

## ภาคผนวก ค-1

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ผลการตรวจสอบความถูกต้องของระบบ CEMs (RAA)



## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634667

Date Received : May 07, 2026

Date Reported : May 11, 2026

Report Number : 3557221-1

Sample Number 2634667-1  
Sampled Date May 06, 2026  
Sample Description Emission from Stationary Source  
Location ปล่อย HRSG 11  
Parameter NOx

Page 1 of 3

### Relative Accuracy Audit Report

| Run No.                                                           | Date     | Time  |       | Raw Data at Actual O2 |          | Corrected Value at 7% O2 |          | Difference |
|-------------------------------------------------------------------|----------|-------|-------|-----------------------|----------|--------------------------|----------|------------|
|                                                                   |          | Start | Stop  | CEMs (ppm)            | RM (ppm) | CEMs (ppm)               | RM (ppm) |            |
| 1                                                                 | 6-May-26 | 9:30  | 9:50  | 9.21                  | 8.62     | 19.18                    | 18.89    | -0.29      |
| 2                                                                 | 6-May-26 | 9:51  | 10:11 | 9.22                  | 8.99     | 19.31                    | 19.76    | 0.44       |
| 3                                                                 | 6-May-26 | 10:12 | 10:32 | 9.35                  | 9.06     | 19.67                    | 19.92    | 0.25       |
| Average                                                           |          |       |       |                       |          | 19.39                    | 19.52    | 0.13       |
| Relative Accuracy Audit (Compared with RM) (%)                    |          |       |       |                       |          |                          |          | 0.68       |
| Relative Accuracy Audit Criteria <sup>1/</sup> (Compared with RM) |          |       |       |                       |          |                          |          | ± 15%      |

Reference Method : US EPA Method 7E

Remark: <sup>1/</sup> Relative Accuracy Criteria of NOx is refer to 40 CFR Part 60 Appendix B : Performance Specification Test 2 (PS-2)

RAA Result is within Criteria

Technical Management

Wichan Choonharat

Manager

ทะเบียนเลขที่ 7-204-ก-0006

Approved by

Sarayuth Jitranont

Assistant General Manager

ทะเบียนเลขที่ 7-204-ก-0003

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634667

Date Received : May 07, 2026

Date Reported : May 11, 2026

Report Number : 3557221-1

Sample Number 2634667-1  
Sampled Date May 06, 2026  
Sample Description Emission from Stationary Source  
Location ปล่อย HRSG 11  
Parameter CO

Page 2 of 3

### Relative Accuracy Audit Report

| Run No.                                                                          | Date     | Time  |       | Raw Data at Actual O2 |          | Corrected Value at 7% O2 |          | Difference |
|----------------------------------------------------------------------------------|----------|-------|-------|-----------------------|----------|--------------------------|----------|------------|
|                                                                                  |          | Start | Stop  | CEMs (ppm)            | RM (ppm) | CEMs (ppm)               | RM (ppm) |            |
| 1                                                                                | 6-May-26 | 9:30  | 9:50  | 0.25                  | 0.56     | 0.52                     | 1.22     | 0.71       |
| 2                                                                                | 6-May-26 | 9:51  | 10:11 | 0.24                  | 0.55     | 0.51                     | 1.21     | 0.70       |
| 3                                                                                | 6-May-26 | 10:12 | 10:32 | 0.20                  | 0.63     | 0.43                     | 1.38     | 0.95       |
| Average                                                                          |          |       |       |                       |          | 0.49                     | 1.27     | 0.79       |
| Relative Accuracy Audit (Compared with Emission Standard : 690 ppm) (%)          |          |       |       |                       |          |                          |          | 0.11       |
| Relative Accuracy Audit Criteria <sup>1/</sup> (Compared with Emission Standard) |          |       |       |                       |          |                          |          | ± 7.5%     |

Reference Method : US EPA Method 10

Remark: <sup>1/</sup> Relative Accuracy Criteria of CO is refer to 40 CFR Part 60 Appendix B : Performance Specification Test 4 (PS-4) compared with

Emission Standard 690 ppm at 7%O2

RAA Result is within Criteria

Technical Management

Wichan Choonharat

Manager

ทะเบียนเลขที่ 7-204-ก-0006

Approved by

Sarayuth Jitranont

Assistant General Manager

ทะเบียนเลขที่ 7-204-ก-0003

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634667

Date Received : May 07, 2026

Date Reported : May 11, 2026

Report Number : 3557221-1

Sample Number 2634667-1  
Sampled Date May 06, 2026  
Sample Description Emission from Stationary Source  
Location ปล่อย HRSG 11  
Parameter O2

Page 3 of 3

### Relative Accuracy Audit Report

| Run No.                                                           | Date     | Time  |       | Raw Data at Actual |        | Difference |
|-------------------------------------------------------------------|----------|-------|-------|--------------------|--------|------------|
|                                                                   |          | Start | Stop  | CEMs (%)           | RM (%) |            |
| 1                                                                 | 6-May-26 | 9:30  | 9:50  | 14.23              | 14.56  | 0.33       |
| 2                                                                 | 6-May-26 | 9:51  | 10:11 | 14.27              | 14.58  | 0.31       |
| 3                                                                 | 6-May-26 | 10:12 | 10:32 | 14.29              | 14.58  | 0.29       |
| Average                                                           |          |       |       | 14.26              | 14.57  | 0.31       |
| Relative Accuracy Audit (Compared with RM) (%)                    |          |       |       |                    |        | 0.31       |
| Relative Accuracy Audit Criteria <sup>1/</sup> (Compared with RM) |          |       |       |                    |        | ± 15%      |

Reference Method : US EPA Method 3A

Remark: : <sup>1/</sup> Relative Accuracy Criteria of O2 is refer to 40 CFR Part 60 Appendix B : Performance Specification Test 3 (PS-3)

RAA Result is within Criteria

Sampled By : Ussaree Namburee

Technical Management

*Wichan Chonharat*

Wichan Choonharat  
Manager

ทะเบียนเลขที่ 2-204-R-0006

Approved by

*Sarayuth Jitranont*

Sarayuth Jitranont  
Assistant General Manager

ทะเบียนเลขที่ 2-204-R-0003

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634668

Date Received : May 07, 2026

Date Reported : May 11, 2026

Report Number : 3557222-1

Sample Number 2634668-1  
Sampled Date May 06, 2026  
Sample Description Emission from Stationary Source  
Location ปล่อย HRSG 12  
Parameter NOx

Page 1 of 3

### Relative Accuracy Audit Report

| Run No.                                                           | Date     | Time  |       | Raw Data at Actual O2 |          | Corrected Value at 7% O2 |          | Difference |
|-------------------------------------------------------------------|----------|-------|-------|-----------------------|----------|--------------------------|----------|------------|
|                                                                   |          | Start | Stop  | CEMs (ppm)            | RM (ppm) | CEMs (ppm)               | RM (ppm) |            |
| 1                                                                 | 6-May-26 | 11:00 | 11:20 | 12.37                 | 11.57    | 26.60                    | 24.59    | -2.01      |
| 2                                                                 | 6-May-26 | 11:21 | 11:41 | 17.13                 | 15.96    | 36.80                    | 34.41    | -2.40      |
| 3                                                                 | 6-May-26 | 11:42 | 12:02 | 11.36                 | 12.50    | 23.92                    | 26.82    | 2.90       |
| Average                                                           |          |       |       |                       |          | 29.11                    | 28.60    | -0.50      |
| Relative Accuracy Audit (Compared with RM) (%)                    |          |       |       |                       |          |                          |          | 1.76       |
| Relative Accuracy Audit Criteria <sup>1/</sup> (Compared with RM) |          |       |       |                       |          |                          |          | ± 15%      |

Reference Method : US EPA Method 7E

Remark: <sup>1/</sup> Relative Accuracy Criteria of NOx is refer to 40 CFR Part 60 Appendix B : Performance Specification Test 2 (PS-2)

RAA Result is within Criteria

Technical Management

*Wichan Chonharat*

Wichan Choonharat  
Manager

ทะเบียนเลขที่ 2-204-R-0006

Approved by

*Sarayuth Jitranont*

Sarayuth Jitranont  
Assistant General Manager

ทะเบียนเลขที่ 2-204-R-0003

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634668

Date Received : May 07, 2026

Date Reported : May 11, 2026

Report Number : 3557222-1

Page 2 of 3

Sample Number 2634668-1  
Sampled Date May 06, 2026  
Sample Description Emission from Stationary Source  
Location ปล่อย HRSO 12  
Parameter CO

### Relative Accuracy Audit Report

| Run No.                                                                          | Date     | Time  |       | Raw Data at Actual O2 |          | Corrected Value at 7% O2 |          | Difference |
|----------------------------------------------------------------------------------|----------|-------|-------|-----------------------|----------|--------------------------|----------|------------|
|                                                                                  |          | Start | Stop  | CEMs (ppm)            | RM (ppm) | CEMs (ppm)               | RM (ppm) |            |
| 1                                                                                | 6-May-26 | 11:00 | 11:20 | 0.88                  | 0.72     | 1.88                     | 1.53     | -0.35      |
| 2                                                                                | 6-May-26 | 11:21 | 11:41 | 0.87                  | 0.16     | 1.87                     | 0.35     | -1.53      |
| 3                                                                                | 6-May-26 | 11:42 | 12:02 | 0.85                  | 0.27     | 1.79                     | 0.59     | -1.21      |
| Average                                                                          |          |       |       |                       |          | 1.85                     | 0.82     | -1.03      |
| Relative Accuracy Audit (Compared with Emission Standard : 690 ppm) (%)          |          |       |       |                       |          |                          |          | 0.15       |
| Relative Accuracy Audit Criteria <sup>1/</sup> (Compared with Emission Standard) |          |       |       |                       |          |                          |          | ± 7.5%     |

Reference Method : US EPA Method 10

Remark: <sup>1/</sup> Relative Accuracy Criteria of CO is refer to 40 CFR Part 60 Appendix B : Performance Specification Test 4 (PS-4) compared with Emission Standard 690 ppm at 7%O2

RAA Result is within Criteria

Technical Management

Wichan Chonharat

Manager

ทะเบียนเลขที่ 7-204-ก-0006

Approved by

Sarayuth Jitranont

Assistant General Manager

ทะเบียนเลขที่ 7-204-ก-0003

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634668

Date Received : May 07, 2026

Date Reported : May 11, 2026

Report Number : 3557222-1

Page 3 of 3

Sample Number 2634668-1  
Sampled Date May 06, 2026  
Sample Description Emission from Stationary Source  
Location ปล่อย HRSO 12  
Parameter O2

### Relative Accuracy Audit Report

| Run No.                                                           | Date     | Time  |       | Raw Data at Actual |        | Difference |
|-------------------------------------------------------------------|----------|-------|-------|--------------------|--------|------------|
|                                                                   |          | Start | Stop  | CEMs (%)           | RM (%) |            |
| 1                                                                 | 6-May-26 | 11:00 | 11:20 | 14.44              | 14.36  | -0.08      |
| 2                                                                 | 6-May-26 | 11:21 | 11:41 | 14.43              | 14.45  | 0.02       |
| 3                                                                 | 6-May-26 | 11:42 | 12:02 | 14.30              | 14.42  | 0.12       |
| Average                                                           |          |       |       | 14.39              | 14.41  | 0.02       |
| Relative Accuracy Audit (Compared with RM) (%)                    |          |       |       |                    |        | 0.02       |
| Relative Accuracy Audit Criteria <sup>1/</sup> (Compared with RM) |          |       |       |                    |        | ± 15%      |

Reference Method : US EPA Method 3A

Remark: <sup>1/</sup> Relative Accuracy Criteria of O2 is refer to 40 CFR Part 60 Appendix B : Performance Specification Test 3 (PS-3)

RAA Result is within Criteria

Sampled By : Ussaree Namburee

Technical Management

Wichan Chonharat

Manager

ทะเบียนเลขที่ 7-204-ก-0006

Approved by

Sarayuth Jitranont

Assistant General Manager

ทะเบียนเลขที่ 7-204-ก-0003

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ระหว่างเดือนมกราคม-มิถุนายน พ.ศ. 2569

# ภาคผนวก ง-1

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คุณภาพอากาศในบรรยากาศ



## Analysis / Test Report



TESTING  
No.0009

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634660

Date Received : May 12, 2026

Date Reported : May 20, 2026

Report Number: 3557214-1

Page 1 of 1

| Sample Description      | Air Quality                                             |                                                         |      |                                     |                                    |
|-------------------------|---------------------------------------------------------|---------------------------------------------------------|------|-------------------------------------|------------------------------------|
| Location                | พื้นที่โรงไฟฟ้า (GPS 47P 0669792, 1559128)              |                                                         |      |                                     |                                    |
| Date Analysis Commenced | May 13, 2026                                            |                                                         |      |                                     |                                    |
| Condition of Sample     | Drawn into two filter paper placed in plastic cassettes |                                                         |      |                                     |                                    |
| Sample Number           | Sampled Date                                            | Sampling Condition<br>Pressure (mm Hg) Temperature (°C) |      | Total Suspended Particulate (ug/m3) | Particulate Matter (PM-10) (ug/m3) |
| 2634660-1               | May 04 - May 05, 2026                                   | 756                                                     | 35.8 | 43.2                                | 23.7                               |
| 2634660-2               | May 05 - May 06, 2026                                   | 756                                                     | 33.6 | 62.1                                | 33.9                               |
| 2634660-3               | May 06 - May 07, 2026                                   | 756                                                     | 33.5 | 69.3                                | 38.7                               |
| 2634660-4               | May 07 - May 08, 2026                                   | 756                                                     | 33.4 | 62.4                                | 38.5                               |
| 2634660-5               | May 08 - May 09, 2026                                   | 756                                                     | 33.0 | 61.4                                | 36.9                               |
| 2634660-6               | May 09 - May 10, 2026                                   | 756                                                     | 33.1 | 72.0                                | 48.2                               |
| 2634660-7               | May 10 - May 11, 2026                                   | 756                                                     | 33.7 | 62.3                                | 39.5                               |
| Guideline               | -                                                       | -                                                       | -    | 200                                 | 100                                |

### Reference Method

Total Suspended Particulate : In - house method : STM 04-051 based on U.S. Environmental Protection Agency 40 CFR, method 50, Appendix B, revised as of July 1, 2008 (Include sampling)

Particulate Matter (PM-10) : In - house method : STM 04-052 based on U.S. Environmental Protection Agency 40 CFR, method 50, Appendix J, revised as of July 1, 2008 (Include sampling)

Guideline : Notification of the National Environmental Board., 2026 (B.E.2569) dated January 21, 2026.

Sampled By : Thanong Wiriyasahakij

Approved by

*Orawan R.*

Orawan Rakyong  
Scientist (3)

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.

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## Analysis / Test Report



TESTING  
No.0009

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634660

Date Received : May 12, 2026

Date Reported : May 20, 2026

Report Number: 3574988-1

Page 1 of 1

| Sample Description      | Air Quality                                                      |                                                         |      |                                     |                                    |
|-------------------------|------------------------------------------------------------------|---------------------------------------------------------|------|-------------------------------------|------------------------------------|
| Location                | โรงพยาบาลส่งเสริมสุขภาพตำบลเชิงตากมัย (GPS 47P 0670791, 1560756) |                                                         |      |                                     |                                    |
| Date Analysis Commenced | May 13, 2026                                                     |                                                         |      |                                     |                                    |
| Condition of Sample     | Drawn into two filter paper placed in plastic cassettes          |                                                         |      |                                     |                                    |
| Sample Number           | Sampled Date                                                     | Sampling Condition<br>Pressure (mm Hg) Temperature (°C) |      | Total Suspended Particulate (ug/m3) | Particulate Matter (PM-10) (ug/m3) |
| 2634660-8               | May 04 - May 05, 2026                                            | 756                                                     | 35.8 | 76.5                                | 27.7                               |
| 2634660-9               | May 05 - May 06, 2026                                            | 756                                                     | 33.6 | 106                                 | 44.2                               |
| 2634660-10              | May 06 - May 07, 2026                                            | 756                                                     | 33.5 | 123                                 | 47.4                               |
| 2634660-11              | May 07 - May 08, 2026                                            | 756                                                     | 33.4 | 110                                 | 41.6                               |
| 2634660-12              | May 08 - May 09, 2026                                            | 756                                                     | 33.0 | 116                                 | 50.2                               |
| 2634660-13              | May 09 - May 10, 2026                                            | 756                                                     | 33.1 | 118                                 | 57.1                               |
| 2634660-14              | May 10 - May 11, 2026                                            | 756                                                     | 33.7 | 91.7                                | 47.4                               |
| Guideline               | -                                                                | -                                                       | -    | 200                                 | 100                                |

### Reference Method

Total Suspended Particulate : In - house method : STM 04-051 based on U.S. Environmental Protection Agency 40 CFR, method 50, Appendix B, revised as of July 1, 2008 (Include sampling)

Particulate Matter (PM-10) : In - house method : STM 04-052 based on U.S. Environmental Protection Agency 40 CFR, method 50, Appendix J, revised as of July 1, 2008 (Include sampling)

Guideline : Notification of the National Environmental Board., 2026 (B.E.2569) dated January 21, 2026.

Sampled By : Thanong Wiriyasahakij

Approved by

*Orawan R.*

Orawan Rakyong  
Scientist (3)

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.

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## Analysis / Test Report



TESTING  
No.0009

Lot ID: 2634660

Date Received : May 12, 2026

Date Reported : May 20, 2026

Report Number: 3574990-1

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Sample Description Air Quality  
Location โรงเรียนคลองบ้านพร้าว (GPS 47P 0669758, 1557619)  
Date Analysis Commenced May 13, 2026  
Condition of Sample Drawn into two filter paper placed in plastic cassettes

| Sample Number | Sampled Date          | Sampling Condition |                  | Total Suspended Particulate (ug/m3) | Particulate Matter (PM-10) (ug/m3) |
|---------------|-----------------------|--------------------|------------------|-------------------------------------|------------------------------------|
|               |                       | Pressure (mm Hg)   | Temperature (°C) |                                     |                                    |
| 2634660-15    | May 04 - May 05, 2026 | 756                | 35.8             | 47.2                                | 23.3                               |
| 2634660-16    | May 05 - May 06, 2026 | 756                | 33.6             | 62.1                                | 36.4                               |
| 2634660-17    | May 06 - May 07, 2026 | 756                | 33.5             | 59.7                                | 33.0                               |
| 2634660-18    | May 07 - May 08, 2026 | 756                | 33.4             | 57.3                                | 28.0                               |
| 2634660-19    | May 08 - May 09, 2026 | 756                | 33.0             | 69.8                                | 36.7                               |
| 2634660-20    | May 09 - May 10, 2026 | 756                | 33.1             | 87.6                                | 46.8                               |
| 2634660-21    | May 10 - May 11, 2026 | 756                | 33.7             | 71.8                                | 36.7                               |
| Guideline     | -                     | -                  | -                | 200                                 | 100                                |

### Reference Method

Total Suspended Particulate : In - house method : STM 04-051 based on U.S. Environmental Protection Agency 40 CFR, method 50, Appendix B, revised as of July 1, 2008 (Include sampling)

Particulate Matter (PM-10) : In - house method : STM 04-052 based on U.S. Environmental Protection Agency 40 CFR, method 50, Appendix J, revised as of July 1, 2008 (Include sampling)

Guideline : Notification of the National Environment Board., 2026 (B.E.2569) dated January 21, 2026.

Sampled By : Thanong Wiriyasahakij

Approved by

*Orawan R.*

Orawan Rakyong  
Scientist (3)

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634659

Date Received : May 12, 2026

Date Reported : May 16, 2026

Report Number: 3557213-1

Page 1 of 1

Sample Description Air Quality  
Location พื้นที่โรงไฟฟ้า (GPS 47P 0669792, 1559128)  
Parameter Nitrogen dioxide (ppb)  
Measurement Date May 04, 2026 - May 11, 2026  
Measurement by Apisit Srikongkaew

| Time                   | 2634659-1    | 2634659-2    | 2634659-3    | 2634659-4    | 2634659-5    | 2634659-6    | 2634659-7    |
|------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                        | May 04, 2026 | May 05, 2026 | May 06, 2026 | May 07, 2026 | May 08, 2026 | May 09, 2026 | May 10, 2026 |
| 10:00 AM - 11:00 AM    | 2.6          | 10.8         | 11.0         | 9.8          | 12.1         | 10.9         | 8.1          |
| 11:00 AM - 12:00 PM    | 6.7          | 9.1          | 8.2          | 13.4         | 11.1         | 10.5         | 6.4          |
| 12:00 PM - 01:00 PM    | 9.2          | 8.2          | 6.8          | 17.3         | 9.9          | 10.3         | 6.9          |
| 01:00 PM - 02:00 PM    | 17.0         | 8.7          | 13.0         | 21.2         | 9.9          | 9.5          | 10.2         |
| 02:00 PM - 03:00 PM    | 18.0         | 9.0          | 17.4         | 16.7         | 11.5         | 9.8          | 9.2          |
| 03:00 PM - 04:00 PM    | 17.3         | 9.5          | 26.8         | 15.0         | 17.9         | 10.1         | 10.7         |
| 04:00 PM - 05:00 PM    | 17.6         | 12.3         | 28.9         | 20.2         | 20.4         | 10.7         | 16.9         |
| 05:00 PM - 06:00 PM    | 15.9         | 10.2         | 24.8         | 17.1         | 18.9         | 18.6         | 22.9         |
| 06:00 PM - 07:00 PM    | 18.2         | 17.8         | 30.9         | 17.5         | 19.1         | 26.5         | 28.5         |
| 07:00 PM - 08:00 PM    | 17.1         | 30.0         | 14.9         | 23.7         | 25.9         | 31.1         | 32.0         |
| 08:00 PM - 09:00 PM    | 18.2         | 36.5         | 18.7         | 25.3         | 24.9         | 29.5         | 29.8         |
| 09:00 PM - 10:00 PM    | 23.0         | 29.5         | 19.4         | 25.2         | 21.0         | 30.4         | 23.8         |
| 10:00 PM - 11:00 PM    | 16.5         | 22.1         | 22.7         | 20.6         | 22.7         | 27.7         | 17.5         |
| 11:00 PM - 12:00 AM    | 9.6          | 14.6         | 22.8         | 20.8         | 18.9         | 27.8         | 10.4         |
| 12:00 AM - 01:00 AM    | 8.7          | 13.9         | 22.4         | 11.8         | 14.9         | 23.0         | 11.4         |
| 01:00 AM - 02:00 AM    | 7.9          | 16.7         | 12.4         | 10.1         | 11.3         | 15.5         | 13.5         |
| 02:00 AM - 03:00 AM    | 5.7          | 18.4         | 11.3         | 10.0         | 13.1         | 11.8         | 8.4          |
| 03:00 AM - 04:00 AM    | 12.1         | 17.6         | 12.0         | 11.8         | 14.2         | 11.5         | 8.1          |
| 04:00 AM - 05:00 AM    | 16.9         | 18.2         | 15.5         | 10.6         | 12.5         | 11.9         | 8.4          |
| 05:00 AM - 06:00 AM    | 17.2         | 14.7         | 13.7         | 13.4         | 12.3         | 16.8         | 9.2          |
| 06:00 AM - 07:00 AM    | 17.2         | 19.0         | 16.0         | 14.9         | 11.1         | 13.7         | 11.4         |
| 07:00 AM - 08:00 AM    | 13.0         | 15.8         | 15.1         | 16.4         | 14.0         | 14.1         | 13.0         |
| 08:00 AM - 09:00 AM    | 12.6         | 15.8         | 15.7         | 15.6         | 15.2         | 11.1         | 13.9         |
| 09:00 AM - 10:00 AM    | 12.9         | 12.6         | 14.9         | 15.0         | 13.2         | 9.8          | 14.8         |
| Average                | 13.8         | 16.3         | 17.3         | 16.4         | 15.7         | 16.8         | 14.4         |
| 1hr - Maximum          | 23.0         | 36.5         | 30.9         | 25.3         | 25.9         | 31.1         | 32.0         |
| Standard 1hr - Average | 120          | 120          | 120          | 120          | 120          | 120          | 120          |

Standard : Notification of the National Environment Board B.E. 2569.

Reference Method : U.S. Environmental Protection Agency Method Part 50 App. F (Chemiluminescence)

Approved by

*Orawan R.*

Orawan Rakyong  
Scientist (3)

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**

**Project Name :** Monitoring EIA

**Project Location :** GCRN

**Lot ID: 2634659**

Date Received : May 12, 2026

Date Reported : May 16, 2026

Report Number: 3572417-1

Page 1 of 1

**Sample Description** Air Quality

**Location** โรงพยาบาลส่งเสริมสุขภาพตำบลเชิงรกรน้อย (GPS 47P 0670791, 1560756)

**Parameter** Nitrogen dioxide (ppb)

**Measurement Date** May 04, 2026 - May 11, 2026

**Measurement by** Apisit Srikongkaew

| Time                   | 2634659-8    | 2634659-9    | 2634659-10   | 2634659-11   | 2634659-12   | 2634659-13   | 2634659-14   |
|------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                        | May 04, 2026 | May 05, 2026 | May 06, 2026 | May 07, 2026 | May 08, 2026 | May 09, 2026 | May 10, 2026 |
| 09:00 AM - 10:00 AM    | 6.5          | 18.1         | 12.6         | 21.3         | 17.2         | 18.7         | 13.4         |
| 10:00 AM - 11:00 AM    | 10.6         | 11.0         | 16.6         | 14.4         | 16.8         | 17.2         | 13.1         |
| 11:00 AM - 12:00 PM    | 9.5          | 9.4          | 11.7         | 15.5         | 10.2         | 13.7         | 12.7         |
| 12:00 PM - 01:00 PM    | 9.2          | 12.8         | 13.5         | 12.4         | 14.0         | 10.7         | 12.2         |
| 01:00 PM - 02:00 PM    | 14.8         | 11.2         | 15.7         | 24.0         | 24.2         | 11.6         | 10.6         |
| 02:00 PM - 03:00 PM    | 14.6         | 7.3          | 13.2         | 21.2         | 15.7         | 11.9         | 13.5         |
| 03:00 PM - 04:00 PM    | 14.5         | 14.6         | 17.0         | 17.2         | 37.0         | 9.3          | 17.7         |
| 04:00 PM - 05:00 PM    | 13.9         | 23.0         | 32.8         | 21.6         | 38.2         | 18.2         | 17.8         |
| 05:00 PM - 06:00 PM    | 18.8         | 26.0         | 31.9         | 21.9         | 26.6         | 29.1         | 24.5         |
| 06:00 PM - 07:00 PM    | 29.3         | 32.9         | 29.0         | 27.4         | 15.0         | 35.6         | 18.5         |
| 07:00 PM - 08:00 PM    | 33.4         | 35.1         | 15.3         | 31.0         | 24.6         | 34.4         | 28.7         |
| 08:00 PM - 09:00 PM    | 28.6         | 23.4         | 21.4         | 32.3         | 28.3         | 31.7         | 16.4         |
| 09:00 PM - 10:00 PM    | 31.9         | 34.4         | 24.8         | 33.9         | 27.7         | 29.6         | 31.7         |
| 10:00 PM - 11:00 PM    | 24.7         | 24.1         | 23.5         | 29.0         | 25.8         | 30.4         | 20.8         |
| 11:00 PM - 12:00 AM    | 32.5         | 15.4         | 27.6         | 24.0         | 28.6         | 30.6         | 11.8         |
| 12:00 AM - 01:00 AM    | 22.9         | 16.7         | 30.6         | 18.6         | 17.8         | 26.8         | 10.9         |
| 01:00 AM - 02:00 AM    | 19.7         | 22.5         | 14.8         | 13.6         | 13.9         | 12.8         | 11.7         |
| 02:00 AM - 03:00 AM    | 19.7         | 22.3         | 14.5         | 14.6         | 16.3         | 14.5         | 14.0         |
| 03:00 AM - 04:00 AM    | 15.1         | 20.4         | 17.9         | 14.7         | 16.0         | 15.4         | 13.7         |
| 04:00 AM - 05:00 AM    | 11.5         | 23.0         | 18.6         | 20.3         | 14.5         | 10.3         | 15.5         |
| 05:00 AM - 06:00 AM    | 20.1         | 23.3         | 19.9         | 22.0         | 15.0         | 12.5         | 16.7         |
| 06:00 AM - 07:00 AM    | 21.6         | 24.1         | 21.6         | 21.8         | 14.2         | 18.4         | 16.2         |
| 07:00 AM - 08:00 AM    | 18.3         | 15.8         | 16.2         | 17.7         | 17.0         | 17.4         | 17.9         |
| 08:00 AM - 09:00 AM    | 14.9         | 15.1         | 13.8         | 16.4         | 18.5         | 18.1         | 17.7         |
| Average                | 19.0         | 20.1         | 19.8         | 21.1         | 20.5         | 20.0         | 16.6         |
| 1hr - Maximum          | 33.4         | 35.1         | 32.8         | 33.9         | 38.2         | 35.6         | 31.7         |
| Standard 1hr - Average | 120          | 120          | 120          | 120          | 120          | 120          | 120          |

Standard : Notification of the National Environment Board B.E. 2569.

Reference Method : U.S. Environmental Protection Agency Method Part 50 App. F (Chemiluminescence)

Approved by

*Orawan R.*

Orawan Rakyong  
Scientist (3)

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**

**Project Name :** Monitoring EIA

**Project Location :** GCRN

**Lot ID: 2634659**

Date Received : May 12, 2026

Date Reported : May 16, 2026

Report Number: 3572418-1

Page 1 of 1

**Sample Description** Air Quality

**Location** โรงเรียนคลองบ้านพร้าว (GPS 47P 0669758, 1557619)

**Parameter** Nitrogen dioxide (ppb)

**Measurement Date** May 04, 2026 - May 11, 2026

**Measurement by** Apisit Srikongkaew

| Time                   | 2634659-15   | 2634659-16   | 2634659-17   | 2634659-18   | 2634659-19   | 2634659-20   | 2634659-21   |
|------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                        | May 04, 2026 | May 05, 2026 | May 06, 2026 | May 07, 2026 | May 08, 2026 | May 09, 2026 | May 10, 2026 |
| 11:00 AM - 12:00 PM    | 11.8         | 12.7         | 7.4          | 10.0         | 8.4          | 11.2         | 6.8          |
| 12:00 PM - 01:00 PM    | 11.2         | 8.3          | 7.5          | 10.6         | 7.6          | 10.2         | 5.8          |
| 01:00 PM - 02:00 PM    | 13.3         | 5.3          | 5.5          | 11.6         | 6.2          | 8.3          | 4.7          |
| 02:00 PM - 03:00 PM    | 13.3         | 5.8          | 8.1          | 16.0         | 4.9          | 5.8          | 9.5          |
| 03:00 PM - 04:00 PM    | 12.4         | 5.6          | 14.8         | 13.6         | 6.1          | 5.0          | 10.0         |
| 04:00 PM - 05:00 PM    | 7.2          | 5.7          | 21.6         | 9.1          | 14.9         | 4.4          | 9.8          |
| 05:00 PM - 06:00 PM    | 6.1          | 7.6          | 24.3         | 9.3          | 12.5         | 3.9          | 15.8         |
| 06:00 PM - 07:00 PM    | 10.2         | 8.9          | 22.0         | 13.7         | 14.0         | 13.5         | 20.4         |
| 07:00 PM - 08:00 PM    | 16.9         | 9.5          | 23.1         | 15.4         | 11.1         | 22.3         | 24.0         |
| 08:00 PM - 09:00 PM    | 21.6         | 16.6         | 11.7         | 15.4         | 16.3         | 27.6         | 18.7         |
| 09:00 PM - 10:00 PM    | 19.2         | 26.2         | 12.1         | 19.2         | 20.4         | 30.6         | 23.7         |
| 10:00 PM - 11:00 PM    | 19.9         | 22.8         | 16.6         | 20.8         | 23.3         | 27.2         | 20.8         |
| 11:00 PM - 12:00 AM    | 19.2         | 19.8         | 17.4         | 20.5         | 20.8         | 25.6         | 20.6         |
| 12:00 AM - 01:00 AM    | 5.1          | 14.0         | 17.8         | 17.7         | 20.0         | 23.5         | 9.5          |
| 01:00 AM - 02:00 AM    | 2.0          | 12.6         | 18.9         | 14.5         | 18.0         | 24.6         | 6.9          |
| 02:00 AM - 03:00 AM    | 2.7          | 12.7         | 18.1         | 9.7          | 11.5         | 16.6         | 7.6          |
| 03:00 AM - 04:00 AM    | 2.5          | 11.6         | 11.4         | 8.7          | 8.7          | 8.6          | 7.0          |
| 04:00 AM - 05:00 AM    | 6.6          | 14.3         | 11.4         | 8.8          | 11.5         | 8.4          | 7.1          |
| 05:00 AM - 06:00 AM    | 11.8         | 13.5         | 11.2         | 9.3          | 14.2         | 9.9          | 9.9          |
| 06:00 AM - 07:00 AM    | 12.9         | 13.5         | 14.6         | 10.3         | 12.5         | 13.7         | 9.6          |
| 07:00 AM - 08:00 AM    | 14.5         | 15.0         | 14.6         | 11.3         | 10.3         | 12.6         | 10.4         |
| 08:00 AM - 09:00 AM    | 13.7         | 12.4         | 13.7         | 12.2         | 12.6         | 11.9         | 11.0         |
| 09:00 AM - 10:00 AM    | 10.6         | 10.3         | 12.0         | 11.8         | 14.6         | 10.7         | 11.6         |
| 10:00 AM - 11:00 AM    | 12.1         | 9.3          | 11.2         | 10.6         | 14.7         | 8.7          | 8.0          |
| Average                | 11.5         | 12.3         | 14.5         | 12.9         | 13.1         | 14.4         | 12.1         |
| 1hr - Maximum          | 21.6         | 26.2         | 24.3         | 20.8         | 23.3         | 30.6         | 24.0         |
| Standard 1hr - Average | 120          | 120          | 120          | 120          | 120          | 120          | 120          |

Standard : Notification of the National Environment Board B.E. 2569.

Reference Method : U.S. Environmental Protection Agency Method Part 50 App. F (Chemiluminescence)

Approved by

*Orawan R.*

Orawan Rakyong  
Scientist (3)

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S:\Reports\Air SOxNOx.rpt ( 2:26PM)



## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**

**Project Name :** Monitoring EIA

**Project Location :** GCRN

**Lot ID: 2634661**

Date Received : May 12, 2026

Date Reported : May 18, 2026

Report Number : 3557215-1

**Sample Number** 2634661-1 to 7  
**Parameter** Wind Speed / Wind Direction  
**Location** พื้นที่โรงไฟฟ้า (GPS 47P 0669792, 1559128)  
**Sampling Date** May 04 - May 11, 2026  
**Sampling by** Thanesuan Sriwasut

| Time                | May 04 - May 05, 2026 |          |     | May 05 - May 06, 2026 |          |     | May 06 - May 07, 2026 |          |     | May 07 - May 08, 2026 |          |     | May 08 - May 09, 2026 |          |     | May 09 - May 10, 2026 |          |     | May 10 - May 11, 2026 |          |     |
|---------------------|-----------------------|----------|-----|-----------------------|----------|-----|-----------------------|----------|-----|-----------------------|----------|-----|-----------------------|----------|-----|-----------------------|----------|-----|-----------------------|----------|-----|
|                     | WS (m/s)              | WD (deg) |     | WS (m/s)              | WD (deg) |     | WS (m/s)              | WD (deg) |     | WS (m/s)              | WD (deg) |     | WS (m/s)              | WD (deg) |     | WS (m/s)              | WD (deg) |     | WS (m/s)              | WD (deg) |     |
| 10:00 AM - 11:00 AM | 1.7                   | 66.0     | ENE | 1.2                   | 0.0      | N   | 1.7                   | 159.0    | SSE | 1.5                   | 56.0     | NE  | 1.3                   | 320.0    | NW  | 2.0                   | 359.0    | N   | 2.6                   | 294.0    | WNW |
| 11:00 AM - 12:00 PM | 2.0                   | 79.0     | E   | 3.2                   | 277.0    | W   | 1.3                   | 57.0     | ENE | 1.6                   | 255.0    | WSW | 1.3                   | 29.0     | NNE | 1.8                   | 286.0    | WNW | 1.1                   | 265.0    | W   |
| 12:00 PM - 01:00 PM | 1.6                   | 286.0    | WNW | 0.8                   | 317.0    | NW  | 4.8                   | 62.0     | ENE | 2.8                   | 235.0    | SW  | 3.2                   | 126.0    | SE  | 1.9                   | 240.0    | WSW | 2.2                   | 260.0    | W   |
| 01:00 PM - 02:00 PM | 3.3                   | 269.0    | W   | 0.4                   | 16.0     | NNE | 1.1                   | 0.0      | N   | 1.1                   | 209.0    | SSW | 1.4                   | 60.0     | ENE | 1.0                   | 265.0    | W   | 6.2                   | 258.0    | WSW |
| 02:00 PM - 03:00 PM | 2.7                   | 247.0    | WSW | 3.0                   | 291.0    | WNW | 1.1                   | 335.0    | NNW | 4.7                   | 127.0    | SE  | 2.7                   | 132.0    | SE  | 2.4                   | 104.0    | ESE | 2.8                   | 318.0    | NW  |
| 03:00 PM - 04:00 PM | 2.0                   | 17.0     | NNE | 1.7                   | 319.0    | NW  | 0.6                   | 248.0    | WSW | 3.0                   | 130.0    | SE  | 2.2                   | 51.0     | NE  | 1.6                   | 121.0    | ESE | 0.6                   | 337.0    | NW  |
| 04:00 PM - 05:00 PM | 1.2                   | 56.0     | NE  | 1.3                   | 322.0    | NW  | 1.4                   | 58.0     | ENE | 1.2                   | 75.0     | ENE | 2.6                   | 36.0     | NE  | 1.1                   | 93.0     | E   | 1.5                   | 287.0    | NNW |
| 05:00 PM - 06:00 PM | 1.2                   | 66.0     | ENE | 2.4                   | 114.0    | ESE | 3.5                   | 126.0    | SE  | 1.8                   | 182.0    | S   | 1.3                   | 69.0     | ENE | 0.3                   | 10.0     | N   | 1.7                   | 127.0    | SE  |
| 06:00 PM - 07:00 PM | 0.4                   | 31.0     | NNE | 2.0                   | 100.0    | E   | 2.3                   | 144.0    | SE  | 1.8                   | 62.0     | ENE | 0.8                   | 109.0    | ESE | 2.6                   | 29.0     | NNE | 2.5                   | 40.0     | NE  |
| 07:00 PM - 08:00 PM | 1.2                   | 68.0     | ENE | 0.8                   | 351.0    | N   | 0.4                   | 196.0    | SSW | 2.1                   | 171.0    | S   | 2.8                   | 105.0    | ESE | 1.1                   | 311.0    | NW  | 0.5                   | 226.0    | SW  |
| 08:00 PM - 09:00 PM | 0.6                   | 321.0    | NW  | 1.3                   | 140.0    | SE  | 1.4                   | 69.0     | ENE | 1.8                   | 106.0    | ESE | 1.3                   | 116.0    | ESE | 0.9                   | 338.0    | NNW | 1.1                   | 109.0    | ESE |
| 09:00 PM - 10:00 PM | 0.6                   | 19.0     | NNE | 1.0                   | 244.0    | WSW | 0.3                   | 88.0     | E   | 0.5                   | 47.0     | NE  | 1.5                   | 253.0    | WSW | 0.6                   | 315.0    | NW  | 3.4                   | 113.0    | ESE |
| 10:00 PM - 11:00 PM | 2.6                   | 75.0     | ENE | 1.9                   | 257.0    | WSW | 2.4                   | 127.0    | SE  | 1.2                   | 94.0     | E   | 0.6                   | 306.0    | NW  | 0.4                   | 305.0    | NW  | 4.0                   | 117.0    | ESE |
| 11:00 PM - 12:00 AM | 3.9                   | 108.0    | ESE | 0.7                   | 245.0    | WSW | 2.1                   | 105.0    | ESE | 0.6                   | 357.0    | N   | 1.2                   | 290.0    | WNW | 0.8                   | 265.0    | W   | 3.9                   | 119.0    | ESE |
| 12:00 AM - 01:00 AM | 5.4                   | 116.0    | ESE | 1.3                   | 257.0    | WSW | 0.0                   | -        | -   | 1.9                   | 76.0     | ENE | 0.6                   | 15.0     | NNE | 0.9                   | 322.0    | NW  | 2.4                   | 122.0    | ESE |
| 01:00 AM - 02:00 AM | 2.3                   | 29.0     | NNE | 0.9                   | 30.0     | NNE | 1.9                   | 105.0    | ESE | 2.0                   | 118.0    | ESE | 0.8                   | 10.0     | N   | 1.8                   | 260.0    | W   | 1.9                   | 123.0    | ESE |
| 02:00 AM - 03:00 AM | 0.7                   | 74.0     | ENE | 1.3                   | 91.0     | E   | 1.2                   | 100.0    | E   | 1.9                   | 91.0     | E   | 0.8                   | 69.0     | ENE | 1.4                   | 260.0    | W   | 0.0                   | -        | -   |
| 03:00 AM - 04:00 AM | 1.8                   | 266.0    | W   | 0.3                   | 313.0    | NW  | 1.9                   | 112.0    | ESE | 2.2                   | 120.0    | ESE | 1.2                   | 286.0    | WNW | 1.5                   | 263.0    | W   | 1.2                   | 111.0    | ESE |
| 04:00 AM - 05:00 AM | 1.2                   | 270.0    | W   | 0.5                   | 359.0    | N   | 1.1                   | 94.0     | E   | 1.7                   | 125.0    | SE  | 1.2                   | 302.0    | WNW | 0.7                   | 291.0    | WNW | 1.3                   | 62.0     | ENE |
| 05:00 AM - 06:00 AM | 0.4                   | 245.0    | WSW | 1.3                   | 57.0     | ENE | 2.5                   | 105.0    | ESE | 2.6                   | 102.0    | ESE | 1.2                   | 329.0    | NNW | 0.4                   | 305.0    | NW  | 1.8                   | 73.0     | ENE |
| 06:00 AM - 07:00 AM | 1.3                   | 358.0    | N   | 1.6                   | 113.0    | ESE | 1.5                   | 88.0     | E   | 1.5                   | 127.0    | SE  | 1.1                   | 7.0      | N   | 0.6                   | 331.0    | NNW | 2.5                   | 72.0     | ENE |
| 07:00 AM - 08:00 AM | 2.5                   | 324.0    | NW  | 1.9                   | 121.0    | ESE | 2.3                   | 126.0    | SE  | 1.5                   | 112.0    | ESE | 1.2                   | 305.0    | NW  | 1.1                   | 301.0    | WNW | 1.8                   | 64.0     | ENE |
| 08:00 AM - 09:00 AM | 0.9                   | 305.0    | NW  | 1.5                   | 107.0    | ESE | 0.7                   | 181.0    | S   | 1.8                   | 120.0    | ESE | 2.2                   | 28.0     | NNE | 1.7                   | 5.0      | N   | 2.4                   | 117.0    | ESE |
| 09:00 AM - 10:00 AM | 1.7                   | 22.0     | NNE | 1.7                   | 121.0    | ESE | 3.0                   | 116.0    | ESE | 2.7                   | 256.0    | WSW | 1.6                   | 326.0    | NW  | 1.0                   | 265.0    | W   | 3.3                   | 136.0    | SE  |

Reference Method : Cup Anemometer & Anodized Aluminium Vane Method

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**

**Project Name :** Monitoring EIA

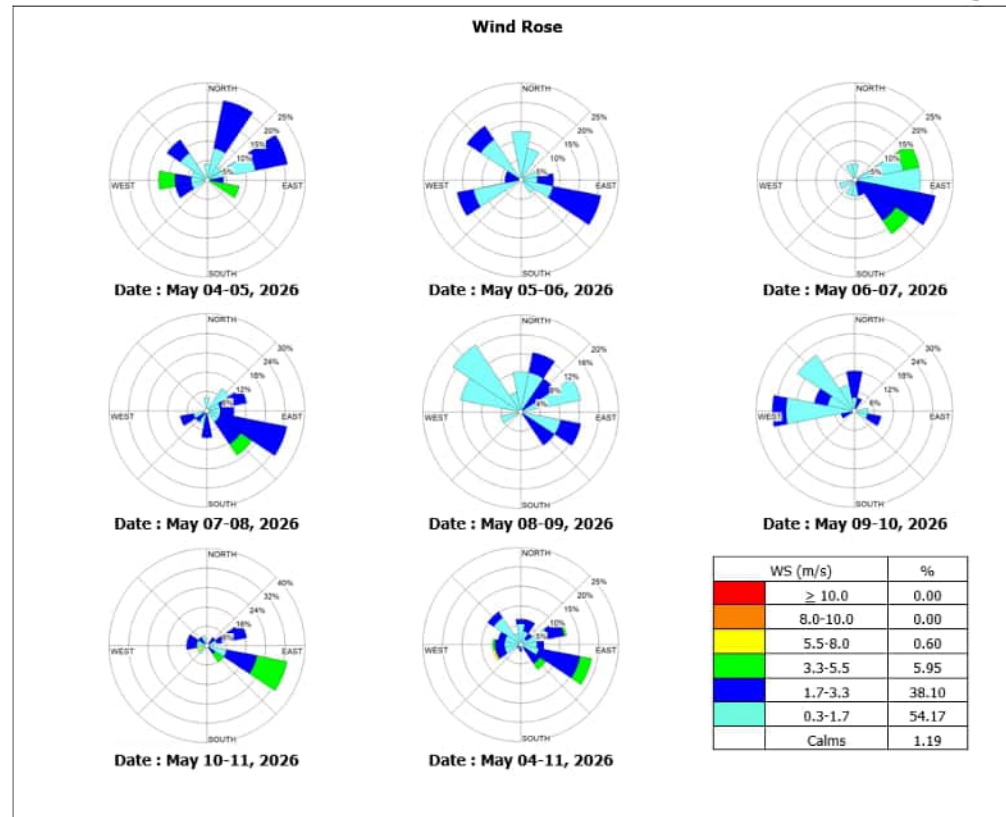
**Project Location :** GCRN

**Lot ID: 2634661**

Date Received : May 12, 2026

Date Reported : May 18, 2026

Report Number : 3557215-1



Location : พื้นที่โรงไฟฟ้า (GPS 47P 0669792, 1559128)

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## Analysis / Test Report

**Client** : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O** :

**Project Name** : Monitoring EIA

**Project Location** : GCRN

**Lot ID**: 2634661

Date Received : May 12, 2026

Date Reported : May 18, 2026

Report Number : 3557215-1

Page 1 of 2

**Sample Number** : 2634661-8 to 14

**Parameter** : Wind Speed / Wind Direction

**Location** : โรงพนาถสงเสริมสุขภาพด่านตงเชียงรากน้อย (GPS 47P 0670791, 1560756)

**Sampling Date** : May 04 - May 11, 2026

**Sampling by** : Thanesuan Sriwasut

| Time                | May 04 - May 05, 2026 |          |     | May 05 - May 06, 2026 |          |     | May 06 - May 07, 2026 |          |     | May 07 - May 08, 2026 |          |     | May 08 - May 09, 2026 |          |     | May 09 - May 10, 2026 |          |     | May 10 - May 11, 2026 |          |     |
|---------------------|-----------------------|----------|-----|-----------------------|----------|-----|-----------------------|----------|-----|-----------------------|----------|-----|-----------------------|----------|-----|-----------------------|----------|-----|-----------------------|----------|-----|
|                     | WS (m/s)              | WD (deg) | SSE | WS (m/s)              | WD (deg) | NE  | WS (m/s)              | WD (deg) | WNW | WS (m/s)              | WD (deg) | SW  | WS (m/s)              | WD (deg) | S   | WS (m/s)              | WD (deg) | ENE | WS (m/s)              | WD (deg) | W   |
| 09:00 AM - 10:00 AM | 1.6                   | 163.0    | SSE | 0.7                   | 40.0     | NE  | 0.8                   | 282.0    | WNW | 1.5                   | 220.0    | SW  | 2.0                   | 184.0    | S   | 0.9                   | 63.0     | ENE | 1.8                   | 245.0    | WSW |
| 10:00 AM - 11:00 AM | 0.9                   | 125.0    | SE  | 3.3                   | 36.0     | NE  | 1.9                   | 287.0    | WNW | 0.8                   | 167.0    | SSE | 0.9                   | 58.0     | ENE | 0.6                   | 328.0    | NNW | 0.7                   | 280.0    | W   |
| 11:00 AM - 12:00 PM | 1.7                   | 190.0    | S   | 0.9                   | 255.0    | WSW | 1.5                   | 168.0    | SSE | 0.7                   | 231.0    | SW  | 1.9                   | 174.0    | S   | 0.4                   | 332.0    | NNW | 0.5                   | 260.0    | W   |
| 12:00 PM - 01:00 PM | 2.0                   | 211.0    | SSW | 0.5                   | 359.0    | N   | 0.5                   | 127.0    | SE  | 2.4                   | 196.0    | SSW | 1.0                   | 159.0    | SSE | 1.1                   | 270.0    | W   | 0.5                   | 242.0    | WSW |
| 01:00 PM - 02:00 PM | 1.2                   | 205.0    | SSW | 0.1                   | -        | -   | 3.6                   | 198.0    | SSW | 1.7                   | 157.0    | SSE | 1.2                   | 80.0     | E   | 1.7                   | 212.0    | SSW | 0.6                   | 207.0    | SSW |
| 02:00 PM - 03:00 PM | 1.3                   | 334.0    | NNW | 1.5                   | 63.0     | ENE | 0.7                   | 271.0    | W   | 2.1                   | 98.0     | E   | 2.3                   | 65.0     | ENE | 0.6                   | 227.0    | SW  | 4.3                   | 0.0      | N   |
| 03:00 PM - 04:00 PM | 2.3                   | 145.0    | SE  | 0.4                   | 317.0    | NW  | 0.5                   | 119.0    | ESE | 1.3                   | 184.0    | S   | 1.1                   | 72.0     | ENE | 1.1                   | 182.0    | S   | 0.0                   | -        | -   |
| 04:00 PM - 05:00 PM | 1.4                   | 44.0     | NE  | 0.2                   | -        | -   | 0.1                   | -        | -   | 2.2                   | 137.0    | SE  | 0.5                   | 33.0     | NNE | 0.5                   | 323.0    | NW  | 0.0                   | -        | -   |
| 05:00 PM - 06:00 PM | 0.6                   | 262.0    | W   | 1.7                   | 128.0    | SE  | 1.3                   | 164.0    | SSE | 1.4                   | 180.0    | S   | 0.4                   | 171.0    | S   | 0.3                   | 0.0      | N   | 1.9                   | 195.0    | SSW |
| 06:00 PM - 07:00 PM | 0.0                   | -        | -   | 0.1                   | -        | -   | 0.9                   | 203.0    | SSW | 0.4                   | 135.0    | SE  | 0.2                   | -        | -   | 0.0                   | -        | -   | 0.8                   | 167.0    | SSE |
| 07:00 PM - 08:00 PM | 0.0                   | -        | -   | 0.4                   | 189.0    | S   | 0.8                   | 145.0    | SE  | 0.7                   | 91.0     | E   | 0.2                   | -        | -   | 0.2                   | -        | -   | 0.3                   | 191.0    | S   |
| 08:00 PM - 09:00 PM | 0.4                   | 253.0    | WSW | 0.6                   | 238.0    | WSW | 1.7                   | 151.0    | SSE | 0.0                   | -        | -   | 0.8                   | 293.0    | WNW | 0.0                   | -        | -   | 0.0                   | -        | -   |
| 09:00 PM - 10:00 PM | 0.5                   | 0.0      | N   | 0.5                   | 143.0    | SE  | 0.3                   | 184.0    | S   | 0.7                   | 82.0     | E   | 0.0                   | -        | -   | 0.0                   | -        | -   | 1.8                   | 126.0    | SE  |
| 10:00 PM - 11:00 PM | 3.4                   | 148.0    | SSE | 0.9                   | 168.0    | SSE | 0.0                   | -        | -   | 0.0                   | -        | -   | 0.0                   | -        | -   | 0.0                   | -        | -   | 0.7                   | 130.0    | SE  |
| 11:00 PM - 12:00 AM | 2.8                   | 146.0    | SE  | 1.1                   | 177.0    | S   | 0.3                   | 80.0     | E   | 0.2                   | -        | -   | 0.0                   | -        | -   | 0.0                   | -        | -   | 1.2                   | 135.0    | SE  |
| 12:00 AM - 01:00 AM | 0.6                   | 101.0    | E   | 0.7                   | 210.0    | SSW | 0.6                   | 129.0    | SE  | 0.7                   | 94.0     | E   | 1.0                   | 10.0     | N   | 0.1                   | -        | -   | 0.5                   | 170.0    | S   |
| 01:00 AM - 02:00 AM | 0.8                   | 121.0    | ESE | 0.5                   | 192.0    | SSW | 0.2                   | -        | -   | 1.3                   | 126.0    | SE  | 0.2                   | -        | -   | 0.2                   | -        | -   | 0.3                   | 145.0    | SE  |
| 02:00 AM - 03:00 AM | 0.3                   | 273.0    | W   | 0.3                   | 149.0    | SSE | 0.3                   | 95.0     | E   | 0.1                   | -        | -   | 0.8                   | 303.0    | WNW | 0.4                   | 211.0    | SSW | 0.0                   | -        | -   |
| 03:00 AM - 04:00 AM | 0.6                   | 209.0    | SSW | 0.6                   | 185.0    | S   | 0.0                   | -        | -   | 0.0                   | -        | -   | 0.5                   | 282.0    | WNW | 0.0                   | -        | -   | 0.6                   | 66.0     | ENE |
| 04:00 AM - 05:00 AM | 0.0                   | -        | -   | 0.8                   | 156.0    | SSE | 0.2                   | -        | -   | 1.3                   | 109.0    | ESE | 0.0                   | -        | -   | 0.1                   | -        | -   | 0.2                   | -        | -   |
| 05:00 AM - 06:00 AM | 0.5                   | 23.0     | NNE | 0.7                   | 98.0     | E   | 0.7                   | 152.0    | SSE | 0.6                   | 197.0    | SSW | 0.1                   | -        | -   | 0.0                   | -        | -   | 0.9                   | 74.0     | ENE |
| 06:00 AM - 07:00 AM | 0.5                   | 334.0    | NNW | 0.7                   | 60.0     | ENE | 0.7                   | 125.0    | SE  | 1.5                   | 178.0    | S   | 0.4                   | 300.0    | WNW | 0.1                   | -        | -   | 0.2                   | -        | -   |
| 07:00 AM - 08:00 AM | 0.6                   | 280.0    | W   | 0.7                   | 42.0     | NE  | 2.8                   | 168.0    | SSE | 0.4                   | 237.0    | WSW | 0.3                   | 20.0     | NNE | 0.4                   | 75.0     | ENE | 1.0                   | 194.0    | SSW |
| 08:00 AM - 09:00 AM | 0.9                   | 5.0      | N   | 1.2                   | 56.0     | NE  | 1.1                   | 136.0    | SE  | 0.4                   | 28.0     | NNE | 1.6                   | 14.0     | NNE | 0.3                   | 286.0    | WNW | 2.5                   | 222.0    | SW  |

Reference Method : Cup Anemometer & Anodized Aluminium Vane Method

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## Analysis / Test Report

**Client** : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O** :

**Project Name** : Monitoring EIA

**Project Location** : GCRN

**Lot ID**: 2634661

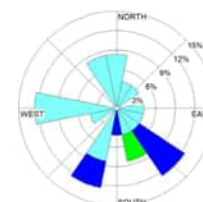
Date Received : May 12, 2026

Date Reported : May 18, 2026

Report Number : 3557215-1

Page 2 of 2

### Wind Rose



Date : May 04-05, 2026



Date : May 05-06, 2026



Date : May 06-07, 2026



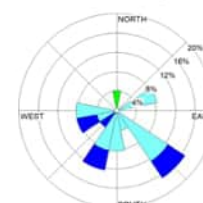
Date : May 07-08, 2026



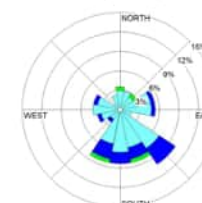
Date : May 08-09, 2026



Date : May 09-10, 2026



Date : May 10-11, 2026



Date : May 04-11, 2026

| WS (m/s) | %     |
|----------|-------|
| ≥ 10.0   | 0.00  |
| 8.0-10.0 | 0.00  |
| 5.5-8.0  | 0.00  |
| 3.3-5.5  | 2.38  |
| 1.7-3.3  | 11.91 |
| 0.3-1.7  | 60.71 |
| Calms    | 25.00 |

Location : โรงพนาถสงเสริมสุขภาพด่านตงเชียงรากน้อย (GPS 47P 0670791, 1560756)

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## Analysis / Test Report

**Client** : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O** :

**Project Name** : Monitoring EIA

**Project Location** : GCRN

**Lot ID: 2634661**

Date Received : May 12, 2026

Date Reported : May 18, 2026

Report Number : 3557215-1

**Sample Number** : 2634661-15 to 21

**Parameter** : Wind Speed / Wind Direction

**Location** : โรงเรือนคลองบ้านพร้าว (GPS 47P 0669758, 1557619)

**Sampling Date** : May 04 - May 11, 2026

**Sampling by** : Thanesuan Sriwasut

| Time                | May 04 - May 05, 2026 |          |     | May 05 - May 06, 2026 |          |     | May 06 - May 07, 2026 |          |     | May 07 - May 08, 2026 |          |     | May 08 - May 09, 2026 |          |     | May 09 - May 10, 2026 |          |     | May 10 - May 11, 2026 |          |     |
|---------------------|-----------------------|----------|-----|-----------------------|----------|-----|-----------------------|----------|-----|-----------------------|----------|-----|-----------------------|----------|-----|-----------------------|----------|-----|-----------------------|----------|-----|
|                     | WS (m/s)              | WD (deg) | S   | WS (m/s)              | WD (deg) | S   | WS (m/s)              | WD (deg) | S   | WS (m/s)              | WD (deg) | S   | WS (m/s)              | WD (deg) | S   | WS (m/s)              | WD (deg) | S   | WS (m/s)              | WD (deg) | S   |
| 11:00 AM - 12:00 PM | 3.2                   | 180.0    | S   | 1.1                   | 358.0    | N   | 1.3                   | 142.0    | SE  | 2.8                   | 217.0    | SW  | 2.0                   | 148.0    | SSE | 1.0                   | 317.0    | NW  | 0.8                   | 349.0    | N   |
| 12:00 PM - 01:00 PM | 2.1                   | 205.0    | SSW | 1.4                   | 338.0    | NNW | 2.3                   | 69.0     | ENE | 1.5                   | 237.0    | WSW | 0.5                   | 164.0    | SSE | 0.8                   | 336.0    | NNW | 0.6                   | 291.0    | WNW |
| 01:00 PM - 02:00 PM | 1.8                   | 222.0    | SW  | 2.3                   | 100.0    | E   | 4.5                   | 211.0    | SSW | 1.5                   | 217.0    | SW  | 0.6                   | 147.0    | SSE | 1.0                   | 299.0    | WNW | 4.9                   | 237.0    | WSW |
| 02:00 PM - 03:00 PM | 2.7                   | 242.0    | WSW | 1.0                   | 356.0    | N   | 1.1                   | 164.0    | SSE | 1.7                   | 126.0    | SE  | 2.6                   | 156.0    | SSE | 1.3                   | 348.0    | NNW | 2.1                   | 328.0    | NNW |
| 03:00 PM - 04:00 PM | 0.9                   | 61.0     | ENE | 0.3                   | 332.0    | NNW | 0.4                   | 178.0    | S   | 2.3                   | 114.0    | ESE | 1.6                   | 25.0     | NNE | 1.3                   | 197.0    | SSW | 1.4                   | 0.0      | N   |
| 04:00 PM - 05:00 PM | 2.3                   | 195.0    | SSW | 1.4                   | 343.0    | NNW | 1.8                   | 91.0     | E   | 1.1                   | 177.0    | S   | 0.9                   | 26.0     | NNE | 0.4                   | 103.0    | ESE | 0.4                   | 259.0    | W   |
| 05:00 PM - 06:00 PM | 1.2                   | 9.0      | N   | 0.5                   | 93.0     | E   | 0.7                   | 139.0    | SE  | 1.8                   | 124.0    | SE  | 1.4                   | 122.0    | ESE | 0.4                   | 315.0    | NW  | 0.3                   | 126.0    | SE  |
| 06:00 PM - 07:00 PM | 0.5                   | 201.0    | SSW | 0.3                   | 133.0    | SE  | 1.8                   | 151.0    | SSE | 1.7                   | 157.0    | SSE | 0.7                   | 146.0    | SE  | 1.2                   | 4.0      | N   | 1.0                   | 162.0    | SSE |
| 07:00 PM - 08:00 PM | 0.8                   | 160.0    | SSE | 1.7                   | 162.0    | SSE | 1.1                   | 153.0    | SSE | 1.3                   | 151.0    | SSE | 0.7                   | 157.0    | SSE | 0.3                   | 333.0    | NNW | 1.7                   | 190.0    | S   |
| 08:00 PM - 09:00 PM | 0.5                   | 350.0    | N   | 0.3                   | 203.0    | SSW | 1.0                   | 195.0    | SSW | 2.1                   | 126.0    | SE  | 0.0                   | -        | -   | 0.5                   | 359.0    | N   | 1.2                   | 171.0    | S   |
| 09:00 PM - 10:00 PM | 0.5                   | 252.0    | WSW | 0.0                   | -        | -   | 1.7                   | 159.0    | SSE | 0.0                   | -        | -   | 0.4                   | 258.0    | WSW | 0.0                   | -        | -   | 0.9                   | 108.0    | ESE |
| 10:00 PM - 11:00 PM | 1.5                   | 83.0     | E   | 0.3                   | 259.0    | W   | 0.7                   | 176.0    | S   | 1.2                   | 78.0     | ENE | 0.2                   | -        | -   | 0.0                   | -        | -   | 0.7                   | 112.0    | ESE |
| 11:00 PM - 12:00 AM | 3.3                   | 144.0    | SE  | 0.0                   | -        | -   | 0.0                   | -        | -   | 0.1                   | -        | -   | 0.0                   | -        | -   | 0.0                   | -        | -   | 1.2                   | 124.0    | SE  |
| 12:00 AM - 01:00 AM | 3.0                   | 137.0    | SE  | 0.3                   | 258.0    | WSW | 0.4                   | 75.0     | ENE | 0.4                   | 102.0    | ESE | 0.6                   | 92.0     | E   | 0.4                   | 328.0    | NNW | 1.8                   | 110.0    | ESE |
| 01:00 AM - 02:00 AM | 1.1                   | 60.0     | ENE | 0.0                   | -        | -   | 0.8                   | 76.0     | ENE | 1.3                   | 142.0    | SE  | 0.5                   | 88.0     | E   | 0.8                   | 282.0    | WNW | 0.1                   | -        | -   |
| 02:00 AM - 03:00 AM | 0.7                   | 100.0    | E   | 0.0                   | -        | -   | 0.3                   | 134.0    | SE  | 0.4                   | 90.0     | E   | 0.6                   | 122.0    | ESE | 0.5                   | 306.0    | NW  | 0.0                   | -        | -   |
| 03:00 AM - 04:00 AM | 0.8                   | 249.0    | WSW | 0.4                   | 321.0    | NW  | 0.5                   | 136.0    | SE  | 0.8                   | 139.0    | SE  | 0.1                   | -        | -   | 1.1                   | 214.0    | SW  | 0.6                   | 138.0    | SE  |
| 04:00 AM - 05:00 AM | 0.5                   | 154.0    | SSE | 0.6                   | 359.0    | N   | 1.2                   | 119.0    | ESE | 0.8                   | 118.0    | ESE | 0.1                   | -        | -   | 0.4                   | 331.0    | NNW | 0.8                   | 87.0     | E   |
| 05:00 AM - 06:00 AM | 0.0                   | -        | -   | 0.4                   | 77.0     | ENE | 0.9                   | 97.0     | E   | 0.8                   | 108.0    | ESE | 0.7                   | 348.0    | NNW | 0.5                   | 313.0    | NW  | 0.7                   | 80.0     | E   |
| 06:00 AM - 07:00 AM | 1.6                   | 15.0     | NNE | 1.3                   | 138.0    | SE  | 1.4                   | 127.0    | SE  | 0.2                   | -        | -   | 1.9                   | 338.0    | NNW | 0.9                   | 5.0      | N   | 0.9                   | 87.0     | E   |
| 07:00 AM - 08:00 AM | 2.2                   | 5.0      | N   | 0.5                   | 144.0    | SE  | 0.1                   | -        | -   | 1.0                   | 113.0    | ESE | 2.0                   | 328.0    | NNW | 0.6                   | 359.0    | N   | 2.0                   | 120.0    | ESE |
| 08:00 AM - 09:00 AM | 1.8                   | 292.0    | WNW | 0.4                   | 261.0    | W   | 1.2                   | 191.0    | S   | 0.5                   | 184.0    | S   | 2.7                   | 317.0    | NW  | 0.9                   | 292.0    | WNW | 0.5                   | 82.0     | E   |
| 09:00 AM - 10:00 AM | 0.5                   | 7.0      | N   | 0.5                   | 177.0    | S   | 1.4                   | 179.0    | S   | 1.4                   | 289.0    | WNW | 1.1                   | 308.0    | NW  | 1.2                   | 310.0    | NW  | 1.4                   | 95.0     | E   |
| 10:00 AM - 11:00 AM | 0.8                   | 339.0    | NNW | 0.6                   | 105.0    | ESE | 0.5                   | 296.0    | WNW | 1.4                   | 205.0    | SSW | 0.8                   | 0.0      | N   | 0.8                   | 359.0    | N   | 0.2                   | -        | -   |

Reference Method : Cup Anemometer & Anodized Aluminium Vane Method

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Approved by

Sarayuth Jitranont  
Assistant General Manager

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## Analysis / Test Report

**Client** : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O** :

**Project Name** : Monitoring EIA

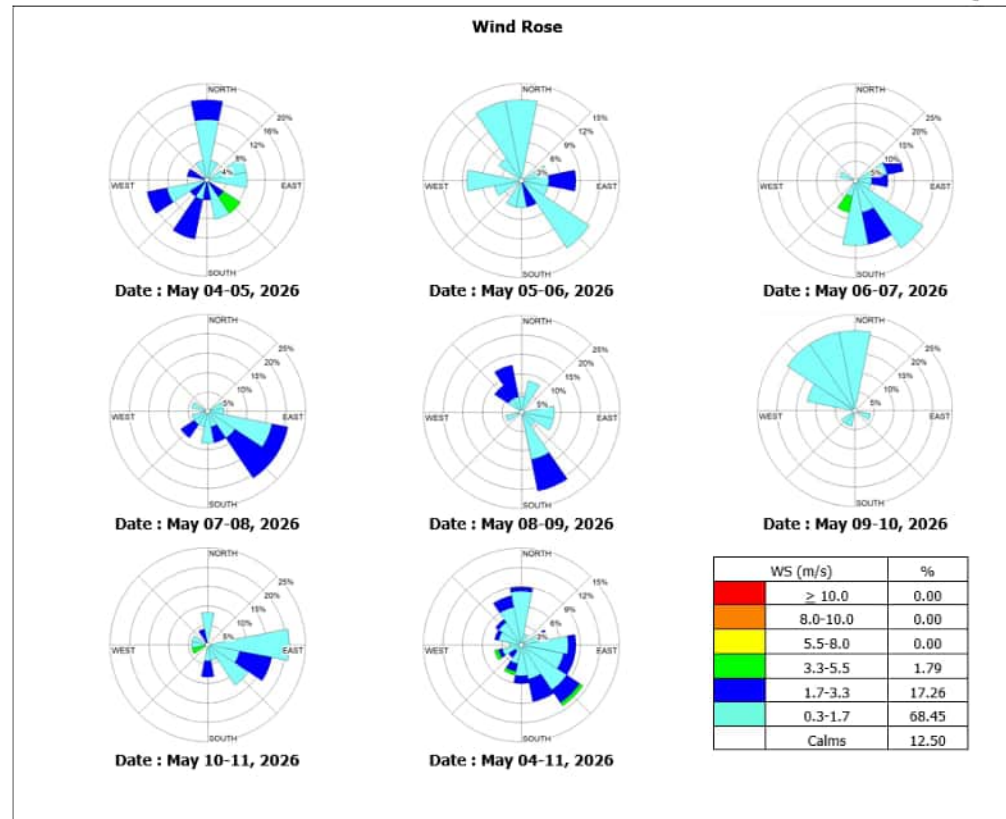
**Project Location** : GCRN

**Lot ID: 2634661**

Date Received : May 12, 2026

Date Reported : May 18, 2026

Report Number : 3557215-1



Location : โรงเรือนคลองบ้านพร้าว (GPS 47P 0669758, 1557619)

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Approved by

Sarayuth Jitranont  
Assistant General Manager

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## ภาคผนวก ง-2

---

คุณภาพอากาศจากปล่องระบาย



## Analysis / Test Report



TESTING  
No.0009

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN

**Lot ID: 2634671**  
Date Received : May 06, 2026  
Date Reported : May 12, 2026  
Report Number: 3557225-1

Page 1 of 2

**Sample Number** 2634671-1  
**Sampled Date** May 06, 2026  
**Sample Description** Emission from Stationary Source  
**Location** ปล่อย HRSG 1  
**Date Analysis Commenced** May 07, 2026  
**Condition of Sample** Extracted into one filter paper placed in plastic petri dish

### Stack Description

|                     |             |      |                   |        |    |                       |        |        |
|---------------------|-------------|------|-------------------|--------|----|-----------------------|--------|--------|
| Ambient Pressure    | 756         | mmHg | Diameter          | 2.96   | m  | Oxygen                | 14.6   | %      |
| Ambient Temperature | 33.0        | °C   | Shape             | Circle |    | Carbon Dioxide        | 4.0    | %      |
| Type of Process     | Combustion  |      | Stack Temperature | 96.4   | °C | Gas Velocity          | 17.7   | m/s    |
| Type of Fuel        | Natural Gas |      | Moisture          | 7.79   | %  | Flow Rate (Actual O2) | 324531 | Nm3/hr |

| Analyte | Sampled Time | Unit | LOD | LOQ (LOR) | Result at 7 %O <sub>2</sub> at 14.6 % O <sub>2</sub> | Guideline (1) | Guideline (2) | Method | Testing Location |
|---------|--------------|------|-----|-----------|------------------------------------------------------|---------------|---------------|--------|------------------|
|---------|--------------|------|-----|-----------|------------------------------------------------------|---------------|---------------|--------|------------------|

### Air Testing

|                             |                     |       |   |     |      |      |      |    |                                                                                             |         |
|-----------------------------|---------------------|-------|---|-----|------|------|------|----|---------------------------------------------------------------------------------------------|---------|
| Total Suspended Particulate | 09:30 AM - 10:12 AM | mg/m3 | - | 0.5 | <0.5 | <0.5 | 32.7 | 60 | U.S. Environmental Protection Agency 40 CFR method 1-5, Appendix A, 2020 (Include sampling) | Bangkok |
|-----------------------------|---------------------|-------|---|-----|------|------|------|----|---------------------------------------------------------------------------------------------|---------|

### Guideline :

Guideline (1) Environmental Impact Assessment Report of Gulf JP CRN Co., Ltd.  
Guideline (2) Notification of the Ministry of Natural Resources and Environment, 2023 (B.E. 2566) on Emission Standard from Power Plants.

Technical Management

*Orawan R.*

Orawan Rakyong  
Scientist (3)

ทะเบียนเลขที่ ว-204-จ-0027

Approved by

*Kanokkorn Anek*

Kanokkorn Anek  
Assistant General Manager

ทะเบียนเลขที่ ว-204-ค-0004

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## Analysis / Test Report



TESTING  
No.0009

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN

**Lot ID: 2634671**  
Date Received : May 06, 2026  
Date Reported : May 12, 2026  
Report Number: 3557225-1

Page 2 of 2

**Sample Number** 2634671-1  
**Sampled Date** May 06, 2026  
**Sample Description** Emission from Stationary Source  
**Location** ปล่อย HRSG 1  
**Date Analysis Commenced** May 07, 2026  
**Condition of Sample** Extracted into one filter paper placed in plastic petri dish

### Stack Description

|                     |             |      |                   |        |    |                       |        |        |
|---------------------|-------------|------|-------------------|--------|----|-----------------------|--------|--------|
| Ambient Pressure    | 756         | mmHg | Diameter          | 2.96   | m  | Oxygen                | 14.6   | %      |
| Ambient Temperature | 33.0        | °C   | Shape             | Circle |    | Carbon Dioxide        | 4.0    | %      |
| Type of Process     | Combustion  |      | Stack Temperature | 96.4   | °C | Gas Velocity          | 17.7   | m/s    |
| Type of Fuel        | Natural Gas |      | Moisture          | 7.79   | %  | Flow Rate (Actual O2) | 324531 | Nm3/hr |

| Analyte | Sampled Time | Unit | LOD | LOQ (LOR) | Result Emission Rate | Guideline (1) | Guideline (2) | Method | Testing Location |
|---------|--------------|------|-----|-----------|----------------------|---------------|---------------|--------|------------------|
|---------|--------------|------|-----|-----------|----------------------|---------------|---------------|--------|------------------|

### Air Testing

|                             |                     |     |   |   |       |      |   |            |         |
|-----------------------------|---------------------|-----|---|---|-------|------|---|------------|---------|
| Total Suspended Particulate | 09:30 AM - 10:12 AM | g/s | - | - | <0.05 | 1.72 | - | Calculated | Bangkok |
|-----------------------------|---------------------|-----|---|---|-------|------|---|------------|---------|

### Guideline :

Guideline (1) Environmental Impact Assessment Report of Gulf JP CRN Co., Ltd.  
Guideline (2) Notification of the Ministry of Natural Resources and Environment, 2023 (B.E. 2566) on Emission Standard from Power Plants.

**Sampling By :** Thanatpong Sirasunthararat ทะเบียนเลขที่ ว-204-จ-0081

### Remark :

- LOD : Limit of Detection
- "c" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.

Technical Management

*Orawan R.*

Orawan Rakyong  
Scientist (3)

ทะเบียนเลขที่ ว-204-จ-0027

Approved by

*Kanokkorn Anek*

Kanokkorn Anek  
Assistant General Manager

ทะเบียนเลขที่ ว-204-ค-0004

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160  
**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN



**TESTING**  
**No.0009**

**Lot ID: 2634672**  
Date Received : May 06, 2026  
Date Reported : May 12, 2026  
Report Number: 3557226-1

Page 1 of 2

**Sample Number** 2634672-1  
**Sampled Date** May 06, 2026  
**Sample Description** Emission from Stationary Source  
**Location** แปลง HRSG 2  
**Date Analysis Commenced** May 07, 2026  
**Condition of Sample** Extracted into one filter paper placed in plastic petri dish

### Stack Description

|                     |             |      |                   |        |    |                       |        |        |
|---------------------|-------------|------|-------------------|--------|----|-----------------------|--------|--------|
| Ambient Pressure    | 756         | mmHg | Diameter          | 2.96   | m  | Oxygen                | 14.4   | %      |
| Ambient Temperature | 34.0        | °C   | Shape             | Circle |    | Carbon Dioxide        | 4.2    | %      |
| Type of Process     | Combustion  |      | Stack Temperature | 98.0   | °C | Gas Velocity          | 18.2   | m/s    |
| Type of Fuel        | Natural Gas |      | Moisture          | 8.00   | %  | Flow Rate (Actual O2) | 331697 | Nm3/hr |

| Analyte | Sampled Time | Unit | LOD | LOQ (LOR) | Result at 7 %O <sub>2</sub> | Result at 14.4 % O <sub>2</sub> | Guideline (1) | Guideline (2) | Method | Testing Location |
|---------|--------------|------|-----|-----------|-----------------------------|---------------------------------|---------------|---------------|--------|------------------|
|---------|--------------|------|-----|-----------|-----------------------------|---------------------------------|---------------|---------------|--------|------------------|

### Air Testing

|                             |                     |       |   |     |      |      |      |    |                                                                                             |         |
|-----------------------------|---------------------|-------|---|-----|------|------|------|----|---------------------------------------------------------------------------------------------|---------|
| Total Suspended Particulate | 11:10 AM - 11:52 AM | mg/m3 | - | 0.5 | <0.5 | <0.5 | 32.7 | 60 | U.S. Environmental Protection Agency 40 CFR method 1-5, Appendix A, 2020 (Include sampling) | Bangkok |
|-----------------------------|---------------------|-------|---|-----|------|------|------|----|---------------------------------------------------------------------------------------------|---------|

### Guideline :

Guideline (1) Environmental Impact Assessment Report of Gulf JP CRN Co., Ltd.  
Guideline (2) Notification of the Ministry of Natural Resources and Environment, 2023 (B.E. 2566) on Emission Standard from Power Plants.

Technical Management

*Orawan R.*

Orawan Rakyong  
Scientist (3)

ทะเบียนเลขที่ ว-204-จ-0027

Approved by

*Kanokkorn Anek*

Kanokkorn Anek  
Assistant General Manager

ทะเบียนเลขที่ ว-204-ค-0004

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160  
**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN



**TESTING**  
**No.0009**

**Lot ID: 2634672**  
Date Received : May 06, 2026  
Date Reported : May 12, 2026  
Report Number: 3557226-1

Page 2 of 2

**Sample Number** 2634672-1  
**Sampled Date** May 06, 2026  
**Sample Description** Emission from Stationary Source  
**Location** แปลง HRSG 2  
**Date Analysis Commenced** May 07, 2026  
**Condition of Sample** Extracted into one filter paper placed in plastic petri dish

### Stack Description

|                     |             |      |                   |        |    |                       |        |        |
|---------------------|-------------|------|-------------------|--------|----|-----------------------|--------|--------|
| Ambient Pressure    | 756         | mmHg | Diameter          | 2.96   | m  | Oxygen                | 14.4   | %      |
| Ambient Temperature | 34.0        | °C   | Shape             | Circle |    | Carbon Dioxide        | 4.2    | %      |
| Type of Process     | Combustion  |      | Stack Temperature | 98.0   | °C | Gas Velocity          | 18.2   | m/s    |
| Type of Fuel        | Natural Gas |      | Moisture          | 8.00   | %  | Flow Rate (Actual O2) | 331697 | Nm3/hr |

| Analyte | Sampled Time | Unit | LOD | LOQ (LOR) | Result Emission Rate | Guideline (1) | Guideline (2) | Method | Testing Location |
|---------|--------------|------|-----|-----------|----------------------|---------------|---------------|--------|------------------|
|---------|--------------|------|-----|-----------|----------------------|---------------|---------------|--------|------------------|

### Air Testing

|                             |                     |     |   |   |       |      |   |            |         |
|-----------------------------|---------------------|-----|---|---|-------|------|---|------------|---------|
| Total Suspended Particulate | 11:10 AM - 11:52 AM | g/s | - | - | <0.05 | 1.72 | - | Calculated | Bangkok |
|-----------------------------|---------------------|-----|---|---|-------|------|---|------------|---------|

### Guideline :

Guideline (1) Environmental Impact Assessment Report of Gulf JP CRN Co., Ltd.  
Guideline (2) Notification of the Ministry of Natural Resources and Environment, 2023 (B.E. 2566) on Emission Standard from Power Plants.

**Sampling By :** Thanatpong Sirasunthararat ทะเบียนเลขที่ ว-204-จ-0081

### Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.

Technical Management

*Orawan R.*

Orawan Rakyong  
Scientist (3)

ทะเบียนเลขที่ ว-204-จ-0027

Approved by

*Kanokkorn Anek*

Kanokkorn Anek  
Assistant General Manager

ทะเบียนเลขที่ ว-204-ค-0004

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**Lot ID: 2634669**  
Date Received : May 07, 2026  
Date Reported : May 09, 2026  
Report Number : 3557223-1

**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN

Page 1 of 1

**Sample Number** 2634669-1  
**Sample Description** Emission from Stationary Source  
**Location** แปลง HRSG 11  
**Sampled Date** May 06, 2026

### Stack Description

|                     |             |                   |        |                |               |
|---------------------|-------------|-------------------|--------|----------------|---------------|
| Ambient Temperature | 34 °C       | Diameter          | 2.96 m | Oxygen         | 14.57 %       |
| Ambient Pressure    | 756 mmHg    | Shape             | Circle | Carbon dioxide | 3.99 %        |
| Type of Process     | Combustion  | Stack Temperature | 96 °C  | Gas Velocity   | 17.68 m/s     |
| Type of Fuel        | Natural Gas | Moisture          | 7.77 % | Flow Rate      | 324236 Nm3/hr |

| Run No.                                      | Sampling Time       | Oxygen (%)              | Carbon Dioxide (%) | Oxides of Nitrogen (ppm) |                      | Sulfur Dioxide (ppm)     |                      |
|----------------------------------------------|---------------------|-------------------------|--------------------|--------------------------|----------------------|--------------------------|----------------------|
|                                              |                     |                         |                    | at Actual O <sub>2</sub> | at 7% O <sub>2</sub> | at Actual O <sub>2</sub> | at 7% O <sub>2</sub> |
| 1                                            | 09:30 AM - 09:50 AM | 14.56                   | 3.99               | 8.62                     | 18.89                | 0.13                     | 0.29                 |
| 2                                            | 09:51 AM - 10:11 AM | 14.58                   | 3.99               | 8.99                     | 19.76                | 0.13                     | 0.29                 |
| 3                                            | 10:12 AM - 10:32 AM | 14.58                   | 4.00               | 9.06                     | 19.92                | 0.15                     | 0.32                 |
| Average (ppm)                                |                     | 14.57                   | 3.99               | 8.89                     | 19.52                | 0.14                     | 0.30                 |
| Guideline <sup>1)</sup> (ppm)                |                     | -                       | -                  | -                        | 60                   | -                        | 7.14                 |
| Guideline <sup>2)</sup> (ppm)                |                     | -                       | -                  | -                        | 120                  | -                        | 20                   |
| Result (mg/Nm <sup>3</sup> )                 |                     | -                       | -                  | 16.72                    | 36.73                | 0.36                     | 0.78                 |
| Emission Rate at Actual O <sub>2</sub> (g/s) |                     | -                       | -                  | 1.506 *                  |                      | 0.032 *                  |                      |
| Guideline <sup>1)</sup> (g/s)                |                     | -                       | -                  | 5.92                     |                      | 0.98                     |                      |
| Method                                       |                     | US EPA (2017) Method 3A |                    | US EPA (2020) Method 7E  |                      | US EPA (2017) Method 6C  |                      |

**Guideline :** <sup>1)</sup>Environmental Impact Assessment Report of Gulf JP CRN Co., Ltd.

<sup>2)</sup>Notification of the Ministry of Natural Resources and Environment, 2023 (B.E. 2566) on Emission Standard from Power Plants.

**Remark :** - "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)  
- Analyte (s) marked \* is/ae not included in scope of Accreditation ISO/IEC 17025.

**Sampled By**

Ussaree N.  
Ussaree Namburee  
BKK Field Services Scientist (4)  
ทะเบียนเลขที่ ๖-204-๖-0073

**Approved by**

Sarayuth Jittranont  
Assistant General Manager  
ทะเบียนเลขที่ ๖-204-๖-0003

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**Lot ID: 2634669**  
Date Received : May 07, 2026  
Date Reported : May 09, 2026  
Report Number : 3557223-1

**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN

Page 1 of 1

**Sample Number** 2634669-1  
**Sample Description** Emission from Stationary Source  
**Location** แปลง HRSG 11  
**Sampled Date** May 06, 2026

### Stack Description

|                     |             |                   |        |                |               |
|---------------------|-------------|-------------------|--------|----------------|---------------|
| Ambient Temperature | 34 °C       | Diameter          | 2.96 m | Oxygen         | 14.57 %       |
| Ambient Pressure    | 756 mmHg    | Shape             | Circle | Carbon dioxide | 3.99 %        |
| Type of Process     | Combustion  | Stack Temperature | 96 °C  | Gas Velocity   | 17.68 m/s     |
| Type of Fuel        | Natural Gas | Moisture          | 7.77 % | Flow Rate      | 324236 Nm3/hr |

| Run No.                                      | Sampling Time       | Oxygen (%)              | Carbon Dioxide (%) | Carbon Monoxide (ppm)    |                      |
|----------------------------------------------|---------------------|-------------------------|--------------------|--------------------------|----------------------|
|                                              |                     |                         |                    | at Actual O <sub>2</sub> | At 7% O <sub>2</sub> |
| 1                                            | 09:30 AM - 09:50 AM | 14.56                   | 3.99               | 0.56                     | 1.22                 |
| 2                                            | 09:51 AM - 10:11 AM | 14.58                   | 3.99               | 0.55                     | 1.21                 |
| 3                                            | 10:12 AM - 10:32 AM | 14.58                   | 4.00               | 0.63                     | 1.38                 |
| Average (ppm)                                |                     | 14.57                   | 3.99               | 0.58                     | 1.27                 |
| Guideline (ppm)                              |                     | -                       | -                  | -                        | 690                  |
| Result (mg/Nm <sup>3</sup> )                 |                     | -                       | -                  | 0.66                     | 1.46                 |
| Emission Rate at Actual O <sub>2</sub> (g/s) |                     | -                       | -                  | 0.06 *                   |                      |
| Method                                       |                     | US EPA (2017) Method 3A |                    | US EPA (2017) Method 10  |                      |

**Guideline :** Notification of the Ministry of Industry 2006 (B.E. 2549) Published in the Royal Government Gazette, Vol.123 Special Part 125 D, dated December 4, 2006 (B.E. 2549)

**Remark :** - "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)  
- Analyte (s) marked \* is/ae not included in scope of Accreditation ISO/IEC 17025.

**Sampled By**

Ussaree N.  
Ussaree Namburee  
BKK Field Services Scientist (4)  
ทะเบียนเลขที่ ๖-204-๖-0073

**Approved by**

Sarayuth Jittranont  
Assistant General Manager  
ทะเบียนเลขที่ ๖-204-๖-0003

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**

**Project Name :** Monitoring EIA

**Project Location :** GCRN

**Lot ID: 2634670**

Date Received : May 07, 2026

Date Reported : May 09, 2026

Report Number : 3557224-1

Page 1 of 1

**Sample Number** 2634670-1  
**Sample Description** Emission from Stationary Source  
**Location** โรงงาน HRSG 12  
**Sampled Date** May 06, 2026

### Stack Description

|                     |             |                   |        |                |               |
|---------------------|-------------|-------------------|--------|----------------|---------------|
| Ambient Temperature | 34 °C       | Diameter          | 2.96 m | Oxygen         | 14.41 %       |
| Ambient Pressure    | 756 mmHg    | Shape             | Circle | Carbon dioxide | 4.21 %        |
| Type of Process     | Combustion  | Stack Temperature | 98 °C  | Gas Velocity   | 18.19 m/s     |
| Type of Fuel        | Natural Gas | Moisture          | 7.96 % | Flow Rate      | 331423 Nm3/hr |

| Run No.                                      | Sampling Time       | Oxygen (%)              | Carbon Dioxide (%) | Oxides of Nitrogen (ppm) |                      | Sulfur Dioxide (ppm)     |                      |
|----------------------------------------------|---------------------|-------------------------|--------------------|--------------------------|----------------------|--------------------------|----------------------|
|                                              |                     |                         |                    | at Actual O <sub>2</sub> | at 7% O <sub>2</sub> | at Actual O <sub>2</sub> | at 7% O <sub>2</sub> |
| 1                                            | 11:00 AM - 11:20 AM | 14.36                   | 4.22               | 11.57                    | 24.59                | 0.11                     | 0.22                 |
| 2                                            | 11:21 AM - 11:41 AM | 14.45                   | 4.19               | 15.96                    | 34.41                | 0.13                     | 0.27                 |
| 3                                            | 11:42 AM - 12:02 PM | 14.42                   | 4.21               | 12.50                    | 26.82                | 0.12                     | 0.25                 |
| Average (ppm)                                |                     | 14.41                   | 4.21               | 13.34                    | 28.60                | 0.12                     | 0.25                 |
| Guideline <sup>1)</sup> (ppm)                |                     | -                       | -                  | -                        | 60                   | -                        | 7.14                 |
| Guideline <sup>2)</sup> (ppm)                |                     | -                       | -                  | -                        | 120                  | -                        | 20                   |
| Result (mg/Nm <sup>3</sup> )                 |                     | -                       | -                  | 25.10                    | 53.82                | 0.30                     | 0.65                 |
| Emission Rate at Actual O <sub>2</sub> (g/s) |                     | -                       | -                  | 2.311 *                  |                      | 0.028 *                  |                      |
| Guideline <sup>1)</sup> (g/s)                |                     | -                       | -                  | 5.92                     |                      | 0.98                     |                      |
| Method                                       |                     | US EPA (2017) Method 3A |                    | US EPA (2020) Method 7E  |                      | US EPA (2017) Method 6C  |                      |

**Guideline :** <sup>1)</sup> Environmental Impact Assessment Report of Gulf JP CRN Co., Ltd.

<sup>2)</sup> Notification of the Ministry of Natural Resources and Environment, 2023 (B.E. 2566) on Emission Standard from Power Plants.

**Remark :** - "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

- Analyte (s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.

**Sampled By**

Ussaree N.

Ussaree Namburee  
BKK Field Services Scientist (4)  
ทะเบียนเลขที่ ๖-204-๖-0073

**Approved by**

Sarayuth Jittrantong  
Assistant General Manager  
ทะเบียนเลขที่ ๖-204-๖-0003

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**

**Project Name :** Monitoring EIA

**Project Location :** GCRN

**Lot ID: 2634670**

Date Received : May 07, 2026

Date Reported : May 09, 2026

Report Number : 3557224-1

Page 1 of 1

**Sample Number** 2634670-1  
**Sample Description** Emission from Stationary Source  
**Location** โรงงาน HRSG 12  
**Sampled Date** May 06, 2026

### Stack Description

|                     |             |                   |        |                |               |
|---------------------|-------------|-------------------|--------|----------------|---------------|
| Ambient Temperature | 34 °C       | Diameter          | 2.96 m | Oxygen         | 14.41 %       |
| Ambient Pressure    | 756 mmHg    | Shape             | Circle | Carbon dioxide | 4.21 %        |
| Type of Process     | Combustion  | Stack Temperature | 98 °C  | Gas Velocity   | 18.19 m/s     |
| Type of Fuel        | Natural Gas | Moisture          | 7.96 % | Flow Rate      | 331423 Nm3/hr |

| Run No.                                      | Sampling Time       | Oxygen (%)              | Carbon Dioxide (%) | Carbon Monoxide (ppm)    |                      |
|----------------------------------------------|---------------------|-------------------------|--------------------|--------------------------|----------------------|
|                                              |                     |                         |                    | at Actual O <sub>2</sub> | At 7% O <sub>2</sub> |
| 1                                            | 11:00 AM - 11:20 AM | 14.36                   | 4.22               | 0.72                     | 1.53                 |
| 2                                            | 11:21 AM - 11:41 AM | 14.45                   | 4.19               | 0.16                     | 0.35                 |
| 3                                            | 11:42 AM - 12:02 PM | 14.42                   | 4.21               | 0.27                     | 0.59                 |
| Average (ppm)                                |                     | 14.41                   | 4.21               | 0.39                     | 0.82                 |
| Guideline (ppm)                              |                     | -                       | -                  | -                        | 690                  |
| Result (mg/Nm <sup>3</sup> )                 |                     | -                       | -                  | 0.44                     | 0.94                 |
| Emission Rate at Actual O <sub>2</sub> (g/s) |                     | -                       | -                  | 0.041 *                  |                      |
| Method                                       |                     | US EPA (2017) Method 3A |                    | US EPA (2017) Method 10  |                      |

**Guideline :** Notification of the Ministry of Industry 2006 (B.E. 2549) Published in the Royal Government Gazette, Vol.123 Special Part 125 D, dated December 4, 2006 (B.E. 2549)

**Remark :** - "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

- Analyte (s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.

**Sampled By**

Ussaree N.

Ussaree Namburee  
BKK Field Services Scientist (4)  
ทะเบียนเลขที่ ๖-204-๖-0073

**Approved by**

Sarayuth Jittrantong  
Assistant General Manager  
ทะเบียนเลขที่ ๖-204-๖-0003

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## ภาคผนวก ง-3

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การตรวจสอบความถูกต้องของ CEMs (Audit/RAA/RATA)



## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634667

Date Received : May 07, 2026

Date Reported : May 11, 2026

Report Number : 3557221-1

Sample Number 2634667-1  
Sampled Date May 06, 2026  
Sample Description Emission from Stationary Source  
Location ปล่อย HRSG 11  
Parameter NOx

Page 1 of 3

### Relative Accuracy Audit Report

| Run No.                                                           | Date     | Time  |       | Raw Data at Actual O2 |          | Corrected Value at 7% O2 |          | Difference |
|-------------------------------------------------------------------|----------|-------|-------|-----------------------|----------|--------------------------|----------|------------|
|                                                                   |          | Start | Stop  | CEMs (ppm)            | RM (ppm) | CEMs (ppm)               | RM (ppm) |            |
| 1                                                                 | 6-May-26 | 9:30  | 9:50  | 9.21                  | 8.62     | 19.18                    | 18.89    | -0.29      |
| 2                                                                 | 6-May-26 | 9:51  | 10:11 | 9.22                  | 8.99     | 19.31                    | 19.76    | 0.44       |
| 3                                                                 | 6-May-26 | 10:12 | 10:32 | 9.35                  | 9.06     | 19.67                    | 19.92    | 0.25       |
| Average                                                           |          |       |       |                       |          | 19.39                    | 19.52    | 0.13       |
| Relative Accuracy Audit (Compared with RM) (%)                    |          |       |       |                       |          |                          |          | 0.68       |
| Relative Accuracy Audit Criteria <sup>1/</sup> (Compared with RM) |          |       |       |                       |          |                          |          | ± 15%      |

Reference Method : US EPA Method 7E

Remark: <sup>1/</sup> Relative Accuracy Criteria of NOx is refer to 40 CFR Part 60 Appendix B : Performance Specification Test 2 (PS-2)

RAA Result is within Criteria

Technical Management

*Wichan Choonharat*

Wichan Choonharat  
Manager

ทะเบียนเลขที่ 7-204-ก-0006

Approved by

*Sarayuth Jitranont*

Sarayuth Jitranont  
Assistant General Manager

ทะเบียนเลขที่ 7-204-ก-0003

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634667

Date Received : May 07, 2026

Date Reported : May 11, 2026

Report Number : 3557221-1

Sample Number 2634667-1  
Sampled Date May 06, 2026  
Sample Description Emission from Stationary Source  
Location ปล่อย HRSG 11  
Parameter CO

Page 2 of 3

### Relative Accuracy Audit Report

| Run No.                                                                          | Date     | Time  |       | Raw Data at Actual O2 |          | Corrected Value at 7% O2 |          | Difference |
|----------------------------------------------------------------------------------|----------|-------|-------|-----------------------|----------|--------------------------|----------|------------|
|                                                                                  |          | Start | Stop  | CEMs (ppm)            | RM (ppm) | CEMs (ppm)               | RM (ppm) |            |
| 1                                                                                | 6-May-26 | 9:30  | 9:50  | 0.25                  | 0.56     | 0.52                     | 1.22     | 0.71       |
| 2                                                                                | 6-May-26 | 9:51  | 10:11 | 0.24                  | 0.55     | 0.51                     | 1.21     | 0.70       |
| 3                                                                                | 6-May-26 | 10:12 | 10:32 | 0.20                  | 0.63     | 0.43                     | 1.38     | 0.95       |
| Average                                                                          |          |       |       |                       |          | 0.49                     | 1.27     | 0.79       |
| Relative Accuracy Audit (Compared with Emission Standard : 690 ppm) (%)          |          |       |       |                       |          |                          |          | 0.11       |
| Relative Accuracy Audit Criteria <sup>1/</sup> (Compared with Emission Standard) |          |       |       |                       |          |                          |          | ± 7.5%     |

Reference Method : US EPA Method 10

Remark: <sup>1/</sup> Relative Accuracy Criteria of CO is refer to 40 CFR Part 60 Appendix B : Performance Specification Test 4 (PS-4) compared with

Emission Standard 690 ppm at 7%O2

RAA Result is within Criteria

Technical Management

*Wichan Choonharat*

Wichan Choonharat  
Manager

ทะเบียนเลขที่ 7-204-ก-0006

Approved by

*Sarayuth Jitranont*

Sarayuth Jitranont  
Assistant General Manager

ทะเบียนเลขที่ 7-204-ก-0003

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634667

Date Received : May 07, 2026

Date Reported : May 11, 2026

Report Number : 3557221-1

Sample Number 2634667-1  
Sampled Date May 06, 2026  
Sample Description Emission from Stationary Source  
Location ปล่อย HRSG 11  
Parameter O2

Page 3 of 3

### Relative Accuracy Audit Report

| Run No.                                                           | Date     | Time  |       | Raw Data at Actual |        | Difference |
|-------------------------------------------------------------------|----------|-------|-------|--------------------|--------|------------|
|                                                                   |          | Start | Stop  | CEMs (%)           | RM (%) |            |
| 1                                                                 | 6-May-26 | 9:30  | 9:50  | 14.23              | 14.56  | 0.33       |
| 2                                                                 | 6-May-26 | 9:51  | 10:11 | 14.27              | 14.58  | 0.31       |
| 3                                                                 | 6-May-26 | 10:12 | 10:32 | 14.29              | 14.58  | 0.29       |
| Average                                                           |          |       |       | 14.26              | 14.57  | 0.31       |
| Relative Accuracy Audit (Compared with RM) (%)                    |          |       |       |                    |        | 0.31       |
| Relative Accuracy Audit Criteria <sup>1/</sup> (Compared with RM) |          |       |       |                    |        | ± 15%      |

Reference Method : US EPA Method 3A

Remark: : <sup>1/</sup> Relative Accuracy Criteria of O2 is refer to 40 CFR Part 60 Appendix B : Performance Specification Test 3 (PS-3)

RAA Result is within Criteria

Sampled By : Ussaree Namburee

Technical Management

*Wichan Choonharat*

Wichan Choonharat  
Manager

ทะเบียนเลขที่ 2-204-R-0006

Approved by

*Sarayuth Jitranont*

Sarayuth Jitranont  
Assistant General Manager

ทะเบียนเลขที่ 2-204-R-0003

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634668

Date Received : May 07, 2026

Date Reported : May 11, 2026

Report Number : 3557222-1

Sample Number 2634668-1  
Sampled Date May 06, 2026  
Sample Description Emission from Stationary Source  
Location ปล่อย HRSG 12  
Parameter NOx

Page 1 of 3

### Relative Accuracy Audit Report

| Run No.                                                           | Date     | Time  |       | Raw Data at Actual O2 |          | Corrected Value at 7% O2 |          | Difference |
|-------------------------------------------------------------------|----------|-------|-------|-----------------------|----------|--------------------------|----------|------------|
|                                                                   |          | Start | Stop  | CEMs (ppm)            | RM (ppm) | CEMs (ppm)               | RM (ppm) |            |
| 1                                                                 | 6-May-26 | 11:00 | 11:20 | 12.37                 | 11.57    | 26.60                    | 24.59    | -2.01      |
| 2                                                                 | 6-May-26 | 11:21 | 11:41 | 17.13                 | 15.96    | 36.80                    | 34.41    | -2.40      |
| 3                                                                 | 6-May-26 | 11:42 | 12:02 | 11.36                 | 12.50    | 23.92                    | 26.82    | 2.90       |
| Average                                                           |          |       |       |                       |          | 29.11                    | 28.60    | -0.50      |
| Relative Accuracy Audit (Compared with RM) (%)                    |          |       |       |                       |          |                          |          | 1.76       |
| Relative Accuracy Audit Criteria <sup>1/</sup> (Compared with RM) |          |       |       |                       |          |                          |          | ± 15%      |

Reference Method : US EPA Method 7E

Remark: <sup>1/</sup> Relative Accuracy Criteria of NOx is refer to 40 CFR Part 60 Appendix B : Performance Specification Test 2 (PS-2)

RAA Result is within Criteria

Technical Management

*Wichan Choonharat*

Wichan Choonharat  
Manager

ทะเบียนเลขที่ 2-204-R-0006

Approved by

*Sarayuth Jitranont*

Sarayuth Jitranont  
Assistant General Manager

ทะเบียนเลขที่ 2-204-R-0003

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634668

Date Received : May 07, 2026

Date Reported : May 11, 2026

Report Number : 3557222-1

Page 2 of 3

Sample Number 2634668-1  
Sampled Date May 06, 2026  
Sample Description Emission from Stationary Source  
Location ปล่อย HRSO 12  
Parameter CO

### Relative Accuracy Audit Report

| Run No.                                                                          | Date     | Time  |       | Raw Data at Actual O2 |          | Corrected Value at 7% O2 |          | Difference |
|----------------------------------------------------------------------------------|----------|-------|-------|-----------------------|----------|--------------------------|----------|------------|
|                                                                                  |          | Start | Stop  | CEMs (ppm)            | RM (ppm) | CEMs (ppm)               | RM (ppm) |            |
| 1                                                                                | 6-May-26 | 11:00 | 11:20 | 0.88                  | 0.72     | 1.88                     | 1.53     | -0.35      |
| 2                                                                                | 6-May-26 | 11:21 | 11:41 | 0.87                  | 0.16     | 1.87                     | 0.35     | -1.53      |
| 3                                                                                | 6-May-26 | 11:42 | 12:02 | 0.85                  | 0.27     | 1.79                     | 0.59     | -1.21      |
| Average                                                                          |          |       |       |                       |          | 1.85                     | 0.82     | -1.03      |
| Relative Accuracy Audit (Compared with Emission Standard : 690 ppm) (%)          |          |       |       |                       |          |                          |          | 0.15       |
| Relative Accuracy Audit Criteria <sup>1/</sup> (Compared with Emission Standard) |          |       |       |                       |          |                          |          | ± 7.5%     |

Reference Method : US EPA Method 10

Remark: <sup>1/</sup> Relative Accuracy Criteria of CO is refer to 40 CFR Part 60 Appendix B : Performance Specification Test 4 (PS-4) compared with Emission Standard 690 ppm at 7%O2

RAA Result is within Criteria

Technical Management

Wichan Chonharat

Manager

ทะเบียนเลขที่ 7-204-ก-0006

Approved by

Sarayuth Jitranont

Assistant General Manager

ทะเบียนเลขที่ 7-204-ก-0003

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634668

Date Received : May 07, 2026

Date Reported : May 11, 2026

Report Number : 3557222-1

Page 3 of 3

Sample Number 2634668-1  
Sampled Date May 06, 2026  
Sample Description Emission from Stationary Source  
Location ปล่อย HRSO 12  
Parameter O2

### Relative Accuracy Audit Report

| Run No.                                                           | Date     | Time  |       | Raw Data at Actual |        | Difference |
|-------------------------------------------------------------------|----------|-------|-------|--------------------|--------|------------|
|                                                                   |          | Start | Stop  | CEMs (%)           | RM (%) |            |
| 1                                                                 | 6-May-26 | 11:00 | 11:20 | 14.44              | 14.36  | -0.08      |
| 2                                                                 | 6-May-26 | 11:21 | 11:41 | 14.43              | 14.45  | 0.02       |
| 3                                                                 | 6-May-26 | 11:42 | 12:02 | 14.30              | 14.42  | 0.12       |
| Average                                                           |          |       |       | 14.39              | 14.41  | 0.02       |
| Relative Accuracy Audit (Compared with RM) (%)                    |          |       |       |                    |        | 0.02       |
| Relative Accuracy Audit Criteria <sup>1/</sup> (Compared with RM) |          |       |       |                    |        | ± 15%      |

Reference Method : US EPA Method 3A

Remark: <sup>1/</sup> Relative Accuracy Criteria of O2 is refer to 40 CFR Part 60 Appendix B : Performance Specification Test 3 (PS-3)

RAA Result is within Criteria

Sampled By : Ussaree Namburee

Technical Management

Wichan Chonharat

Manager

ทะเบียนเลขที่ 7-204-ก-0006

Approved by

Sarayuth Jitranont

Assistant General Manager

ทะเบียนเลขที่ 7-204-ก-0003

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# ภาคผนวก ง-4

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ระดับเสียงในบรรยากาศ



## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634662

Date Received : May 12, 2026

Date Reported : May 20, 2026

Report Number: 3575103-1

Page 1 of 1

Sample Number 2634662-1  
Parameter Noise (Leq 24 hrs.)  
Location พื้นที่โรงไฟฟ้า (GPS 47P 0669782, 1559176)  
Measurement Date May 06 - May 07, 2026  
Measurement by Thanesuan Sriwasut  
Sound Level meter Serial No. 597156

| Time                | Leq (dB(A)) | Lmax (dB(A)) | L90 (dB(A)) |
|---------------------|-------------|--------------|-------------|
| 11:00 AM - 12:00 PM | 61.8        | 65.3         | 61.4        |
| 12:00 PM - 01:00 PM | 61.7        | 63.6         | 61.4        |
| 01:00 PM - 02:00 PM | 62.2        | 64.7         | 61.6        |
| 02:00 PM - 03:00 PM | 62.2        | 66.7         | 61.8        |
| 03:00 PM - 04:00 PM | 62.0        | 65.9         | 61.6        |
| 04:00 PM - 05:00 PM | 62.3        | 65.8         | 61.8        |
| 05:00 PM - 06:00 PM | 62.1        | 66.0         | 61.8        |
| 06:00 PM - 07:00 PM | 62.6        | 64.7         | 62.2        |
| 07:00 PM - 08:00 PM | 62.4        | 64.9         | 62.0        |
| 08:00 PM - 09:00 PM | 62.3        | 63.3         | 62.0        |
| 09:00 PM - 10:00 PM | 62.4        | 64.6         | 62.1        |
| 10:00 PM - 11:00 PM | 62.3        | 63.3         | 62.0        |
| 11:00 PM - 12:00 AM | 62.2        | 63.1         | 61.9        |
| 12:00 AM - 01:00 AM | 62.1        | 63.0         | 61.8        |
| 01:00 AM - 02:00 AM | 62.2        | 63.1         | 62.0        |
| 02:00 AM - 03:00 AM | 62.3        | 63.3         | 62.0        |
| 03:00 AM - 04:00 AM | 62.6        | 65.4         | 62.2        |
| 04:00 AM - 05:00 AM | 63.1        | 65.7         | 62.6        |
| 05:00 AM - 06:00 AM | 62.4        | 65.1         | 62.1        |
| 06:00 AM - 07:00 AM | 62.4        | 66.2         | 62.0        |
| 07:00 AM - 08:00 AM | 62.3        | 65.7         | 61.9        |
| 08:00 AM - 09:00 AM | 62.0        | 66.5         | 61.7        |
| 09:00 AM - 10:00 AM | 61.9        | 71.3         | 61.5        |
| 10:00 AM - 11:00 AM | 61.8        | 66.5         | 61.4        |

Leq Average 24 hrs. (dB(A)) 62.2  
Lmax (dB(A)) 71.3  
L90 (dB(A)) 61.9  
Ldn (dB(A)) 68.8  
Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป  
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

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S:\Reports\Air Noise.rpt (10:19AM)



## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634662

Date Received : May 12, 2026

Date Reported : May 20, 2026

Report Number: 3575104-1

Page 1 of 1

Sample Number 2634662-2  
Parameter Noise (Leq 24 hrs.)  
Location พื้นที่โรงไฟฟ้า (GPS 47P 0669782, 1559176)  
Measurement Date May 07 - May 08, 2026  
Measurement by Thanesuan Sriwasut  
Sound Level meter Serial No. 597156

| Time                | Leq (dB(A)) | Lmax (dB(A)) | L90 (dB(A)) |
|---------------------|-------------|--------------|-------------|
| 11:00 AM - 12:00 PM | 62.3        | 65.4         | 61.8        |
| 12:00 PM - 01:00 PM | 62.0        | 64.5         | 61.7        |
| 01:00 PM - 02:00 PM | 62.1        | 64.1         | 61.7        |
| 02:00 PM - 03:00 PM | 62.2        | 65.5         | 61.8        |
| 03:00 PM - 04:00 PM | 62.3        | 64.8         | 61.9        |
| 04:00 PM - 05:00 PM | 62.5        | 69.3         | 62.0        |
| 05:00 PM - 06:00 PM | 62.6        | 70.6         | 62.2        |
| 06:00 PM - 07:00 PM | 62.6        | 72.6         | 62.2        |
| 07:00 PM - 08:00 PM | 62.2        | 64.7         | 61.8        |
| 08:00 PM - 09:00 PM | 62.2        | 63.2         | 61.9        |
| 09:00 PM - 10:00 PM | 62.1        | 63.2         | 61.9        |
| 10:00 PM - 11:00 PM | 62.2        | 63.2         | 61.9        |
| 11:00 PM - 12:00 AM | 62.0        | 62.8         | 61.7        |
| 12:00 AM - 01:00 AM | 62.1        | 63.7         | 61.8        |
| 01:00 AM - 02:00 AM | 62.1        | 63.0         | 61.9        |
| 02:00 AM - 03:00 AM | 62.3        | 63.2         | 62.0        |
| 03:00 AM - 04:00 AM | 62.3        | 63.4         | 62.0        |
| 04:00 AM - 05:00 AM | 62.6        | 64.6         | 62.3        |
| 05:00 AM - 06:00 AM | 63.3        | 66.2         | 62.7        |
| 06:00 AM - 07:00 AM | 62.4        | 66.2         | 62.1        |
| 07:00 AM - 08:00 AM | 62.5        | 65.5         | 62.1        |
| 08:00 AM - 09:00 AM | 62.3        | 64.8         | 61.9        |
| 09:00 AM - 10:00 AM | 62.7        | 64.2         | 62.2        |
| 10:00 AM - 11:00 AM | 61.9        | 71.0         | 61.5        |

Leq Average 24 hrs. (dB(A)) 62.3  
Lmax (dB(A)) 72.6  
L90 (dB(A)) 61.9  
Ldn (dB(A)) 68.8  
Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป  
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

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S:\Reports\Air Noise.rpt (10:19AM)



## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**

**Project Name :** Monitoring EIA

**Project Location :** GCRN

**Lot ID: 2634662**

Date Received : May 12, 2026

Date Reported : May 20, 2026

Report Number: 3575105-1

Page 1 of 1

**Sample Number** 2634662-3  
**Parameter** Noise (Leq 24 hrs.)  
**Location** พื้นที่โรงไฟฟ้า (GPS 47P 0669782, 1559176)  
**Measurement Date** May 08 - May 09, 2026  
**Measurement by** Thanesuan Sriwasut  
**Sound Level meter** Serial No. 597156

| Time                | Leq (dB(A)) | Lmax (dB(A)) | L90 (dB(A)) |
|---------------------|-------------|--------------|-------------|
| 11:00 AM - 12:00 PM | 61.7        | 65.2         | 61.3        |
| 12:00 PM - 01:00 PM | 61.4        | 63.2         | 61.1        |
| 01:00 PM - 02:00 PM | 61.8        | 62.9         | 61.4        |
| 02:00 PM - 03:00 PM | 61.6        | 62.5         | 61.2        |
| 03:00 PM - 04:00 PM | 61.9        | 66.1         | 61.5        |
| 04:00 PM - 05:00 PM | 61.3        | 64.7         | 60.9        |
| 05:00 PM - 06:00 PM | 61.6        | 64.0         | 61.2        |
| 06:00 PM - 07:00 PM | 62.1        | 64.8         | 61.7        |
| 07:00 PM - 08:00 PM | 62.1        | 67.7         | 61.7        |
| 08:00 PM - 09:00 PM | 62.3        | 63.4         | 62.0        |
| 09:00 PM - 10:00 PM | 62.3        | 63.9         | 62.0        |
| 10:00 PM - 11:00 PM | 62.1        | 63.5         | 61.8        |
| 11:00 PM - 12:00 AM | 62.1        | 64.5         | 61.8        |
| 12:00 AM - 01:00 AM | 62.0        | 62.9         | 61.8        |
| 01:00 AM - 02:00 AM | 62.3        | 63.6         | 62.0        |
| 02:00 AM - 03:00 AM | 62.2        | 63.2         | 61.9        |
| 03:00 AM - 04:00 AM | 61.9        | 62.9         | 61.6        |
| 04:00 AM - 05:00 AM | 61.8        | 62.8         | 61.6        |
| 05:00 AM - 06:00 AM | 62.0        | 62.9         | 61.7        |
| 06:00 AM - 07:00 AM | 61.9        | 62.8         | 61.7        |
| 07:00 AM - 08:00 AM | 61.9        | 65.5         | 61.5        |
| 08:00 AM - 09:00 AM | 62.0        | 68.2         | 61.6        |
| 09:00 AM - 10:00 AM | 61.8        | 65.9         | 61.4        |
| 10:00 AM - 11:00 AM | 62.0        | 65.7         | 61.5        |

Leq Average 24 hrs. (dB(A)) 61.9  
Lmax (dB(A)) 68.2  
L90 (dB(A)) 61.6  
Ldn (dB(A)) 68.4  
Standard (dB(A)) 70

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป  
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

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S:\Reports\Air Noise.rpt (10:19AM)



## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**

**Project Name :** Monitoring EIA

**Project Location :** GCRN

**Lot ID: 2634662**

Date Received : May 12, 2026

Date Reported : May 20, 2026

Report Number: 3575106-1

Page 1 of 1

**Sample Number** 2634662-4  
**Parameter** Noise (Leq 24 hrs.)  
**Location** พื้นที่โรงไฟฟ้า (GPS 47P 0669782, 1559176)  
**Measurement Date** May 09 - May 10, 2026  
**Measurement by** Thanesuan Sriwasut  
**Sound Level meter** Serial No. 597156

| Time                | Leq (dB(A)) | Lmax (dB(A)) | L90 (dB(A)) |
|---------------------|-------------|--------------|-------------|
| 11:00 AM - 12:00 PM | 61.5        | 63.9         | 61.1        |
| 12:00 PM - 01:00 PM | 61.6        | 63.8         | 61.2        |
| 01:00 PM - 02:00 PM | 61.7        | 64.3         | 61.3        |
| 02:00 PM - 03:00 PM | 61.8        | 66.1         | 61.4        |
| 03:00 PM - 04:00 PM | 61.9        | 69.8         | 61.4        |
| 04:00 PM - 05:00 PM | 61.7        | 65.3         | 61.3        |
| 05:00 PM - 06:00 PM | 61.8        | 68.3         | 61.4        |
| 06:00 PM - 07:00 PM | 62.3        | 74.2         | 61.6        |
| 07:00 PM - 08:00 PM | 62.1        | 63.7         | 61.8        |
| 08:00 PM - 09:00 PM | 62.2        | 63.3         | 61.9        |
| 09:00 PM - 10:00 PM | 62.1        | 66.1         | 61.8        |
| 10:00 PM - 11:00 PM | 62.1        | 68.0         | 61.8        |
| 11:00 PM - 12:00 AM | 62.2        | 63.7         | 61.8        |
| 12:00 AM - 01:00 AM | 62.3        | 64.1         | 62.0        |
| 01:00 AM - 02:00 AM | 62.2        | 63.3         | 61.9        |
| 02:00 AM - 03:00 AM | 62.2        | 63.2         | 61.9        |
| 03:00 AM - 04:00 AM | 62.1        | 63.3         | 61.8        |
| 04:00 AM - 05:00 AM | 62.2        | 63.0         | 61.9        |
| 05:00 AM - 06:00 AM | 62.3        | 66.2         | 62.0        |
| 06:00 AM - 07:00 AM | 61.8        | 64.0         | 61.5        |
| 07:00 AM - 08:00 AM | 62.2        | 67.9         | 61.8        |
| 08:00 AM - 09:00 AM | 62.1        | 64.3         | 61.8        |
| 09:00 AM - 10:00 AM | 61.4        | 62.4         | 61.1        |
| 10:00 AM - 11:00 AM | 61.4        | 62.9         | 61.0        |

Leq Average 24 hrs. (dB(A)) 62.0  
Lmax (dB(A)) 74.2  
L90 (dB(A)) 61.8  
Ldn (dB(A)) 68.5  
Standard (dB(A)) 70

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป  
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

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S:\Reports\Air Noise.rpt (10:20AM)



## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**

**Project Name :** Monitoring EIA

**Project Location :** GCRN

**Lot ID: 2634662**

Date Received : May 12, 2026

Date Reported : May 20, 2026

Report Number: 3575107-1

Page 1 of 1

**Sample Number** 2634662-5  
**Parameter** Noise (Leq 24 hrs.)  
**Location** พื้นที่โรงไฟฟ้า (GPS 47P 0669782, 1559176)  
**Measurement Date** May 10 - May 11, 2026  
**Measurement by** Thanesuan Sriwasut  
**Sound Level meter** Serial No. 597156

| Time                | Leq (dB(A)) | Lmax (dB(A)) | L90 (dB(A)) |
|---------------------|-------------|--------------|-------------|
| 11:00 AM - 12:00 PM | 61.5        | 63.1         | 61.1        |
| 12:00 PM - 01:00 PM | 61.3        | 62.5         | 60.9        |
| 01:00 PM - 02:00 PM | 61.7        | 62.6         | 61.4        |
| 02:00 PM - 03:00 PM | 61.8        | 66.0         | 61.3        |
| 03:00 PM - 04:00 PM | 61.9        | 63.9         | 61.5        |
| 04:00 PM - 05:00 PM | 61.7        | 63.0         | 61.3        |
| 05:00 PM - 06:00 PM | 63.1        | 68.7         | 62.4        |
| 06:00 PM - 07:00 PM | 63.3        | 66.5         | 62.5        |
| 07:00 PM - 08:00 PM | 63.4        | 68.1         | 62.6        |
| 08:00 PM - 09:00 PM | 63.4        | 71.8         | 62.6        |
| 09:00 PM - 10:00 PM | 63.6        | 70.3         | 62.7        |
| 10:00 PM - 11:00 PM | 61.5        | 63.8         | 61.2        |
| 11:00 PM - 12:00 AM | 61.4        | 62.8         | 61.1        |
| 12:00 AM - 01:00 AM | 61.3        | 62.5         | 61.0        |
| 01:00 AM - 02:00 AM | 61.2        | 62.3         | 60.9        |
| 02:00 AM - 03:00 AM | 61.2        | 62.2         | 60.9        |
| 03:00 AM - 04:00 AM | 61.2        | 62.3         | 60.9        |
| 04:00 AM - 05:00 AM | 61.5        | 63.4         | 61.2        |
| 05:00 AM - 06:00 AM | 61.9        | 65.5         | 61.3        |
| 06:00 AM - 07:00 AM | 61.9        | 64.2         | 61.4        |
| 07:00 AM - 08:00 AM | 62.0        | 64.4         | 61.4        |
| 08:00 AM - 09:00 AM | 62.3        | 65.4         | 61.6        |
| 09:00 AM - 10:00 AM | 62.2        | 65.2         | 61.6        |
| 10:00 AM - 11:00 AM | 62.5        | 66.3         | 61.7        |

Leq Average 24 hrs. (dB(A)) 62.1  
Lmax (dB(A)) 71.8  
L90 (dB(A)) 61.3  
Ldn (dB(A)) 68.0  
Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป  
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

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Scientist (3)

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S:\Reports\Air Noise.rpt (10:20AM)



## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**

**Project Name :** Monitoring EIA

**Project Location :** GCRN

**Lot ID: 2634662**

Date Received : May 12, 2026

Date Reported : May 20, 2026

Report Number: 3575108-1

Page 1 of 1

**Sample Number** 2634662-6  
**Parameter** Noise (Leq 24 hrs.)  
**Location** โรงพยาบาลส่งเสริมสุขภาพตำบลเชียงรากน้อย (GPS 47P 0670745, 1560740)  
**Measurement Date** May 06 - May 07, 2026  
**Measurement by** Thanesuan Sriwasut  
**Sound Level meter** Serial No. 597155

| Time                | Leq (dB(A)) | Lmax (dB(A)) | L90 (dB(A)) |
|---------------------|-------------|--------------|-------------|
| 10:00 AM - 11:00 AM | 51.0        | 74.9         | 40.8        |
| 11:00 AM - 12:00 PM | 50.3        | 76.2         | 40.4        |
| 12:00 PM - 01:00 PM | 51.0        | 76.3         | 39.6        |
| 01:00 PM - 02:00 PM | 63.5        | 77.7         | 40.1        |
| 02:00 PM - 03:00 PM | 50.0        | 70.9         | 39.1        |
| 03:00 PM - 04:00 PM | 52.1        | 76.9         | 42.8        |
| 04:00 PM - 05:00 PM | 51.0        | 71.9         | 42.9        |
| 05:00 PM - 06:00 PM | 54.0        | 80.8         | 44.1        |
| 06:00 PM - 07:00 PM | 52.6        | 78.3         | 44.1        |
| 07:00 PM - 08:00 PM | 51.5        | 76.9         | 47.7        |
| 08:00 PM - 09:00 PM | 52.3        | 79.0         | 49.6        |
| 09:00 PM - 10:00 PM | 53.2        | 82.8         | 49.9        |
| 10:00 PM - 11:00 PM | 53.3        | 82.6         | 52.0        |
| 11:00 PM - 12:00 AM | 53.6        | 73.7         | 52.7        |
| 12:00 AM - 01:00 AM | 51.0        | 66.8         | 49.1        |
| 01:00 AM - 02:00 AM | 49.6        | 62.4         | 48.4        |
| 02:00 AM - 03:00 AM | 48.4        | 63.3         | 46.9        |
| 03:00 AM - 04:00 AM | 47.5        | 63.7         | 45.6        |
| 04:00 AM - 05:00 AM | 50.5        | 72.6         | 45.9        |
| 05:00 AM - 06:00 AM | 56.1        | 76.0         | 45.6        |
| 06:00 AM - 07:00 AM | 51.9        | 70.2         | 42.6        |
| 07:00 AM - 08:00 AM | 52.1        | 74.2         | 42.8        |
| 08:00 AM - 09:00 AM | 50.4        | 75.0         | 41.0        |
| 09:00 AM - 10:00 AM | 49.4        | 81.4         | 41.2        |

Leq Average 24 hrs. (dB(A)) 53.8  
Lmax (dB(A)) 82.8  
L90 (dB(A)) 44.1  
Ldn (dB(A)) 59.0  
Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป  
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634662

Date Received : May 12, 2026

Date Reported : May 20, 2026

Report Number: 3575109-1

Page 1 of 1

Sample Number 2634662-7  
Parameter Noise (Leq 24 hrs.)  
Location โรงพยาบาลส่งเสริมสุขภาพตำบลเชียงรากน้อย (GPS 47P 0670745, 1560740)  
Measurement Date May 07 - May 08, 2026  
Measurement by Thanesuan Sriwasut  
Sound Level meter Serial No. 597155

| Time                | Leq (dB(A)) | Lmax (dB(A)) | L90 (dB(A)) |
|---------------------|-------------|--------------|-------------|
| 10:00 AM - 11:00 AM | 47.3        | 67.0         | 41.1        |
| 11:00 AM - 12:00 PM | 50.3        | 76.4         | 41.1        |
| 12:00 PM - 01:00 PM | 49.8        | 75.3         | 40.3        |
| 01:00 PM - 02:00 PM | 51.3        | 71.7         | 43.6        |
| 02:00 PM - 03:00 PM | 51.6        | 73.1         | 42.3        |
| 03:00 PM - 04:00 PM | 50.4        | 68.0         | 42.5        |
| 04:00 PM - 05:00 PM | 51.9        | 69.9         | 43.4        |
| 05:00 PM - 06:00 PM | 51.7        | 73.4         | 44.7        |
| 06:00 PM - 07:00 PM | 51.1        | 74.9         | 45.4        |
| 07:00 PM - 08:00 PM | 53.5        | 87.6         | 45.4        |
| 08:00 PM - 09:00 PM | 50.6        | 75.9         | 47.1        |
| 09:00 PM - 10:00 PM | 51.5        | 67.2         | 49.1        |
| 10:00 PM - 11:00 PM | 50.6        | 63.0         | 49.4        |
| 11:00 PM - 12:00 AM | 49.9        | 63.0         | 48.6        |
| 12:00 AM - 01:00 AM | 51.1        | 74.7         | 49.4        |
| 01:00 AM - 02:00 AM | 51.9        | 62.8         | 50.1        |
| 02:00 AM - 03:00 AM | 51.8        | 62.9         | 50.6        |
| 03:00 AM - 04:00 AM | 50.6        | 70.0         | 49.3        |
| 04:00 AM - 05:00 AM | 49.1        | 64.2         | 46.9        |
| 05:00 AM - 06:00 AM | 51.2        | 71.1         | 44.9        |
| 06:00 AM - 07:00 AM | 53.1        | 76.4         | 44.1        |
| 07:00 AM - 08:00 AM | 51.1        | 77.5         | 42.7        |
| 08:00 AM - 09:00 AM | 52.7        | 75.2         | 44.3        |
| 09:00 AM - 10:00 AM | 50.5        | 71.7         | 42.8        |

Leq Average 24 hrs. (dB(A)) 51.2  
Lmax (dB(A)) 87.6  
L90 (dB(A)) 44.7  
Ldn (dB(A)) 57.6  
Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป  
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

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S:\Reports\Air Noise.rpt (10:20AM)



## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634662

Date Received : May 12, 2026

Date Reported : May 20, 2026

Report Number: 3575110-1

Page 1 of 1

Sample Number 2634662-8  
Parameter Noise (Leq 24 hrs.)  
Location โรงพยาบาลส่งเสริมสุขภาพตำบลเชียงรากน้อย (GPS 47P 0670745, 1560740)  
Measurement Date May 08 - May 09, 2026  
Measurement by Thanesuan Sriwasut  
Sound Level meter Serial No. 597155

| Time                | Leq (dB(A)) | Lmax (dB(A)) | L90 (dB(A)) |
|---------------------|-------------|--------------|-------------|
| 10:00 AM - 11:00 AM | 49.5        | 68.7         | 41.8        |
| 11:00 AM - 12:00 PM | 48.0        | 74.9         | 41.4        |
| 12:00 PM - 01:00 PM | 55.7        | 73.5         | 41.2        |
| 01:00 PM - 02:00 PM | 51.4        | 72.5         | 39.7        |
| 02:00 PM - 03:00 PM | 46.7        | 70.6         | 40.4        |
| 03:00 PM - 04:00 PM | 48.0        | 76.0         | 42.5        |
| 04:00 PM - 05:00 PM | 50.7        | 73.9         | 44.7        |
| 05:00 PM - 06:00 PM | 50.7        | 70.1         | 42.8        |
| 06:00 PM - 07:00 PM | 51.3        | 73.1         | 44.1        |
| 07:00 PM - 08:00 PM | 50.7        | 71.4         | 43.5        |
| 08:00 PM - 09:00 PM | 51.3        | 68.1         | 47.1        |
| 09:00 PM - 10:00 PM | 52.0        | 71.5         | 48.2        |
| 10:00 PM - 11:00 PM | 49.3        | 62.8         | 48.0        |
| 11:00 PM - 12:00 AM | 48.8        | 70.9         | 47.3        |
| 12:00 AM - 01:00 AM | 47.7        | 71.4         | 44.9        |
| 01:00 AM - 02:00 AM | 46.5        | 63.8         | 44.7        |
| 02:00 AM - 03:00 AM | 44.8        | 56.9         | 43.7        |
| 03:00 AM - 04:00 AM | 45.0        | 63.8         | 42.9        |
| 04:00 AM - 05:00 AM | 44.1        | 59.3         | 43.1        |
| 05:00 AM - 06:00 AM | 46.9        | 63.6         | 42.9        |
| 06:00 AM - 07:00 AM | 56.4        | 84.3         | 42.1        |
| 07:00 AM - 08:00 AM | 49.9        | 73.5         | 40.5        |
| 08:00 AM - 09:00 AM | 50.7        | 77.3         | 39.7        |
| 09:00 AM - 10:00 AM | 53.1        | 87.1         | 41.1        |

Leq Average 24 hrs. (dB(A)) 50.7  
Lmax (dB(A)) 87.1  
L90 (dB(A)) 42.9  
Ldn (dB(A)) 56.3  
Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป  
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

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S:\Reports\Air Noise.rpt (10:21AM)



## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634662

Date Received : May 12, 2026

Date Reported : May 20, 2026

Report Number: 3575111-1

Page 1 of 1

Sample Number 2634662-9  
Parameter Noise (Leq 24 hrs.)  
Location โรงพยาบาลส่งเสริมสุขภาพตำบลเชียงรากน้อย (GPS 47P 0670745, 1560740)  
Measurement Date May 09 - May 10, 2026  
Measurement by Thanesuan Sriwasut  
Sound Level meter Serial No. 597155

| Time                | Leq (dB(A)) | Lmax (dB(A)) | L90 (dB(A)) |
|---------------------|-------------|--------------|-------------|
| 10:00 AM - 11:00 AM | 50.7        | 73.1         | 42.5        |
| 11:00 AM - 12:00 PM | 50.7        | 72.6         | 41.9        |
| 12:00 PM - 01:00 PM | 50.3        | 72.8         | 41.7        |
| 01:00 PM - 02:00 PM | 50.5        | 71.8         | 40.7        |
| 02:00 PM - 03:00 PM | 49.6        | 69.2         | 40.2        |
| 03:00 PM - 04:00 PM | 49.9        | 69.5         | 41.9        |
| 04:00 PM - 05:00 PM | 49.6        | 77.5         | 41.1        |
| 05:00 PM - 06:00 PM | 49.8        | 78.4         | 40.7        |
| 06:00 PM - 07:00 PM | 49.6        | 66.6         | 40.9        |
| 07:00 PM - 08:00 PM | 50.3        | 70.1         | 43.5        |
| 08:00 PM - 09:00 PM | 50.0        | 77.0         | 44.4        |
| 09:00 PM - 10:00 PM | 53.2        | 68.2         | 49.0        |
| 10:00 PM - 11:00 PM | 54.4        | 85.2         | 51.1        |
| 11:00 PM - 12:00 AM | 52.1        | 69.3         | 50.2        |
| 12:00 AM - 01:00 AM | 52.2        | 64.8         | 50.2        |
| 01:00 AM - 02:00 AM | 52.5        | 67.7         | 50.5        |
| 02:00 AM - 03:00 AM | 51.6        | 68.1         | 50.3        |
| 03:00 AM - 04:00 AM | 51.1        | 60.4         | 49.1        |
| 04:00 AM - 05:00 AM | 50.9        | 63.7         | 49.7        |
| 05:00 AM - 06:00 AM | 50.7        | 71.0         | 48.3        |
| 06:00 AM - 07:00 AM | 50.6        | 71.7         | 44.4        |
| 07:00 AM - 08:00 AM | 53.5        | 78.5         | 43.8        |
| 08:00 AM - 09:00 AM | 52.9        | 76.0         | 41.0        |
| 09:00 AM - 10:00 AM | 51.1        | 67.9         | 42.7        |

Leq Average 24 hrs. (dB(A)) 51.4  
Lmax (dB(A)) 85.2  
L90 (dB(A)) 43.5  
Ldn (dB(A)) 58.2  
Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป  
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

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S:\Reports\Air Noise.rpt (10:22AM)



## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634662

Date Received : May 12, 2026

Date Reported : May 20, 2026

Report Number: 3575112-1

Page 1 of 1

Sample Number 2634662-10  
Parameter Noise (Leq 24 hrs.)  
Location โรงพยาบาลส่งเสริมสุขภาพตำบลเชียงรากน้อย (GPS 47P 0670745, 1560740)  
Measurement Date May 10 - May 11, 2026  
Measurement by Thanesuan Sriwasut  
Sound Level meter Serial No. 597155

| Time                | Leq (dB(A)) | Lmax (dB(A)) | L90 (dB(A)) |
|---------------------|-------------|--------------|-------------|
| 10:00 AM - 11:00 AM | 50.7        | 73.5         | 39.8        |
| 11:00 AM - 12:00 PM | 50.4        | 73.9         | 40.9        |
| 12:00 PM - 01:00 PM | 47.6        | 70.2         | 39.7        |
| 01:00 PM - 02:00 PM | 52.1        | 66.6         | 43.8        |
| 02:00 PM - 03:00 PM | 53.1        | 69.0         | 48.1        |
| 03:00 PM - 04:00 PM | 51.3        | 69.7         | 44.9        |
| 04:00 PM - 05:00 PM | 50.1        | 71.7         | 44.3        |
| 05:00 PM - 06:00 PM | 50.1        | 72.4         | 42.2        |
| 06:00 PM - 07:00 PM | 51.4        | 76.8         | 41.2        |
| 07:00 PM - 08:00 PM | 49.3        | 68.7         | 42.3        |
| 08:00 PM - 09:00 PM | 50.8        | 81.6         | 44.6        |
| 09:00 PM - 10:00 PM | 51.4        | 71.0         | 49.0        |
| 10:00 PM - 11:00 PM | 52.2        | 75.0         | 50.1        |
| 11:00 PM - 12:00 AM | 51.2        | 67.4         | 49.2        |
| 12:00 AM - 01:00 AM | 50.6        | 66.9         | 49.3        |
| 01:00 AM - 02:00 AM | 50.3        | 68.4         | 48.7        |
| 02:00 AM - 03:00 AM | 49.8        | 68.4         | 47.9        |
| 03:00 AM - 04:00 AM | 49.6        | 64.0         | 47.7        |
| 04:00 AM - 05:00 AM | 49.7        | 66.6         | 48.4        |
| 05:00 AM - 06:00 AM | 49.5        | 67.0         | 47.6        |
| 06:00 AM - 07:00 AM | 53.8        | 76.8         | 44.7        |
| 07:00 AM - 08:00 AM | 55.8        | 79.6         | 45.0        |
| 08:00 AM - 09:00 AM | 53.0        | 75.0         | 44.7        |
| 09:00 AM - 10:00 AM | 51.8        | 73.4         | 42.5        |

Leq Average 24 hrs. (dB(A)) 51.4  
Lmax (dB(A)) 81.6  
L90 (dB(A)) 44.7  
Ldn (dB(A)) 57.5  
Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป  
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

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Scientist (3)

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S:\Reports\Air Noise.rpt (10:22AM)



## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634662

Date Received : May 12, 2026

Date Reported : May 20, 2026

Report Number: 3575113-1

Page 1 of 1

Sample Number 2634662-11  
Parameter Noise (Leq 24 hrs.)  
Location โรงเรียนคลองบ้านพร้าว (GPS 47P 0669730, 1557618)  
Measurement Date May 06 - May 07, 2026  
Measurement by Thanesuan Sriwasut  
Sound Level meter Serial No. 597159

| Time                | Leq (dB(A)) | Lmax (dB(A)) | L90 (dB(A)) |
|---------------------|-------------|--------------|-------------|
| 12:00 PM - 01:00 PM | 49.8        | 80.2         | 44.9        |
| 01:00 PM - 02:00 PM | 57.7        | 77.2         | 53.3        |
| 02:00 PM - 03:00 PM | 53.8        | 72.9         | 50.2        |
| 03:00 PM - 04:00 PM | 55.0        | 75.7         | 50.6        |
| 04:00 PM - 05:00 PM | 53.1        | 74.2         | 48.4        |
| 05:00 PM - 06:00 PM | 57.2        | 69.2         | 49.7        |
| 06:00 PM - 07:00 PM | 53.7        | 66.4         | 51.4        |
| 07:00 PM - 08:00 PM | 55.6        | 69.6         | 53.9        |
| 08:00 PM - 09:00 PM | 56.4        | 73.2         | 55.1        |
| 09:00 PM - 10:00 PM | 54.6        | 63.6         | 51.9        |
| 10:00 PM - 11:00 PM | 52.0        | 61.6         | 49.4        |
| 11:00 PM - 12:00 AM | 53.1        | 72.5         | 46.0        |
| 12:00 AM - 01:00 AM | 47.1        | 63.5         | 43.6        |
| 01:00 AM - 02:00 AM | 48.4        | 68.9         | 45.3        |
| 02:00 AM - 03:00 AM | 46.9        | 63.3         | 43.1        |
| 03:00 AM - 04:00 AM | 48.0        | 67.5         | 44.3        |
| 04:00 AM - 05:00 AM | 56.5        | 73.1         | 48.0        |
| 05:00 AM - 06:00 AM | 54.0        | 77.3         | 47.6        |
| 06:00 AM - 07:00 AM | 53.9        | 76.0         | 47.9        |
| 07:00 AM - 08:00 AM | 52.3        | 70.5         | 47.2        |
| 08:00 AM - 09:00 AM | 50.8        | 69.7         | 47.5        |
| 09:00 AM - 10:00 AM | 52.7        | 76.3         | 48.0        |
| 10:00 AM - 11:00 AM | 51.9        | 74.6         | 46.1        |
| 11:00 AM - 12:00 PM | 57.2        | 70.9         | 54.6        |

Leq Average 24 hrs. (dB(A)) 54.0  
Lmax (dB(A)) 80.2  
L90 (dB(A)) 48.0  
Ldn (dB(A)) 59.2  
Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป  
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

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S:\Reports\Air Noise.rpt (10:22AM)



## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2634662

Date Received : May 12, 2026

Date Reported : May 20, 2026

Report Number: 3575114-1

Page 1 of 1

Sample Number 2634662-12  
Parameter Noise (Leq 24 hrs.)  
Location โรงเรียนคลองบ้านพร้าว (GPS 47P 0669730, 1557618)  
Measurement Date May 07 - May 08, 2026  
Measurement by Thanesuan Sriwasut  
Sound Level meter Serial No. 597159

| Time                | Leq (dB(A)) | Lmax (dB(A)) | L90 (dB(A)) |
|---------------------|-------------|--------------|-------------|
| 12:00 PM - 01:00 PM | 56.6        | 79.0         | 51.5        |
| 01:00 PM - 02:00 PM | 54.6        | 75.4         | 51.0        |
| 02:00 PM - 03:00 PM | 54.6        | 76.4         | 48.9        |
| 03:00 PM - 04:00 PM | 55.1        | 78.2         | 49.0        |
| 04:00 PM - 05:00 PM | 55.0        | 71.2         | 51.7        |
| 05:00 PM - 06:00 PM | 54.4        | 69.5         | 51.2        |
| 06:00 PM - 07:00 PM | 58.2        | 70.3         | 51.0        |
| 07:00 PM - 08:00 PM | 53.0        | 64.1         | 50.1        |
| 08:00 PM - 09:00 PM | 53.5        | 64.7         | 52.1        |
| 09:00 PM - 10:00 PM | 52.6        | 74.2         | 49.5        |
| 10:00 PM - 11:00 PM | 51.1        | 69.1         | 48.0        |
| 11:00 PM - 12:00 AM | 48.3        | 63.9         | 44.7        |
| 12:00 AM - 01:00 AM | 48.8        | 63.1         | 45.2        |
| 01:00 AM - 02:00 AM | 46.5        | 64.2         | 45.0        |
| 02:00 AM - 03:00 AM | 46.3        | 61.8         | 43.7        |
| 03:00 AM - 04:00 AM | 46.7        | 64.0         | 44.1        |
| 04:00 AM - 05:00 AM | 52.8        | 71.2         | 46.7        |
| 05:00 AM - 06:00 AM | 58.7        | 75.0         | 48.1        |
| 06:00 AM - 07:00 AM | 54.5        | 73.4         | 48.2        |
| 07:00 AM - 08:00 AM | 54.4        | 80.0         | 49.0        |
| 08:00 AM - 09:00 AM | 57.7        | 79.1         | 47.0        |
| 09:00 AM - 10:00 AM | 55.2        | 75.7         | 46.2        |
| 10:00 AM - 11:00 AM | 51.0        | 70.7         | 46.9        |
| 11:00 AM - 12:00 PM | 52.0        | 66.4         | 47.4        |

Leq Average 24 hrs. (dB(A)) 54.2  
Lmax (dB(A)) 80.0  
L90 (dB(A)) 48.1  
Ldn (dB(A)) 59.4  
Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป  
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

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Orawan Rak Yong  
Scientist (3)

Approved by

*Supt S.*

Supot Salamteht  
Section Head

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**

**Project Name :** Monitoring EIA

**Project Location :** GCRN

**Lot ID: 2634662**

Date Received : May 12, 2026

Date Reported : May 20, 2026

Report Number: 3575115-1

Page 1 of 1

**Sample Number** 2634662-13  
**Parameter** Noise (Leq 24 hrs.)  
**Location** โรงเรียนคลองบ้านพร้าว (GPS 47P 0669730, 1557618)  
**Measurement Date** May 08 - May 09, 2026  
**Measurement by** Thanesuan Sriwasut  
**Sound Level meter** Serial No. 597159

| Time                | Leq (dB(A)) | Lmax (dB(A)) | L90 (dB(A)) |
|---------------------|-------------|--------------|-------------|
| 12:00 PM - 01:00 PM | 55.0        | 75.7         | 47.0        |
| 01:00 PM - 02:00 PM | 54.7        | 75.2         | 46.1        |
| 02:00 PM - 03:00 PM | 52.7        | 68.8         | 46.1        |
| 03:00 PM - 04:00 PM | 55.1        | 78.5         | 46.5        |
| 04:00 PM - 05:00 PM | 53.2        | 75.2         | 47.6        |
| 05:00 PM - 06:00 PM | 53.0        | 72.4         | 47.6        |
| 06:00 PM - 07:00 PM | 52.5        | 66.7         | 48.6        |
| 07:00 PM - 08:00 PM | 61.4        | 75.9         | 52.0        |
| 08:00 PM - 09:00 PM | 54.7        | 73.8         | 51.8        |
| 09:00 PM - 10:00 PM | 54.1        | 66.1         | 50.8        |
| 10:00 PM - 11:00 PM | 54.9        | 67.8         | 53.8        |
| 11:00 PM - 12:00 AM | 50.2        | 64.6         | 46.8        |
| 12:00 AM - 01:00 AM | 52.8        | 66.6         | 51.3        |
| 01:00 AM - 02:00 AM | 58.0        | 68.9         | 51.7        |
| 02:00 AM - 03:00 AM | 48.7        | 58.6         | 45.6        |
| 03:00 AM - 04:00 AM | 47.6        | 63.4         | 44.2        |
| 04:00 AM - 05:00 AM | 49.5        | 66.6         | 46.8        |
| 05:00 AM - 06:00 AM | 62.2        | 75.0         | 47.2        |
| 06:00 AM - 07:00 AM | 54.4        | 78.8         | 47.3        |
| 07:00 AM - 08:00 AM | 53.7        | 78.5         | 47.7        |
| 08:00 AM - 09:00 AM | 55.0        | 79.5         | 49.1        |
| 09:00 AM - 10:00 AM | 54.7        | 75.6         | 46.6        |
| 10:00 AM - 11:00 AM | 53.1        | 73.9         | 46.1        |
| 11:00 AM - 12:00 PM | 52.2        | 73.7         | 46.8        |

Leq Average 24 hrs. (dB(A)) 55.4  
Lmax (dB(A)) 79.5  
L90 (dB(A)) 47.2  
Ldn (dB(A)) 62.1  
Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป  
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

*Orawan R.*

Orawan Rak Yong  
Scientist (3)

Approved by

*Supot S.*

Supot Salamteh  
Section Head

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**

**Project Name :** Monitoring EIA

**Project Location :** GCRN

**Lot ID: 2634662**

Date Received : May 12, 2026

Date Reported : May 20, 2026

Report Number: 3575116-1

Page 1 of 1

**Sample Number** 2634662-14  
**Parameter** Noise (Leq 24 hrs.)  
**Location** โรงเรียนคลองบ้านพร้าว (GPS 47P 0669730, 1557618)  
**Measurement Date** May 09 - May 10, 2026  
**Measurement by** Thanesuan Sriwasut  
**Sound Level meter** Serial No. 597159

| Time                | Leq (dB(A)) | Lmax (dB(A)) | L90 (dB(A)) |
|---------------------|-------------|--------------|-------------|
| 12:00 PM - 01:00 PM | 54.6        | 74.1         | 47.9        |
| 01:00 PM - 02:00 PM | 53.9        | 75.2         | 46.5        |
| 02:00 PM - 03:00 PM | 51.6        | 73.0         | 46.7        |
| 03:00 PM - 04:00 PM | 49.8        | 70.3         | 45.4        |
| 04:00 PM - 05:00 PM | 52.9        | 74.8         | 45.5        |
| 05:00 PM - 06:00 PM | 52.0        | 71.2         | 46.7        |
| 06:00 PM - 07:00 PM | 53.2        | 74.7         | 47.5        |
| 07:00 PM - 08:00 PM | 59.7        | 71.4         | 46.8        |
| 08:00 PM - 09:00 PM | 58.9        | 70.7         | 48.7        |
| 09:00 PM - 10:00 PM | 53.9        | 73.6         | 51.5        |
| 10:00 PM - 11:00 PM | 53.7        | 65.4         | 51.7        |
| 11:00 PM - 12:00 AM | 53.7        | 63.3         | 51.5        |
| 12:00 AM - 01:00 AM | 52.6        | 78.3         | 45.3        |
| 01:00 AM - 02:00 AM | 59.1        | 85.8         | 47.8        |
| 02:00 AM - 03:00 AM | 48.0        | 66.3         | 44.2        |
| 03:00 AM - 04:00 AM | 47.7        | 70.5         | 44.6        |
| 04:00 AM - 05:00 AM | 47.9        | 63.8         | 44.3        |
| 05:00 AM - 06:00 AM | 57.8        | 77.9         | 47.1        |
| 06:00 AM - 07:00 AM | 53.9        | 68.7         | 47.6        |
| 07:00 AM - 08:00 AM | 52.9        | 72.4         | 48.1        |
| 08:00 AM - 09:00 AM | 51.7        | 74.4         | 46.7        |
| 09:00 AM - 10:00 AM | 52.2        | 70.4         | 46.2        |
| 10:00 AM - 11:00 AM | 50.2        | 66.4         | 46.0        |
| 11:00 AM - 12:00 PM | 51.9        | 72.3         | 46.4        |

Leq Average 24 hrs. (dB(A)) 54.4  
Lmax (dB(A)) 85.8  
L90 (dB(A)) 46.7  
Ldn (dB(A)) 60.8  
Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป  
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

*Orawan R.*

Orawan Rak Yong  
Scientist (3)

Approved by

*Supot S.*

Supot Salamteh  
Section Head

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN

**Lot ID: 2634662**

Date Received : May 12, 2026  
Date Reported : May 20, 2026  
Report Number: 3575117-1

Page 1 of 1

**Sample Number** 2634662-15  
**Parameter** Noise (Leq 24 hrs.)  
**Location** โรงเรียนคลองบ้านพร้าว (GPS 47P 0669730, 1557618)  
**Measurement Date** May 10 - May 11, 2026  
**Measurement by** Thanesuan Sriwasut  
**Sound Level meter** Serial No. 597159

| Time                | Leq (dB(A)) | Lmax (dB(A)) | L90 (dB(A)) |
|---------------------|-------------|--------------|-------------|
| 12:00 PM - 01:00 PM | 50.2        | 65.4         | 45.1        |
| 01:00 PM - 02:00 PM | 51.5        | 66.2         | 46.5        |
| 02:00 PM - 03:00 PM | 51.7        | 75.4         | 45.3        |
| 03:00 PM - 04:00 PM | 55.6        | 77.0         | 46.3        |
| 04:00 PM - 05:00 PM | 54.7        | 77.9         | 50.2        |
| 05:00 PM - 06:00 PM | 51.7        | 68.3         | 46.8        |
| 06:00 PM - 07:00 PM | 52.2        | 76.6         | 47.0        |
| 07:00 PM - 08:00 PM | 54.3        | 76.3         | 48.2        |
| 08:00 PM - 09:00 PM | 54.1        | 66.7         | 50.0        |
| 09:00 PM - 10:00 PM | 53.9        | 72.1         | 51.2        |
| 10:00 PM - 11:00 PM | 53.8        | 73.0         | 50.7        |
| 11:00 PM - 12:00 AM | 51.8        | 65.3         | 49.3        |
| 12:00 AM - 01:00 AM | 48.5        | 64.5         | 45.2        |
| 01:00 AM - 02:00 AM | 46.9        | 61.7         | 44.0        |
| 02:00 AM - 03:00 AM | 47.5        | 67.1         | 44.5        |
| 03:00 AM - 04:00 AM | 47.4        | 65.9         | 44.5        |
| 04:00 AM - 05:00 AM | 46.0        | 65.2         | 42.7        |
| 05:00 AM - 06:00 AM | 49.2        | 67.5         | 42.3        |
| 06:00 AM - 07:00 AM | 52.8        | 69.8         | 43.3        |
| 07:00 AM - 08:00 AM | 55.0        | 80.8         | 47.2        |
| 08:00 AM - 09:00 AM | 53.8        | 74.6         | 47.4        |
| 09:00 AM - 10:00 AM | 52.4        | 69.0         | 47.8        |
| 10:00 AM - 11:00 AM | 51.4        | 73.8         | 46.0        |
| 11:00 AM - 12:00 PM | 49.3        | 66.1         | 45.6        |

Leq Average 24 hrs. (dB(A))

52.2

Lmax (dB(A))

80.8

L90 (dB(A))

46.3

Ldn (dB(A))

57.1

Standard (dB(A))

70

115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป  
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

*Orawan R.*

Orawan Rak Yong  
Scientist (3)

Approved by

*Supot S.*

Supot Salamteh  
Section Head

# ภาคผนวก ง-5

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คุณภาพน้ำทิ้ง



## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2646262

Date Received : Jun 09, 2026

Date Reported : Jun 16, 2026

Report Number : 3582561-1

Page 2 of 2

|                         |                                                                                                                                               |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2646262-1                                                                                                                                     |
| Sampled Date            | Jun 09, 2026 9:00 AM                                                                                                                          |
| Sample Description      | Wastewater                                                                                                                                    |
| Location                | ปลวกน้ำทิ้งสุดท้ายของโครงการ                                                                                                                  |
| Date Analysis Commenced | Jun 10, 2026                                                                                                                                  |
| Condition of Sample     | Contained in one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                                            | Unit     | LOD | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                                    | Testing Location |
|----------------------------------------------------|----------|-----|-----------|--------|---------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>                               |          |     |           |        |                           |                                                                                                                           |                  |
| pH at 25 degree C                                  |          | -   | -         | 7.9    | 5.5-9.0                   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)         | Bangkok          |
| Residual Free Chlorine *                           | mg/L     | -   | 0.1       | 0.3    | ≤1.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-CI (F)          | Bangkok          |
| Temperature *                                      | Degree C | -   | -         | 32.7   | ≤40                       | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B               | Bangkok          |
| Total Chlorine *                                   | mg/L     | -   | 0.1       | 0.8    | No Standard               | Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-CI (F) | Bangkok          |
| Total Dissolved solids Dried at 180 degree C       | mg/L     | -   | 5         | 2752   | ≤3000                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C               | Bangkok          |
| Total Suspended Solids Dried from 103-105 degree C | mg/L     | -   | 5         | 10     | ≤50                       | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 D               | Bangkok          |

**Guideline :** Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

**Sampling By :** Aittipon Yaso ทะเบียนเลขที่ ๖-204-๖-0059

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.
- Sampling is not included in scope of accreditation ISO/IEC 17025

Technical Management

*Savitree N.*

Savitree Noisangiam  
Manager

ทะเบียนเลขที่ ๖-204-๖-0007

Approved by

*Kanokorn Anek*

Kanokorn Anek  
Assistant General Manager

ทะเบียนเลขที่ ๖-204-๖-0004

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2646262

Date Received : Jun 09, 2026

Date Reported : Jun 16, 2026

Report Number : 3582561-2

Page 1 of 1

|                         |                                                                                                                                               |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2646262-1                                                                                                                                     |
| Sampled Date            | Jun 09, 2026 9:00 AM                                                                                                                          |
| Sample Description      | Wastewater                                                                                                                                    |
| Location                | ปลวกน้ำทิ้งสุดท้ายของโครงการ                                                                                                                  |
| Date Analysis Commenced | Jun 10, 2026                                                                                                                                  |
| Condition of Sample     | Contained in one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte               | Unit | LOD   | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                             | Testing Location |
|-----------------------|------|-------|-----------|--------|---------------------------|--------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Metals Testing</b> |      |       |           |        |                           |                                                                                                                    |                  |
| Iron                  | mg/L | 0.003 | 0.005     | 0.16   | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |

**Guideline :** Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

**Sampling By :** Aittipon Yaso

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.
- Sampling is not included in scope of accreditation ISO/IEC 17025

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.

Approved by

*Savitree N.*

Savitree Noisangiam  
Manager

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2634674

Date Received : May 12, 2026

Date Reported : May 19, 2026

Report Number : 3557228-2

Page 1 of 1

|                         |                                                                                                                                               |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2634674-1                                                                                                                                     |
| Sampled Date            | May 12, 2026 8:10 AM                                                                                                                          |
| Sample Description      | Wastewater                                                                                                                                    |
| Location                | บ่อกักน้ำทิ้งสุดท้ายของโครงการ                                                                                                                |
| Date Analysis Commenced | May 13, 2026                                                                                                                                  |
| Condition of Sample     | Contained in one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte               | Unit | LOD   | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                                    | Testing Location |
|-----------------------|------|-------|-----------|--------|---------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Metals Testing</b> |      |       |           |        |                           |                                                                                                                           |                  |
| Iron                  | mg/L | 0.003 | 0.005     | 0.15   | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F        | Bangkok          |
| <b>Water Testing</b>  |      |       |           |        |                           |                                                                                                                           |                  |
| Total Chlorine *      | mg/L | -     | 0.1       | 0.6    | No Standard               | Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F) | Bangkok          |

**Guideline :** Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

**Sampling By :** Aittipon Yaso

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.
- Sampling is not included in scope of accreditation ISO/IEC 17025

Approved by

Siriluk P.

Siriluk Bunnak  
Section Head

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2646262

Date Received : Jun 09, 2026

Date Reported : Jun 16, 2026

Report Number : 3582561-1

Page 1 of 2

|                         |                                                                                                                                               |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2646262-1                                                                                                                                     |
| Sampled Date            | Jun 09, 2026 9:00 AM                                                                                                                          |
| Sample Description      | Wastewater                                                                                                                                    |
| Location                | บ่อกักน้ำทิ้งสุดท้ายของโครงการ                                                                                                                |
| Date Analysis Commenced | Jun 10, 2026                                                                                                                                  |
| Condition of Sample     | Contained in one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                     | Unit | LOD    | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                                       | Testing Location |
|-----------------------------|------|--------|-----------|--------|---------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Metals Testing</b>       |      |        |           |        |                           |                                                                                                                              |                  |
| Copper                      | mg/L | 0.0003 | 0.0005    | 0.02   | ≤2.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F           | Bangkok          |
| Lead                        | mg/L | 0.0003 | 0.0005    | 0.001  | ≤0.2                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F           | Bangkok          |
| Zinc                        | mg/L | 0.003  | 0.005     | 0.52   | ≤5.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F           | Bangkok          |
| <b>Water Testing</b>        |      |        |           |        |                           |                                                                                                                              |                  |
| BOD (5 days at 20 degree C) | mg/L | -      | 2.0       | <2.0   | ≤20                       | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5210 B, part 4500 - O G | Bangkok          |
| COD                         | mg/L | -      | 25        | 56     | ≤120                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5220 D                  | Bangkok          |
| Color (at Original pH)      | ADMI | -      | 5         | 13     | ≤300                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F                  | Bangkok          |
| Color (at pH 7.0)           | ADMI | -      | 5         | 13     | ≤300                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F                  | Bangkok          |
| Oil & Grease                | mg/L | -      | 3         | <3     | ≤5                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5520 B                  | Bangkok          |

Technical Management

Savitree N.

Savitree Noisangiam  
Manager

ทะเบียนเลขที่ 7-204-3-0007

Approved by

Kanokorn Anek

Kanokorn Anek  
Assistant General Manager

ทะเบียนเลขที่ 7-204-3-0004

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :  
Project Name : Monitoring EIA  
Project Location : GCRN



TESTING  
No.0009  
Lot ID: 2634674  
Date Received : May 12, 2026  
Date Reported : May 19, 2026  
Report Number : 3557228-1

Page 1 of 2

Sample Number 2634674-1  
Sampled Date May 12, 2026 8:10 AM  
Sample Description Wastewater  
Location บ่อพักน้ำทิ้งสุดท้ายของโครงการ  
Date Analysis Commenced May 13, 2026  
Condition of Sample Contained in one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

| Analyte                     | Unit | LOD    | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                                       | Testing Location |
|-----------------------------|------|--------|-----------|--------|---------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Metals Testing</b>       |      |        |           |        |                           |                                                                                                                              |                  |
| Copper                      | mg/L | 0.0003 | 0.0005    | 0.02   | ≤2.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B, 3030 F          | Bangkok          |
| Lead                        | mg/L | 0.0003 | 0.0005    | 0.001  | ≤0.2                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B, 3030 F          | Bangkok          |
| Zinc                        | mg/L | 0.003  | 0.005     | 0.47   | ≤5.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B, 3030 F          | Bangkok          |
| <b>Water Testing</b>        |      |        |           |        |                           |                                                                                                                              |                  |
| BOD (5 days at 20 degree C) | mg/L | -      | 2.0       | <2.0   | ≤20                       | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5210 B, part 4500 - O G | Bangkok          |
| COD                         | mg/L | -      | 25        | 36     | ≤120                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5220 D                  | Bangkok          |
| Color (at Original pH)      | ADMI | -      | 5         | 11     | ≤300                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F                  | Bangkok          |
| Color (at pH 7.0)           | ADMI | -      | 5         | 10     | ≤300                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F                  | Bangkok          |
| Oil & Grease                | mg/L | -      | 3         | <3     | ≤5                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5520 B                  | Bangkok          |

Technical Management

Siriluk P.

Siriluk Bunnak  
Section Head  
ทะเบียนเลขที่ ๖-204-๓-0013

Approved by

Kanokorn Anek

Kanokorn Anek  
Assistant General Manager  
ทะเบียนเลขที่ ๖-204-๓-0004

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :  
Project Name : Monitoring EIA  
Project Location : GCRN



TESTING  
No.0009  
Lot ID: 2634674  
Date Received : May 12, 2026  
Date Reported : May 19, 2026  
Report Number : 3557228-1

Page 2 of 2

Sample Number 2634674-1  
Sampled Date May 12, 2026 8:10 AM  
Sample Description Wastewater  
Location บ่อพักน้ำทิ้งสุดท้ายของโครงการ  
Date Analysis Commenced May 13, 2026  
Condition of Sample Contained in one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

| Analyte                                            | Unit     | LOD | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                            | Testing Location |
|----------------------------------------------------|----------|-----|-----------|--------|---------------------------|-------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>                               |          |     |           |        |                           |                                                                                                                   |                  |
| pH at 25 degree C                                  |          | -   | -         | 7.9    | 5.5-9.0                   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B) | Bangkok          |
| Residual Free Chlorine *                           | mg/L     | -   | 0.1       | <0.1   | ≤1.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F)  | Bangkok          |
| Temperature *                                      | Degree C | -   | -         | 30.6   | ≤40                       | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B       | Bangkok          |
| Total Dissolved solids Dried at 180 degree C       | mg/L     | -   | 5         | 2556   | ≤3000                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C       | Bangkok          |
| Total Suspended Solids Dried from 103-105 degree C | mg/L     | -   | 5         | 7      | ≤50                       | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 D       | Bangkok          |

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

Sampling By : Aittipon Yaso ทะเบียนเลขที่ ๖-204-๓-0059

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.
- Sampling is not included in scope of accreditation ISO/IEC 17025

Technical Management

Siriluk P.

Siriluk Bunnak  
Section Head  
ทะเบียนเลขที่ ๖-204-๓-0013

Approved by

Kanokorn Anek

Kanokorn Anek  
Assistant General Manager  
ทะเบียนเลขที่ ๖-204-๓-0004

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2624861

Date Received : Apr 28, 2026

Date Reported : May 07, 2026

Report Number : 3532552-2

Page 4 of 5

|                         |                                                                                                                                                                  |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2624861-1                                                                                                                                                        |
| Sampled Date            | Apr 28, 2026 11:50 AM                                                                                                                                            |
| Sample Description      | Wastewater                                                                                                                                                       |
| Location                | บ่อกักน้ำทิ้งสุดท้ายของโครงการ                                                                                                                                   |
| Date Analysis Commenced | Apr 29, 2026                                                                                                                                                     |
| Condition of Sample     | Contained in five amber glass bottles, two glass vials and nine plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                                   | Unit         | LOD  | LOQ (LOR) | Result       | Guideline / Specification | Method                                                                                                                           | Testing Location |
|-------------------------------------------|--------------|------|-----------|--------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Pesticides - Organophosphate Group</b> |              |      |           |              |                           |                                                                                                                                  |                  |
| Pirimiphos-methyl                         | ug/L         | 0.03 | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| Profenofos                                | ug/L         | 0.03 | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| Prothiophos                               | ug/L         | 0.03 | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| Triazophos                                | ug/L         | 0.03 | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| <b>Water Testing</b>                      |              |      |           |              |                           |                                                                                                                                  |                  |
| Conductivity at 25 degree C *             | micromhos/cm | -    | 0.5       | 2973         | No Standard               | Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2510 B             | Bangkok          |
| Tar *                                     | mg/L         | 0.5  | 1.0       | Not Detected | No Standard               | In-house method based on United States Environmental Protection Agency, EPA Method 8015 D                                        | Bangkok          |
| Total Chlorine *                          | mg/L         | -    | 0.1       | 0.1          | No Standard               | Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F)        | Bangkok          |

**Guideline :** Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

**Sampling By :** Apisit Srikongkaew

Remark :

- LOD : Limit of Detection

Approved by

*Chanatt L.*

Chanattagarn Imchom  
Section Head

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2624861

Date Received : Apr 28, 2026

Date Reported : May 07, 2026

Report Number : 3532552-2

Page 5 of 5

- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.
- Sampling is not included in scope of accreditation ISO/IEC 17025

Approved by

*Chanatt L.*

Chanattagarn Imchom  
Section Head

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2624861

Date Received : Apr 28, 2026

Date Reported : May 07, 2026

Report Number : 3532552-2

Page 2 of 5

|                         |                                                                                                                                                                  |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2624861-1                                                                                                                                                        |
| Sampled Date            | Apr 28, 2026 11:50 AM                                                                                                                                            |
| Sample Description      | Wastewater                                                                                                                                                       |
| Location                | มลพิษน้ำทิ้งสุดท้ายของโครงการ                                                                                                                                    |
| Date Analysis Commenced | Apr 29, 2026                                                                                                                                                     |
| Condition of Sample     | Contained in five amber glass bottles, two glass vials and nine plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                                   | Unit | LOD  | LOQ (LOR) | Result       | Guideline / Specification | Method                                                                                                                           | Testing Location |
|-------------------------------------------|------|------|-----------|--------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Pesticides - Organophosphate Group</b> |      |      |           |              |                           |                                                                                                                                  |                  |
| EPN                                       | ug/L | 0.03 | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| Ethion                                    | ug/L | 0.03 | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| Fenitrothion                              | ug/L | 0.03 | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| Malathion                                 | ug/L | 0.03 | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| Methamidophos *                           | ug/L | 0.03 | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| Methidathion                              | ug/L | 0.03 | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| Mevinphos                                 | ug/L | 0.03 | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |

Approved by

*Chanatt L.*

Chanattagarn Imchom  
Section Head

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2624861

Date Received : Apr 28, 2026

Date Reported : May 07, 2026

Report Number : 3532552-2

Page 3 of 5

|                         |                                                                                                                                                                  |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2624861-1                                                                                                                                                        |
| Sampled Date            | Apr 28, 2026 11:50 AM                                                                                                                                            |
| Sample Description      | Wastewater                                                                                                                                                       |
| Location                | มลพิษน้ำทิ้งสุดท้ายของโครงการ                                                                                                                                    |
| Date Analysis Commenced | Apr 29, 2026                                                                                                                                                     |
| Condition of Sample     | Contained in five amber glass bottles, two glass vials and nine plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                                   | Unit | LOD  | LOQ (LOR) | Result       | Guideline / Specification | Method                                                                                                                           | Testing Location |
|-------------------------------------------|------|------|-----------|--------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Pesticides - Organophosphate Group</b> |      |      |           |              |                           |                                                                                                                                  |                  |
| Monocrotophos *                           | ug/L | 0.03 | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| Omethoate *                               | ug/L | 0.03 | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| Parathion *                               | ug/L | 0.06 | 0.2       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| Parathion-ethyl                           | ug/L | 0.03 | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| Parathion-methyl                          | ug/L | 0.03 | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| Phosalone                                 | ug/L | 0.03 | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| Pirimiphos-ethyl                          | ug/L | 0.03 | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |

Approved by

*Chanatt L.*

Chanattagarn Imchom  
Section Head

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :  
Project Name : Monitoring EIA  
Project Location : GCRN



TESTING  
No.0009  
Lot ID: 2624861  
Date Received : Apr 28, 2026  
Date Reported : May 07, 2026  
Report Number : 3532552-1

Page 4 of 4

|                         |                                                                                                                                                                  |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2624861-1                                                                                                                                                        |
| Sampled Date            | Apr 28, 2026 11:50 AM                                                                                                                                            |
| Sample Description      | Wastewater                                                                                                                                                       |
| Location                | มลพิษน้ำทิ้งสุดท้ายของโครงการ                                                                                                                                    |
| Date Analysis Commenced | Apr 29, 2026                                                                                                                                                     |
| Condition of Sample     | Contained in five amber glass bottles, two glass vials and nine plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                                            | Unit | LOD  | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                             | Testing Location |
|----------------------------------------------------|------|------|-----------|--------|---------------------------|--------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>                               |      |      |           |        |                           |                                                                                                                    |                  |
| Total Kjeldahl Nitrogen as N *                     | mg/L | 0.15 | 1.0       | <1.0   | ≤100                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Norg (C) | Bangkok          |
| Total Suspended Solids Dried from 103-105 degree C | mg/L | -    | 5         | 21     | ≤50                       | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 D        | Bangkok          |

**Guideline :** Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

**Sampling By :** Apisit Srikongkaew ทะเบียนเลขที่ ๖-204-๖-0203

**Remark :**

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.
- Sampling is not included in scope of accreditation ISO/IEC 17025

Technical Management

*Chanatt L.*

Chanattagam Imchom  
Section Head  
ทะเบียนเลขที่ ๖-204-๖-0008

Approved by

*Kanokorn Anek*

Kanokorn Anek  
Assistant General Manager  
ทะเบียนเลขที่ ๖-204-๖-0004

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :  
Project Name : Monitoring EIA  
Project Location : GCRN



TESTING  
No.0009  
Lot ID: 2624861  
Date Received : Apr 28, 2026  
Date Reported : May 07, 2026  
Report Number : 3532552-2

Page 1 of 5

|                         |                                                                                                                                                                  |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2624861-1                                                                                                                                                        |
| Sampled Date            | Apr 28, 2026 11:50 AM                                                                                                                                            |
| Sample Description      | Wastewater                                                                                                                                                       |
| Location                | มลพิษน้ำทิ้งสุดท้ายของโครงการ                                                                                                                                    |
| Date Analysis Commenced | Apr 29, 2026                                                                                                                                                     |
| Condition of Sample     | Contained in five amber glass bottles, two glass vials and nine plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                                   | Unit | LOD   | LOQ (LOR) | Result       | Guideline / Specification | Method                                                                                                                           | Testing Location |
|-------------------------------------------|------|-------|-----------|--------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Metals Testing</b>                     |      |       |           |              |                           |                                                                                                                                  |                  |
| Iron                                      | mg/L | 0.003 | 0.005     | 0.24         | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F               | Bangkok          |
| <b>Pesticides - Organophosphate Group</b> |      |       |           |              |                           |                                                                                                                                  |                  |
| Azinphos-ethyl                            | ug/L | 0.03  | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| Chlorpyrifos                              | ug/L | 0.03  | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| DDVP                                      | ug/L | 0.03  | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| Diazinon                                  | ug/L | 0.03  | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| Dicrotophos                               | ug/L | 0.03  | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |
| Dimethoate                                | ug/L | 0.03  | 0.1       | Not Detected | Not Detected              | In-house method : STM 04-067 based on United States Environmental Protection Agency, 1996, Method 3510 C and 1994, Method 8141 A | Bangkok          |

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.

Approved by

*Chanatt L.*

Chanattagam Imchom  
Section Head

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2624861

Date Received : Apr 28, 2026

Date Reported : May 07, 2026

Report Number : 3532552-1

Page 2 of 4

|                         |                                                                                                                                                                  |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2624861-1                                                                                                                                                        |
| Sampled Date            | Apr 28, 2026 11:50 AM                                                                                                                                            |
| Sample Description      | Wastewater                                                                                                                                                       |
| Location                | บ่อกักน้ำทิ้งสุดท้ายของโครงการ                                                                                                                                   |
| Date Analysis Commenced | Apr 29, 2026                                                                                                                                                     |
| Condition of Sample     | Contained in five amber glass bottles, two glass vials and nine plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                     | Unit | LOD    | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                                       | Testing Location |
|-----------------------------|------|--------|-----------|--------|---------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Metals Testing</b>       |      |        |           |        |                           |                                                                                                                              |                  |
| Nickel                      | mg/L | 0.0003 | 0.0005    | 0.005  | ≤1.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F           | Bangkok          |
| Selenium                    | mg/L | 0.0003 | 0.0005    | 0.0006 | ≤0.02                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F           | Bangkok          |
| Trivalent Chromium *        | mg/L | -      | 0.01      | <0.01  | ≤0.75                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F           | Bangkok          |
| Zinc                        | mg/L | 0.003  | 0.005     | 0.54   | ≤5.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F           | Bangkok          |
| <b>Water Testing</b>        |      |        |           |        |                           |                                                                                                                              |                  |
| BOD (5 days at 20 degree C) | mg/L | -      | 2.0       | <2.0   | ≤20                       | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5210 B, part 4500 - O G | Bangkok          |
| COD                         | mg/L | -      | 25        | <25    | ≤120                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5220 D                  | Bangkok          |
| Color (at Original pH)      | ADMI | -      | 5         | 15     | ≤300                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F                  | Bangkok          |
| Color (at pH 7.0)           | ADMI | -      | 5         | 13     | ≤300                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F                  | Bangkok          |

Technical Management

*Chanatt L.*

Chanattagarn Imchom  
Section Head

ทะเบียนเลขที่ 7-204-ก-0008

Approved by

*Kanokorn Anek*

Kanokorn Anek  
Assistant General Manager  
ทะเบียนเลขที่ 7-204-ก-0004

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2624861

Date Received : Apr 28, 2026

Date Reported : May 07, 2026

Report Number : 3532552-1

Page 3 of 4

|                         |                                                                                                                                                                  |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2624861-1                                                                                                                                                        |
| Sampled Date            | Apr 28, 2026 11:50 AM                                                                                                                                            |
| Sample Description      | Wastewater                                                                                                                                                       |
| Location                | บ่อกักน้ำทิ้งสุดท้ายของโครงการ                                                                                                                                   |
| Date Analysis Commenced | Apr 29, 2026                                                                                                                                                     |
| Condition of Sample     | Contained in five amber glass bottles, two glass vials and nine plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                                      | Unit     | LOD   | LOQ (LOR) | Result       | Guideline / Specification | Method                                                                                                                | Testing Location |
|----------------------------------------------|----------|-------|-----------|--------------|---------------------------|-----------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>                         |          |       |           |              |                           |                                                                                                                       |                  |
| Cyanide as CN                                | mg/L     | 0.002 | 0.005     | Not Detected | ≤0.2                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - CN (C, E) | Bangkok          |
| Formaldehyde                                 | mg/L     | 0.03  | 0.1       | Not Detected | ≤1.0                      | Wastewater analysis manual, Environmental Engineering Association of Thailand, 4th ed., 2004                          | Bangkok          |
| Oil & Grease                                 | mg/L     | -     | 3         | <3           | ≤5                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5520 B           | Bangkok          |
| pH at 25 degree C                            | -        | -     | -         | 8.3          | 5.5-9.0                   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)     | Bangkok          |
| Phenol                                       | mg/L     | 0.005 | 0.01      | 0.033        | ≤1.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5530 D           | Bangkok          |
| Residual Free Chlorine *                     | mg/L     | -     | 0.1       | 0.1          | ≤1.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F)      | Bangkok          |
| Sulfide *                                    | mg/L     | -     | 0.5       | <0.5         | ≤1.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-S2 (C, F)   | Bangkok          |
| Temperature *                                | Degree C | -     | -         | 32.5         | ≤40                       | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B           | Bangkok          |
| Total Dissolved solids Dried at 180 degree C | mg/L     | -     | 5         | 1900         | ≤3000                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C           | Bangkok          |

Technical Management

*Chanatt L.*

Chanattagarn Imchom  
Section Head  
ทะเบียนเลขที่ 7-204-ก-0008

Approved by

*Kanokorn Anek*

Kanokorn Anek  
Assistant General Manager  
ทะเบียนเลขที่ 7-204-ก-0004

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN



**TESTING**  
**No.0009**  
**Lot ID: 2610250**  
Date Received : Feb 03, 2026  
Date Reported : Feb 10, 2026  
Report Number : 3499572-2

Page 1 of 1

**Sample Number** 2610250-1  
**Sampled Date** Feb 03, 2026 11:30 AM  
**Sample Description** Wastewater  
**Location** บ่อพักน้ำทิ้งสุดท้ายของโครงการ  
**Date Analysis Commenced** Feb 04, 2026  
**Condition of Sample** Contained in one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

| Analyte               | Unit | LOD   | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                                    | Testing Location |
|-----------------------|------|-------|-----------|--------|---------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Metals Testing</b> |      |       |           |        |                           |                                                                                                                           |                  |
| Iron                  | mg/L | 0.003 | 0.005     | 0.35   | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F        | Bangkok          |
| <b>Water Testing</b>  |      |       |           |        |                           |                                                                                                                           |                  |
| Total Chlorine *      | mg/L | -     | 0.1       | 0.5    | No Standard               | Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F) | Bangkok          |

**Guideline :** Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

**Sampling By :** Teerapong Srikamhang

**Remark :**

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.
- Sampling is not included in scope of accreditation ISO/IEC 17025

Approved by

*Chanatt L.*

Chanattagarn Imchom  
Section Head

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN



**TESTING**  
**No.0009**  
**Lot ID: 2624861**  
Date Received : Apr 28, 2026  
Date Reported : May 07, 2026  
Report Number : 3532552-1

Page 1 of 4

**Sample Number** 2624861-1  
**Sampled Date** Apr 28, 2026 11:50 AM  
**Sample Description** Wastewater  
**Location** บ่อพักน้ำทิ้งสุดท้ายของโครงการ  
**Date Analysis Commenced** Apr 29, 2026  
**Condition of Sample** Contained in five amber glass bottles, two glass vials and nine plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

| Analyte               | Unit | LOD    | LOQ (LOR) | Result       | Guideline / Specification | Method                                                                                                             | Testing Location |
|-----------------------|------|--------|-----------|--------------|---------------------------|--------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Metals Testing</b> |      |        |           |              |                           |                                                                                                                    |                  |
| Arsenic               | mg/L | 0.0003 | 0.0005    | 0.007        | ≤0.25                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Barium                | mg/L | 0.0003 | 0.0005    | 0.36         | ≤1.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Cadmium               | mg/L | 0.0003 | 0.0005    | Not Detected | ≤0.03                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Copper                | mg/L | 0.0003 | 0.0005    | 0.02         | ≤2.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Hexavalent Chromium   | mg/L | 0.003  | 0.01      | Not Detected | ≤0.25                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3500-Cr B     | Bangkok          |
| Lead                  | mg/L | 0.0003 | 0.0005    | 0.002        | ≤0.2                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Manganese             | mg/L | 0.0003 | 0.0005    | 0.07         | ≤5.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Mercury *             | mg/L | 0.0001 | 0.0005    | Not Detected | ≤0.005                    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3112          | Bangkok          |

Technical Management

*Chanatt L.*

Chanattagarn Imchom  
Section Head  
ทะเบียนเลขที่ 7-204-จ-0008

Approved by

*Kanokorn Anek*

Kanokorn Anek  
Assistant General Manager  
ทะเบียนเลขที่ 7-204-ก-0004

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :  
Project Name : Monitoring EIA  
Project Location : GCRN



TESTING  
No.0009  
Lot ID: 2620319  
Date Received : Mar 10, 2026  
Date Reported : Mar 17, 2026  
Report Number : 3521254-1

Page 2 of 2

|                         |                                                                                                                                               |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2620319-1                                                                                                                                     |
| Sampled Date            | Mar 10, 2026 11:39 AM                                                                                                                         |
| Sample Description      | Wastewater                                                                                                                                    |
| Location                | บ่อกักน้ำทิ้งสุดท้ายของโครงการ                                                                                                                |
| Date Analysis Commenced | Mar 11, 2026                                                                                                                                  |
| Condition of Sample     | Contained in one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                                            | Unit     | LOD | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                            | Testing Location |
|----------------------------------------------------|----------|-----|-----------|--------|---------------------------|-------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>                               |          |     |           |        |                           |                                                                                                                   |                  |
| pH at 25 degree C                                  |          | -   | -         | 7.9    | 5.5-9.0                   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B) | Bangkok          |
| Residual Free Chlorine *                           | mg/L     | -   | 0.1       | 0.1    | ≤1.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-CI (F)  | Bangkok          |
| Temperature *                                      | Degree C | -   | -         | 30.4   | ≤40                       | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B       | Bangkok          |
| Total Dissolved solids Dried at 180 degree C       | mg/L     | -   | 5         | 2800   | ≤3000                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C       | Bangkok          |
| Total Suspended Solids Dried from 103-105 degree C | mg/L     | -   | 5         | 9      | ≤50                       | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 D       | Bangkok          |

**Guideline :** Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

**Sampling By :** Teerapong Srikamhang ทะเบียนเลขที่ ๖-204-๖-0202

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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- Sampling is not included in scope of accreditation ISO/IEC 17025

Technical Management

*Chanatt L.*

Chanattagarn Imchom  
Section Head  
ทะเบียนเลขที่ ๖-204-๖-0008

Approved by

*Kanokorn Anek*

Kanokorn Anek  
Assistant General Manager  
ทะเบียนเลขที่ ๖-204-๖-0004

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :  
Project Name : Monitoring EIA  
Project Location : GCRN



TESTING  
No.0009  
Lot ID: 2620319  
Date Received : Mar 10, 2026  
Date Reported : Mar 17, 2026  
Report Number : 3521254-2

Page 1 of 1

|                         |                                                                                                                                               |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2620319-1                                                                                                                                     |
| Sampled Date            | Mar 10, 2026 11:39 AM                                                                                                                         |
| Sample Description      | Wastewater                                                                                                                                    |
| Location                | บ่อกักน้ำทิ้งสุดท้ายของโครงการ                                                                                                                |
| Date Analysis Commenced | Mar 11, 2026                                                                                                                                  |
| Condition of Sample     | Contained in one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte               | Unit | LOD   | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                                    | Testing Location |
|-----------------------|------|-------|-----------|--------|---------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Metals Testing</b> |      |       |           |        |                           |                                                                                                                           |                  |
| Iron                  | mg/L | 0.003 | 0.005     | 0.30   | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F        | Bangkok          |
| <b>Water Testing</b>  |      |       |           |        |                           |                                                                                                                           |                  |
| Total Chlorine *      | mg/L | -     | 0.1       | 0.8    | No Standard               | Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-CI (F) | Bangkok          |

**Guideline :** Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

**Sampling By :** Teerapong Srikamhang

Remark :

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- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.
- Sampling is not included in scope of accreditation ISO/IEC 17025

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Approved by

*Chanatt L.*

Chanattagarn Imchom  
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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN



**TESTING**  
**No.0009**  
**Lot ID: 2610250**  
Date Received : Feb 03, 2026  
Date Reported : Feb 10, 2026  
Report Number : 3499572-1

Page 2 of 2

|                                |                                                                                                                                               |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Sample Number</b>           | 2610250-1                                                                                                                                     |
| <b>Sampled Date</b>            | Feb 03, 2026 11:30 AM                                                                                                                         |
| <b>Sample Description</b>      | Wastewater                                                                                                                                    |
| <b>Location</b>                | ปลวกน้ำทิ้งสุดท้ายของโครงการ                                                                                                                  |
| <b>Date Analysis Commenced</b> | Feb 04, 2026                                                                                                                                  |
| <b>Condition of Sample</b>     | Contained in one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                                          | Unit     | LOD | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                            | Testing Location |
|--------------------------------------------------|----------|-----|-----------|--------|---------------------------|-------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>                             |          |     |           |        |                           |                                                                                                                   |                  |
| pH at 25 degree C                                | -        | -   | -         | 7.7    | 5.5-9.0                   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B) | Bangkok          |
| Residual Free Chlorine *                         | mg/L     | -   | 0.1       | <0.1   | ≤1.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F)  | Bangkok          |
| Temperature *                                    | Degree C | -   | -         | 27.8   | ≤40                       | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B       | Bangkok          |
| Total Dissolved solids Dried at 180 degree C     | mg/L     | -   | 5         | 2356   | ≤3000                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C       | Bangkok          |
| Total Suspended Solids Dried at 103-105 degree C | mg/L     | -   | 5         | 11     | ≤50                       | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 D       | Bangkok          |

**Guideline :** Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

**Sampling By :** Teerapong Srikamhang ทะเบียนเลขที่ ๖-204-๖-0202

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.
- Sampling is not included in scope of accreditation ISO/IEC 17025

Technical Management

*Chanatt L.*

Chanattagam Imchom  
Section Head  
ทะเบียนเลขที่ ๖-204-๖-0008

Approved by

*Kanokorn Anek*

Kanokorn Anek  
Assistant General Manager  
ทะเบียนเลขที่ ๖-204-๖-0004

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN



**TESTING**  
**No.0009**  
**Lot ID: 2620319**  
Date Received : Mar 10, 2026  
Date Reported : Mar 17, 2026  
Report Number : 3521254-1

Page 1 of 2

|                                |                                                                                                                                               |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Sample Number</b>           | 2620319-1                                                                                                                                     |
| <b>Sampled Date</b>            | Mar 10, 2026 11:39 AM                                                                                                                         |
| <b>Sample Description</b>      | Wastewater                                                                                                                                    |
| <b>Location</b>                | ปลวกน้ำทิ้งสุดท้ายของโครงการ                                                                                                                  |
| <b>Date Analysis Commenced</b> | Mar 11, 2026                                                                                                                                  |
| <b>Condition of Sample</b>     | Contained in one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                     | Unit | LOD    | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                                       | Testing Location |
|-----------------------------|------|--------|-----------|--------|---------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Metals Testing</b>       |      |        |           |        |                           |                                                                                                                              |                  |
| Copper                      | mg/L | 0.0003 | 0.0005    | 0.03   | ≤2.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F           | Bangkok          |
| Lead                        | mg/L | 0.0003 | 0.0005    | 0.002  | ≤0.2                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F           | Bangkok          |
| Zinc                        | mg/L | 0.003  | 0.005     | 0.65   | ≤5.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F           | Bangkok          |
| <b>Water Testing</b>        |      |        |           |        |                           |                                                                                                                              |                  |
| BOD (5 days at 20 degree C) | mg/L | -      | 2.0       | 2.0    | ≤20                       | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5210 B, part 4500 - O G | Bangkok          |
| COD                         | mg/L | -      | 25        | 51     | ≤120                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5220 D                  | Bangkok          |
| Color (at Original pH)      | ADMI | -      | 5         | 11     | ≤300                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F                  | Bangkok          |
| Color (at pH 7.0)           | ADMI | -      | 5         | 11     | ≤300                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F                  | Bangkok          |
| Oil & Grease                | mg/L | -      | 3         | <3     | ≤5                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5520 B                  | Bangkok          |

Technical Management

*Chanatt L.*

Chanattagam Imchom  
Section Head  
ทะเบียนเลขที่ ๖-204-๖-0008

Approved by

*Kanokorn Anek*

Kanokorn Anek  
Assistant General Manager  
ทะเบียนเลขที่ ๖-204-๖-0004

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :  
Project Name : Monitoring EIA  
Project Location : GCRN



TESTING  
No.0009  
Lot ID: 25115714  
Date Received : Jan 06, 2026  
Date Reported : Jan 13, 2026  
Report Number : 3481085-2

Page 1 of 1

Sample Number 25115714-1  
Sampled Date Jan 06, 2026 1:15 PM  
Sample Description Wastewater  
Location บ่อกักน้ำทิ้งสุดท้ายของโครงการ  
Date Analysis Commenced Jan 07, 2026  
Condition of Sample Contained in one amber glass bottle and six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

| Analyte                  | Unit | LOD   | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                                    | Testing Location |
|--------------------------|------|-------|-----------|--------|---------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Metals Testing</b>    |      |       |           |        |                           |                                                                                                                           |                  |
| Iron                     | mg/L | 0.003 | 0.005     | 0.17   | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F        | Bangkok          |
| <b>Water Testing</b>     |      |       |           |        |                           |                                                                                                                           |                  |
| Residual Free Chlorine * | mg/L | -     | 0.1       | 0.5    | ≤1.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F)          | Bangkok          |
| Total Chlorine *         | mg/L | -     | 0.1       | 1.1    | No Standard               | Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F) | Bangkok          |

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).  
Sampling By : Apisit Srikongkaew

Remark :  
- LOD : Limit of Detection  
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)  
- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.  
- Sampling is not included in scope of accreditation ISO/IEC 17025

Approved by

*Sawitree N.*

Sawitree Noisangiam  
Manager

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :  
Project Name : Monitoring EIA  
Project Location : GCRN



TESTING  
No.0009  
Lot ID: 2610250  
Date Received : Feb 03, 2026  
Date Reported : Feb 10, 2026  
Report Number : 3499572-1

Page 1 of 2

Sample Number 2610250-1  
Sampled Date Feb 03, 2026 11:30 AM  
Sample Description Wastewater  
Location บ่อกักน้ำทิ้งสุดท้ายของโครงการ  
Date Analysis Commenced Feb 04, 2026  
Condition of Sample Contained in one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

| Analyte                     | Unit | LOD    | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                                       | Testing Location |
|-----------------------------|------|--------|-----------|--------|---------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Metals Testing</b>       |      |        |           |        |                           |                                                                                                                              |                  |
| Copper                      | mg/L | 0.0003 | 0.0005    | 0.03   | ≤2.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F           | Bangkok          |
| Lead                        | mg/L | 0.0003 | 0.0005    | 0.003  | ≤0.2                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F           | Bangkok          |
| Zinc                        | mg/L | 0.003  | 0.005     | 0.59   | ≤5.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F           | Bangkok          |
| <b>Water Testing</b>        |      |        |           |        |                           |                                                                                                                              |                  |
| BOD (5 days at 20 degree C) | mg/L | -      | 2.0       | 2.7    | ≤20                       | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5210 B, part 4500 - O G | Bangkok          |
| COD                         | mg/L | -      | 25        | 47     | ≤120                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5220 D                  | Bangkok          |
| Color (at Original pH)      | ADMI | -      | 5         | 20     | ≤300                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F                  | Bangkok          |
| Color (at pH 7.0)           | ADMI | -      | 5         | 18     | ≤300                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F                  | Bangkok          |
| Oil & Grease                | mg/L | -      | 3         | <3     | ≤5                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5520 B                  | Bangkok          |

Technical Management

*Chanatt L.*

Chanattagam Imchom  
Section Head  
ทะเบียนเลขที่ 7-204-2-0008

Approved by

*Kanokorn Anek*

Kanokorn Anek  
Assistant General Manager  
ทะเบียนเลขที่ 7-204-2-0004

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :  
Project Name : Monitoring EIA  
Project Location : GCRN



TESTING  
No.0009  
Lot ID: 25115714  
Date Received : Jan 06, 2026  
Date Reported : Jan 13, 2026  
Report Number : 3481085-1

Page 1 of 2

Sample Number 25115714-1  
Sampled Date Jan 06, 2026 1:15 PM  
Sample Description Wastewater  
Location บ่อกักน้ำทิ้งสุดท้ายของโครงการ  
Date Analysis Commenced Jan 07, 2026  
Condition of Sample Contained in one amber glass bottle and six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

| Analyte                     | Unit | LOD    | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                                       | Testing Location |
|-----------------------------|------|--------|-----------|--------|---------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Metals Testing</b>       |      |        |           |        |                           |                                                                                                                              |                  |
| Copper                      | mg/L | 0.0003 | 0.0005    | 0.03   | ≤2.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B, 3030 F          | Bangkok          |
| Lead                        | mg/L | 0.0003 | 0.0005    | 0.003  | ≤0.2                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B, 3030 F          | Bangkok          |
| Zinc                        | mg/L | 0.003  | 0.005     | 0.57   | ≤5.0                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B, 3030 F          | Bangkok          |
| <b>Water Testing</b>        |      |        |           |        |                           |                                                                                                                              |                  |
| BOD (5 days at 20 degree C) | mg/L | -      | 2.0       | <2.0   | ≤20                       | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5210 B, part 4500 - O G | Bangkok          |
| COD                         | mg/L | -      | 25        | 75     | ≤120                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5220 D                  | Bangkok          |
| Color (at Original pH)      | ADMI | -      | 5         | 37     | ≤300                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F                  | Bangkok          |
| Color (at pH 7.0)           | ADMI | -      | 5         | 37     | ≤300                      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F                  | Bangkok          |
| Oil & Grease                | mg/L | -      | 3         | <3     | ≤5                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5520 B                  | Bangkok          |

Technical Management

*Savitree N.*

Savitree Naisangiam  
Manager

ทะเบียนเลขที่ ว-204-จ-0007

Approved by

*Kanokorn Anek*

Kanokorn Anek  
Assistant General Manager  
ทะเบียนเลขที่ ว-204-ก-0004

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :  
Project Name : Monitoring EIA  
Project Location : GCRN



TESTING  
No.0009  
Lot ID: 25115714  
Date Received : Jan 06, 2026  
Date Reported : Jan 13, 2026  
Report Number : 3481085-1

Page 2 of 2

Sample Number 25115714-1  
Sampled Date Jan 06, 2026 1:15 PM  
Sample Description Wastewater  
Location บ่อกักน้ำทิ้งสุดท้ายของโครงการ  
Date Analysis Commenced Jan 07, 2026  
Condition of Sample Contained in one amber glass bottle and six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

| Analyte                                          | Unit     | LOD | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                            | Testing Location |
|--------------------------------------------------|----------|-----|-----------|--------|---------------------------|-------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>                             |          |     |           |        |                           |                                                                                                                   |                  |
| pH at 25 degree C                                |          | -   | -         | 7.6    | 5.5-9.0                   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B) | Bangkok          |
| Temperature *                                    | Degree C | -   | -         | 27.5   | ≤40                       | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B       | Bangkok          |
| Total Dissolved solids Dried at 180 degree C     | mg/L     | -   | 5         | 2500   | ≤3000                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C       | Bangkok          |
| Total Suspended Solids Dried at 103-105 degree C | mg/L     | -   | 5         | 7      | ≤50                       | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 D       | Bangkok          |

**Guideline :** Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

**Sampling By :** Apisit Srikongkaew ทะเบียนเลขที่ ว-204-จ-0203

Remark :

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- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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- Sampling is not included in scope of accreditation ISO/IEC 17025

Technical Management

*Savitree N.*

Savitree Naisangiam  
Manager

ทะเบียนเลขที่ ว-204-จ-0007

Approved by

*Kanokorn Anek*

Kanokorn Anek  
Assistant General Manager  
ทะเบียนเลขที่ ว-204-ก-0004

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# ภาคผนวก ง-6

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2610247

Date Received : Feb 17, 2026

Date Reported : Feb 23, 2026

Report Number : 3499568-1

Page 1 of 6

|                         |                                                                                                                                                               |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2610247-1                                                                                                                                                     |
| Sampled Date            | Feb 17, 2026 12:00 PM                                                                                                                                         |
| Sample Description      | Surface water                                                                                                                                                 |
| Location                | แม่น้ำเจ้าพระยาที่ 500 เมตรเหนือจุดสูบน้ำของโครงการ                                                                                                           |
| Date Analysis Commenced | Feb 18, 2026                                                                                                                                                  |
| Condition of Sample     | Contained in one amber glass bottle, two BOD bottles and two plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                  | Unit | LOD    | LOQ (LOR) | Result  | Guideline / Specification | Method                                                                                                             | Testing Location |
|--------------------------|------|--------|-----------|---------|---------------------------|--------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Metals Testing</b>    |      |        |           |         |                           |                                                                                                                    |                  |
| Copper                   | mg/L | 0.0003 | 0.0005    | 0.001   | ≤0.10                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Iron                     | mg/L | 0.003  | 0.005     | 0.46    | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Lead                     | mg/L | 0.0003 | 0.0005    | <0.0005 | ≤0.05                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Zinc                     | mg/L | 0.003  | 0.005     | 0.006   | ≤1                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| <b>Water Testing</b>     |      |        |           |         |                           |                                                                                                                    |                  |
| Dissolved Oxygen *       | mg/L | -      | 0.1       | 6.0     | ≥4                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-O (C)    | Bangkok          |
| Oil & Grease             | mg/L | -      | 3         | <3      | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5520 B        | Bangkok          |
| pH at 25 degree C        | -    | -      | -         | 7.3     | 5.0-9.0                   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)  | Bangkok          |
| Residual Free Chlorine * | mg/L | -      | 0.1       | <0.1    | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F)   | Bangkok          |

Approved by

*Chanatt L.*

Chanattagarn Imchom  
Section Head

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2610247

Date Received : Feb 17, 2026

Date Reported : Feb 23, 2026

Report Number : 3499568-1

Page 2 of 6

|                         |                                                                                                                                                               |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2610247-1                                                                                                                                                     |
| Sampled Date            | Feb 17, 2026 12:00 PM                                                                                                                                         |
| Sample Description      | Surface water                                                                                                                                                 |
| Location                | แม่น้ำเจ้าพระยาที่ 500 เมตรเหนือจุดสูบน้ำของโครงการ                                                                                                           |
| Date Analysis Commenced | Feb 18, 2026                                                                                                                                                  |
| Condition of Sample     | Contained in one amber glass bottle, two BOD bottles and two plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                                        | Unit     | LOD | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                                    | Testing Location |
|------------------------------------------------|----------|-----|-----------|--------|---------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>                           |          |     |           |        |                           |                                                                                                                           |                  |
| Temperature *                                  | Degree C | -   | -         | 30.1   | n'                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B               | Bangkok          |
| Total Chlorine *                               | mg/L     | -   | 0.1       | <0.1   | No Standard               | Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F) | Bangkok          |
| Total Dissolved solids Dried at 180 degree C * | mg/L     | -   | 5         | 142    | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C               | Bangkok          |

**Guideline :** Notification of the National Environmental Board, No. 8, B.E.2537 issued under the Enhancement and Conservation of National Environmental Quality Act. B.E.2535, published in the Royal Government Gazette, Vol. 111, Part 16, Dated February 24, B.E. 2537 (Class 3)

n': Change from Natural condition not more than 3 degree C

n : Not Change from natural condition

**Sampling By :** Teerapong Srikamhang

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.
- Sampling is not included in scope of accreditation ISO/IEC 17025

Approved by

*Chanatt L.*

Chanattagarn Imchom  
Section Head

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2610247

Date Received : Feb 17, 2026

Date Reported : Feb 23, 2026

Report Number : 3499568-1

Page 3 of 6

|                         |                                                                                                                                                               |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2610247-2                                                                                                                                                     |
| Sampled Date            | Feb 17, 2026 12:25 PM                                                                                                                                         |
| Sample Description      | Surface water                                                                                                                                                 |
| Location                | แม่น้ำเจ้าพระยาบริเวณจุดสูบน้ำดิบ - ระบายน้ำลงคลอง                                                                                                            |
| Date Analysis Commenced | Feb 18, 2026                                                                                                                                                  |
| Condition of Sample     | Contained in one amber glass bottle, two BOD bottles and two plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                  | Unit | LOD    | LOQ (LOR) | Result  | Guideline / Specification | Method                                                                                                             | Testing Location |
|--------------------------|------|--------|-----------|---------|---------------------------|--------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Metals Testing</b>    |      |        |           |         |                           |                                                                                                                    |                  |
| Copper                   | mg/L | 0.0003 | 0.0005    | 0.001   | ≤0.10                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Iron                     | mg/L | 0.003  | 0.005     | 0.48    | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Lead                     | mg/L | 0.0003 | 0.0005    | <0.0005 | ≤0.05                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Zinc                     | mg/L | 0.003  | 0.005     | 0.005   | ≤1                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| <b>Water Testing</b>     |      |        |           |         |                           |                                                                                                                    |                  |
| Dissolved Oxygen *       | mg/L | -      | 0.1       | 5.4     | ≥4                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-O (C)    | Bangkok          |
| Oil & Grease             | mg/L | -      | 3         | <3      | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5520 B        | Bangkok          |
| pH at 25 degree C        | -    | -      | -         | 7.4     | 5.0-9.0                   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)  | Bangkok          |
| Residual Free Chlorine * | mg/L | -      | 0.1       | <0.1    | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F)   | Bangkok          |

Approved by

*Chanatt L.*

Chanattagarn Imchom  
Section Head

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2610247

Date Received : Feb 17, 2026

Date Reported : Feb 23, 2026

Report Number : 3499568-1

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|                         |                                                                                                                                                               |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2610247-2                                                                                                                                                     |
| Sampled Date            | Feb 17, 2026 12:25 PM                                                                                                                                         |
| Sample Description      | Surface water                                                                                                                                                 |
| Location                | แม่น้ำเจ้าพระยาบริเวณจุดสูบน้ำดิบ - ระบายน้ำลงคลอง                                                                                                            |
| Date Analysis Commenced | Feb 18, 2026                                                                                                                                                  |
| Condition of Sample     | Contained in one amber glass bottle, two BOD bottles and two plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                                        | Unit     | LOD | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                                    | Testing Location |
|------------------------------------------------|----------|-----|-----------|--------|---------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>                           |          |     |           |        |                           |                                                                                                                           |                  |
| Temperature *                                  | Degree C | -   | -         | 29.7   | n'                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B               | Bangkok          |
| Total Chlorine *                               | mg/L     | -   | 0.1       | <0.1   | No Standard               | Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F) | Bangkok          |
| Total Dissolved solids Dried at 180 degree C * | mg/L     | -   | 5         | 147    | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C               | Bangkok          |

**Guideline :** Notification of the National Environmental Board, No. 8, B.E.2537 issued under the Enhancement and Conservation of National Environmental Quality Act. B.E.2535, published in the Royal Government Gazette, Vol. 111, Part 16, Dated February 24, B.E. 2537 (Class 3)

n': Change from Natural condition not more than 3 degree C

n : Not Change from natural condition

**Sampling By :** Teerapong Srikamhang

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.
- Sampling is not included in scope of accreditation ISO/IEC 17025

Approved by

*Chanatt L.*

Chanattagarn Imchom  
Section Head

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2610247

Date Received : Feb 17, 2026

Date Reported : Feb 23, 2026

Report Number : 3499568-1

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|                         |                                                                                                                                                               |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2610247-3                                                                                                                                                     |
| Sampled Date            | Feb 17, 2026 12:45 PM                                                                                                                                         |
| Sample Description      | Surface water                                                                                                                                                 |
| Location                | แม่น้ำเจ้าพระยาที่ 500 เมตรท้ายจุดสูบน้ำของโครงการ                                                                                                            |
| Date Analysis Commenced | Feb 18, 2026                                                                                                                                                  |
| Condition of Sample     | Contained in one amber glass bottle, two BOD bottles and two plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                  | Unit | LOD    | LOQ (LOR) | Result       | Guideline / Specification | Method                                                                                                             | Testing Location |
|--------------------------|------|--------|-----------|--------------|---------------------------|--------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Metals Testing</b>    |      |        |           |              |                           |                                                                                                                    |                  |
| Copper                   | mg/L | 0.0003 | 0.0005    | 0.001        | ≤0.10                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Iron                     | mg/L | 0.003  | 0.005     | 0.53         | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Lead                     | mg/L | 0.0003 | 0.0005    | <0.0005      | ≤0.05                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Zinc                     | mg/L | 0.003  | 0.005     | Not Detected | ≤1                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| <b>Water Testing</b>     |      |        |           |              |                           |                                                                                                                    |                  |
| Dissolved Oxygen *       | mg/L | -      | 0.1       | 5.4          | ≥4                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-O (C)    | Bangkok          |
| Oil & Grease             | mg/L | -      | 3         | <3           | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5520 B        | Bangkok          |
| pH at 25 degree C        | -    | -      | -         | 7.6          | 5.0-9.0                   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)  | Bangkok          |
| Residual Free Chlorine * | mg/L | -      | 0.1       | <0.1         | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F)   | Bangkok          |

Approved by

*Chanatt L.*

Chanattagarn Imchom  
Section Head

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2610247

Date Received : Feb 17, 2026

Date Reported : Feb 23, 2026

Report Number : 3499568-1

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|                         |                                                                                                                                                               |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2610247-3                                                                                                                                                     |
| Sampled Date            | Feb 17, 2026 12:45 PM                                                                                                                                         |
| Sample Description      | Surface water                                                                                                                                                 |
| Location                | แม่น้ำเจ้าพระยาที่ 500 เมตรท้ายจุดสูบน้ำของโครงการ                                                                                                            |
| Date Analysis Commenced | Feb 18, 2026                                                                                                                                                  |
| Condition of Sample     | Contained in one amber glass bottle, two BOD bottles and two plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                                        | Unit     | LOD | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                                    | Testing Location |
|------------------------------------------------|----------|-----|-----------|--------|---------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>                           |          |     |           |        |                           |                                                                                                                           |                  |
| Temperature *                                  | Degree C | -   | -         | 29.7   | n'                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B               | Bangkok          |
| Total Chlorine *                               | mg/L     | -   | 0.1       | <0.1   | No Standard               | Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F) | Bangkok          |
| Total Dissolved solids Dried at 180 degree C * | mg/L     | -   | 5         | 134    | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C               | Bangkok          |

**Guideline :** Notification of the National Environmental Board, No. 8, B.E.2537 issued under the Enhancement and Conservation of National Environmental Quality Act. B.E.2535, published in the Royal Government Gazette, Vol. 111, Part 16, Dated February 24, B.E. 2537 (Class 3)

n': Change from Natural condition not more than 3 degree C

n : Not Change from natural condition

**Sampling By :** Teerapong Srikamhang

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.
- Sampling is not included in scope of accreditation ISO/IEC 17025

Approved by

*Chanatt L.*

Chanattagarn Imchom  
Section Head

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2634673

Date Received : May 12, 2026

Date Reported : May 16, 2026

Report Number : 3557227-1

Page 1 of 6

|                         |                                                                                                                                                               |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2634673-1                                                                                                                                                     |
| Sampled Date            | May 12, 2026 8:50 AM                                                                                                                                          |
| Sample Description      | Surface water                                                                                                                                                 |
| Location                | แม่น้ำเจ้าพระยาที่ 500 เมตรเหนือจุดสูบน้ำเข้าของโครงการ                                                                                                       |
| Date Analysis Commenced | May 13, 2026                                                                                                                                                  |
| Condition of Sample     | Contained in one amber glass bottle, two BOD bottles and two plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                  | Unit | LOD    | LOQ (LOR) | Result       | Guideline / Specification | Method                                                                                                             | Testing Location |
|--------------------------|------|--------|-----------|--------------|---------------------------|--------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Metals Testing</b>    |      |        |           |              |                           |                                                                                                                    |                  |
| Copper                   | mg/L | 0.0003 | 0.0005    | 0.001        | ≤0.10                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Iron                     | mg/L | 0.003  | 0.005     | 0.31         | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Lead                     | mg/L | 0.0003 | 0.0005    | Not Detected | ≤0.05                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Zinc                     | mg/L | 0.003  | 0.005     | 0.005        | ≤1                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| <b>Water Testing</b>     |      |        |           |              |                           |                                                                                                                    |                  |
| Dissolved Oxygen *       | mg/L | -      | 0.1       | 6.7          | ≥4                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-O (C)    | Bangkok          |
| Oil & Grease             | mg/L | -      | 3         | <3           | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5520 B        | Bangkok          |
| pH at 25 degree C        | -    | -      | -         | 7.9          | 5.0-9.0                   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)  | Bangkok          |
| Residual Free Chlorine * | mg/L | -      | 0.1       | <0.1         | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F)   | Bangkok          |

Approved by

Suwimon C.

Suwimon Chairuangwut  
Scientist (3)

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2634673

Date Received : May 12, 2026

Date Reported : May 16, 2026

Report Number : 3557227-1

Page 2 of 6

|                         |                                                                                                                                                               |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2634673-1                                                                                                                                                     |
| Sampled Date            | May 12, 2026 8:50 AM                                                                                                                                          |
| Sample Description      | Surface water                                                                                                                                                 |
| Location                | แม่น้ำเจ้าพระยาที่ 500 เมตรเหนือจุดสูบน้ำเข้าของโครงการ                                                                                                       |
| Date Analysis Commenced | May 13, 2026                                                                                                                                                  |
| Condition of Sample     | Contained in one amber glass bottle, two BOD bottles and two plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                                        | Unit     | LOD | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                                    | Testing Location |
|------------------------------------------------|----------|-----|-----------|--------|---------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>                           |          |     |           |        |                           |                                                                                                                           |                  |
| Temperature *                                  | Degree C | -   | -         | 32.0   | n'                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B               | Bangkok          |
| Total Chlorine *                               | mg/L     | -   | 0.1       | 0.1    | No Standard               | Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F) | Bangkok          |
| Total Dissolved solids Dried at 180 degree C * | mg/L     | -   | 5         | 154    | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C               | Bangkok          |

Guideline : Notification of the National Environmental Board, No. 8, B.E.2537 issued under the Enhancement and Conservation of National Environmental Quality Act. B.E.2535, published in the Royal Government Gazette, Vol. 111, Part 16, Dated February 24, B.E. 2537 (Class 3)

n' : Change from Natural condition not more than 3 degree C

n : Not Change from natural condition

Sampling By : Aittipon Yaso

Remark :

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- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.
- Sampling is not included in scope of accreditation ISO/IEC 17025

Approved by

Suwimon C.

Suwimon Chairuangwut  
Scientist (3)

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2634673

Date Received : May 12, 2026

Date Reported : May 16, 2026

Report Number : 3557227-1

Page 3 of 6

|                         |                                                                                                                                                               |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2634673-2                                                                                                                                                     |
| Sampled Date            | May 12, 2026 9:10 AM                                                                                                                                          |
| Sample Description      | Surface water                                                                                                                                                 |
| Location                | แม่น้ำเจ้าพระยาบริเวณจุดสูบน้ำดิบ - ระบายน้ำลงคลองการ                                                                                                         |
| Date Analysis Commenced | May 13, 2026                                                                                                                                                  |
| Condition of Sample     | Contained in one amber glass bottle, two BOD bottles and two plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                  | Unit | LOD    | LOQ (LOR) | Result       | Guideline / Specification | Method                                                                                                             | Testing Location |
|--------------------------|------|--------|-----------|--------------|---------------------------|--------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Metals Testing</b>    |      |        |           |              |                           |                                                                                                                    |                  |
| Copper                   | mg/L | 0.0003 | 0.0005    | 0.0009       | ≤0.10                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Iron                     | mg/L | 0.003  | 0.005     | 0.28         | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Lead                     | mg/L | 0.0003 | 0.0005    | Not Detected | ≤0.05                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Zinc                     | mg/L | 0.003  | 0.005     | <0.005       | ≤1                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| <b>Water Testing</b>     |      |        |           |              |                           |                                                                                                                    |                  |
| Dissolved Oxygen *       | mg/L | -      | 0.1       | 5.2          | ≥4                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-O (C)    | Bangkok          |
| Oil & Grease             | mg/L | -      | 3         | <3           | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5520 B        | Bangkok          |
| pH at 25 degree C        | -    | -      | -         | 7.9          | 5.0-9.0                   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)  | Bangkok          |
| Residual Free Chlorine * | mg/L | -      | 0.1       | <0.1         | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F)   | Bangkok          |

Approved by

Suwimon C.

Suwimon Chairuangwut  
Scientist (3)

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2634673

Date Received : May 12, 2026

Date Reported : May 16, 2026

Report Number : 3557227-1

Page 4 of 6

|                         |                                                                                                                                                               |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2634673-2                                                                                                                                                     |
| Sampled Date            | May 12, 2026 9:10 AM                                                                                                                                          |
| Sample Description      | Surface water                                                                                                                                                 |
| Location                | แม่น้ำเจ้าพระยาบริเวณจุดสูบน้ำดิบ - ระบายน้ำลงคลองการ                                                                                                         |
| Date Analysis Commenced | May 13, 2026                                                                                                                                                  |
| Condition of Sample     | Contained in one amber glass bottle, two BOD bottles and two plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                                        | Unit     | LOD | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                                    | Testing Location |
|------------------------------------------------|----------|-----|-----------|--------|---------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>                           |          |     |           |        |                           |                                                                                                                           |                  |
| Temperature *                                  | Degree C | -   | -         | 32.4   | n'                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B               | Bangkok          |
| Total Chlorine *                               | mg/L     | -   | 0.1       | <0.1   | No Standard               | Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F) | Bangkok          |
| Total Dissolved solids Dried at 180 degree C * | mg/L     | -   | 5         | 149    | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C               | Bangkok          |

Guideline : Notification of the National Environmental Board, No. 8, B.E.2537 issued under the Enhancement and Conservation of National Environmental Quality Act. B.E.2535, published in the Royal Government Gazette, Vol. 111, Part 16, Dated February 24, B.E. 2537 (Class 3)

n': Change from Natural condition not more than 3 degree C

n : Not Change from natural condition

Sampling By : Aittipon Yaso

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.
- Sampling is not included in scope of accreditation ISO/IEC 17025

Approved by

Suwimon C.

Suwimon Chairuangwut  
Scientist (3)

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2634673

Date Received : May 12, 2026

Date Reported : May 16, 2026

Report Number : 3557227-1

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|                         |                                                                                                                                                               |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2634673-3                                                                                                                                                     |
| Sampled Date            | May 12, 2026 9:30 AM                                                                                                                                          |
| Sample Description      | Surface water                                                                                                                                                 |
| Location                | แม่น้ำเจ้าพระยาที่ 500 เมตรท้ายจุดสูบน้ำของโครงการ                                                                                                            |
| Date Analysis Commenced | May 13, 2026                                                                                                                                                  |
| Condition of Sample     | Contained in one amber glass bottle, two BOD bottles and two plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                  | Unit | LOD    | LOQ (LOR) | Result       | Guideline / Specification | Method                                                                                                             | Testing Location |
|--------------------------|------|--------|-----------|--------------|---------------------------|--------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Metals Testing</b>    |      |        |           |              |                           |                                                                                                                    |                  |
| Copper                   | mg/L | 0.0003 | 0.0005    | 0.001        | ≤0.10                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Iron                     | mg/L | 0.003  | 0.005     | 0.29         | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Lead                     | mg/L | 0.0003 | 0.0005    | Not Detected | ≤0.05                     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| Zinc                     | mg/L | 0.003  | 0.005     | <0.005       | ≤1                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 3125 B,3030 F | Bangkok          |
| <b>Water Testing</b>     |      |        |           |              |                           |                                                                                                                    |                  |
| Dissolved Oxygen *       | mg/L | -      | 0.1       | 4.9          | ≥4                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-O (C)    | Bangkok          |
| Oil & Grease             | mg/L | -      | 3         | <3           | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5520 B        | Bangkok          |
| pH at 25 degree C        | -    | -      | -         | 7.9          | 5.0-9.0                   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)  | Bangkok          |
| Residual Free Chlorine * | mg/L | -      | 0.1       | <0.1         | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F)   | Bangkok          |

Approved by

Suwimon C.

Suwimon Chairuangwut  
Scientist (3)

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN



TESTING

No.0009

Lot ID: 2634673

Date Received : May 12, 2026

Date Reported : May 16, 2026

Report Number : 3557227-1

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|                         |                                                                                                                                                               |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Number           | 2634673-3                                                                                                                                                     |
| Sampled Date            | May 12, 2026 9:30 AM                                                                                                                                          |
| Sample Description      | Surface water                                                                                                                                                 |
| Location                | แม่น้ำเจ้าพระยาที่ 500 เมตรท้ายจุดสูบน้ำของโครงการ                                                                                                            |
| Date Analysis Commenced | May 13, 2026                                                                                                                                                  |
| Condition of Sample     | Contained in one amber glass bottle, two BOD bottles and two plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                                        | Unit     | LOD | LOQ (LOR) | Result | Guideline / Specification | Method                                                                                                                    | Testing Location |
|------------------------------------------------|----------|-----|-----------|--------|---------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>                           |          |     |           |        |                           |                                                                                                                           |                  |
| Temperature *                                  | Degree C | -   | -         | 32.3   | n'                        | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B               | Bangkok          |
| Total Chlorine *                               | mg/L     | -   | 0.1       | <0.1   | No Standard               | Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl (F) | Bangkok          |
| Total Dissolved solids Dried at 180 degree C * | mg/L     | -   | 5         | 147    | No Standard               | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C               | Bangkok          |

Guideline : Notification of the National Environmental Board, No. 8, B.E.2537 issued under the Enhancement and Conservation of National Environmental Quality Act. B.E.2535, published in the Royal Government Gazette, Vol. 111, Part 16, Dated February 24, B.E. 2537 (Class 3)

n': Change from Natural condition not more than 3 degree C

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Sampling By : Aittipon Yaso

Remark :

- LOD : Limit of Detection
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- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.
- Sampling is not included in scope of accreditation ISO/IEC 17025

Approved by

Suwimon C.

Suwimon Chairuangwut  
Scientist (3)

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# ภาคผนวก ง-7

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นิเวศวิทยาในน้ำ



สถานีวิจัยประมงศรีราชา  
101/12 หมู่ 9 ต. บางพระ  
อ. ศรีราชา จ. ชลบุรี 20110  
โทร./โทรสาร. (038) 311379

Client : Gulf JP CRN Co., Ltd.

Address : 59/4 Moo 4 Chiang Rak Noi, Sam Khok, Pathumthani, Thailand, 12160

Project Name : Monitoring EIA

Project Location : GCRN

#### รายงานผลการวิเคราะห์แพลงก์ตอนพืช

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 12 พฤษภาคม 2569)

| ชนิดแพลงก์ตอนพืช                 | ปริมาณแพลงก์ตอนพืช (หน่วยต่อลิตร) |           |           |
|----------------------------------|-----------------------------------|-----------|-----------|
|                                  | 2634678-1                         | 2634678-2 | 2634678-3 |
| <b>Division Cyanophyta</b>       |                                   |           |           |
| <b>Class Cyanophyceae</b>        |                                   |           |           |
| <b>Order Chroococcales</b>       |                                   |           |           |
| <b>Family Chroococcaceae</b>     |                                   |           |           |
| 1. <i>Microcystis aeruginosa</i> | 161                               | 29        | 241       |
| <b>Order Nostocales</b>          |                                   |           |           |
| <b>Family Oscillatoriaceae</b>   |                                   |           |           |
| 2. <i>Lyngbya contorta</i>       | 1,248                             | 1,375     | 1,409     |
| 3. <i>Oscillatoria limosa</i>    | 8                                 | -         | -         |
| 4. <i>Oscillatoria</i> sp.       | 24                                | 945       | 637       |
| 5. <i>Oscillatoria tenuis</i>    | 16                                | -         | -         |
| <b>Family Nostocaceae</b>        |                                   |           |           |
| 6. <i>Anabaenopsis</i> sp.       | 16                                | 10        | 10        |
| 7. <i>Cylindrospermum</i> sp.    | 620                               | 898       | 511       |

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 12 พฤษภาคม 2569)

(ต่อ)

| ชนิดแพลงก์ตอนพืช                   | ปริมาณแพลงก์ตอนพืช (หน่วยต่อลิตร) |           |           |
|------------------------------------|-----------------------------------|-----------|-----------|
|                                    | 2634678-1                         | 2634678-2 | 2634678-3 |
| <b>Division Chlorophyta</b>        |                                   |           |           |
| <b>Class Chlorophyceae</b>         |                                   |           |           |
| <b>Order Volvocales</b>            |                                   |           |           |
| <b>Family Volvocaceae</b>          |                                   |           |           |
| 8. <i>Eudorina elegans</i>         | 2,093                             | 468       | 521       |
| 9. <i>Gonium pectorale</i>         | -                                 | 19        | -         |
| 10. <i>Pandorina morum</i>         | 837                               | 506       | 154       |
| 11. <i>Volvox tertius</i>          | -                                 | 19        | -         |
| <b>Order Chlorococcales</b>        |                                   |           |           |
| <b>Family Hydrodictyaceae</b>      |                                   |           |           |
| 12. <i>Pediastrum duplex</i>       | 8                                 | 29        | 10        |
| 13. <i>Pediastrum simplex</i>      | 765                               | 840       | 1,100     |
| 14. <i>Pediastrum tetras</i>       | -                                 | 10        | 10        |
| <b>Family Coelastraceae</b>        |                                   |           |           |
| 15. <i>Coelastrum microporum</i>   | 8                                 | 19        | -         |
| <b>Family Oocystaceae</b>          |                                   |           |           |
| 16. <i>Tetraedron gracile</i>      | -                                 | 10        | -         |
| <b>Family Scenedesmaceae</b>       |                                   |           |           |
| 17. <i>Actinastrum hantzschii</i>  | -                                 | 19        | 10        |
| 18. <i>Crucigenia apiculata</i>    | 89                                | -         | -         |
| 19. <i>Micractinium pusillum</i>   | 81                                | -         | 145       |
| 20. <i>Scenedesmus quadricauda</i> | 16                                | 10        | 10        |
| 21. <i>Scenedesmus</i> sp.         | 8                                 | -         | -         |
| <b>Order Zygomatales</b>           |                                   |           |           |
| <b>Family Desmidiaceae</b>         |                                   |           |           |
| 22. <i>Closterium</i> sp.          | -                                 | 10        | -         |
| 23. <i>Staurastrum</i> sp.         | 8                                 | 10        | 10        |

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 12 พฤษภาคม 2569)  
(ต่อ)

| ชนิดแพลงก์ตอนพืช                   | ปริมาณแพลงก์ตอนพืช (หน่วยต่อลิตร) |           |           |
|------------------------------------|-----------------------------------|-----------|-----------|
|                                    | 2634678-1                         | 2634678-2 | 2634678-3 |
| <b>Class Euglenophyceae</b>        |                                   |           |           |
| <b>Order Euglenales</b>            |                                   |           |           |
| <b>Family Euglenaceae</b>          |                                   |           |           |
| 24. <i>Euglena acus</i>            | 8                                 | -         | 10        |
| 25. <i>Euglena oxyuris</i>         | -                                 | -         | 10        |
| 26. <i>Lepocinclis ovum</i>        | -                                 | 10        | -         |
| 27. <i>Phacus ranula</i>           | 8                                 | 10        | 29        |
| 28. <i>Trachelomonas crebea</i>    | 8                                 | 10        | -         |
| 29. <i>Trachelomonas hispida</i>   | -                                 | 10        | -         |
| <b>Division Chromophyta</b>        |                                   |           |           |
| <b>Class Bacillariophyceae</b>     |                                   |           |           |
| <b>Order Biddulphiales</b>         |                                   |           |           |
| <b>Suborder Coscinodiscineae</b>   |                                   |           |           |
| <b>Family Thalassiosiraceae</b>    |                                   |           |           |
| 30. <i>Cyclotella meneghiniana</i> | 531                               | 10        | 29        |
| <b>Family Aulacoseiraceae</b>      |                                   |           |           |
| 31. <i>Aulacoseira granulata</i>   | 20,214                            | 18,489    | 2,055     |
| <b>Order Bacillariales</b>         |                                   |           |           |
| <b>Suborder Fragilariineae</b>     |                                   |           |           |
| <b>Family Fragilariaceae</b>       |                                   |           |           |
| 32. <i>Synedra ulna</i>            | 97                                | -         | -         |
| <b>Suborder Bacillariineae</b>     |                                   |           |           |
| <b>Family Bacillariaceae</b>       |                                   |           |           |
| 33. <i>Nitzschia fruticosa</i>     | 8                                 | 19        | -         |
| 34. <i>Nitzschia lorenziana</i>    | 13,323                            | 12,835    | 15,083    |
| 35. <i>Nitzschia</i> sp.           | 8                                 | 19        | -         |

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 12 พฤษภาคม 2569)  
(ต่อ)

| ชนิดแพลงก์ตอนพืช                 | ปริมาณแพลงก์ตอนพืช (หน่วยต่อลิตร) |           |           |
|----------------------------------|-----------------------------------|-----------|-----------|
|                                  | 2634678-1                         | 2634678-2 | 2634678-3 |
| <b>Family Surirellaceae</b>      |                                   |           |           |
| 36. <i>Surirella elegans</i>     | -                                 | 10        | -         |
| 37. <i>Surirella ovata</i>       | 16                                | -         | -         |
| <b>Class Dinophyceae</b>         |                                   |           |           |
| <b>Order Gonyaulacales</b>       |                                   |           |           |
| <b>Family Ceratiaceae</b>        |                                   |           |           |
| 38. <i>Ceratium hirundinella</i> | 8                                 | -         | -         |
| <b>Order Peridiniales</b>        |                                   |           |           |
| <b>Family Peridiniaceae</b>      |                                   |           |           |
| 39. <i>Peridinium gatunense</i>  | 8                                 | -         | -         |
| 40. <i>Peridinium</i> sp.        | 523                               | 487       | 19        |
| ชนิดแพลงก์ตอนพืช                 | 30                                | 29        | 21        |
| ปริมาณแพลงก์ตอนพืช               | 40,766                            | 37,135    | 22,013    |
| ดัชนีความหลากหลายแพลงก์ตอนพืช    | 1.4017                            | 1.3371    | 1.2533    |
| ดัชนีความสม่ำเสมอแพลงก์ตอนพืช    | 0.4121                            | 0.3971    | 0.4117    |

Sample Location : 1. สถานี 2634678-1 : แม่น้ำเจ้าพระยาที่ 500 เมตรเหนือจุดสูบน้ำ-ระบายน้ำของ  
โครงการ  
2. สถานี 2634678-2 : แม่น้ำเจ้าพระยาริมบริเวณจุดสูบน้ำ-ระบายน้ำของโครงการ  
3. สถานี 2634678-3 : แม่น้ำเจ้าพระยาที่ 500 เมตรท้ายจุดสูบน้ำ-ระบายน้ำของ  
โครงการ

Condition of Sample : contained in one plastic bottle, sample containers comply to pretreatment-  
preservation standards (APHA, USEPA)

  
(นางสาวกนกวรรณ ขาวค้อน)  
ผู้วิเคราะห์

  
(นายอภิลักษณ์ อินทรชาติ)  
หัวหน้าสถานีวิจัยประมงศรีราชา



สถานีวิจัยประมงศรีราชา  
101/12 หมู่ 9 ต. บางพระ  
อ. ศรีราชา จ. ชลบุรี 20110  
โทร./โทรสาร. (038) 311379

Client : Gulf JP CRN Co., Ltd.

Address : 59/4 Moo 4 Chiang Rak Noi, Sam Khok, Pathumthani, Thailand, 12160

Project Name : Monitoring EIA

Project Location : GCRN

#### รายงานผลการวิเคราะห์แหล่งกักต่อนสัตว์

ตาราง ผลการวิเคราะห์แหล่งกักต่อนสัตว์ (เก็บตัวอย่างวันที่ 12 พฤษภาคม 2569)

| ชนิดแพลงก์ตอนสัตว์           | ปริมาณแพลงก์ตอนสัตว์ (หน่วยต่อลิตร) |           |           |
|------------------------------|-------------------------------------|-----------|-----------|
|                              | 2634678-1                           | 2634678-2 | 2634678-3 |
| Phylum Protozoa              |                                     |           |           |
| Subphylum Plasmodroma        |                                     |           |           |
| Class Sarcodina              |                                     |           |           |
| Subclass Rhizopoda           |                                     |           |           |
| Order Testacida              |                                     |           |           |
| Family Arcellidae            |                                     |           |           |
| 1. <i>Arcella</i> sp.        | -                                   | -         | 10        |
| 2. <i>Arcella vulgaris</i>   | -                                   | -         | 39        |
| Family Diffugiidae           |                                     |           |           |
| 3. <i>Diffugia acuminata</i> | 8                                   | -         | 19        |

ตาราง ผลการวิเคราะห์แหล่งกักต่อนสัตว์ (เก็บตัวอย่างวันที่ 12 พฤษภาคม 2569)

(ต่อ)

| ชนิดแพลงก์ตอนสัตว์                 | ปริมาณแพลงก์ตอนสัตว์ (หน่วยต่อลิตร) |           |           |
|------------------------------------|-------------------------------------|-----------|-----------|
|                                    | 2634678-1                           | 2634678-2 | 2634678-3 |
| Subphylum Ciliophora               |                                     |           |           |
| Class Ciliata                      |                                     |           |           |
| Subclass Holotricha                |                                     |           |           |
| Order Gymnostomatida               |                                     |           |           |
| 4. <i>Coleps</i> sp.               | 8                                   | 10        | -         |
| Subclass Spirotricha               |                                     |           |           |
| Order Tintinnida                   |                                     |           |           |
| Family Tintinnididae               |                                     |           |           |
| 5. <i>Tintinnidium</i> sp.         | 16                                  | 29        | -         |
| Family Codonellidae                |                                     |           |           |
| 6. <i>Tintinnopsis</i> sp.         | 32                                  | 67        | 58        |
| Phylum Rotifera                    |                                     |           |           |
| Class Monogononta                  |                                     |           |           |
| Order Ploima                       |                                     |           |           |
| Family Brachionidae                |                                     |           |           |
| 7. <i>Anuraeopsis fissa</i>        | -                                   | 10        | 10        |
| 8. <i>Brachionus falcatus</i>      | 8                                   | -         | -         |
| 9. <i>Brachionus havanaensis</i>   | 8                                   | 10        | -         |
| 10. <i>Keratella cochlearis</i>    | 24                                  | 10        | -         |
| 11. <i>Keratella valga</i>         | -                                   | 19        | -         |
| Family Lecanidae                   |                                     |           |           |
| 12. <i>Lecane papuana</i>          | 8                                   | -         | -         |
| Family Tricercidae                 |                                     |           |           |
| 13. <i>Trichocerca chattoni</i>    | -                                   | 10        | -         |
| 14. <i>Trichocerca</i> sp.         | 8                                   | -         | -         |
| Family Synchaetidae                |                                     |           |           |
| 15. <i>Polyarthra dolichoptera</i> | 32                                  | 38        | 48        |

ตาราง ผลการวิเคราะห์แพลงก์ตอนสัตว์ (เก็บตัวอย่างวันที่ 12 พฤษภาคม 2569)  
(ต่อ)

| ชนิดแพลงก์ตอนสัตว์                 | ปริมาณแพลงก์ตอนสัตว์ (หน่วยต่อลิตร) |           |           |
|------------------------------------|-------------------------------------|-----------|-----------|
|                                    | 2634678-1                           | 2634678-2 | 2634678-3 |
| 16. <i>Polyarthra vulgaris</i>     | 56                                  | 57        | -         |
| <b>Order Flosculariacea</b>        |                                     |           |           |
| <b>Family Testudinellidae</b>      |                                     |           |           |
| 17. <i>Filinia opoliensis</i>      | 16                                  | -         | -         |
| 18. <i>Filinia terminalis</i>      | -                                   | -         | 10        |
| <b>Family Hexarthridae</b>         |                                     |           |           |
| 19. <i>Hexarthra fennica</i>       | 8                                   | -         | -         |
| <b>Class Digononta</b>             |                                     |           |           |
| <b>Family Philodinidae</b>         |                                     |           |           |
| 20. <i>Philodina</i> sp.           | -                                   | 10        | -         |
| <b>Phylum Arthropoda</b>           |                                     |           |           |
| <b>Class Crustacea</b>             |                                     |           |           |
| <b>Subclass Branchiopoda</b>       |                                     |           |           |
| <b>Order Diplostraca</b>           |                                     |           |           |
| <b>Suborder Cladocera</b>          |                                     |           |           |
| <b>Family Daphnidae</b>            |                                     |           |           |
| 21. <i>Ceriodaphnia reticulata</i> | 8                                   | -         | -         |
| <b>Subclass Copepoda</b>           |                                     |           |           |
| 22. Copepod nauplius               | 89                                  | 48        | 145       |
| <b>Order Cyclopoida</b>            |                                     |           |           |
| 23. Cyclopoid copepod              | 16                                  | -         | -         |
| <b>Order Harpacticoida</b>         |                                     |           |           |
| 24. Harpacticoid copepod           | -                                   | -         | 10        |
| ชนิดแพลงก์ตอนสัตว์                 | 16                                  | 12        | 9         |
| ปริมาณแพลงก์ตอนสัตว์               | 345                                 | 318       | 349       |
| ดัชนีความหลากหลายแพลงก์ตอนสัตว์    | 2.3967                              | 2.2150    | 1.7465    |
| ดัชนีความสม่ำเสมอแพลงก์ตอนสัตว์    | 0.8644                              | 0.8914    | 0.7949    |

Sample Location : 1. สถานี 2634678-1 : แม่น้ำเจ้าพระยาที่ 500 เมตรเหนือจุดสูบน้ำของ  
โครงการ  
2. สถานี 2634678-2 : แม่น้ำเจ้าพระยาบริเวณจุดสูบน้ำของโครงการ  
3. สถานี 2634678-3 : แม่น้ำเจ้าพระยาที่ 500 เมตรท้ายจุดสูบน้ำของ  
โครงการ

Condition of Sample : contained in one plastic bottle, sample containers comply to pretreatment-  
preservation standards (APHA, USEPA)

  
 (นางสาวกนกวรรณ ขาวด่อน)  
 ผู้วิเคราะห์

  
 (นายอลงกต อินทรชาติ)  
 หัวหน้าสถานีวิจัยประมงศรีราชา



สถานีวิจัยประมงศรีราชา  
101/12 หมู่ 9 ต. บางพระ  
อ. ศรีราชา จ. ชลบุรี 20110  
โทร./โทรสาร. (038) 311379

Client : Gulf JP CRN Co., Ltd.

Address : 59/4 Moo 4 Chiang Rak Noi, Sam Khok, Pathumthani, Thailand, 12160

Project Name : Monitoring EIA

Project Location : GCRN

#### รายงานผลการวิเคราะห์ไข่น้ำปลาและลูกปลา

ตาราง ผลการวิเคราะห์ไข่น้ำปลาและลูกปลา (เก็บตัวอย่างวันที่ 12 พฤษภาคม 2569)

| ชนิดไข่น้ำปลาและลูกปลา                           | ปริมาณไข่น้ำปลาและลูกปลา<br>(ตัว/ฟอง 1,000 ลูกบาศก์เมตร) |           |           |
|--------------------------------------------------|----------------------------------------------------------|-----------|-----------|
|                                                  | 2634678-1                                                | 2634678-2 | 2634678-3 |
| Phylum Chordata                                  |                                                          |           |           |
| Subphylum Vertebrata                             |                                                          |           |           |
| Superclass Osteichthyes                          |                                                          |           |           |
| Class Actinopterygii                             |                                                          |           |           |
| Order Clupeiformes                               |                                                          |           |           |
| Family Clupeidae                                 |                                                          |           |           |
| <i>Clupeichthys aesarnensis</i> (ลูกปลาจิ๋วแก้ว) | 708                                                      | 285       | 329       |
| Order Perciformes                                |                                                          |           |           |
| Family Toxotidae                                 |                                                          |           |           |
| <i>Toxotes chatareus</i> (ลูกปลาเสือพ่นน้ำ)      | 32                                                       | 21        | 43        |
| ชนิดลูกปลา                                       | 2                                                        | 2         | 2         |
| ปริมาณลูกปลาทั้งหมด                              | 740                                                      | 306       | 372       |

ตาราง ผลการวิเคราะห์ไข่น้ำปลาและลูกปลา (เก็บตัวอย่างวันที่ 12 พฤษภาคม 2569)

(ต่อ)

| ชนิดไข่น้ำปลาและลูกปลา     | ปริมาณไข่น้ำปลาและลูกปลา<br>(ตัว/ฟอง 1,000 ลูกบาศก์เมตร) |           |           |
|----------------------------|----------------------------------------------------------|-----------|-----------|
|                            | 2634678-1                                                | 2634678-2 | 2634678-3 |
| ค่าดัชนีความหลากหลายลูกปลา | 0.1781                                                   | 0.2501    | 0.3580    |
| ปริมาณไข่น้ำปลา            | -                                                        | -         | -         |

Sample Location : 1. สถานี 2634678-1 : แม่น้ำเจ้าพระยาที่ 500 เมตร เหนือจุดสูบน้ำระบายน้ำของโครงการ

2. สถานี 2634678-2 : แม่น้ำเจ้าพระยาบริเวณจุดสูบน้ำระบายน้ำของโครงการ

3. สถานี 2634678-3 : แม่น้ำเจ้าพระยาที่ 500 เมตร ท้ายจุดสูบน้ำระบายน้ำของโครงการ

Condition of Sample : contained in one plastic bottle, add 10% formalin sample containers comply to pretreatment-preservation standards (APIA, USEPA)

(นางสาวกนกวรรณ ขาวด่อน)

ผู้วิเคราะห์

(นายอลงกต อินทรชาติ)

หัวหน้าสถานีวิจัยประมงศรีราชา



สถานีวิจัยประมงศรีราชา  
101/12 หมู่ 9 ต. บางพระ  
อ. ศรีราชา จ. ชลบุรี 20110  
โทร./โทรสาร. (038) 311379

Client : Gulf JP CRN Co., Ltd.

Address : 59/4 Moo 4 Chiang Rak Noi, Sam Khok, Pathumthani, Thailand, 12160

Project Name : Monitoring EIA

Project Location : GCRN

#### รายงานผลการวิเคราะห์สัตว์หน้าดิน

ตาราง ผลการวิเคราะห์สัตว์หน้าดิน (เก็บตัวอย่างวันที่ 12 พฤษภาคม 2569)

| สกุลสัตว์หน้าดิน                     | ปริมาณสัตว์หน้าดิน (ตัวต่อตารางเมตร) |           |           |
|--------------------------------------|--------------------------------------|-----------|-----------|
|                                      | 2634679-1                            | 2634679-2 | 2634679-3 |
| Phylum Annelida                      |                                      |           |           |
| Class Clitellata                     |                                      |           |           |
| Order Lumbriculida                   |                                      |           |           |
| Family Lumbriculidae                 |                                      |           |           |
| <i>Lumbriculus</i> sp. (ไส้เดือนน้ำ) | 89                                   | 89        | -         |
| Class Polychaeta                     |                                      |           |           |
| Order Capitellida                    |                                      |           |           |
| Family Capitellidae                  |                                      |           |           |
| <i>Heteromastus</i> sp. (โพลีคีต)    | -                                    | 30        | -         |
| Order Phyllodocida                   |                                      |           |           |
| Family Nephtyidae                    |                                      |           |           |
| <i>Nephtys</i> sp. (โพลีคีต)         | 178                                  | -         | -         |
| Family Nereididae                    |                                      |           |           |
| <i>Nereis</i> sp. (แม่เพรียง)        | -                                    | 15        | 15        |

ตาราง ผลการวิเคราะห์สัตว์หน้าดิน (เก็บตัวอย่างวันที่ 12 พฤษภาคม 2569) (ต่อ)

| สกุลสัตว์หน้าดิน                     | ปริมาณสัตว์หน้าดิน (ตัวต่อตารางเมตร) |           |           |
|--------------------------------------|--------------------------------------|-----------|-----------|
|                                      | 2634679-1                            | 2634679-2 | 2634679-3 |
| Phylum Arthropoda                    |                                      |           |           |
| Class Insecta                        |                                      |           |           |
| Order Diptera                        |                                      |           |           |
| Family Chironomidae                  |                                      |           |           |
| <i>Chironomus</i> sp. (หนอนแดง)      | -                                    | -         | 15        |
| Class Malacostraca                   |                                      |           |           |
| Order Decapoda                       |                                      |           |           |
| Family Hymenosomatidae               |                                      |           |           |
| <i>Limnopolis</i> sp. (ปูแมงมุมทะเล) | -                                    | -         | 30        |
| สกุลสัตว์หน้าดิน                     | 2                                    | 3         | 3         |
| ปริมาณสัตว์หน้าดิน                   | 267                                  | 134       | 60        |
| ค่าดัชนีความหลากหลายสัตว์หน้าดิน     | 0.6365                               | 0.8520    | 1.0397    |

Sample Location : 1. สถานี 2634679-1 : แม่น้ำเจ้าพระยาที่ 500 เมตร เหนือจุดสูบน้ำของโครงการ  
2. สถานี 2634679-2 : แม่น้ำเจ้าพระยาบริเวณจุดสูบน้ำของโครงการ  
3. สถานี 2634679-3 : แม่น้ำเจ้าพระยาที่ 500 เมตร ท้ายจุดสูบน้ำของโครงการ

Condition of Sample : contained in one plastic zip bag

(นายอรรถวุฒิ กันทะวงศ์)  
ผู้วิเคราะห์

(นายอลงกต อินทรชาติ)  
หัวหน้าสถานีวิจัยประมงศรีราชา



สถานีวิจัยประมงศรีราชา  
101/12 หมู่ 9 ต. บางพระ  
อ. ศรีราชา จ. ชลบุรี 20110  
โทร./โทรสาร. (038) 311379

Client : Gulf JP CRN Co., Ltd.

Address : 59/4 Moo 4 Chiang Rak Noi, Sam Khok, Pathumthani, Thailand, 12160

Project Name : Monitoring EIA

Project Location : GCRN

#### รายงานผลการวิเคราะห์สัตว์หน้าดิน

ตาราง ผลการวิเคราะห์สัตว์หน้าดิน (เก็บตัวอย่างวันที่ 12 พฤษภาคม 2569)

| สกุลสัตว์หน้าดิน                     | ปริมาณสัตว์หน้าดิน (ตัวต่อตารางเมตร) |           |           |
|--------------------------------------|--------------------------------------|-----------|-----------|
|                                      | 2634679-1                            | 2634679-2 | 2634679-3 |
| Phylum Annelida                      |                                      |           |           |
| Class Clitellata                     |                                      |           |           |
| Order Lumbriculida                   |                                      |           |           |
| Family Lumbriculidae                 |                                      |           |           |
| <i>Lumbriculus</i> sp. (ไส้เดือนน้ำ) | 89                                   | 89        | -         |
| Class Polychaeta                     |                                      |           |           |
| Order Capitellida                    |                                      |           |           |
| Family Capitellidae                  |                                      |           |           |
| <i>Heteromastus</i> sp. (โพลีคีต)    | -                                    | 30        | -         |
| Order Phyllodocida                   |                                      |           |           |
| Family Nephtyidae                    |                                      |           |           |
| <i>Nephtys</i> sp. (โพลีคีต)         | 178                                  | -         | -         |
| Family Nereididae                    |                                      |           |           |
| <i>Nereis</i> sp. (แม่เพรียง)        | -                                    | 15        | 15        |

ตาราง ผลการวิเคราะห์สัตว์หน้าดิน (เก็บตัวอย่างวันที่ 12 พฤษภาคม 2569) (ต่อ)

| สกุลสัตว์หน้าดิน                     | ปริมาณสัตว์หน้าดิน (ตัวต่อตารางเมตร) |           |           |
|--------------------------------------|--------------------------------------|-----------|-----------|
|                                      | 2634679-1                            | 2634679-2 | 2634679-3 |
| Phylum Arthropoda                    |                                      |           |           |
| Class Insecta                        |                                      |           |           |
| Order Diptera                        |                                      |           |           |
| Family Chironomidae                  |                                      |           |           |
| <i>Chironomus</i> sp. (หนอนแดง)      | -                                    | -         | 15        |
| Class Malacostraca                   |                                      |           |           |
| Order Decapoda                       |                                      |           |           |
| Family Hymenosomatidae               |                                      |           |           |
| <i>Limnopolis</i> sp. (ปูแมงมุมทะเล) | -                                    | -         | 30        |
| สกุลสัตว์หน้าดิน                     | 2                                    | 3         | 3         |
| ปริมาณสัตว์หน้าดิน                   | 267                                  | 134       | 60        |
| ค่าดัชนีความหลากหลายสัตว์หน้าดิน     | 0.6365                               | 0.8520    | 1.0397    |

Sample Location : 1. สถานี 2634679-1 : แม่น้ำเจ้าพระยาที่ 500 เมตร เหนือจุดสูบน้ำของโครงการ  
2. สถานี 2634679-2 : แม่น้ำเจ้าพระยาบริเวณจุดสูบน้ำของโครงการ  
3. สถานี 2634679-3 : แม่น้ำเจ้าพระยาที่ 500 เมตร ท้ายจุดสูบน้ำของโครงการ

Condition of Sample : contained in one plastic zip bag

นายอรุณ คุ้มวงศ์  
(นายอรุณ คุ้มวงศ์)  
ผู้วิเคราะห์

นายอลงกต อินทรชาติ  
(นายอลงกต อินทรชาติ)  
หัวหน้าสถานีวิจัยประมงศรีราชา

## ภาคผนวก ง-8

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ระดับเสียงเฉลี่ยตลอดเวลาการทำงาน (TWA)



## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160  
**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN

**Lot ID: 2624533**  
Date Received : Apr 25, 2026  
Date Reported : Apr 28, 2026  
Report Number : 3531503-1

Page 1 of 3

**Sample Number** 2624533-1  
**Sampled Date** Apr 24, 2026  
**Sample Description** Noise Dose  
**Location** วิทยาลัยการอาชีพ Maintenance 1  
**Personal Sampling** ชุดตรวจวัดระดับเสียง  
**Date Analysis Commenced** Apr 27, 2026

| Analyte             | Sampled Date/time   | Unit  | LOD | LOQ (LOR) | Result | Guideline Limit | Method                                                   | Guideline | Testing Location |
|---------------------|---------------------|-------|-----|-----------|--------|-----------------|----------------------------------------------------------|-----------|------------------|
| <b>Air Testing</b>  |                     |       |     |           |        |                 |                                                          |           |                  |
| Noise Dose (8 hrs.) | 07:55 AM - 03:55 PM | %     | -   | 1         | 19.0   | No Standard     | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |
| TWA (8 hrs.)        | 07:55 AM - 03:55 PM | dB(A) | -   | -         | 77.8   | 85              | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |

### Guideline :

MOL : 1. Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)  
2. Notification of Department of Labour Protection and Welfare on the Standard of Time Weighted Average (TWA) Noise Level (B.E. 2561)

**Sampled By :** Phongsin Somkaew

### Remark :

- LOD : Limit of Detection
- \*c\* : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

*Wichan Choonharat*

Wichan Choonharat  
Assistant Manager

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160  
**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN

**Lot ID: 2624533**  
Date Received : Apr 25, 2026  
Date Reported : Apr 28, 2026  
Report Number : 3531503-1

Page 2 of 3

**Sample Number** 2624533-2  
**Sampled Date** Apr 24, 2026  
**Sample Description** Noise Dose  
**Location** วิทยาลัยการอาชีพ Maintenance 2  
**Personal Sampling** ชุดตรวจวัดระดับเสียง  
**Date Analysis Commenced** Apr 27, 2026

| Analyte             | Sampled Date/time   | Unit  | LOD | LOQ (LOR) | Result | Guideline Limit | Method                                                   | Guideline | Testing Location |
|---------------------|---------------------|-------|-----|-----------|--------|-----------------|----------------------------------------------------------|-----------|------------------|
| <b>Air Testing</b>  |                     |       |     |           |        |                 |                                                          |           |                  |
| Noise Dose (8 hrs.) | 08:01 AM - 04:01 PM | %     | -   | 1         | <1     | No Standard     | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |
| TWA (8 hrs.)        | 08:01 AM - 04:01 PM | dB(A) | -   | -         | 61.7   | 85              | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |

### Guideline :

MOL : 1. Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)  
2. Notification of Department of Labour Protection and Welfare on the Standard of Time Weighted Average (TWA) Noise Level (B.E. 2561)

**Sampled By :** Phongsin Somkaew

### Remark :

- LOD : Limit of Detection
- \*c\* : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

*Wichan Choonharat*

Wichan Choonharat  
Assistant Manager

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160  
**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN

**Lot ID: 2624533**  
Date Received : Apr 25, 2026  
Date Reported : Apr 28, 2026  
Report Number : 3531503-1

Page 3 of 3

**Sample Number** 2624533-3  
**Sampled Date** Apr 24, 2026  
**Sample Description** Noise Dose  
**Location** พนักงาน Maintenance 3  
**Personal Sampling** คุณชายณรงค์ สอนจันทร์  
**Date Analysis Commenced** Apr 27, 2026

| Analyte             | Sampled Date/time   | Unit  | LOD | LOQ (LOR) | Result | Guideline Limit | Method                                                   | Guideline | Testing Location |
|---------------------|---------------------|-------|-----|-----------|--------|-----------------|----------------------------------------------------------|-----------|------------------|
| <b>Air Testing</b>  |                     |       |     |           |        |                 |                                                          |           |                  |
| Noise Dose (8 hrs.) | 08:02 AM - 04:02 PM | %     | -   | 1         | <1     | No Standard     | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |
| TWA (8 hrs.)        | 08:02 AM - 04:02 PM | dB(A) | -   | -         | 64.6   | 85              | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |

### Guideline :

MOL : 1. Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)  
2. Notification of Department of Labour Protection and Welfare on the Standard of Time Weighted Average (TWA) Noise Level (B.E. 2561)

**Sampled By :** Phongsiri Somkaew

### Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

*Wichan Chonharat*

Wichan Chonharat  
Assistant Manager

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160  
**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN

**Lot ID: 2624537**  
Date Received : Apr 25, 2026  
Date Reported : Apr 28, 2026  
Report Number : 3531511-1

Page 1 of 2

**Sample Number** 2624537-1  
**Sampled Date** Apr 24, 2026  
**Sample Description** Noise Dose  
**Location** พนักงาน Operation 1  
**Personal Sampling** คุณณัฏฐพร รอดจันทร์  
**Date Analysis Commenced** Apr 27, 2026

| Analyte                                        | Sampled Date/time   | Unit  | LOD | LOQ (LOR) | Result | Guideline Limit | Method                                                   | Guideline | Testing Location |
|------------------------------------------------|---------------------|-------|-----|-----------|--------|-----------------|----------------------------------------------------------|-----------|------------------|
| <b>Air Testing</b>                             |                     |       |     |           |        |                 |                                                          |           |                  |
| Noise Dose (12 hrs.)<br>(Calculated from Lavg) | 07:04 AM - 07:04 PM | %     | -   | -         | 26.9   | No Standard     | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |
| Noise Dose (8 hrs.)                            | 07:04 AM - 07:04 PM | %     | -   | 1         | 25.7   | No Standard     | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |
| TWA (12 hrs.)<br>(Calculated from Lavg)        | 07:04 AM - 07:04 PM | dB(A) | -   | -         | 77.3   | 83*             | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |
| TWA (8 hrs.)                                   | 07:04 AM - 07:04 PM | dB(A) | -   | -         | 79.1   | 85              | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |

### Guideline :

MOL : 1. Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)  
2. Notification of Department of Labour Protection and Welfare on the Standard of Time Weighted Average (TWA) Noise Level (B.E. 2561)  
\* MOL: Recommended guideline limit for 12 working hours should not be over 83 dB(A)

**Sampled By :** Phongsiri Somkaew

### Remark :

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- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

*Wichan Chonharat*

Wichan Chonharat  
Assistant Manager

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160  
**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN

**Lot ID: 2624537**  
Date Received : Apr 25, 2026  
Date Reported : Apr 28, 2026  
Report Number : 3531511-1

Page 2 of 2

| <b>Sample Number</b>                           | 2624537-2              |       |     |           |        |                 |                                                          |           |                  |  |
|------------------------------------------------|------------------------|-------|-----|-----------|--------|-----------------|----------------------------------------------------------|-----------|------------------|--|
| <b>Sampled Date</b>                            | Apr 24, 2026           |       |     |           |        |                 |                                                          |           |                  |  |
| <b>Sample Description</b>                      | Noise Dose             |       |     |           |        |                 |                                                          |           |                  |  |
| <b>Location</b>                                | พื้นที่งาน Operation 2 |       |     |           |        |                 |                                                          |           |                  |  |
| <b>Personal Sampling</b>                       | บุคลากรในพื้นที่       |       |     |           |        |                 |                                                          |           |                  |  |
| <b>Date Analysis Commenced</b>                 | Apr 27, 2026           |       |     |           |        |                 |                                                          |           |                  |  |
| Analyte                                        | Sampled Date/time      | Unit  | LOD | LOQ (LOR) | Result | Guideline Limit | Method                                                   | Guideline | Testing Location |  |
| <b>Air Testing</b>                             |                        |       |     |           |        |                 |                                                          |           |                  |  |
| Noise Dose (12 hrs.)<br>(Calculated from Lavg) | 07:03 AM - 07:03 PM    | %     | -   | -         | 19.0   | No Standard     | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |  |
| Noise Dose (8 hrs.)                            | 07:03 AM - 07:03 PM    | %     | -   | 1         | 18.2   | No Standard     | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |  |
| TWA (12 hrs.)<br>(Calculated from Lavg)        | 07:03 AM - 07:03 PM    | dB(A) | -   | -         | 75.8   | 83*             | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |  |
| TWA (8 hrs.)                                   | 07:03 AM - 07:03 PM    | dB(A) | -   | -         | 77.6   | 85              | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |  |

### Guideline :

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2. Notification of Department of Labour Protection and Welfare on the Standard of Time Weighted Average (TWA) Noise Level (B.E. 2561)  
\* MOL: Recommended guideline limit for 12 working hours should not be over 83 dB(A)

**Sampled By :** Phongsiri Somkaew

### Remark :

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- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

*Wichan Choonharat*

Wichan Choonharat  
Assistant Manager

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**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN

**Lot ID: 2610257**  
Date Received : Feb 11, 2026  
Date Reported : Feb 13, 2026  
Report Number : 3499584-1

Page 1 of 3

| <b>Sample Number</b>           | 2610257-1             |       |     |           |        |                 |                                                          |           |                  |  |
|--------------------------------|-----------------------|-------|-----|-----------|--------|-----------------|----------------------------------------------------------|-----------|------------------|--|
| <b>Sampled Date</b>            | Feb 10, 2026          |       |     |           |        |                 |                                                          |           |                  |  |
| <b>Sample Description</b>      | Noise Dose            |       |     |           |        |                 |                                                          |           |                  |  |
| <b>Location</b>                | พนักงาน Maintenance 1 |       |     |           |        |                 |                                                          |           |                  |  |
| <b>Personal Sampling</b>       | บุคลากรในพื้นที่      |       |     |           |        |                 |                                                          |           |                  |  |
| <b>Date Analysis Commenced</b> | Feb 12, 2026          |       |     |           |        |                 |                                                          |           |                  |  |
| Analyte                        | Sampled Date/time     | Unit  | LOD | LOQ (LOR) | Result | Guideline Limit | Method                                                   | Guideline | Testing Location |  |
| <b>Air Testing</b>             |                       |       |     |           |        |                 |                                                          |           |                  |  |
| Noise Dose (8 hrs.)            | 08:00 AM - 04:00 PM   | %     | -   | 1         | 17.8   | No Standard     | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |  |
| TWA (8 hrs.)                   | 08:00 AM - 04:00 PM   | dB(A) | -   | -         | 77.5   | 85              | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |  |

### Guideline :

MOL : 1. Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)  
2. Notification of Department of Labour Protection and Welfare on the Standard of Time Weighted Average (TWA) Noise Level (B.E. 2561)

**Sampled By :** Phitsanupong Chaiya

### Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

*Wichan Choonharat*

Wichan Choonharat  
Assistant Manager

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160  
**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN

**Lot ID: 2610257**  
Date Received : Feb 11, 2026  
Date Reported : Feb 13, 2026  
Report Number : 3499584-1

Page 2 of 3

**Sample Number** 2610257-2  
**Sampled Date** Feb 10, 2026  
**Sample Description** Noise Dose  
**Location** พนักงาน Maintenance 2  
**Personal Sampling** กุณพิสุทธิ์ ศรรนสุก  
**Date Analysis Commenced** Feb 12, 2026

| Analyte             | Sampled Date/time   | Unit  | LOD | LOQ (LOR) | Result | Guideline Limit | Method                                                   | Guideline | Testing Location |
|---------------------|---------------------|-------|-----|-----------|--------|-----------------|----------------------------------------------------------|-----------|------------------|
| <b>Air Testing</b>  |                     |       |     |           |        |                 |                                                          |           |                  |
| Noise Dose (8 hrs.) | 08:01 AM - 04:01 PM | %     | -   | 1         | <1     | No Standard     | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |
| TWA (8 hrs.)        | 08:01 AM - 04:01 PM | dB(A) | -   | -         | 61.9   | 85              | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |

### Guideline :

MOL : 1. Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)  
2. Notification of Department of Labour Protection and Welfare on the Standard of Time Weighted Average (TWA) Noise Level (B.E. 2561)

**Sampled By :** Phitsanupong Chaiya

### Remark :

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Approved by

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59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160  
**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN

**Lot ID: 2610257**  
Date Received : Feb 11, 2026  
Date Reported : Feb 13, 2026  
Report Number : 3499584-1

Page 3 of 3

**Sample Number** 2610257-3  
**Sampled Date** Feb 10, 2026  
**Sample Description** Noise Dose  
**Location** พนักงาน Maintenance 3  
**Personal Sampling** กุณพิสุทธิ์ ศรรนสุก  
**Date Analysis Commenced** Feb 12, 2026

| Analyte             | Sampled Date/time   | Unit  | LOD | LOQ (LOR) | Result | Guideline Limit | Method                                                   | Guideline | Testing Location |
|---------------------|---------------------|-------|-----|-----------|--------|-----------------|----------------------------------------------------------|-----------|------------------|
| <b>Air Testing</b>  |                     |       |     |           |        |                 |                                                          |           |                  |
| Noise Dose (8 hrs.) | 08:00 AM - 04:00 PM | %     | -   | 1         | <1     | No Standard     | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |
| TWA (8 hrs.)        | 08:00 AM - 04:00 PM | dB(A) | -   | -         | 61.9   | 85              | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |

### Guideline :

MOL : 1. Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)  
2. Notification of Department of Labour Protection and Welfare on the Standard of Time Weighted Average (TWA) Noise Level (B.E. 2561)

**Sampled By :** Phitsanupong Chaiya

### Remark :

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Approved by

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**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN

**Lot ID: 2610260**  
Date Received : Feb 11, 2026  
Date Reported : Feb 13, 2026  
Report Number : 3499587-1

Page 1 of 2

**Sample Number** 2610260-1  
**Sampled Date** Feb 10, 2026  
**Sample Description** Noise Dose  
**Location** พนักงาน Operation 1  
**Personal Sampling** ทัศนวิสัย ร่มเงา  
**Date Analysis Commenced** Feb 12, 2026

| Analyte                                        | Sampled Date/time   | Unit  | LOD | LOQ (LOR) | Result | Guideline Limit | Method                                                   | Guideline | Testing Location |
|------------------------------------------------|---------------------|-------|-----|-----------|--------|-----------------|----------------------------------------------------------|-----------|------------------|
| <b>Air Testing</b>                             |                     |       |     |           |        |                 |                                                          |           |                  |
| Noise Dose (12 hrs.)<br>(Calculated from Lavg) | 07:02 AM - 07:02 PM | %     | -   | -         | 5.6    | No Standard     | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |
| Noise Dose (8 hrs.)                            | 07:02 AM - 07:02 PM | %     | -   | 1         | 5.4    | No Standard     | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |
| TWA (12 hrs.)<br>(Calculated from Lavg)        | 07:02 AM - 07:02 PM | dB(A) | -   | -         | 70.5   | 83*             | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |
| TWA (8 hrs.)                                   | 07:02 AM - 07:02 PM | dB(A) | -   | -         | 72.3   | 85              | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |

### Guideline :

- MOL : 1. Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)  
2. Notification of Department of Labour Protection and Welfare on the Standard of Time Weighted Average (TWA) Noise Level (B.E. 2561)  
\* MOL: Recommended guideline limit for 12 working hours should not be over 83 dB(A)

**Sampled By :** Phitsanupong Chaiya

### Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

*Wichan Choonharat*

Wichan Choonharat  
Assistant Manager

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## Analysis / Test Report

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59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160  
**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN

**Lot ID: 2610260**  
Date Received : Feb 11, 2026  
Date Reported : Feb 13, 2026  
Report Number : 3499587-1

Page 2 of 2

**Sample Number** 2610260-2  
**Sampled Date** Feb 10, 2026  
**Sample Description** Noise Dose  
**Location** พนักงาน Operation 2  
**Personal Sampling** ทัศนวิสัย ร่มเงา  
**Date Analysis Commenced** Feb 12, 2026

| Analyte                                        | Sampled Date/time   | Unit  | LOD | LOQ (LOR) | Result | Guideline Limit | Method                                                   | Guideline | Testing Location |
|------------------------------------------------|---------------------|-------|-----|-----------|--------|-----------------|----------------------------------------------------------|-----------|------------------|
| <b>Air Testing</b>                             |                     |       |     |           |        |                 |                                                          |           |                  |
| Noise Dose (12 hrs.)<br>(Calculated from Lavg) | 07:02 AM - 07:02 PM | %     | -   | -         | 10.5   | No Standard     | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |
| Noise Dose (8 hrs.)                            | 07:02 AM - 07:02 PM | %     | -   | 1         | 9.8    | No Standard     | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |
| TWA (12 hrs.)<br>(Calculated from Lavg)        | 07:02 AM - 07:02 PM | dB(A) | -   | -         | 73.2   | 83*             | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |
| TWA (8 hrs.)                                   | 07:02 AM - 07:02 PM | dB(A) | -   | -         | 74.9   | 85              | MOL, Department Labour Protection and Welfare (B.E.2561) | MOL       | Bangkok          |

### Guideline :

- MOL : 1. Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)  
2. Notification of Department of Labour Protection and Welfare on the Standard of Time Weighted Average (TWA) Noise Level (B.E. 2561)  
\* MOL: Recommended guideline limit for 12 working hours should not be over 83 dB(A)

**Sampled By :** Phitsanupong Chaiya

### Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

*Wichan Choonharat*

Wichan Choonharat  
Assistant Manager

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# ภาคผนวก ง-9

---

ระดับความร้อนในบริเวณการทำงาน



## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2610267

Date Received : Feb 11, 2026

Date Reported : Feb 13, 2026

Report Number: 3499600-1

Page 1 of 7

Sample Number 2610267-1  
Parameter Heat Stress (Sampling Time : 10.00 AM - 12.00 PM)  
Measurement Date Feb 10, 2026  
Measurement by Phitsanupong Chalya  
Location ปล่อยปลิงงาน 1 พื้นที่ (ปล่อย-นามสกุล ปล่อยปลิงงาน : - นาม : -)

| Location                      | Duration (min) | WBGT (°C) | NWB (°C) | GT (°C) | DB (°C) |
|-------------------------------|----------------|-----------|----------|---------|---------|
| บริเวณ Condenser Exhaust Unit | 120            | 27.9      | 24.8     | 35.1    | 35.0    |
| Average (WBGT)                |                | 27.9      |          |         |         |
| Guideline WBGT (°C)           |                | 34.0      |          |         |         |

Reference Method : Wet Bulb Globe Temperature

### Guideline:

- Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)
- Ministerial Regulation on Prescribing of Standard for Administration and Management of Occupational Safety, Health and Environment in relation to Heat, Light and Noise, B.E.2559

Technical Management

Supot Salamteh  
Section Head

Approved by

Wichan Choonharat  
Assistant Manager

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2610267

Date Received : Feb 11, 2026

Date Reported : Feb 13, 2026

Report Number: 3499600-1

Page 2 of 7

Sample Number 2610267-2  
Parameter Heat Stress (Sampling Time : 10.00 AM - 12.00 PM)  
Measurement Date Feb 10, 2026  
Measurement by Phitsanupong Chalya  
Location ปล่อยปลิงงาน 1 พื้นที่ (ปล่อย-นามสกุล ปล่อยปลิงงาน : - นาม : -)

| Location                | Duration (min) | WBGT (°C) | NWB (°C) | GT (°C) | DB (°C) |
|-------------------------|----------------|-----------|----------|---------|---------|
| บริเวณท่อส่งน้ำจืดที่ 1 | 120            | 26.6      | 23.3     | 34.4    | 33.7    |
| Average (WBGT)          |                | 26.6      |          |         |         |
| Guideline WBGT (°C)     |                | 34.0      |          |         |         |

Reference Method : Wet Bulb Globe Temperature

### Guideline:

- Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)
- Ministerial Regulation on Prescribing of Standard for Administration and Management of Occupational Safety, Health and Environment in relation to Heat, Light and Noise, B.E.2559

Technical Management

Supot Salamteh  
Section Head

Approved by

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2610267

Date Received : Feb 11, 2026

Date Reported : Feb 13, 2026

Report Number: 3499600-1

Page 5 of 7

Sample Number 2610267-5  
Parameter Heat Stress (Sampling Time : 10.00 AM - 12.00 PM)  
Measurement Date Feb 10, 2026  
Measurement by Phitsanupong Chalya  
Location ปล่อยปลิงงาน 1 พื้นที่ (ปล่อย-นามสกุล ปล่อยปลิงงาน : - นาม : -)

| Location            | Duration (min) | WBGT (°C) | NWB (°C) | GT (°C) | DB (°C) |
|---------------------|----------------|-----------|----------|---------|---------|
| ปล่อยปลิง Generator | 120            | 31.6      | 27.4     | 41.3    | 41.1    |
| Average (WBGT)      |                | 31.6      |          |         |         |
| Guideline WBGT (°C) |                | 34.0      |          |         |         |

Reference Method : Wet Bulb Globe Temperature

### Guideline:

1. Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)
2. Ministerial Regulation on Prescribing of Standard for Administration and Management of Occupational Safety, Health and Environment in relation to Heat, Light and Noise, B.E.2559

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2610267

Date Received : Feb 11, 2026

Date Reported : Feb 13, 2026

Report Number: 3499600-1

Page 6 of 7

Sample Number 2610267-6  
Parameter Heat Stress (Sampling Time : 10.00 AM - 12.00 PM)  
Measurement Date Feb 10, 2026  
Measurement by Phitsanupong Chalya  
Location ปล่อยปลิงงาน 1 พื้นที่ (ปล่อย-นามสกุล ปล่อยปลิงงาน : - นาม : -)

| Location                       | Duration (min) | WBGT (°C) | NWB (°C) | GT (°C) | DB (°C) |
|--------------------------------|----------------|-----------|----------|---------|---------|
| ปล่อยปลิง Combustion Turbine 1 | 120            | 26.7      | 23.4     | 34.6    | 34.4    |
| Average (WBGT)                 |                | 26.7      |          |         |         |
| Guideline WBGT (°C)            |                | 34.0      |          |         |         |

Reference Method : Wet Bulb Globe Temperature

### Guideline:

1. Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)
2. Ministerial Regulation on Prescribing of Standard for Administration and Management of Occupational Safety, Health and Environment in relation to Heat, Light and Noise, B.E.2559

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## Analysis / Test Report

**Client:** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN

**Lot ID: 2624542**  
**Date Received :** Apr 25, 2026  
**Date Reported :** Apr 28, 2026  
**Report Number:** 3531514-1

Page 1 of 7

**Sample Number** 2624542-1  
**Parameter** Heat Stress (Sampling Time : 10.00 AM - 12.00 PM)  
**Measurement Date** Apr 24, 2026  
**Measurement by** Phongsiri Somkaew  
**Location** ปลูกฝังงาน 1 พื้นที่ (ชื่อ-นามสกุล ปลูกฝังงาน : - แผนก : -)

| Location                      | Duration (min) | WBGT (°C) | NWB (°C) | GT (°C) | DB (°C) |
|-------------------------------|----------------|-----------|----------|---------|---------|
| บริเวณ Condenser Exhaust Unit | 120            | 30.8      | 27.5     | 38.5    | 38.0    |
| Average (WBGT)                |                | 30.8      |          |         |         |
| Guideline WBGT (°C)           |                | 34.0      |          |         |         |

**Reference Method :** Wet Bulb Globe Temperature

### Guideline:

- Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)
- Ministerial Regulation on Prescribing of Standard for Administration and Management of Occupational Safety, Health and Environment in relation to Heat, Light and Noise, B.E.2559

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## Analysis / Test Report

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59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location :** GCRN

**Lot ID: 2624542**  
**Date Received :** Apr 25, 2026  
**Date Reported :** Apr 28, 2026  
**Report Number:** 3531514-1

Page 2 of 7

**Sample Number** 2624542-2  
**Parameter** Heat Stress (Sampling Time : 01.00 PM - 03.00 PM)  
**Measurement Date** Apr 24, 2026  
**Measurement by** Phongsiri Somkaew  
**Location** ปลูกฝังงาน 1 พื้นที่ (ชื่อ-นามสกุล ปลูกฝังงาน : - แผนก : -)

| Location                 | Duration (min) | WBGT (°C) | NWB (°C) | GT (°C) | DB (°C) |
|--------------------------|----------------|-----------|----------|---------|---------|
| บริเวณห้องเครื่องไอน้ำ 1 | 120            | 31.0      | 27.9     | 38.9    | 37.3    |
| Average (WBGT)           |                | 31.0      |          |         |         |
| Guideline WBGT (°C)      |                | 34.0      |          |         |         |

**Reference Method :** Wet Bulb Globe Temperature

### Guideline:

- Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)
- Ministerial Regulation on Prescribing of Standard for Administration and Management of Occupational Safety, Health and Environment in relation to Heat, Light and Noise, B.E.2559

Technical Management

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## Analysis / Test Report

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59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2624542

Date Received : Apr 25, 2026

Date Reported : Apr 28, 2026

Report Number: 3531514-1

Page 5 of 7

Sample Number 2624542-5  
Parameter Heat Stress (Sampling Time : 10.00 AM - 12.00 PM)  
Measurement Date Apr 24, 2026  
Measurement by Phongsiri Somkaew  
Location ปลั๊กบัสงาน 1 พื้นที่ (ห้อง-นารวมสกุด ฝั่งปลั๊กบัสงาน : - แผนก : -)

| Location            | Duration (min) | WBGT (°C) | NWB (°C) | GT (°C) | DB (°C) |
|---------------------|----------------|-----------|----------|---------|---------|
| บริเวณ Generator    | 120            | 33.0      | 29.5     | 41.0    | 40.0    |
| Average (WBGT)      |                | 33.0      |          |         |         |
| Guideline WBGT (°C) |                | 34.0      |          |         |         |

Reference Method : Wet Bulb Globe Temperature

### Guideline:

- Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)
- Ministerial Regulation on Prescribing of Standard for Administration and Management of Occupational Safety, Health and Environment in relation to Heat, Light and Noise, B.E.2559

Technical Management

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## Analysis / Test Report

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59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location : GCRN

Lot ID: 2624542

Date Received : Apr 25, 2026

Date Reported : Apr 28, 2026

Report Number: 3531514-1

Page 6 of 7

Sample Number 2624542-6  
Parameter Heat Stress (Sampling Time : 01.00 PM - 03.00 PM)  
Measurement Date Apr 24, 2026  
Measurement by Phongsiri Somkaew  
Location ปลั๊กบัสงาน 1 พื้นที่ (ห้อง-นารวมสกุด ฝั่งปลั๊กบัสงาน : - แผนก : -)

| Location                    | Duration (min) | WBGT (°C) | NWB (°C) | GT (°C) | DB (°C) |
|-----------------------------|----------------|-----------|----------|---------|---------|
| บริเวณ Combustion Turbine 1 | 120            | 31.1      | 27.8     | 39.9    | 37.0    |
| Average (WBGT)              |                | 31.1      |          |         |         |
| Guideline WBGT (°C)         |                | 34.0      |          |         |         |

Reference Method : Wet Bulb Globe Temperature

### Guideline:

- Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)
- Ministerial Regulation on Prescribing of Standard for Administration and Management of Occupational Safety, Health and Environment in relation to Heat, Light and Noise, B.E.2559

Technical Management

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# ภาคผนวก ง-10

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ระดับความเข้มของแสงในบริเวณการทำงาน



## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA

**Project Location:** GCRN

**Lot ID: 2610269 (1)**

Date Received : Feb 12, 2026  
Date Reported : Feb 12, 2026  
Report Number: 2610269 (1)-1

Page 1 of 2

| Lay out No. | Location                                | Reference Number | Date      | Time     | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|-------------|-----------------------------------------|------------------|-----------|----------|-----|-------------------|---------|-----------------|---------|---------|
|             |                                         |                  |           |          |     | Spot              | Average | Spot/Min        | Average |         |
| 1           | Area : Administration : Copy Room       | 2610269 (1)-1    | 10-Feb-26 | Day time | 1   | 1,230             | 936     | 150             | 300     | Pass    |
|             |                                         | 2610269 (1)-2    | 10-Feb-26 | Day time | 2   | 641               |         |                 |         |         |
| 2           | Area : Administration : Corridor        | 2610269 (1)-3    | 10-Feb-26 | Day time | 1   | 355               | 368     | 50              | 100     | Pass    |
|             |                                         | 2610269 (1)-4    | 10-Feb-26 | Day time | 2   | 354               |         |                 |         |         |
|             |                                         | 2610269 (1)-5    | 10-Feb-26 | Day time | 3   | 235               |         |                 |         |         |
|             |                                         | 2610269 (1)-6    | 10-Feb-26 | Day time | 4   | 366               |         |                 |         |         |
|             |                                         | 2610269 (1)-7    | 10-Feb-26 | Day time | 5   | 364               |         |                 |         |         |
|             |                                         | 2610269 (1)-8    | 10-Feb-26 | Day time | 6   | 362               |         |                 |         |         |
|             |                                         | 2610269 (1)-9    | 10-Feb-26 | Day time | 7   | 228               |         |                 |         |         |
|             |                                         | 2610269 (1)-10   | 10-Feb-26 | Day time | 8   | 425               |         |                 |         |         |
|             |                                         | 2610269 (1)-11   | 10-Feb-26 | Day time | 9   | 387               |         |                 |         |         |
|             |                                         | 2610269 (1)-12   | 10-Feb-26 | Day time | 10  | 600               |         |                 |         |         |
| 3           | Area : Administration : Document Room   | 2610269 (1)-13   | 10-Feb-26 | Day time | 1   | 614               | 666     | 150             | 300     | Pass    |
|             |                                         | 2610269 (1)-14   | 10-Feb-26 | Day time | 2   | 719               |         |                 |         |         |
| 4           | Area : Administration : Electrical Room | 2610269 (1)-15   | 10-Feb-26 | Day time | 1   | 606               | 508     | 100             | 200     | Pass    |
|             |                                         | 2610269 (1)-16   | 10-Feb-26 | Day time | 2   | 431               |         |                 |         |         |
|             |                                         | 2610269 (1)-17   | 10-Feb-26 | Day time | 3   | 579               |         |                 |         |         |
|             |                                         | 2610269 (1)-18   | 10-Feb-26 | Day time | 4   | 416               |         |                 |         |         |
| 5           | Area : Administration : Meeting Room 1  | 2610269 (1)-19   | 10-Feb-26 | Day time | 1   | 1,008             | 551     | 150             | 300     | Pass    |
|             |                                         | 2610269 (1)-20   | 10-Feb-26 | Day time | 2   | 368               |         |                 |         |         |
|             |                                         | 2610269 (1)-21   | 10-Feb-26 | Day time | 3   | 314               |         |                 |         |         |
|             |                                         | 2610269 (1)-22   | 10-Feb-26 | Day time | 4   | 396               |         |                 |         |         |
|             |                                         | 2610269 (1)-23   | 10-Feb-26 | Day time | 5   | 314               |         |                 |         |         |
|             |                                         | 2610269 (1)-24   | 10-Feb-26 | Day time | 6   | 388               |         |                 |         |         |
|             |                                         | 2610269 (1)-25   | 10-Feb-26 | Day time | 7   | 566               |         |                 |         |         |
|             |                                         | 2610269 (1)-26   | 10-Feb-26 | Day time | 8   | 1,057             |         |                 |         |         |
| 6           | Area : Administration : Meeting Room 2  | 2610269 (1)-27   | 10-Feb-26 | Day time | 1   | 344               | 380     | 150             | 300     | Pass    |
|             |                                         | 2610269 (1)-28   | 10-Feb-26 | Day time | 2   | 415               |         |                 |         |         |
| 7           | Area : Administration : Meeting Room    | 2610269 (1)-29   | 10-Feb-26 | Day time | 1   | 852               | 810     | 150             | 300     | Pass    |
|             |                                         | 2610269 (1)-30   | 10-Feb-26 | Day time | 2   | 768               |         |                 |         |         |
| 8           | Area : Administration : Server Room     | 2610269 (1)-31   | 10-Feb-26 | Day time | 1   | 683               | 657     | 100             | 200     | Pass    |
|             |                                         | 2610269 (1)-32   | 10-Feb-26 | Day time | 2   | 631               |         |                 |         |         |

Technical Management

*Supt S*  
Supt Salameh  
Section Head

Approved by

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Assistant Manager

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA

**Project Location:** GCRN

**Lot ID: 2610269 (1)**

Date Received : Feb 12, 2026  
Date Reported : Feb 12, 2026  
Report Number: 2610269 (1)-1

Page 2 of 2

| Lay out No. | Location                                            | Reference Number | Date      | Time     | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|-------------|-----------------------------------------------------|------------------|-----------|----------|-----|-------------------|---------|-----------------|---------|---------|
|             |                                                     |                  |           |          |     | Spot              | Average | Spot/Min        | Average |         |
| 9           | Spot : Administration : โต๊ะทำงาน EHS Manager       | 2610269 (1)-33   | 10-Feb-26 | Day time | 1   | 1,213             | -       | 400-500         | -       | Pass    |
|             |                                                     | 2610269 (1)-34   | 10-Feb-26 | Day time | 2   | 1,030             | -       | 300             | -       |         |
|             |                                                     | 2610269 (1)-35   | 10-Feb-26 | Day time | 3   | 987               | -       | 200             | -       |         |
| 10          | Spot : Administration : โต๊ะทำงาน HR Manager        | 2610269 (1)-36   | 10-Feb-26 | Day time | 1   | 625               | -       | 400-500         | -       | Pass    |
| 11          | Spot : Administration : โต๊ะทำงาน Plant Manager     | 2610269 (1)-37   | 10-Feb-26 | Day time | 1   | 707               | -       | 400-500         | -       | Pass    |
| 12          | Spot : Administration : โต๊ะทำงานเจ้าหน้าที่ยึด CR. | 2610269 (1)-38   | 10-Feb-26 | Day time | 1   | 441               | -       | 400-500         | -       | Pass    |
| 13          | Spot : Administration : โต๊ะทำงานเจ้าหน้าที่ยึด 1   | 2610269 (1)-39   | 10-Feb-26 | Day time | 1   | 612               | -       | 400-500         | -       | Pass    |
| 14          | Spot : Administration : โต๊ะทำงานผู้ช่วย HR/Admin   | 2610269 (1)-40   | 10-Feb-26 | Day time | 1   | 430               | -       | 400-500         | -       | Pass    |
| 15          | Area : Administration : ห้องรับแขก                  | 2610269 (1)-41   | 10-Feb-26 | Day time | 1   | 325               | 279     | 50              | 100     | Pass    |
|             |                                                     | 2610269 (1)-42   | 10-Feb-26 | Day time | 2   | 233               |         |                 |         |         |

Measurement by : Phitsanupong Chaiyai

Guideline : Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

Technical Management

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Supt Salameh  
Section Head

Approved by

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Wichan Choonharat  
Assistant Manager

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location: GCRN

Lot ID: 2610269 (2)

Date Received : Feb 12, 2026

Date Reported : Feb 12, 2026

Report Number: 2610269 (2)-1

Page 1 of 1

| Lay out No. | Location                                       | Reference Number | Date      | Time       | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|-------------|------------------------------------------------|------------------|-----------|------------|-----|-------------------|---------|-----------------|---------|---------|
|             |                                                |                  |           |            |     | Spot              | Average | Spot/Min        | Average |         |
| 1           | Area : รั้วรอบ Cooling System : ทางเดิน        | 2610269 (2)-1    | 10-Feb-26 | Night time | 1   | 74                | 61      | 25              | 50      | Pass    |
|             |                                                | 2610269 (2)-2    | 10-Feb-26 | Night time | 2   | 56                |         |                 |         |         |
|             |                                                | 2610269 (2)-3    | 10-Feb-26 | Night time | 3   | 68                |         |                 |         |         |
|             |                                                | 2610269 (2)-4    | 10-Feb-26 | Night time | 4   | 53                |         |                 |         |         |
|             |                                                | 2610269 (2)-5    | 10-Feb-26 | Night time | 5   | 56                |         |                 |         |         |
|             |                                                | 2610269 (2)-6    | 10-Feb-26 | Night time | 6   | 56                |         |                 |         |         |
|             |                                                | 2610269 (2)-7    | 10-Feb-26 | Night time | 7   | 65                |         |                 |         |         |
|             |                                                | 2610269 (2)-8    | 10-Feb-26 | Night time | 8   | 55                |         |                 |         |         |
|             |                                                | 2610269 (2)-9    | 10-Feb-26 | Night time | 9   | 60                |         |                 |         |         |
|             |                                                | 2610269 (2)-10   | 10-Feb-26 | Night time | 10  | 65                |         |                 |         |         |
| 2           | Area : รั้วรอบ Switch yard ถึงบ่อน้ำ : ทางเดิน | 2610269 (2)-11   | 10-Feb-26 | Night time | 1   | 49                | 57      | 25              | 50      | Pass    |
|             |                                                | 2610269 (2)-12   | 10-Feb-26 | Night time | 2   | 74                |         |                 |         |         |
|             |                                                | 2610269 (2)-13   | 10-Feb-26 | Night time | 3   | 52                |         |                 |         |         |
|             |                                                | 2610269 (2)-14   | 10-Feb-26 | Night time | 4   | 53                |         |                 |         |         |
|             |                                                | 2610269 (2)-15   | 10-Feb-26 | Night time | 5   | 58                |         |                 |         |         |
|             |                                                | 2610269 (2)-16   | 10-Feb-26 | Night time | 6   | 69                |         |                 |         |         |
|             |                                                | 2610269 (2)-17   | 10-Feb-26 | Night time | 7   | 47                |         |                 |         |         |
|             |                                                | 2610269 (2)-18   | 10-Feb-26 | Night time | 8   | 53                |         |                 |         |         |
|             |                                                | 2610269 (2)-19   | 10-Feb-26 | Night time | 9   | 57                |         |                 |         |         |
|             |                                                | 2610269 (2)-20   | 10-Feb-26 | Night time | 10  | 63                |         |                 |         |         |

Measurement by : Phitsanupong Chaiya

Guideline : Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

Technical Management

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Section Head

Approved by

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Assistant Manager

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location: GCRN

Lot ID: 2610269 (3)

Date Received : Feb 12, 2026

Date Reported : Feb 12, 2026

Report Number: 2610269 (3)-1

Page 1 of 1

| Lay out No. | Location                                      | Reference Number | Date      | Time       | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|-------------|-----------------------------------------------|------------------|-----------|------------|-----|-------------------|---------|-----------------|---------|---------|
|             |                                               |                  |           |            |     | Spot              | Average | Spot/Min        | Average |         |
| 1           | Area : Chemical Skid : Cooling Tower          | 2610269 (3)-1    | 10-Feb-26 | Night time | 1   | 435               | 577     | 150             | 300     | Pass    |
|             |                                               | 2610269 (3)-2    | 10-Feb-26 | Night time | 2   | 319               |         |                 |         |         |
|             |                                               | 2610269 (3)-3    | 10-Feb-26 | Night time | 3   | 1,206             |         |                 |         |         |
|             |                                               | 2610269 (3)-4    | 10-Feb-26 | Night time | 4   | 347               |         |                 |         |         |
| 2           | Area : Chemical Skid : Demineralization Plant | 2610269 (3)-5    | 10-Feb-26 | Night time | 1   | 529               | 586     | 150             | 300     | Pass    |
|             |                                               | 2610269 (3)-6    | 10-Feb-26 | Night time | 2   | 452               |         |                 |         |         |
|             |                                               | 2610269 (3)-7    | 10-Feb-26 | Night time | 3   | 892               |         |                 |         |         |
|             |                                               | 2610269 (3)-8    | 10-Feb-26 | Night time | 4   | 473               |         |                 |         |         |
| 3           | Area : Chemical Skid : Pre-Treatment          | 2610269 (3)-9    | 10-Feb-26 | Night time | 1   | 317               | 423     | 150             | 300     | Pass    |
|             |                                               | 2610269 (3)-10   | 10-Feb-26 | Night time | 2   | 495               |         |                 |         |         |
|             |                                               | 2610269 (3)-11   | 10-Feb-26 | Night time | 3   | 517               |         |                 |         |         |
|             |                                               | 2610269 (3)-12   | 10-Feb-26 | Night time | 4   | 578               |         |                 |         |         |
|             |                                               | 2610269 (3)-13   | 10-Feb-26 | Night time | 5   | 314               |         |                 |         |         |
|             |                                               | 2610269 (3)-14   | 10-Feb-26 | Night time | 6   | 317               |         |                 |         |         |
| 4           | Area : Chemical Skid : Thermal Evaporation    | 2610269 (3)-15   | 10-Feb-26 | Night time | 1   | 356               | 400     | 150             | 300     | Pass    |
|             |                                               | 2610269 (3)-16   | 10-Feb-26 | Night time | 2   | 330               |         |                 |         |         |
|             |                                               | 2610269 (3)-17   | 10-Feb-26 | Night time | 3   | 391               |         |                 |         |         |
|             |                                               | 2610269 (3)-18   | 10-Feb-26 | Night time | 4   | 401               |         |                 |         |         |
|             |                                               | 2610269 (3)-19   | 10-Feb-26 | Night time | 5   | 227               |         |                 |         |         |
|             |                                               | 2610269 (3)-20   | 10-Feb-26 | Night time | 6   | 347               |         |                 |         |         |
|             |                                               | 2610269 (3)-21   | 10-Feb-26 | Night time | 7   | 360               |         |                 |         |         |
|             |                                               | 2610269 (3)-22   | 10-Feb-26 | Night time | 8   | 785               |         |                 |         |         |
| 5           | Area : Chemical Skid : Water Treatment Plant  | 2610269 (3)-23   | 10-Feb-26 | Night time | 1   | 395               | 346     | 150             | 300     | Pass    |
|             |                                               | 2610269 (3)-24   | 10-Feb-26 | Night time | 2   | 301               |         |                 |         |         |
|             |                                               | 2610269 (3)-25   | 10-Feb-26 | Night time | 3   | 317               |         |                 |         |         |
|             |                                               | 2610269 (3)-26   | 10-Feb-26 | Night time | 4   | 372               |         |                 |         |         |

Measurement by : Phitsanupong Chaiya

Guideline : Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

Technical Management

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Section Head

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160  
**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location:** GCRN

**Lot ID: 2610269 (4)**

Date Received : Feb 12, 2026  
Date Reported : Feb 12, 2026  
Report Number: 2610269 (4)-1

Page 1 of 1

| GCRN        |                                                            |                  |           |            |     |                           |         |                             |         |         |
|-------------|------------------------------------------------------------|------------------|-----------|------------|-----|---------------------------|---------|-----------------------------|---------|---------|
| Lay out No. | Location                                                   | Reference Number | Date      | Time       | No. | Illuminance (Lux)<br>Spot | Average | Guideline Limit<br>Spot/Min | Average | Comment |
| 1           | Area : Control Room Building FL.1 : Corridor               | 2610269 (4)-1    | 10-Feb-26 | Day time   | 1   | 129                       | 191     | 50                          | 100     | Pass    |
|             |                                                            | 2610269 (4)-2    | 10-Feb-26 | Day time   | 2   | 255                       |         |                             |         |         |
|             |                                                            | 2610269 (4)-3    | 10-Feb-26 | Day time   | 3   | 126                       |         |                             |         |         |
|             |                                                            | 2610269 (4)-4    | 10-Feb-26 | Day time   | 4   | 255                       |         |                             |         |         |
| 2           | Area : Control Room Building FL.1 : ห้องเดิน Cable Room    | 2610269 (4)-5    | 10-Feb-26 | Day time   | 1   | 285                       | 306     | 50                          | 100     | Pass    |
|             |                                                            | 2610269 (4)-6    | 10-Feb-26 | Day time   | 2   | 182                       |         |                             |         |         |
|             |                                                            | 2610269 (4)-7    | 10-Feb-26 | Day time   | 3   | 328                       |         |                             |         |         |
|             |                                                            | 2610269 (4)-8    | 10-Feb-26 | Day time   | 4   | 428                       |         |                             |         |         |
| 3           | Area : Control Room Building FL.1 : ห้องประชุมทางอาคาร CCR | 2610269 (4)-9    | 10-Feb-26 | Night time | 1   | 110                       | 125     | 50                          | 100     | Pass    |
|             |                                                            | 2610269 (4)-10   | 10-Feb-26 | Night time | 2   | 140                       |         |                             |         |         |
| 4           | Area : Control Room Building FL.1 : ห้องเดินหลังค          | 2610269 (4)-11   | 10-Feb-26 | Night time | 1   | 76                        | 176     | 25                          | 50      | Pass    |
|             |                                                            | 2610269 (4)-12   | 10-Feb-26 | Night time | 2   | 437                       |         |                             |         |         |
|             |                                                            | 2610269 (4)-13   | 10-Feb-26 | Night time | 3   | 162                       |         |                             |         |         |
|             |                                                            | 2610269 (4)-14   | 10-Feb-26 | Night time | 4   | 144                       |         |                             |         |         |
|             |                                                            | 2610269 (4)-15   | 10-Feb-26 | Night time | 5   | 59                        |         |                             |         |         |

Measurement by : Phitsanupong Chaiya

**Guideline :** Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

Technical Management

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160  
**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location:** GCRN

**Lot ID: 2610269 (5)**

Date Received : Feb 12, 2026  
Date Reported : Feb 12, 2026  
Report Number: 2610269 (5)-1

Page 1 of 3

| GCRN        |                                                  |                  |           |            |     |                           |         |                             |         |         |
|-------------|--------------------------------------------------|------------------|-----------|------------|-----|---------------------------|---------|-----------------------------|---------|---------|
| Lay out No. | Location                                         | Reference Number | Date      | Time       | No. | Illuminance (Lux)<br>Spot | Average | Guideline Limit<br>Spot/Min | Average | Comment |
| 1           | Area : Control Room Building FL.2 : Battery Room | 2610269 (5)-1    | 10-Feb-26 | Day time   | 1   | 419                       | 322     | 100                         | 200     | Pass    |
|             |                                                  | 2610269 (5)-2    | 10-Feb-26 | Day time   | 2   | 225                       |         |                             |         |         |
| 2           | Area : Control Room Building FL.2 : ห้อง MCC     | 2610269 (5)-3    | 10-Feb-26 | Day time   | 1   | 333                       | 306     | 100                         | 200     | Pass    |
|             |                                                  | 2610269 (5)-4    | 10-Feb-26 | Day time   | 2   | 231                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-5    | 10-Feb-26 | Day time   | 3   | 247                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-6    | 10-Feb-26 | Day time   | 4   | 396                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-7    | 10-Feb-26 | Day time   | 5   | 280                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-8    | 10-Feb-26 | Day time   | 6   | 330                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-9    | 10-Feb-26 | Day time   | 7   | 224                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-10   | 10-Feb-26 | Day time   | 8   | 271                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-11   | 10-Feb-26 | Day time   | 9   | 278                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-12   | 10-Feb-26 | Day time   | 10  | 214                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-13   | 10-Feb-26 | Day time   | 11  | 231                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-14   | 10-Feb-26 | Day time   | 12  | 386                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-15   | 10-Feb-26 | Day time   | 13  | 214                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-16   | 10-Feb-26 | Day time   | 14  | 269                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-17   | 10-Feb-26 | Day time   | 15  | 333                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-18   | 10-Feb-26 | Day time   | 16  | 450                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-19   | 10-Feb-26 | Day time   | 17  | 275                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-20   | 10-Feb-26 | Day time   | 18  | 241                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-21   | 10-Feb-26 | Day time   | 19  | 374                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-22   | 10-Feb-26 | Day time   | 20  | 264                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-23   | 10-Feb-26 | Day time   | 21  | 337                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-24   | 10-Feb-26 | Day time   | 22  | 234                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-25   | 10-Feb-26 | Day time   | 23  | 321                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-26   | 10-Feb-26 | Day time   | 24  | 216                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-27   | 10-Feb-26 | Day time   | 25  | 479                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-28   | 10-Feb-26 | Day time   | 26  | 213                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-29   | 10-Feb-26 | Day time   | 27  | 381                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-30   | 10-Feb-26 | Day time   | 28  | 297                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-31   | 10-Feb-26 | Day time   | 29  | 348                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-32   | 10-Feb-26 | Day time   | 30  | 362                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-33   | 10-Feb-26 | Day time   | 31  | 364                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-34   | 10-Feb-26 | Day time   | 32  | 402                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-35   | 10-Feb-26 | Night time | 1   | 323                       | 311     | 100                         | 200     | Pass    |
|             |                                                  | 2610269 (5)-36   | 10-Feb-26 | Night time | 2   | 206                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-37   | 10-Feb-26 | Night time | 3   | 243                       |         |                             |         |         |
|             |                                                  | 2610269 (5)-38   | 10-Feb-26 | Night time | 4   | 256                       |         |                             |         |         |

Technical Management

*Supot S*  
Supot Salamteh  
Section Head

Approved by

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Wichan Choonharat  
Assistant Manager

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA

**Project Location:** GCRN

**Lot ID: 2610269 (5)**

Date Received : Feb 12, 2026  
Date Reported : Feb 12, 2026  
Report Number: 2610269 (5)-1

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| Lay out No. | Location                                                     | Reference Number | Date      | Time       | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|-------------|--------------------------------------------------------------|------------------|-----------|------------|-----|-------------------|---------|-----------------|---------|---------|
|             |                                                              |                  |           |            |     | Spot              | Average | Spot/Min        | Average |         |
| 2           | Area : Control Room Building FL.2 : ห้อง MCC                 | 2610269 (5)-39   | 10-Feb-26 | Night time | 5   | 227               |         |                 |         |         |
|             |                                                              | 2610269 (5)-40   | 10-Feb-26 | Night time | 6   | 213               |         |                 |         |         |
|             |                                                              | 2610269 (5)-41   | 10-Feb-26 | Night time | 7   | 218               |         |                 |         |         |
|             |                                                              | 2610269 (5)-42   | 10-Feb-26 | Night time | 8   | 387               |         |                 |         |         |
|             |                                                              | 2610269 (5)-43   | 10-Feb-26 | Night time | 9   | 329               |         |                 |         |         |
|             |                                                              | 2610269 (5)-44   | 10-Feb-26 | Night time | 10  | 217               |         |                 |         |         |
|             |                                                              | 2610269 (5)-45   | 10-Feb-26 | Night time | 11  | 212               |         |                 |         |         |
|             |                                                              | 2610269 (5)-46   | 10-Feb-26 | Night time | 12  | 287               |         |                 |         |         |
|             |                                                              | 2610269 (5)-47   | 10-Feb-26 | Night time | 13  | 215               |         |                 |         |         |
|             |                                                              | 2610269 (5)-48   | 10-Feb-26 | Night time | 14  | 213               |         |                 |         |         |
|             |                                                              | 2610269 (5)-49   | 10-Feb-26 | Night time | 15  | 408               |         |                 |         |         |
|             |                                                              | 2610269 (5)-50   | 10-Feb-26 | Night time | 16  | 489               |         |                 |         |         |
|             |                                                              | 2610269 (5)-51   | 10-Feb-26 | Night time | 17  | 589               |         |                 |         |         |
|             |                                                              | 2610269 (5)-52   | 10-Feb-26 | Night time | 18  | 266               |         |                 |         |         |
|             |                                                              | 2610269 (5)-53   | 10-Feb-26 | Night time | 19  | 348               |         |                 |         |         |
|             |                                                              | 2610269 (5)-54   | 10-Feb-26 | Night time | 20  | 346               |         |                 |         |         |
|             |                                                              | 2610269 (5)-55   | 10-Feb-26 | Night time | 21  | 234               |         |                 |         |         |
|             |                                                              | 2610269 (5)-56   | 10-Feb-26 | Night time | 22  | 344               |         |                 |         |         |
|             |                                                              | 2610269 (5)-57   | 10-Feb-26 | Night time | 23  | 219               |         |                 |         |         |
|             |                                                              | 2610269 (5)-58   | 10-Feb-26 | Night time | 24  | 217               |         |                 |         |         |
|             |                                                              | 2610269 (5)-59   | 10-Feb-26 | Night time | 25  | 350               |         |                 |         |         |
|             |                                                              | 2610269 (5)-60   | 10-Feb-26 | Night time | 26  | 426               |         |                 |         |         |
|             |                                                              | 2610269 (5)-61   | 10-Feb-26 | Night time | 27  | 287               |         |                 |         |         |
|             |                                                              | 2610269 (5)-62   | 10-Feb-26 | Night time | 28  | 358               |         |                 |         |         |
|             |                                                              | 2610269 (5)-63   | 10-Feb-26 | Night time | 29  | 376               |         |                 |         |         |
|             |                                                              | 2610269 (5)-64   | 10-Feb-26 | Night time | 30  | 358               |         |                 |         |         |
|             |                                                              | 2610269 (5)-65   | 10-Feb-26 | Night time | 31  | 448               |         |                 |         |         |
|             |                                                              | 2610269 (5)-66   | 10-Feb-26 | Night time | 32  | 342               |         |                 |         |         |
| 3           | Area : Control Room Building FL.2 : ห้องเดินบันไดต่อห้อง MCC | 2610269 (5)-67   | 10-Feb-26 | Day time   | 1   | 311               | 216     | 50              | 100     | Pass    |
|             |                                                              | 2610269 (5)-68   | 10-Feb-26 | Day time   | 2   | 128               |         |                 |         |         |
|             |                                                              | 2610269 (5)-69   | 10-Feb-26 | Day time   | 3   | 112               |         |                 |         |         |
|             |                                                              | 2610269 (5)-70   | 10-Feb-26 | Day time   | 4   | 311               |         |                 |         |         |
|             |                                                              | 2610269 (5)-71   | 10-Feb-26 | Night time | 1   | 319               | 232     | 50              | 100     | Pass    |
|             |                                                              | 2610269 (5)-72   | 10-Feb-26 | Night time | 2   | 267               |         |                 |         |         |
|             |                                                              | 2610269 (5)-73   | 10-Feb-26 | Night time | 3   | 218               |         |                 |         |         |
|             |                                                              | 2610269 (5)-74   | 10-Feb-26 | Night time | 4   | 123               |         |                 |         |         |

Measurement by : Phitsanupong Chaiya

Technical Management

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Section Head

Approved by

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Assistant Manager

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA

**Project Location:** GCRN

**Lot ID: 2610269 (5)**

Date Received : Feb 12, 2026  
Date Reported : Feb 12, 2026  
Report Number: 2610269 (5)-1

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| GCRN        |                                                                                                                                                                                                                     |                  |      |      |     |                   |         |                 |         |         |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------|------|-----|-------------------|---------|-----------------|---------|---------|
| Lay out No. | Location                                                                                                                                                                                                            | Reference Number | Date | Time | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|             |                                                                                                                                                                                                                     |                  |      |      |     | Spot              | Average | Spot/Min        | Average |         |
| Guideline : | Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018) |                  |      |      |     |                   |         |                 |         |         |

Technical Management

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Assistant Manager

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location: GCRN

Lot ID: 2610269 (6)

Date Received : Feb 12, 2026

Date Reported : Feb 12, 2026

Report Number: 2610269 (6)-1

Page 1 of 2

| GCRN        |                                                                |                  |           |            |     |                   |         |                 |         |         |
|-------------|----------------------------------------------------------------|------------------|-----------|------------|-----|-------------------|---------|-----------------|---------|---------|
| Lay out No. | Location                                                       | Reference Number | Date      | Time       | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|             |                                                                |                  |           |            |     | Spot              | Average | Spot/Min        | Average |         |
| 1           | Area : Control Room Building FL.3 : Canteen                    | 2610269 (6)-1    | 10-Feb-26 | Day time   | 1   | 528               | 548     | 150             | 300     | Pass    |
|             |                                                                | 2610269 (6)-2    | 10-Feb-26 | Day time   | 2   | 486               |         |                 |         |         |
|             |                                                                | 2610269 (6)-3    | 10-Feb-26 | Day time   | 3   | 592               |         |                 |         |         |
|             |                                                                | 2610269 (6)-4    | 10-Feb-26 | Day time   | 4   | 588               |         |                 |         |         |
|             |                                                                | 2610269 (6)-5    | 10-Feb-26 | Night time | 1   | 1,183             | 834     | 150             | 300     | Pass    |
|             |                                                                | 2610269 (6)-6    | 10-Feb-26 | Night time | 2   | 862               |         |                 |         |         |
|             |                                                                | 2610269 (6)-7    | 10-Feb-26 | Night time | 3   | 648               |         |                 |         |         |
|             |                                                                | 2610269 (6)-8    | 10-Feb-26 | Night time | 4   | 642               |         |                 |         |         |
| 2           | Area : Control Room Building FL.3 : Corridor                   | 2610269 (6)-9    | 10-Feb-26 | Day time   | 1   | 189               | 176     | 50              | 100     | Pass    |
|             |                                                                | 2610269 (6)-10   | 10-Feb-26 | Day time   | 2   | 223               |         |                 |         |         |
|             |                                                                | 2610269 (6)-11   | 10-Feb-26 | Day time   | 3   | 129               |         |                 |         |         |
|             |                                                                | 2610269 (6)-12   | 10-Feb-26 | Day time   | 4   | 173               |         |                 |         |         |
|             |                                                                | 2610269 (6)-13   | 10-Feb-26 | Day time   | 5   | 178               |         |                 |         |         |
|             |                                                                | 2610269 (6)-14   | 10-Feb-26 | Day time   | 6   | 148               |         |                 |         |         |
|             |                                                                | 2610269 (6)-15   | 10-Feb-26 | Day time   | 7   | 192               |         |                 |         |         |
|             |                                                                | 2610269 (6)-16   | 10-Feb-26 | Night time | 1   | 502               | 316     | 50              | 100     | Pass    |
|             |                                                                | 2610269 (6)-17   | 10-Feb-26 | Night time | 2   | 411               |         |                 |         |         |
|             |                                                                | 2610269 (6)-18   | 10-Feb-26 | Night time | 3   | 329               |         |                 |         |         |
|             |                                                                | 2610269 (6)-19   | 10-Feb-26 | Night time | 4   | 185               |         |                 |         |         |
|             |                                                                | 2610269 (6)-20   | 10-Feb-26 | Night time | 5   | 384               |         |                 |         |         |
|             |                                                                | 2610269 (6)-21   | 10-Feb-26 | Night time | 6   | 244               |         |                 |         |         |
|             |                                                                | 2610269 (6)-22   | 10-Feb-26 | Night time | 7   | 159               |         |                 |         |         |
| 3           | Area : Control Room Building FL.3 : Document Room              | 2610269 (6)-23   | 10-Feb-26 | Day time   | 1   | 560               | 437     | 150             | 300     | Pass    |
|             |                                                                | 2610269 (6)-24   | 10-Feb-26 | Day time   | 2   | 314               |         |                 |         |         |
|             |                                                                | 2610269 (6)-25   | 10-Feb-26 | Night time | 1   | 609               | 558     | 150             | 300     | Pass    |
|             |                                                                | 2610269 (6)-26   | 10-Feb-26 | Night time | 2   | 508               |         |                 |         |         |
| 4           | Spot : Control Room Building FL.3 : ฝ้ากระจก Operation 1       | 2610269 (6)-27   | 10-Feb-26 | Day time   | 1   | 511               | -       | 400-500         | -       | Pass    |
|             |                                                                | 2610269 (6)-28   | 10-Feb-26 | Night time | 1   | 641               | -       | 400-500         | -       | Pass    |
| 5           | Spot : Control Room Building FL.3 : ฝ้ากระจก Operation 2       | 2610269 (6)-29   | 10-Feb-26 | Day time   | 1   | 465               | -       | 400-500         | -       | Pass    |
|             |                                                                | 2610269 (6)-30   | 10-Feb-26 | Night time | 1   | 518               | -       | 400-500         | -       | Pass    |
| 6           | Spot : Control Room Building FL.3 : ฝ้ากระจก Operation 3       | 2610269 (6)-31   | 10-Feb-26 | Day time   | 1   | 472               | -       | 400-500         | -       | Pass    |
|             |                                                                | 2610269 (6)-32   | 10-Feb-26 | Night time | 1   | 468               | -       | 400-500         | -       | Pass    |
| 7           | Spot : Control Room Building FL.3 : ฝ้ากระจก Operation Manager | 2610269 (6)-33   | 10-Feb-26 | Day time   | 1   | 620               | -       | 400-500         | -       | Pass    |

Technical Management

*Supot S*

Supot Salameh  
Section Head

Approved by

*Wichan Choonharat*

Wichan Choonharat  
Assistant Manager

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location: GCRN

Lot ID: 2610269 (6)

Date Received : Feb 12, 2026

Date Reported : Feb 12, 2026

Report Number: 2610269 (6)-1

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| GCRN        |                                                                                  |                  |           |            |     |                   |         |                 |         |         |
|-------------|----------------------------------------------------------------------------------|------------------|-----------|------------|-----|-------------------|---------|-----------------|---------|---------|
| Lay out No. | Location                                                                         | Reference Number | Date      | Time       | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|             |                                                                                  |                  |           |            |     | Spot              | Average | Spot/Min        | Average |         |
| 8           | Spot : Control Room Building FL.3 : ฝ้ากระจก shift Leader 1                      | 2610269 (6)-34   | 10-Feb-26 | Day time   | 1   | 432               | -       | 400-500         | -       | Pass    |
|             |                                                                                  | 2610269 (6)-35   | 10-Feb-26 | Night time | 1   | 515               | -       | 400-500         | -       | Pass    |
| 9           | Spot : Control Room Building FL.3 : ฝ้ากระจก shift Leader 2                      | 2610269 (6)-36   | 10-Feb-26 | Day time   | 1   | 421               | -       | 400-500         | -       | Pass    |
|             |                                                                                  | 2610269 (6)-37   | 10-Feb-26 | Night time | 1   | 408               | -       | 400-500         | -       | Pass    |
| 10          | Area : Control Room Building FL.3 : ฝ้ากระจก Control Cabinet (บริเวณโถงกลางห้อง) | 2610269 (6)-38   | 10-Feb-26 | Day time   | 1   | 799               | 410     | 50              | 100     | Pass    |
|             |                                                                                  | 2610269 (6)-39   | 10-Feb-26 | Day time   | 2   | 372               |         |                 |         |         |
|             |                                                                                  | 2610269 (6)-40   | 10-Feb-26 | Day time   | 3   | 246               |         |                 |         |         |
|             |                                                                                  | 2610269 (6)-41   | 10-Feb-26 | Day time   | 4   | 221               |         |                 |         |         |
|             |                                                                                  | 2610269 (6)-42   | 10-Feb-26 | Night time | 1   | 472               | 449     | 50              | 100     | Pass    |
|             |                                                                                  | 2610269 (6)-43   | 10-Feb-26 | Night time | 2   | 377               |         |                 |         |         |
|             |                                                                                  | 2610269 (6)-44   | 10-Feb-26 | Night time | 3   | 309               |         |                 |         |         |
|             |                                                                                  | 2610269 (6)-45   | 10-Feb-26 | Night time | 4   | 638               |         |                 |         |         |

Measurement by : Phitsanupong Chaiya

Guideline : Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

Technical Management

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Supot Salameh  
Section Head

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Wichan Choonharat  
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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location: GCRN

Lot ID: 2610269 (7)

Date Received : Feb 12, 2026

Date Reported : Feb 12, 2026

Report Number: 2610269 (7)-1

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| GCRN        |                                                           |                  |           |            |     |                   |         |                 |         |         |  |
|-------------|-----------------------------------------------------------|------------------|-----------|------------|-----|-------------------|---------|-----------------|---------|---------|--|
| Lay out No. | Location                                                  | Reference Number | Date      | Time       | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |  |
|             |                                                           |                  |           |            |     | Spot              | Average | Spot/Min        | Average |         |  |
| 1           | Spot : Lab Chemical Building : ใต้ทางวิ่ง Operation Demin | 2610269 (7)-1    | 10-Feb-26 | Day time   | 1   | 611               | -       | 400-500         | -       | Pass    |  |
|             |                                                           | 2610269 (7)-2    | 10-Feb-26 | Night time | 1   | 644               | -       | 400-500         | -       | Pass    |  |
| 2           | Spot : Lab Chemical Building : ใต้ทางวิ่ง บัณฑิต          | 2610269 (7)-3    | 10-Feb-26 | Day time   | 1   | 2,650             | -       | 400-500         | -       | Pass    |  |
|             |                                                           | 2610269 (7)-4    | 10-Feb-26 | Day time   | 2   | 1,557             | -       | 600             | -       |         |  |
|             |                                                           | 2610269 (7)-5    | 10-Feb-26 | Day time   | 3   | 1,210             | -       | 300             | -       |         |  |
|             |                                                           | 2610269 (7)-6    | 10-Feb-26 | Night time | 1   | 1,253             | -       | 400-500         | -       | Pass    |  |
|             |                                                           | 2610269 (7)-7    | 10-Feb-26 | Night time | 2   | 756               | -       | 300             | -       |         |  |
|             |                                                           | 2610269 (7)-8    | 10-Feb-26 | Night time | 3   | 421               | -       | 200             | -       |         |  |
| 3           | Spot : Lab Chemical Building : ใต้โรงระเหยสาร             | 2610269 (7)-9    | 10-Feb-26 | Day time   | 1   | 414               | -       | 400-500         | -       | Pass    |  |
|             |                                                           | 2610269 (7)-10   | 10-Feb-26 | Night time | 1   | 462               | -       | 400-500         | -       | Pass    |  |
| 4           | Area : Lab Chemical Building : โรงไฟฟ้า MCC Demin Plant   | 2610269 (7)-11   | 10-Feb-26 | Day time   | 1   | 294               | 468     | 100             | 200     | Pass    |  |
|             |                                                           | 2610269 (7)-12   | 10-Feb-26 | Day time   | 2   | 555               |         |                 |         |         |  |
|             |                                                           | 2610269 (7)-13   | 10-Feb-26 | Day time   | 3   | 281               |         |                 |         |         |  |
|             |                                                           | 2610269 (7)-14   | 10-Feb-26 | Day time   | 4   | 743               |         |                 |         |         |  |
|             |                                                           | 2610269 (7)-15   | 10-Feb-26 | Night time | 1   | 325               | 482     | 100             | 200     | Pass    |  |
|             |                                                           | 2610269 (7)-16   | 10-Feb-26 | Night time | 2   | 572               |         |                 |         |         |  |
|             |                                                           | 2610269 (7)-17   | 10-Feb-26 | Night time | 3   | 291               |         |                 |         |         |  |
|             |                                                           | 2610269 (7)-18   | 10-Feb-26 | Night time | 4   | 739               |         |                 |         |         |  |
| 5           | Area : Lab Chemical Building : ทางเดิน อาคาร Lab          | 2610269 (7)-19   | 10-Feb-26 | Day time   | 1   | 1,029             | 656     | 50              | 100     | Pass    |  |
|             |                                                           | 2610269 (7)-20   | 10-Feb-26 | Day time   | 2   | 662               |         |                 |         |         |  |
|             |                                                           | 2610269 (7)-21   | 10-Feb-26 | Day time   | 3   | 483               |         |                 |         |         |  |
|             |                                                           | 2610269 (7)-22   | 10-Feb-26 | Day time   | 4   | 451               |         |                 |         |         |  |
|             |                                                           | 2610269 (7)-23   | 10-Feb-26 | Night time | 1   | 354               | 538     | 50              | 100     | Pass    |  |
|             |                                                           | 2610269 (7)-24   | 10-Feb-26 | Night time | 2   | 479               |         |                 |         |         |  |
|             |                                                           | 2610269 (7)-25   | 10-Feb-26 | Night time | 3   | 547               |         |                 |         |         |  |
|             |                                                           | 2610269 (7)-26   | 10-Feb-26 | Night time | 4   | 773               |         |                 |         |         |  |
| 6           | Area : Lab Chemical Building : ทางเดิน อาคารหอระเหย Lab   | 2610269 (7)-27   | 10-Feb-26 | Night time | 1   | 122               | 104     | 25              | 50      | Pass    |  |
|             |                                                           | 2610269 (7)-28   | 10-Feb-26 | Night time | 2   | 57                |         |                 |         |         |  |
|             |                                                           | 2610269 (7)-29   | 10-Feb-26 | Night time | 3   | 132               |         |                 |         |         |  |

Measurement by : Phitsanupong Chaiya

Guideline : Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

Technical Management

*Supot S*

Supot Salamteh  
Section Head

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location: GCRN

Lot ID: 2610269 (8)

Date Received : Feb 12, 2026

Date Reported : Feb 12, 2026

Report Number: 2610269 (8)-1

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| GCRN        |                                                      |                  |           |          |     |                   |         |                 |         |         |  |
|-------------|------------------------------------------------------|------------------|-----------|----------|-----|-------------------|---------|-----------------|---------|---------|--|
| Lay out No. | Location                                             | Reference Number | Date      | Time     | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |  |
|             |                                                      |                  |           |          |     | Spot              | Average | Spot/Min        | Average |         |  |
| 1           | Area : Maintenance Building FL.1 : Corridor          | 2610269 (8)-1    | 10-Feb-26 | Day time | 1   | 169               | 454     | 50              | 100     | Pass    |  |
|             |                                                      | 2610269 (8)-2    | 10-Feb-26 | Day time | 2   | 680               |         |                 |         |         |  |
|             |                                                      | 2610269 (8)-3    | 10-Feb-26 | Day time | 3   | 274               |         |                 |         |         |  |
|             |                                                      | 2610269 (8)-4    | 10-Feb-26 | Day time | 4   | 222               |         |                 |         |         |  |
|             |                                                      | 2610269 (8)-5    | 10-Feb-26 | Day time | 5   | 234               |         |                 |         |         |  |
|             |                                                      | 2610269 (8)-6    | 10-Feb-26 | Day time | 6   | 724               |         |                 |         |         |  |
|             |                                                      | 2610269 (8)-7    | 10-Feb-26 | Day time | 7   | 642               |         |                 |         |         |  |
|             |                                                      | 2610269 (8)-8    | 10-Feb-26 | Day time | 8   | 620               |         |                 |         |         |  |
|             |                                                      | 2610269 (8)-9    | 10-Feb-26 | Day time | 9   | 518               |         |                 |         |         |  |
| 2           | Area : Maintenance Building FL.1 : LAN & SERVER ROOM | 2610269 (8)-10   | 10-Feb-26 | Day time | 1   | 327               | 386     | 100             | 200     | Pass    |  |
|             |                                                      | 2610269 (8)-11   | 10-Feb-26 | Day time | 2   | 445               |         |                 |         |         |  |
| 3           | Area : Maintenance Building FL.1 : Work Shop         | 2610269 (8)-12   | 10-Feb-26 | Day time | 1   | 338               | 441     | 150             | 300     | Pass    |  |
|             |                                                      | 2610269 (8)-13   | 10-Feb-26 | Day time | 2   | 460               |         |                 |         |         |  |
|             |                                                      | 2610269 (8)-14   | 10-Feb-26 | Day time | 3   | 364               |         |                 |         |         |  |
|             |                                                      | 2610269 (8)-15   | 10-Feb-26 | Day time | 4   | 465               |         |                 |         |         |  |
|             |                                                      | 2610269 (8)-16   | 10-Feb-26 | Day time | 5   | 850               |         |                 |         |         |  |
|             |                                                      | 2610269 (8)-17   | 10-Feb-26 | Day time | 6   | 558               |         |                 |         |         |  |
|             |                                                      | 2610269 (8)-18   | 10-Feb-26 | Day time | 7   | 206               |         |                 |         |         |  |
|             |                                                      | 2610269 (8)-19   | 10-Feb-26 | Day time | 8   | 288               |         |                 |         |         |  |
|             |                                                      | 2610269 (8)-20   | 10-Feb-26 | Day time | 9   | 360               |         |                 |         |         |  |
|             |                                                      | 2610269 (8)-21   | 10-Feb-26 | Day time | 10  | 465               |         |                 |         |         |  |
|             |                                                      | 2610269 (8)-22   | 10-Feb-26 | Day time | 11  | 455               |         |                 |         |         |  |
|             |                                                      | 2610269 (8)-23   | 10-Feb-26 | Day time | 12  | 481               |         |                 |         |         |  |
| 4           | Spot : Maintenance Building FL.1 : ใต้ทางวิ่ง C&I 1  | 2610269 (8)-24   | 10-Feb-26 | Day time | 1   | 438               | -       | 400-500         | -       | Pass    |  |
| 5           | Spot : Maintenance Building FL.1 : ใต้ทางวิ่ง C&I 2  | 2610269 (8)-25   | 10-Feb-26 | Day time | 1   | 852               | -       | 400-500         | -       | Pass    |  |
| 6           | Spot : Maintenance Building FL.1 : ใต้ทางวิ่ง C&I 3  | 2610269 (8)-26   | 10-Feb-26 | Day time | 1   | 902               | -       | 400-500         | -       | Pass    |  |
| 7           | Spot : Maintenance Building FL.1 : ใต้ทางวิ่ง C&I 4  | 2610269 (8)-27   | 10-Feb-26 | Day time | 1   | 753               | -       | 400-500         | -       | Pass    |  |

Technical Management

*Supot S*

Supot Salamteh  
Section Head

Approved by

*Wichan Choonharat*

Wichan Choonharat  
Assistant Manager

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**

**Project Name :** Monitoring EIA

**Project Location:** GCRN

**Lot ID: 2610269 (8)**

Date Received : Feb 12, 2026

Date Reported : Feb 12, 2026

Report Number: 2610269 (8)-1

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| GCRN        |                                                                |                  |           |          |     |                   |         |                 |         |         |
|-------------|----------------------------------------------------------------|------------------|-----------|----------|-----|-------------------|---------|-----------------|---------|---------|
| Lay out No. | Location                                                       | Reference Number | Date      | Time     | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|             |                                                                |                  |           |          |     | Spot              | Average | Spot/Min        | Average |         |
| 8           | Area : Maintenance Building FL.1 : บันไดทางเดิน                | 2610269 (8)-28   | 10-Feb-26 | Day time | 1   | 339               | 283     | 50              | 100     | Pass    |
|             |                                                                | 2610269 (8)-29   | 10-Feb-26 | Day time | 2   | 226               |         |                 |         |         |
|             |                                                                | 2610269 (8)-30   | 10-Feb-26 | Day time | 3   | 249               |         |                 |         |         |
|             |                                                                | 2610269 (8)-31   | 10-Feb-26 | Day time | 4   | 261               |         |                 |         |         |
|             |                                                                | 2610269 (8)-32   | 10-Feb-26 | Day time | 5   | 304               |         |                 |         |         |
|             |                                                                | 2610269 (8)-33   | 10-Feb-26 | Day time | 6   | 321               |         |                 |         |         |
| 9           | Spot : Maintenance Building FL.1 : Warehouse Room : ใต้ทางเดิน | 2610269 (8)-34   | 10-Feb-26 | Day time | 1   | 552               | -       | 400-500         | -       | Pass    |

**Measurement by :** Phitsanupong Chaiya

**Guideline :** Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

Technical Management

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Section Head

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Wichan Choonharat  
Assistant Manager

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**

**Project Name :** Monitoring EIA

**Project Location:** GCRN

**Lot ID: 2610269 (9)**

Date Received : Feb 12, 2026

Date Reported : Feb 12, 2026

Report Number: 2610269 (9)-1

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| GCRN        |                                                            |                  |           |          |     |                   |         |                 |         |         |
|-------------|------------------------------------------------------------|------------------|-----------|----------|-----|-------------------|---------|-----------------|---------|---------|
| Lay out No. | Location                                                   | Reference Number | Date      | Time     | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|             |                                                            |                  |           |          |     | Spot              | Average | Spot/Min        | Average |         |
| 1           | Area : Maintenance Building FL.2 : Canteen                 | 2610269 (9)-1    | 10-Feb-26 | Day time | 1   | 599               | 566     | 150             | 300     | Pass    |
|             |                                                            | 2610269 (9)-2    | 10-Feb-26 | Day time | 2   | 697               |         |                 |         |         |
|             |                                                            | 2610269 (9)-3    | 10-Feb-26 | Day time | 3   | 415               |         |                 |         |         |
|             |                                                            | 2610269 (9)-4    | 10-Feb-26 | Day time | 4   | 552               |         |                 |         |         |
| 2           | Area : Maintenance Building FL.2 : Copy Room               | 2610269 (9)-5    | 10-Feb-26 | Day time | 1   | 333               | 360     | 150             | 300     | Pass    |
|             |                                                            | 2610269 (9)-6    | 10-Feb-26 | Day time | 2   | 387               |         |                 |         |         |
| 3           | Area : Maintenance Building FL.2 : Corridor                | 2610269 (9)-7    | 10-Feb-26 | Day time | 1   | 371               | 368     | 50              | 100     | Pass    |
|             |                                                            | 2610269 (9)-8    | 10-Feb-26 | Day time | 2   | 338               |         |                 |         |         |
|             |                                                            | 2610269 (9)-9    | 10-Feb-26 | Day time | 3   | 414               |         |                 |         |         |
|             |                                                            | 2610269 (9)-10   | 10-Feb-26 | Day time | 4   | 927               |         |                 |         |         |
|             |                                                            | 2610269 (9)-11   | 10-Feb-26 | Day time | 5   | 485               |         |                 |         |         |
|             |                                                            | 2610269 (9)-12   | 10-Feb-26 | Day time | 6   | 506               |         |                 |         |         |
|             |                                                            | 2610269 (9)-13   | 10-Feb-26 | Day time | 7   | 115               |         |                 |         |         |
|             |                                                            | 2610269 (9)-14   | 10-Feb-26 | Day time | 8   | 77                |         |                 |         |         |
|             |                                                            | 2610269 (9)-15   | 10-Feb-26 | Day time | 9   | 75                |         |                 |         |         |
| 4           | Area : Maintenance Building FL.2 : Document Room           | 2610269 (9)-16   | 10-Feb-26 | Day time | 1   | 802               | 1037    | 150             | 300     | Pass    |
|             |                                                            | 2610269 (9)-17   | 10-Feb-26 | Day time | 2   | 629               |         |                 |         |         |
|             |                                                            | 2610269 (9)-18   | 10-Feb-26 | Day time | 3   | 1,708             |         |                 |         |         |
|             |                                                            | 2610269 (9)-19   | 10-Feb-26 | Day time | 4   | 1,008             |         |                 |         |         |
| 5           | Area : Maintenance Building FL.2 : Meeting Room            | 2610269 (9)-20   | 10-Feb-26 | Day time | 1   | 761               | 770     | 150             | 300     | Pass    |
|             |                                                            | 2610269 (9)-21   | 10-Feb-26 | Day time | 2   | 873               |         |                 |         |         |
|             |                                                            | 2610269 (9)-22   | 10-Feb-26 | Day time | 3   | 759               |         |                 |         |         |
|             |                                                            | 2610269 (9)-23   | 10-Feb-26 | Day time | 4   | 774               |         |                 |         |         |
|             |                                                            | 2610269 (9)-24   | 10-Feb-26 | Day time | 5   | 833               |         |                 |         |         |
|             |                                                            | 2610269 (9)-25   | 10-Feb-26 | Day time | 6   | 618               |         |                 |         |         |
| 6           | Spot : Maintenance Building FL.2 : ใต้ทางเดิน Electrical 1 | 2610269 (9)-26   | 10-Feb-26 | Day time | 1   | 485               | -       | 400-500         | -       | Pass    |
| 7           | Spot : Maintenance Building FL.2 : ใต้ทางเดิน Electrical 2 | 2610269 (9)-27   | 10-Feb-26 | Day time | 1   | 568               | -       | 400-500         | -       | Pass    |
| 8           | Spot : Maintenance Building FL.2 : ใต้ทางเดิน Electrical 3 | 2610269 (9)-28   | 10-Feb-26 | Day time | 1   | 985               | -       | 400-500         | -       | Pass    |
| 9           | Spot : Maintenance Building FL.2 : ใต้ทางเดิน Mechanical 1 | 2610269 (9)-29   | 10-Feb-26 | Day time | 1   | 539               | -       | 400-500         | -       | Pass    |

Technical Management

*Supot S*  
Supot Salamteh  
Section Head

Approved by

*Nichana Chonharat*  
Wichan Choonharat  
Assistant Manager

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA

**Project Location:** GCRN

**Lot ID: 2610269 (9)**

Date Received : Feb 12, 2026  
Date Reported : Feb 12, 2026  
Report Number: 2610269 (9)-1

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| GCRN        |                                                                       |                  |           |          |     |                   |         |                 |         |         |  |
|-------------|-----------------------------------------------------------------------|------------------|-----------|----------|-----|-------------------|---------|-----------------|---------|---------|--|
| Lay out No. | Location                                                              | Reference Number | Date      | Time     | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |  |
|             |                                                                       |                  |           |          |     | Spot              | Average | Spot/Min        | Average |         |  |
| 10          | Spot : Maintenance Building FL.2 : ใต้โต๊ะ<br>งาน Mechanical 2        | 2610269 (9)-30   | 10-Feb-26 | Day time | 1   | 727               | -       | 400-500         | -       | Pass    |  |
| 11          | Spot : Maintenance Building FL.2 : ใต้โต๊ะ<br>งาน Mechanical 3        | 2610269 (9)-31   | 10-Feb-26 | Day time | 1   | 629               | -       | 400-500         | -       | Pass    |  |
| 12          | Spot : Maintenance Building FL.2 : ใต้โต๊ะ<br>งาน Maintenance Manager | 2610269 (9)-32   | 10-Feb-26 | Day time | 1   | 786               | -       | 400-500         | -       | Pass    |  |
| 13          | Spot : Maintenance Building FL.2 : ใต้โต๊ะ<br>งานผู้ช่วยเครื่องกล     | 2610269 (9)-33   | 10-Feb-26 | Day time | 1   | 419               | -       | 400-500         | -       | Pass    |  |
| 14          | Spot : Maintenance Building FL.2 : ใต้โต๊ะ<br>งานผู้ช่วยช่างไฟฟ้า C&I | 2610269 (9)-34   | 10-Feb-26 | Day time | 1   | 435               | -       | 400-500         | -       | Pass    |  |
| 15          | Spot : Maintenance Building FL.2 : IT<br>Room : ใต้โต๊ะงาน            | 2610269 (9)-35   | 10-Feb-26 | Day time | 1   | 843               | -       | 400-500         | -       | Pass    |  |

Measurement by : Phitsanupong Chaiya

**Guideline :** Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

Technical Management

*Supot S*  
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Section Head

Approved by

*Nichana Chonharat*  
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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA

**Project Location:** GCRN

**Lot ID: 2610269 (10)**

Date Received : Feb 12, 2026  
Date Reported : Feb 12, 2026  
Report Number: 2610269 (10)-1

Page 1 of 1

| GCRN        |                                                                                         |                  |           |          |     |                   |         |                 |         |         |  |
|-------------|-----------------------------------------------------------------------------------------|------------------|-----------|----------|-----|-------------------|---------|-----------------|---------|---------|--|
| Lay out No. | Location                                                                                | Reference Number | Date      | Time     | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |  |
|             |                                                                                         |                  |           |          |     | Spot              | Average | Spot/Min        | Average |         |  |
| 1           | Area : ฝ้า Switchyard Control Room :<br>ฝ้า 115 Kv Relay Protection                     | 2610269 (10)-1   | 10-Feb-26 | Day time | 1   | 487               | 554     | 100             | 200     | Pass    |  |
|             |                                                                                         | 2610269 (10)-2   | 10-Feb-26 | Day time | 2   | 624               |         |                 |         |         |  |
|             |                                                                                         | 2610269 (10)-3   | 10-Feb-26 | Day time | 3   | 483               |         |                 |         |         |  |
|             |                                                                                         | 2610269 (10)-4   | 10-Feb-26 | Day time | 4   | 651               |         |                 |         |         |  |
|             |                                                                                         | 2610269 (10)-5   | 10-Feb-26 | Day time | 5   | 567               |         |                 |         |         |  |
|             |                                                                                         | 2610269 (10)-6   | 10-Feb-26 | Day time | 6   | 512               |         |                 |         |         |  |
| 2           | Area : ฝ้า Switchyard Control Room :<br>ฝ้า 22 Kv Switch Gear (บริเวณหน้าตู้<br>สวิตช์) | 2610269 (10)-7   | 10-Feb-26 | Day time | 1   | 213               | 267     | 100             | 200     | Pass    |  |
|             |                                                                                         | 2610269 (10)-8   | 10-Feb-26 | Day time | 2   | 201               |         |                 |         |         |  |
|             |                                                                                         | 2610269 (10)-9   | 10-Feb-26 | Day time | 3   | 387               |         |                 |         |         |  |
| 3           | Area : ฝ้า Switchyard Control Room :<br>ฝ้า Battery 115 Kv Relay Protection             | 2610269 (10)-10  | 10-Feb-26 | Day time | 1   | 243               | 260     | 100             | 200     | Pass    |  |
|             |                                                                                         | 2610269 (10)-11  | 10-Feb-26 | Day time | 2   | 277               |         |                 |         |         |  |
| 4           | Area : ฝ้า Switchyard Control Room :<br>ฝ้า Battery Terminal Sub 115 Kv                 | 2610269 (10)-12  | 10-Feb-26 | Day time | 1   | 345               | 280     | 100             | 200     | Pass    |  |
|             |                                                                                         | 2610269 (10)-13  | 10-Feb-26 | Day time | 2   | 215               |         |                 |         |         |  |
| 5           | Area : ฝ้า Switchyard Control Room :<br>ฝ้า Terminal Sub 115 Kv                         | 2610269 (10)-14  | 10-Feb-26 | Day time | 1   | 247               | 492     | 100             | 200     | Pass    |  |
|             |                                                                                         | 2610269 (10)-15  | 10-Feb-26 | Day time | 2   | 390               |         |                 |         |         |  |
|             |                                                                                         | 2610269 (10)-16  | 10-Feb-26 | Day time | 3   | 750               |         |                 |         |         |  |
|             |                                                                                         | 2610269 (10)-17  | 10-Feb-26 | Day time | 4   | 833               |         |                 |         |         |  |
|             |                                                                                         | 2610269 (10)-18  | 10-Feb-26 | Day time | 5   | 378               |         |                 |         |         |  |
|             |                                                                                         | 2610269 (10)-19  | 10-Feb-26 | Day time | 6   | 355               |         |                 |         |         |  |

Measurement by : Phitsanupong Chaiya

**Guideline :** Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

Technical Management

*Supot S*  
Supot Salamteh  
Section Head

Approved by

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Assistant Manager

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location:** GCRN

**Lot ID: 2610269 (11)**

Date Received : Feb 12, 2026  
Date Reported : Feb 12, 2026  
Report Number: 2610269 (11)-1

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| GCRN        |                     |                  |           |            |     |                   |         |                 |         |         |
|-------------|---------------------|------------------|-----------|------------|-----|-------------------|---------|-----------------|---------|---------|
| Lay out No. | Location            | Reference Number | Date      | Time       | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|             |                     |                  |           |            |     | Spot              | Average | Spot/Min        | Average |         |
| 1           | Area : ทุ่งวัดระเหย | 2610269 (11)-1   | 10-Feb-26 | Night time | 1   | 1,242             | 992     | -               | 100     | Pass    |
|             |                     | 2610269 (11)-2   | 10-Feb-26 | Night time | 2   | 742               |         |                 |         |         |

Measurement by : Phitsanupong Chaiya

**Guideline :** Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

Technical Management

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location:** GCRN

**Lot ID: 2624543 (1)**

Date Received : Apr 26, 2026  
Date Reported : May 04, 2026  
Report Number: 2624543 (1)-1

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| GCRN        |                                         |                  |           |          |     |                   |         |                 |         |         |
|-------------|-----------------------------------------|------------------|-----------|----------|-----|-------------------|---------|-----------------|---------|---------|
| Lay out No. | Location                                | Reference Number | Date      | Time     | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|             |                                         |                  |           |          |     | Spot              | Average | Spot/Min        | Average |         |
| 1           | Area : Administration : Copy Room       | 2624543 (1)-1    | 24-Apr-26 | Day time | 1   | 938               | 798     | 150             | 300     | Pass    |
|             |                                         | 2624543 (1)-2    | 24-Apr-26 | Day time | 2   | 658               |         |                 |         |         |
| 2           | Area : Administration : Corridor        | 2624543 (1)-3    | 24-Apr-26 | Day time | 1   | 740               | 384     | 50              | 100     | Pass    |
|             |                                         | 2624543 (1)-4    | 24-Apr-26 | Day time | 2   | 370               |         |                 |         |         |
|             |                                         | 2624543 (1)-5    | 24-Apr-26 | Day time | 3   | 284               |         |                 |         |         |
|             |                                         | 2624543 (1)-6    | 24-Apr-26 | Day time | 4   | 350               |         |                 |         |         |
|             |                                         | 2624543 (1)-7    | 24-Apr-26 | Day time | 5   | 328               |         |                 |         |         |
|             |                                         | 2624543 (1)-8    | 24-Apr-26 | Day time | 6   | 269               |         |                 |         |         |
|             |                                         | 2624543 (1)-9    | 24-Apr-26 | Day time | 7   | 234               |         |                 |         |         |
|             |                                         | 2624543 (1)-10   | 24-Apr-26 | Day time | 8   | 347               |         |                 |         |         |
|             |                                         | 2624543 (1)-11   | 24-Apr-26 | Day time | 9   | 398               |         |                 |         |         |
|             |                                         | 2624543 (1)-12   | 24-Apr-26 | Day time | 10  | 519               |         |                 |         |         |
| 3           | Area : Administration : Document Room   | 2624543 (1)-13   | 24-Apr-26 | Day time | 1   | 565               | 637     | 150             | 300     | Pass    |
|             |                                         | 2624543 (1)-14   | 24-Apr-26 | Day time | 2   | 709               |         |                 |         |         |
| 4           | Area : Administration : Electrical Room | 2624543 (1)-15   | 24-Apr-26 | Day time | 1   | 415               | 436     | 100             | 200     | Pass    |
|             |                                         | 2624543 (1)-16   | 24-Apr-26 | Day time | 2   | 448               |         |                 |         |         |
|             |                                         | 2624543 (1)-17   | 24-Apr-26 | Day time | 3   | 566               |         |                 |         |         |
|             |                                         | 2624543 (1)-18   | 24-Apr-26 | Day time | 4   | 315               |         |                 |         |         |
| 5           | Area : Administration : Meeting Room 1  | 2624543 (1)-19   | 24-Apr-26 | Day time | 1   | 1,431             | 1024    | 150             | 300     | Pass    |
|             |                                         | 2624543 (1)-20   | 24-Apr-26 | Day time | 2   | 1,159             |         |                 |         |         |
|             |                                         | 2624543 (1)-21   | 24-Apr-26 | Day time | 3   | 1,238             |         |                 |         |         |
|             |                                         | 2624543 (1)-22   | 24-Apr-26 | Day time | 4   | 725               |         |                 |         |         |
|             |                                         | 2624543 (1)-23   | 24-Apr-26 | Day time | 5   | 641               |         |                 |         |         |
|             |                                         | 2624543 (1)-24   | 24-Apr-26 | Day time | 6   | 941               |         |                 |         |         |
|             |                                         | 2624543 (1)-25   | 24-Apr-26 | Day time | 7   | 875               |         |                 |         |         |
|             |                                         | 2624543 (1)-26   | 24-Apr-26 | Day time | 8   | 1,181             |         |                 |         |         |
| 6           | Area : Administration : Meeting Room 2  | 2624543 (1)-27   | 24-Apr-26 | Day time | 1   | 711               | 741     | 150             | 300     | Pass    |
|             |                                         | 2624543 (1)-28   | 24-Apr-26 | Day time | 2   | 771               |         |                 |         |         |
| 7           | Area : Administration : Meeting Room    | 2624543 (1)-29   | 24-Apr-26 | Day time | 1   | 668               | 552     | 150             | 300     | Pass    |
|             |                                         | 2624543 (1)-30   | 24-Apr-26 | Day time | 2   | 435               |         |                 |         |         |
| 8           | Area : Administration : Server Room     | 2624543 (1)-31   | 24-Apr-26 | Day time | 1   | 435               | 485     | 100             | 200     | Pass    |
|             |                                         | 2624543 (1)-32   | 24-Apr-26 | Day time | 2   | 535               |         |                 |         |         |

Technical Management

*Supot S*  
Supot Salamteh  
Section Head

Approved by

*Wichan Choonharat*  
Wichan Choonharat  
Assistant Manager

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA

**Project Location:** GCRN

**Lot ID: 2624543 (1)**

Date Received : Apr 26, 2026  
Date Reported : May 04, 2026  
Report Number: 2624543 (1)-1

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| GCRN        |                                                      |                  |           |          |     |                   |         |                 |         |         |
|-------------|------------------------------------------------------|------------------|-----------|----------|-----|-------------------|---------|-----------------|---------|---------|
| Lay out No. | Location                                             | Reference Number | Date      | Time     | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|             |                                                      |                  |           |          |     | Spot              | Average | Spot/Min        | Average |         |
| 9           | Spot : Administration : โต๊ะทำงาน EHS Manager        | 2624543 (1)-33   | 24-Apr-26 | Day time | 1   | 997               | -       | 400-500         | -       | Pass    |
| 10          | Spot : Administration : โต๊ะทำงาน HR Manager         | 2624543 (1)-34   | 24-Apr-26 | Day time | 1   | 595               | -       | 400-500         | -       | Pass    |
| 11          | Spot : Administration : โต๊ะทำงาน Plant Manager      | 2624543 (1)-35   | 24-Apr-26 | Day time | 1   | 545               | -       | 400-500         | -       | Pass    |
| 12          | Spot : Administration : โต๊ะทำงานเจ้าพนักงาน CR.     | 2624543 (1)-36   | 24-Apr-26 | Day time | 1   | 410               | -       | 400-500         | -       | Pass    |
| 13          | Spot : Administration : โต๊ะทำงานเจ้าพนักงาน รดข้อ 1 | 2624543 (1)-37   | 24-Apr-26 | Day time | 1   | 751               | -       | 400-500         | -       | Pass    |
| 14          | Spot : Administration : โต๊ะทำงานผู้ช่วย HR/Admin    | 2624543 (1)-38   | 24-Apr-26 | Day time | 1   | 495               | -       | 400-500         | -       | Pass    |
| 15          | Area : Administration : ห้องรับแขก                   | 2624543 (1)-39   | 24-Apr-26 | Day time | 1   | 846               | 846     | 50              | 100     | Pass    |
|             |                                                      | 2624543 (1)-40   | 24-Apr-26 | Day time | 2   | 845               |         |                 |         |         |

Measurement by : Phongsiri Somkaew

**Guideline :** Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

Technical Management

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Supot Salamteh  
Section Head

Approved by

*Wichan Choonharat*  
Wichan Choonharat  
Assistant Manager

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA

**Project Location:** GCRN

**Lot ID: 2624543 (2)**

Date Received : Apr 26, 2026  
Date Reported : May 04, 2026  
Report Number: 2624543 (2)-1

Page 1 of 1

| GCRN        |                                               |                  |           |            |     |                   |         |                 |         |         |
|-------------|-----------------------------------------------|------------------|-----------|------------|-----|-------------------|---------|-----------------|---------|---------|
| Lay out No. | Location                                      | Reference Number | Date      | Time       | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|             |                                               |                  |           |            |     | Spot              | Average | Spot/Min        | Average |         |
| 1           | Area : รั้วรอบ Cooling System : ทางเดิน       | 2624543 (2)-1    | 24-Apr-26 | Night time | 1   | 78                | 61      | 25              | 50      | Pass    |
|             |                                               | 2624543 (2)-2    | 24-Apr-26 | Night time | 2   | 57                |         |                 |         |         |
|             |                                               | 2624543 (2)-3    | 24-Apr-26 | Night time | 3   | 64                |         |                 |         |         |
|             |                                               | 2624543 (2)-4    | 24-Apr-26 | Night time | 4   | 63                |         |                 |         |         |
|             |                                               | 2624543 (2)-5    | 24-Apr-26 | Night time | 5   | 51                |         |                 |         |         |
|             |                                               | 2624543 (2)-6    | 24-Apr-26 | Night time | 6   | 54                |         |                 |         |         |
|             |                                               | 2624543 (2)-7    | 24-Apr-26 | Night time | 7   | 59                |         |                 |         |         |
|             |                                               | 2624543 (2)-8    | 24-Apr-26 | Night time | 8   | 68                |         |                 |         |         |
|             |                                               | 2624543 (2)-9    | 24-Apr-26 | Night time | 9   | 64                |         |                 |         |         |
|             |                                               | 2624543 (2)-10   | 24-Apr-26 | Night time | 10  | 51                |         |                 |         |         |
| 2           | Area : รั้วรอบ Switch yard ถึงห้อง บ. ทางเดิน | 2624543 (2)-11   | 24-Apr-26 | Night time | 1   | 61                | 60      | 25              | 50      | Pass    |
|             |                                               | 2624543 (2)-12   | 24-Apr-26 | Night time | 2   | 53                |         |                 |         |         |
|             |                                               | 2624543 (2)-13   | 24-Apr-26 | Night time | 3   | 54                |         |                 |         |         |
|             |                                               | 2624543 (2)-14   | 24-Apr-26 | Night time | 4   | 78                |         |                 |         |         |
|             |                                               | 2624543 (2)-15   | 24-Apr-26 | Night time | 5   | 53                |         |                 |         |         |
|             |                                               | 2624543 (2)-16   | 24-Apr-26 | Night time | 6   | 51                |         |                 |         |         |
|             |                                               | 2624543 (2)-17   | 24-Apr-26 | Night time | 7   | 63                |         |                 |         |         |
|             |                                               | 2624543 (2)-18   | 24-Apr-26 | Night time | 8   | 54                |         |                 |         |         |
|             |                                               | 2624543 (2)-19   | 24-Apr-26 | Night time | 9   | 77                |         |                 |         |         |
|             |                                               | 2624543 (2)-20   | 24-Apr-26 | Night time | 10  | 59                |         |                 |         |         |

Measurement by : Phongsiri Somkaew

**Guideline :** Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

Technical Management

*Supot S*  
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Section Head

Approved by

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA

**Project Location:** GCRN

**Lot ID: 2624543 (3)**

Date Received : Apr 26, 2026  
Date Reported : May 04, 2026  
Report Number: 2624543 (3)-1

Page 1 of 1

| Lay out No. | Location                                     | Reference Number | Date      | Time       | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|-------------|----------------------------------------------|------------------|-----------|------------|-----|-------------------|---------|-----------------|---------|---------|
|             |                                              |                  |           |            |     | Spot              | Average | Spot/Min        | Average |         |
| 1           | Area : Chemical Skid : Cooling Tower         | 2624543 (3)-1    | 24-Apr-26 | Night time | 1   | 456               | 440     | 150             | 300     | Pass    |
|             |                                              | 2624543 (3)-2    | 24-Apr-26 | Night time | 2   | 478               |         |                 |         |         |
|             |                                              | 2624543 (3)-3    | 24-Apr-26 | Night time | 3   | 378               |         |                 |         |         |
|             |                                              | 2624543 (3)-4    | 24-Apr-26 | Night time | 4   | 450               |         |                 |         |         |
| 3           | Area : Chemical Skid : Pre-Treatment         | 2624543 (3)-5    | 24-Apr-26 | Night time | 1   | 315               | 330     | 150             | 300     | Pass    |
|             |                                              | 2624543 (3)-6    | 24-Apr-26 | Night time | 2   | 320               |         |                 |         |         |
|             |                                              | 2624543 (3)-7    | 24-Apr-26 | Night time | 3   | 305               |         |                 |         |         |
|             |                                              | 2624543 (3)-8    | 24-Apr-26 | Night time | 4   | 314               |         |                 |         |         |
|             |                                              | 2624543 (3)-9    | 24-Apr-26 | Night time | 5   | 346               |         |                 |         |         |
|             |                                              | 2624543 (3)-10   | 24-Apr-26 | Night time | 6   | 378               |         |                 |         |         |
| 4           | Area : Chemical Skid : Thermal Evaporation   | 2624543 (3)-11   | 24-Apr-26 | Night time | 1   | 350               | 352     | 150             | 300     | Pass    |
|             |                                              | 2624543 (3)-12   | 24-Apr-26 | Night time | 2   | 340               |         |                 |         |         |
|             |                                              | 2624543 (3)-13   | 24-Apr-26 | Night time | 3   | 370               |         |                 |         |         |
|             |                                              | 2624543 (3)-14   | 24-Apr-26 | Night time | 4   | 378               |         |                 |         |         |
|             |                                              | 2624543 (3)-15   | 24-Apr-26 | Night time | 5   | 350               |         |                 |         |         |
|             |                                              | 2624543 (3)-16   | 24-Apr-26 | Night time | 6   | 360               |         |                 |         |         |
|             |                                              | 2624543 (3)-17   | 24-Apr-26 | Night time | 7   | 340               |         |                 |         |         |
|             |                                              | 2624543 (3)-18   | 24-Apr-26 | Night time | 8   | 330               |         |                 |         |         |
| 5           | Area : Chemical Skid : Water Treatment Plant | 2624543 (3)-19   | 24-Apr-26 | Night time | 1   | 310               | 329     | 150             | 300     | Pass    |
|             |                                              | 2624543 (3)-20   | 24-Apr-26 | Night time | 2   | 390               |         |                 |         |         |
|             |                                              | 2624543 (3)-21   | 24-Apr-26 | Night time | 3   | 315               |         |                 |         |         |
|             |                                              | 2624543 (3)-22   | 24-Apr-26 | Night time | 4   | 300               |         |                 |         |         |

Measurement by : Phongsiri Somkaew

**Guideline :** Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

Technical Management

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Section Head

Approved by

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Assistant Manager

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA

**Project Location:** GCRN

**Lot ID: 2624543 (4)**

Date Received : Apr 26, 2026  
Date Reported : May 04, 2026  
Report Number: 2624543 (4)-1

Page 1 of 1

| Lay out No. | Location                                                     | Reference Number | Date      | Time       | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|-------------|--------------------------------------------------------------|------------------|-----------|------------|-----|-------------------|---------|-----------------|---------|---------|
|             |                                                              |                  |           |            |     | Spot              | Average | Spot/Min        | Average |         |
| 1           | Area : Control Room Building FL.1 : Corridor                 | 2624543 (4)-1    | 24-Apr-26 | Day time   | 1   | 300               | 414     | 50              | 100     | Pass    |
|             |                                                              | 2624543 (4)-2    | 24-Apr-26 | Day time   | 2   | 361               |         |                 |         |         |
|             |                                                              | 2624543 (4)-3    | 24-Apr-26 | Day time   | 3   | 502               |         |                 |         |         |
|             |                                                              | 2624543 (4)-4    | 24-Apr-26 | Day time   | 4   | 495               |         |                 |         |         |
| 2           | Area : Control Room Building FL.1 : ทางเดิน Cable Room       | 2624543 (4)-5    | 24-Apr-26 | Day time   | 1   | 140               | 178     | 50              | 100     | Pass    |
|             |                                                              | 2624543 (4)-6    | 24-Apr-26 | Day time   | 2   | 190               |         |                 |         |         |
|             |                                                              | 2624543 (4)-7    | 24-Apr-26 | Day time   | 3   | 185               |         |                 |         |         |
|             |                                                              | 2624543 (4)-8    | 24-Apr-26 | Day time   | 4   | 195               |         |                 |         |         |
| 3           | Area : Control Room Building FL.1 : ทางประตูทางเข้าอาคาร CCR | 2624543 (4)-9    | 24-Apr-26 | Night time | 1   | 126               | 155     | 50              | 100     | Pass    |
|             |                                                              | 2624543 (4)-10   | 24-Apr-26 | Night time | 2   | 184               |         |                 |         |         |
| 4           | Area : Control Room Building FL.1 : ทางเดินหลังค             | 2624543 (4)-11   | 24-Apr-26 | Night time | 1   | 169               | 99      | 25              | 50      | Pass    |
|             |                                                              | 2624543 (4)-12   | 24-Apr-26 | Night time | 2   | 115               |         |                 |         |         |
|             |                                                              | 2624543 (4)-13   | 24-Apr-26 | Night time | 3   | 78                |         |                 |         |         |
|             |                                                              | 2624543 (4)-14   | 24-Apr-26 | Night time | 4   | 69                |         |                 |         |         |
|             |                                                              | 2624543 (4)-15   | 24-Apr-26 | Night time | 5   | 65                |         |                 |         |         |

Measurement by : Phongsiri Somkaew

**Guideline :** Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

Technical Management

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160  
**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location:** GCRN

**Lot ID: 2624543 (5)**

Date Received : Apr 26, 2026  
Date Reported : May 04, 2026  
Report Number: 2624543 (5)-1

Page 1 of 3

| Lay out No. | Location                                         | Reference Number | Date      | Time       | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|-------------|--------------------------------------------------|------------------|-----------|------------|-----|-------------------|---------|-----------------|---------|---------|
|             |                                                  |                  |           |            |     | Spot              | Average | Spot/Min        | Average |         |
| 1           | Area : Control Room Building FL.2 : Battery Room | 2624543 (5)-1    | 24-Apr-26 | Day time   | 1   | 345               | 302     | 100             | 200     | Pass    |
|             |                                                  | 2624543 (5)-2    | 24-Apr-26 | Day time   | 2   | 258               |         |                 |         |         |
| 2           | Area : Control Room Building FL.2 : ห้อง MCC     | 2624543 (5)-3    | 24-Apr-26 | Day time   | 1   | 461               | 290     | 100             | 200     | Pass    |
|             |                                                  | 2624543 (5)-4    | 24-Apr-26 | Day time   | 2   | 225               |         |                 |         |         |
|             |                                                  | 2624543 (5)-5    | 24-Apr-26 | Day time   | 3   | 274               |         |                 |         |         |
|             |                                                  | 2624543 (5)-6    | 24-Apr-26 | Day time   | 4   | 205               |         |                 |         |         |
|             |                                                  | 2624543 (5)-7    | 24-Apr-26 | Day time   | 5   | 203               |         |                 |         |         |
|             |                                                  | 2624543 (5)-8    | 24-Apr-26 | Day time   | 6   | 259               |         |                 |         |         |
|             |                                                  | 2624543 (5)-9    | 24-Apr-26 | Day time   | 7   | 513               |         |                 |         |         |
|             |                                                  | 2624543 (5)-10   | 24-Apr-26 | Day time   | 8   | 330               |         |                 |         |         |
|             |                                                  | 2624543 (5)-11   | 24-Apr-26 | Day time   | 9   | 360               |         |                 |         |         |
|             |                                                  | 2624543 (5)-12   | 24-Apr-26 | Day time   | 10  | 412               |         |                 |         |         |
|             |                                                  | 2624543 (5)-13   | 24-Apr-26 | Day time   | 11  | 235               |         |                 |         |         |
|             |                                                  | 2624543 (5)-14   | 24-Apr-26 | Day time   | 12  | 216               |         |                 |         |         |
|             |                                                  | 2624543 (5)-15   | 24-Apr-26 | Day time   | 13  | 318               |         |                 |         |         |
|             |                                                  | 2624543 (5)-16   | 24-Apr-26 | Day time   | 14  | 368               |         |                 |         |         |
|             |                                                  | 2624543 (5)-17   | 24-Apr-26 | Day time   | 15  | 204               |         |                 |         |         |
|             |                                                  | 2624543 (5)-18   | 24-Apr-26 | Day time   | 16  | 320               |         |                 |         |         |
|             |                                                  | 2624543 (5)-19   | 24-Apr-26 | Day time   | 17  | 422               |         |                 |         |         |
|             |                                                  | 2624543 (5)-20   | 24-Apr-26 | Day time   | 18  | 205               |         |                 |         |         |
|             |                                                  | 2624543 (5)-21   | 24-Apr-26 | Day time   | 19  | 210               |         |                 |         |         |
|             |                                                  | 2624543 (5)-22   | 24-Apr-26 | Day time   | 20  | 258               |         |                 |         |         |
|             |                                                  | 2624543 (5)-23   | 24-Apr-26 | Day time   | 21  | 303               |         |                 |         |         |
|             |                                                  | 2624543 (5)-24   | 24-Apr-26 | Day time   | 22  | 295               |         |                 |         |         |
|             |                                                  | 2624543 (5)-25   | 24-Apr-26 | Day time   | 23  | 259               |         |                 |         |         |
|             |                                                  | 2624543 (5)-26   | 24-Apr-26 | Day time   | 24  | 434               |         |                 |         |         |
|             |                                                  | 2624543 (5)-27   | 24-Apr-26 | Day time   | 25  | 261               |         |                 |         |         |
|             |                                                  | 2624543 (5)-28   | 24-Apr-26 | Day time   | 26  | 205               |         |                 |         |         |
|             |                                                  | 2624543 (5)-29   | 24-Apr-26 | Day time   | 27  | 230               |         |                 |         |         |
|             |                                                  | 2624543 (5)-30   | 24-Apr-26 | Day time   | 28  | 297               |         |                 |         |         |
|             |                                                  | 2624543 (5)-31   | 24-Apr-26 | Day time   | 29  | 234               |         |                 |         |         |
|             |                                                  | 2624543 (5)-32   | 24-Apr-26 | Day time   | 30  | 215               |         |                 |         |         |
|             |                                                  | 2624543 (5)-33   | 24-Apr-26 | Day time   | 31  | 324               |         |                 |         |         |
|             |                                                  | 2624543 (5)-34   | 24-Apr-26 | Day time   | 32  | 219               |         |                 |         |         |
|             |                                                  | 2624543 (5)-35   | 24-Apr-26 | Night time | 1   | 460               | 282     | 100             | 200     | Pass    |
|             |                                                  | 2624543 (5)-36   | 24-Apr-26 | Night time | 2   | 217               |         |                 |         |         |
|             |                                                  | 2624543 (5)-37   | 24-Apr-26 | Night time | 3   | 250               |         |                 |         |         |
|             |                                                  | 2624543 (5)-38   | 24-Apr-26 | Night time | 4   | 213               |         |                 |         |         |

Technical Management

*Supt S*  
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Section Head

Approved by

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160  
**P/O :**  
**Project Name :** Monitoring EIA  
**Project Location:** GCRN

**Lot ID: 2624543 (5)**

Date Received : Apr 26, 2026  
Date Reported : May 04, 2026  
Report Number: 2624543 (5)-1

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| Lay out No. | Location                                                 | Reference Number | Date      | Time       | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|-------------|----------------------------------------------------------|------------------|-----------|------------|-----|-------------------|---------|-----------------|---------|---------|
|             |                                                          |                  |           |            |     | Spot              | Average | Spot/Min        | Average |         |
| 2           | Area : Control Room Building FL.2 : ห้อง MCC             | 2624543 (5)-39   | 24-Apr-26 | Night time | 5   | 205               |         |                 |         |         |
|             |                                                          | 2624543 (5)-40   | 24-Apr-26 | Night time | 6   | 240               |         |                 |         |         |
|             |                                                          | 2624543 (5)-41   | 24-Apr-26 | Night time | 7   | 510               |         |                 |         |         |
|             |                                                          | 2624543 (5)-42   | 24-Apr-26 | Night time | 8   | 279               |         |                 |         |         |
|             |                                                          | 2624543 (5)-43   | 24-Apr-26 | Night time | 9   | 329               |         |                 |         |         |
|             |                                                          | 2624543 (5)-44   | 24-Apr-26 | Night time | 10  | 415               |         |                 |         |         |
|             |                                                          | 2624543 (5)-45   | 24-Apr-26 | Night time | 11  | 218               |         |                 |         |         |
|             |                                                          | 2624543 (5)-46   | 24-Apr-26 | Night time | 12  | 207               |         |                 |         |         |
|             |                                                          | 2624543 (5)-47   | 24-Apr-26 | Night time | 13  | 311               |         |                 |         |         |
|             |                                                          | 2624543 (5)-48   | 24-Apr-26 | Night time | 14  | 324               |         |                 |         |         |
|             |                                                          | 2624543 (5)-49   | 24-Apr-26 | Night time | 15  | 230               |         |                 |         |         |
|             |                                                          | 2624543 (5)-50   | 24-Apr-26 | Night time | 16  | 328               |         |                 |         |         |
|             |                                                          | 2624543 (5)-51   | 24-Apr-26 | Night time | 17  | 420               |         |                 |         |         |
|             |                                                          | 2624543 (5)-52   | 24-Apr-26 | Night time | 18  | 205               |         |                 |         |         |
|             |                                                          | 2624543 (5)-53   | 24-Apr-26 | Night time | 19  | 204               |         |                 |         |         |
|             |                                                          | 2624543 (5)-54   | 24-Apr-26 | Night time | 20  | 250               |         |                 |         |         |
|             |                                                          | 2624543 (5)-55   | 24-Apr-26 | Night time | 21  | 289               |         |                 |         |         |
|             |                                                          | 2624543 (5)-56   | 24-Apr-26 | Night time | 22  | 294               |         |                 |         |         |
|             |                                                          | 2624543 (5)-57   | 24-Apr-26 | Night time | 23  | 259               |         |                 |         |         |
|             |                                                          | 2624543 (5)-58   | 24-Apr-26 | Night time | 24  | 429               |         |                 |         |         |
|             |                                                          | 2624543 (5)-59   | 24-Apr-26 | Night time | 25  | 242               |         |                 |         |         |
|             |                                                          | 2624543 (5)-60   | 24-Apr-26 | Night time | 26  | 205               |         |                 |         |         |
|             |                                                          | 2624543 (5)-61   | 24-Apr-26 | Night time | 27  | 224               |         |                 |         |         |
|             |                                                          | 2624543 (5)-62   | 24-Apr-26 | Night time | 28  | 296               |         |                 |         |         |
|             |                                                          | 2624543 (5)-63   | 24-Apr-26 | Night time | 29  | 230               |         |                 |         |         |
|             |                                                          | 2624543 (5)-64   | 24-Apr-26 | Night time | 30  | 214               |         |                 |         |         |
|             |                                                          | 2624543 (5)-65   | 24-Apr-26 | Night time | 31  | 320               |         |                 |         |         |
|             |                                                          | 2624543 (5)-66   | 24-Apr-26 | Night time | 32  | 220               |         |                 |         |         |
| 3           | Area : Control Room Building FL.2 : ทางเดินบันไดห้อง MCC | 2624543 (5)-67   | 24-Apr-26 | Day time   | 1   | 600               | 282     | 50              | 100     | Pass    |
|             |                                                          | 2624543 (5)-68   | 24-Apr-26 | Day time   | 2   | 275               |         |                 |         |         |
|             |                                                          | 2624543 (5)-69   | 24-Apr-26 | Day time   | 3   | 147               |         |                 |         |         |
|             |                                                          | 2624543 (5)-70   | 24-Apr-26 | Day time   | 4   | 105               |         |                 |         |         |
|             |                                                          | 2624543 (5)-71   | 24-Apr-26 | Night time | 1   | 158               | 129     | 50              | 100     | Pass    |
|             |                                                          | 2624543 (5)-72   | 24-Apr-26 | Night time | 2   | 103               |         |                 |         |         |
|             |                                                          | 2624543 (5)-73   | 24-Apr-26 | Night time | 3   | 149               |         |                 |         |         |
|             |                                                          | 2624543 (5)-74   | 24-Apr-26 | Night time | 4   | 106               |         |                 |         |         |

Measurement by : Phongsiri Somkaew

Technical Management

*Supt S*  
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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA

**Project Location:** GCRN

**Lot ID: 2624543 (5)**

Date Received : Apr 26, 2026  
Date Reported : May 04, 2026  
Report Number: 2624543 (5)-1

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| GCRN        |          |                  |      |      |     |                                   |                                     |         |  |
|-------------|----------|------------------|------|------|-----|-----------------------------------|-------------------------------------|---------|--|
| Lay out No. | Location | Reference Number | Date | Time | No. | Illuminance (Lux)<br>Spot Average | Guideline Limit<br>Spot/Min Average | Comment |  |

**Guideline :** Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA

**Project Location:** GCRN

**Lot ID: 2624543 (6)**

Date Received : Apr 26, 2026  
Date Reported : May 04, 2026  
Report Number: 2624543 (6)-1

Page 1 of 2

| GCRN        |          |                  |      |      |     |                                   |                                     |         |  |
|-------------|----------|------------------|------|------|-----|-----------------------------------|-------------------------------------|---------|--|
| Lay out No. | Location | Reference Number | Date | Time | No. | Illuminance (Lux)<br>Spot Average | Guideline Limit<br>Spot/Min Average | Comment |  |

|   |                                                                |                |           |            |   |     |     |         |     |      |
|---|----------------------------------------------------------------|----------------|-----------|------------|---|-----|-----|---------|-----|------|
| 1 | Area : Control Room Building FL.3 :<br>Canteen                 | 2624543 (6)-1  | 24-Apr-26 | Day time   | 1 | 725 | 657 | 150     | 300 | Pass |
|   |                                                                | 2624543 (6)-2  | 24-Apr-26 | Day time   | 2 | 740 |     |         |     |      |
|   |                                                                | 2624543 (6)-3  | 24-Apr-26 | Day time   | 3 | 524 |     |         |     |      |
|   |                                                                | 2624543 (6)-4  | 24-Apr-26 | Day time   | 4 | 638 |     |         |     |      |
|   |                                                                | 2624543 (6)-5  | 24-Apr-26 | Night time | 1 | 722 | 640 | 150     | 300 | Pass |
|   |                                                                | 2624543 (6)-6  | 24-Apr-26 | Night time | 2 | 700 |     |         |     |      |
|   |                                                                | 2624543 (6)-7  | 24-Apr-26 | Night time | 3 | 523 |     |         |     |      |
|   |                                                                | 2624543 (6)-8  | 24-Apr-26 | Night time | 4 | 617 |     |         |     |      |
| 2 | Area : Control Room Building FL.3 :<br>Corridor                | 2624543 (6)-9  | 24-Apr-26 | Day time   | 1 | 385 | 261 | 50      | 100 | Pass |
|   |                                                                | 2624543 (6)-10 | 24-Apr-26 | Day time   | 2 | 300 |     |         |     |      |
|   |                                                                | 2624543 (6)-11 | 24-Apr-26 | Day time   | 3 | 264 |     |         |     |      |
|   |                                                                | 2624543 (6)-12 | 24-Apr-26 | Day time   | 4 | 245 |     |         |     |      |
|   |                                                                | 2624543 (6)-13 | 24-Apr-26 | Day time   | 5 | 125 |     |         |     |      |
|   |                                                                | 2624543 (6)-14 | 24-Apr-26 | Day time   | 6 | 160 |     |         |     |      |
|   |                                                                | 2624543 (6)-15 | 24-Apr-26 | Day time   | 7 | 348 |     |         |     |      |
|   |                                                                | 2624543 (6)-16 | 24-Apr-26 | Night time | 1 | 375 | 237 | 50      | 100 | Pass |
|   |                                                                | 2624543 (6)-17 | 24-Apr-26 | Night time | 2 | 220 |     |         |     |      |
|   |                                                                | 2624543 (6)-18 | 24-Apr-26 | Night time | 3 | 265 |     |         |     |      |
|   |                                                                | 2624543 (6)-19 | 24-Apr-26 | Night time | 4 | 248 |     |         |     |      |
|   |                                                                | 2624543 (6)-20 | 24-Apr-26 | Night time | 5 | 130 |     |         |     |      |
|   |                                                                | 2624543 (6)-21 | 24-Apr-26 | Night time | 6 | 155 |     |         |     |      |
|   |                                                                | 2624543 (6)-22 | 24-Apr-26 | Night time | 7 | 269 |     |         |     |      |
| 3 | Area : Control Room Building FL.3 :<br>Document Room           | 2624543 (6)-23 | 24-Apr-26 | Day time   | 1 | 575 | 518 | 150     | 300 | Pass |
|   |                                                                | 2624543 (6)-24 | 24-Apr-26 | Day time   | 2 | 460 |     |         |     |      |
|   |                                                                | 2624543 (6)-25 | 24-Apr-26 | Night time | 1 | 574 | 503 | 150     | 300 | Pass |
|   |                                                                | 2624543 (6)-26 | 24-Apr-26 | Night time | 2 | 432 |     |         |     |      |
| 4 | Spot : Control Room Building FL.3 : 16:00<br>Operation 1       | 2624543 (6)-27 | 24-Apr-26 | Day time   | 1 | 475 | -   | 400-500 | -   | Pass |
|   |                                                                | 2624543 (6)-28 | 24-Apr-26 | Night time | 1 | 469 | -   | 400-500 | -   | Pass |
| 5 | Spot : Control Room Building FL.3 : 16:00<br>Operation 2       | 2624543 (6)-29 | 24-Apr-26 | Day time   | 1 | 482 | -   | 400-500 | -   | Pass |
|   |                                                                | 2624543 (6)-30 | 24-Apr-26 | Night time | 1 | 453 | -   | 400-500 | -   | Pass |
| 6 | Spot : Control Room Building FL.3 : 16:00<br>Operation 3       | 2624543 (6)-31 | 24-Apr-26 | Day time   | 1 | 410 | -   | 400-500 | -   | Pass |
|   |                                                                | 2624543 (6)-32 | 24-Apr-26 | Night time | 1 | 405 | -   | 400-500 | -   | Pass |
| 7 | Spot : Control Room Building FL.3 : 16:00<br>Operation Manager | 2624543 (6)-33 | 24-Apr-26 | Day time   | 1 | 518 | -   | 400-500 | -   | Pass |

Technical Management

*Supot S*  
Supot Salamteh  
Section Head

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location: GCRN

Lot ID: 2624543 (6)

Date Received : Apr 26, 2026

Date Reported : May 04, 2026

Report Number: 2624543 (6)-1

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| GCRN        |                                                                                       |                  |           |            |     |                   |         |                 |         |         |
|-------------|---------------------------------------------------------------------------------------|------------------|-----------|------------|-----|-------------------|---------|-----------------|---------|---------|
| Lay out No. | Location                                                                              | Reference Number | Date      | Time       | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|             |                                                                                       |                  |           |            |     | Spot              | Average | Spot/Min        | Average |         |
| 8           | Spot : Control Room Building FL.3 : โต๊ะทำงาน shift Leader 1                          | 2624543 (6)-34   | 24-Apr-26 | Day time   | 1   | 485               | -       | 400-500         | -       | Pass    |
|             |                                                                                       | 2624543 (6)-35   | 24-Apr-26 | Night time | 1   | 483               | -       | 400-500         | -       | Pass    |
| 9           | Spot : Control Room Building FL.3 : โต๊ะทำงาน shift Leader 2                          | 2624543 (6)-36   | 24-Apr-26 | Day time   | 1   | 415               | -       | 400-500         | -       | Pass    |
|             |                                                                                       | 2624543 (6)-37   | 24-Apr-26 | Night time | 1   | 410               | -       | 400-500         | -       | Pass    |
| 10          | Area : Control Room Building FL.3 : ห้องเดินห้อง Control Cabinet (บริเวณโสตทัศนศึกษา) | 2624543 (6)-38   | 24-Apr-26 | Day time   | 1   | 420               | 395     | 50              | 100     | Pass    |
|             |                                                                                       | 2624543 (6)-39   | 24-Apr-26 | Day time   | 2   | 394               |         |                 |         |         |
|             |                                                                                       | 2624543 (6)-40   | 24-Apr-26 | Day time   | 3   | 360               |         |                 |         |         |
|             |                                                                                       | 2624543 (6)-41   | 24-Apr-26 | Day time   | 4   | 405               |         |                 |         |         |
|             |                                                                                       | 2624543 (6)-42   | 24-Apr-26 | Night time | 1   | 320               | 347     | 50              | 100     | Pass    |
|             |                                                                                       | 2624543 (6)-43   | 24-Apr-26 | Night time | 2   | 365               |         |                 |         |         |
|             |                                                                                       | 2624543 (6)-44   | 24-Apr-26 | Night time | 3   | 340               |         |                 |         |         |
|             |                                                                                       | 2624543 (6)-45   | 24-Apr-26 | Night time | 4   | 362               |         |                 |         |         |

Measurement by : Phongsiri Somkaew

Guideline : Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

Technical Management

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location: GCRN

Lot ID: 2624543 (7)

Date Received : Apr 26, 2026

Date Reported : May 04, 2026

Report Number: 2624543 (7)-1

Page 1 of 1

| GCRN        |                                                          |                  |           |            |     |                   |         |                 |         |         |
|-------------|----------------------------------------------------------|------------------|-----------|------------|-----|-------------------|---------|-----------------|---------|---------|
| Lay out No. | Location                                                 | Reference Number | Date      | Time       | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|             |                                                          |                  |           |            |     | Spot              | Average | Spot/Min        | Average |         |
| 1           | Spot : Lab Chemical Building : โต๊ะทำงาน Operation Demin | 2624543 (7)-1    | 24-Apr-26 | Day time   | 1   | 615               | -       | 400-500         | -       | Pass    |
|             |                                                          | 2624543 (7)-2    | 24-Apr-26 | Night time | 1   | 589               | -       | 400-500         | -       | Pass    |
| 2           | Spot : Lab Chemical Building : โต๊ะทำงาน นักเคมี         | 2624543 (7)-3    | 24-Apr-26 | Day time   | 1   | 997               | -       | 400-500         | -       | Pass    |
|             |                                                          | 2624543 (7)-4    | 24-Apr-26 | Night time | 1   | 995               | -       | 400-500         | -       | Pass    |
| 3           | Spot : Lab Chemical Building : โต๊ะวิเคราะห์คุณภาพน้ำ    | 2624543 (7)-5    | 24-Apr-26 | Day time   | 1   | 588               | -       | 400-500         | -       | Pass    |
|             |                                                          | 2624543 (7)-6    | 24-Apr-26 | Night time | 1   | 405               | -       | 400-500         | -       | Pass    |
| 4           | Area : Lab Chemical Building : ห้องไฟฟ้า MCC Demin Plant | 2624543 (7)-7    | 24-Apr-26 | Day time   | 1   | 645               | 409     | 100             | 200     | Pass    |
|             |                                                          | 2624543 (7)-8    | 24-Apr-26 | Day time   | 2   | 516               |         |                 |         |         |
|             |                                                          | 2624543 (7)-9    | 24-Apr-26 | Day time   | 3   | 264               |         |                 |         |         |
|             |                                                          | 2624543 (7)-10   | 24-Apr-26 | Day time   | 4   | 212               |         |                 |         |         |
|             |                                                          | 2624543 (7)-11   | 24-Apr-26 | Night time | 1   | 639               | 401     | 100             | 200     | Pass    |
|             |                                                          | 2624543 (7)-12   | 24-Apr-26 | Night time | 2   | 492               |         |                 |         |         |
|             |                                                          | 2624543 (7)-13   | 24-Apr-26 | Night time | 3   | 263               |         |                 |         |         |
|             |                                                          | 2624543 (7)-14   | 24-Apr-26 | Night time | 4   | 209               |         |                 |         |         |
|             |                                                          | 2624543 (7)-15   | 24-Apr-26 | Day time   | 1   | 991               | 586     | 50              | 100     | Pass    |
|             |                                                          | 2624543 (7)-16   | 24-Apr-26 | Day time   | 2   | 578               |         |                 |         |         |
| 5           | Area : Lab Chemical Building : ทางเดินอาคาร Lab          | 2624543 (7)-17   | 24-Apr-26 | Day time   | 3   | 435               |         |                 |         |         |
|             |                                                          | 2624543 (7)-18   | 24-Apr-26 | Day time   | 4   | 342               |         |                 |         |         |
|             |                                                          | 2624543 (7)-19   | 24-Apr-26 | Night time | 1   | 197               | 137     | 50              | 100     | Pass    |
|             |                                                          | 2624543 (7)-20   | 24-Apr-26 | Night time | 2   | 110               |         |                 |         |         |
|             |                                                          | 2624543 (7)-21   | 24-Apr-26 | Night time | 3   | 100               |         |                 |         |         |
|             |                                                          | 2624543 (7)-22   | 24-Apr-26 | Night time | 4   | 140               |         |                 |         |         |
| 6           | Area : Lab Chemical Building : ทางเดินอาคารอาคาร Lab     | 2624543 (7)-23   | 24-Apr-26 | Night time | 1   | 61                | 68      | 25              | 50      | Pass    |
|             |                                                          | 2624543 (7)-24   | 24-Apr-26 | Night time | 2   | 65                |         |                 |         |         |
|             |                                                          | 2624543 (7)-25   | 24-Apr-26 | Night time | 3   | 78                |         |                 |         |         |

Measurement by : Phongsiri Somkaew

Guideline : Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

Technical Management

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location: GCRN

Lot ID: 2624543 (8)

Date Received : Apr 26, 2026

Date Reported : May 04, 2026

Report Number: 2624543 (8)-1

Page 1 of 2

| Lay out No. | Location                                             | Reference Number | Date      | Time     | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|-------------|------------------------------------------------------|------------------|-----------|----------|-----|-------------------|---------|-----------------|---------|---------|
|             |                                                      |                  |           |          |     | Spot              | Average | Spot/Min        | Average |         |
| 1           | Area : Maintenance Building FL.1 : Corridor          | 2624543 (8)-1    | 24-Apr-26 | Day time | 1   | 625               | 526     | 50              | 100     | Pass    |
|             |                                                      | 2624543 (8)-2    | 24-Apr-26 | Day time | 2   | 432               |         |                 |         |         |
|             |                                                      | 2624543 (8)-3    | 24-Apr-26 | Day time | 3   | 444               |         |                 |         |         |
|             |                                                      | 2624543 (8)-4    | 24-Apr-26 | Day time | 4   | 352               |         |                 |         |         |
|             |                                                      | 2624543 (8)-5    | 24-Apr-26 | Day time | 5   | 556               |         |                 |         |         |
|             |                                                      | 2624543 (8)-6    | 24-Apr-26 | Day time | 6   | 658               |         |                 |         |         |
|             |                                                      | 2624543 (8)-7    | 24-Apr-26 | Day time | 7   | 515               |         |                 |         |         |
|             |                                                      | 2624543 (8)-8    | 24-Apr-26 | Day time | 8   | 435               |         |                 |         |         |
|             |                                                      | 2624543 (8)-9    | 24-Apr-26 | Day time | 9   | 714               |         |                 |         |         |
| 2           | Area : Maintenance Building FL.1 : LAN & SERVER ROOM | 2624543 (8)-10   | 24-Apr-26 | Day time | 1   | 288               | 322     | 100             | 200     | Pass    |
|             |                                                      | 2624543 (8)-11   | 24-Apr-26 | Day time | 2   | 355               |         |                 |         |         |
| 3           | Area : Maintenance Building FL.1 : Work Shop         | 2624543 (8)-12   | 24-Apr-26 | Day time | 1   | 305               | 410     | 150             | 300     | Pass    |
|             |                                                      | 2624543 (8)-13   | 24-Apr-26 | Day time | 2   | 450               |         |                 |         |         |
|             |                                                      | 2624543 (8)-14   | 24-Apr-26 | Day time | 3   | 339               |         |                 |         |         |
|             |                                                      | 2624543 (8)-15   | 24-Apr-26 | Day time | 4   | 414               |         |                 |         |         |
|             |                                                      | 2624543 (8)-16   | 24-Apr-26 | Day time | 5   | 725               |         |                 |         |         |
|             |                                                      | 2624543 (8)-17   | 24-Apr-26 | Day time | 6   | 508               |         |                 |         |         |
|             |                                                      | 2624543 (8)-18   | 24-Apr-26 | Day time | 7   | 315               |         |                 |         |         |
|             |                                                      | 2624543 (8)-19   | 24-Apr-26 | Day time | 8   | 300               |         |                 |         |         |
|             |                                                      | 2624543 (8)-20   | 24-Apr-26 | Day time | 9   | 304               |         |                 |         |         |
|             |                                                      | 2624543 (8)-21   | 24-Apr-26 | Day time | 10  | 410               |         |                 |         |         |
|             |                                                      | 2624543 (8)-22   | 24-Apr-26 | Day time | 11  | 435               |         |                 |         |         |
|             |                                                      | 2624543 (8)-23   | 24-Apr-26 | Day time | 12  | 411               |         |                 |         |         |
| 4           | Spot : Maintenance Building FL.1 : ตู้ควบคุม C&I 1   | 2624543 (8)-24   | 24-Apr-26 | Day time | 1   | 410               | -       | 400-500         | -       | Pass    |
| 5           | Spot : Maintenance Building FL.1 : ตู้ควบคุม C&I 2   | 2624543 (8)-25   | 24-Apr-26 | Day time | 1   | 415               | -       | 400-500         | -       | Pass    |
| 6           | Spot : Maintenance Building FL.1 : ตู้ควบคุม C&I 3   | 2624543 (8)-26   | 24-Apr-26 | Day time | 1   | 785               | -       | 400-500         | -       | Pass    |
| 7           | Spot : Maintenance Building FL.1 : ตู้ควบคุม C&I 4   | 2624543 (8)-27   | 24-Apr-26 | Day time | 1   | 671               | -       | 400-500         | -       | Pass    |

Technical Management

*Supot S*

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Section Head

Approved by

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Wichan Choonharat  
Assistant Manager

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location: GCRN

Lot ID: 2624543 (8)

Date Received : Apr 26, 2026

Date Reported : May 04, 2026

Report Number: 2624543 (8)-1

Page 2 of 2

| Lay out No. | Location                                                     | Reference Number | Date      | Time     | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|-------------|--------------------------------------------------------------|------------------|-----------|----------|-----|-------------------|---------|-----------------|---------|---------|
|             |                                                              |                  |           |          |     | Spot              | Average | Spot/Min        | Average |         |
| 8           | Area : Maintenance Building FL.1 : บันไดทางเดิน              | 2624543 (8)-28   | 24-Apr-26 | Day time | 1   | 267               | 270     | 50              | 100     | Pass    |
|             |                                                              | 2624543 (8)-29   | 24-Apr-26 | Day time | 2   | 230               |         |                 |         |         |
|             |                                                              | 2624543 (8)-30   | 24-Apr-26 | Day time | 3   | 235               |         |                 |         |         |
|             |                                                              | 2624543 (8)-31   | 24-Apr-26 | Day time | 4   | 234               |         |                 |         |         |
|             |                                                              | 2624543 (8)-32   | 24-Apr-26 | Day time | 5   | 306               |         |                 |         |         |
|             |                                                              | 2624543 (8)-33   | 24-Apr-26 | Day time | 6   | 345               |         |                 |         |         |
| 9           | Spot : Maintenance Building FL.1 : Warehouse Room : ตู้ทำงาน | 2624543 (8)-34   | 24-Apr-26 | Day time | 1   | 485               | -       | 400-500         | -       | Pass    |

Measurement by : Phongsiri Somkaew

Guideline : Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

Technical Management

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Section Head

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location: GCRN

Lot ID: 2624543 (9)

Date Received : Apr 26, 2026

Date Reported : May 04, 2026

Report Number: 2624543 (9)-1

Page 1 of 2

| GCRN        |                                                       |                  |           |          |     |                   |         |                 |         |         |
|-------------|-------------------------------------------------------|------------------|-----------|----------|-----|-------------------|---------|-----------------|---------|---------|
| Lay out No. | Location                                              | Reference Number | Date      | Time     | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|             |                                                       |                  |           |          |     | Spot              | Average | Spot/Min        | Average |         |
| 1           | Area : Maintenance Building FL.2 : Canteen            | 2624543 (9)-1    | 24-Apr-26 | Day time | 1   | 523               | 568     | 150             | 300     | Pass    |
|             |                                                       | 2624543 (9)-2    | 24-Apr-26 | Day time | 2   | 650               |         |                 |         |         |
|             |                                                       | 2624543 (9)-3    | 24-Apr-26 | Day time | 3   | 584               |         |                 |         |         |
|             |                                                       | 2624543 (9)-4    | 24-Apr-26 | Day time | 4   | 515               |         |                 |         |         |
| 2           | Area : Maintenance Building FL.2 : Copy Room          | 2624543 (9)-5    | 24-Apr-26 | Day time | 1   | 465               | 438     | 150             | 300     | Pass    |
|             |                                                       | 2624543 (9)-6    | 24-Apr-26 | Day time | 2   | 410               |         |                 |         |         |
| 3           | Area : Maintenance Building FL.2 : Corridor           | 2624543 (9)-7    | 24-Apr-26 | Day time | 1   | 366               | 473     | 50              | 100     | Pass    |
|             |                                                       | 2624543 (9)-8    | 24-Apr-26 | Day time | 2   | 430               |         |                 |         |         |
|             |                                                       | 2624543 (9)-9    | 24-Apr-26 | Day time | 3   | 687               |         |                 |         |         |
|             |                                                       | 2624543 (9)-10   | 24-Apr-26 | Day time | 4   | 763               |         |                 |         |         |
|             |                                                       | 2624543 (9)-11   | 24-Apr-26 | Day time | 5   | 789               |         |                 |         |         |
|             |                                                       | 2624543 (9)-12   | 24-Apr-26 | Day time | 6   | 278               |         |                 |         |         |
|             |                                                       | 2624543 (9)-13   | 24-Apr-26 | Day time | 7   | 609               |         |                 |         |         |
|             |                                                       | 2624543 (9)-14   | 24-Apr-26 | Day time | 8   | 150               |         |                 |         |         |
|             |                                                       | 2624543 (9)-15   | 24-Apr-26 | Day time | 9   | 185               |         |                 |         |         |
| 4           | Area : Maintenance Building FL.2 : Document Room      | 2624543 (9)-16   | 24-Apr-26 | Day time | 1   | 605               | 648     | 150             | 300     | Pass    |
|             |                                                       | 2624543 (9)-17   | 24-Apr-26 | Day time | 2   | 577               |         |                 |         |         |
|             |                                                       | 2624543 (9)-18   | 24-Apr-26 | Day time | 3   | 697               |         |                 |         |         |
|             |                                                       | 2624543 (9)-19   | 24-Apr-26 | Day time | 4   | 715               |         |                 |         |         |
| 5           | Area : Maintenance Building FL.2 : Meeting Room       | 2624543 (9)-20   | 24-Apr-26 | Day time | 1   | 691               | 679     | 150             | 300     | Pass    |
|             |                                                       | 2624543 (9)-21   | 24-Apr-26 | Day time | 2   | 548               |         |                 |         |         |
|             |                                                       | 2624543 (9)-22   | 24-Apr-26 | Day time | 3   | 613               |         |                 |         |         |
|             |                                                       | 2624543 (9)-23   | 24-Apr-26 | Day time | 4   | 656               |         |                 |         |         |
|             |                                                       | 2624543 (9)-24   | 24-Apr-26 | Day time | 5   | 889               |         |                 |         |         |
|             |                                                       | 2624543 (9)-25   | 24-Apr-26 | Day time | 6   | 678               |         |                 |         |         |
| 6           | Spot : Maintenance Building FL.2 : ไฟฟ้า Electrical 1 | 2624543 (9)-26   | 24-Apr-26 | Day time | 1   | 410               | -       | 400-500         | -       | Pass    |
| 7           | Spot : Maintenance Building FL.2 : ไฟฟ้า Electrical 2 | 2624543 (9)-27   | 24-Apr-26 | Day time | 1   | 494               | -       | 400-500         | -       | Pass    |
| 8           | Spot : Maintenance Building FL.2 : ไฟฟ้า Electrical 3 | 2624543 (9)-28   | 24-Apr-26 | Day time | 1   | 785               | -       | 400-500         | -       | Pass    |
| 9           | Spot : Maintenance Building FL.2 : ไฟฟ้า Mechanical 1 | 2624543 (9)-29   | 24-Apr-26 | Day time | 1   | 752               | -       | 400-500         | -       | Pass    |

Technical Management

*Supt S*

Supot Salamteh  
Section Head

Approved by

*Nichan Chonharat*

Wichan Choonharat  
Assistant Manager

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## Analysis / Test Report

Client : Gulf JP CRN Co., Ltd.

59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

P/O :

Project Name : Monitoring EIA

Project Location: GCRN

Lot ID: 2624543 (9)

Date Received : Apr 26, 2026

Date Reported : May 04, 2026

Report Number: 2624543 (9)-1

Page 2 of 2

| GCRN        |                                                                  |                  |           |          |     |                   |         |                 |         |         |
|-------------|------------------------------------------------------------------|------------------|-----------|----------|-----|-------------------|---------|-----------------|---------|---------|
| Lay out No. | Location                                                         | Reference Number | Date      | Time     | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|             |                                                                  |                  |           |          |     | Spot              | Average | Spot/Min        | Average |         |
| 10          | Spot : Maintenance Building FL.2 : ไฟฟ้า Mechanical 2            | 2624543 (9)-30   | 24-Apr-26 | Day time | 1   | 748               | -       | 400-500         | -       | Pass    |
| 11          | Spot : Maintenance Building FL.2 : ไฟฟ้า Mechanical 3            | 2624543 (9)-31   | 24-Apr-26 | Day time | 1   | 533               | -       | 400-500         | -       | Pass    |
| 12          | Spot : Maintenance Building FL.2 : ไฟฟ้า Maintenance Manager     | 2624543 (9)-32   | 24-Apr-26 | Day time | 1   | 669               | -       | 400-500         | -       | Pass    |
| 13          | Spot : Maintenance Building FL.2 : ไฟฟ้า งานผู้ช่วยเครื่องกล     | 2624543 (9)-33   | 24-Apr-26 | Day time | 1   | 434               | -       | 400-500         | -       | Pass    |
| 14          | Spot : Maintenance Building FL.2 : ไฟฟ้า งานผู้ช่วยช่างไฟฟ้า C&I | 2624543 (9)-34   | 24-Apr-26 | Day time | 1   | 427               | -       | 400-500         | -       | Pass    |
| 15          | Spot : Maintenance Building FL.2 : IT Room : ไฟฟ้างาน            | 2624543 (9)-35   | 24-Apr-26 | Day time | 1   | 784               | -       | 400-500         | -       | Pass    |

Measurement by : Phongsiri Somkaew

Guideline : Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

Technical Management

*Supt S*

Supot Salamteh  
Section Head

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Assistant Manager

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA

**Project Location:** GCRN

**Lot ID: 2624543 (10)**

Date Received : Apr 26, 2026  
Date Reported : May 04, 2026  
Report Number: 2624543 (10)-1

Page 1 of 1

| GCRN        |                                                                                  |                  |           |          |     |                   |         |                 |         |         |
|-------------|----------------------------------------------------------------------------------|------------------|-----------|----------|-----|-------------------|---------|-----------------|---------|---------|
| Lay out No. | Location                                                                         | Reference Number | Date      | Time     | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|             |                                                                                  |                  |           |          |     | Spot              | Average | Spot/Min        | Average |         |
| 1           | Area : ห้อง Switchyard Control Room :<br>ห้อง 115 Kv Relay Protection            | 2624543 (10)-1   | 24-Apr-26 | Day time | 1   | 500               | 573     | 100             | 200     | Pass    |
|             |                                                                                  | 2624543 (10)-2   | 24-Apr-26 | Day time | 2   | 578               |         |                 |         |         |
|             |                                                                                  | 2624543 (10)-3   | 24-Apr-26 | Day time | 3   | 745               |         |                 |         |         |
|             |                                                                                  | 2624543 (10)-4   | 24-Apr-26 | Day time | 4   | 524               |         |                 |         |         |
|             |                                                                                  | 2624543 (10)-5   | 24-Apr-26 | Day time | 5   | 514               |         |                 |         |         |
|             |                                                                                  | 2624543 (10)-6   | 24-Apr-26 | Day time | 6   | 579               |         |                 |         |         |
| 2           | Area : ห้อง Switchyard Control Room :<br>ห้อง 22 Kv Switch Gear (บริเวณหม้อแปลง) | 2624543 (10)-7   | 24-Apr-26 | Day time | 1   | 293               | 235     | 100             | 200     | Pass    |
|             |                                                                                  | 2624543 (10)-8   | 24-Apr-26 | Day time | 2   | 208               |         |                 |         |         |
|             |                                                                                  | 2624543 (10)-9   | 24-Apr-26 | Day time | 3   | 205               |         |                 |         |         |
| 3           | Area : ห้อง Switchyard Control Room :<br>ห้อง Battery 115 Kv Relay Protection    | 2624543 (10)-10  | 24-Apr-26 | Day time | 1   | 275               | 274     | 100             | 200     | Pass    |
|             |                                                                                  | 2624543 (10)-11  | 24-Apr-26 | Day time | 2   | 273               |         |                 |         |         |
| 4           | Area : ห้อง Switchyard Control Room :<br>ห้อง Battery Terminal Sub 115 Kv        | 2624543 (10)-12  | 24-Apr-26 | Day time | 1   | 204               | 204     | 100             | 200     | Pass    |
|             |                                                                                  | 2624543 (10)-13  | 24-Apr-26 | Day time | 2   | 205               |         |                 |         |         |
| 5           | Area : ห้อง Switchyard Control Room :<br>ห้อง Terminal Sub 115 Kv                | 2624543 (10)-14  | 24-Apr-26 | Day time | 1   | 461               | 331     | 100             | 200     | Pass    |
|             |                                                                                  | 2624543 (10)-15  | 24-Apr-26 | Day time | 2   | 375               |         |                 |         |         |
|             |                                                                                  | 2624543 (10)-16  | 24-Apr-26 | Day time | 3   | 212               |         |                 |         |         |
|             |                                                                                  | 2624543 (10)-17  | 24-Apr-26 | Day time | 4   | 252               |         |                 |         |         |
|             |                                                                                  | 2624543 (10)-18  | 24-Apr-26 | Day time | 5   | 370               |         |                 |         |         |
|             |                                                                                  | 2624543 (10)-19  | 24-Apr-26 | Day time | 6   | 318               |         |                 |         |         |

Measurement by : Phongsiri Somkaew

**Guideline :** Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

Technical Management

*Supot S*  
Supot Salamteh  
Section Head

Approved by

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Assistant Manager

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## Analysis / Test Report

**Client :** Gulf JP CRN Co., Ltd.  
59/4 Moo 4, Chiang Rak Noi, Sam Khok, Pathumthani Thailand 12160

**P/O :**  
**Project Name :** Monitoring EIA

**Project Location:** GCRN

**Lot ID: 2624543 (11)**

Date Received : Apr 26, 2026  
Date Reported : May 04, 2026  
Report Number: 2624543 (11)-1

Page 1 of 1

| GCRN        |                                     |                  |           |            |     |                   |         |                 |         |         |
|-------------|-------------------------------------|------------------|-----------|------------|-----|-------------------|---------|-----------------|---------|---------|
| Lay out No. | Location                            | Reference Number | Date      | Time       | No. | Illuminance (Lux) |         | Guideline Limit |         | Comment |
|             |                                     |                  |           |            |     | Spot              | Average | Spot/Min        | Average |         |
| 1           | Area : ห้อง 115 Kv Relay Protection | 2624543 (11)-1   | 24-Apr-26 | Night time | 1   | 785               | 610     | -               | 100     | Pass    |
|             |                                     | 2624543 (11)-2   | 24-Apr-26 | Night time | 2   | 436               |         |                 |         |         |

Measurement by : Phongsiri Somkaew

**Guideline :** Notification of Department of Labour Protection and Welfare, B.E.2560 (2017) dated November 27, B.E.2560 (2017), and published in the Royal Government Gazette, Vol.135, Part 39D dated February 21 B.E.2561 (2018)

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# ภาคผนวก จ

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มาตรฐานที่เกี่ยวข้อง



ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ  
ฉบับที่ ๒๔ (พ.ศ. ๒๕๔๗)  
เรื่อง กำหนดมาตรฐานคุณภาพอากาศในบรรยากาศโดยทั่วไป

อาศัยอำนาจตามความในมาตรา ๓๒ และมาตรา ๓๔ แห่งพระราชบัญญัติส่งเสริมและรักษาคุณภาพสิ่งแวดล้อมแห่งชาติ พ.ศ. ๒๕๓๕ อันเป็นพระราชบัญญัติที่มีบทบัญญัติบางประการเกี่ยวกับการจำกัดสิทธิและเสรีภาพของบุคคล ซึ่งมาตรา ๒๙ ประกอบกับมาตรา ๓๕ มาตรา ๔๘ มาตรา ๕๐ และมาตรา ๕๑ ของรัฐธรรมนูญแห่งราชอาณาจักรไทยบัญญัติให้กระทำได้โดยอาศัยอำนาจตามบทบัญญัติแห่งกฎหมาย คณะกรรมการสิ่งแวดล้อมแห่งชาติ จึงได้มีมติในคราวการประชุมครั้งที่ ๒/๒๕๔๗ เมื่อวันที่ ๒๔ กุมภาพันธ์ ๒๕๔๗ ให้ปรับปรุงแก้ไขมาตรฐานคุณภาพอากาศในบรรยากาศโดยทั่วไป ดังต่อไปนี้

ข้อ ๑ ให้ยกเลิกความใน (๔) ของข้อ ๒ แห่งประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ ๑๐ (พ.ศ. ๒๕๓๘) ออกตามความในพระราชบัญญัติส่งเสริมและรักษาคุณภาพสิ่งแวดล้อมแห่งชาติ พ.ศ. ๒๕๓๕ เรื่อง กำหนดมาตรฐานคุณภาพอากาศในบรรยากาศโดยทั่วไป และให้ใช้ความต่อไปนี้แทน

“(๔) ค่าเฉลี่ยของก๊าซซัลเฟอร์ไดออกไซด์ ในเวลา ๒๔ ชั่วโมง จะต้องไม่เกิน ๐.๑๒ ส่วนในล้านส่วน หรือไม่เกิน ๐.๓๐ มิลลิกรัมต่อลูกบาศก์เมตร และค่ามัธยฐานเลขคณิต (Arithmetic Mean) ในเวลา ๑ ปี จะต้องไม่เกิน ๐.๐๔ ส่วนในล้านส่วน หรือไม่เกิน ๐.๑๐ มิลลิกรัมต่อลูกบาศก์เมตร”

ข้อ ๒ ให้ยกเลิกความใน (๒) และ (๓) ของข้อ ๔ แห่งประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ ๑๐ (พ.ศ. ๒๕๓๘) ออกตามความในพระราชบัญญัติส่งเสริมและรักษาคุณภาพสิ่งแวดล้อมแห่งชาติ พ.ศ. ๒๕๓๕ เรื่อง กำหนดมาตรฐานคุณภาพอากาศในบรรยากาศโดยทั่วไป และให้ใช้ความต่อไปนี้แทน

- ๒ -

“(๒) ค่าเฉลี่ยของฝุ่นละอองขนาดไม่เกิน ๑๐ ไมครอน ในเวลา ๒๔ ชั่วโมง จะต้องไม่เกิน ๐.๑๒ มิลลิกรัมต่อลูกบาศก์เมตร และค่ามัธยฐานเลขคณิต (Arithmetic Mean) ในเวลา ๑ ปี จะต้องไม่เกิน ๐.๐๕ มิลลิกรัมต่อลูกบาศก์เมตร

(๓) ค่าเฉลี่ยของฝุ่นละอองรวมหรือฝุ่นละอองขนาดไม่เกิน ๑๐๐ ไมครอน ในเวลา ๒๔ ชั่วโมง จะต้องไม่เกิน ๐.๓๓ มิลลิกรัมต่อลูกบาศก์เมตร และค่ามัธยฐานเลขคณิต (Arithmetic Mean) ในเวลา ๑ ปี จะต้องไม่เกิน ๐.๑๐ มิลลิกรัมต่อลูกบาศก์เมตร”

ประกาศ ณ วันที่ ๙ สิงหาคม พ.ศ. ๒๕๔๗

(ลงนาม) จาตุรนต์ ฉายแสง

(นายจาตุรนต์ ฉายแสง)

รองนายกรัฐมนตรี

ปฏิบัติหน้าที่ประธานคณะกรรมการสิ่งแวดล้อมแห่งชาติ

ราชกิจจานุเบกษา ฉบับประกาศทั่วไป เล่ม ๑๒๑ ตอนพิเศษ ๑๐๔ ง วันที่ ๒๒ กันยายน ๒๕๔๗

## ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ

ฉบับที่ ๓๓ (พ.ศ. ๒๕๕๒)

เรื่อง กำหนดมาตรฐานค่าก๊าซไนโตรเจนไดออกไซด์ในบรรยากาศโดยทั่วไป

โดยที่เป็นการสมควรกำหนดมาตรฐานค่าก๊าซไนโตรเจนไดออกไซด์ในบรรยากาศโดยทั่วไป เพื่อเป็นเกณฑ์ทั่วไปสำหรับการส่งเสริมและรักษาคุณภาพสิ่งแวดล้อมตามพระราชบัญญัติส่งเสริมและรักษาคุณภาพสิ่งแวดล้อมแห่งชาติ พ.ศ. ๒๕๓๕

อาศัยอำนาจตามความในมาตรา ๓๒ (๔) และมาตรา ๓๔ แห่งพระราชบัญญัติส่งเสริมและรักษาคุณภาพสิ่งแวดล้อมแห่งชาติ พ.ศ. ๒๕๓๕ อันเป็นพระราชบัญญัติที่มีบทบัญญัติบางประการเกี่ยวกับการจำกัดสิทธิและเสรีภาพของบุคคล ซึ่งมาตรา ๒๘ ประกอบกับมาตรา ๓๓ มาตรา ๓๔ มาตรา ๔๑ และมาตรา ๔๒ ของรัฐธรรมนูญแห่งราชอาณาจักรไทย บัญญัติให้กระทำได้ โดยอาศัยอำนาจตามบทบัญญัติแห่งกฎหมาย คณะกรรมการสิ่งแวดล้อมแห่งชาติจึงออกประกาศ กำหนดมาตรฐานค่าก๊าซไนโตรเจนไดออกไซด์ในบรรยากาศโดยทั่วไปไว้ ดังต่อไปนี้

ข้อ ๑ ในประกาศนี้

“เครื่องวัดระบบเคมีลูมิเนสเซน” (Chemiluminescence) หมายความว่า เครื่องมือวัดค่าก๊าซไนโตรเจนไดออกไซด์โดยใช้ก๊าซโอโซนทำปฏิกิริยากับก๊าซไนตริกออกไซด์ซึ่งถูกเปลี่ยนมาจากก๊าซไนโตรเจนไดออกไซด์แล้ววัดความเข้มของแสงซึ่งเกิดจากปฏิกิริยานั้น ณ ที่ความยาวคลื่นที่สูงกว่า ๖๐๐ นาโนมิเตอร์ (Nanometer)

ข้อ ๒ ให้ยกเลิก

(๑) ความใน (๒) ของข้อ ๒ แห่งประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ ๑๐ (พ.ศ. ๒๕๓๕) ออกตามความในพระราชบัญญัติส่งเสริมและรักษาคุณภาพสิ่งแวดล้อมแห่งชาติ พ.ศ. ๒๕๓๕ เรื่อง กำหนดมาตรฐานคุณภาพอากาศในบรรยากาศโดยทั่วไป

(๒) ความใน (๑) ของข้อ ๖ แห่งประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ ๑๐ (พ.ศ. ๒๕๓๕) ออกตามความในพระราชบัญญัติส่งเสริมและรักษาคุณภาพสิ่งแวดล้อมแห่งชาติ พ.ศ. ๒๕๓๕ เรื่อง กำหนดมาตรฐานคุณภาพอากาศในบรรยากาศโดยทั่วไป แก้ไขเพิ่มเติมโดย ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ ๒๘ (พ.ศ. ๒๕๕๐) เรื่อง กำหนดมาตรฐานคุณภาพอากาศในบรรยากาศโดยทั่วไป

ข้อ ๓ ให้กำหนดมาตรฐานค่าก๊าซไนโตรเจนไดออกไซด์ในบรรยากาศโดยทั่วไปไว้ดังต่อไปนี้

(๑) ค่าเฉลี่ยของก๊าซไนโตรเจนไดออกไซด์ในเวลา ๑ ชั่วโมง จะต้องไม่เกิน ๐.๑๗ ส่วนในล้านส่วนหรือไม่เกิน ๐.๓๒ มิลลิกรัมต่อลูกบาศก์เมตร

(๒) ค่ามัธยฐานเลขคณิต (Arithmetic Mean) ของก๊าซไนโตรเจนไดออกไซด์ในเวลา ๑ ปี จะต้องไม่เกิน ๐.๐๓ ส่วนในล้านส่วน หรือไม่เกิน ๐.๐๕๗ มิลลิกรัมต่อลูกบาศก์เมตร

ข้อ ๔ การคำนวณค่าความเข้มข้นของก๊าซไนโตรเจนไดออกไซด์ในบรรยากาศโดยทั่วไป ให้คำนวณเทียบที่ความดัน ๑ บรรยากาศ และอุณหภูมิ ๒๕ องศาเซลเซียส

ข้อ ๕ การวัดค่าเฉลี่ยของก๊าซไนโตรเจนไดออกไซด์ในเวลา ๑ ชั่วโมง หรือค่ามัธยฐานเลขคณิต (Arithmetic Mean) ในเวลา ๑ ปี ให้ใช้เครื่องวัดระบบเคมีลูมิเนสเซน หรือระบบอื่นที่กรมควบคุมมลพิษ ให้ความเห็นชอบ

ประกาศ ณ วันที่ ๑๗ มิถุนายน พ.ศ. ๒๕๕๒

อภิสิทธิ์ เวชชาชีวะ

นายกรัฐมนตรี

ประธานกรรมการสิ่งแวดล้อมแห่งชาติ

## ประกาศกระทรวงทรัพยากรธรรมชาติและสิ่งแวดล้อม

เรื่อง กำหนดมาตรฐานควบคุมการปล่อยทิ้งอากาศเสียจากโรงไฟฟ้าใหม่

โดยที่เป็นการสมควรปรับปรุงการกำหนดมาตรฐานควบคุมการปล่อยทิ้งอากาศเสียจากโรงไฟฟ้าให้มีความเหมาะสมกับการพัฒนาเทคโนโลยี และสถานการณ์มลพิษในปัจจุบัน

อาศัยอำนาจตามความในมาตรา ๕๕ แห่งพระราชบัญญัติส่งเสริมและรักษาคุณภาพสิ่งแวดล้อมแห่งชาติ พ.ศ. ๒๕๓๕ อันเป็นพระราชบัญญัติที่มีบทบัญญัติบางประการเกี่ยวกับการจำกัดสิทธิ และเสรีภาพของบุคคล ซึ่งมาตรา ๒๕ ประกอบกับมาตรา ๓๓ มาตรา ๓๘ มาตรา ๔๑ และมาตรา ๔๓ ของรัฐธรรมนูญแห่งราชอาณาจักรไทยบัญญัติให้กระทำได้โดยอาศัยอำนาจตามบทบัญญัติแห่งกฎหมาย รัฐมนตรีว่าการกระทรวงทรัพยากรธรรมชาติและสิ่งแวดล้อม โดยคำแนะนำของคณะกรรมการควบคุมมลพิษ และโดยความเห็นชอบของคณะกรรมการสิ่งแวดล้อมแห่งชาติ จึงออกประกาศไว้ ดังต่อไปนี้

ข้อ ๑ ในประกาศนี้

“โรงไฟฟ้าใหม่” หมายความว่า โรงงานผลิตพลังงานไฟฟ้าตามกฎหมายว่าด้วยโรงงานซึ่งใช้ถ่านหิน น้ำมัน ก๊าซธรรมชาติหรือเชื้อเพลิงชีวมวลเป็นเชื้อเพลิง ที่ได้รับอนุญาตให้ประกอบกิจการหลังจากวันที่ประกาศนี้มีผลใช้บังคับ

“เชื้อเพลิงชีวมวล” หมายความว่า เชื้อเพลิงที่ได้มาจากอินทรีย์สารหรือสิ่งมีชีวิต รวมทั้งผลผลิตจากการเกษตร การปศุสัตว์ และการทำป่าไม้ เช่น ไม้ฟืน เศษไม้ แกลบ ฟาง ชานอ้อย ดัน และใบอ้อย ใบปาล์ม กะลาปาล์ม ทะลายปาล์ม กะลามะพร้าว ใบมะพร้าว เศษพืช มูลสัตว์ กากตะกอนหรือของเสียจากโรงงานแปรรูปผลิตภัณฑ์ทางการเกษตร เป็นต้น

“สภาวะแห้ง” หมายความว่า สภาวะที่ความชื้นของตัวอย่างอากาศเป็นศูนย์

ข้อ ๒ กำหนดมาตรฐานควบคุมการปล่อยทิ้งอากาศเสียจากโรงไฟฟ้าใหม่ และโรงไฟฟ้าตามกฎหมายว่าด้วยการส่งเสริมและรักษาคุณภาพสิ่งแวดล้อมแห่งชาติที่ได้รับใบอนุญาตประกอบกิจการโรงงานก่อนและในวันที่ประกาศนี้มีผลใช้บังคับเฉพาะส่วนที่ได้รับอนุญาตให้ขยายโรงงานไว้ดังต่อไปนี้

| ชนิดของเชื้อเพลิง                                                                            | ฝุ่นละออง<br>(มิลลิกรัม<br>ต่อลูกบาศก์เมตร) | ก๊าซซัลเฟอร์<br>ไดออกไซด์<br>(ส่วนในล้านส่วน) | ก๊าซออกไซด์<br>ของไนโตรเจน<br>ซึ่งคำนวณผล<br>ในรูปก๊าซไนโตรเจน<br>ไดออกไซด์<br>(ส่วนในล้านส่วน) |
|----------------------------------------------------------------------------------------------|---------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------|
| ๑. โรงไฟฟ้าที่ใช้ถ่านหินเป็นเชื้อเพลิง<br>(๑) ที่มีกำลังการผลิตไฟฟ้า<br>ไม่เกิน ๕๐ เมกะวัตต์ | ไม่เกิน ๘๐                                  | ไม่เกิน ๓๖๐                                   | ไม่เกิน ๒๐๐                                                                                     |
| (๒) ที่มีกำลังการผลิตไฟฟ้า<br>เกิน ๕๐ เมกะวัตต์                                              | ไม่เกิน ๘๐                                  | ไม่เกิน ๑๘๐                                   | ไม่เกิน ๒๐๐                                                                                     |
| ๒. โรงไฟฟ้าที่ใช้ถ่านหินเป็นเชื้อเพลิง                                                       | ไม่เกิน ๑๒๐                                 | ไม่เกิน ๒๖๐                                   | ไม่เกิน ๑๘๐                                                                                     |
| ๓. โรงไฟฟ้าที่ใช้ก๊าซธรรมชาติเป็นเชื้อเพลิง                                                  | ไม่เกิน ๖๐                                  | ไม่เกิน ๒๐                                    | ไม่เกิน ๑๒๐                                                                                     |
| ๔. โรงไฟฟ้าที่ใช้เชื้อเพลิงชีวมวลเป็นเชื้อเพลิง                                              | ไม่เกิน ๑๒๐                                 | ไม่เกิน ๖๐                                    | ไม่เกิน ๒๐๐                                                                                     |

ข้อ ๓ การคำนวณค่าอากาศเสียแต่ละชนิดที่ปล่อยทิ้งจากปล่องโรงไฟฟ้าตามข้อ ๒ ให้คำนวณผลที่ความดัน ๑ บรรยากาศหรือที่ ๗๖๐ มิลลิเมตรปรอท อุณหภูมิ ๒๕ องศาเซลเซียส ที่สภาวะแห้ง (Dry Basis) โดยมีปริมาตรอากาศส่วนเกินในการเผาไหม้ (Excess Air) ร้อยละ ๕๐ หรือที่ปริมาตรออกซิเจนส่วนเกิน (Excess Oxygen) ในการเผาไหม้ร้อยละ ๓

ข้อ ๔ กรณีโรงไฟฟ้าตามข้อ ๒ ใช้ทั้งถ่านหิน น้ำมัน ก๊าซธรรมชาติหรือเชื้อเพลิงชีวมวลเป็นเชื้อเพลิงร่วมกันตั้งแต่ ๒ ประเภทขึ้นไป ให้คำนวณมาตรฐานควบคุมการปล่อยทิ้งอากาศเสียตามสัดส่วนของเชื้อเพลิงที่ใช้แต่ละประเภทดังต่อไปนี้

คำนวณมาตรฐานควบคุมการปล่อยทิ้งอากาศเสีย = AW + BX + CY + DZ

เมื่อ A = ค่ามาตรฐานอากาศเสียที่ปล่อยทิ้งเมื่อใช้ถ่านหินเป็นเชื้อเพลิงอย่างเดียว  
B = ค่ามาตรฐานอากาศเสียที่ปล่อยทิ้งเมื่อใช้ถ่านหินเป็นเชื้อเพลิงอย่างเดียว  
C = ค่ามาตรฐานอากาศเสียที่ปล่อยทิ้งเมื่อใช้ก๊าซธรรมชาติเป็นเชื้อเพลิงอย่างเดียว  
D = ค่ามาตรฐานอากาศเสียที่ปล่อยทิ้งเมื่อใช้เชื้อเพลิงชีวมวลเป็นเชื้อเพลิงอย่างเดียว  
W = สัดส่วนของความร้อน (Heat Input) ที่ได้จากเชื้อเพลิงประเภทถ่านหิน  
X = สัดส่วนของความร้อน (Heat Input) ที่ได้จากเชื้อเพลิงประเภทถ่านหิน  
Y = สัดส่วนของความร้อน (Heat Input) ที่ได้จากเชื้อเพลิงประเภทก๊าซธรรมชาติ  
Z = สัดส่วนของความร้อน (Heat Input) ที่ได้จากเชื้อเพลิงประเภทเชื้อเพลิงชีวมวล

ข้อ ๕ การตรวจวัดอากาศเสียที่ปล่อยทิ้งจากปล่องโรงไฟฟ้าตามข้อ ๒ ให้ใช้วิธีดังต่อไปนี้

(๑) การตรวจวัดค่าฝุ่นละอองให้ใช้วิธี Determination of Particulate Emissions from Stationary Sources ที่องค์การพิทักษ์สิ่งแวดล้อมแห่งประเทศสหรัฐอเมริกา (United States Environmental Protection Agency) กำหนดไว้หรือวิธีอื่นที่คณะกรรมการควบคุมมลพิษเห็นชอบ

(๒) การตรวจวัดค่าก๊าซซัลเฟอร์ไดออกไซด์ ให้ใช้วิธี Determination of Sulfur Dioxide Emissions from Stationary Sources หรือวิธี Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions from Stationary Sources ที่องค์การพิทักษ์สิ่งแวดล้อมแห่งประเทศสหรัฐอเมริกา (United States Environmental Protection Agency) กำหนดไว้หรือวิธีอื่นที่คณะกรรมการควบคุมมลพิษเห็นชอบ

(๓) การตรวจวัดค่าก๊าซออกไซด์ของไนโตรเจน ซึ่งคำนวณผลในรูปของก๊าซไนโตรเจนไดออกไซด์ ให้ใช้วิธี Determination of Nitrogen Oxide Emissions from Stationary Sources ที่องค์การพิทักษ์สิ่งแวดล้อมแห่งประเทศสหรัฐอเมริกา (United States Environmental Protection Agency) กำหนดไว้หรือวิธีอื่นที่คณะกรรมการควบคุมมลพิษเห็นชอบ

ข้อ ๖ ประการนี้ให้ใช้บังคับตั้งแต่วันถัดจากวันประกาศในราชกิจจานุเบกษาเป็นต้นไป

ประกาศ ณ วันที่ ๒๐ ธันวาคม พ.ศ. ๒๕๕๒  
สุวิทย์ คุณกิตติ  
รัฐมนตรีว่าการกระทรวงทรัพยากรธรรมชาติและสิ่งแวดล้อม



## ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ

ฉบับที่ ๑๕ (พ.ศ. ๒๕๕๐)

### เรื่อง กำหนดมาตรฐานระดับเสียงโดยทั่วไป

อาศัยอำนาจตามความในมาตรา ๓๒ (๕) แห่งพระราชบัญญัติส่งเสริมและรักษาคุณภาพสิ่งแวดล้อมแห่งชาติ พ.ศ. ๒๕๓๕ คณะกรรมการสิ่งแวดล้อมแห่งชาติกำหนดมาตรฐานระดับเสียงโดยทั่วไปไว้ดังต่อไปนี้

ข้อ ๑ ในประกาศนี้

“ระดับเสียงโดยทั่วไป” หมายความว่า ระดับเสียงที่เกิดขึ้นในสิ่งแวดล้อม

“ค่าระดับเสียงสูงสุด” หมายความว่า ค่าระดับเสียงสูงสุดที่เกิดขึ้นในขณะใดขณะหนึ่งระหว่างการตรวจวัดระดับเสียง โดยมีหน่วยเป็นเดซิเบลเอ หรือ dB (A)

“ค่าระดับเสียงเฉลี่ย ๒๔ ชั่วโมง” หมายความว่า ค่าระดับเสียงคงที่ที่มีพลังงานเทียบเท่าระดับเสียงที่เกิดขึ้นจริง ซึ่งมีระดับเสียงเปลี่ยนแปลงตามเวลาในช่วง ๒๔ ชั่วโมง (๒๔ hours A-weighted Equivalent Continuous Sound Level) ซึ่งเรียกโดยย่อว่า Leq ๒๔ hr โดยมีหน่วยเป็นเดซิเบลเอ หรือ dB (A)

“มาตรฐานระดับเสียง” หมายความว่า เครื่องวัดระดับเสียงตามมาตรฐาน IEC ๖๕๑ หรือ IEC ๘๐๔ ของคณะกรรมการวิชาการระหว่างประเทศว่าด้วยเทคนิคไฟฟ้า (International Electrotechnical Commission, IEC)

ข้อ ๒ ให้กำหนดมาตรฐานระดับเสียงโดยทั่วไป ไว้ดังต่อไปนี้

(๑) ค่าระดับเสียงสูงสุด ไม่เกิน ๑๑๕ เดซิเบลเอ

(๒) ค่าระดับเสียงเฉลี่ย ๒๔ ชั่วโมง ไม่เกิน ๙๐ เดซิเบลเอ

ข้อ ๓ การตรวจวัดระดับเสียงโดยทั่วไป ให้ดำเนินการดังต่อไปนี้

(๑) การตรวจวัดค่าระดับเสียงสูงสุด ให้ใช้มาตรระดับเสียงตรวจวัดระดับเสียงในบริเวณที่มีคนอยู่หรืออาศัยอยู่

(๒) การตรวจวัดค่าระดับเสียงเฉลี่ย ๒๔ ชั่วโมง ให้ใช้มาตรระดับเสียงตรวจวัดระดับเสียงอย่างต่อเนื่องตลอดเวลา ๒๔ ชั่วโมงใดๆ

(๓) การตั้งไมโครโฟนของมาตรระดับเสียงที่บริเวณภายนอกอาคารให้ตั้งสูงจากพื้นไม่น้อยกว่า ๑.๒๐ เมตร โดยในรัศมี ๓.๕๐ เมตร ตามแนวราบรอบไมโครโฟน ต้องไม่มีกำแพงหรือสิ่งใดที่มีคุณสมบัติในการสะท้อนเสียงกีดขวางอยู่

(๔) การตั้งไมโครโฟนของมาตรระดับเสียงที่บริเวณภายในอาคารให้ตั้งสูงจากพื้นไม่น้อยกว่า ๑.๒๐ เมตร โดยในรัศมี ๑.๐๐ เมตร ตามแนวราบรอบไมโครโฟน ต้องไม่มีกำแพงหรือสิ่งใดที่มีคุณสมบัติในการสะท้อนเสียงกีดขวางอยู่และต้องห่างจากช่องหน้าต่างหรือช่องทางที่เปิดออกนอกอาคารอย่างน้อย ๑.๕๐ เมตร

ข้อ ๔ การคำนวณค่าระดับเสียงจะต้องเป็นไปตามวิธีการที่องค์การระหว่างประเทศว่าด้วยมาตรฐาน (International Organization for Standardization, ISO) กำหนด ซึ่งกรมควบคุมมลพิษจะประกาศในราชกิจจานุเบกษา

ประกาศ ณ วันที่ ๑๒ มีนาคม พ.ศ. ๒๕๔๐

พลเอก ชวลิต ยงใจยุทธ

นายกรัฐมนตรี

ประธานคณะกรรมการสิ่งแวดล้อมแห่งชาติ

(ประกาศในราชกิจจานุเบกษา เล่ม ๑๑๔ ตอนที่ ๒๗ ง วันที่ ๓ เมษายน ๒๕๔๐)

เล่ม ๑๒๓ ตอนพิเศษ ๑๑ ง

หน้า ๒๐  
ราชกิจจานุเบกษา

๒๕ มกราคม ๒๕๔๕

## ประกาศกระทรวงอุตสาหกรรม

เรื่อง กำหนดค่าระดับเสียงการรบกวนและระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน

พ.ศ. ๒๕๔๘

อาศัยอำนาจตามความในข้อ ๑๗ แห่งกฎกระทรวง ฉบับที่ ๒ (พ.ศ. ๒๕๓๕) ออกตามความในพระราชบัญญัติโรงงาน พ.ศ. ๒๕๓๕ อันเป็นพระราชบัญญัติที่มีบทบัญญัติบางประการเกี่ยวกับการจำกัดสิทธิและเสรีภาพของบุคคล ซึ่งมาตรา ๒๕ ประกอบกับมาตรา ๓๕ มาตรา ๔๘ และมาตรา ๕๐ ของรัฐธรรมนูญแห่งราชอาณาจักรไทย บัญญัติให้กระทำได้โดยอาศัยอำนาจตามบทบัญญัติแห่งกฎหมาย รัฐมนตรีว่าการกระทรวงอุตสาหกรรมจึงได้ออกประกาศไว้ ดังต่อไปนี้

ข้อ ๑ ในประกาศนี้

“เสียงรบกวน” หมายความว่า ระดับเสียงตรวจวัดนอกบริเวณโรงงาน ที่เกิดจากการประกอบกิจการโรงงาน ขณะมีการรบกวน ซึ่งมีระดับเสียงสูงกว่าระดับเสียงพื้นฐาน และมีระดับการรบกวนเกินกว่าค่าที่กำหนดไว้ในประกาศนี้

“ระดับเสียงพื้นฐาน” หมายความว่า ระดับเสียงที่ตรวจวัดในสิ่งแวดล้อมเดิม ขณะยังไม่มีเสียงรบกวนจากการประกอบกิจการโรงงานเป็นระดับเสียงเปอร์เซ็นต์ไทล์ที่ ๕๐ (Percentile Level ๕๐, L<sub>๕๐</sub>)

“ระดับเสียงเปอร์เซ็นต์ไทล์ที่ ๕๐ (L<sub>๕๐</sub>)” หมายความว่า ระดับเสียงที่ร้อยละ ๕๐ ของเวลาที่ตรวจวัดจะมีระดับเสียงเกินระดับนี้

“ระดับเสียงขณะมีการรบกวน” หมายความว่า ระดับเสียงที่ตรวจวัดหรือคำนวณจากการประกอบกิจการโรงงานขณะเกิดเสียงรบกวน

“ระดับการรบกวน” หมายความว่า ระดับความแตกต่างของระดับเสียงขณะมีการรบกวนกับระดับเสียงพื้นฐาน

“ระดับเสียงเฉลี่ย ๒๔ ชั่วโมง” หมายความว่า ระดับเสียงคงที่นอกบริเวณโรงงานที่มีพลังงานเทียบเท่าระดับเสียงที่เกิดขึ้นจริง ซึ่งมีระดับเสียงเปลี่ยนแปลงตามเวลาในช่วง ๒๔ ชั่วโมง (24 hours A-weighted Equivalent Continuous Sound Level) ซึ่งเรียกโดยย่อว่า Leq 24 hr โดยมีหน่วยเป็นเดซิเบลเอ หรือ dB(A)

“ระดับเสียงสูงสุด” หมายความว่า ระดับเสียงสูงสุดนอกบริเวณโรงงาน ที่เกิดขึ้นในขณะใดขณะหนึ่ง ระหว่างการตรวจวัดระดับเสียง โดยมีหน่วยเป็นเดซิเบลเอ หรือ dB(A)

“มาตรฐานระดับเสียง” หมายความว่า เครื่องวัดระดับเสียงตามมาตรฐาน IEC 60804 หรือ IEC 61672 ของคณะกรรมการระหว่างประเทศว่าด้วยเทคนิคไฟฟ้า (International Electrotechnical Commission , IEC)

ข้อ ๒ ค่าระดับการรบกวน ที่เกิดจากการประกอบกิจการโรงงาน ไม่เกิน ๑๐ เดซิเบลเอ  
ข้อ ๓ ค่าระดับเสียงเฉลี่ย ๒๔ ชั่วโมง ที่เกิดจากการประกอบกิจการโรงงาน ไม่เกิน ๗๐ เดซิเบลเอ

ข้อ ๔ ค่าระดับเสียงสูงสุด ที่เกิดจากการประกอบกิจการโรงงาน ไม่เกิน ๑๑๕ เดซิเบลเอ  
ข้อ ๕ วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย ๒๔ ชั่วโมง และระดับเสียงสูงสุด ที่เกิดจากการประกอบกิจการโรงงาน ให้เป็นไปตามที่กรมโรงงานอุตสาหกรรมกำหนด  
ทั้งนี้ ให้ใช้บังคับตั้งแต่วันถัดจากวันประกาศในราชกิจจานุเบกษาเป็นต้นไป

ประกาศ ณ วันที่ ๒๗ ธันวาคม พ.ศ. ๒๕๔๔  
สุริยะ จีรุงเรืองกิจ  
รัฐมนตรีว่าการกระทรวงอุตสาหกรรม



## ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ

ฉบับที่ ๘ (พ.ศ. ๒๕๓๗)

ออกตามความในพระราชบัญญัติส่งเสริมและรักษาคุณภาพสิ่งแวดล้อมแห่งชาติ

พ.ศ. ๒๕๓๕

เรื่อง กำหนดมาตรฐานคุณภาพน้ำในแหล่งน้ำผิวดิน

อาศัยอำนาจตามความในมาตรา ๓๒ (๑) แห่งพระราชบัญญัติส่งเสริมและรักษาคุณภาพสิ่งแวดล้อมแห่งชาติ พ.ศ. ๒๕๓๕ คณะกรรมการสิ่งแวดล้อมแห่งชาติประกาศกำหนดมาตรฐานคุณภาพน้ำในแหล่งน้ำผิวดิน ไว้ดังต่อไปนี้

หมวด ๑

บททั่วไป

ข้อ ๑ ในประกาศนี้

“แหล่งน้ำผิวดิน” หมายถึง แม่น้ำ ลำคลอง หนอง บึง ทะเลสาบ อ่างเก็บน้ำ และแหล่งน้ำสาธารณะอื่นๆ ที่อยู่ในพื้นแผ่นดิน ซึ่งหมายความรวมถึงแหล่งน้ำสาธารณะที่อยู่ในพื้นแผ่นดินบนเกาะด้วย แต่ไม่รวมถึงน้ำบาดาล และในกรณีที่แหล่งน้ำนั้นอยู่ติดกับทะเลให้หมายความถึงแหล่งน้ำที่อยู่ในปากแม่น้ำหรือปากทะเลสาบ

ปากแม่น้ำและปากทะเลสาบให้ถือแนวเขตตามที่กรมเจ้าท่ากำหนด

## หมวด ๒

### ประเภทและมาตรฐานคุณภาพน้ำในแหล่งน้ำผิวดิน

ข้อ ๒ ให้แบ่งแหล่งน้ำผิวดินออกเป็น ๕ ประเภทคือ แหล่งน้ำประเภทที่ ๑ แหล่งน้ำประเภทที่ ๒ แหล่งน้ำประเภทที่ ๓ แหล่งน้ำประเภทที่ ๔ และแหล่งน้ำประเภทที่ ๕

(๑) แหล่งน้ำประเภทที่ ๑ ได้แก่ แหล่งน้ำที่คุณภาพน้ำมีสภาพตามธรรมชาติโดยปราศจากน้ำที่จากกิจกรรมทุกประเภทและสามารถเป็นประโยชน์เพื่อ

- (ก) การอุปโภคและบริโภคโดยต้องผ่านการฆ่าเชื้อโรคตามปกติก่อน
- (ข) การขยายพันธุ์ตามธรรมชาติของสิ่งมีชีวิตระดับพื้นฐาน
- (ค) การอนุรักษ์ระบบนิเวศน์ของแหล่งน้ำ

(๒) แหล่งน้ำประเภทที่ ๒ ได้แก่ แหล่งน้ำที่ได้รับน้ำที่จากกิจกรรมบางประเภทและสามารถเป็นประโยชน์เพื่อ

(ก) การอุปโภคและบริโภคโดยต้องผ่านการฆ่าเชื้อโรคตามปกติ และผ่านกระบวนการปรับปรุงคุณภาพน้ำทั่วไปก่อน

- (ข) การอนุรักษ์สัตว์น้ำ
- (ค) การประมง
- (ง) การว่ายน้ำและกีฬาทางน้ำ

(๓) แหล่งน้ำประเภทที่ ๓ ได้แก่ แหล่งน้ำที่ได้รับน้ำที่จากกิจกรรมบางประเภทและสามารถเป็นประโยชน์เพื่อ

(ก) การอุปโภคและบริโภคโดยต้องผ่านการฆ่าเชื้อโรคตามปกติ และผ่านกระบวนการปรับปรุงคุณภาพน้ำทั่วไปก่อน

- (ข) การเกษตร

(๔) แหล่งน้ำประเภทที่ ๔ ได้แก่ แหล่งน้ำที่ได้รับน้ำที่จากกิจกรรมบางประเภทและสามารถเป็นประโยชน์เพื่อ

(ก) การอุปโภคและบริโภคโดยต้องผ่านการฆ่าเชื้อโรคตามปกติ และผ่านกระบวนการปรับปรุงคุณภาพน้ำเป็นพิเศษก่อน

- (ข) การอุตสาหกรรม

(๕) แหล่งน้ำประเภทที่ ๕ ได้แก่ แหล่งน้ำที่ได้รับน้ำที่จากกิจกรรมบางประเภท และสามารถเป็นประโยชน์เพื่อการคมนาคม

ข้อ ๓ คุณภาพน้ำในแหล่งน้ำประเภทที่ ๑ ต้องมีสภาพตามธรรมชาติ และสามารถใช้ประโยชน์ได้ตามข้อ ๒ (๑)

ข้อ ๔ คุณภาพน้ำในแหล่งน้ำประเภทที่ ๒ ต้องมีมาตรฐานดังต่อไปนี้

(๑) ไม่มีวัตถุหรือสิ่งของที่เกิดจากการกระทำของมนุษย์ซึ่งจะทำให้ สี กลิ่น และรสของน้ำเปลี่ยนไปตามธรรมชาติ

(๒) อุณหภูมิ (Temperature) ไม่สูงกว่าอุณหภูมิตามธรรมชาติเกิน ๓ องศาเซลเซียส

(๓) ความเป็นกรดและด่าง (pH) มีค่าระหว่าง ๕.๐-๙.๐

(๔) ออกซิเจนละลาย (DO) มีค่าไม่น้อยกว่า ๖.๐ มิลลิกรัมต่อลิตร

(๕) บีโอดี (BOD) มีค่าไม่เกินกว่า ๑.๕ มิลลิกรัมต่อลิตร

(๖) แบคทีเรียกลุ่มโคลิฟอร์มทั้งหมด (Total Coliform Bacteria) มีค่าไม่เกินกว่า ๕,๐๐๐ เอ็ม.พี.เอ็น. ต่อ ๑๐๐ มิลลิลิตร

(๗) แบคทีเรียกลุ่มฟีคอลโคลิฟอร์ม (Fecal Coliform Bacteria) มีค่าไม่เกินกว่า ๑,๐๐๐ เอ็ม.พี.เอ็น. ต่อ ๑๐๐ มิลลิลิตร

(๘) ไนเตรต ( $\text{NO}_3$ ) ในหน่วยไนโตรเจน มีค่าไม่เกินกว่า ๕.๐ มิลลิกรัมต่อลิตร

(๙) แอมโมเนีย ( $\text{NH}_3$ ) ในหน่วยไนโตรเจน มีค่าไม่เกินกว่า ๐.๕ มิลลิกรัมต่อลิตร

(๑๐) ฟีนอล (Phenols) มีค่าไม่เกินกว่า ๐.๐๐๕ มิลลิกรัมต่อลิตร

(๑๑) ทองแดง (Cu) มีค่าไม่เกินกว่า ๐.๑ มิลลิกรัมต่อลิตร

(๑๒) นิกเกิล (Ni) มีค่าไม่เกินกว่า ๐.๑ มิลลิกรัมต่อลิตร

(๑๓) แมงกานีส (Mn) มีค่าไม่เกินกว่า ๑.๐ มิลลิกรัมต่อลิตร

(๑๔) สังกะสี (Zn) มีค่าไม่เกินกว่า ๑.๐ มิลลิกรัมต่อลิตร

(๑๕) แคดเมียม (Cd) ในน้ำที่มีความกระด้างในรูปของ  $\text{CaCO}_3$  ไม่เกินกว่า ๑๐๐ มิลลิกรัมต่อลิตร มีค่าไม่เกินกว่า ๐.๐๐๕ มิลลิกรัมต่อลิตร และในน้ำที่มีความกระด้างในรูปของ  $\text{CaCO}_3$  เกินกว่า ๑๐๐ มิลลิกรัมต่อลิตร มีค่าไม่เกินกว่า ๐.๐๕ มิลลิกรัมต่อลิตร

(๑๖) โครเมียมชนิดเฮกซะวาเลนต์ (Cr Hexavalent) มีค่าไม่เกินกว่า ๐.๐๕ มิลลิกรัมต่อลิตร

(๑๗) ตะกั่ว (Pb) มีค่าไม่เกิน ๐.๐๕ มิลลิกรัมต่อลิตร

(๑๘)ปรอททั้งหมด (Total Hg) มีค่าไม่เกินกว่า ๐.๐๐๒ มิลลิกรัมต่อลิตร

(๑๙) สารหนู (As) มีค่าไม่เกินกว่า ๐.๐๑ มิลลิกรัมต่อลิตร

(๒๐) ไซยาไนด์ (Cyanide) มีค่าไม่เกินกว่า ๐.๐๐๕ มิลลิกรัมต่อลิตร

(๒๑) กัมมันตภาพรังสี (Radioactivity) มีค่ารังสีแอลฟา (Alpha) ไม่เกินกว่า ๐.๑ เบกเคอเรลต่อลิตร และรังสีเบตา (Beta) ไม่เกินกว่า ๑.๐ เบกเคอเรลต่อลิตร

(๒๒) สารฆ่าศัตรูพืชและสัตว์ชนิดที่มีคลอรีนทั้งหมด (Total Organochlorine Pesticides) มีค่าไม่เกินกว่า ๐.๐๕ มิลลิกรัมต่อลิตร

(๒๓) ดีดีที (DDT) มีค่าไม่เกินกว่า ๑.๐ ไมโครกรัมต่อลิตร

(๒๔) บีเอชซีชนิดแอลฟา (Alpha-BHC) มีค่าไม่เกินกว่า ๐.๐๒ ไมโครกรัมต่อลิตร

(๒๕) ดิลดริน (Dieldrin) มีค่าไม่เกินกว่า ๐.๑ ไมโครกรัมต่อลิตร

(๒๖) อัลดริน (Aldrin) มีค่าไม่เกินกว่า ๐.๑ ไมโครกรัมต่อลิตร

(๒๗) เฮปตาคลอร์ (Heptachlor) และเฮปตาคลอร์อีพอกไซด์ (Heptachlorepoxyde) มีค่าไม่เกินกว่า ๐.๒ ไมโครกรัมต่อลิตร

(๒๘) เอนดริน (Endrin) ไม่สามารถตรวจพบได้ตามวิธีการตรวจสอบที่กำหนด

**ข้อ ๕** คุณภาพน้ำในแหล่งน้ำประเภทที่ ๓ ต้องมีมาตรฐานตาม ข้อ ๔ เว้นแต่

(๑) ออกซิเจนละลาย มีค่าไม่น้อยกว่า ๔.๐ มิลลิกรัมต่อลิตร

(๒) บีโอดี มีค่าไม่เกินกว่า ๒.๐ มิลลิกรัมต่อลิตร

(๓) แบคทีเรียกลุ่มโคลิฟอร์มทั้งหมด มีค่าไม่เกินกว่า ๒๐,๐๐๐ เอ็ม.พี.เอ็น.

ต่อ ๑๐๐ มิลลิตร

(๔) แบคทีเรียกลุ่มฟีคอลโคลิฟอร์ม มีค่าไม่เกินกว่า ๔,๐๐๐ เอ็ม.พี.เอ็น.

ต่อ ๑๐๐ มิลลิตร

**ข้อ ๖** คุณภาพน้ำในแหล่งน้ำประเภทที่ ๔ ต้องมีมาตรฐานตามข้อ ๔ (๑) ถึง (๕) และ (๘) ถึง (๒๘) เว้นแต่

(๑) ออกซิเจนละลาย มีค่าไม่น้อยกว่า ๒.๐ มิลลิกรัมต่อลิตร

(๒) บีโอดี มีค่าไม่เกินกว่า ๔.๐ มิลลิกรัมต่อลิตร

**ข้อ ๗** คุณภาพน้ำในแหล่งน้ำประเภทที่ ๕ ต้องมีมาตรฐานต่ำกว่าคุณภาพน้ำ ในแหล่งน้ำประเภทที่ ๔

**ข้อ ๘** การกำหนดให้แหล่งน้ำผิวดินแหล่งใดแหล่งหนึ่งเป็นประเภทใดตามข้อ ๒ ให้เป็นไปตามที่กรมควบคุมมลพิษประกาศในราชกิจจานุเบกษา

### หมวด ๓

#### วิธีการเก็บตัวอย่างและตรวจสอบคุณภาพน้ำในแหล่งน้ำผิวดิน

**ข้อ ๕** การเก็บตัวอย่างน้ำเพื่อตรวจสอบคุณภาพตามข้อ ๓ ถึง ข้อ ๗ ให้ใช้วิธีการดังต่อไปนี้

(๑) แหล่งน้ำไหล ซึ่งได้แก่ แม่น้ำ ลำคลอง เป็นต้น ให้เก็บที่จุดกึ่งกลางความกว้างของแหล่งน้ำที่ระดับกึ่งกลางความลึก ณ จุดตรวจสอบ เว้นแต่แบคทีเรียกลุ่มโคลิฟอร์มทั้งหมดและแบคทีเรียกลุ่มฟีคอลโคลิฟอร์ม ให้เก็บที่ระดับความลึก ๓๐ เซนติเมตร ณ จุดตรวจสอบ

(๒) แหล่งน้ำนิ่ง ซึ่งได้แก่ ทะเลสาบ หนอง บึง อ่างเก็บน้ำ เป็นต้น ให้เก็บที่ระดับความลึก ๑ เมตร ณ จุดตรวจสอบสำหรับแหล่งน้ำที่มีความลึกเกินกว่า ๒ เมตร และให้เก็บที่จุดกึ่งกลางความลึก ณ จุดตรวจสอบสำหรับแหล่งน้ำที่มีความลึกไม่เกิน ๒ เมตร เว้นแต่แบคทีเรียกลุ่มโคลิฟอร์มทั้งหมดและแบคทีเรียกลุ่มฟีคอลโคลิฟอร์ม ให้เก็บที่ระดับความลึก ๓๐ เซนติเมตร ณ จุดตรวจสอบ

จุดตรวจสอบตาม (๑) และ (๒) ของแหล่งน้ำที่กำหนดตามข้อ ๘ ให้เป็นไปตามที่กรมควบคุมมลพิษกำหนด

**ข้อ ๑๐** การตรวจสอบคุณภาพน้ำตามข้อ ๓ ถึงข้อ ๗ ให้ใช้วิธีการดังต่อไปนี้

(๑) การตรวจสอบอุณหภูมิ ให้ใช้เครื่องวัดอุณหภูมิ (Thermometer) วัดขณะทำการเก็บตัวอย่างน้ำ

(๒) การตรวจสอบค่าความเป็นกรดและด่าง ให้ใช้เครื่องวัดความเป็นกรดและด่างของน้ำ (pH meter) ตามวิธีการหาค่าแบบอิเล็กโตรเมตริก (Electrometric)

(๓) การตรวจสอบค่าออกซิเจนละลาย ให้ใช้วิธีอะไซด์โมดิฟิเคชัน (Azide Modification)

(๔) การตรวจสอบค่าบีไอดี ให้ใช้วิธีอะไซด์โมดิฟิเคชัน (Azide Modification) ที่อุณหภูมิ ๒๐ องศาเซลเซียส เป็นเวลา ๕ วันติดต่อกัน

(๕) การตรวจสอบค่าแบคทีเรียกลุ่มโคลิฟอร์มทั้งหมดและค่าแบคทีเรียกลุ่มฟิคอลโคลิฟอร์ม ให้ใช้วิธีมัลติเพิล ทิวบ์ เฟอเมนเตชัน เทคนิค (Multiple Tube Fermentation Technique)

(๖) การตรวจสอบค่าไนเตรดในหน่วยไนโตรเจน ให้ใช้วิธีแคดเมียมรีดักชัน (Cadmium Reduction)

(๗) การตรวจสอบค่าแอมโมเนียในหน่วยไนโตรเจน ให้ใช้วิธีดิสทิลเลชัน เนสสเลอร์ไรเซชัน (Distillation Nesslerization)

(๘) การตรวจสอบค่าฟีนอล ให้ใช้วิธีดิสทิลเลชัน ๔ - อะมิโนแอนติไพรีน (Distillation, 4-Amino antipyrine)

(๙) การตรวจสอบค่าทองแดง นิกเกิล แมงกานีส สังกะสี แคดเมียม โครเมียมชนิดเฮกซะวาเลนต์ และตะกั่ว ให้ใช้วิธีอะตอมมิก แอ็บซอร์ปชัน ไดเรกต์ แอสไพเรชัน (Atomic Absorption - Direct Aspiration)

(๑๐) การตรวจสอบค่าปรอททั้งหมด ให้ใช้วิธีอะตอมมิก แอ็บซอร์ปชัน โคลด์ เวปอร์ เทคนิค (Atomic Absorption-Cold Vapour Technique)

(๑๑) การตรวจสอบค่าสารหนู ให้ใช้วิธีอะตอมมิก แอ็บซอร์ปชัน แก๊สไฮไดรด์ (Atomic Absorption - Gaseous Hydride)

(๑๒) การตรวจสอบค่าไซยาไนด์ ให้ใช้วิธีไพรีดีน บาร์บิทูริก แอซิด (Pyridine - Barbituric Acid)

(๑๓) การตรวจสอบค่ากัมมันตภาพรังสี ให้ใช้วิธีโลว์ แบ็กกราวด์ พร็อพอร์ชันนอล เคาน์เตอร์ (Low Background Proportional Counter)

(๑๔) การตรวจค่าสารฆ่าศัตรูพืชและสัตว์ชนิดที่มีคลอรีนทั้งหมด ดีดีที บีเอชซีชนิดแอลฟา ดีลดริน อัลดริน เฮปตาคลอโรอีพอกไซด์ และเอนดริน ให้ใช้วิธีแก๊สโครมาโตกราฟี (Gas - Chromatography)

ข้อ ๑๑ การตรวจสอบค่าออกซิเจนละลายให้ใช้ค่าเปอร์เซ็นต์ไทล์ที่ ๒๐ (20<sup>th</sup> Percentile Value) ส่วนการตรวจสอบค่าบีไอดี แบคทีเรียกลุ่มโคลิฟอร์มทั้งหมด และแบคทีเรียกลุ่มฟิคอลโคลิฟอร์ม ให้ใช้ค่าเปอร์เซ็นต์ไทล์ที่ ๘๐ โดยจำนวนและระยะเวลาสำหรับการเก็บตัวอย่างน้ำดังกล่าว ให้เป็นไปตามที่กรมควบคุมมลพิษกำหนด

ข้อ ๑๒ การเก็บตัวอย่างน้ำตามข้อ ๙ และการตรวจสอบคุณภาพน้ำตามข้อ ๑๐ จะต้องเป็นไปตามวิธีการมาตรฐานสำหรับการวิเคราะห์น้ำและน้ำเสีย (Standard Methods for Examination of Water and Wastewater) ซึ่ง American Public Health Association และ American Water Works Association กับ Water Pollution Control Federation ของสหรัฐอเมริกา ร่วมกันกำหนดไว้ด้วย

ประกาศ ณ วันที่ ๒๐ มกราคม พ.ศ. ๒๕๓๗

ชวน หลีกภัย

นายกรัฐมนตรี

ประธานคณะกรรมการสิ่งแวดล้อมแห่งชาติ

(ประกาศในราชกิจจานุเบกษา เล่ม ๑๑๑ ตอนที่ ๑๖ ง วันที่ ๒๔ กุมภาพันธ์ ๒๕๓๗)

## ประกาศกระทรวงทรัพยากรธรรมชาติและสิ่งแวดล้อม

เรื่อง กำหนดมาตรฐานควบคุมการระบายน้ำทิ้งจากโรงงานอุตสาหกรรม นิคมอุตสาหกรรม และเขตประกอบการอุตสาหกรรม

โดยที่เป็นการสมควรปรับปรุงการกำหนดมาตรฐานควบคุมการระบายน้ำทิ้งจากโรงงานอุตสาหกรรม นิคมอุตสาหกรรม และเขตประกอบการอุตสาหกรรม ให้มีความเหมาะสมยิ่งขึ้น

อาศัยอำนาจตามความในมาตรา ๕๕ แห่งพระราชบัญญัติส่งเสริมและรักษาคุณภาพสิ่งแวดล้อมแห่งชาติ พ.ศ. ๒๕๓๕ รัฐมนตรีว่าการกระทรวงทรัพยากรธรรมชาติและสิ่งแวดล้อม โดยคำแนะนำของคณะกรรมการควบคุมมลพิษ และโดยความเห็นชอบของคณะกรรมการสิ่งแวดล้อมแห่งชาติ จึงออกประกาศไว้ ดังต่อไปนี้

ข้อ ๑ ให้ยกเลิกประกาศกระทรวงวิทยาศาสตร์ เทคโนโลยีและสิ่งแวดล้อม ฉบับที่ ๓ (พ.ศ. ๒๕๓๙) เรื่อง กำหนดมาตรฐานควบคุมการระบายน้ำทิ้งจากแหล่งกำเนิดประเภทโรงงานอุตสาหกรรม และนิคมอุตสาหกรรม ลงวันที่ ๓ มกราคม พ.ศ. ๒๕๓๙

ข้อ ๒ ให้ประกาศคณะกรรมการควบคุมมลพิษ เรื่อง กำหนดประเภทของโรงงานอุตสาหกรรม ที่อนุญาตให้ระบายน้ำทิ้งให้มีค่ามาตรฐานแตกต่างจากค่ามาตรฐานควบคุมการระบายน้ำทิ้งที่กำหนดไว้ในประกาศกระทรวงวิทยาศาสตร์ เทคโนโลยีและสิ่งแวดล้อม ฉบับที่ ๓ (พ.ศ. ๒๕๓๙) เรื่อง กำหนดมาตรฐานควบคุมการระบายน้ำทิ้งจากแหล่งกำเนิดประเภทโรงงานอุตสาหกรรมและนิคมอุตสาหกรรม ลงวันที่ ๒๐ สิงหาคม พ.ศ. ๒๕๓๙ ยังคงมีผลใช้บังคับต่อไปจนกว่าจะมีการออกประกาศกำหนดมาตรฐานควบคุมการระบายน้ำทิ้งจากโรงงานอุตสาหกรรม นิคมอุตสาหกรรม และเขตประกอบการอุตสาหกรรม เฉพาะประเภทฉบับใหม่

ข้อ ๓ ในประกาศนี้

“โรงงานอุตสาหกรรม” หมายความว่า โรงงาน ตามกฎหมายว่าด้วยโรงงาน

“นิคมอุตสาหกรรม” หมายความว่า นิคมอุตสาหกรรม ตามกฎหมายว่าด้วยการนิคมอุตสาหกรรม

“เขตประกอบการอุตสาหกรรม” หมายความว่า เขตประกอบการอุตสาหกรรม ตามกฎหมายว่าด้วยโรงงาน หรือพื้นที่จัดสรรเพื่อการอุตสาหกรรมที่มีการจัดการระบายน้ำทิ้งลงสู่แหล่งน้ำสาธารณะหรือออกสู่สิ่งแวดล้อมร่วมกัน

“น้ำทิ้ง” หมายความว่า น้ำที่เกิดจากการประกอบกิจการ น้ำจากการใช้น้ำของคนงาน หรือน้ำจากกิจกรรมอื่นในโรงงานอุตสาหกรรม นิคมอุตสาหกรรม หรือเขตประกอบการอุตสาหกรรมที่จะระบายลงสู่แหล่งน้ำสาธารณะหรือออกสู่สิ่งแวดล้อม

ข้อ ๔ กำหนดมาตรฐานควบคุมการระบายน้ำทิ้งจากโรงงานอุตสาหกรรมนิคมอุตสาหกรรม และเขตประกอบการอุตสาหกรรมไว้ ดังต่อไปนี้

๔.๑ ความเป็นกรดและด่าง (pH) ตั้งแต่ ๕.๕ ถึง ๙.๐

๔.๒ อุณหภูมิ (Temperature) ไม่เกิน ๔๐ องศาเซลเซียส

๔.๓ สี (Color) ไม่เกิน ๓๐๐ เอทีเอ็มไอ

๔.๔ ของแข็งละลายน้ำทั้งหมด (Total Dissolved Solids หรือ TDS) มีค่าดังนี้

(๑) กรณีระบายลงแหล่งน้ำ ต้องไม่เกิน ๓,๐๐๐ มิลลิกรัมต่อลิตร

(๒) กรณีระบายลงแหล่งน้ำที่มีค่าของแข็งละลายน้ำทั้งหมดเกินกว่า ๓,๐๐๐ มิลลิกรัมต่อลิตร ค่าของแข็งละลายน้ำทั้งหมดในน้ำทิ้งที่จะระบายได้ต้องมีค่าเกินกว่าค่าของแข็งละลายน้ำทั้งหมดที่มีอยู่ในแหล่งน้ำนั้นไม่เกิน ๕,๐๐๐ มิลลิกรัมต่อลิตร

๔.๕ ของแข็งแขวนลอยทั้งหมด (Total Suspended Solids) ไม่เกิน ๕๐ มิลลิกรัมต่อลิตร

๔.๖ บีโอดี (Biochemical Oxygen Demand) ไม่เกิน ๒๐ มิลลิกรัมต่อลิตร

๔.๗ ซีโอดี (Chemical Oxygen Demand) ไม่เกิน ๑๒๐ มิลลิกรัมต่อลิตร

๔.๘ ซัลไฟด์ (Sulfide) ไม่เกิน ๑ มิลลิกรัมต่อลิตร

๔.๙ ไซยาไนด์ (Cyanides HCN) ไม่เกิน ๐.๒ มิลลิกรัมต่อลิตร

๔.๑๐ น้ำมันและไขมัน (Fat Oil and Grease) ไม่เกิน ๕ มิลลิกรัมต่อลิตร

๔.๑๑ ฟORMALDEHYDE (Formaldehyde) ไม่เกิน ๑ มิลลิกรัมต่อลิตร

๔.๑๒ สารประกอบฟีนอล (Phenols) ไม่เกิน ๑ มิลลิกรัมต่อลิตร

๔.๑๓ คลอรีนอิสระ (Free Chlorine) ไม่เกิน ๑ มิลลิกรัมต่อลิตร

๔.๑๔ สารฆ่าศัตรูพืชและสัตว์ (Pesticide) ต้องตรวจไม่พบ

๔.๑๕ ทีเคเอ็น (Total Kjeldahl Nitrogen) ไม่เกิน ๑๐๐ มิลลิกรัมต่อลิตร

๔.๑๖ โลหะหนัก มีค่าดังนี้

(๑) สังกะสี (Zn) ไม่เกิน ๕.๐ มิลลิกรัมต่อลิตร

(๒) โครเมียมเฮกซะวาเลนต์ (Hexavalent Chromium) ไม่เกิน ๐.๒๕

มิลลิกรัมต่อลิตร

(๓) โครเมียมไตรวาเลนต์ (Trivalent Chromium) ไม่เกิน ๐.๗๕ มิลลิกรัมต่อลิตร

(๔) สารหนู (As) ไม่เกิน ๐.๒๕ มิลลิกรัมต่อลิตร

(๕) ทองแดง (Cu) ไม่เกิน ๒.๐ มิลลิกรัมต่อลิตร

(๖)ปรอท (Hg) ไม่เกิน ๐.๐๐๕ มิลลิกรัมต่อลิตร

(๗) แคดเมียม (Cd) ไม่เกิน ๐.๐๓ มิลลิกรัมต่อลิตร

(๘) แบเรียม (Ba) ไม่เกิน ๑.๐ มิลลิกรัมต่อลิตร

(๙) ซีลีเนียม (Se) ไม่เกิน ๐.๐๒ มิลลิกรัมต่อลิตร

(๑๐) ตะกั่ว (Pb) ไม่เกิน ๐.๒ มิลลิกรัมต่อลิตร

(๑๑) นิกเกิล (Ni) ไม่เกิน ๑.๐ มิลลิกรัมต่อลิตร

(๑๒) แมงกานีส (Mn) ไม่เกิน ๕.๐ มิลลิกรัมต่อลิตร

ข้อ ๕ การตรวจสอบค่ามาตรฐานน้ำทิ้งจากโรงงานอุตสาหกรรม นิคมอุตสาหกรรม และเขตประกอบการอุตสาหกรรม ตามข้อ ๔ ให้ใช้วิธีดังต่อไปนี้

- ๕.๑ ความเป็นกรดและด่าง ให้ใช้เครื่องวัดความเป็นกรดและด่างของน้ำ (pH Meter) ที่มีความละเอียดไม่ต่ำกว่า ๐.๑ หน่วย
- ๕.๒ อลูมิเนียม ให้ใช้เครื่องวัดอลูมิเนียมวัดขณะทำการเก็บตัวอย่าง
- ๕.๓ สี ให้ใช้วิธีเอ็ดเอ็มไอ (ADMI Method)
- ๕.๔ ของแข็งละลายน้ำทั้งหมด ให้ใช้วิธีระเหยตัวอย่างที่กรองผ่านกระดาษกรองใยแก้ว (Glass Fiber Filter Disk) และอบแห้งที่อุณหภูมิ ๑๘๐ องศาเซลเซียส เป็นเวลาอย่างน้อย ๑ ชั่วโมง
- ๕.๕ ของแข็งแขวนลอยทั้งหมด ให้ใช้วิธีกรองผ่านกระดาษกรองใยแก้ว (Glass Fiber Filter Disk) และอบแห้งที่อุณหภูมิ ๑๐๓ - ๑๐๕ องศาเซลเซียส เป็นเวลาอย่างน้อย ๑ ชั่วโมง
- ๕.๖ บีโอดี ให้ใช้วิธีบ่มตัวอย่างที่อุณหภูมิ ๒๐ องศาเซลเซียส เป็นเวลา ๕ วันติดต่อกัน และหาค่าออกซิเจนละลายด้วยวิธีเอไซด์โมดิฟิเคชัน (Azide Modification) หรือวิธีเมมเบรนอิเล็กโทรด (Membrane Electrode)
- ๕.๗ ซีโอดี ให้ใช้วิธีย่อยสลายโดยใช้โพแทสเซียมไดโครเมต (Potassium Dichromate)
- ๕.๘ ซัลไฟด์ ให้ใช้วิธีไอโอดเมตริก (Iodometric Method) หรือวิธีเมทิลีนบลู (Methylene Blue Method)
- ๕.๙ ไซยาไนต์ ให้ใช้การกลั่น (Distillation) และตรวจวัดด้วยวิธีเทียบสี (Colorimetric Method) หรือวิธี Flow Injection Analysis
- ๕.๑๐ น้ำมันและไขมัน ให้ใช้วิธีสกัดด้วยเทคนิค Liquid - Liquid Extraction หรือ Soxhlet Extraction ด้วยตัวทำละลายแล้วแยกหาน้ำหนักของน้ำมันและไขมัน
- ๕.๑๑ ฟอर्मัลดีไฮด์ ให้ใช้วิธีเทียบสี (Colorimetric Method)
- ๕.๑๒ สารประกอบฟีนอล ให้ใช้การกลั่น (Distillation) และตรวจวัดด้วยวิธีเทียบสี (Colorimetric Method)
- ๕.๑๓ คลอรีนอิสระ ให้ใช้วิธีไตเตรท (Titrimetric Method) หรือวิธีเทียบสี (Colorimetric Method)
- ๕.๑๔ สารฆ่าศัตรูพืชและสัตว์ ให้ใช้วิธีก๊าซโครมาโตกราฟี (Gas-Chromatographic Method)
- ๕.๑๕ ทีเคเอ็น ให้ใช้วิธีเจลดาล์ (Kjeldahl)
- ๕.๑๖ โลหะหนัก

(๑) สังกะสี ทองแดง แคดเมียม แบเรียม ตะกั่ว นิกเกิล และแมงกานีส ให้ใช้วิธีย่อยสลายตัวอย่างด้วยกรด (Acid digestion) และวัดหาปริมาณโลหะด้วยวิธีอะตอมมิกแอบซอร์พชันสเปกโตรเมตรี (Atomic Absorption Spectrometry : AAS) หรือวิธีอินดักทีฟลิคัพเพลพลาสมา (Inductively Coupled Plasma)

(๒) โครเมียม

(ก) โครเมียมทั้งหมด ให้ใช้วิธีย่อยสลายตัวอย่างด้วยกรด (Acid digestion) และวัดหาปริมาณโลหะด้วยวิธีอะตอมมิกแอบซอร์พชันสเปกโตรเมตรี (Atomic Absorption Spectrometry: AAS) หรือวิธีอินดักทีฟลิคัพเพลพลาสมา (Inductively Coupled Plasma)

(ข) โครเมียมเฮกซะวาเลนต์ ให้ใช้วิธีเทียบสี (Colorimetric Method) หรือวิธีสกัดและตรวจวัดด้วยวิธีอะตอมมิกแอบซอร์พชันสเปกโตรเมตรี (Atomic Absorption Spectrometry: AAS) หรือวิธีสกัดและตรวจวัดด้วยวิธีอินดักทีฟลิคัพเพลพลาสมา (Inductively Coupled Plasma)

(ค) โครเมียมไตรวาเลนต์ ให้ใช้วิธีคำนวณจากค่าส่วนต่างของโครเมียมทั้งหมดกับโครเมียมเฮกซะวาเลนต์

(๓) สารหนูและซีลีเนียม ให้ใช้วิธีอะตอมมิกแอบซอร์พชันสเปกโตรโฟโตเมตรี (Atomic Absorption Spectrophotometry) ชนิดไฮไดรด์เจนเนอเรชัน (Hydride Generation) หรือวิธีอินดักทีฟลิคัพเพลพลาสมา (Inductively Coupled Plasma)

(๔) พรอท ให้ใช้วิธีโคลด์เวเปอร์อะตอมมิกแอบซอร์พชันสเปกโตรเมตรี (Cold Vapor Atomic Absorption Spectrometry) หรือวิธีโคลด์เวเปอร์อะตอมมิกฟลูออเรสเซนซ์สเปกโตรเมตรี (Cold Vapor Atomic Fluorescence Spectrometry) หรือวิธีอินดักทีฟลิคัพเพลพลาสมา (Inductively Coupled Plasma)

ข้อ ๖ การตรวจสอบค่ามาตรฐานน้ำทิ้งจากโรงงานอุตสาหกรรม นิคมอุตสาหกรรม และเขตประกอบการอุตสาหกรรม ตามข้อ ๕ ให้เป็นไปตามคู่มือวิเคราะห์น้ำและน้ำเสียของสมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย หรือ Standard Methods for the Examination of Water and Wastewater ซึ่ง American Public Health Association, American Water Work Association และ Water Environment Federation ของประเทศสหรัฐอเมริกากำหนด หรือตามที่คณะกรรมการควบคุมมลพิษประกาศในราชกิจจานุเบกษา

ข้อ ๗ การเก็บตัวอย่างน้ำทิ้งเพื่อการตรวจสอบมาตรฐานควบคุมการระบายน้ำทิ้งจากโรงงานอุตสาหกรรม นิคมอุตสาหกรรม และเขตประกอบการอุตสาหกรรม ตามข้อ ๔ ให้เป็นดังต่อไปนี้

๗.๑ จุดเก็บตัวอย่าง ให้เก็บในจุดระบายทิ้งลงสู่แหล่งน้ำสาธารณะหรือออกสู่สิ่งแวดล้อมหรือจุดอื่นที่สามารถใช้เป็นตัวแทนของน้ำทิ้งที่ระบายออกจากโรงงานอุตสาหกรรม นิคมอุตสาหกรรม และเขตประกอบการอุตสาหกรรม ในกรณีมีการระบายทิ้งหลายจุดให้เก็บทุกจุด

๗.๒ วิธีการเก็บตัวอย่างน้ำทิ้ง ณ จุดเก็บตัวอย่างตาม ๗.๑ ให้เก็บแบบจ้วง (Grab Sample)

ข้อ ๘ ประกาศนี้ไม่ใช้บังคับกับแหล่งกำเนิดมลพิษที่มีการกำหนดมาตรฐานควบคุมการระบายน้ำทั้งตามกฎหมายว่าด้วยการส่งเสริมและรักษาคุณภาพสิ่งแวดล้อมแห่งชาติไว้เป็นการเฉพาะ

ข้อ ๙ ประกาศนี้ให้ใช้บังคับเมื่อพ้นกำหนดหนึ่งปีนับจากแต่วันประกาศในราชกิจจานุเบกษาเป็นต้นไป

ประกาศ ณ วันที่ ๒๙ มีนาคม พ.ศ. ๒๕๕๙  
พลเอก สุรศักดิ์ กาญจนรัตน์  
รัฐมนตรีว่าการกระทรวงทรัพยากรธรรมชาติและสิ่งแวดล้อม



ประกาศกระทรวงอุตสาหกรรม  
เรื่อง กำหนดมาตรฐานควบคุมการระบายน้ำทิ้งจากโรงงาน  
พ.ศ.๒๕๖๐

โดยที่เป็นการสมควรปรับปรุงการกำหนดมาตรฐานควบคุมการระบายน้ำทิ้งจากการประกอบกิจการโรงงาน เพื่อให้มีค่ามาตรฐานและวิธีการตรวจสอบน้ำทิ้งจากโรงงานให้เหมาะสมและเป็นไปตามมาตรฐานสากล รวมถึงเป็นการควบคุมการระบายน้ำทิ้งจากโรงงาน อาศัยอำนาจตามความในข้อ ๑๔ แห่งกฎกระทรวงฉบับที่ ๒ (พ.ศ.๒๕๓๕) ออกตามความในพระราชบัญญัติโรงงาน พ.ศ. ๒๕๓๕ ที่ระบุว่า "ห้ามระบายน้ำทิ้งออกจากโรงงาน เว้นแต่ได้ทำการอย่างใดอย่างหนึ่งหรือหลายอย่างจนน้ำทิ้งนั้นมีลักษณะเป็นไปตามที่รัฐมนตรีกำหนดโดยประกาศในราชกิจจานุเบกษา แต่ทั้งนี้ต้องไม่ใช้วิธีทำให้เจือจาง (dilution)" รัฐมนตรีว่าการกระทรวงอุตสาหกรรมจึงออกประกาศ ดังต่อไปนี้

ข้อ ๑ ประกาศนี้เรียกว่า "ประกาศกระทรวงอุตสาหกรรม เรื่อง กำหนดมาตรฐานควบคุมการระบายน้ำทิ้งจากโรงงาน พ.ศ.๒๕๖๐"

ข้อ ๒ ประกาศนี้ใช้บังคับตั้งแต่วันที่ ๗ มิถุนายน พ.ศ.๒๕๖๐ เป็นต้นไป

ข้อ ๓ ให้ยกเลิกประกาศกระทรวงอุตสาหกรรม ฉบับที่ ๒ (พ.ศ. ๒๕๓๕) ออกตามความในพระราชบัญญัติโรงงาน พ.ศ.๒๕๓๕ เรื่อง กำหนดคุณลักษณะของน้ำทิ้งที่ระบายออกจากโรงงาน ลงวันที่ ๑๔ มิถุนายน พ.ศ.๒๕๓๕

ข้อ ๔ ในประกาศนี้

"โรงงาน" หมายความว่า โรงงานจำพวกที่ ๑ จำพวกที่ ๒ จำพวกที่ ๓ ตามกฎหมายว่าด้วยโรงงาน

"น้ำทิ้ง" หมายความว่า น้ำที่เกิดจากการประกอบกิจการโรงงาน น้ำจากการใช้น้ำของคนงานหรือน้ำจากกิจกรรมอื่นในโรงงาน ที่จะระบายออกจากโรงงาน หรือเขตประกอบการอุตสาหกรรม

ข้อ ๕ มาตรฐานน้ำทิ้ง ต้องมีคุณภาพดังต่อไปนี้

๕.๑ ความเป็นกรดและด่าง (pH) ตั้งแต่ ๕.๕ ถึง ๙.๐

๕.๒ อุณหภูมิ (Temperature) ไม่เกิน ๔๐ องศาเซลเซียส

๕.๓ สี (Color) ไม่เกิน ๓๐๐ เอซีเอ็มไอ

๕.๔ ของแข็งละลายน้ำทั้งหมด (Total Dissolved Solids หรือ TDS) มีค่าดังนี้

(๑) กรณีระบายลงแหล่งน้ำ ต้องไม่เกิน ๓,๐๐๐ มิลลิกรัมต่อลิตร

(๒) กรณีระบายลงแหล่งน้ำที่มีค่าของแข็งละลายน้ำทั้งหมดเกินกว่า

๓,๐๐๐ มิลลิกรัมต่อลิตร ค่าของแข็งละลายน้ำทั้งหมดในน้ำทิ้งที่จะระบายได้ต้องมีค่าเกินกว่าค่าของแข็งละลายน้ำทั้งหมดที่มีอยู่ในแหล่งน้ำนั้นไม่เกิน ๕,๐๐๐ มิลลิกรัมต่อลิตร

๕.๕ ของแข็งแขวนลอยทั้งหมด (Total Suspended Solids) ไม่เกิน ๕๐ มิลลิกรัม

ต่อลิตร

๕.๖ บีโอดี (Biochemical Oxygen Demand) ไม่เกิน ๒๐ มิลลิกรัมต่อลิตร

๕.๗ ซีโอดี (Chemical Oxygen Demand) ไม่เกิน ๑๒๐ มิลลิกรัมต่อลิตร

๕.๘ ซัลไฟด์ (Sulfide) ไม่เกิน ๑ มิลลิกรัมต่อลิตร

/๕๙ ไซยาโนต์...

๕.๙ โซยาไนต์ (Cyanides CN) ไม่เกิน ๐.๒ มิลลิกรัมต่อลิตร  
 ๕.๑๐ น้ำมันและไขมัน (Oil and Grease) ไม่เกิน ๕ มิลลิกรัมต่อลิตร  
 ๕.๑๑ ฟORMALDEHYDE (Formaldehyde) ไม่เกิน ๑ มิลลิกรัมต่อลิตร  
 ๕.๑๒ สารประกอบฟีนอล (Phenols) ไม่เกิน ๑ มิลลิกรัมต่อลิตร  
 ๕.๑๓ คลอรีนอิสระ (Free Chlorine) ไม่เกิน ๑ มิลลิกรัมต่อลิตร  
 ๕.๑๔ สารฆ่าศัตรูพืชและสัตว์ (Pesticide) ต้องตรวจไม่พบ  
 ๕.๑๕ ไทเคเนน (Total Kjeldahl Nitrogen) ไม่เกิน ๑๐๐ มิลลิกรัมต่อลิตร  
 ๕.๑๖ โลหะหนัก มีค่าดังนี้

- (๑) สังกะสี (Zn) ไม่เกิน ๕.๐ มิลลิกรัมต่อลิตร
- (๒) โครเมียมเฮกซะวาเลนต์ (Hexavalent Chromium) ไม่เกิน ๐.๒๕

มิลลิกรัมต่อลิตร

- (๓) โครเมียมไตรวาเลนต์ (Trivalent Chromium) ไม่เกิน ๐.๗๕ มิลลิกรัม

ต่อลิตร

- (๔) สารหนู (As) ไม่เกิน ๐.๒๕ มิลลิกรัมต่อลิตร
- (๕) ทองแดง (Cu) ไม่เกิน ๒.๐ มิลลิกรัมต่อลิตร
- (๖)ปรอท (Hg) ไม่เกิน ๐.๐๐๕ มิลลิกรัมต่อลิตร
- (๗) แคดเมียม (Cd) ไม่เกิน ๐.๐๓ มิลลิกรัมต่อลิตร
- (๘) แบเรียม (Ba) ไม่เกิน ๑.๐ มิลลิกรัมต่อลิตร
- (๙) ซีลีเนียม (Se) ไม่เกิน ๐.๐๒ มิลลิกรัมต่อลิตร
- (๑๐) ตะกั่ว (Pb) ไม่เกิน ๐.๒ มิลลิกรัมต่อลิตร
- (๑๑) นิกเกิล (Ni) ไม่เกิน ๑.๐ มิลลิกรัมต่อลิตร
- (๑๒) แมงกานีส (Mn) ไม่เกิน ๕.๐ มิลลิกรัมต่อลิตร

ข้อ ๖ การตรวจสอบค่ามาตรฐานน้ำทิ้งจากโรงงาน ตามข้อ ๕ ให้ใช้วิธีดังต่อไปนี้

๖.๑ ความเป็นกรดและด่าง ให้ใช้เครื่องวัดความเป็นกรดและด่างของน้ำ

(pH Meter) ที่มีความละเอียดไม่ต่ำกว่า ๐.๑ หน่วย

๖.๒ อุณหภูมิ ให้ใช้เครื่องมือวัดอุณหภูมิวัดขณะทำการเก็บตัวอย่าง

๖.๓ ซี ให้ใช้วิธีเอ็ดเอ็มไอ (ADMI Method)

๖.๔ ของแข็งละลายน้ำทั้งหมด ให้ใช้วิธีระเหยตัวอย่างที่กรองผ่านกระดาษกรอง

ใยแก้ว (Glass Fiber Filter Disk) และอบแห้งที่อุณหภูมิ ๑๘๐ องศาเซลเซียส เป็นเวลาอย่างน้อย ๑ ชั่วโมง

๖.๕ ของแข็งแขวนลอยทั้งหมด ให้ใช้วิธีกรองผ่านกระดาษกรองใยแก้ว (Glass Fiber Filter) และอบแห้งที่อุณหภูมิ ๑๐๓ - ๑๐๕ องศาเซลเซียส เป็นเวลาอย่างน้อย ๑ ชั่วโมง

๖.๖ บีโอดี ให้ใช้วิธีบ่มตัวอย่างที่อุณหภูมิ ๒๐ องศาเซลเซียส เป็นเวลา ๕ วัน

ติดต่อกัน และหาค่าออกซิเจนละลายด้วยวิธีไอโซไทป์เคชั่น (Azide Modification) หรือวิธีเมมเบรนอิเล็กโทรด (Membrane Electrode)

๖.๗ ซีไอดี ให้ใช้วิธีย่อยสลายโดยใช้โพแทสเซียมไดโครเมต (Potassium

Dichromate)

๖.๘ ซีแอล ให้ใช้วิธีไอโอดิเมตริก (Iodometric Method) หรือวิธีเมทิลีนบลู

(Methylene Blue Method)

๖.๙ โซยาไนต์ ให้ใช้การกลั่น (Distillation) และตรวจวัดด้วยวิธีเทียบสี (Colorimetric Method) หรือวิธี Flow Injection Analysis

๖.๑๐ น้ำมันและไขมัน ให้ใช้วิธีสกัดด้วยเทคนิค Liquid - Liquid Extraction หรือ Soxhlet Extraction ด้วยตัวทำละลายแล้วแยกหาน้ำมันของน้ำมันและไขมัน

๖.๑๑ ฟORMALDEHYDE ให้ใช้วิธีเทียบสี (Colorimetric Method)

๖.๑๒ สารประกอบฟีนอล ให้ใช้การกลั่น (Distillation) และตรวจวัดด้วยวิธีเทียบสี (Colorimetric Method)

๖.๑๓ คลอรีนอิสระ ให้ใช้วิธีไตเตรท (Titrimetric Method) หรือวิธีเทียบสี (Colorimetric Method)

๖.๑๔ สารฆ่าศัตรูพืชและสัตว์ ให้ใช้วิธีก๊าซโครมาโตกราฟีค (Gas-Chromatographic Method) หรือวิธีไฮเพอร์ฟอร์แมนซ์ ลิกวิด โครมาโตกราฟีค (High-Performance Liquid Chromatographic Method)

๖.๑๕ ไทเคเนน ให้ใช้วิธีเจลดาล์ (Kjeldahl)

๖.๑๖ โลหะหนัก

(๑) สังกะสี ทองแดง แคดเมียม แบเรียม ตะกั่ว นิกเกิลและแมงกานีส ให้ใช้วิธีย่อยสลายตัวอย่างด้วยกรด (Acid digestion) และวัดหาปริมาณโลหะด้วยวิธีอะตอมมิกแอบซอร์พชัน สเปกโตรเมตริ (Atomic Absorption Spectrometry : AAS) หรือวิธีอินดักทีฟลีคัพเพิลพลาสมา (Inductively Coupled Plasma)

(๒) โครเมียม

ก) โครเมียมทั้งหมด ให้ใช้วิธีย่อยสลายตัวอย่างด้วยกรด (Acid digestion) และวัดหาปริมาณโลหะด้วยวิธีอะตอมมิกแอบซอร์พชันสเปกโตรเมตริ (Atomic Absorption Spectrometry : AAS) หรือวิธีอินดักทีฟลีคัพเพิลพลาสมา (Inductively Coupled Plasma)

ข) โครเมียมเฮกซะวาเลนต์ ให้ใช้วิธีเทียบสี (Colorimetric Method) หรือวิธีสกัดและตรวจวัดด้วยวิธีอะตอมมิกแอบซอร์พชันสเปกโตรเมตริ (Atomic Absorption Spectrometry: AAS) หรือวิธีสกัดและตรวจวัดด้วยวิธีอินดักทีฟลีคัพเพิลพลาสมา (Inductively Coupled Plasma)

ค) โครเมียมไตรวาเลนต์ ให้ใช้วิธีคำนวณจากค่าส่วนต่างของโครเมียมทั้งหมดกับโครเมียมเฮกซะวาเลนต์

(๓) สารหนูและซีลีเนียม ให้ใช้วิธีอะตอมมิกแอบซอร์พชันสเปกโตรโฟโตเมตริ (Atomic Absorption Spectrophotometry) ชนิดไฮไดรด์เจนเนอเรชัน (Hydride Generation) หรือวิธีอินดักทีฟลีคัพเพิลพลาสมา (Inductively Coupled Plasma)

(๔) ปรอท ให้ใช้วิธีโคลด์เวเปอร์อะตอมมิกแอบซอร์พชันสเปกโตรเมตริ (Cold Vapor Atomic Absorption Spectrometry) หรือวิธีโคลด์เวเปอร์อะตอมมิกฟลูออเรสเซนซ์สเปกโตรเมตริ (Cold Vapor Atomic Fluorescence Spectrometry) หรือวิธีอินดักทีฟลีคัพเพิลพลาสมา (Inductively Coupled Plasma)

ข้อ ๗ การตรวจสอบค่ามาตรฐานน้ำทิ้งจากโรงงาน ตามข้อ ๖ ให้เป็นไปตามคู่มือวิเคราะห์น้ำและน้ำเสียของสมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย หรือ Standard Methods for the Examination of Water and Wastewater ซึ่ง American Public Health Association, American Water Work

Association และ Water Environment Federation ของประเทศสหรัฐอเมริกากำหนด หรือตามที่กรมโรงงานอุตสาหกรรมกำหนด

ข้อ ๘ การเก็บตัวอย่างน้ำทิ้งเพื่อการตรวจสอบค่ามาตรฐาน ตามข้อ ๕ ให้เป็นดังต่อไปนี้

๘.๑ จุดเก็บตัวอย่าง ให้เก็บในจุดระบายทิ้งออกจากโรงงาน ไม่ว่าจะมียูทเดี่ยวหรือหลายจุดก็ตาม หรือจุดอื่นที่สามารถใช้เป็นตัวแทนของน้ำทิ้งที่ระบายออกจากโรงงาน กรณีมีการระบายทิ้งหลายจุดให้เก็บทุกจุด

๘.๒ วิธีการเก็บตัวอย่างน้ำทิ้ง ณ จุดเก็บตัวอย่างตาม ๘.๑ ให้เก็บแบบจ้วง

(Grab Sample)

ข้อ ๙ การกำหนดค่ามาตรฐานน้ำทิ้งให้แตกต่างไปจากข้อ ๕ สำหรับโรงงานในประเภทหรือชนิดใดเป็นการเฉพาะให้เป็นไปตามประกาศกรมโรงงานอุตสาหกรรม

ข้อ ๑๐ ให้ประกาศกรมโรงงานอุตสาหกรรม (พ.ศ.๒๕๓๔) เรื่อง กำหนดคุณลักษณะน้ำทิ้งที่ระบายออกนอกโรงงานให้มีค่าแตกต่างจากที่กำหนดไว้ในประกาศกระทรวงอุตสาหกรรม ฉบับที่ ๒ (พ.ศ. ๒๕๓๔) เรื่อง กำหนดคุณลักษณะของน้ำทิ้งที่ระบายออกจากโรงงาน ลงวันที่ ๑๘ กุมภาพันธ์ พ.ศ. ๒๕๔๐ ยังคงบังคับใช้ต่อไปจนกว่าจะได้มีการยกเลิก

ประกาศ ณ วันที่ ๓๐ พฤษภาคม พ.ศ. ๒๕๖๐



(นายอรรถมนต์ สวานายน)

รัฐมนตรีว่าการกระทรวงอุตสาหกรรม

## ภาคผนวก ฉ

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ใบรับรองการสอบเทียบเครื่องมือ

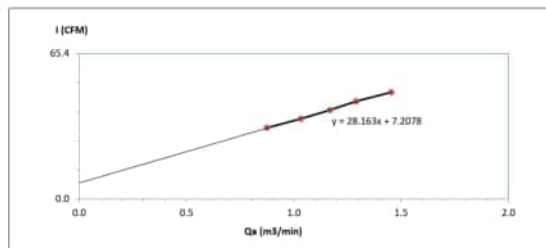
| Sample Name  | Parameter                     | Equipment Name                       | ID No.     | Calibrated Date | Next Cal. | Presq. Calibration (Months)                       |
|--------------|-------------------------------|--------------------------------------|------------|-----------------|-----------|---------------------------------------------------|
| Amidant      | Particulate Matter (PM) 10    | High Volume                          | BHV-550180 |                 |           | On file, Calibration on file, Calibration on file |
| Amidant      | Particulate Matter (PM) 2.5   | High Volume                          | BHV-550184 |                 |           | On file, Calibration on file, Calibration on file |
| Amidant      | Carbon Dioxide (CO2) 10       | High Volume                          | HP-550185  |                 |           | On file, Calibration on file, Calibration on file |
| Amidant      | Carbon Dioxide (CO2) 2.5      | High Volume                          | HP-550186  |                 |           | On file, Calibration on file, Calibration on file |
| Amidant      | Total Suspended Particulate   | High Volume                          | BHV-550172 |                 |           | On file, Calibration on file, Calibration on file |
| Amidant      | Total Suspended Particulate   | High Volume                          | BHV-550166 |                 |           | On file, Calibration on file, Calibration on file |
| Amidant      | Total Suspended Particulate   | High Volume                          | HP-550163  |                 |           | On file, Calibration on file, Calibration on file |
| Amidant      | Organic Carbon                | GC-Analyzer                          | BHV-551000 | 10 May 22       | 10 May 24 | 22                                                |
| Amidant      | Inorganic Carbon              | GC-Analyzer                          | HP-551000  | 5 Jan 22        | 5 Jan 24  | 22                                                |
| Amidant      | Inorganic Carbon              | GC-Analyzer                          | HP-551001  | 5 Jan 22        | 5 Jan 24  | 22                                                |
| Amidant      | Wind Speed / Wind Direction   | Wind Speed / Wind Direction          | BHV-551440 | 31 Mar 22       | 1 Oct 27  | 28                                                |
| Amidant      | Wind Speed / Wind Direction   | Wind Speed / Wind Direction          | BHV-551441 | 8 Sep 22        | 8 Sep 24  | 22                                                |
| Amidant      | Cloud Cover / Cloud Thickness | Cloud Cover / Cloud Thickness        | HP-551003  | 12 Oct 20       | 12 Oct 22 | 18                                                |
| Suck (CBAR)  | Orbits of Visions             | Prognosis - System satisfaction, SIA |            |                 |           |                                                   |
| Suck (CBAR)  | Selfie Camera                 | Prognosis - System satisfaction, SIA |            |                 |           |                                                   |
| Steel (CBAR) |                               | Prognosis - System satisfaction, SIA |            |                 |           |                                                   |
| Steel        | Total Suspended Particulate   | Prognosis - System satisfaction, SIA | HP-550182  | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550183 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550184 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550185 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550186 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550187 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550188 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550189 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550190 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550191 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550192 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550193 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550194 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550195 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550196 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550197 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550198 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550199 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550200 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550201 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550202 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550203 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550204 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550205 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550206 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550207 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550208 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550209 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550210 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550211 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550212 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550213 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550214 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550215 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550216 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550217 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550218 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550219 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550220 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550221 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550222 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550223 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550224 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550225 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550226 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550227 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550228 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550229 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550230 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550231 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550232 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550233 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550234 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550235 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550236 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550237 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550238 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550239 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550240 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550241 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550242 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550243 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550244 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550245 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550246 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550247 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550248 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550249 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550250 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550251 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550252 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550253 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550254 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550255 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550256 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550257 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550258 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550259 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550260 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550261 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550262 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550263 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550264 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550265 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550266 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550267 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550268 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550269 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550270 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550271 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550272 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550273 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550274 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550275 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550276 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550277 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550278 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550279 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550280 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550281 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550282 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550283 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550284 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550285 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550286 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550287 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550288 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550289 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550290 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550291 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550292 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550293 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550294 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550295 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550296 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550297 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550298 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550299 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550300 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550301 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550302 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550303 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550304 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550305 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550306 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550307 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550308 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550309 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550310 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550311 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550312 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550313 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550314 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550315 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550316 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550317 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550318 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550319 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550320 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550321 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550322 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550323 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550324 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550325 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550326 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550327 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550328 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550329 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550330 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550331 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550332 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550333 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550334 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550335 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550336 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550337 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550338 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550339 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550340 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550341 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550342 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550343 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr. Trap                          | BHV-550344 | 25 Oct 20       | 25 Oct 20 | 6                                                 |
| Steel        | Total Suspended Particulate   | Filtr.                               |            |                 |           |                                                   |

| Sample Name | Parameter                  | Equipment Name                             | ID No.      | Calibrated Date | Next Cal. | Freq. Calibrate (Months) |
|-------------|----------------------------|--------------------------------------------|-------------|-----------------|-----------|--------------------------|
| Water 1a    | Total Dissolved Solids     | Blockman's Total Dissolved Solids Analyzer | BPX-10003   | 17 Jan 25       | 17 Jul 26 | 6                        |
| Water 1a    | Total Dissolved Solids     | Blockman's Total Dissolved Solids Analyzer | BPX-100425  | 6 Oct 23        | 6 Oct 24  | 12                       |
| Water 1a    | Total Dissolved Solids TDS | Hiometer's Low Cost Solids Analyzer        | 1005-10003  | 3 Jan 25        | 1 Jul 25  | 6                        |
| Water 1a    | Total Dissolved Solids TDS | Hiometer's Low Cost Solids Analyzer        | 1005-100425 | 6 Oct 23        | 6 Oct 24  | 12                       |
| Water 1a    | Lead                       | KOF-MS                                     | BPX-10004   | 5 Oct 23        | 2 Oct 24  | 12                       |
| Water 1a    | Lead                       | Hiometer's Low Cost Solids Analyzer        | BPX-10004   | 4 Oct 23        | 4 Sep 24  | 12                       |
| Water 1a    | Lead                       | KOF-MS                                     | 1005-10018  | 3 Jan 25        | 1 Oct 26  | 18                       |
| Water 1a    | Lead                       | KOF-MS                                     | BPX-10042   | 3 Jan 23        | 2 Oct 24  | 12                       |
| Water 1a    | Lead                       | Hiometer's Low Cost Solids Analyzer        | BPX-10004   | 6 Oct 23        | 6 Sep 24  | 12                       |
| Water 1a    | Lead                       | Hiometer's Low Cost Solids Analyzer        | 1005-10018  | 3 Jan 25        | 1 Oct 26  | 18                       |
| Water 1a    | Copper                     | KOF-MS                                     | 1005-10018  | 3 Oct 20        | 3 Oct 26  | 18                       |
| Water 1a    | Copper                     | Hiometer's Low Cost Solids Analyzer        | BPX-10004   | 4 Oct 23        | 4 Sep 24  | 12                       |
| Water 1a    | Copper                     | Hiometer's Low Cost Solids Analyzer        | BPX-10018   | 4 Jun 23        | 4 Oct 24  | 18                       |
| Water 1a    | Iron                       | KOF-MS                                     | 1005-10018  | 3 Oct 20        | 3 Oct 26  | 18                       |
| Water 1a    | Iron                       | Hiometer's Low Cost Solids Analyzer        | BPX-10004   | 4 Oct 23        | 4 Sep 24  | 12                       |
| Water 1a    | Iron                       | Hiometer's Low Cost Solids Analyzer        | BPX-10018   | 4 Jun 23        | 4 Oct 24  | 18                       |
| Water 1a    | Summary                    | Hiometer's Summary Analyzer                | 1005-10003  | 3 Oct 20        | 1 Oct 26  | 18                       |
| Water 1a    | Summary                    | Hiometer's Summary Analyzer                | 1005-10018  | 3 Oct 20        | 3 Oct 26  | 18                       |
| Water 1a    | Summary                    | Hiometer's Summary Analyzer                | BPX-10003   | 5 Oct 23        | 8 Oct 24  | 12                       |

## High Volume Air Sampler Calibration Worksheet

|                       |                       |                               |            |
|-----------------------|-----------------------|-------------------------------|------------|
| Project Site :        | Gulf IP CRN Co., Ltd. | Barometric Pressure (mm Hg) : | 755.6      |
| Calibrate Location :  | พื้นที่ 1 (ในป่า)     | Temperature (°C) :            | 35.8       |
| Calibrate Date :      | 4 May 26              | High Volume ID :              | BKK_F503B3 |
| CalibrationSheet No.: | C-040526-BKK_F503B3   | High Volume Model :           | TE-5009X   |
| Calibrator ID:        | BKK_F50625            | High Volume S/N :             | 4787       |
| Calibrator Model :    | TE-5028A              | Calibrator Slope :            | 1.65044    |
| Calibrator S/N:       | 2585                  | Calibrator Intercept :        | -0.01426   |

| Test No. | Delta H <sub>2</sub> O<br>(inch) | Q <sub>s</sub><br>(m <sup>3</sup> /min) | I : Chart<br>(CPM) | Linear Regression         |         |
|----------|----------------------------------|-----------------------------------------|--------------------|---------------------------|---------|
| 1        | 2.0                              | 0.875                                   | 32                 | Slope :                   | 28.1633 |
| 2        | 2.8                              | 1.033                                   | 36                 | Intercept :               | 7.2078  |
| 3        | 3.6                              | 1.169                                   | 40                 | Correlation Coefficient : | 0.9989  |
| 4        | 4.4                              | 1.291                                   | 44                 |                           |         |
| 5        | 5.6                              | 1.454                                   | 48                 |                           |         |



Calibrated by Thanesuon

( Mr. Thanesuan Sriwasut )  
BKK Field Services Senior Technician

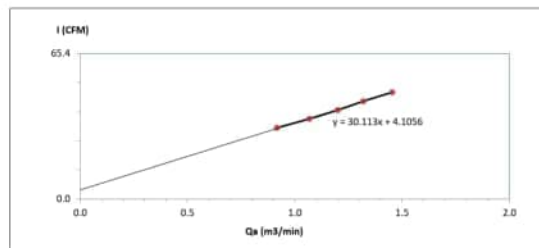
Approved by: *G. Narayan*

( Mr. Warakorn Pookrak )  
Field Services Supervisor

## High Volume Air Sampler Calibration Worksheet

|                       |                                                                          |                               |            |
|-----------------------|--------------------------------------------------------------------------|-------------------------------|------------|
| Project Site :        | Gulf IP CRN Co., Ltd.<br>131 หมู่ 7 ตำบลนาเกลือ อำเภอนาทรี จังหวัดชลบุรี | Barometric Pressure (mm Hg) : | 755.6      |
| Calibrate Location :  | หน้า                                                                     | Temperature (°C) :            | 35.8       |
| Calibrate date :      | 4-May-26                                                                 | High Volume ID :              | BKK_P50384 |
| CalibrationSheet No.: | C-040526-BKK_P50384                                                      | High Volume Model :           | TE-5009X   |
| Calibrator ID:        | BKK_P50625                                                               | High Volume S/N :             | 4788       |
| Calibrator Model :    | TE-5028A                                                                 | Calibrator Slope :            | 1.65044    |
| Calibrator S/N :      | 2585                                                                     | Calibrator Intercept :        | -0.01426   |

| Test No. | Delta H <sub>2</sub> O<br>(inch) | Qa<br>(m <sup>3</sup> /min) | I: Chart<br>(CFM) | Linear Regression         |         |
|----------|----------------------------------|-----------------------------|-------------------|---------------------------|---------|
| 1        | 2.2                              | 0.917                       | 32                | Slope :                   | 30.1134 |
| 2        | 3.0                              | 1.068                       | 36                | Intercept :               | 4.1056  |
| 3        | 3.8                              | 1.201                       | 40                | Correlation Coefficient : | 0.9992  |
| 4        | 4.6                              | 1.320                       | 44                |                           |         |
| 5        | 5.6                              | 1.454                       | 48                |                           |         |



Calibrated by Thanesan

( Mr. Thanesuan Sriwasut )  
BKK Field Services Senior Technician

Approved by: *Y. Narasimhan*

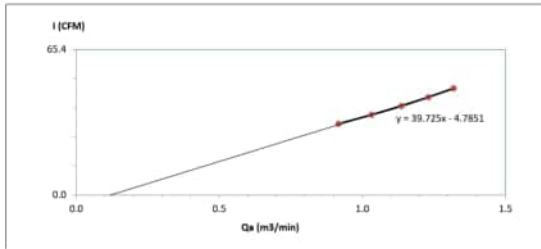
( Mr. Warakorn Pookrak )  
Field Services Supervisor



## High Volume Air Sampler Calibration Worksheet

Project Site : Gulf IP CRN Co., Ltd. Barometric Pressure (mm Hg) : 755.6  
Calibrate Location : กรุงเทพมหานคร Barometric Pressure (mm Hg) : 755.6  
Calibrate Date : 4 May 26 Temperature (°C) : 35.8  
Calibration Sheet No.: C-040526-BKK\_FS0374 High Volume ID : BKK\_FS0374  
Calibrator ID : BKK\_FS0625 High Volume Model : TE-5009X  
Calibrator Model : TE-5028A High Volume S/N : 5195  
Calibrator S/N : 2585 Calibrator Slope : 1.05044  
Calibrator Intercept : -0.01426

| Test No. | Delta H <sub>2</sub> O (inch) | Q <sub>a</sub> (m <sup>3</sup> /min) | I-Chart (CFM) | Linear Regression                |
|----------|-------------------------------|--------------------------------------|---------------|----------------------------------|
| 1        | 2.2                           | 0.917                                | 32            | Slope : 39.7245                  |
| 2        | 2.8                           | 1.033                                | 36            | Intercept : -4.7851              |
| 3        | 3.4                           | 1.136                                | 40            | Correlation Coefficient : 0.9985 |
| 4        | 4.0                           | 1.231                                | 44            |                                  |
| 5        | 4.6                           | 1.320                                | 48            |                                  |



Calibrated by: Thanesuan  
(Mr. Thanesuan Sriwasit)  
BKK Field Services Senior Technician

Approved by: Warakorn P.  
(Mr. Warakorn Pookrak)  
Field Services Supervisor

FORM NO.: F 06-074 REVISION NO.: 3 ISSUE DATE: 10/11/23

SARTORIUS



Accredited by

NSC-TISI-TIS 17025

Calibration 0426

## Calibration certificate

Calibration Certificate No. 25BCI0197

|                        |                                                                                                  |                                                                                                                                                                    |
|------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Object                 | Electronic non-automatic weighing instrument                                                     | This calibration certificate documents the traceability to national standards.                                                                                     |
| Manufacturer           | Ohaus                                                                                            | Uncertainties of measurements are taken into account when only statements of compliance are made.                                                                  |
| Type                   | EX225D/AD                                                                                        | This certificate was prepared by Sartorius Corporation in accordance to the current ISO/IEC 17025:2017 standard and Sartorius Work Instruction (Method) SOP WI 08. |
| Serial   QM Ident. no. | C309774648   BKK_EN0403                                                                          | This certificate relate and apply this equipment only.                                                                                                             |
| Customer               | ALS Laboratory Group (Thailand)Co., Ltd.                                                         |                                                                                                                                                                    |
|                        | 104 Phatthanakarn 40, Phatthanakarn Rd., Khwaeng Phatthanakarn<br>Khet Suan Luang, Bangkok 10250 |                                                                                                                                                                    |
| Order no.              | 261969                                                                                           |                                                                                                                                                                    |
| Number of pages        | 6                                                                                                |                                                                                                                                                                    |
| Date of calibration    | 30 May 2025                                                                                      |                                                                                                                                                                    |

This calibration certificate may not be reproduced other than in full except with the permission of NSC-TISI-TIS-17025 and the issuing laboratory. Calibration certificates without signature are not valid.

The user is obliged to have the object recalibrated at appropriate intervals.

|      |             |                                         |                         |
|------|-------------|-----------------------------------------|-------------------------|
| Date | 30 May 2025 | Approval of the Calibration Certificate | Person in charge        |
|      |             | <u>Chonchai Inthana</u>                 | <u>Chonchai Inthana</u> |
|      |             | Mr. Chonchai Inthana                    | Chonchai Inthana        |

Sartorius (Thailand) Co., Ltd.  
129 Rama 9 Road, Huaykwang  
10310 Bangkok

Verical®  
Version 6.5

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Calibration certificate No.: 25BCI0197

Calibration Certificate

## Calibration object

### Multi range instrument

|                              |                        |
|------------------------------|------------------------|
| Model                        | EX225D/AD              |
| Serial Number                | C309774648             |
| QM Ident. no   Inventory no. | BKK_EN0403   ---       |
| Range                        | 1 2                    |
| Maximum capacity (Max. load) | 120.00000 g 220.0000 g |
| Measured range               | 120.00000 g 220.0000 g |
| Scale interval               | 0.00001 g 0.0001 g     |

## Place of calibration

|                                                       |                               |
|-------------------------------------------------------|-------------------------------|
| Address                                               | According to page 1           |
| Department   Cost center                              | Environment Department.   --- |
| Building   Floor                                      | ---   1st Floor.              |
| Room                                                  | Laboratory Room.              |
| Maximum temperature variation at place of calibration | 5 K                           |

## Calibration procedure

EURAMET cg-18, V4.0 - Guidelines on the Calibration of Non-Automatic Weighing Instruments

## Test equipment

| Test equipment type          | Test equipment ID                                             | Valid until |
|------------------------------|---------------------------------------------------------------|-------------|
| Thermometer                  | Testo 174(Traceable to SI unit through ENTECH)                | 11 Nov 2025 |
| Test weight set OIML R111 E2 | Certificate No.M2308197S_E2(Traceable to SI unit through TCS) | 23 Aug 2025 |

Calibration certificate No.: 25BCI0197

Calibration Certificate

## Range 1

### Adjustment Status

The measuring device was internally adjusted before the calibration.

## Environmental and measuring conditions

|                                                   |                                                                                                       |
|---------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Date of calibration                               | 30 May 2025                                                                                           |
| Temperature at place of calibration   Temp. diff. | 21.7 °C   0.5 K                                                                                       |
| Tweights - Tplace                                 |                                                                                                       |
| Measuring conditions                              | The installation site is suitable. The device was levelled. Balance was loaded up to Max before test. |
| Comments                                          | Humidity 60.0 %RH.                                                                                    |

## Measurement results | Measurement uncertainties

| Repeatability                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Eccentricity                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| Test load (nominal): 1 g   100 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Test load (nominal): 50 g                         |
| 1 g 100 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Center 49.99996 g                                 |
| 1 0.99993 g 99.99971 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Front left 49.99993 g                             |
| 2 0.99991 g 99.99971 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Back left 49.99993 g                              |
| 3 0.99992 g 99.99974 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Back right 49.99994 g                             |
| 4 0.99993 g 99.99973 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Front right 49.99990 g                            |
| 5 0.99992 g 99.99974 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Maximum deviation from centric loading indication |
| 6 0.99991 g 99.99970 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Δ%  <sub>ecc</sub> max = 0.00006 g                |
| 7 0.99993 g 99.99973 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                   |
| 8 0.99994 g 99.99972 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                   |
| 9 0.99995 g 99.99971 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                   |
| 10 0.99995 g 99.99969 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                   |
| σ = 0.000014 g σ = 0.000017 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                   |
| Error of indication                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                   |
| Testload L Indication I Error E Expansion factor k Uncertainty U(E) Uncertainty relative U <sub>rel</sub> (E)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                   |
| 0.00000 g 0.00000 g 0.00000 g 2.00 0.000030 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                   |
| 0.01000 g 0.00995 g -0.00005 g 2.00 0.000037 g 0.37 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                   |
| 0.10000 g 0.09991 g -0.00009 g 2.00 0.000038 g 0.038 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                   |
| 0.50000 g 0.49995 g -0.00005 g 2.00 0.000040 g 0.0080 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                   |
| 1.00000 g 0.99991 g -0.00009 g 2.00 0.000041 g 0.0041 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                   |
| 5.00002 g 4.99997 g -0.00005 g 2.00 0.000050 g 0.0010 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                   |
| 10.00002 g 10.00003 g 0.00001 g 2.00 0.000069 g 0.00069 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                   |
| 50.00002 g 49.99972 g -0.00030 g 2.00 0.000091 g 0.00018 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                   |
| 70.00004 g 69.99975 g -0.00029 g 2.00 0.00017 g 0.00024 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                   |
| 100.00001 g 99.99958 g -0.00043 g 2.00 0.00017 g 0.00017 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                   |
| 115.00000 g 114.99966 g -0.00034 g 2.00 0.00028 g 0.00024 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                   |
| Maximum error of indication  E  <sub>max</sub> = 0.00043 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                   |
| U <sub>rel</sub> (E) is the quotient of U(E) and test load L. The uncertainty of measurement U(E) is valid only if error E is considered. You will find reference notes on the uncertainty of measurement in use under: Appendix to the calibration certificate   Interpretation of measurement results.<br>Reference note: The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the documented Expansion factor, determined in accordance with the European Calibration Guideline EURAMET cg-18, V4.0. There is a 95 % probability that the value of the measured will be in the assigned value range. |                                                   |

Range 2

Adjustment Status

The measuring device was internally adjusted before the calibration.

Environmental and measuring conditions

Date of calibration 30 May 2025

Temperature at place of calibration | Temp. diff. 21.7 °C | 0.5 K

Weights - T<sub>place</sub>

Measuring conditions

The installation site is suitable. The device was levelled. Balance was loaded up to Max before test.

Comments

Humidity 60.0 %RH.

Measurement results | Measurement uncertainties

Repeatability

Test load (nominal): 200 g

|               | 200 g      |
|---------------|------------|
| 1             | 199.9998 g |
| 2             | 199.9998 g |
| 3             | 199.9998 g |
| 4             | 200.0000 g |
| 5             | 199.9998 g |
| 6             | 199.9999 g |
| 7             | 199.9999 g |
| 8             | 200.0000 g |
| 9             | 199.9998 g |
| 10            | 199.9999 g |
| s = 0.00008 g |            |

Eccentricity

Test load (nominal):

|                                                   | 100 g      |
|---------------------------------------------------|------------|
| Center                                            | 99.99984 g |
| Front left                                        | 99.99990 g |
| Back left                                         | 99.99983 g |
| Back right                                        | 99.99979 g |
| Front right                                       | 99.99979 g |
| Maximum deviation from centric loading indication |            |
| Δ <sub>ecc</sub>   <sub>max</sub> = 0.00006 g     |            |

Error of indication

| Testload L                  | Indication I | Error E                        | Expansion factor k | Uncertainty U(E) | Uncertainty relative U <sub>rel</sub> (E) |
|-----------------------------|--------------|--------------------------------|--------------------|------------------|-------------------------------------------|
| 0.00000 g                   | 0.00000 g    | 0.00000 g                      | 2.00               | 0.000030 g       | —                                         |
| 20.00002 g                  | 19.99986 g   | -0.00016 g                     | 2.00               | 0.000069 g       | 0.00034 %                                 |
| 50.00002 g                  | 49.99978 g   | -0.00024 g                     | 2.00               | 0.000091 g       | 0.00018 %                                 |
| 70.00004 g                  | 69.99981 g   | -0.00023 g                     | 2.00               | 0.000117 g       | 0.00024 %                                 |
| 90.00007 g                  | 89.99976 g   | -0.00031 g                     | 2.00               | 0.00018 g        | 0.00020 %                                 |
| 110.00003 g                 | 109.99986 g  | -0.00017 g                     | 2.00               | 0.00028 g        | 0.00025 %                                 |
| 130.0001 g                  | 129.9999 g   | -0.0002 g                      | 2.00               | 0.00028 g        | 0.00022 %                                 |
| 150.0000 g                  | 149.9999 g   | -0.0001 g                      | 2.00               | 0.00028 g        | 0.00019 %                                 |
| 170.0000 g                  | 170.0000 g   | 0.0000 g                       | 2.00               | 0.00028 g        | 0.00016 %                                 |
| 200.0000 g                  | 199.9998 g   | -0.0002 g                      | 2.00               | 0.00028 g        | 0.00014 %                                 |
| 220.0000 g                  | 219.9999 g   | -0.0001 g                      | 2.00               | 0.00029 g        | 0.00013 %                                 |
| Maximum error of indication |              | E <sub>PMAX</sub>   = 0.0003 g |                    |                  |                                           |

U<sub>rel</sub>(E) is the quotient of U(E) and test load L. The uncertainty of measurement U(E) is valid only if error E is considered. You will find reference notes on the uncertainty of measurement in use under: Appendix to the calibration certificate | Interpretation of measurement results. Reference note: The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the documented Expansion factor, determined in accordance with the European Calibration Guideline EURAMET cg-18, V4.0. There is a 95 % probability that the value of the measured will be in the assigned value range.

End of calibration certificate

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Uncertainty of measurement in use

Range 1

Device adjusted before measurement

Yes

Temperature deviation considered

5 K

Temperature coefficient considered

2 · 10<sup>-4</sup>/K

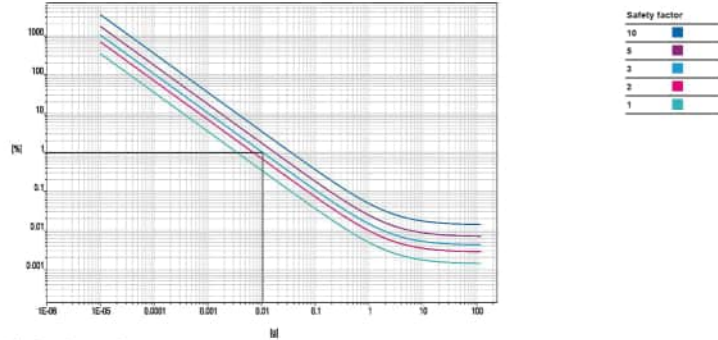
Uncertainty of the weighing result U<sub>G</sub>(W)

U<sub>G</sub>(W) = 0.000035 g + 1.38 · 10<sup>-4</sup> · R

Reference note: The current uncertainty of measurement is calculated by entering of the reading R into this formula. In relation to this, there is no need for a correction of the indication error. The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied with an Expansion factor of 2, determined in accordance with the European Calibration Guideline EURAMET cg-18, V4.0. There is a 95 % probability that the value of the measurand will be in the assigned value range.

| Indication in % from max load | Net indication R | Uncertainty U <sub>G</sub> (W) | Uncertainty relative U <sub>G</sub> (W) <sub>rel</sub> |
|-------------------------------|------------------|--------------------------------|--------------------------------------------------------|
| 1 %                           | 1.20000 g        | 0.000052 g                     | 0.0043 %                                               |
| 25 %                          | 30.00000 g       | 0.00045 g                      | 0.0015 %                                               |
| 50 %                          | 60.00000 g       | 0.00086 g                      | 0.0014 %                                               |
| 75 %                          | 90.00000 g       | 0.0013 g                       | 0.0014 %                                               |
| 100 %                         | 120.00000 g      | 0.0017 g                       | 0.0014 %                                               |

Graphic realization of the relative uncertainty of measurement | process accuracy



Displayed example

Process accuracy

1.00 %

Safety factor

3

Minimum sample weight

0.01045 g

Uncertainty of measurement in use

Range 2

Device adjusted before measurement

Yes

Temperature deviation considered

5 K

Temperature coefficient considered

2 · 10<sup>-4</sup>/K

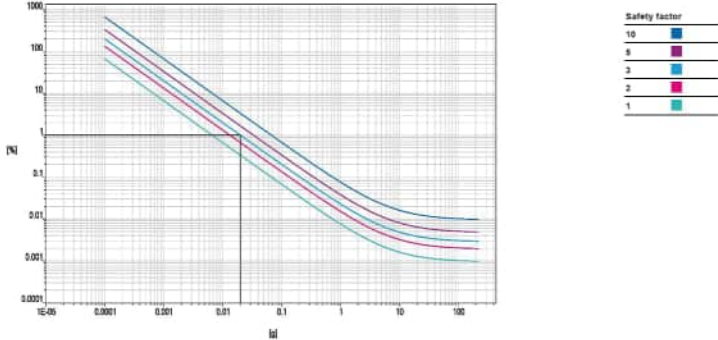
Uncertainty of the weighing result U<sub>G</sub>(W)

U<sub>G</sub>(W) = 0.000067 g + 9.52 · 10<sup>-4</sup> · R

Reference note: The current uncertainty of measurement is calculated by entering of the reading R into this formula. In relation to this, there is no need for a correction of the indication error. The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied with an Expansion factor of 2, determined in accordance with the European Calibration Guideline EURAMET cg-18, V4.0. There is a 95 % probability that the value of the measurand will be in the assigned value range.

| Indication in % from max load | Net indication R | Uncertainty U <sub>G</sub> (W) | Uncertainty relative U <sub>G</sub> (W) <sub>rel</sub> |
|-------------------------------|------------------|--------------------------------|--------------------------------------------------------|
| 1 %                           | 2.20000 g        | 0.000088 g                     | 0.0040 %                                               |
| 25 %                          | 55.00000 g       | 0.00059 g                      | 0.0011 %                                               |
| 50 %                          | 110.00000 g      | 0.0011 g                       | 0.0010 %                                               |
| 75 %                          | 165.0000 g       | 0.0016 g                       | 0.00095 %                                              |
| 100 %                         | 220.0000 g       | 0.0022 g                       | 0.00098 %                                              |

Graphic realization of the relative uncertainty of measurement | process accuracy



Displayed example

Process accuracy

1.00 %

Safety factor

3

Minimum sample weight

0.02019 g

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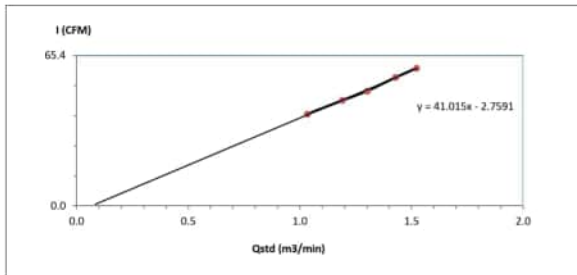
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High Volume Air Sampler Calibration Worksheet

|                       |                      |                               |            |
|-----------------------|----------------------|-------------------------------|------------|
| Project Site :        | Gulf P CRN Co., Ltd. | Barometric Pressure (mm Hg) : | 755.6      |
| Calibrate Location :  | พื้นที่โรงงาน        | Temperature ( °C ) :          | 35.8       |
| Calibrate Date :      | 4-May-26             | High Volume ID :              | BKK_FS0372 |
| CalibrationSheet No.: | C-040526-BKK_FS0372  | High Volume Model :           | TE-5009X   |
| Calibrator ID:        | BKK_FS0625           | High Volume S/N :             | 5332       |
| Calibrator Model :    | TE-5028A             | Calibrator Slope :            | 1.67715    |
| Calibrator S/N :      | 2585                 | Calibrator Intercept :        | -0.87288   |

| Test No. | Delta H <sub>2</sub> O<br>(inch) | Q <sub>ad</sub><br>(m <sup>3</sup> /min) | I : Chart<br>(CFM) | Linear Regression         |         |
|----------|----------------------------------|------------------------------------------|--------------------|---------------------------|---------|
| 1        | 3.0                              | 1.0344                                   | 40                 | Slope :                   | 41.0148 |
| 2        | 4.0                              | 1.1909                                   | 46                 | Intercept :               | -2.7591 |
| 3        | 4.8                              | 1.3024                                   | 50                 | Correlation Coefficient : | 0.9987  |
| 4        | 5.8                              | 1.4294                                   | 56                 |                           |         |
| 5        | 6.6                              | 1.5233                                   | 60                 |                           |         |



Calibrated by

Thanesuan

( Mr. Thanesuan Sriwasut )  
BKK Field Services Senior Technician

Approved by :

Warakorn P.

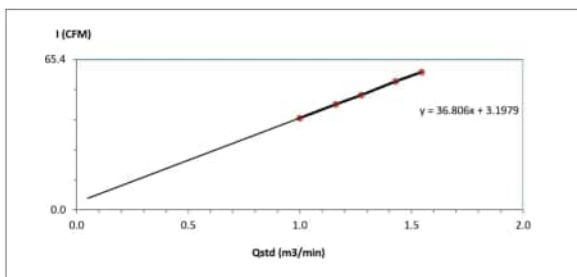
( Mr. Warakorn Pookrak )  
Field Services Supervisor



### High Volume Air Sampler Calibration Worksheet

Project Site : Gulf/P CRN Co., Ltd. Barometric Pressure (mm Hg) : 755.6  
Calibrate Location : โรงงานผลิตชิ้นส่วนอากาศยานและชิ้นส่วนอากาศยาน Temperature (°C) : 35.8  
Calibrate Date : 4-May-26 High Volume ID : BKK\_FS0366  
Calibration Sheet No. : C-040526-BKK\_FS0366 High Volume Model : TE-5009X  
Calibrator ID : BKK\_FS0625 High Volume S/N : 4156  
Calibrator Model : TE-5028A Calibrator Slope : 1.67715  
Calibrator S/N : 2585 Calibrator Intercept : -0.02288

| Test No. | Delta H <sub>2</sub> O (inch) | Q <sub>ad</sub> (m <sup>3</sup> /min) | I : Chart (CFM) | Linear Regression                                                         |
|----------|-------------------------------|---------------------------------------|-----------------|---------------------------------------------------------------------------|
| 1        | 2.8                           | 1.0001                                | 40              | Slope : 36.8063<br>Intercept : 3.1979<br>Correlation Coefficient : 0.9999 |
| 2        | 3.8                           | 1.1614                                | 46              |                                                                           |
| 3        | 4.6                           | 1.2755                                | 50              |                                                                           |
| 4        | 5.8                           | 1.4294                                | 56              |                                                                           |
| 5        | 6.8                           | 1.5458                                | 60              |                                                                           |



Calibrated by Thanesun  
( Mr. Thanesun Sriwasut )  
BKK Field Services Senior Technician

Approved by Warakorn P.  
( Mr. Warakorn Pookrak )  
Field Services Supervisor

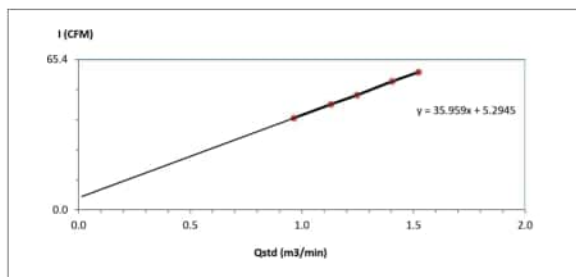
FORM NO.: F 06-073 REVISION NO.:2 ISSUE DATE: 20/11/23



### High Volume Air Sampler Calibration Worksheet

Project Site : Gulf/P CRN Co., Ltd. Barometric Pressure (mm Hg) : 755.6  
Calibrate Location : โรงงานผลิตชิ้นส่วนอากาศยานและชิ้นส่วนอากาศยาน Temperature (°C) : 35.8  
Calibrate Date : 4-May-26 High Volume ID : BKK\_FS0358  
Calibration Sheet No. : C-040526-BKK\_FS0358 High Volume Model : TE-5009X  
Calibrator ID : BKK\_FS0625 High Volume S/N : 5193  
Calibrator Model : TE-5028A Calibrator Slope : 1.67715  
Calibrator S/N : 2585 Calibrator Intercept : -0.02288

| Test No. | Delta H <sub>2</sub> O (inch) | Q <sub>ad</sub> (m <sup>3</sup> /min) | I : Chart (CFM) | Linear Regression                                                         |
|----------|-------------------------------|---------------------------------------|-----------------|---------------------------------------------------------------------------|
| 1        | 2.6                           | 0.9646                                | 40              | Slope : 35.9592<br>Intercept : 5.2945<br>Correlation Coefficient : 0.9999 |
| 2        | 3.6                           | 1.1310                                | 46              |                                                                           |
| 3        | 4.4                           | 1.2479                                | 50              |                                                                           |
| 4        | 5.6                           | 1.4049                                | 56              |                                                                           |
| 5        | 6.6                           | 1.5233                                | 60              |                                                                           |



Calibrated by Thanesun  
( Mr. Thanesun Sriwasut )  
BKK Field Services Senior Technician

Approved by Warakorn P.  
( Mr. Warakorn Pookrak )  
Field Services Supervisor

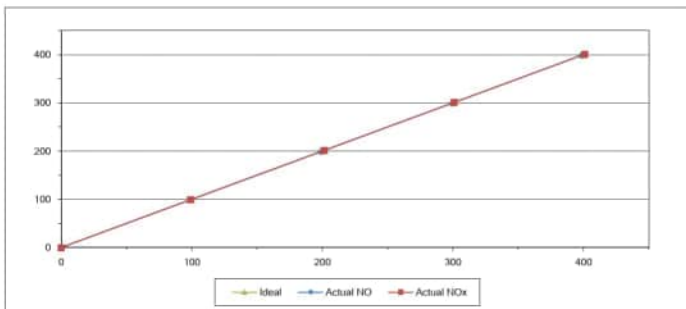
FORM NO.: F 06-073 REVISION NO.:2 ISSUE DATE: 20/11/23



### MULTIPOINT CALIBRATION REPORT

Calibration Date : 5-Jan-26 Equipment Name : NOx Analyzer  
Manufacturer : HORIBA Model : APNA-370  
Serial No. : SUDL58MU Equipment ID : BKK\_FS1090  
Calibrator Manufacturer : Teledyne API Model : 700  
Serial No. : 947  
Std. Gas Concentration (PPM) : 55.88 Cylinder No. : GN0027222  
Cylinder Pressure (psi) : 1800 Certified By : Airgas Inc.  
Certified Date : 9-Feb-22 Expired Date : 9-Feb-30

| Point       | CALIBRATION RESULTS |           |          |           |            |           |            |
|-------------|---------------------|-----------|----------|-----------|------------|-----------|------------|
|             | Ideal               | Actual NO | Error NO | %Error NO | Actual NOx | Error NOx | %Error NOx |
| ZERO        | 0.00                | 0.10      | 0.10     | 0.10      | 0.10       | 0.10      | 0.10       |
| 1           | 100.00              | 98.90     | -1.10    | -1.10     | 99.10      | -0.90     | -0.90      |
| 2           | 200.00              | 198.70    | -1.30    | -0.65     | 201.50     | 1.50      | 0.75       |
| 3           | 300.00              | 299.30    | -0.70    | -0.23     | 301.00     | 1.00      | 0.33       |
| 4           | 400.00              | 398.30    | -1.70    | -0.42     | 401.20     | 1.20      | 0.30       |
| AVERAGE (%) |                     |           |          | -0.46     |            |           | 0.12       |



Calibrated By Mr. Jirawat Sakam  
Field Environmental Scientist (3)

Approved By Mr. Sarayuth Jitranont  
Assistant General Manager

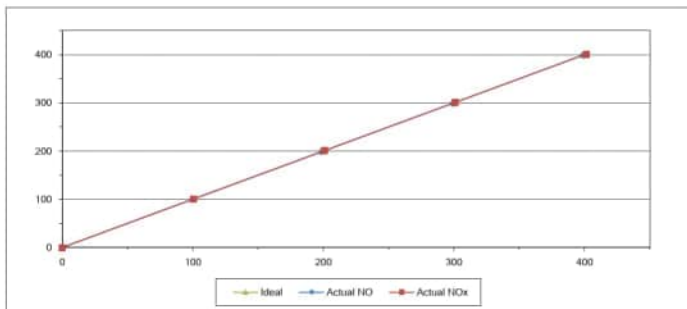
ALS Laboratory Group  
FORM NO.: F 06-056 REVISION NO.:1 ISSUE DATE: 02/04/12



### MULTIPOINT CALIBRATION REPORT

Calibration Date : 5-Jan-26 Equipment Name : NOx Analyzer  
Manufacturer : HORIBA Model : APNA-370  
Serial No. : 30K18RHM Equipment ID : BKK\_FS1086  
Calibrator Manufacturer : Teledyne API Model : 700  
Serial No. : 947  
Std. Gas Concentration (PPM) : 55.88 Cylinder No. : GN0027222  
Cylinder Pressure (psi) : 1800 Certified By : Airgas Inc.  
Certified Date : 9-Feb-22 Expired Date : 9-Feb-30

| Point       | CALIBRATION RESULTS |           |          |           |            |           |            |
|-------------|---------------------|-----------|----------|-----------|------------|-----------|------------|
|             | Ideal               | Actual NO | Error NO | %Error NO | Actual NOx | Error NOx | %Error NOx |
| ZERO        | 0.00                | 0.05      | 0.05     | 0.05      | 0.10       | 0.10      | 0.10       |
| 1           | 100.00              | 99.50     | -0.50    | -0.50     | 100.20     | 0.20      | 0.20       |
| 2           | 200.00              | 198.30    | -1.70    | -0.85     | 201.10     | 1.10      | 0.55       |
| 3           | 300.00              | 298.90    | -1.10    | -0.37     | 301.00     | 1.00      | 0.33       |
| 4           | 400.00              | 398.60    | -1.40    | -0.35     | 401.30     | 1.30      | 0.33       |
| AVERAGE (%) |                     |           |          | -0.40     |            |           | 0.30       |



Calibrated By Mr. Jirawat Sakam  
Field Environmental Scientist (3)

Approved By Mr. Sarayuth Jitranont  
Assistant General Manager

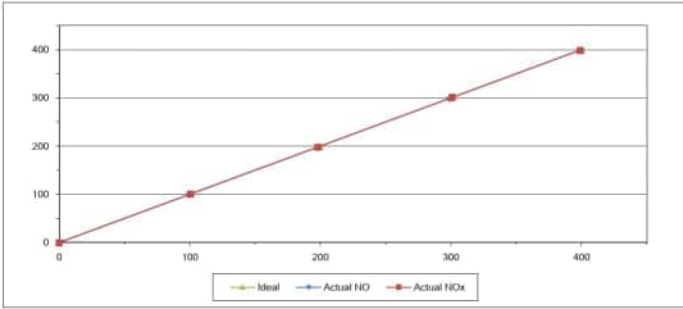
ALS Laboratory Group  
FORM NO.: F 06-056 REVISION NO.:1 ISSUE DATE: 02/04/12



## MULTIPOINT CALIBRATION REPORT

|                              |              |                |              |
|------------------------------|--------------|----------------|--------------|
| Calibration Date             | 5-Jan-26     | Equipment Name | NOx Analyzer |
| Manufacturer                 | HORIBA       | Model          | APNA-370     |
| Serial No.                   | PX13CWA0     | Equipment ID   | BKK_FS1088   |
| Calibrator Manufacturer      | Teledyne API | Model          | 700          |
| Serial No.                   | 947          |                |              |
| Std. Gas Concentration (PPM) | 55.88        | Cylinder No.   | GN0027222    |
| Cylinder Pressure (psi)      | 1800         | Certified By   | Airgas Inc.  |
| Certified Date               | 9-Feb-22     | Expired Date   | 9-Feb-30     |

| Point       | CALIBRATION RESULTS |           |          |           |            |           |            |
|-------------|---------------------|-----------|----------|-----------|------------|-----------|------------|
|             | Ideal               | Actual NO | Error NO | %Error NO | Actual NOx | Error NOx | %Error NOx |
| ZERO        | 0.00                | 0.10      | 0.10     | 0.10      | 0.10       | 0.10      | 0.10       |
| 1           | 100.00              | 99.10     | -0.90    | -0.90     | 100.20     | 0.20      | 0.20       |
| 2           | 200.00              | 198.30    | -1.70    | -0.85     | 198.10     | -1.90     | -0.95      |
| 3           | 300.00              | 298.60    | -1.40    | -0.47     | 301.10     | 1.10      | 0.37       |
| 4           | 400.00              | 399.90    | -0.10    | -0.03     | 398.90     | -1.10     | -0.28      |
| AVERAGE (%) |                     |           |          | -0.43     |            |           | -0.11      |



Calibrated By

(Mr. Jirawat Sakam)

Field Environmental Scientist (3)

Approved By

(Mr. Sarayuth Jitranont)

Assistant General Manager

ALS Laboratory Group

FORM NO.: F 06-056 REVISION NO.: - ISSUE DATE: 02/04/12

Certificate Number

CWS-026-69

Page 2 of 2 Pages

### MEASUREMENT RESULTS<sup>1</sup>

The Cup anemometer, Unit Under Calibration (UUC) was exercised at 10 m/s for 5 minutes prior to calibration being performed. The standard air velocity 0.5 m/s to 5 m/s was calculated by a standard air velocity transducer which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section and the standard air velocity 5 m/s to 30 m/s was calculated by a pitot tube with precision differential pressure meter which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section. UUC was mounted on a round vertical tube of the lower plate at center of test section. The calibration was carried out under both rising and falling air velocity in the range of 1 m/s to 16 m/s at calibration interval of 1 m/s. The results of calibration and associated measurement uncertainties are reported in the table below.

| $V_{std}^1$<br>(m/s) | Temp. wind tunnel<br>(°C) | Temp. room<br>(°C) | $V_{uuc}$<br>(m/s) | Error<br>(m/s) | $U (k=2)$<br>(m/s) |
|----------------------|---------------------------|--------------------|--------------------|----------------|--------------------|
| 1.016                | 24.66                     | 24.70              | 0.9                | -0.1           | 0.31               |
| 2.212                | 24.80                     | 24.70              | 1.9                | -0.3           | 0.31               |
| 3.038                | 24.60                     | 24.70              | 2.8                | -0.2           | 0.31               |
| 4.269                | 24.60                     | 24.70              | 4.0                | -0.3           | 0.31               |
| 4.99                 | 24.50                     | 24.70              | 4.9                | -0.1           | 0.31               |
| 5.99                 | 24.40                     | 24.70              | 5.9                | 0.0            | 0.31               |
| 7.00                 | 24.50                     | 24.70              | 7.0                | 0.0            | 0.31               |
| 8.01                 | 24.40                     | 24.70              | 7.9                | -0.1           | 0.31               |
| 8.99                 | 24.62                     | 24.70              | 9.0                | 0.0            | 0.31               |
| 9.99                 | 24.30                     | 24.70              | 10.0               | 0.0            | 0.31               |
| 10.99                | 24.70                     | 24.70              | 11.1               | 0.1            | 0.31               |
| 11.99                | 24.30                     | 24.70              | 12.1               | 0.1            | 0.31               |
| 12.98                | 24.70                     | 24.70              | 13.0               | 0.1            | 0.31               |
| 13.97                | 24.36                     | 24.70              | 14.0               | 0.1            | 0.31               |
| 14.96                | 24.62                     | 24.70              | 15.1               | 0.1            | 0.31               |
| 16.01                | 24.28                     | 24.70              | 16.1               | 0.1            | 0.37               |

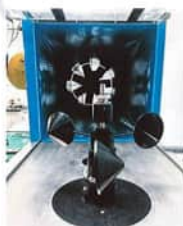
### Remark:

<sup>1</sup> Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

<sup>2</sup> Velocity of standard

<sup>3</sup> Velocity of Unit Under Calibration

### PHOTO OF CALIBRATION SET-UP



Calibration set-up of the Cup anemometer calibration in the wind tunnel of Jirante Associates Co., Ltd. The Cup anemometer shown may differ from the calibrated one. Remark: The proportion of the set-up is not true to scale due to imaging geometry.



JIRANTE ASSOCIATES CO., LTD.

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Web site: www.jiranate.com

Accredited calibration laboratory  
ISO/IEC 17025:2017  
NSC-TIS-TIS 17025  
CALIBRATION 0367

Air speed measurement laboratory  
Calibration services department.



Certificate Number

CWS-026-69

## CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

### MEASUREMENT ITEM

### MANUFACTURER

### MODEL/TYPE

### SERIAL NUMBER

### ID NUMBER

### CONDITION AS-RECEIVED

### CUSTOMER

Cup anemometer

Novolynx

Sensor: WS-02FA

Data logger: 110-WS-25DI-D

Sensor: WSO-AS983

Data logger: AS983

BKX\_F52440

Used item

ALS laboratory group (Thailand) Co., Ltd.

104 Phatthanakan 40, Phatthanakan Rd,

Khwaeng Suan Luang, Khut Suan Luang,

Bangkok 10250 Thailand.

### RECEIVED DATE

18 Mar 2026

### MEASUREMENT DATE

31 Mar 2026

### ISSUE DATE

31 Mar 2026

### ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature: 23.0 ± 3.0 °C

Relative Humidity: 55.0 ± 15.0 %RH

Atmospheric Pressure: 1010 ± 10 hPa

### PLACE OF CALIBRATION

Effel-type wind tunnel of Jirante Associates Co., Ltd.

### CALIBRATION CONDITIONS

Wind tunnel cross-section area<sup>1</sup> 900 cm<sup>2</sup>

Cup anemometer frontal area<sup>2</sup> 100 cm<sup>2</sup>

Diameter of mounting pipe<sup>3</sup> - mm

Blockage ratio of test object<sup>4</sup> 0.111 [-]

### Preconditioning

24 hours at ambient conditions.

### Measurement Condition

The average values during measurement are (24.7) °C, (46.8) %RH and (1007.5) hPa.

### TABULATION OF RESULTS:

The table on next page give the measured values.

### Calibrated by:

Mr. Sorawit Thachalad

Miss Jitraporn Lertsomphol



### Approved signatory:

Mr. Parinya Booncharoen

Calibration Department Manager

### Remark:

<sup>1</sup> Nozzle cross-section area of the wind tunnel

<sup>2</sup> Projected cross-section area of the tested object include mounting pipe

<sup>3</sup> Diameter of mounting pipe

<sup>4</sup> Ratio "a" / "b"

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY



JIRANTE ASSOCIATES CO., LTD.

Jirante Associates Co., Ltd.  
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Web site: www.jiranate.com

Accredited calibration laboratory  
ISO/IEC 17025:2017  
NSC-TIS-TIS 17025  
CALIBRATION 0367

Wind direction measurement laboratory  
Calibration services department.



Certificate Number

CWS-026-69

## CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

### MEASUREMENT ITEM

### MANUFACTURER

### MODEL/TYPE

### SERIAL NUMBER

### ID NUMBER

### CONDITION AS-RECEIVED

### CUSTOMER

Wind Direction Sensor

Novolynx

Sensor: WS-02FA

Data logger: 110-WS-25DI-D

Sensor: WSO-AS983

Data logger: AS983

BKX\_F52440

Used item

ALS laboratory group (Thailand) Co., Ltd.

104 Phatthanakan 40, Phatthanakan Rd,

Khwaeng Suan Luang, Khut Suan Luang,

Bangkok 10250 Thailand.

### RECEIVED DATE

18 Mar 2026

### MEASUREMENT DATE

31 Mar 2026

### ISSUE DATE

31 Mar 2026

### ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature: 23.0 ± 3.0 °C

Relative Humidity: 55.0 ± 15.0 %RH

Atmospheric Pressure: 1010 ± 10 hPa

### PLACE OF CALIBRATION

Effel-type wind tunnel of Jirante Associates Co., Ltd.

### CALIBRATION CONDITION

Wind tunnel cross-section area<sup>1</sup> 900 cm<sup>2</sup>

Wind direction frontal area<sup>2</sup> 129 cm<sup>2</sup>

Diameter of mounting pipe<sup>3</sup> - mm

Blockage ratio of test object<sup>4</sup> 0.143 [-]

### Preconditioning

24 hours at ambient conditions.

### Measurement Condition

The average values during measurement are (23.8) °C, (50.5) %RH and (1006.0) hPa.

### TABULATION OF RESULTS:

The table on next page give the measured values.

### Calibrated by:

Mr. Sorawit Thachalad

Miss Jitraporn Lertsomphol



### Approved signatory:

Mr. Parinya Booncharoen

Calibration Department Manager

### Remark:

<sup>1</sup> Nozzle cross-section area of the wind tunnel

<sup>2</sup> Projected cross-section area of the tested object include mounting pipe

<sup>3</sup> Diameter of mounting pipe

<sup>4</sup> Ratio "a" / "b"

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

MEASUREMENT RESULTS<sup>5</sup>

The wind direction sensor was calibrated against standard rotary encoder by comparison method. During calibration, the measurement was carried out at 45° intervals in clockwise and counterclockwise directions after offset adjustment has been made. The flow speed of wind tunnel (usually 5 m/s) is kept constant while the sensor is rotated around its vertical axis. The results of calibration and associated measurement uncertainties are reported in the table below.

| Air speed | D <sup>1</sup> <sub>std</sub> | D <sup>2</sup> <sub>std</sub> | Error      | U (k=2)    |
|-----------|-------------------------------|-------------------------------|------------|------------|
| m/s       | Degree (°)                    | Degree (°)                    | Degree (°) | Degree (°) |
| 4.99      | 45.000                        | 41                            | -4         | 0.60       |
|           | 90.000                        | 86                            | -4         | 0.60       |
|           | 135.000                       | 131                           | -4         | 0.60       |
|           | 180.000                       | 180                           | 0          | 0.60       |
|           | 225.000                       | 228                           | 3          | 0.60       |
|           | 270.000                       | 275                           | 5          | 0.60       |
|           | 315.000                       | 320                           | 5          | 0.82       |
|           | 360.000                       | 359                           | -1         | 0.60       |

## Remark:

<sup>5</sup> Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

<sup>1</sup> Direction of standard

<sup>2</sup> Direction of Unit Under Calibration

\*\*\*End of Certificate of Calibration\*\*\*



JIRANATEE ASSOCIATES CO., LTD.

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Accredited calibration laboratory  
ISO/IEC 17025:2017  
NSC-TIS-TIS 17025  
CALIBRATION 0367

Temperature measurement laboratory  
Calibration services department.



## CERTIFICATE OF CALIBRATION

Certificate No. : CDT-083-69

Page 1 of 2 Pages

## MEASUREMENT ITEM

: Data Logger with Temperature sensor

## MANUFACTURER

: Novolynx

## MODEL/TYPE

: 110-WS-25DL-D

## SERIAL NUMBER

: A5983

## ID NUMBER

: BKK\_FS1440

## CONDITION AS-RECEIVED

: Used item

## CUSTOMER

: ALS laboratory group (Thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Suan Luang, Khet Suan Luang,  
Bangkok 10250 Thailand.

## RECEIVED DATE

: 18 Mar 2026

## MEASUREMENT DATE

: 31 Mar 2026

## ISSUE DATE

: 31 Mar 2026

## ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature : 23.0 ± 3.0 °C  
Relative Humidity : 55.0 ± 15.0 %RH

**NOTED:** The certificate is valid only to the item calibrated on date and place of calibration.

## TABULATION OF RESULTS:

The table on next page give the measured values.

## Calibration procedure:

The temperature calibration was done by In-House calibration method as WI-CL-001 according to comparison method with standard digital temperature indicator and standard temperature probe. The temperature scale use was based on ITS-90.

## Traceability:

The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT). Certificate number: IT-1013-25, Certificate number: FR-0061-25.

## Reference Used During Calibration:

1. Standard Temperature Probe  
Model: STS-100 AS03, Serial No.: 667682-09,  
Due date: 9 Apr 2027  
2. Digital Temperature Indicator  
Model: DTI-1000-A MK II, Serial No.: 671407-00591 Due date: 22 Apr 2027

## Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM: Evaluation of measurement data - Guide to the expression of uncertainty in measurement<sup>6</sup>

## Calibrated by:

☐ Mr. Sorawit Thachalad  
☒ Miss Jittrapon Lertsomphol  
☐ Miss Ruangrumpai Phoommit



## Approved signature:

Mr. Parinya Booncharoen  
Calibration Department Manager

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Continuation of Certificate of Calibration Number CDT-083-69

Page 2 of 2 Pages

**Result of Calibration:** ☒ Without Adjustment ☐ With Adjustment

**Calibration Range:** 20 °C to 40 °C

## Function:

Table 1: This equipment was connected with temperature sensor Model: HMP60 S/N: W2920780.  
Dimension: Diameter 12 mm. Length 80 mm.

| Immersion Depth<br>(mm) | Standard Reading<br>(°C) | UUC Reading<br>(°C) | Error<br>(°C) | Uncertainty<br>(°C) |
|-------------------------|--------------------------|---------------------|---------------|---------------------|
| 80                      | 20.026                   | 19.6                | -0.4          | 0.099               |
| 80                      | 25.013                   | 24.6                | -0.4          | 0.099               |
| 80                      | 30.000                   | 29.6                | -0.4          | 0.099               |
| 80                      | 35.003                   | 34.5                | -0.5          | 0.099               |
| 80                      | 39.998                   | 39.5                | -0.5          | 0.099               |

UUC\*: Unit Under Calibration

\*\*\*End of Certificate of Calibration\*\*\*



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NSC-TIS-TIS 17025  
CALIBRATION 0367

Relative humidity and Air Temperature measurement laboratory  
Calibration services department.



## CERTIFICATE OF CALIBRATION

Certificate No. : CRT-019-69

Page 1 of 2 Pages

## MEASUREMENT ITEM

: Relative humidity with data logger

## MANUFACTURER

: Novolynx

## MODEL/TYPE

: Data Logger: 110-WS-25DL-D

## SERIAL NUMBER

: Sensor: HMP60

## ID NUMBER

: Data Logger: A5983

## CONDITION AS-RECEIVED

: Sensor: W2920780

## CUSTOMER

: BKK\_FS1440  
Used item  
: ALS laboratory group (Thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd. Khwaeng Suan Luang,  
Khet Suan Luang, Bangkok 10250 Thailand.

## RECEIVED DATE

: 18 Mar 2026

## MEASUREMENT DATE

: 31 Mar 2026

## ISSUE DATE

: 31 Mar 2026

## ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature : 23.0 ± 3.0 °C  
Relative Humidity : 55.0 ± 15.0 %RH

**NOTED:** The certificate is valid only to the item calibrated on date and place of calibration.

## TABULATION OF RESULTS:

The table on next page give the measured values.

## Calibration procedure:

The Relative humidity and Air Temperature calibration was done by In-House calibration method as WI-CL-009 and WI-CL-010 according to comparison method with Standard, Chilled Mirror hygrometer with Temperature sensor and standard Humidity generator chamber.

## Traceability:

The measurements are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT). Certificate number: TH-0146-24 and Jiranatee Associates Co., Ltd. Certificate number: CDT-027-68.

## Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM: Evaluation of measurement data - Guide to the expression of uncertainty in measurement<sup>6</sup>

## Calibrated by:

☐ Mr. Sorawit Thachalad  
☒ Miss Jittrapon Lertsomphol  
☐ Miss Ruangrumpai Phoommit



## Approved signature:

Mr. Parinya Booncharoen  
Calibration Department Manager

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

#### Measurement Results:

The results of calibration and associated measurement uncertainties are reported in the table below.

Result of Calibration: ☐ Without Adjustment ☒ With Adjustment

Table 1: The results of calibration of relative humidity at 30 °C are reported in table below.  
Calibration Range: 20%RH to 80%RH

| Air Temperature<br>(°C) | Standard Reading<br>(%RH) | UUC Reading<br>(%RH) | Error<br>(%RH) | Uncertainty<br>(%RH) |
|-------------------------|---------------------------|----------------------|----------------|----------------------|
| 29.98                   | 20.02                     | 21.4                 | 1.3            | 0.78                 |
| 29.98                   | 50.07                     | 49.8                 | -0.2           | 1.3                  |
| 30.01                   | 80.15                     | 78.7                 | -1.4           | 2.1                  |

UUC\*: Unit Under Calibration

\*\*\*End of Certificate of Calibration\*\*\*



## CERTIFICATE OF CALIBRATION

Certificate No. : CPR-017-69

Page 1 of 2 Pages

#### MEASUREMENT ITEM

: Digital barometer

#### MANUFACTURER

: Novalyx

#### MODEL/TYPE

: Sensor: 110-WS-25BP

Data logger: 110-WS-25DL-D

#### SERIAL NUMBER

: Sensor: BP-A5983

Data logger: A5983

#### ID NUMBER

: BKK\_F51440

#### CONDITION AS-RECEIVED

: Used item

#### CUSTOMER

: ALS laboratory group (Thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd,  
Khwaeng Suan Luang, Khet Suan Luang,  
Bangkok 10250 Thailand.

#### RECEIVED DATE

: 18 Mar 2026

#### MEASUREMENT DATE

: 31 Mar 2026

#### ISSUE DATE

: 31 Mar 2026

#### Calibration procedure:

The Digital barometer was calibrated against Digital pressure calibrator, The WI-CL-003 was used as a calibration guideline.

#### Traceability:

The measurement results are traceable to the international system of units (SI) through the NIMT (National Metrology Institute of Thailand) via Certificate number: MP-0004-26

#### Reference Used During Calibration:

1. Absolute Pressure Transducer  
Model: CPG2500, Serial No.: 4100126P

#### Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor  $k=2$ , Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM (Evaluation of measurement data - Guide to the expression of uncertainty in measurement)

#### CONDITION OF THIS RESULT OF CALIBRATION:

1. Calibration effort for calibration sequence C
2. The UUC\* was installed in vertical orientation above reference standard instrument and center of UUC\* was used as the reference level.
3. Calibration conditions:
4. Condition : ☒ Normal ☐ Abnormal  
Pressure transmitting medium : Air  
 $p_h$  (20°C, 1 bar) : 1.19 kg/m<sup>3</sup>  
 $H_{amb}$  : (58.2±0.1) %  
 $t_{amb}$  : (23.1±0.1) °C  
 $p_{amb}$  : (1008.1±0.9) mbar
5. The certificate is valid only to the item calibrated on date and place of calibration



#### Calibrated by:

- ☒ Mr. Sorawit Thachalad  
☐ Miss Jitraporn Lertsomphol

#### Approved signatory:

Mr. Panyra Booncharoen  
Calibration Department Manager

THIS CERTIFICATE REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

## CERTIFICATE OF CALIBRATION

Certificate No. : CPR-017-69

Page 2 of 2 Pages

#### MEASUREMENT RESULTS

: ☒ Without adjustment ☐ With adjustment

CALIBRATION IN THE RANGE OF : 950 mbar to 1050 mbar

The results of calibration and associated measurement uncertainties are reported in the table below.

| STD<br>(mbar) | UUC*<br>(mbar) | Error<br>(mbar) | Uncertainty (k=2)<br>(mbar) |
|---------------|----------------|-----------------|-----------------------------|
| 950.01        | 951.8          | 1.8             | 0.39                        |
| 970.00        | 971.1          | 1.1             | 0.37                        |
| 989.98        | 990.4          | 0.5             | 0.37                        |
| 1010.02       | 1009.6         | -0.4            | 0.37                        |
| 1030.03       | 1029.0         | -1.1            | 0.39                        |
| 1050.00       | 1048.2         | -1.8            | 0.37                        |

Note: UUC\* Unit Under Calibration

: To convert the result in report unit to Pa should be multiply by 100

\*End of certificate\*



## CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

#### MEASUREMENT ITEM

: Cup anemometer

#### MANUFACTURER

: Novalyx

#### MODEL/TYPE

: Sensor: WS-02FA

Data logger: 110-WS-25DL-D

#### SERIAL NUMBER

: Sensor: WSD-A5981

Data logger: A5981

#### ID NUMBER

: BKK\_F51438

#### CONDITION AS-RECEIVED

: Used item

#### CUSTOMER

: ALS laboratory group (Thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd,  
Khwaeng Suan Luang, Khet Suan Luang,  
Bangkok 10250 Thailand.

#### RECEIVED DATE

: 27 Feb 2026

#### MEASUREMENT DATE

: 09 Mar 2026

#### ISSUE DATE

: 09 Mar 2026

#### ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature : 23.0 ± 3.0 °C  
Relative Humidity : 55.0 ± 15.0 %RH  
Atmospheric Pressure : 1010 ± 10 hPa

#### PLACE OF CALIBRATION

: Effel-type wind tunnel of Jirantee Associates Co., Ltd.

#### CALIBRATION CONDITIONS

Wind tunnel cross-section area: 900 cm<sup>2</sup>  
Cup anemometer frontal area: 100 cm<sup>2</sup>  
Diameter of mounting pipe: - mm  
Blockage ratio of test object: 0.111 %

#### Preconditioning

: Measurement Condition

: 24 hours at ambient conditions.  
The average values during measurement are (24.0) °C, (49.8) %RH and (1007.6) hPa.

#### TABULATION OF RESULTS:

The table on next page give the measured values.

#### Calibrated by:

- ☒ Mr. Sorawit Thachalad  
☐ Miss Jitraporn Lertsomphol



#### Approved signatory:

Mr. Panyra Booncharoen  
Calibration Department Manager

#### Calibration procedure:

The Cup anemometer was calibrated against Standard air velocity transducer model: 8455/32 and pitot tube with precision differential pressure meter model: DP42500 in on/off-line verification of Pitot-type wind tunnel with 900 cm<sup>2</sup> cross section area. The WI-CL-003 based on IEC 61400-12-1: Wind energy generation systems - Part 12-1: Power performance measurements of electricity producing wind turbines, March 2017 was used as a calibration guideline.

#### Traceability:

This certificate provides a traceability of the measurement to recognized the national standard, and to realization of the international system of units (SI) through the NIMT (National Metrology Institute of Thailand) via Certificate number: MW-0019-25 and MW-0059-25

#### Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor  $k=2$ , Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM (Evaluation of measurement data - Guide to the expression of uncertainty in measurement)

REVIEW BY: P. Panyra

APPROVED BY: P. Panyra

NEXT CAL DATE: 09/09/27

#### Remark:

- \* Nozzle cross-section area of the wind tunnel  
\* Projected cross-section area of the tested object include mounting pipe  
\* Diameter of mounting pipe  
\* Ratio: 1 to 1

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

MEASUREMENT RESULTS<sup>1</sup>

The Cup anemometer, Unit Under Calibration (UUC) was exercised at 10 m/s for 5 minutes prior to calibration being performed. The standard air velocity 0.5 m/s to 5 m/s was calculated by a standard air velocity transducer which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section and the standard air velocity 5 m/s to 30 m/s was calculated by a pitot tube with precision differential pressure meter which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section. UUC was mounted on a round vertical tube of the lower plate at center of test section. The calibration was carried out under both rising and falling air velocity in the range of 1 m/s to 16 m/s at calibration interval of 1 m/s. The results of calibration and associated measurement uncertainties are reported in the table below.

| $v_{std}$<br>(m/s) | Temp. wind tunnel<br>(°C) | Temp. room<br>(°C) | $v_{std}$<br>(m/s) | Error<br>(m/s) | $U$ (k=2)<br>(m/s) |
|--------------------|---------------------------|--------------------|--------------------|----------------|--------------------|
| 1.039              | 23.90                     | 24.00              | 0.9                | -0.1           | 0.31               |
| 2.210              | 24.30                     | 24.00              | 2.0                | -0.2           | 0.31               |
| 3.015              | 23.80                     | 24.00              | 2.9                | -0.1           | 0.31               |
| 4.295              | 23.82                     | 24.00              | 4.0                | -0.3           | 0.31               |
| 4.99               | 23.40                     | 24.00              | 5.0                | 0.0            | 0.31               |
| 5.99               | 23.70                     | 24.00              | 6.1                | 0.1            | 0.31               |
| 7.01               | 23.38                     | 24.00              | 7.1                | 0.1            | 0.31               |
| 8.01               | 23.64                     | 24.00              | 8.2                | 0.2            | 0.31               |
| 8.99               | 23.32                     | 24.00              | 9.1                | 0.3            | 0.31               |
| 10.00              | 23.50                     | 24.00              | 10.2               | 0.2            | 0.31               |
| 10.99              | 23.40                     | 24.00              | 11.2               | 0.2            | 0.31               |
| 11.98              | 23.40                     | 24.00              | 12.4               | 0.4            | 0.31               |
| 12.98              | 23.50                     | 24.00              | 13.5               | 0.5            | 0.31               |
| 13.96              | 23.40                     | 24.00              | 14.5               | 0.5            | 0.31               |
| 14.96              | 23.50                     | 24.00              | 15.5               | 0.5            | 0.31               |
| 16.00              | 23.50                     | 24.00              | 16.5               | 0.5            | 0.35               |

## Remarks:

<sup>1</sup> Calibration results only count for the tested circumstances and environmental condition during which calibration took place

<sup>2</sup> Velocity of standard

<sup>3</sup> Velocity of Unit Under Calibration

## PHOTO OF CALIBRATION SET-UP



Calibration set-up of the Cup anemometer calibration in the wind tunnel of Jiranatee Associates Co., Ltd. The Cup anemometer shown may differ from the calibrated one. Remark: The proportion of the set-up is not true to scale due to imaging geometry.



## CERTIFICATE OF CALIBRATION

## MEASUREMENT ITEM

## MANUFACTURER

## MODEL/TYPE

## SERIAL NUMBER

## ID NUMBER

## CONDITION AS-RECEIVED

## CUSTOMER

## RECEIVED DATE

## MEASUREMENT DATE

## ISSUE DATE

## ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

|                      |             |     |
|----------------------|-------------|-----|
| Temperature          | 23.0 ± 0.1  | °C  |
| Relative Humidity    | 55.0 ± 15.0 | %RH |
| Atmospheric Pressure | 1010 ± 10   | hPa |

## PLACE OF CALIBRATION

Eiffel-type wind tunnel of Jiranatee Associates Co., Ltd.

## CALIBRATION CONDITION

|                                             |       |                 |
|---------------------------------------------|-------|-----------------|
| Wind tunnel cross-section area <sup>1</sup> | 900   | cm <sup>2</sup> |
| Wind direction (up/down)                    | 129   | cm <sup>2</sup> |
| Diameter of mounting pipe <sup>2</sup>      | -     | mm              |
| Blockage ratio of test object <sup>3</sup>  | 0.143 | [-]             |

## Preconditioning

## Measurement Condition

24 hours at ambient conditions.  
The average values during measurement are (23.9°C, (51.2) %RH and (1005.9) hPa.

## TABULATION OF RESULTS:

The table on next page give the measured values.

## Calibrated by:

☒ Mr. Sorawit Thachalad  
☐ Miss Jitraporn Lertsomphol



## Approved signatory:

Mr. Parinya Booncharoen  
Calibration Department Manager

## Remarks:

<sup>1</sup> Wind tunnel cross-section area of the wind tunnel

<sup>2</sup> Proposed cross-section area of the tested object include mounting pipe

<sup>3</sup> Diameter of mounting pipe

<sup>4</sup> Ratio to 1

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

MEASUREMENT RESULTS<sup>1</sup>

The wind direction sensor was calibrated against standard rotary encoder by comparison method. During calibration, the measurement was carried out at 45° intervals in clockwise and counter-clockwise directions after offset adjustment has been made. The flow speed of wind tunnel (usually 5 m/s) is kept constant while the sensor is rotated around its vertical axis. The results of calibration and associated measurement uncertainties are reported in the table below.

| Air speed<br>m/s | D <sup>1</sup> <sub>max</sub><br>Degree (°) | D <sup>1</sup> <sub>min</sub><br>Degree (°) | Error<br>Degree (°) | $U$ (k=2)<br>Degree (°) |
|------------------|---------------------------------------------|---------------------------------------------|---------------------|-------------------------|
| 5.01             | 45.000                                      | 40                                          | -5                  | 0.60                    |
|                  | 90.000                                      | 85                                          | -5                  | 0.60                    |
|                  | 135.000                                     | 131                                         | -4                  | 0.60                    |
|                  | 180.000                                     | 178                                         | -2                  | 0.82                    |
|                  | 225.000                                     | 226                                         | 1                   | 0.82                    |
|                  | 270.000                                     | 273                                         | 3                   | 0.60                    |
|                  | 315.000                                     | 320                                         | 5                   | 0.60                    |
|                  | 360.000                                     | 359                                         | -1                  | 0.60                    |

## Remarks:

<sup>1</sup> Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

<sup>2</sup> Direction of standard

<sup>3</sup> Direction of Unit Under Calibration



## CERTIFICATE OF CALIBRATION

Certificate No. : CDT-073-69

Page 1 of 2 Pages

## MEASUREMENT ITEM

## MANUFACTURER

## MODEL/TYPE

## SERIAL NUMBER

## ID NUMBER

## CONDITION AS-RECEIVED

## CUSTOMER

## RECEIVED DATE

## MEASUREMENT DATE

## ISSUE DATE

## ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

|                   |             |     |
|-------------------|-------------|-----|
| Temperature       | 23.0 ± 3.0  | °C  |
| Relative Humidity | 55.0 ± 15.0 | %RH |

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

## TABULATION OF RESULTS:

The table on next page give the measured values.

## Calibration procedure:

The temperature calibration was done by In-House calibration method as WI-CL-001 according to comparison method with standard digital temperature indicator and standard temperature probe. The temperature scale use was based on ITS-90.

## Traceability:

The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT) Certificate number: TT-1013-25, Certificate number: ER-0061-25.

## Reference Used During Calibration:

1. Standard Temperature Probe  
Model: STS-100 AS500, Serial No.: 667682-09,  
Due date: 9 Apr 2027  
2. Digital Temperature Indicator  
Model: DTI-1000-A MK II, Serial No.: 671407-00591 Due date: 22 Apr 2027

## Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM Evaluation of measurement data - Guide to the expression of uncertainty in measurement<sup>1</sup>

## Calibrated by:

☐ Mr. Sorawit Thachalad  
☒ Miss Jitraporn Lertsomphol  
☐ Miss Ruangrumpal Phoommit



## Approved signatory:

Mr. Parinya Booncharoen  
Calibration Department Manager

THIS CERTIFICATE MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 20 °C to 40 °C

**Function:**

Table 1: This equipment was connected with temperature sensor Model: HMP60 S/N: W2920778.  
Dimension: Diameter 12 mm. Length 80 mm.

| Immersion Depth<br>(mm) | Standard Reading<br>(°C) | UUC Reading<br>(°C) | Error<br>(°C) | Uncertainty<br>(°C) |
|-------------------------|--------------------------|---------------------|---------------|---------------------|
| 80                      | 20.024                   | 19.8                | -0.2          | 0.099               |
| 80                      | 25.008                   | 24.8                | -0.2          | 0.099               |
| 80                      | 30.000                   | 29.8                | -0.2          | 0.099               |
| 80                      | 34.999                   | 34.8                | -0.2          | 0.099               |
| 80                      | 39.996                   | 39.7                | -0.3          | 0.099               |

UUC\*: Unit Under Calibration

\*\*\*End of Certificate of Calibration\*\*\*



**CERTIFICATE OF CALIBRATION**

Certificate No. : CRT-012-69

Page 1 of 2 Pages

**MEASUREMENT ITEM  
MANUFACTURER  
MODEL/TYPE**

: Relative humidity with data logger  
: Novalynx  
: Data Logger: 110-WS-25DL-D  
Sensor: HMP60

**SERIAL NUMBER**

: Data Logger: A5981

**ID NUMBER**

: Sensor: W2920778

**CONDITION AS-RECEIVED**

: BKK, FS1438

**CUSTOMER**

: Used item  
: ALS laboratory group (Thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,  
Khet Suan Luang, Bangkok 10250 Thailand.

**RECEIVED DATE**

: 27 Feb 2026

**MEASUREMENT DATE**

: 09 Mar 2026

**ISSUE DATE**

: 09 Mar 2026

**ENVIRONMENTAL CONDITIONS:**

Ambient condition in the laboratory are as follows:

Temperature :  $23.0 \pm 3.0$  °C

Relative Humidity :  $55.0 \pm 15.0$  %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

**TABULATION OF RESULTS:**

The table on next page give the measured values.

**Calibration procedure:**

The Relative humidity and Air Temperature calibration was done by In-House calibration method as W1-CL-009 and W1-CL-010 according to comparison method with Standard, Chilled Mirror hygrometer with Temperature sensor and standard Humidity generator chamber.

**Traceability:**

The measurements are traceable to the international system of units (SI) through National Institute of Metrology (NIMT). Certificate number: TH-0146-24 and Jiranatee Associates Co., Ltd. Certificate number: CDT-027-69.

**Uncertainty of Measurement:**

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor  $k=2$ . Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM 'Evaluation of measurement data - Guide to the expression of uncertainty in measurement'.

**Calibrated by:**

- ☐ Mr. Sorawit Thachalad
- ☒ Miss Jitraporn Lertsomphol
- ☐ Miss Ruangsakul Phoomsri



**Approved signatory:**

Mr. Parnya Booncharoen  
Calibration Department Manager

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

**Measurement Results:**

The results of calibration and associated measurement uncertainties are reported in the table below.

Result of Calibration: ☐ Without Adjustment ☒ With Adjustment

Table 1: The results of calibration of relative humidity at 30 °C are reported in table below.

Calibration Range: 20%RH to 80%RH

| Air Temperature<br>(°C) | Standard Reading<br>(%RH) | UUC Reading<br>(%RH) | Error<br>(%RH) | Uncertainty<br>(%RH) |
|-------------------------|---------------------------|----------------------|----------------|----------------------|
| 30.02                   | 20.04                     | 21.9                 | 1.8            | 0.78                 |
| 30.07                   | 50.10                     | 50.0                 | -0.1           | 1.3                  |
| 30.06                   | 80.10                     | 78.2                 | -1.9           | 2.1                  |

UUC\*: Unit Under Calibration

\*\*\*End of Certificate of Calibration\*\*\*



**CERTIFICATE OF CALIBRATION**

Certificate No. : CPR-014-69

Page 1 of 2 Pages

**MEASUREMENT ITEM  
MANUFACTURER  
MODEL/TYPE**

: Digital barometer  
: Novalynx  
: Sensor: 110-WS-25BP  
Data logger: 110-WS-25DL-D

**SERIAL NUMBER**

: Sensor: BP-A5981

**ID NUMBER**

: Data logger: A5981

**CONDITION AS-RECEIVED**

: BKK, FS1438

**CUSTOMER**

: Used item  
: ALS laboratory group (Thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd,  
Khwaeng Suan Luang, Khet Suan Luang,  
Bangkok 10250 Thailand.

**RECEIVED DATE**

: 27 Feb 2026

**MEASUREMENT DATE**

: 09 Feb 2026

**ISSUE DATE**

: 09 Feb 2026

**Calibration procedure:**

The Digital barometer was calibrated against Digital pressure calibrator. The W1-CL-003 was used as a calibration guideline.

**Traceability:**

The measurement results are traceable to the international system of units (SI) through the NIMT (National Metrology Institute of Thailand) via Certificate number: MP-0017-25

**Reference Used During Calibration:**

1. Absolute Pressure Transducer  
Model: FPG2500, Serial No.: 4100126P

**Uncertainty of Measurement:**

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor  $k=2$ . Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM 'Evaluation of measurement data - Guide to the expression of uncertainty in measurement'.

**CONDITION OF THIS RESULT OF CALIBRATION:**

1. Calibration effort for calibration sequence C
2. The UUC\* was installed in vertical orientation above reference standard instrument and center of UUC\* was used as the reference level.
3. Calibration conditions:
4. Condition
  - ☒ Normal ☐ Abnormal
  - Pressure transmitting medium : Air
  - $p_h$  (20°C, 1 bar) :  $1.19 \text{ kg/m}^3$
  - $p_{amb}$  : (63.7±5.5) %
  - $T_{amb}$  : (22.6±0.1) °C
  - $p_{amb}$  : (1010.6±1.4) mbar
5. The certificate is valid only to the item calibrated on date and place of calibration

**Calibrated by:**

- ☒ Mr. Sorawit Thachalad
- ☐ Miss Jitraporn Lertsomphol



**Approved signatory:**

Mr. Parnya Booncharoen  
Calibration Department Manager

THIS CERTIFICATE REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

## CERTIFICATE OF CALIBRATION

Certificate No. : CPR-014-69

Page 2 of 2 Pages

MEASUREMENT RESULTS : ☒ Without adjustment ☐ With adjustment

CALIBRATION IN THE RANGE OF : 950 mbar to 1050 mbar

The results of calibration and associated measurement uncertainties are reported in the table below.

| STD<br>(mbar) | UUC*<br>(mbar) | Error<br>(mbar) | Uncertainty (k=2)<br>(mbar) |
|---------------|----------------|-----------------|-----------------------------|
| 950.01        | 951.9          | 1.9             | 0.37                        |
| 970.00        | 971.3          | 1.3             | 0.37                        |
| 990.00        | 990.5          | 0.5             | 0.37                        |
| 1010.00       | 1010.0         | 0.0             | 0.40                        |
| 1029.99       | 1029.3         | -0.7            | 0.37                        |
| 1050.01       | 1048.7         | -1.3            | 0.37                        |

Note: UUC\* Unit Under Calibration

: To convert the result in report unit to Pa should be multiply by 100

\*End of certificate\*



Page 1 of 2 Pages

## CERTIFICATE OF CALIBRATION

MEASUREMENT ITEM

MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS-RECEIVED

CUSTOMER

RECEIVED DATE

MEASUREMENT DATE

ISSUE DATE

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature : 23.0 ± 3.0 °C  
Relative Humidity : 55.0 ± 15.0 %RH  
Atmospheric Pressure : 1010 ± 10 hPa

PLACE OF CALIBRATION

: Effel-type wind tunnel of Jiranatee Associates Co., Ltd.

CALIBRATION CONDITIONS

: Wind tunnel cross-section area : 900 cm<sup>2</sup>  
Cup anemometer frontal area : 100 cm<sup>2</sup>  
Diameter of mounting pipe : 1.11 mm  
Blockage ratio of test object<sup>1</sup> : [-]

Preconditioning

Measurement Condition

: 24 hours at ambient conditions.  
The average values during measurement are (23.9) °C, (49.2) %RH and (1006.4) hPa.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

☒ Mr. Sorawat Thakulad  
☐ Miss Jitraporn Lertkarnphol



Approved signatory:

Mr. Parinya Inooncharoen  
Calibration Department Manager

Remark:

<sup>1</sup> Nozzle cross-section area of the wind tunnel  
<sup>2</sup> Projected cross-section area of the tested object include mounting pipe  
<sup>3</sup> Diameter of mounting pipe  
<sup>4</sup> Ratio <sup>1</sup> to <sup>3</sup>

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

Page 2 of 2 Pages

MEASUREMENT RESULTS<sup>1</sup>

The Cup anemometer, Unit Under Calibration (UUC) was exercise at 10 m/s for 5 minutes prior to calibration being performed. The standard air velocity 0.5 m/s to 5 m/s was calculated by a standard air velocity transducer which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section and the standard air velocity 5 m/s to 30 m/s was calculated by a pitot tube with precision differential pressure meter which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section, UUC was mounted on a round vertical tube of the lower plate at center of test section. The calibration was carried out under both rising and falling air velocity in the range of 1 m/s to 16 m/s at calibration interval of 1 m/s. The results of calibration and associated measurement uncertainties are reported in the table below.

| V <sub>std</sub><br>(m/s) | Temp. wind tunnel<br>(°C) | Temp. room<br>(°C) | V <sub>uuc</sub><br>(m/s) | Error<br>(m/s) | U (k=2)<br>(m/s) |
|---------------------------|---------------------------|--------------------|---------------------------|----------------|------------------|
| 1.016                     | 23.96                     | 23.85              | 0.9                       | -0.1           | 0.31             |
| 2.205                     | 23.60                     | 23.85              | 2.0                       | -0.2           | 0.31             |
| 3.038                     | 23.70                     | 23.85              | 2.8                       | -0.2           | 0.31             |
| 4.279                     | 23.74                     | 23.85              | 4.0                       | -0.3           | 0.31             |
| 5.01                      | 23.27                     | 23.85              | 5.0                       | 0.0            | 0.31             |
| 6.01                      | 23.70                     | 23.85              | 6.0                       | 0.0            | 0.31             |
| 7.01                      | 23.06                     | 23.85              | 7.1                       | 0.1            | 0.31             |
| 8.02                      | 23.64                     | 23.85              | 8.1                       | 0.1            | 0.31             |
| 9.01                      | 23.06                     | 23.85              | 9.1                       | 0.1            | 0.31             |
| 10.00                     | 23.44                     | 23.85              | 10.1                      | 0.1            | 0.31             |
| 11.00                     | 23.14                     | 23.85              | 11.1                      | 0.1            | 0.31             |
| 12.01                     | 23.30                     | 23.85              | 12.2                      | 0.2            | 0.31             |
| 12.99                     | 23.24                     | 23.85              | 13.2                      | 0.2            | 0.32             |
| 13.98                     | 23.70                     | 23.85              | 14.3                      | 0.3            | 0.31             |
| 14.98                     | 23.30                     | 23.85              | 15.4                      | 0.4            | 0.31             |
| 16.02                     | 23.30                     | 23.85              | 16.4                      | 0.4            | 0.31             |

Remark:

<sup>1</sup> Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

<sup>2</sup> Velocity of standard

<sup>3</sup> Velocity of Unit Under Calibration

PHOTO OF CALIBRATION SET-UP



Calibration set-up of the Cup anemometer calibration in the wind tunnel of Jiranatee Associates Co., Ltd. The Cup anemometer shown may differ from the calibrated one. Remark: The proportion of the set-up is not true to scale due to imaging geometry.



Certificate Number

CWD-024-68

## CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

MEASUREMENT ITEM

MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS-RECEIVED

CUSTOMER

RECEIVED DATE

MEASUREMENT DATE

ISSUE DATE

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature : 23.0 ± 3.0 °C  
Relative Humidity : 55.0 ± 15.0 %RH  
Atmospheric Pressure : 1010 ± 10 hPa

PLACE OF CALIBRATION

: Effel-type wind tunnel of Jiranatee Associates Co., Ltd.

CALIBRATION CONDITION

: Wind tunnel cross-section area : 900 cm<sup>2</sup>  
Wind direction frontal area : 129 cm<sup>2</sup>  
Diameter of mounting pipe : 0.143 mm  
Blockage ratio of test object<sup>1</sup> : [-]

Preconditioning

Measurement Condition

: 24 hours at ambient conditions.  
The average values during measurement are (24.0) °C, (54.0) %RH and (1006.0) hPa.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

☒ Mr. Sorawat Thakulad  
☐ Miss Jitraporn Lertkarnphol



Approved signatory:

Mr. Parinya Inooncharoen  
Calibration Department Manager

Remark:

<sup>1</sup> Nozzle cross-section area of the wind tunnel  
<sup>2</sup> Projected cross-section area of the tested object include mounting pipe  
<sup>3</sup> Diameter of mounting pipe  
<sup>4</sup> Ratio <sup>1</sup> to <sup>3</sup>

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

MEASUREMENT RESULTS<sup>1</sup>

The wind direction sensor was calibrated against standard rotary encoder by comparison method. During calibration, the measurement was carried out at 45° intervals in clockwise and counterclockwise directions after offset adjustment has been made. The flow speed of wind tunnel (usually 5 m/s) is kept constant while the sensor is rotated around its vertical axis. The results of calibration and associated measurement uncertainties are reported in the table below.

| Air speed<br>m/s | D <sub>100</sub><br>Degree (°) | D <sub>100</sub><br>Degree (°) | Error<br>Degree (°) | U (k=2)<br>Degree (°) |
|------------------|--------------------------------|--------------------------------|---------------------|-----------------------|
| 5.00             | 0.000                          | 0                              | 0                   | 0.60                  |
|                  | 45.000                         | 41                             | -4                  | 0.60                  |
|                  | 90.000                         | 87                             | -3                  | 0.60                  |
|                  | 135.000                        | 132                            | -3                  | 0.60                  |
|                  | 180.000                        | 180                            | 0                   | 0.60                  |
|                  | 225.000                        | 226                            | 1                   | 0.60                  |
|                  | 270.000                        | 273                            | 3                   | 0.60                  |
|                  | 315.000                        | 318                            | 3                   | 0.60                  |
|                  |                                |                                |                     |                       |

## Remark:

<sup>1</sup> Calibration results only count for the tested circumstances and environmental conditions during which calibration was made.

<sup>2</sup> Direction of standard

<sup>3</sup> Direction of Unit Under Calibration

\*\*\*End of Certificate of Calibration\*\*\*



Jiranatee Associates Co., Ltd.  
63/14-15, 63/15-16  
Petchkasem 7,7/1, Rd. Wattayapa, Bangkok,  
Bangkok 10260 (Thailand)  
Tel: +6688399453  
Mobile: +6688399453  
E-mail: jnac@jiranatee.com  
Web site: www.jiranatee.com

Accredited calibration laboratory  
ISO/IEC 17025:2017  
NSC-TIS-TIS 17025  
CALIBRATION 0367

Temperature measurement laboratory  
Calibration services department.



## CERTIFICATE OF CALIBRATION

Certificate No. : CDT-074-69

Page 1 of 2 Pages

MEASUREMENT ITEM : Data Logger with Temperature sensor  
MANUFACTURER : Novalynx  
MODEL/TYPE : 110-WS-25DL-D  
SERIAL NUMBER : AS982  
ID NUMBER : BKK\_F51439  
CONDITION AS-RECEIVED : Used item  
CUSTOMER : ALS laboratory group (Thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Suan Luang, Khet Suan Luang,  
Bangkok 10250 Thailand.

RECEIVED DATE : 27 Feb 2026  
MEASUREMENT DATE : 10 Mar 2026  
ISSUE DATE : 10 Mar 2026

## ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follows:

Temperature : 23.0 ± 3.0 °C  
Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

## TABULATION OF RESULTS:

The table on next page give the measured values.

## Calibration procedure:

The temperature calibration was done by In-House calibration method as WI-CL-001 according to comparison method with standard digital temperature indicator and standard temperature probe. The temperature scale use was based on ITS-90.

## Traceability:

The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT). Certificate number: TT-1013-25, Certificate number: FR-0061-25.

## Reference Used During Calibration:

1. Standard Temperature Probe  
Model: STS-100 AS00, Serial No.: 667682-09,  
Due date: 9 Apr 2027  
2. Digital Temperature Indicator  
Model: DTI-1000-A MK II, Serial No.: 671407-00591 Due date: 22 Apr 2027

## Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM Evaluation of measurement data - Guide to the expression of uncertainty in measurement<sup>1</sup>

## Calibrated by:

☐ Mr. Sorawit Thachalad  
☒ Miss Jitraporn Lertsomphol  
☐ Miss Ruangrumpai Phoommit



## Approved signatory:

Mr. Parinya Booncharoen  
Calibration Department Manager

THIS CERTIFICATE MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY



## Continuation of Certificate of Calibration Number CDT-074-69

Page 2 of 2 Pages

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 20 °C to 40 °C

## Function:

Table 1: This equipment was connected with temperature sensor Model: HMP60 S/N: W2920779.  
Dimension: Diameter 12 mm. Length 80 mm.

| Immersion Depth<br>(mm) | Standard Reading<br>(°C) | UUC Reading<br>(°C) | Error<br>(°C) | Uncertainty<br>(°C) |
|-------------------------|--------------------------|---------------------|---------------|---------------------|
| 80                      | 20.025                   | 19.8                | -0.2          | 0.099               |
| 80                      | 25.008                   | 24.8                | -0.2          | 0.099               |
| 80                      | 30.000                   | 29.7                | -0.3          | 0.099               |
| 80                      | 34.998                   | 34.7                | -0.3          | 0.099               |
| 80                      | 39.996                   | 39.7                | -0.3          | 0.099               |

UUC: Unit Under Calibration

\*\*\*End of Certificate of Calibration\*\*\*



Jiranatee Associates Co., Ltd.  
63/14-15, 63/15-16  
Petchkasem 7,7/1, Rd. Wattayapa, Bangkok,  
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E-mail: jnac@jiranatee.com  
Web site: www.jiranatee.com

Accredited calibration laboratory  
ISO/IEC 17025:2017  
NSC-TIS-TIS 17025  
CALIBRATION 0367  
Relative humidity and Air Temperature measurement laboratory  
Calibration services department.



## CERTIFICATE OF CALIBRATION

Certificate No. : CRT-013-69

Page 1 of 2 Pages

MEASUREMENT ITEM : Relative humidity with data logger  
MANUFACTURER : Novalynx  
MODEL/TYPE : Data Logger: 110-WS-25DL-D  
Sensor: HMP60  
SERIAL NUMBER : Delta Logger: AS982  
Sensor: W2920779  
ID NUMBER : BKK\_F51439  
CONDITION AS-RECEIVED : Used item  
CUSTOMER : ALS laboratory group (Thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,  
Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE : 27 Feb 2026  
MEASUREMENT DATE : 10 Mar 2026  
ISSUE DATE : 10 Mar 2026

## ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follows:

Temperature : 23.0 ± 3.0 °C  
Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

## TABULATION OF RESULTS:

The table on next page give the measured values.

## Calibration procedure:

The Relative humidity and Air Temperature calibration was done by In-House calibration method as WI-CL-009 and WI-CL-010 according to comparison method with Standard Chilled Mirror hygrometer with Temperature sensor and standard Humidity generator chamber.

## Traceability:

The measurements are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT). Certificate number: TH-0146-24 and Jiranatee Associates Co., Ltd. Certificate number: CDT-027-69.

## Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM Evaluation of measurement data - Guide to the expression of uncertainty in measurement<sup>1</sup>

## Calibrated by:

☐ Mr. Sorawit Thachalad  
☒ Miss Jitraporn Lertsomphol  
☐ Miss Ruangrumpai Phoommit



## Approved signatory:

Mr. Parinya Booncharoen  
Calibration Department Manager

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

**Measurement Results:**

The results of calibration and associated measurement uncertainties are reported in the table below.

**Result of Calibration:** ☐ Without Adjustment ☒ With Adjustment

Table 1: The results of calibration of relative humidity at 30 °C are reported in table below.

Calibration Range: 20%RH to 80%RH

| Air Temperature<br>[°C] | Standard Reading<br>[NRH] | UUC Reading<br>[NRH] | Error<br>[NRH] | Uncertainty<br>± [NRH] |
|-------------------------|---------------------------|----------------------|----------------|------------------------|
| 30.02                   | 20.04                     | 22.2                 | 2.1            | 0.78                   |
| 30.07                   | 50.11                     | 49.7                 | -0.4           | 1.3                    |
| 30.05                   | 80.08                     | 78.9                 | -1.2           | 2.1                    |

UUC\*: Unit Under Calibration

\*\*\*End of Certificate of Calibration\*\*\*



**CERTIFICATE OF CALIBRATION**

Certificate No. : CPR-015-69

Page 1 of 2 Pages

**MEASUREMENT ITEM**

: Digital barometer

**MANUFACTURER**

: Novolyn

**MODEL/TYPE**

: Sensor: 110-WS-25BP  
Data logger: 110-WS-25DL-D

**SERIAL NUMBER**

: Sensor: BP-AS982

**ID NUMBER**

: Data logger: A5982

**CONDITION AS-RECEIVED**

: BKK-F51439

**CUSTOMER**

: Used item  
ALS laboratory group (Thailand) Co., Ltd.  
104 Phuttharakon Rd, Phuttharakon Rd,  
Khuang Suan Luang, Khet Suan Luang,  
Bangkok 10250 Thailand.

**RECEIVED DATE**

: 27 Feb 2026

**MEASUREMENT DATE**

: 10 Feb 2026

**ISSUE DATE**

: 10 Feb 2026

**Calibration procedure:**

The Digital barometer was calibrated against Digital pressure calibrator, The WI-CL-003 was used as a calibration guideline.

**Traceability:**

The measurement results are traceable to the international system of units (SI) through the NIMT (National Metrology Institute of Thailand) via Certificate number: MP-0017-25

**Reference Used During Calibration:**

1. Absolute Pressure Transducer  
Model: CG2500, Serial no.: 4100126P

**Uncertainty of Measurement:**

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement"

**CONDITION OF THIS RESULT OF CALIBRATION:**

1. Calibration effort for calibration sequence C  
2. The UUC\* was installed in vertical orientation above reference standard instrument and center of UUC\* was used as the reference level.

3. Calibration conditions:

4. Condition : ☒ Normal ☐ Abnormal

Pressure transmitting medium : Air

$p_h$  (20°C, 1 bar) : 1.19 kg/m<sup>3</sup>

$M_{rel}$  : (55.0±2.1) %

$t_{amb}$  : (22.8±0.3) °C

$p_{amb}$  : (1013.1±1.2) mbar

5. The certificate is valid only to the item calibrated on date and place of calibration

**Calibrated by:**

☒ Mr. Sorawit Thachalad

☐ Miss Jitraporn Lertsomphol



**Approved signatory:**

*Mr. Panyia Booncharoen*

Calibration Department Manager

THIS CERTIFICATE REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

**CERTIFICATE OF CALIBRATION**

Certificate No. : CPR-015-69

Page 2 of 2 Pages

**MEASUREMENT RESULTS**

: ☒ Without adjustment ☐ With adjustment

**CALIBRATION IN THE RANGE OF**

: 950 mbar to 1050 mbar

The results of calibration and associated measurement uncertainties are reported in the table below.

| STD<br>[mbar] | UUC*<br>[mbar] | Error<br>[mbar] | Uncertainty (k=2)<br>[mbar] |
|---------------|----------------|-----------------|-----------------------------|
| 950.01        | 951.7          | 1.7             | 0.37                        |
| 970.00        | 971.1          | 1.1             | 0.37                        |
| 990.01        | 990.5          | 0.5             | 0.37                        |
| 1010.00       | 1010.0         | 0.0             | 0.37                        |
| 1029.99       | 1029.4         | -0.6            | 0.37                        |
| 1050.01       | 1049.3         | -0.7            | 0.69                        |

Note: UUC\* Unit Under Calibration

: To convert the result in report unit to Pa should be multiply by 100

\*End of certificate\*



**ANALYZER CALIBRATION DATA**

Client : Gulf JP CRN Co., Ltd. Location : 11/11 HRBG 11  
Date : 06 May 26 Test Operator : Worawich T.

**O<sub>2</sub> ANALYZER**

Model : TELEDYNE API T200H

Span (%) : 25

Serial No. : 482

|               | Cylinder Value<br>[%] | Initial Analyzers<br>Calibration<br>Response (%) | Final Analyzers<br>Calibration<br>Response (%) | Difference<br>(Percent of Span) |
|---------------|-----------------------|--------------------------------------------------|------------------------------------------------|---------------------------------|
| Zero Gas      | 0.00                  | 0.00                                             | 0.00                                           | 0.00                            |
| Low-Level Gas | 8.02                  | 8.07                                             | 8.11                                           | 0.16                            |
| Span Gas      | 16.12                 | 16.13                                            | 16.15                                          | 0.08                            |

**NO<sub>x</sub> ANALYZER**

Model : TELEDYNE API T200H

Span (ppm) : 100

Serial No. : 482

|               | Cylinder Value<br>[ppm] | Initial Analyzers<br>Calibration<br>Response (ppm) | Final Analyzers<br>Calibration<br>Response (ppm) | Difference<br>(Percent of Span) |
|---------------|-------------------------|----------------------------------------------------|--------------------------------------------------|---------------------------------|
| Zero Gas      | 0.00                    | 0.00                                               | 0.00                                             | 0.00                            |
| Low-Level Gas | 50.16                   | 55.85                                              | 55.39                                            | 0.46                            |
| Span Gas      | 80.73                   | 80.76                                              | 80.14                                            | 0.62                            |

**CO ANALYZER**

Model : TELEDYNE API 300EM

Span (ppm) : 100

Serial No. : 425

|               | Cylinder Value<br>[ppm] | Initial Analyzers<br>Calibration<br>Response (ppm) | Final Analyzers<br>Calibration<br>Response (ppm) | Difference<br>(Percent of Span) |
|---------------|-------------------------|----------------------------------------------------|--------------------------------------------------|---------------------------------|
| Zero Gas      | 0.00                    | 0.00                                               | 0.07                                             | 0.07                            |
| Low-Level Gas | 54.22                   | 53.88                                              | 54.05                                            | 0.17                            |
| Span Gas      | 79.82                   | 79.77                                              | 79.20                                            | 0.57                            |

**Calibrated by**

*Worawich T.*

( Mr. Worawich Tongpoom )

Environmental Field Scientist (3)



Lot No. 2634667-1

## SYSTEM CALIBRATION BIAS AND DRIFT DATA

Client : Gulf JP CRN Co., Ltd. Location : บ้าน HRSG 11  
Date : 06 May 26 Test Operator : Worawich T.

O<sub>2</sub> ANALYZER  
Cylinder Conc. (%) : 16.12 Span (%) : 25.00

| O <sub>2</sub> Analyzer Calibration Response | Initial Values              |                             | Final Values                |                             | Drift (% of Span) |
|----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-------------------|
|                                              | System Calibration Response | System Cal Bias (% of Span) | System Calibration Response | System Cal Bias (% of Span) |                   |
| Zero Gas                                     | 0.00                        | 0.01                        | 0.04                        | 0.02                        | 0.04              |
| Upscale Gas                                  | 16.13                       | 16.17                       | 0.16                        | 16.20                       | 0.12              |

NO<sub>2</sub> ANALYZER  
Cylinder Conc. (ppm) : 80.73 Span (ppm) : 100

| NO <sub>2</sub> Analyzer Calibration Response | Initial Values              |                             | Final Values                |                             | Drift (% of Span) |
|-----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-------------------|
|                                               | System Calibration Response | System Cal Bias (% of Span) | System Calibration Response | System Cal Bias (% of Span) |                   |
| Zero Gas                                      | 0.00                        | 0.08                        | 0.10                        | 0.10                        | 0.02              |
| Upscale Gas                                   | 80.76                       | 79.59                       | 1.17                        | 79.22                       | 1.54              |

CO ANALYZER  
Cylinder Conc. (ppm) : 79.82 Span (ppm) : 100

| CO Analyzer Calibration Response | Initial Values              |                             | Final Values                |                             | Drift (% of Span) |
|----------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-------------------|
|                                  | System Calibration Response | System Cal Bias (% of Span) | System Calibration Response | System Cal Bias (% of Span) |                   |
| Zero Gas                         | 0.00                        | 0.11                        | 0.09                        | 0.09                        | 0.02              |
| Upscale Gas                      | 79.77                       | 79.06                       | 0.71                        | 78.70                       | 1.07              |

Calibrated by

( Mr. Worawich Tongpoom )

Environmental Field Scientist (3)

FORM NO. : F-06-063 REVISION NO. : 3 ISSUE DATE: 2011/03

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ALS Laboratory Group



## CEMs Data

Client Name : Gulf JP CRN Co., Ltd. Date : 06 May 26  
Plant Name : HRSG Location : บ้าน HRSG 11

| Run No. 1 |      |         |         |        |       |       | Run No. 2 |      |         |         |        |       |       |
|-----------|------|---------|---------|--------|-------|-------|-----------|------|---------|---------|--------|-------|-------|
| Date      | Time | SO2 ppm | NOx ppm | CO ppm | CO2 % | Level | Date      | Time | SO2 ppm | NOx ppm | CO ppm | CO2 % | Level |
| 6 May 26  | 9:00 | -       | 0.00    | 0.00   | 14.23 | 37.70 | 6 May 26  | 9:01 | -       | 0.00    | 0.00   | 14.22 | 37.80 |
| 6 May 26  | 9:01 | -       | 0.00    | 0.00   | 14.22 | 37.80 | 6 May 26  | 9:02 | -       | 0.10    | 0.00   | 14.23 | 37.70 |
| 6 May 26  | 9:02 | -       | 0.10    | 0.00   | 14.24 | 37.80 | 6 May 26  | 9:03 | -       | 0.10    | 0.10   | 14.26 | 38.20 |
| 6 May 26  | 9:03 | -       | 0.00    | 0.00   | 14.23 | 38.30 | 6 May 26  | 9:04 | -       | 0.10    | 0.00   | 14.26 | 38.30 |
| 6 May 26  | 9:04 | -       | 0.20    | 0.00   | 14.22 | 37.80 | 6 May 26  | 9:05 | -       | 0.00    | 0.00   | 14.26 | 37.70 |
| 6 May 26  | 9:05 | -       | 0.30    | 0.10   | 14.21 | 37.80 | 6 May 26  | 9:06 | -       | 0.40    | 0.30   | 14.23 | 37.70 |
| 6 May 26  | 9:06 | -       | 0.00    | 0.00   | 14.21 | 37.80 | 6 May 26  | 9:07 | -       | 0.00    | 0.00   | 14.23 | 37.80 |
| 6 May 26  | 9:07 | -       | 0.20    | 0.20   | 14.23 | 37.70 | 6 May 26  | 9:08 | -       | 0.00    | 0.00   | 14.27 | 38.00 |
| 6 May 26  | 9:08 | -       | 0.00    | 0.10   | 14.24 | 37.80 | 6 May 26  | 9:09 | -       | 0.10    | 0.00   | 14.27 | 38.00 |
| 6 May 26  | 9:09 | -       | 0.00    | 0.00   | 14.22 | 37.80 | 6 May 26  | 9:10 | -       | 0.20    | 0.20   | 14.27 | 38.40 |
| 6 May 26  | 9:10 | -       | 0.00    | 0.00   | 14.21 | 37.70 | 6 May 26  | 9:11 | -       | 0.00    | 0.20   | 14.31 | 38.00 |
| 6 May 26  | 9:11 | -       | 0.20    | 0.20   | 14.22 | 37.80 | 6 May 26  | 9:12 | -       | 0.00    | 0.10   | 14.30 | 38.00 |
| 6 May 26  | 9:12 | -       | 0.40    | 0.00   | 14.20 | 37.80 | 6 May 26  | 9:13 | -       | 0.00    | 0.00   | 14.30 | 38.00 |
| 6 May 26  | 9:13 | -       | 0.20    | 0.20   | 14.23 | 38.00 | 6 May 26  | 9:14 | -       | 0.20    | 0.40   | 14.31 | 38.00 |
| 6 May 26  | 9:14 | -       | 0.00    | 0.00   | 14.20 | 38.20 | 6 May 26  | 9:15 | -       | 0.00    | 0.00   | 14.24 | 38.20 |
| 6 May 26  | 9:15 | -       | 0.00    | 0.00   | 14.20 | 38.30 | 6 May 26  | 9:16 | -       | 0.00    | 0.20   | 14.24 | 37.80 |
| 6 May 26  | 9:16 | -       | 0.10    | 0.20   | 14.24 | 37.80 | 6 May 26  | 9:17 | -       | 0.10    | 0.00   | 14.30 | 38.40 |
| 6 May 26  | 9:17 | -       | 0.00    | 0.00   | 14.20 | 37.80 | 6 May 26  | 9:18 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:18 | -       | 0.00    | 0.20   | 14.24 | 37.80 | 6 May 26  | 9:19 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:19 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:20 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:20 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:21 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:21 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:22 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:22 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:23 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:23 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:24 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:24 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:25 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:25 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:26 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:26 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:27 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:27 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:28 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:28 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:29 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:29 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:30 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:30 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:31 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:31 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:32 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:32 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:33 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:33 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:34 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:34 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:35 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:35 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:36 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:36 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:37 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:37 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:38 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:38 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:39 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:39 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:40 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:40 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:41 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:41 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:42 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:42 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:43 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:43 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:44 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:44 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:45 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:45 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:46 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:46 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:47 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:47 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:48 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:48 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:49 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:49 | -       | 0.00    | 0.20   | 14.24 | 37.80 | 6 May 26  | 9:50 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:50 | -       | 0.00    | 0.20   | 14.23 | 37.80 | 6 May 26  | 9:51 | -       | 0.00    | 0.20   | 14.26 | 38.20 |
| 6 May 26  | 9:51 | -       | 0.00    | 0.40   | 14.28 | 38.30 | 6 May 26  | 9:52 | -       | 0.00    | 0.40   | 14.30 | 38.00 |
| 6 May 26  | 9:52 | -       | 0.21    | 0.38   | 14.28 | 37.72 | 6 May 26  | 9:53 | -       | 0.22    | 0.24   | 14.31 | 38.00 |



Lot No. 2634668-1

## SYSTEM CALIBRATION BIAS AND DRIFT DATA

Client : Gulf JP CRN Co., Ltd. Location : บ้าน HRSG 12  
Date : 06 May 26 Test Operator : Worawich T.

O<sub>2</sub> ANALYZER  
Cylinder Conc. (%) : 16.12 Span (%) : 25.00

|             | Initial Values                    |                                   | Final Values                      |                                   | Drift<br>(% of Span) |
|-------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------------|
|             | System<br>Calibration<br>Response | System<br>Cal Bias<br>(% of Span) | System<br>Calibration<br>Response | System<br>Cal Bias<br>(% of Span) |                      |
| Zero Gas    | 0.00                              | 0.06                              | 0.01                              | 0.04                              | 0.04                 |
| Upscale Gas | 16.13                             | 16.20                             | 16.21                             | 0.32                              | 0.04                 |

NO<sub>2</sub> ANALYZER  
Cylinder Conc. (ppm) : 80.73 Span (ppm) : 100

|             | Initial Values                    |                                   | Final Values                      |                                   | Drift<br>(% of Span) |
|-------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------------|
|             | System<br>Calibration<br>Response | System<br>Cal Bias<br>(% of Span) | System<br>Calibration<br>Response | System<br>Cal Bias<br>(% of Span) |                      |
| Zero Gas    | 0.00                              | 0.10                              | 0.07                              | 0.03                              | 0.03                 |
| Upscale Gas | 80.76                             | 79.22                             | 1.54                              | 79.43                             | 0.21                 |

CO ANALYZER  
Cylinder Conc. (ppm) : 79.82 Span (ppm) : 100

|             | Initial Values                    |                                   | Final Values                      |                                   | Drift<br>(% of Span) |
|-------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------------|
|             | System<br>Calibration<br>Response | System<br>Cal Bias<br>(% of Span) | System<br>Calibration<br>Response | System<br>Cal Bias<br>(% of Span) |                      |
| Zero Gas    | 0.00                              | 0.09                              | 0.13                              | 0.15                              | 0.04                 |
| Upscale Gas | 79.77                             | 78.70                             | 1.07                              | 78.66                             | 0.04                 |

Calibrated by

Worawich T.

(Mr. Worawich Tongpoom)

Environmental Field Scientist (3)

FORM NO.: F 06-063 REVISION NO.: 3 ISSUE DATE: 2011/03

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ALS Laboratory Group



## CEMs Data

Client Name : Gulf JP CRN Co., Ltd. Date : 06 May 26  
Plant Name : HRSG Location : บ้าน HRSG 12

| Run No. 1 |       |            |            |           |         |       | Run No. 2 |       |            |            |           |         |       |
|-----------|-------|------------|------------|-----------|---------|-------|-----------|-------|------------|------------|-----------|---------|-------|
| Date      | Time  | SO2<br>ppm | NOx<br>ppm | CO<br>ppm | CO<br>% | Level | Date      | Time  | SO2<br>ppm | NOx<br>ppm | CO<br>ppm | CO<br>% | Level |
| 6 May 26  | 11:00 | -          | 10.00      | 0.00      | 14.30   | 37.00 | 6 May 26  | 11:21 | -          | 10.00      | 0.00      | 14.30   | 37.00 |
| 6 May 26  | 11:01 | -          | 11.50      | 0.00      | 14.46   | 37.10 | 6 May 26  | 11:22 | -          | 12.30      | 0.00      | 14.46   | 37.20 |
| 6 May 26  | 11:02 | -          | 11.80      | 0.00      | 14.46   | 37.40 | 6 May 26  | 11:23 | -          | 12.20      | 0.00      | 14.46   | 37.20 |
| 6 May 26  | 11:03 | -          | 11.60      | 0.00      | 14.46   | 37.60 | 6 May 26  | 11:24 | -          | 12.40      | 0.00      | 14.46   | 37.20 |
| 6 May 26  | 11:04 | -          | 12.30      | 0.00      | 14.46   | 38.00 | 6 May 26  | 11:25 | -          | 12.20      | 0.00      | 14.46   | 37.30 |
| 6 May 26  | 11:05 | -          | 12.70      | 0.00      | 14.45   | 38.30 | 6 May 26  | 11:26 | -          | 12.20      | 0.00      | 14.46   | 37.70 |
| 6 May 26  | 11:06 | -          | 12.80      | 0.00      | 14.62   | 38.20 | 6 May 26  | 11:27 | -          | 17.10      | 0.00      | 14.46   | 37.60 |
| 6 May 26  | 11:07 | -          | 13.00      | 0.00      | 14.61   | 38.20 | 6 May 26  | 11:28 | -          | 16.60      | 0.00      | 14.43   | 37.40 |
| 6 May 26  | 11:08 | -          | 13.10      | 0.00      | 14.61   | 37.80 | 6 May 26  | 11:29 | -          | 16.80      | 0.00      | 14.46   | 37.60 |
| 6 May 26  | 11:09 | -          | 12.80      | 0.00      | 14.44   | 37.70 | 6 May 26  | 11:30 | -          | 16.80      | 0.00      | 14.43   | 37.20 |
| 6 May 26  | 11:10 | -          | 12.30      | 0.00      | 14.43   | 37.70 | 6 May 26  | 11:31 | -          | 16.80      | 0.00      | 14.43   | 37.60 |
| 6 May 26  | 11:11 | -          | 12.70      | 0.00      | 14.42   | 37.80 | 6 May 26  | 11:32 | -          | 16.10      | 0.00      | 14.43   | 37.60 |
| 6 May 26  | 11:12 | -          | 12.80      | 0.00      | 14.61   | 37.60 | 6 May 26  | 11:33 | -          | 16.80      | 0.00      | 14.43   | 37.60 |
| 6 May 26  | 11:13 | -          | 12.30      | 0.00      | 14.44   | 37.50 | 6 May 26  | 11:34 | -          | 16.40      | 0.00      | 14.46   | 37.60 |
| 6 May 26  | 11:14 | -          | 12.30      | 0.00      | 14.46   | 37.80 | 6 May 26  | 11:35 | -          | 16.80      | 0.00      | 14.47   | 38.00 |
| 6 May 26  | 11:15 | -          | 12.30      | 0.00      | 14.46   | 37.70 | 6 May 26  | 11:36 | -          | 16.40      | 0.00      | 14.46   | 38.00 |
| 6 May 26  | 11:16 | -          | 12.40      | 0.00      | 14.42   | 37.70 | 6 May 26  | 11:37 | -          | 16.40      | 0.00      | 14.46   | 38.00 |
| 6 May 26  | 11:17 | -          | 13.10      | 0.00      | 14.40   | 37.70 | 6 May 26  | 11:38 | -          | 16.30      | 0.00      | 14.44   | 38.40 |
| 6 May 26  | 11:18 | -          | 12.80      | 0.00      | 14.44   | 37.70 | 6 May 26  | 11:39 | -          | 17.10      | 0.00      | 14.41   | 37.60 |
| 6 May 26  | 11:19 | -          | 11.60      | 0.00      | 14.47   | 37.40 | 6 May 26  | 11:40 | -          | 17.30      | 0.00      | 14.25   | 37.20 |
| 6 May 26  | 11:20 | -          | 11.00      | 0.00      | 14.36   | 37.70 | 6 May 26  | 11:41 | -          | 17.10      | 0.00      | 14.36   | 37.10 |
| Max       | -     | -          | 13.10      | 0.00      | 14.50   | 38.20 | Max       | -     | -          | 17.30      | 0.00      | 14.47   | 38.20 |
| Avg       | -     | -          | 12.97      | 0.00      | 14.44   | 37.84 | Avg       | -     | -          | 17.18      | 0.00      | 14.43   | 37.68 |

| Run No. 3 |       |            |            |           |         |       |
|-----------|-------|------------|------------|-----------|---------|-------|
| Date      | Time  | SO2<br>ppm | NOx<br>ppm | CO<br>ppm | CO<br>% | Level |
| 6 May 26  | 11:42 | -          | 18.80      | 0.00      | 14.38   | 37.10 |
| 6 May 26  | 11:43 | -          | 17.30      | 0.00      | 14.37   | 36.80 |
| 6 May 26  | 11:44 | -          | 16.20      | 0.00      | 14.36   | 36.80 |
| 6 May 26  | 11:45 | -          | 14.40      | 0.00      | 14.34   | 36.80 |
| 6 May 26  | 11:46 | -          | 12.30      | 0.00      | 14.29   | 36.80 |
| 6 May 26  | 11:47 | -          | 12.30      | 0.00      | 14.28   | 36.80 |
| 6 May 26  | 11:48 | -          | 10.30      | 0.00      | 14.25   | 37.10 |
| 6 May 26  | 11:49 | -          | 10.30      | 0.00      | 14.32   | 37.20 |
| 6 May 26  | 11:50 | -          | 10.70      | 0.00      | 14.29   | 36.80 |
| 6 May 26  | 11:51 | -          | 10.20      | 0.00      | 14.31   | 36.80 |
| 6 May 26  | 11:52 | -          | 10.30      | 0.00      | 14.26   | 36.80 |
| 6 May 26  | 11:53 | -          | 10.30      | 0.00      | 14.29   | 36.80 |
| 6 May 26  | 11:54 | -          | 9.20       | 0.00      | 14.24   | 36.80 |
| 6 May 26  | 11:55 | -          | 9.10       | 0.00      | 14.31   | 36.80 |
| 6 May 26  | 11:56 | -          | 8.80       | 0.00      | 14.31   | 37.00 |
| 6 May 26  | 11:57 | -          | 10.10      | 0.00      | 14.28   | 36.80 |
| 6 May 26  | 11:58 | -          | 8.80       | 0.00      | 14.36   | 36.40 |
| 6 May 26  | 11:59 | -          | 10.20      | 0.00      | 14.28   | 36.20 |
| 6 May 26  | 12:00 | -          | 10.40      | 0.00      | 14.22   | 36.80 |
| 6 May 26  | 12:01 | -          | 8.80       | 0.00      | 14.25   | 32.80 |
| 6 May 26  | 12:02 | -          | 10.10      | 0.00      | 14.14   | 36.80 |
| Max       | -     | -          | 17.30      | 0.00      | 14.38   | 37.20 |
| Avg       | -     | -          | 11.38      | 0.00      | 14.30   | 36.84 |

## Reference Method Data

Client Name : Gulf JP CRN Co., Ltd. Date : 06 May 26  
Plant Name : HRSG Location : บ้าน HRSG 12

| Run No. 1 |       |            |            |           |         |       | Run No. 2 |       |            |            |           |         |       |
|-----------|-------|------------|------------|-----------|---------|-------|-----------|-------|------------|------------|-----------|---------|-------|
| Date      | Time  | SO2<br>ppm | NOx<br>ppm | CO<br>ppm | CO<br>% | Level | Date      | Time  | SO2<br>ppm | NOx<br>ppm | CO<br>ppm | CO<br>% | Level |
| 6 May 26  | 11:00 | -          | 11.80      | 0.00      | 14.36   | 4.20  | 6 May 26  | 11:21 | -          | 11.80      | 0.00      | 14.37   | 4.30  |
| 6 May 26  | 11:01 | -          | 11.80      | 0.00      | 14.36   | 4.10  | 6 May 26  | 11:22 | -          | 11.40      | 0.00      | 14.22   | 4.20  |
| 6 May 26  | 11:02 | -          | 11.80      | 0.00      | 14.36   | 4.17  | 6 May 26  | 11:23 | -          | 10.10      | 0.20      | 14.32   | 4.20  |
| 6 May 26  | 11:03 | -          | 11.71      | 0.00      | 14.36   | 4.18  | 6 May 26  | 11:24 | -          | 10.07      | 0.00      | 14.33   | 4.17  |
| 6 May 26  | 11:04 | -          | 11.78      | 0.00      | 14.37   | 4.18  | 6 May 26  | 11:25 | -          | 11.40      | 0.03      | 14.31   | 4.16  |
| 6 May 26  | 11:05 | -          | 12.00      | 0.71      | 14.36   | 4.18  | 6 May 26  | 11:26 | -          | 11.44      | 0.03      | 14.30   | 4.16  |
| 6 May 26  | 11:06 | -          | 12.00      | 0.00      | 14.36   | 4.20  | 6 May 26  | 11:27 | -          | 11.61      | 0.00      | 14.48   | 4.14  |
| 6 May 26  | 11:07 | -          | 11.30      | 0.00      | 14.36   | 4.18  | 6 May 26  | 11:28 | -          | 12.21      | 0.08      | 14.47   | 4.21  |
| 6 May 26  | 11:08 | -          | 11.20      | 0.77      | 14.36   | 4.14  | 6 May 26  | 11:29 | -          | 11.48      | 0.07      | 14.31   | 4.21  |
| 6 May 26  | 11:09 | -          | 11.07      | 0.70      | 14.27   | 4.24  | 6 May 26  | 11:30 | -          | 11.20      | 0.00      | 14.30   | 4.21  |
| 6 May 26  | 11:10 | -          | 11.78      | 0.78      | 14.34   | 4.24  | 6 May 26  | 11:31 | -          | 10.61      | 0.00      | 14.43   | 4.17  |
| 6 May 26  | 11:11 | -          | 11.80      | 0.77      | 14.27   | 4.23  | 6 May 26  | 11:32 | -          | 10.80      | 0.00      | 14.48   | 4.14  |
| 6 May 26  | 11:12 | -          | 11.20      | 0.70      | 14.30   | 4.20  | 6 May 26  | 11:33 | -          | 10.80      | 0.10      | 14.48   | 4.20  |
| 6 May 26  | 11:13 | -          | 11.78      | 0.72      | 14.36   | 4.28  | 6 May 26  | 11:34 | -          | 10.30      | 0.12      | 14.48   | 4.10  |
| 6 May 26  | 11:14 | -          | 11.12      | 0.77      | 14.36   | 4.28  | 6 May 26  | 11:35 | -          | 10.20      | 0.14      | 14.49   | 4.17  |
| 6 May 26  | 11:15 | -          | 11.34      | 0.80      | 14.40   | 4.23  | 6 May 26  | 11:36 | -          | 10.10      | 0.00      | 14.30   | 4.18  |
| 6 May 26  | 11:16 | -          | 11.30      | 0.78      | 14.40   | 4.29  | 6 May 26  | 11:37 | -          | 10.24      | 0.21      | 14.48   | 4.18  |
| 6 May 26  | 11:17 | -          | 10.40      | 0.79      | 14.33   | 4.28  | 6 May 26  | 11:38 | -          | 21.80      | 0.10      | 14.40   | 4.18  |
| 6 May 26  | 11:18 | -          | 11.84      | 0.81      | 14.21   | 4.28  | 6 May 26  | 11:39 | -          | 21.44      | 0.12      | 14.48   | 4.20  |
| 6 May 26  | 11:19 | -          | 11.78      | 0.23      | 14.25   | 4.28  | 6 May 26  | 11:40 | -          | 21.40      | 0.11      | 14.47   | 4.10  |
| 6 May 26  | 11:20 | -          | 11.71      | 0.74      | 14.20   | 4.23  | 6 May 26  | 11:41 | -          | 21.32      | 0.10      | 14.49   | 4.16  |
| Max       | -     | -          | 12.00      | 0.87      | 14.40   | 4.28  | Max       | -     | -          | 21.80      | 0.00      | 14.33   | 4.30  |
| Avg       | -     | -          | 11.87      | 0.70      | 14.38   | 4.20  | Avg       | -     | -          | 10.80      | 0.10      | 14.48   | 4.18  |

| Run No. 3 |       |            |            |           |         |       |
|-----------|-------|------------|------------|-----------|---------|-------|
| Date      | Time  | SO2<br>ppm | NOx<br>ppm | CO<br>ppm | CO<br>% | Level |
| 6 May 26  | 11:42 | -          | 18.10      | 0.20      | 14.48   | 4.18  |
| 6 May 26  | 11:43 | -          | 16.70      | 0.20      | 14.47   | 4.17  |
| 6 May 26  | 11:44 | -          | 14.20      | 0.22      | 14.40   | 4.17  |
| 6 May 26  | 11:45 | -          | 13.30      | 0.20      | 14.48   | 4.18  |
| 6 May 26  | 11:46 | -          | 13.00      | 0.18      | 14.46   | 4.18  |
| 6 May 26  | 11:47 | -          | 12.70      | 0.20      | 14.48   | 4.18  |
| 6 May 26  | 11:48 | -          | 12.00      | 0.21      | 14.48   | 4.18  |
| 6 May 26  | 11:49 | -          | 10.40      | 0.20      | 14.46   | 4.18  |
| 6 May 26  | 11:50 | -          | 11.80      | 0.18      | 14.43   | 4.18  |
| 6 May 26  | 11:51 | -          | 10.00      | 0.27      | 14.38   | 4.18  |
| 6 May 26  | 11:52 | -          | 11.71      | 0.28      | 14.38   | 4.20  |
| 6 May 26  | 11:53 | -          | 11.82      | 0.24      | 14.38   | 4.20  |
| 6 May 26  | 11:54 | -          | 11.00      | 0.22      | 14.38   | 4.22  |
| 6 May 26  | 11:55 | -          | 13.30      | 0.19      | 14.38   | 4.20  |
| 6 May 26  | 11:56 | -          | 11.80      | 0.24      | 14.38   | 4.20  |
| 6 May 26  | 11:57 | -          | 11.20      | 0.31      | 14.37   | 4.24  |
| 6 May 26  | 11:58 | -          | 11.30      | 0.37      | 14.36   | 4.24  |
| 6 May 26  | 11:59 | -          | 10.40      | 0.30      | 14.38   | 4.20  |
| 6 May 26  | 12:00 | -          | 11.84      | 0.34      | 14.38   | 4.20  |
| 6 May 26  | 12:01 | -          | 11.78      | 0.48      | 14.38   | 4.28  |
| 6 May 26  | 12:02 | -          | 11.71      | 0.30      | 14.37   | 4.20  |
| Max       | -     | -          | 18.10      | 0.40      | 14.48   | 4.20  |
| Avg       | -     | -          | 12.50      | 0.27      | 14.42   | 4.21  |

## ANALYZER CALIBRATION DATA

Client : Gulf JP CRN Co., Ltd. Location : บ้าน HRSG 11  
Date : 06 May 26 Test Operator : Usaree N.

O<sub>2</sub> ANALYZER  
Model : TELEDYNE API T200H Serial No. : 482  
Span (%) : 25

|               | Cylinder Value<br>(%) | Initial Analyzers<br>Calibration<br>Response (%) | Final Analyzers<br>Calibration<br>Response (%) | Difference<br>(Percent of Span) |
|---------------|-----------------------|--------------------------------------------------|------------------------------------------------|---------------------------------|
| Zero Gas      | 0.00                  | 0.00                                             | 0.00                                           | 0.00                            |
| Low-Level Gas | 7.96                  | 8.07                                             | 8.11                                           | 0.15                            |
| Span Gas      | 16.12                 | 16.13                                            | 16.15                                          | 0.08                            |

NO<sub>2</sub> ANALYZER  
Model : TELEDYNE API T200H Serial No. : 482  
Span (ppm) : 100

|               | Cylinder Value<br>(ppm) | Initial Analyzers<br>Calibration<br>Response (ppm) | Final Analyzers<br>Calibration<br>Response (ppm) | Difference<br>(Percent of Span) |
|---------------|-------------------------|----------------------------------------------------|--------------------------------------------------|---------------------------------|
| Zero Gas      | 0.00                    | 0.00                                               | 0.06                                             | 0.06                            |
| Low-Level Gas | 56.16                   | 55.85                                              | 55.39                                            | 0.46                            |
| Span Gas      | 80.73                   | 80.76                                              | 80.14                                            | 0.62                            |



Lot No. 2634669-1

## SYSTEM CALIBRATION BIAS AND DRIFT DATA

Client : Gulf JP CRN Co., Ltd. Location : Ussaree N.  
Date : 06 May 26 Test Operator : Ussaree N.

O<sub>2</sub> ANALYZER : 16.12 Span (%) : 25  
Cylinder Conc. (%)

|             | O <sub>2</sub> Analyzer Calibration Response | Initial Values              |                             | Final Values                |                             | Drift (% of Span) |
|-------------|----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-------------------|
|             |                                              | System Calibration Response | System Cal Bias (% of Span) | System Calibration Response | System Cal Bias (% of Span) |                   |
| Zero Gas    | 0.00                                         | 0.01                        | 0.04                        | 0.02                        | 0.08                        | 0.04              |
| Upscale Gas | 16.13                                        | 16.17                       | 0.16                        | 16.20                       | 0.28                        | 0.12              |

NO<sub>x</sub> ANALYZER : 80.73 Span (ppm) : 100  
Cylinder Conc. (ppm)

|             | NO <sub>x</sub> Analyzer Calibration Response | Initial Values              |                             | Final Values                |                             | Drift (% of Span) |
|-------------|-----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-------------------|
|             |                                               | System Calibration Response | System Cal Bias (% of Span) | System Calibration Response | System Cal Bias (% of Span) |                   |
| Zero Gas    | 0.00                                          | 0.08                        | 0.08                        | 0.10                        | 0.10                        | 0.02              |
| Upscale Gas | 80.76                                         | 79.59                       | 1.17                        | 79.22                       | 1.54                        | 0.37              |

SO<sub>2</sub> ANALYZER : 79.43 Span (ppm) : 100  
Cylinder Conc. (ppm)

|             | SO <sub>2</sub> Analyzer Calibration Response | Initial Values              |                             | Final Values                |                             | Drift (% of Span) |
|-------------|-----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-------------------|
|             |                                               | System Calibration Response | System Cal Bias (% of Span) | System Calibration Response | System Cal Bias (% of Span) |                   |
| Zero Gas    | 0.00                                          | 0.00                        | 0.00                        | 0.00                        | 0.00                        | 0.00              |
| Upscale Gas | 79.42                                         | 78.83                       | 0.59                        | 78.49                       | 0.93                        | 0.34              |

CO ANALYZER : 79.82 Span (ppm) : 100  
Cylinder Conc. (ppm)

|             | CO Analyzer Calibration Response | Initial Values              |                             | Final Values                |                             | Drift (% of Span) |
|-------------|----------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-------------------|
|             |                                  | System Calibration Response | System Cal Bias (% of Span) | System Calibration Response | System Cal Bias (% of Span) |                   |
| Zero Gas    | 0.00                             | 0.11                        | 0.11                        | 0.09                        | 0.09                        | 0.02              |
| Upscale Gas | 79.77                            | 79.06                       | 0.71                        | 78.70                       | 1.07                        | 0.36              |

Calibrated by

Ussaree N.

Ussaree Namburee

BKK Field Services Scientist (4)

FORM NO.: F 06-063 REVISION NO.: 4 ISSUE DATE: 18/01/24

ALS Laboratory Group

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## EMISSION TEST RESULT

Client : Gulf JP CRN Co., Ltd. Run # : 1  
Date : 06 May 26 Location : Ussaree N.  
Start Time : 9:30 Test Operator : Ussaree N.  
Finish Time : 9:50  
SO<sub>2</sub> Analyzer Model : TELEDYNE API T100H Serial No. : 324  
NO<sub>x</sub>/O<sub>2</sub> Analyzer Model : TELEDYNE API T200H Serial No. : 482  
CO/CO<sub>2</sub> Analyzer Model : TELEDYNE API 300EM Serial No. : 423

| Time (min) | O <sub>2</sub> (%) | CO <sub>2</sub> (%) | NO <sub>x</sub> (ppm) | SO <sub>2</sub> (ppm) | CO (ppm) | Remark |
|------------|--------------------|---------------------|-----------------------|-----------------------|----------|--------|
| 9:30       | 14.50              | 4.02                | 7.93                  | 0.17                  | 0.60     |        |
| 9:31       | 14.48              | 4.01                | 8.19                  | 0.16                  | 0.62     |        |
| 9:32       | 14.51              | 4.02                | 8.53                  | 0.16                  | 0.51     |        |
| 9:33       | 14.53              | 4.02                | 8.75                  | 0.14                  | 0.58     |        |
| 9:34       | 14.61              | 3.98                | 8.04                  | 0.14                  | 0.53     |        |
| 9:35       | 14.58              | 3.96                | 7.61                  | 0.14                  | 1.00     |        |
| 9:36       | 14.56              | 3.97                | 7.84                  | 0.16                  | 0.84     |        |
| 9:37       | 14.54              | 4.01                | 8.69                  | 0.16                  | 0.57     |        |
| 9:38       | 14.56              | 3.99                | 9.04                  | 0.14                  | 0.54     |        |
| 9:39       | 14.55              | 4.02                | 9.13                  | 0.14                  | 0.48     |        |
| 9:40       | 14.56              | 4.01                | 9.04                  | 0.14                  | 0.47     |        |
| 9:41       | 14.57              | 4.01                | 8.63                  | 0.14                  | 0.51     |        |
| 9:42       | 14.56              | 3.97                | 8.51                  | 0.14                  | 0.45     |        |
| 9:43       | 14.57              | 3.96                | 8.62                  | 0.12                  | 0.48     |        |
| 9:44       | 14.56              | 3.98                | 8.88                  | 0.10                  | 0.52     |        |
| 9:45       | 14.57              | 3.97                | 8.95                  | 0.11                  | 0.51     |        |
| 9:46       | 14.58              | 3.96                | 8.99                  | 0.10                  | 0.51     |        |
| 9:47       | 14.57              | 3.95                | 8.97                  | 0.10                  | 0.49     |        |
| 9:48       | 14.57              | 4.01                | 9.95                  | 0.09                  | 0.51     |        |
| 9:49       | 14.57              | 3.98                | 8.92                  | 0.09                  | 0.56     |        |
| 9:50       | 14.56              | 4.03                | 8.87                  | 0.08                  | 0.48     |        |
| Average    | 14.56              | 3.99                | 8.62                  | 0.13                  | 0.56     |        |

Ussaree N.

Ussaree Namburee

BKK Field Services Scientist (4)

FORM NO.: F 06-063 REVISION NO.: 1 ISSUE DATE: 18/01/24

ALS Laboratory Group

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## EMISSION TEST RESULT

Client : Gulf JP CRN Co., Ltd. Run # : 2  
Date : 06 May 26 Location : Ussaree N.  
Start Time : 9:51 Test Operator : Ussaree N.  
Finish Time : 10:11  
SO<sub>2</sub> Analyzer Model : TELEDYNE API T100H Serial No. : 324  
NO<sub>x</sub>/O<sub>2</sub> Analyzer Model : TELEDYNE API T200H Serial No. : 482  
CO/CO<sub>2</sub> Analyzer Model : TELEDYNE API 300EM Serial No. : 423

| Time (min) | O <sub>2</sub> (%) | CO <sub>2</sub> (%) | NO <sub>x</sub> (ppm) | SO <sub>2</sub> (ppm) | CO (ppm) | Remark |
|------------|--------------------|---------------------|-----------------------|-----------------------|----------|--------|
| 9:51       | 14.58              | 3.99                | 8.87                  | 0.08                  | 0.48     |        |
| 9:52       | 14.59              | 3.94                | 8.86                  | 0.08                  | 0.53     |        |
| 9:53       | 14.57              | 3.96                | 8.89                  | 0.08                  | 0.51     |        |
| 9:54       | 14.57              | 4.00                | 8.98                  | 0.13                  | 0.50     |        |
| 9:55       | 14.58              | 3.98                | 9.01                  | 0.13                  | 0.52     |        |
| 9:56       | 14.59              | 3.96                | 8.91                  | 0.13                  | 0.53     |        |
| 9:57       | 14.58              | 3.96                | 8.83                  | 0.12                  | 0.50     |        |
| 9:58       | 14.59              | 4.00                | 8.87                  | 0.15                  | 0.56     |        |
| 9:59       | 14.59              | 4.01                | 8.96                  | 0.16                  | 0.49     |        |
| 10:00      | 14.58              | 3.97                | 8.97                  | 0.15                  | 0.60     |        |
| 10:01      | 14.58              | 4.00                | 8.98                  | 0.15                  | 0.50     |        |
| 10:02      | 14.57              | 3.98                | 9.03                  | 0.15                  | 0.54     |        |
| 10:03      | 14.57              | 4.02                | 9.09                  | 0.15                  | 0.58     |        |
| 10:04      | 14.57              | 4.04                | 9.15                  | 0.14                  | 0.60     |        |
| 10:05      | 14.56              | 4.04                | 9.14                  | 0.12                  | 0.55     |        |
| 10:06      | 14.56              | 3.99                | 9.08                  | 0.14                  | 0.54     |        |
| 10:07      | 14.57              | 3.96                | 8.99                  | 0.12                  | 0.64     |        |
| 10:08      | 14.58              | 3.97                | 9.00                  | 0.12                  | 0.68     |        |
| 10:09      | 14.57              | 3.96                | 9.05                  | 0.14                  | 0.55     |        |
| 10:10      | 14.58              | 4.00                | 9.07                  | 0.14                  | 0.58     |        |
| 10:11      | 14.57              | 4.03                | 9.07                  | 0.13                  | 0.59     |        |
| Average    | 14.58              | 3.99                | 8.98                  | 0.13                  | 0.55     |        |

Ussaree N.Ussaree Namburee  
BKK Field Services Scientist (4)

FORM NO.: F 06-063 REVISION NO.: 1 ISSUE DATE: 18/01/24

ALS Laboratory Group

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## EMISSION TEST RESULT

Client : Gulf JP CRN Co., Ltd. Run # : 3  
Date : 06 May 26 Location : Ussaree N.  
Start Time : 10:12 Test Operator : Ussaree N.  
Finish Time : 10:32  
SO<sub>2</sub> Analyzer Model : TELEDYNE API T100H Serial No. : 324  
NO<sub>x</sub>/O<sub>2</sub> Analyzer Model : TELEDYNE API T200H Serial No. : 482  
CO/CO<sub>2</sub> Analyzer Model : TELEDYNE API 300EM Serial No. : 425

| Time (min) | O <sub>2</sub> (%) | CO <sub>2</sub> (%) | NO <sub>x</sub> (ppm) | SO <sub>2</sub> (ppm) | CO (ppm) | Remark |
|------------|--------------------|---------------------|-----------------------|-----------------------|----------|--------|
| 10:12      | 14.57              | 3.98                | 9.03                  | 0.12                  | 0.62     |        |
| 10:13      | 14.56              | 4.01                | 9.04                  | 0.11                  | 0.57     |        |
| 10:14      | 14.53              | 3.99                | 9.02                  | 0.13                  | 0.54     |        |
| 10:15      | 14.55              | 4.02                | 9.01                  | 0.11                  | 0.58     |        |
| 10:16      | 14.58              | 4.01                | 9.03                  | 0.11                  | 0.61     |        |
| 10:17      | 14.56              | 3.99                | 9.07                  | 0.14                  | 0.64     |        |
| 10:18      | 14.56              | 4.01                | 9.08                  | 0.14                  | 0.55     |        |
| 10:19      | 14.59              | 4.01                | 9.10                  | 0.13                  | 0.65     |        |
| 10:20      | 14.59              | 4.01                | 9.09                  | 0.14                  | 0.62     |        |
| 10:21      | 14.58              | 4.02                | 9.08                  | 0.13                  | 0.61     |        |
| 10:22      | 14.59              | 4.01                | 9.10                  | 0.15                  | 0.62     |        |
| 10:23      | 14.59              | 4.04                | 9.12                  | 0.14                  | 0.66     |        |
| 10:24      | 14.58              | 3.98                | 9.15                  | 0.16                  | 0.71     |        |
| 10:25      | 14.58              | 4.00                | 9.09                  | 0.16                  | 0.61     |        |
| 10:26      | 14.59              | 3.95                | 9.04                  | 0.15                  | 0.70     |        |
| 10:27      | 14.59              | 4.00                | 8.99                  | 0.15                  | 0.65     |        |
| 10:28      | 14.59              | 4.01                | 9.02                  | 0.19                  | 0.60     |        |
| 10:29      | 14.59              | 3.97                | 9.06                  | 0.18                  | 0.61     |        |
| 10:30      | 14.58              | 3.98                | 9.08                  | 0.17                  | 0.67     |        |
| 10:31      | 14.56              | 4.01                | 9.00                  | 0.18                  | 0.65     |        |
| 10:32      | 14.60              | 4.02                | 9.09                  | 0.18                  | 0.65     |        |
| Average    | 14.58              | 4.00                | 9.06                  | 0.15                  | 0.63     |        |

Ussaree N.Ussaree Namburee  
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Lot No. 2634670-1

## ANALYZER CALIBRATION DATA

Client : Gulf JP CRN Co., Ltd. Location : 1100 HRSG 12  
Date : 06 May 26 Test Operator : Ussaree N.O<sub>2</sub> ANALYZER  
Model : TELEDYNE API T200H Serial No. : 482  
Span (%) : 25

|               | Cylinder Value (%) | Initial Analyzers Calibration Response (%) | Final Analyzers Calibration Response (%) | Difference (Percent of Span) |
|---------------|--------------------|--------------------------------------------|------------------------------------------|------------------------------|
| Zero Gas      | 0.00               | 0.00                                       | 0.00                                     | 0.00                         |
| Low-Level Gas | 7.96               | 8.07                                       | 8.11                                     | 0.16                         |
| Span Gas      | 16.12              | 16.13                                      | 16.15                                    | 0.08                         |

NO<sub>2</sub> ANALYZER  
Model : TELEDYNE API T200H Serial No. : 482  
Span (ppm) : 100

|               | Cylinder Value (ppm) | Initial Analyzers Calibration Response (ppm) | Final Analyzers Calibration Response (ppm) | Difference (Percent of Span) |
|---------------|----------------------|----------------------------------------------|--------------------------------------------|------------------------------|
| Zero Gas      | 0.00                 | 0.00                                         | 0.06                                       | 0.06                         |
| Low-Level Gas | 56.16                | 55.85                                        | 55.39                                      | 0.46                         |
| Span Gas      | 80.73                | 80.76                                        | 80.14                                      | 0.62                         |

SO<sub>2</sub> ANALYZER  
Model : TELEDYNE API T100H Serial No. : 324  
Span (ppm) : 100

|               | Cylinder Value (ppm) | Initial Analyzers Calibration Response (ppm) | Final Analyzers Calibration Response (ppm) | Difference (Percent of Span) |
|---------------|----------------------|----------------------------------------------|--------------------------------------------|------------------------------|
| Zero Gas      | 0.00                 | 0.00                                         | 0.00                                       | 0.00                         |
| Low-Level Gas | 55.55                | 54.89                                        | 54.74                                      | 0.05                         |
| Span Gas      | 79.43                | 79.42                                        | 78.98                                      | 0.44                         |

CO ANALYZER  
Model : TELEDYNE API 300EM Serial No. : 425  
Span (ppm) : 100

|               | Cylinder Value (ppm) | Initial Analyzers Calibration Response (ppm) | Final Analyzers Calibration Response (ppm) | Difference (Percent of Span) |
|---------------|----------------------|----------------------------------------------|--------------------------------------------|------------------------------|
| Zero Gas      | 0.00                 | 0.00                                         | 0.07                                       | 0.07                         |
| Low-Level Gas | 54.22                | 53.88                                        | 54.05                                      | 0.17                         |
| Span Gas      | 79.62                | 79.77                                        | 79.20                                      | 0.57                         |

Calibrated by

Ussaree N.

Ussaree Namburee

BKK Field Services Scientist (4)

FORM NO.: F 06-062 ISSUE NO.: 5 ISSUE DATE: 02/02/26

ALS Laboratory Group



Lot No. 2634670-1

## SYSTEM CALIBRATION BIAS AND DRIFT DATA

Client : Gulf JP CRN Co., Ltd. Location : 1100 HRSG 12  
Date : 06 May 26 Test Operator : Ussaree N.O<sub>2</sub> ANALYZER  
Cylinder Conc. (%) : 16.12 Span (%) : 25

|             | O <sub>2</sub> Analyzer Calibration Response | Initial Values<br>System Calibration Response | System Cal Bias (% of Span) | Final Values<br>System Calibration Response | System Cal Bias (% of Span) | Drift (% of Span) |
|-------------|----------------------------------------------|-----------------------------------------------|-----------------------------|---------------------------------------------|-----------------------------|-------------------|
| Zero Gas    | 0.00                                         | 0.02                                          | 0.06                        | 0.01                                        | 0.04                        | 0.04              |
| Upscale Gas | 16.13                                        | 16.20                                         | 0.28                        | 16.21                                       | 0.32                        | 0.04              |

NO<sub>2</sub> ANALYZER  
Cylinder Conc. (ppm) : 80.73 Span (ppm) : 100

|             | NO <sub>2</sub> Analyzer Calibration Response | Initial Values<br>System Calibration Response | System Cal Bias (% of Span) | Final Values<br>System Calibration Response | System Cal Bias (% of Span) | Drift (% of Span) |
|-------------|-----------------------------------------------|-----------------------------------------------|-----------------------------|---------------------------------------------|-----------------------------|-------------------|
| Zero Gas    | 0.00                                          | 0.10                                          | 0.10                        | 0.07                                        | 0.07                        | 0.03              |
| Upscale Gas | 80.76                                         | 79.22                                         | 1.54                        | 79.43                                       | 1.33                        | 0.21              |

SO<sub>2</sub> ANALYZER  
Cylinder Conc. (ppm) : 79.43 Span (ppm) : 100

|             | SO <sub>2</sub> Analyzer Calibration Response | Initial Values<br>System Calibration Response | System Cal Bias (% of Span) | Final Values<br>System Calibration Response | System Cal Bias (% of Span) | Drift (% of Span) |
|-------------|-----------------------------------------------|-----------------------------------------------|-----------------------------|---------------------------------------------|-----------------------------|-------------------|
| Zero Gas    | 0.00                                          | 0.00                                          | 0.00                        | 0.00                                        | 0.00                        | 0.00              |
| Upscale Gas | 79.42                                         | 78.49                                         | 0.93                        | 78.29                                       | 1.13                        | 0.20              |

CO ANALYZER  
Cylinder Conc. (ppm) : 79.62 Span (ppm) : 100

|             | CO Analyzer Calibration Response | Initial Values<br>System Calibration Response | System Cal Bias (% of Span) | Final Values<br>System Calibration Response | System Cal Bias (% of Span) | Drift (% of Span) |
|-------------|----------------------------------|-----------------------------------------------|-----------------------------|---------------------------------------------|-----------------------------|-------------------|
| Zero Gas    | 0.00                             | 0.09                                          | 0.09                        | 0.13                                        | 0.13                        | 0.04              |
| Upscale Gas | 79.77                            | 78.70                                         | 1.07                        | 78.66                                       | 1.11                        | 0.04              |

Calibrated by

Ussaree N.

Ussaree Namburee

BKK Field Services Scientist (4)

FORM NO.: F 06-063 REVISION NO.: 4 ISSUE DATE: 18/01/24

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## EMISSION TEST RESULT

Run # 1  
Client : Gulf JP CRN Co., Ltd. Location : 1100 HRSG 12  
Date : 06 May 26 Test Operator : Ussaree N.  
Start Time : 11:00 Finish Time : 11:20  
SO<sub>2</sub> Analyzer Model : TELEDYNE API T100H Serial No. : 324  
NO<sub>2</sub>/O<sub>2</sub> Analyzer Model : TELEDYNE API T200H Serial No. : 482  
CO/CO<sub>2</sub> Analyzer Model : TELEDYNE API 300EM Serial No. : 425

| Time (min) | O <sub>2</sub> (%) | CO <sub>2</sub> (%) | NO <sub>x</sub> (ppm) | SO <sub>2</sub> (ppm) | CO (ppm) | Remark |
|------------|--------------------|---------------------|-----------------------|-----------------------|----------|--------|
| 11:00      | 14.39              | 4.20                | 11.67                 | 0.22                  | 0.56     |        |
| 11:01      | 14.38              | 4.15                | 11.86                 | 0.12                  | 0.59     |        |
| 11:02      | 14.38              | 4.17                | 11.86                 | 0.04                  | 0.62     |        |
| 11:03      | 14.39              | 4.19                | 11.71                 | 0.05                  | 0.64     |        |
| 11:04      | 14.37              | 4.19                | 11.78                 | 0.06                  | 0.67     |        |
| 11:05      | 14.39              | 4.16                | 12.06                 | 0.06                  | 0.71     |        |
| 11:06      | 14.38              | 4.25                | 12.32                 | 0.07                  | 0.80     |        |
| 11:07      | 14.38              | 4.15                | 11.50                 | 0.07                  | 0.87     |        |
| 11:08      | 14.36              | 4.14                | 11.29                 | 0.08                  | 0.77     |        |
| 11:09      | 14.37              | 4.24                | 11.67                 | 0.09                  | 0.78     |        |
| 11:10      | 14.34              | 4.24                | 11.78                 | 0.09                  | 0.76     |        |
| 11:11      | 14.37              | 4.23                | 11.63                 | 0.10                  | 0.77     |        |
| 11:12      | 14.39              | 4.23                | 11.26                 | 0.12                  | 0.76     |        |
| 11:13      | 14.38              | 4.26                | 11.19                 | 0.12                  | 0.72     |        |
| 11:14      | 14.38              | 4.25                | 11.12                 | 0.13                  | 0.77     |        |
| 11:15      | 14.40              | 4.23                | 11.34                 | 0.13                  | 0.80     |        |
| 11:16      | 14.40              | 4.26                | 11.32                 | 0.16                  | 0.76     |        |
| 11:17      | 14.33              | 4.28                | 10.45                 | 0.13                  | 0.79     |        |
| 11:18      | 14.31              | 4.25                | 11.84                 | 0.16                  | 0.83     |        |
| 11:19      | 14.25              | 4.26                | 11.78                 | 0.14                  | 0.23     |        |
| 11:20      | 14.22              | 4.23                | 11.71                 | 0.10                  | 0.74     |        |
| Average    | 14.36              | 4.22                | 11.57                 | 0.11                  | 0.72     |        |

Ussaree N.

Ussaree Namburee

BKK Field Services Scientist (4)

FORM NO.: F 06-060 REVISION NO.: 1 ISSUE DATE: 18/01/24

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## EMISSION TEST RESULT

Run # 2  
Client : Gulf JP CRN Co., Ltd. Location : 1100 HRSG 12  
Date : 06 May 26 Test Operator : Ussaree N.  
Start Time : 11:21 Finish Time : 11:41  
SO<sub>2</sub> Analyzer Model : TELEDYNE API T100H Serial No. : 324  
NO<sub>2</sub>/O<sub>2</sub> Analyzer Model : TELEDYNE API T200H Serial No. : 482  
CO/CO<sub>2</sub> Analyzer Model : TELEDYNE API 300EM Serial No. : 425

| Time (min) | O <sub>2</sub> (%) | CO <sub>2</sub> (%) | NO <sub>x</sub> (ppm) | SO <sub>2</sub> (ppm) | CO (ppm) | Remark |
|------------|--------------------|---------------------|-----------------------|-----------------------|----------|--------|
| 11:21      | 14.17              | 4.30                | 11.58                 | 0.06                  | 0.88     |        |
| 11:22      | 14.22              | 4.21                | 11.40                 | 0.09                  | 0.96     |        |
| 11:23      | 14.32              | 4.21                | 13.10                 | 0.07                  | 0.73     |        |
| 11:24      | 14.53              | 4.17                | 15.07                 | 0.06                  | 0.09     |        |
| 11:25      | 14.51              | 4.14                | 11.42                 | 0.08                  | 0.03     |        |
| 11:26      | 14.50              | 4.18                | 11.49                 | 0.08                  | 0.03     |        |
| 11:27      | 14.48              | 4.14                | 11.81                 | 0.07                  | 0.09     |        |
| 11:28      | 14.47              | 4.21                | 12.21                 | 0.09                  | 0.09     |        |
| 11:29      | 14.51              | 4.21                | 11.46                 | 0.09                  | 0.07     |        |
| 11:30      | 14.50              | 4.21                | 11.25                 | 0.08                  | 0.04     |        |
| 11:31      | 14.43              | 4.17                | 18.41                 | 0.12                  | 0.05     |        |
| 11:32      | 14.46              | 4.14                | 18.69                 | 0.18                  | 0.08     |        |
| 11:33      | 14.49              | 4.20                | 18.65                 | 0.17                  | 0.10     |        |
| 11:34      | 14.48              | 4.15                | 18.30                 | 0.17                  | 0.12     |        |
| 11:35      | 14.49              | 4.17                | 18.23                 | 0.15                  | 0.14     |        |
| 11:36      | 14.50              | 4.19                | 18.18                 | 0.16                  | 0.08     |        |
| 11:37      | 14.48              | 4.19                | 18.24                 | 0.19                  | 0.21     |        |
| 11:38      | 14.45              | 4.16                | 21.80                 | 0.19                  | 0.15     |        |
| 11:39      | 14.48              | 4.25                | 21.44                 | 0.19                  | 0.12     |        |
| 11:40      | 14.47              | 4.15                | 21.45                 | 0.18                  | 0.11     |        |
| 11:41      | 14.49              | 4.14                | 21.02                 | 0.16                  | 0.13     |        |
| Average    | 14.45              | 4.19                | 15.96                 | 0.13                  | 0.16     |        |

Ussaree N.

Ussaree Namburee

BKK Field Services Scientist (4)

FORM NO.: F 06-060 REVISION NO.: 1 ISSUE DATE: 18/01/24

ALS Laboratory Group



## EMISSION TEST RESULT

|                                                |                       |               |               |
|------------------------------------------------|-----------------------|---------------|---------------|
| Client                                         | Gulf JP CRN Co., Ltd. | Run #         | 3             |
| Date                                           | 06 May 26             | Location      | Jilau HRSG 12 |
| Start Time                                     | 11:42                 | Test Operator | Ussaree N.    |
| SO <sub>2</sub> Analyzer Model                 | TELEDYNE API T100H    | Finish Time   | 12:02         |
| NO <sub>x</sub> /O <sub>2</sub> Analyzer Model | TELEDYNE API T200H    | Serial No.    | 324           |
| CO/CO <sub>2</sub> Analyzer Model              | TELEDYNE API 300EM    | Serial No.    | 482           |
|                                                |                       | Serial No.    | 425           |

| Time (min) | O <sub>2</sub> (%) | CO <sub>2</sub> (%) | NO <sub>x</sub> (ppm) | SO <sub>2</sub> (ppm) | CO (ppm) | Remark |
|------------|--------------------|---------------------|-----------------------|-----------------------|----------|--------|
| 11:42      | 14.48              | 4.19                | 16.15                 | 0.17                  | 0.20     |        |
| 11:43      | 14.47              | 4.17                | 15.73                 | 0.18                  | 0.25     |        |
| 11:44      | 14.48              | 4.17                | 14.26                 | 0.18                  | 0.23     |        |
| 11:45      | 14.48              | 4.16                | 13.29                 | 0.18                  | 0.33     |        |
| 11:46      | 14.49              | 4.18                | 13.09                 | 0.16                  | 0.18     |        |
| 11:47      | 14.48              | 4.15                | 12.76                 | 0.14                  | 0.22     |        |
| 11:48      | 14.48              | 4.15                | 12.62                 | 0.14                  | 0.31     |        |
| 11:49      | 14.48              | 4.15                | 12.45                 | 0.12                  | 0.30     |        |
| 11:50      | 14.43              | 4.15                | 11.98                 | 0.12                  | 0.19     |        |
| 11:51      | 14.39              | 4.15                | 12.00                 | 0.12                  | 0.27     |        |
| 11:52      | 14.39              | 4.25                | 11.71                 | 0.10                  | 0.26     |        |
| 11:53      | 14.39              | 4.23                | 11.52                 | 0.10                  | 0.24     |        |
| 11:54      | 14.38              | 4.22                | 11.35                 | 0.08                  | 0.22     |        |
| 11:55      | 14.38              | 4.23                | 13.39                 | 0.07                  | 0.18     |        |
| 11:56      | 14.39              | 4.25                | 11.89                 | 0.07                  | 0.24     |        |
| 11:57      | 14.37              | 4.24                | 11.20                 | 0.05                  | 0.31     |        |
| 11:58      | 14.39              | 4.24                | 11.32                 | 0.05                  | 0.37     |        |
| 11:59      | 14.38              | 4.23                | 10.45                 | 0.04                  | 0.38     |        |
| 12:00      | 14.36              | 4.23                | 11.84                 | 0.05                  | 0.34     |        |
| 12:01      | 14.36              | 4.26                | 11.78                 | 0.15                  | 0.48     |        |
| 12:02      | 14.37              | 4.25                | 11.71                 | 0.16                  | 0.34     |        |
| Average    | 14.42              | 4.21                | 12.50                 | 0.12                  | 0.27     |        |

Ussaree N.

Ussaree Nambure  
BKK Field Services Scientist (4)



Airgas Specialty Gases  
Airgas USA LLC  
6141 Easton Road  
Plumsteadville, PA 18949  
Airgas.com

## CERTIFICATE OF ANALYSIS

### Grade of Product: EPA PROTOCOL STANDARD

|                  |                                |                     |                 |
|------------------|--------------------------------|---------------------|-----------------|
| Customer:        | AIR LIQUIDE<br>(THAILAND) LTD  | Reference Number:   | 160-402340013-1 |
| Part Number:     | E04N199E3HA0002                | Cylinder Volume:    | 247.2 CF        |
| Cylinder Number: | GN0027199                      | Cylinder Pressure:  | 2215 PSIG       |
| Laboratory:      | 124 - Plumsteadville - PA      | Valve Outlet:       | 680             |
| PGVP Number:     | A12022                         | Certification Date: | Feb 11, 2022    |
| Gas Code:        | CO,NO,NOX,SO <sub>2</sub> BALN |                     |                 |

Expiration Date: Feb 11, 2030

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 800/R-12/031, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

| Component       | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates            |
|-----------------|-------------------------|----------------------|-----------------|----------------------------|------------------------|
| NOX             | 80.00 PPM               | 80.73 PPM            | G1              | +/- 1.0% NIST Traceable    | 02/04/2022, 02/11/2022 |
| CARBON MONOXIDE | 80.00 PPM               | 79.82 PPM            | G1              | +/- 0.8% NIST Traceable    | 02/04/2022, 02/11/2022 |
| NITRIC OXIDE    | 80.00 PPM               | 80.73 PPM            | G1              | +/- 1.0% NIST Traceable    | 02/04/2022, 02/11/2022 |
| SULFUR DIOXIDE  | 80.00 PPM               | 79.43 PPM            | G1              | +/- 0.8% NIST Traceable    | 02/04/2022, 02/11/2022 |
| NITROGEN        | Balance                 |                      |                 |                            |                        |

| Type | Lot ID        | Cylinder No | Concentration                       | Uncertainty | Expiration Date |
|------|---------------|-------------|-------------------------------------|-------------|-----------------|
| NTRM | 09010212      | KAL004777   | 98.48 PPM CARBON MONOXIDE/NITROGEN  | +/- 0.5%    | Oct 16, 2024    |
| NTRM | 200610-15     | CC733106    | 98.81 PPM NITRIC OXIDE/NITROGEN     | +/- 0.9%    | Oct 06, 2026    |
| NTRM | 200610-04     | CC708044    | 98.61 PPM NITRIC OXIDE/NITROGEN     | +/- 0.9%    | Oct 06, 2026    |
| GMS  | 124-206889139 | CC323707    | 4.997 PPM NITROGEN DIOXIDE/NITROGEN | +/- 2.0%    | Sep 03, 2024    |
| NTRM | 11010419      | KAL004815   | 99.5 PPM SULFUR DIOXIDE/NITROGEN    | +/- 0.8%    | Jul 28, 2023    |

| Instrument/Make/Model                        | Analytical Principle | Last Multipoint Calibration |
|----------------------------------------------|----------------------|-----------------------------|
| Nicolet iS50 FTIR AUP2010245 CO              | FTIR                 | Feb 03, 2022                |
| Nicolet iS50 FTIR AUP2010245 NO              | FTIR                 | Feb 10, 2022                |
| Nicolet iS50 FTIR AUP2010245 NO <sub>2</sub> | FTIR                 | Jan 27, 2022                |
| Nicolet iS50 FTIR AUP2010245 SO <sub>2</sub> | FTIR                 | Jan 20, 2022                |

Triad Data Available Upon Request

NOTES: Gross Weight: 48.5 Kg  
Net Weight: 8.1 Kg



## CERTIFICATE OF ANALYSIS

### Grade of Product: EPA Protocol

|                  |                                |                     |                 |
|------------------|--------------------------------|---------------------|-----------------|
| Part Number:     | E04N199E3HA0066                | Reference Number:   | 160-402138464-1 |
| Cylinder Number: | ND11215                        | Cylinder Volume:    | 247.2 CF        |
| Laboratory:      | 124 - Plumsteadville - PA      | Cylinder Pressure:  | 2215 PSIG       |
| PGVP Number:     | A12021                         | Valve Outlet:       | 680             |
| Gas Code:        | CO,NO,NOX,SO <sub>2</sub> BALN | Certification Date: | Jul 15, 2021    |

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 800/R-12/031, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

| Component       | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates            |
|-----------------|-------------------------|----------------------|-----------------|----------------------------|------------------------|
| NOX             | 55.00 PPM               | 56.16 PPM            | G1              | +/- 1.4% NIST Traceable    | 07/08/2021, 07/15/2021 |
| CARBON MONOXIDE | 55.00 PPM               | 54.22 PPM            | G1              | +/- 0.5% NIST Traceable    | 07/08/2021             |
| NITRIC OXIDE    | 55.00 PPM               | 56.16 PPM            | G1              | +/- 1.5% NIST Traceable    | 07/08/2021, 07/15/2021 |
| SULFUR DIOXIDE  | 55.00 PPM               | 55.55 PPM            | G1              | +/- 1.1% NIST Traceable    | 07/08/2021, 07/15/2021 |
| NITROGEN        | Balance                 |                      |                 |                            |                        |

| Type | Lot ID     | Cylinder No | Concentration                       | Uncertainty | Expiration Date |
|------|------------|-------------|-------------------------------------|-------------|-----------------|
| NTRM | 11010130   | KAL004538   | 97.31 PPM CARBON MONOXIDE/NITROGEN  | +/- 0.4%    | Oct 04, 2022    |
| PRM  | 12398      | D685025     | 9.91 PPM AIR/NITROGEN DIOXIDE       | 2.6%        | Feb 20, 2020    |
| NTRM | 200810-50  | CC733426    | 98.61 PPM NITRIC OXIDE/NITROGEN     | +/- 0.9%    | Oct 06, 2026    |
| GMS  | 124-206889 | CC323707    | 4.028 PPM NITROGEN DIOXIDE/NITROGEN | 2.1%        | Aug 15, 2021    |
| NTRM | 18010224   | KAL003858   | 97.69 PPM SULFUR DIOXIDE/NITROGEN   | +/- 0.8%    | Dec 23, 2021    |

The PRM, PRM or RDM noted above is only in reference to the GMS used in the assay and not part of the analysis.

| Instrument/Make/Model                        | Analytical Principle | Last Multipoint Calibration |
|----------------------------------------------|----------------------|-----------------------------|
| Nicolet iS50 FTIR AUP2010245 CO              | FTIR                 | Jun 24, 2021                |
| Nicolet iS50 FTIR AUP2010245 NO              | FTIR                 | Jul 01, 2021                |
| Nicolet iS50 FTIR AUP2010245 NO <sub>2</sub> | FTIR                 | Jun 30, 2021                |
| Nicolet iS50 FTIR AUP2010245 SO <sub>2</sub> | FTIR                 | Jul 09, 2021                |

Triad Data Available Upon Request

NOTES: Gross Weight: 47.9 Kg  
Net Weight: 7.8 Kg



Michael A. Tuley

Sharon A. 160-402138464-1



## CERTIFICATE OF ANALYSIS

### Grade of Product: EPA PROTOCOL STANDARD

|                  |                               |                     |                 |
|------------------|-------------------------------|---------------------|-----------------|
| Customer:        | AIR LIQUIDE<br>(THAILAND) LTD | Reference Number:   | 160-402340009-1 |
| Part Number:     | E02N192E3HA0000               | Cylinder Volume:    | 248.4 CF        |
| Cylinder Number: | GN0027035                     | Cylinder Pressure:  | 2214 PSIG       |
| Laboratory:      | 124 - Plumsteadville - PA     | Valve Outlet:       | 580             |
| PGVP Number:     | A12022                        | Certification Date: | Feb 10, 2022    |
| Gas Code:        | O <sub>2</sub> BALN           |                     |                 |

Expiration Date: Feb 10, 2030

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 800/R-12/031, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|-----------|-------------------------|----------------------|-----------------|----------------------------|-------------|
| OXYGEN    | 8.00% G                 | 7.979 %              | G1              | +/- 0.5% NIST Traceable    | 02/10/2022  |
| NITROGEN  | Balance                 |                      |                 |                            |             |

| Type | Lot ID   | Cylinder No | Concentration           | Uncertainty | Expiration Date |
|------|----------|-------------|-------------------------|-------------|-----------------|
| NTRM | 10010935 | K022178     | 9.987 % OXYGEN/NITROGEN | +/- 0.3%    | Apr 19, 2022    |

| Instrument/Make/Model             | Analytical Principle | Last Multipoint Calibration |
|-----------------------------------|----------------------|-----------------------------|
| SIEMENS OXYMAT 8 - N1-W5-951 - O2 | PARAMAGNETIC         | Jan 27, 2022                |

Triad Data Available Upon Request

NOTES: Gross Weight: 48.3 Kg  
Net Weight: 8.1 Kg



Approved for Release

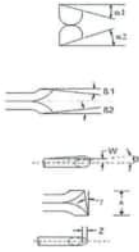
Page 1 of 160-402340009-1





## Type S Pitot Tube Calibration

Date Calibration 22-Apr-26 Due Date 22-Oct-26  
Pitot ID BKK\_FS0552 Inclinator ID BKK\_FS1131  
Pitot SN - Vernier ID BKK\_FS1123



| Parameter           | Value | Allowable Range                    | Check |
|---------------------|-------|------------------------------------|-------|
| $\alpha 1$          | 2.2   | $-10^\circ < \alpha 1 < +10^\circ$ | OK    |
| $\alpha 2$          | 3     | $-10^\circ < \alpha 2 < +10^\circ$ | OK    |
| $\beta 1$           | -1.2  | $-5^\circ < \beta 1 < +5^\circ$    | OK    |
| $\beta 2$           | 2.3   | $-5^\circ < \beta 2 < +5^\circ$    | OK    |
| $\gamma$            | 1.4   | -                                  | -     |
| $\theta$            | 1.2   | -                                  | -     |
| $Z = A \tan \gamma$ | 0.022 | $Z \leq 0.125''$                   | OK    |
| $W = A \tan \theta$ | 0.018 | $W \leq 0.031''$                   | OK    |
| Dt                  | 0.375 | 0.188" to 0.375"                   | OK    |
| A/2Dt               | 1.173 | $1.05 \leq A/2Dt \leq 1.5$         | OK    |
| A                   | 0.88  | $2.1Dt \leq A \leq 3Dt$            | OK    |

Certify that pitot tube/probe meets or exceeds all specifications, criteria and/or applicable design features and is hereby assigned a pitot tube certification factor of 0.84. See 40 CFR Pt. 60, App. A, EPA Method 2.

Calibrated by: S.Thongon Approved By: Mr. Warakorn Pookrak  
(Mr. Mr. Suwicha Thong-On) (Mr. Warakorn Pookrak)  
Enviro Field Services Scientist (2) Enviro Field Services Supervisor

FORM NO.: F-06-124 REVISION NO.: 0 ISSUE DATE: 25/12/23



Accredited by

NSC-TISI-TIS 17025  
Calibration 0426

## Calibration certificate

Calibration Certificate No. 25BCI0423

|                        |                                                                                                                                              |                                                                                                                                                                    |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Object                 | Electronic non-automatic weighing instrument                                                                                                 | This calibration certificate documents the traceability to national standards.                                                                                     |
| Manufacturer           | Sartorius                                                                                                                                    | Uncertainties of measurements are taken into account when only statements of compliance are made.                                                                  |
| Type                   | SECURA224-1S                                                                                                                                 | This certificate was prepared by Sartorius Corporation in accordance to the current ISO/IEC 17025:2017 standard and Sartorius Work Instruction (Method) SOP WI 08. |
| Serial   QM Ident. no. | 38304165   BKK_EN0309                                                                                                                        | This certificate relate and apply this equipment only.                                                                                                             |
| Customer               | ALS Laboratory Group (Thailand)Co., Ltd.<br>104 Phatthanakarn 40, Phatthanakarn Rd., Khwaeng Phatthanakarn<br>Khet Suan Luang, Bangkok 10250 |                                                                                                                                                                    |
| Order no.              | 272173                                                                                                                                       |                                                                                                                                                                    |
| Number of pages        | 4                                                                                                                                            |                                                                                                                                                                    |
| Date of calibration    | 29 Oct 2025                                                                                                                                  |                                                                                                                                                                    |

This calibration certificate may not be reproduced other than in full except with the permission of NSC-TISI-TIS-17025 and the issuing laboratory. Calibration certificates without signature are not valid.  
The user is obliged to have the object recalibrated at appropriate intervals.

|               |             |                                         |                  |
|---------------|-------------|-----------------------------------------|------------------|
| Date of issue | 29 Oct 2025 | Approval of the Calibration Certificate | Person in charge |
|               |             |                                         |                  |
|               |             | Mr. Chonchai Inthana                    | Chonchai Inthana |

Sartorius (Thailand) Co., Ltd.  
129 Rama 9 Road, Huaykwang  
10310 Bangkok

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Version 6.6

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Calibration certificate No.: 25BCI0423

Calibration Certificate

## Calibration object

### Single range instrument

|                              |                  |
|------------------------------|------------------|
| Model                        | SECURA224-1S     |
| Serial Number                | 38304165         |
| QM Ident. no   Inventory no. | BKK_EN0309   --- |
| Maximum capacity (Max. load) | 220.0000 g       |
| Measured up to               | 220.0000 g       |
| Scale interval               | 0.0001 g         |

## Place of calibration

|                                                       |                              |
|-------------------------------------------------------|------------------------------|
| Address                                               | According to page 1          |
| Department   Cost center                              | Laboratory Department.   --- |
| Building   Floor                                      | ---   1st Floor.             |
| Room                                                  | Laboratory Room.             |
| Maximum temperature variation at place of calibration | 5 K                          |

## Calibration procedure

EURAMET Calibration Guide No. 18, Version 4.0 (11/2015) - Guidelines on the Calibration of Non-Automatic Weighing Instruments

## Test equipment

| Test equipment type          | Test equipment ID                                             | Valid until |
|------------------------------|---------------------------------------------------------------|-------------|
| Thermometer                  | Teslo 174(Traceable to SI unit through ENTECH)                | 11 Nov 2025 |
| Test weight set OIML R111 E2 | Certificate No.M2508149S_E2(Traceable to SI unit through TCS) | 19 Aug 2027 |

Calibration certificate No.: 25BCI0423

Calibration Certificate

## Adjustment Status

The measuring device was internally adjusted before the calibration.

## Environmental and measuring conditions

|                                                   |                                                                                                   |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Date of calibration                               | 29 Oct 2025                                                                                       |
| Temperature at place of calibration   Temp. diff. | 20 °C   0.5 K                                                                                     |
| Weights - Tplase                                  |                                                                                                   |
| Measuring conditions                              | The installation site is suitable. The device is level. Balance was loaded up to Max before test. |
| Comments                                          | Humidity 62.0 %RH.                                                                                |

## Measurement results | Measurement uncertainties

| Repeatability                     | Eccentricity                                      |
|-----------------------------------|---------------------------------------------------|
| Test load (nominal): 10 g   100 g | Test load (nominal): 100 g                        |
| 10 g                              | 100 g                                             |
| 1 10.0000 g 100.0000 g            | Center 99.9999 g                                  |
| 2 10.0001 g 100.0000 g            | Front left 99.9999 g                              |
| 3 10.0000 g 100.0001 g            | Back left 99.9999 g                               |
| 4 10.0000 g 100.0000 g            | Back right 99.9998 g                              |
| 5 10.0000 g 100.0000 g            | Front right 99.9999 g                             |
| 6 10.0000 g 100.0001 g            | Maximum deviation from centric loading indication |
| 7 10.0001 g 100.0000 g            | $\Delta(ecc)_{max}$ 0.0001 g                      |
| 8 10.0000 g 100.0000 g            |                                                   |
| 9 10.0000 g 99.9999 g             |                                                   |
| 10 10.0000 g 100.0000 g           |                                                   |
| s 0.00004 g s 0.00006 g           |                                                   |

| Testload                    | Indication             | Error    | Expansion factor | Uncertainty | Uncertainty relative |
|-----------------------------|------------------------|----------|------------------|-------------|----------------------|
| 0.0100 g                    | 0.0100 g               | 0.0000 g | 2.00             | 0.00012 g   | 1.2 %                |
| 0.0500 g                    | 0.0500 g               | 0.0000 g | 2.00             | 0.00014 g   | 0.28 %               |
| 0.1000 g                    | 0.1000 g               | 0.0000 g | 2.00             | 0.00014 g   | 0.14 %               |
| 0.5000 g                    | 0.5000 g               | 0.0000 g | 2.00             | 0.00014 g   | 0.028 %              |
| 1.0000 g                    | 1.0000 g               | 0.0000 g | 2.00             | 0.00014 g   | 0.014 %              |
| 2.0000 g                    | 2.0000 g               | 0.0000 g | 2.00             | 0.00014 g   | 0.0071 %             |
| 5.0000 g                    | 5.0000 g               | 0.0000 g | 2.00             | 0.00014 g   | 0.0028 %             |
| 10.0000 g                   | 10.0000 g              | 0.0000 g | 2.00             | 0.00015 g   | 0.0015 %             |
| 20.0000 g                   | 20.0000 g              | 0.0000 g | 2.00             | 0.00015 g   | 0.00075 %            |
| 200.0000 g                  | 199.9999 g             | 0.0001 g | 2.00             | 0.00026 g   | 0.00014 %            |
| 210.0000 g                  | 209.9999 g             | 0.0001 g | 2.00             | 0.00029 g   | 0.00015 %            |
| Maximum error of indication | $ E _{max} = 0.0001 g$ |          |                  |             |                      |

U<sub>95</sub>(P) is the quotient of U(P) and test load. The uncertainty of measurement U(P) is valid only if error E is considered. You will find reference notes on the uncertainty of measurement in use under: Appendix to the calibration certificate. Interpretation of measurement results.  
Reference note: The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the documented expansion factor, disturbance in accordance with the European Calibration Guideline EURAMET CG-18, V1.6. There is a 95 % probability that the value of the measurand will be in the adjusted value range.

End of calibration certificate

## Uncertainty of measurement in use

Device adjusted before measurement

Yes

Temperature deviation considered

1 K (isoCAL active)

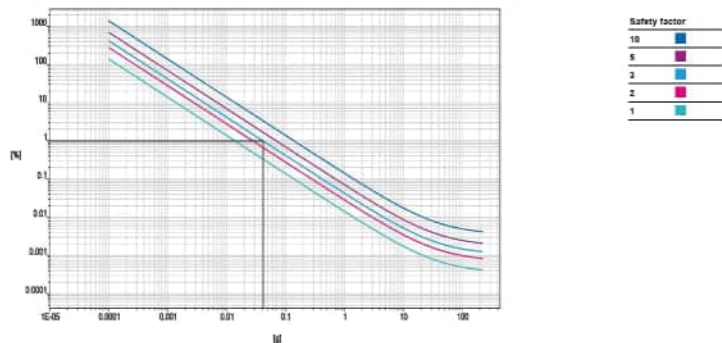
Temperature coefficient considered

2 · 10<sup>-4</sup>/KUncertainty of the weighing result  $U_{95}(W)$  $U_{95}(W) = 0.00014 \text{ g} + 3.58 \cdot 10^{-4} \cdot R$ 

Reference note: The current uncertainty of measurement is calculated by entering of the reading  $R$  into this formula. In relation to this, there is no need for a correction of the indication error. The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied with an Expansion factor of 2, determined in accordance with the European Calibration Guideline EURAMET cg-18, V4.0. There is a 95 % probability that the value of the measurand will be in the assigned value range.

| Indication in % from max load | Net indication<br>$R$ | Uncertainty<br>$U_{95}(W)$ | Uncertainty relative<br>$U_{95}(W)/R$ |
|-------------------------------|-----------------------|----------------------------|---------------------------------------|
| 1 %                           | 2.2000 g              | 0.00015 g                  | 0.0067 %                              |
| 25 %                          | 55.0000 g             | 0.00034 g                  | 0.00061 %                             |
| 50 %                          | 110.0000 g            | 0.00053 g                  | 0.00049 %                             |
| 75 %                          | 165.0000 g            | 0.00073 g                  | 0.00044 %                             |
| 100 %                         | 220.0000 g            | 0.00093 g                  | 0.00042 %                             |

Graphic realization of the relative uncertainty of measurement | process accuracy



Displayed example

Process accuracy

1.00 %

Safety factor

3

Minimum sample weight

0.0420 g

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129 Rama 9 Road, Huaykwang  
10310 Bangkok

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## Certificate of Calibration

## Customer

Name : ALS Laboratory Group Thailand Co., Ltd.

Certificate No : 26-ACT-006

Address : 104 Soi Phatthanakan 40, Phatthanakan Road, Suan Luang,

Request No : Req-2026-0042

Bangkok 10250

## Unit Under Calibration Details

Measurement item : Acoustic Calibrator

Class : 1

Manufacturer : RION

Range : 94 dB / 1000 Hz

Model : NC-74

Instrument Status : Used

Serial Number : 34178119

ID : BKK\_FS0632

## Calibration Environment and Details

Temperature : ( 23 ± 2 °C )

Humidity : ( 50 ± 20 %RH )

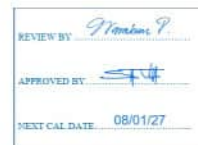
Barometric Pressure : ( 1013 ± 10.0 hPa )

Received Date : 7 January 2026

Calibration Date : 9 January 2026

Location of Calibration : LAB 1 Acoustic

Calibration Procedure : In-house method CP-ACT-02 based on IEC 60942:2017 Electroacoustics - Sound calibrators



| Reference Standard | Model  | Serial Number | Traceable | Due Calibration |
|--------------------|--------|---------------|-----------|-----------------|
| Sound Calibrator   | SV 35A | 58079         | EEI       | 20 June 2026    |
| THD Multimeter     | 2015   | 1047765       | NDMT      | 4 February 2026 |

**Traceability** : This certificate provides traceability of measurement to recognized national standard, and to the realization of the international System of Units (SI).

## Note

The reported uncertainty is based on standard uncertainty multiplied by the Coverage Factor  $k=2$ , providing a level of confidence approximately 95 %.

Calibrated By :

Mr. Noppadon Luangart  
Service Calibration Engineer

Approved By :

Mr. Pacit Mathavorn  
Calibration Engineer Supervisor

Issue Date : 9 January 2026

The results related only to the item calibrated. The certificate shall not be reproduced except in full, without written approval of the Innovative Instrument Co., Ltd.

FM-708-ACT-02 Rev.04 Issue date 17/2/25

Certificate No : 26-ACT-006

Request No : Req-2026-0042

## Sound pressure level

## Calibration Results : Without Adjustment

| Calibration Range<br>(dB) | Without Adjustment (dB) |                | Adjustment (dB) |                | Uncertainty<br>(± dB) |
|---------------------------|-------------------------|----------------|-----------------|----------------|-----------------------|
|                           | Measured                | Deviated value | Measured        | Deviated value |                       |
| 94 dB / 1000 Hz           | 93.78                   | -0.22          | -               | -              | 0.12                  |

## Frequency of Sound pressure level

| Calibration Range<br>(Hz) | Without Adjustment |                    | Adjustment    |                    | Uncertainty<br>(± %) |
|---------------------------|--------------------|--------------------|---------------|--------------------|----------------------|
|                           | Measured (Hz)      | Deviated value (%) | Measured (Hz) | Deviated value (%) |                      |
| 94 dB / 1000 Hz           | 1000.00            | 0.000              | -             | -                  | 0.010                |

## Total Harmonic Distortion plus Noise of Sound pressure level (THD+N %)

| Calibration Range<br>(Hz) | Without Adjustment | Adjustment   | Uncertainty<br>(± %) |
|---------------------------|--------------------|--------------|----------------------|
|                           | Measured (%)       | Measured (%) |                      |
| 94 dB / 1000 Hz           | 1.52               | -            | 0.17                 |

## Note :

- The calibration results exclude the calibration pressure correction

- The calibration results exclude the microphone volume correction

End of Calibration

SITHIPORN ASSOCIATES CO., LTD.  
CALIBRATION LABORATORY

451-451/1 Srikethorn Road, Bangbunmi, Bangplue, Bangkok, 10700 Thailand  
Tel: +66 2433 8331 Email: calibration@sithiporn.com

Cert. No. : ACL25441

Pages : 1 of 8

## Calibration Certificate

**Equipment :** SOUND LEVEL METER  
**Manufacturer :** RION  
**Model :** NL-42 / Microphone UC-52 / Preampifier NH-24  
**Serial No.:** 00597156 / 170403 / 72904  
**ID No.:** BKK\_FS0994

**Condition As Found :** GOOD

**Customer :** ALS LABORATORY GROUP (THAILAND) CO., LTD.  
104 PHATTHANAKAN 40, PHATTHANAKAN ROAD,  
KHWAENG PHATTHANAKAN, KHET SUAN LUANG,  
BANGKOK, 10250 THAILAND.

**Location :** -  
**Ambient Temperature :** ( 23.0 ± 3 ) °C  
**Pressure :** ( 101.3 ± 3 ) kPa  
**Relative Humidity :** ( 50.0 ± 20 ) %

**Received Date :** 12 NOVEMBER 2025  
**Calibration Date :** 24 NOVEMBER 2025  
**Date of Issue :** 25 NOVEMBER 2025



Calibrated by :

Nathakorn Pisutpaisan

Approved by :

( Nitinun Srihawan )

This certificate is issued in accordance with the requirements of ISO/IEC 17025 standard, may not be reproduced other than in full, except with the prior written approval of the head of Calibration Laboratory.



Cert. No. : ACL25441  
Job No. : VC69AC0032  
Pages : 6 of 8

## 7. Level linearity on the reference level range

| Anticipated Value (dB) | Measured Value (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|------------------------|---------------------|---------------------|------------------------|
| 137.0                  | 137.0               | 0.0                 | ± 1.1                  |
| 136.0                  | 136.0               | 0.0                 | ± 1.1                  |
| 135.0                  | 135.0               | 0.0                 | ± 1.1                  |
| 134.0                  | 134.0               | 0.0                 | ± 1.1                  |
| 133.0                  | 133.0               | 0.0                 | ± 1.1                  |
| 132.0                  | 132.0               | 0.0                 | ± 1.1                  |
| 131.0                  | 131.0               | 0.0                 | ± 1.1                  |
| 129.0                  | 129.0               | 0.0                 | ± 1.1                  |
| 124.0                  | 124.0               | 0.0                 | ± 1.1                  |
| 119.0                  | 119.0               | 0.0                 | ± 1.1                  |
| 114.0                  | 114.0               | 0.0                 | ± 1.1                  |
| 109.0                  | 109.0               | 0.0                 | ± 1.1                  |
| 104.0                  | 104.0               | 0.0                 | ± 1.1                  |
| 99.0                   | 99.0                | 0.0                 | ± 1.1                  |
| 94.0                   | 94.0                | 0.0                 | ± 1.1                  |
| 89.0                   | 89.0                | 0.0                 | ± 1.1                  |
| 84.0                   | 84.0                | 0.0                 | ± 1.1                  |
| 79.0                   | 79.0                | 0.0                 | ± 1.1                  |
| 74.0                   | 74.0                | 0.0                 | ± 1.1                  |
| 69.0                   | 69.0                | 0.0                 | ± 1.1                  |
| 64.0                   | 64.0                | 0.0                 | ± 1.1                  |
| 59.0                   | 59.0                | 0.0                 | ± 1.1                  |
| 54.0                   | 53.9                | -0.1                | ± 1.1                  |
| 49.0                   | 49.0                | 0.0                 | ± 1.1                  |
| 44.0                   | 44.0                | 0.0                 | ± 1.1                  |
| 39.0                   | 39.0                | 0.0                 | ± 1.1                  |
| 34.0                   | 34.0                | 0.0                 | ± 1.1                  |
| 30.0                   | 30.0                | 0.0                 | ± 1.1                  |
| 29.0                   | 29.0                | 0.0                 | ± 1.1                  |
| 28.0                   | 28.0                | 0.0                 | ± 1.1                  |
| 27.0                   | 27.0                | 0.0                 | ± 1.1                  |
| 26.0                   | 26.1                | 0.1                 | ± 1.1                  |
| 25.0                   | 25.1                | 0.1                 | ± 1.1                  |

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Cert. No. : ACL25441  
Job No. : VC69AC0032  
Pages : 7 of 8

## 8. Level linearity including the level range control

| Range | Anticipated Value (dB) | Measured Value (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|-------|------------------------|---------------------|---------------------|------------------------|
| 130   | 94.0                   | 94.0                | 0.0                 | ± 1.1                  |

| Range | Anticipated Value (dB) | Measured Value (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|-------|------------------------|---------------------|---------------------|------------------------|
| 130   | 29.0                   | 29.0                | 0.0                 | ± 1.1                  |

## 9. Tone burst response

| Time Weighting | Tone burst duration, Tb (ms) | Cycle | Anticipated Value (dB) | Measured Value (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|----------------|------------------------------|-------|------------------------|---------------------|---------------------|------------------------|
| Fast           | 0.25                         | 1     | 108.0                  | 107.9               | -0.1                | 1.5 ; -5.0             |
|                | 2                            | 8     | 117.0                  | 117.0               | 0.0                 | 1.0 ; -2.5             |
|                | 200                          | 800   | 134.0                  | 134.0               | 0.0                 | ± 1.0                  |
| Slow           | 2                            | 8     | 108.0                  | 108.0               | 0.0                 | 1.0 ; -5.0             |
|                | 200                          | 800   | 127.6                  | 127.6               | 0.0                 | ± 1.0                  |
| SEL            | 0.25                         | 1     | 99.0                   | 98.9                | -0.1                | 1.5 ; -5.0             |
|                | 2                            | 8     | 108.0                  | 108.0               | 0.0                 | 1.0 ; -2.5             |
|                | 200                          | 800   | 128.0                  | 128.0               | 0.0                 | ± 1.0                  |

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Cert. No. : ACL25441  
Job No. : VC69AC0032  
Pages : 8 of 8

## 10. Peak C sound level

| Number of cycle in test signal | Anticipated Value (dB) | Measured Value, Lcpeak (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|--------------------------------|------------------------|-----------------------------|---------------------|------------------------|
| Continuous                     | 130.0                  | 130.0                       | 0.0                 | ± 3.0                  |
| One                            | 133.4                  | 133.3                       | -0.1                | ± 3.0                  |

| Number of cycle in test signal | Anticipated Value (dB) | Measured Value (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|--------------------------------|------------------------|---------------------|---------------------|------------------------|
| Continuous                     | 133.0                  | 133.0               | 0.0                 | ± 2.0                  |
| Positive half cycle            | 135.4                  | 135.2               | -0.2                | ± 2.0                  |
| Negative half cycle            | 135.4                  | 135.2               | -0.2                | ± 2.0                  |

## 11. Overload indication

| Measured value (dB)     |                         | Deviated Value (dB) | Acceptance Limits (dB) |
|-------------------------|-------------------------|---------------------|------------------------|
| Positive one-half cycle | Negative one-half cycle |                     |                        |
| 89.6                    | 89.5                    | -0.1                | +1.5                   |

## 12. High level stability

| Frequency Weighting | SLM Display at initial (dB) | SLM Display at final (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|---------------------|-----------------------------|---------------------------|---------------------|------------------------|
| A-weight            | 137.0                       | 137.0                     | 0.0                 | ± 0.3                  |

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor  $k = 2$  or any value following calculation, providing a level of confidence of approximately 95 %

End of Calibration Certificate

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Cert. No. : ACL25375  
Pages : 1 of 8

## Calibration Certificate

Equipment : SOUND LEVEL METER  
Manufacturer : RION  
Model : NL-42 / Microphone UC-52 / Preamplifier NH-24  
Serial No. : 00597155 / 180398 / 88168  
ID No. : BKK\_FS0993

Condition As Found : GOOD

Customer : ALS LABORATORY GROUP (THAILAND) CO., LTD.  
104 PHATTHANAKAN 40, PHATTHANAKAN ROAD,  
KHWAENG PHATTHANAKAN, KHET SUAN LUANG,  
BANGKOK, 10250 THAILAND.

Location : -  
Ambient Temperature : ( 23.0 ± 3 ) °C  
Pressure : ( 101.3 ± 3 ) kPa  
Relative Humidity : ( 50.0 ± 20 ) %

Received Date : 11 SEPTEMBER 2025  
Calibration Date : 29 SEPTEMBER 2025  
Date of Issue : 30 SEPTEMBER 2025

Calibrated by :

Nathakorn Pisutpaisan

Approved by :

( Nitinun Srihawan )

This certificate is issued in accordance with the requirements of ISO/IEC 17025 standard, may not be reproduced other than in full, except with the prior written approval of the head of Calibration Laboratory.

Cert. No. : ACL25375  
Job No. : VC68AC0183  
Pages : 2 of 8

Calibration Procedure : CP-AC-01

#### Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).

The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.

For tests results of each items were made by observation of each Instruments display and also with SLM's display.

#### Condition of this result of calibration :

1. Reference Standard Instruments :

| Instrument              | Model    | Serial No. | Cert. No.      | Due Date  |
|-------------------------|----------|------------|----------------|-----------|
| Waveform Generator      | 33210A   | MY48017076 | EF-0011-25     | 11-FEB-26 |
| Waveform Generator      | 33511B   | MY52302742 | EF-0012-25     | 11-FEB-26 |
| Digital Multimeter      | 33461A   | MY53220104 | EEL_BP 24/0268 | 22-APR-26 |
| Digital Multimeter      | 33461A   | MY53220076 | EEL_BP 23/0268 | 22-APR-26 |
| Digital Multimeter      | 34461A   | MY60024273 | CA2025120EA    | 18-MAR-26 |
| Programmable Attenuator | MAT-1070 | 62100114   | EF-0006-25     | 11-FEB-26 |
| Condenser Microphone    | 4180     | 2977900    | AA-1002-25     | 19-FEB-26 |
| Measuring Amplifier     | NA-42KAI | 34560495   | AA-3002-25     | 19-FEB-26 |

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of unit maintained at :

3.1 National Institute of Metrology (Thailand).

3.2 Thailand Institute of Scientific and Technological Research (TISTR).

3.3 Electrical And Electronics Institute (EEI).

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#### Summary of Measurement Result :

| Parameter                                            | Uncertainty<br>(dB) | Maximum-permitted<br>uncertainty of<br>measurement (dB) |
|------------------------------------------------------|---------------------|---------------------------------------------------------|
| 1. Absolute sensitivity                              | 0.2                 | N/A                                                     |
| 2. Self-generated noise                              | 0.2                 | N/A                                                     |
| 3. Acoustical signal tests of frequency weightings   |                     |                                                         |
| 125 Hz                                               | 0.3                 | 0.6                                                     |
| 1000 Hz                                              | 0.3                 | 0.6                                                     |
| 8000 Hz                                              | 0.3                 | 0.7                                                     |
| 4. Electrical signal tests of frequency weightings   |                     |                                                         |
| For 10 Hz to 4 kHz                                   | 0.3                 | 0.6                                                     |
| For > 4 kHz to 10 kHz                                | 0.3                 | 0.7                                                     |
| For > 10 kHz to 20 kHz                               | 0.3                 | 1.0                                                     |
| 5. Frequency and time weightings at 1 kHz            | 0.2                 | 0.2                                                     |
| 6. Long - term stability                             | 0.1                 | 0.1                                                     |
| 7. Level linearity on the reference level range      | 0.2                 | 0.3                                                     |
| 8. Level linearity including the level range control | 0.2                 | 0.3                                                     |
| 9. Tone burst response                               | 0.2                 | 0.3                                                     |
| 10. Peak C sound level                               | 0.2                 | 0.35                                                    |
| 11. Overload indication                              | 0.2                 | 0.25                                                    |
| 12. High level stability                             | 0.1                 | 0.1                                                     |

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#### Result of calibration :

##### 1. Absolute sensitivity

| Reference<br>Acoustic Signal<br>( dB ) | Measured<br>Value<br>( dB ) | Deviation<br>( dB ) | Acceptance<br>Limit<br>( dB ) |
|----------------------------------------|-----------------------------|---------------------|-------------------------------|
| 93.9 (93.94)                           | 93.9                        | 0.0                 | ±0.3                          |

##### 2. Self-generated noise

###### 2.1 Normal test

| Measured Value<br>( dB ) |
|--------------------------|
| 18.07333333              |

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

| Frequency<br>Weighting | Weighting<br>( dB ) |
|------------------------|---------------------|
| A - weight             | 11.6                |
| C - weight             | 17.8                |
| Flat                   | 23.4                |

##### 3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

| Frequency<br>( Hz ) | Deviation from various frequency weighting response curve (dB) |          |          |                      |
|---------------------|----------------------------------------------------------------|----------|----------|----------------------|
|                     | Flat                                                           | C-weight | A-weight | Acceptance<br>Limits |
| 125                 | 0.1                                                            | 0.1      | 0.2      | ± 1.5                |
| 1000                | 0.0                                                            | 0.0      | 0.0      | ± 1.0                |
| 8000                | 1.0                                                            | 1.0      | 1.1      | ±5.0                 |

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Job No. : VC68AC0183  
Pages : 5 of 8

#### 4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

| Frequency<br>( Hz ) | Deviation from various frequency weighting response curve (dB) |          |          |                      |
|---------------------|----------------------------------------------------------------|----------|----------|----------------------|
|                     | Flat                                                           | C-weight | A-weight | Acceptance<br>Limits |
| 63                  | 0.0                                                            | 0.0      | 0.0      | ±2.0                 |
| 125                 | 0.0                                                            | 0.1      | 0.0      | ±1.5                 |
| 250                 | 0.0                                                            | 0.0      | 0.0      | ±1.5                 |
| 500                 | 0.0                                                            | 0.1      | 0.0      | ±1.5                 |
| 1000                | 0.0                                                            | 0.0      | 0.0      | ±1.0                 |
| 2000                | 0.0                                                            | 0.1      | 0.0      | ±2.0                 |
| 4000                | 0.0                                                            | 0.0      | 0.0      | ±3.0                 |
| 8000                | 0.0                                                            | 0.1      | 0.1      | ±5.0                 |

#### 5. Frequency and time weightings at 1 kHz

##### 5.1 Frequency weightings at 1 kHz

| Frequency<br>Weighting | Anticipated<br>Value<br>( dB ) | Measured<br>Value<br>( dB ) | Deviated<br>Value<br>( dB ) | Acceptance<br>Limits<br>( dB ) |
|------------------------|--------------------------------|-----------------------------|-----------------------------|--------------------------------|
| A - weight             | 94.0                           | 94.0                        | 0.0                         | ± 0.2                          |
| C - weight             | 94.0                           | 94.0                        | 0.0                         | ± 0.2                          |
| Flat                   | 94.0                           | 94.0                        | 0.0                         | ± 0.2                          |

##### 5.2 Time weighting at 1 kHz

| Frequency<br>Weighting | Anticipated<br>Value<br>( dB ) | Measured<br>Value<br>( dB ) | Deviated<br>Value<br>( dB ) | Acceptance<br>Limits<br>( dB ) |
|------------------------|--------------------------------|-----------------------------|-----------------------------|--------------------------------|
| Fast                   | 94.0                           | 94.0                        | 0.0                         | ± 0.1                          |
| Slow                   | 94.0                           | 94.0                        | 0.0                         | ± 0.1                          |
| Teq                    | 94.0                           | 94.0                        | 0.0                         | ± 0.1                          |

#### 6. Long - term stability

| Frequency<br>Weighting | SLM Display<br>at initial<br>( dB ) | SLM Display<br>at final<br>( dB ) | Deviated<br>Value<br>( dB ) | Acceptance<br>Limits<br>( dB ) |
|------------------------|-------------------------------------|-----------------------------------|-----------------------------|--------------------------------|
| A - weight             | 94.0                                | 94.0                              | 0.0                         | ± 0.3                          |

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Cert. No. : ACL25375  
Job No. : VC68AC0183  
Pages : 6 of 8

## 7. Level linearity on the reference level range

| Anticipated Value (dB) | Measured Value (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|------------------------|---------------------|---------------------|------------------------|
| 137.0                  | 137.0               | 0.0                 | ±1.1                   |
| 136.0                  | 136.0               | 0.0                 | ±1.1                   |
| 135.0                  | 135.0               | 0.0                 | ±1.1                   |
| 134.0                  | 134.0               | 0.0                 | ±1.1                   |
| 133.0                  | 133.0               | 0.0                 | ±1.1                   |
| 132.0                  | 132.0               | 0.0                 | ±1.1                   |
| 131.0                  | 131.0               | 0.0                 | ±1.1                   |
| 129.0                  | 129.0               | 0.0                 | ±1.1                   |
| 124.0                  | 124.0               | 0.0                 | ±1.1                   |
| 119.0                  | 119.0               | 0.0                 | ±1.1                   |
| 114.0                  | 114.0               | 0.0                 | ±1.1                   |
| 109.0                  | 109.0               | 0.0                 | ±1.1                   |
| 104.0                  | 104.0               | 0.0                 | ±1.1                   |
| 99.0                   | 99.0                | 0.0                 | ±1.1                   |
| 94.0                   | 94.0                | 0.0                 | ±1.1                   |
| 89.0                   | 89.0                | 0.0                 | ±1.1                   |
| 84.0                   | 84.0                | 0.0                 | ±1.1                   |
| 79.0                   | 79.0                | 0.0                 | ±1.1                   |
| 74.0                   | 74.0                | 0.0                 | ±1.1                   |
| 69.0                   | 69.0                | 0.0                 | ±1.1                   |
| 64.0                   | 64.0                | 0.0                 | ±1.1                   |
| 59.0                   | 59.0                | 0.0                 | ±1.1                   |
| 54.0                   | 54.0                | 0.0                 | ±1.1                   |
| 49.0                   | 49.0                | 0.0                 | ±1.1                   |
| 44.0                   | 44.0                | 0.0                 | ±1.1                   |
| 39.0                   | 39.0                | 0.0                 | ±1.1                   |
| 34.0                   | 34.0                | 0.0                 | ±1.1                   |
| 30.0                   | 30.0                | 0.0                 | ±1.1                   |
| 29.0                   | 28.9                | -0.1                | ±1.1                   |
| 28.0                   | 28.0                | 0.0                 | ±1.1                   |
| 27.0                   | 26.9                | -0.1                | ±1.1                   |
| 26.0                   | 25.9                | -0.1                | ±1.1                   |
| 25.0                   | 25.0                | 0.0                 | ±1.1                   |

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Job No. : VC68AC0183  
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## 8. Level linearity including the level range control

| Range | Anticipated Value (dB) | Measured Value (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|-------|------------------------|---------------------|---------------------|------------------------|
| 130   | 94.0                   | 94.0                | 0.0                 | ±1.1                   |

| Range | Anticipated Value (dB) | Measured Value (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|-------|------------------------|---------------------|---------------------|------------------------|
| 130   | 29.0                   | 29.0                | 0.0                 | ±1.1                   |

## 9. Tone burst response

| Time Weighting | Tone burst duration, Tb (ms) | Cycle | Anticipated Value (dB) | Measured Value (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|----------------|------------------------------|-------|------------------------|---------------------|---------------------|------------------------|
| Fast           | 0.25                         | 1     | 108.0                  | 107.9               | -0.1                | 1.5 ; -5.0             |
|                | 2                            | 8     | 117.0                  | 117.0               | 0.0                 | 1.0 ; -2.5             |
|                | 200                          | 800   | 134.0                  | 134.1               | 0.1                 | ±1.0                   |
| Slow           | 2                            | 8     | 108.0                  | 108.0               | 0.0                 | 1.0 ; -5.0             |
|                | 200                          | 800   | 127.6                  | 127.6               | 0.0                 | ±1.0                   |
| SEL            | 0.25                         | 1     | 99.0                   | 98.9                | -0.1                | 1.5 ; -5.0             |
|                | 2                            | 8     | 108.0                  | 108.0               | 0.0                 | 1.0 ; -2.5             |
|                | 200                          | 800   | 128.0                  | 128.1               | 0.1                 | ±1.0                   |

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## 10. Peak C sound level

| Number of cycle in test signal | Anticipated Value (dB) | Measured Value, L <sub>peak</sub> (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|--------------------------------|------------------------|----------------------------------------|---------------------|------------------------|
| Continuous                     | 130.0                  | 130.0                                  | 0.0                 | ±3.0                   |
| One                            | 133.4                  | 133.3                                  | -0.1                | ±3.0                   |

| Number of cycle in test signal | Anticipated Value (dB) | Measured Value (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|--------------------------------|------------------------|---------------------|---------------------|------------------------|
| Continuous                     | 133.0                  | 133.0               | 0.0                 | ±2.0                   |
| Positive half cycle            | 135.4                  | 135.2               | -0.2                | ±2.0                   |
| Negative half cycle            | 135.4                  | 135.2               | -0.2                | ±2.0                   |

## 11. Overload indication

| Measured value (dB)     |                         | Deviated Value (dB) | Acceptance Limits (dB) |
|-------------------------|-------------------------|---------------------|------------------------|
| Positive one-half cycle | Negative one-half cycle | 0.0                 | ±1.5                   |
| 89.5                    | 89.5                    |                     |                        |

## 12. High level stability

| Frequency Weighting | SLM Display at initial (dB) | SLM Display at final (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|---------------------|-----------------------------|---------------------------|---------------------|------------------------|
| A - weight          | 137.0                       | 137.0                     | 0.0                 | ±0.3                   |

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor  $k = 2$   
or any value following calculation, providing a level of confidence of approximately 95 %

End of Calibration Certificate

P. 03/01/2025

45/1-45/1 Sirthorn Road, Bangburi, Bangkok, 10700 Thailand  
Tel. +66 2433 8331 Email : calibration@sithiporn.comCert. No. : ACL25442  
Pages : 1 of 8

## Calibration Certificate

Equipment : SOUND LEVEL METER  
Manufacturer : RION  
Model : NL-42 / Microphone UC-52 / Preamplifier NH-24  
Serial No.: 00597159 / 180402 / 88172  
ID No.: BKK\_FS0995

Condition As Found : GOOD

Customer : ALS LABORATORY GROUP (THAILAND) CO., LTD.  
104 PHATTHANAKAN 40, PHATTHANAKAN ROAD,  
KHWAENG PHATTHANAKAN, KHET SUAN LUANG,  
BANGKOK, 10250 THAILAND.

Location : -  
Ambient Temperature : ( 23.0 ± 3 ) °C  
Pressure : ( 101.3 ± 3 ) kPa  
Relative Humidity : ( 50.0 ± 20 ) %

Received Date : 12 NOVEMBER 2025  
Calibration Date : 24 NOVEMBER 2025  
Date of Issue : 25 NOVEMBER 2025

Calibrated by :

Nathakorn Pisutpaisan

Approved by :

( Nitinun Srihawan )

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Cert. No. : ACL25442  
Job No. : VC69AC0032  
Pages : 2 of 8

**Calibration Procedure :** CP-AC-01**Calibration Method :**

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).

The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.

For tests results of each items were made by observation of each Instruments display and also with SLM's display.

**Condition of this result of calibration :**

## 1. Reference Standard Instruments :

| Instrument              | Model    | Serial No. | Cert. No.      | Due Date  |
|-------------------------|----------|------------|----------------|-----------|
| Waveform Generator      | 33210A   | MY48017076 | EF-0011-25     | 11-FEB-26 |
| Waveform Generator      | 33511B   | MY52302742 | EF-0012-25     | 11-FEB-26 |
| Digital Multimeter      | 33461A   | MY53220104 | EEL-BP 24/0268 | 22-APR-26 |
| Digital Multimeter      | 33461A   | MY53220076 | EEL-BP 23/0268 | 22-APR-26 |
| Digital Multimeter      | 34461A   | MY60024273 | CA2025120EA    | 18-MAR-26 |
| Programmable Attenuator | MAT-1070 | 62100114   | EF-0006-25     | 11-FEB-26 |
| Condenser Microphone    | 4180     | 2977900    | AA-1002-25     | 19-FEB-26 |
| Measuring Amplifier     | NA-42KAI | 34560495   | AA-3002-25     | 19-FEB-26 |

## 2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

## 3. This certificate is traceable to the international system of unit maintained at :

- 3.1 National Institute of Metrology (Thailand).
- 3.2 Thailand Institute of Scientific and Technological Research (TISTR).
- 3.3 Electrical And Electronics Institute (EEI).

PIT/Sum 6

Cert. No. : ACL25442  
Job No. : VC69AC0032  
Pages : 3 of 8

**Summary of Measurement Result :**

| Parameter                                            | Uncertainty<br>(dB) | Maximum-permitted<br>uncertainty of<br>measurement (dB) |
|------------------------------------------------------|---------------------|---------------------------------------------------------|
| 1. Absolute sensitivity                              | 0.2                 | N/A                                                     |
| 2. Self-generated noise                              | 0.2                 | N/A                                                     |
| 3. Acoustical signal tests of frequency weightings   |                     |                                                         |
| 125 Hz                                               | 0.3                 | 0.6                                                     |
| 1000 Hz                                              | 0.3                 | 0.6                                                     |
| 8000 Hz                                              | 0.5                 | 0.7                                                     |
| 4. Electrical signal tests of frequency weightings   |                     |                                                         |
| For 10 Hz to 4 kHz                                   | 0.3                 | 0.6                                                     |
| For > 4 kHz to 10 kHz                                | 0.3                 | 0.7                                                     |
| For > 10 kHz to 20 kHz                               | 0.3                 | 1.0                                                     |
| 5. Frequency and time weightings at 1 kHz            | 0.2                 | 0.2                                                     |
| 6. Long - term stability                             | 0.1                 | 0.1                                                     |
| 7. Level linearity on the reference level range      | 0.2                 | 0.3                                                     |
| 8. Level linearity including the level range control | 0.2                 | 0.3                                                     |
| 9. Tone burst response                               | 0.2                 | 0.3                                                     |
| 10. Peak C sound level                               | 0.2                 | 0.35                                                    |
| 11. Overload indication                              | 0.2                 | 0.25                                                    |
| 12. High level stability                             | 0.1                 | 0.1                                                     |

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Cert. No. : ACL25442  
Job No. : VC69AC0032  
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**Result of calibration :****1. Absolute sensitivity**

| Reference<br>Acoustic Signal<br>( dB ) | Measured<br>Value<br>( dB ) | Deviation<br>( dB ) | Acceptance<br>Limit<br>( dB ) |
|----------------------------------------|-----------------------------|---------------------|-------------------------------|
| 93.9 (93.94)                           | 93.9                        | 0.0                 | ±0.3                          |

**2. Self-generated noise**

## 2.1 Normal test

| Measured Value<br>( dB ) |
|--------------------------|
| 15.8                     |

## 2.2 The microphone of the sound level meter was replaced by electrical signal input device.

| Frequency<br>Weighting | Weighting<br>( dB ) |
|------------------------|---------------------|
| A - weight             | 13.4                |
| C - weight             | 19.2                |
| Flat                   | 24.7                |

**3. Acoustical signal tests of frequency weightings**

Meter free-field acoustic response at a level of 84 dB

| Frequency<br>( Hz ) | Deviation from various frequency weighting response curve (dB) |          |          |                      |
|---------------------|----------------------------------------------------------------|----------|----------|----------------------|
|                     | Flat                                                           | C-weight | A-weight | Acceptance<br>Limits |
| 125                 | 0.1                                                            | 0.2      | 0.1      | ± 1.5                |
| 1000                | 0.0                                                            | 0.1      | 0.0      | ± 1.0                |
| 8000                | 1.5                                                            | 2.1      | 2.1      | ±5.0                 |

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Cert. No. : ACL25442  
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Pages : 5 of 8

**4. Electrical signal tests of frequency weightings**

Weighting network response with relative to 1 kHz.

| Frequency<br>( Hz ) | Deviation from various frequency weighting response curve (dB) |          |          |                      |
|---------------------|----------------------------------------------------------------|----------|----------|----------------------|
|                     | Flat                                                           | C-weight | A-weight | Acceptance<br>Limits |
| 63                  | 0.0                                                            | 0.0      | 0.0      | ±2.0                 |
| 125                 | 0.0                                                            | 0.1      | 0.0      | ±1.5                 |
| 250                 | 0.1                                                            | 0.0      | 0.0      | ±1.5                 |
| 500                 | 0.0                                                            | 0.1      | 0.0      | ±1.5                 |
| 1000                | 0.0                                                            | 0.0      | 0.0      | ±1.0                 |
| 2000                | 0.0                                                            | 0.1      | 0.1      | ±2.0                 |
| 4000                | 0.0                                                            | 0.1      | 0.1      | ±3.0                 |
| 8000                | 0.1                                                            | 0.1      | 0.1      | ±5.0                 |

**5. Frequency and time weightings at 1 kHz**

## 5.1 Frequency weightings at 1 kHz

| Frequency<br>Weighting | Anticipated<br>Value<br>( dB ) | Measured<br>Value<br>( dB ) | Deviated<br>Value<br>( dB ) | Acceptance<br>Limits<br>( dB ) |
|------------------------|--------------------------------|-----------------------------|-----------------------------|--------------------------------|
| A - weight             | 94.0                           | 94.0                        | 0.0                         | ± 0.2                          |
| C - weight             | 94.0                           | 94.0                        | 0.0                         | ± 0.2                          |
| Flat                   | 94.0                           | 94.0                        | 0.0                         | ± 0.2                          |

## 5.2 Time weighting at 1 kHz

| Frequency<br>Weighting | Anticipated<br>Value<br>( dB ) | Measured<br>Value<br>( dB ) | Deviated<br>Value<br>( dB ) | Acceptance<br>Limits<br>( dB ) |
|------------------------|--------------------------------|-----------------------------|-----------------------------|--------------------------------|
| Fast                   | 94.0                           | 94.0                        | 0.0                         | ± 0.1                          |
| Slow                   | 94.0                           | 94.0                        | 0.0                         | ± 0.1                          |
| Leq                    | 94.0                           | 94.0                        | 0.0                         | ± 0.1                          |

**6. Long - term stability**

| Frequency<br>Weighting | SLM Display<br>at initial<br>( dB ) | SLM Display<br>at final<br>( dB ) | Deviated<br>Value<br>( dB ) | Acceptance<br>Limits<br>( dB ) |
|------------------------|-------------------------------------|-----------------------------------|-----------------------------|--------------------------------|
| A - weight             | 94.0                                | 94.1                              | 0.1                         | ± 0.3                          |

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Cert. No. : ACL25442  
Job No. : VC69AC0032  
Pages : 6 of 8

## 7. Level linearity on the reference level range

| Anticipated Value (dB) | Measured Value (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|------------------------|---------------------|---------------------|------------------------|
| 137.0                  | 137.0               | 0.0                 | ± 1.1                  |
| 136.0                  | 136.0               | 0.0                 | ± 1.1                  |
| 135.0                  | 135.0               | 0.0                 | ± 1.1                  |
| 134.0                  | 134.0               | 0.0                 | ± 1.1                  |
| 133.0                  | 133.0               | 0.0                 | ± 1.1                  |
| 132.0                  | 132.0               | 0.0                 | ± 1.1                  |
| 131.0                  | 131.0               | 0.0                 | ± 1.1                  |
| 129.0                  | 129.0               | 0.0                 | ± 1.1                  |
| 124.0                  | 124.0               | 0.0                 | ± 1.1                  |
| 119.0                  | 119.1               | 0.1                 | ± 1.1                  |
| 114.0                  | 114.0               | 0.0                 | ± 1.1                  |
| 109.0                  | 109.0               | 0.0                 | ± 1.1                  |
| 104.0                  | 104.1               | 0.1                 | ± 1.1                  |
| 99.0                   | 99.0                | 0.0                 | ± 1.1                  |
| 94.0                   | 94.0                | 0.0                 | ± 1.1                  |
| 89.0                   | 89.0                | 0.0                 | ± 1.1                  |
| 84.0                   | 84.0                | 0.0                 | ± 1.1                  |
| 79.0                   | 79.0                | 0.0                 | ± 1.1                  |
| 74.0                   | 74.0                | 0.0                 | ± 1.1                  |
| 69.0                   | 69.0                | 0.0                 | ± 1.1                  |
| 64.0                   | 64.0                | 0.0                 | ± 1.1                  |
| 59.0                   | 59.0                | 0.0                 | ± 1.1                  |
| 54.0                   | 54.0                | 0.0                 | ± 1.1                  |
| 49.0                   | 49.0                | 0.0                 | ± 1.1                  |
| 44.0                   | 44.0                | 0.0                 | ± 1.1                  |
| 39.0                   | 39.0                | 0.0                 | ± 1.1                  |
| 34.0                   | 34.0                | 0.0                 | ± 1.1                  |
| 30.0                   | 30.0                | 0.0                 | ± 1.1                  |
| 29.0                   | 29.0                | 0.0                 | ± 1.1                  |
| 28.0                   | 28.0                | 0.0                 | ± 1.1                  |
| 27.0                   | 27.0                | 0.0                 | ± 1.1                  |
| 26.0                   | 26.0                | 0.0                 | ± 1.1                  |
| 25.0                   | 25.1                | 0.1                 | ± 1.1                  |

PETERMAN-5

Cert. No. : ACL25442  
Job No. : VC69AC0032  
Pages : 7 of 8

## 8. Level linearity including the level range control

| Range | Anticipated Value (dB) | Measured Value (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|-------|------------------------|---------------------|---------------------|------------------------|
| 130   | 94.0                   | 94.0                | 0.0                 | ±1.1                   |

| Range | Anticipated Value (dB) | Measured Value (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|-------|------------------------|---------------------|---------------------|------------------------|
| 130   | 29.0                   | 28.9                | -0.1                | ±1.1                   |

## 9. Tone burst response

| Time Weighting | Tone burst duration, Tb (ms) | Cycle | Anticipated Value (dB) | Measured Value (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|----------------|------------------------------|-------|------------------------|---------------------|---------------------|------------------------|
| Fast           | 0.25                         | 1     | 108.0                  | 107.9               | -0.1                | 1.5 ; -5.0             |
|                | 2                            | 8     | 117.0                  | 116.9               | -0.1                | 1.0 ; -2.5             |
|                | 200                          | 800   | 134.0                  | 134.0               | 0.0                 | ±1.0                   |
| Slow           | 2                            | 8     | 108.0                  | 107.9               | -0.1                | 1.0 ; -5.0             |
|                | 200                          | 800   | 127.6                  | 127.5               | -0.1                | ±1.0                   |
| SEL            | 0.25                         | 1     | 99.0                   | 98.8                | -0.2                | 1.5 ; -5.0             |
|                | 2                            | 8     | 108.0                  | 108.0               | 0.0                 | 1.0 ; -2.5             |
|                | 200                          | 800   | 128.0                  | 128.0               | 0.0                 | ±1.0                   |

PETERMAN-5

Cert. No. : ACL25442  
Job No. : VC69AC0032  
Pages : 8 of 8

## 10. Peak C sound level

| Number of cycle in test signal | Anticipated Value (dB) | Measured Value, Lepeak (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|--------------------------------|------------------------|-----------------------------|---------------------|------------------------|
| Continuous                     | 130.0                  | 130.0                       | 0.0                 | ±3.0                   |
| One                            | 133.4                  | 133.4                       | 0.0                 | ±3.0                   |

| Number of cycle in test signal | Anticipated Value (dB) | Measured Value (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|--------------------------------|------------------------|---------------------|---------------------|------------------------|
| Continuous                     | 133.0                  | 133.0               | 0.0                 | ±2.0                   |
| Positive half cycle            | 135.4                  | 135.1               | -0.3                | ±2.0                   |
| Negative half cycle            | 135.4                  | 135.1               | -0.3                | ±2.0                   |

## 11. Overload indication

| Measured value (dB)     |                         | Deviated Value (dB) | Acceptance Limits (dB) |
|-------------------------|-------------------------|---------------------|------------------------|
| Positive one-half cycle | Negative one-half cycle | 0.0                 | ±1.5                   |
| 89.5                    | 89.5                    |                     |                        |

## 12. High level stability

| Frequency Weighting | SLM Display at initial (dB) | SLM Display at final (dB) | Deviated Value (dB) | Acceptance Limits (dB) |
|---------------------|-----------------------------|---------------------------|---------------------|------------------------|
| A - weight          | 137.0                       | 137.0                     | 0.0                 | ±0.3                   |

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor  $k = 2$  or any value following calculation, providing a level of confidence of approximately 95 %

End of Calibration Certificate

PETERMAN-5

## CERTIFICATE OF CALIBRATION

ISSUED BY Cirrus Research plc  
DATE OF ISSUE 29 August 2025 CERTIFICATE NUMBER 248240 Cirrus Research plc  
Acoustic House  
Bridlington Road  
Hunmanby  
North Yorkshire  
YO14 0PH  
United KingdomREVIEW BY: *Florian P.*  
APPROVED BY: *[Signature]*  
NEXT CAL DATE: 28/08/26Page 1 of 2  
Approved signatory  
N.Smith  
Electronically signed:  
*[Signature]*

## doseBadge Reader : IEC 60942:2003

## Instrument information

Manufacturer: Cirrus Research plc  
Model: RC-110A  
Serial number: 77676  
Class: 2  
Notes:

## Test summary

Date of calibration: 29 August 2025

The doseBadge reader detailed above has been calibrated to the published data as described in the operating manual and in the half-inch configuration. The procedures and techniques used are as described in IEC60942\_2003 Annex B – Periodic Tests and three determinations of the sound pressure level, frequency and total distortion were made.

The sound pressure level was measured using a WS2F condenser microphone type MK-224 manufactured by Cirrus Research plc.

The results have been corrected to the reference pressure of 101.33 kPa using the manufacturer's data.

The doseBadge Reader has been shown to conform to the Class 2 requirements for periodic testing, described in Annex B of IEC 60942:2003 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed.

However, as public evidence was not available, from a testing organisation responsible for pattern approval, to demonstrate that the model of doseBadge Reader conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2003, no general statement or conclusion can be made about conformance of the doseBadge Reader to the requirements of IEC 60942:2003.

Notes:

# CERTIFICATE OF CALIBRATION

Certificate Number:

248240

Page 2 of 2

## Environmental conditions

The following conditions were recorded at the time of the test:

Before Pressure: 98.75 kPa Temperature: 21.4 °C Humidity: 48.9 %  
After Pressure: 98.75 kPa Temperature: 21.4 °C Humidity: 48.4 %

## Test equipment

| Equipment             | Manufacturer | Model | Serial number |
|-----------------------|--------------|-------|---------------|
| Distortion Meter      | Keithley     | 2015  | 1053426       |
| Environmental Monitor | Comet        | T7510 | 21962628      |

## Initial Acoustic Results

|                | Expected | Sample 1 | Sample 2 | Sample 3 | Average | Deviation | Tolerance | Uncertainty |
|----------------|----------|----------|----------|----------|---------|-----------|-----------|-------------|
| Level (dB)     | 114.00   | 113.95   | 113.95   | 113.95   | 113.95  | -0.05     | ±0.75     | 0.11 dB     |
| Distortion (%) | < 4.00   | 0.43     | 0.43     | 0.43     | 0.43    | 0.43      | +4.00     | 0.13 %      |
| Frequency (Hz) | 1000.0   | 1006.2   | 1006.2   | 1006.2   | 1006.2  | 6.2       | ±20.0     | 0.1 Hz      |

The measured quantities or deviations (as applicable), extended by the expanded combined uncertainty of measurement, must not exceed the corresponding tolerance.

## Adjusted Acoustic Results

|                | Expected | Sample 1 | Sample 2 | Sample 3 | Average | Deviation | Tolerance | Uncertainty |
|----------------|----------|----------|----------|----------|---------|-----------|-----------|-------------|
| Level (dB)     | 114.00   | 113.98   | 113.99   | 113.99   | 113.99  | -0.01     | ±0.75     | 0.11 dB     |
| Distortion (%) | < 4.00   | 0.43     | 0.43     | 0.43     | 0.43    | 0.43      | +4.00     | 0.13 %      |
| Frequency (Hz) | 1000.0   | 1006.2   | 1006.2   | 1006.2   | 1006.2  | 6.2       | ±20.0     | 0.1 Hz      |

## Functionality Results

| Function      | Result |
|---------------|--------|
| Keypad        | Pass   |
| Battery Power | Pass   |
| Display       | Pass   |
| Communication | Pass   |
| 2 way IR link | Pass   |
| Clock         | Pass   |

End of results



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Accredited calibration laboratory  
ISO/IEC 17025:2017  
NSC-TSI-TS 17025  
CALIBRATION 0367

Acoustic calibration laboratory  
Calibration services department

REVIEW BY: *Parinya P.*

APPROVED BY: *[Signature]*

NEXT CAL DATE: 18/09/26

Calibration report Number

CDM-100-68

## CALIBRATION REPORT

Page 1 of 1 Pages

### MEASUREMENT ITEM

#### MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS-RECEIVED

CUSTOMER

: Dose meter

: Cirrus Research plc

: CR110A15

: YF463

: BUK\_F50078

: Used item

: ALS laboratory group (Thailand) Co., Ltd.

: 104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,

: Khet Suan Luang, Bangkok 10250 Thailand.

### Calibration procedure:

The Noise dosimeter (Unit Under Calibration) was calibrated against Standard dosimetric reader model: RC-110A which the calibration was performed respecting the requirements of ISO/IEC 17025:2017 and carried out in accordance with the requirements of IEC 60942:2003 where applicable.

### Traceability:

This certificate provides a traceability of the measurement to "recognized the national standards and to realization of the international system of units (SI) through Cirrus research plc via Certificate number: 248239

RECEIVED DATE: 18 Sep 2025

MEASUREMENT DATE: 18 Sep 2025

ISSUE DATE: 18 Sep 2025

### ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature: 23.0 ± 3.0 °C

Relative Humidity: 55.0 ± 15.0 %RH

Atmospheric Pressure: 1010 ± 10 hPa

### PRECONDITIONING

: The dose meter (Unit Under Calibration) was preconditioning 24 hours at ambient conditions prior to calibration being performed.

### STANDARD USED DURING CALIBRATION:

Instrument name: DoseBadge Reader Manufacturer: Cirrus Research plc Model: RC-110A Serial number: R1051

Remark: DoseBadge Reader Unit with Internal Acoustic Calibrator to IEC 60942: 2003 Class 2.

### CALIBRATION RESULTS:

Table 1: The results of dose meter calibration are reported in the table below.

| DoseBadge Reader Level <sup>1</sup><br>(dB) | Noise Dosimeter reading <sup>1</sup><br>(dB) | Error<br>(dB) | Status |
|---------------------------------------------|----------------------------------------------|---------------|--------|
| 114.0                                       | 114.0                                        | 0.0           | ✓      |

Calibrated by:

Mr. Sorawat Thachalad

Miss Jitraporn Lertsomphol



Approved signatory:

Mr. Parinya Booncharoen

Calibration Department Manager

### Remark:

<sup>1</sup>The decibel level of standard doseBadge reader that supplied to Unit Under Calibration.

<sup>2</sup>The measurement reading of Unit Under Calibration.

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Web site: www.jiranatee.com

Accredited calibration laboratory  
ISO/IEC 17025:2017  
NSC-TSI-TS 17025  
CALIBRATION 0367

Acoustic calibration laboratory  
Calibration services department

REVIEW BY: *Parinya P.*

APPROVED BY: *[Signature]*

NEXT CAL DATE: 29/09/26

Calibration report Number

CDM-117-68

## CALIBRATION REPORT

Page 1 of 1 Pages

### MEASUREMENT ITEM

#### MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS-RECEIVED

CUSTOMER

: Dose meter

: Cirrus Research plc

: CR110A15

: YF463

: BUK\_F50079

: Used item

: ALS laboratory group (Thailand) Co., Ltd.

: 104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,

: Khet Suan Luang, Bangkok 10250 Thailand.

### Calibration procedure:

The Noise dosimeter (Unit Under Calibration) was calibrated against Standard dosimetric reader model: RC-110A which the calibration was performed respecting the requirements of ISO/IEC 17025:2017 and carried out in accordance with the requirements of IEC 60942:2003 where applicable.

### Traceability:

This certificate provides a traceability of the measurement to "recognized the national standards and to realization of the international system of units (SI) through Cirrus research plc via Certificate number: 248239

RECEIVED DATE: 26 Sep 2025

MEASUREMENT DATE: 30 Sep 2025

ISSUE DATE: 30 Sep 2025

### ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature: 23.0 ± 3.0 °C

Relative Humidity: 55.0 ± 15.0 %RH

Atmospheric Pressure: 1010 ± 10 hPa

### PRECONDITIONING

: The dose meter (Unit Under Calibration) was preconditioning 24 hours at ambient conditions prior to calibration being performed.

### STANDARD USED DURING CALIBRATION:

Instrument name: DoseBadge Reader Manufacturer: Cirrus Research plc Model: RC-110A Serial number: R1051

Remark: DoseBadge Reader Unit with Internal Acoustic Calibrator to IEC 60942: 2003 Class 2.

### CALIBRATION RESULTS:

Table 1: The results of dose meter calibration are reported in the table below.

| DoseBadge Reader Level <sup>1</sup><br>(dB) | Noise Dosimeter reading <sup>1</sup><br>(dB) | Error<br>(dB) | Status |
|---------------------------------------------|----------------------------------------------|---------------|--------|
| 114.0                                       | 114.0                                        | 0.0           | ✓      |

Calibrated by:

Mr. Sorawat Thachalad

Miss Jitraporn Lertsomphol



Approved signatory:

Mr. Parinya Booncharoen

Calibration Department Manager

### Remark:

<sup>1</sup>The decibel level of standard doseBadge reader that supplied to Unit Under Calibration.

<sup>2</sup>The measurement reading of Unit Under Calibration.

THIS CALIBRATION REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY



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Web site: www.jiranatee.com

Accredited calibration laboratory  
ISO/IEC 17025:2017  
NSC-TSI-TS 17025  
CALIBRATION 0367

Acoustic calibration laboratory  
Calibration services department

REVIEW BY: *Parinya P.*

APPROVED BY: *[Signature]*

NEXT CAL DATE: 18/09/26

Calibration report Number

CDM-101-68

## CALIBRATION REPORT

Page 1 of 1 Pages

### MEASUREMENT ITEM

#### MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS-RECEIVED

CUSTOMER

: Dose meter

: Cirrus Research plc

: CR110A15

: YF463

: BUK\_F50081

: Used item

: ALS laboratory group (Thailand) Co., Ltd.

: 104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,

: Khet Suan Luang, Bangkok 10250 Thailand.

### Calibration procedure:

The Noise dosimeter (Unit Under Calibration) was calibrated against Standard dosimetric reader model: RC-110A which the calibration was performed respecting the requirements of ISO/IEC 17025:2017 and carried out in accordance with the requirements of IEC 60942:2003 where applicable.

### Traceability:

This certificate provides a traceability of the measurement to "recognized the national standards and to realization of the international system of units (SI) through Cirrus research plc via Certificate number: 248239

RECEIVED DATE: 18 Sep 2025

MEASUREMENT DATE: 18 Sep 2025

ISSUE DATE: 18 Sep 2025

### ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature: 23.0 ± 3.0 °C

Relative Humidity: 55.0 ± 15.0 %RH

Atmospheric Pressure: 1010 ± 10 hPa

### PRECONDITIONING

: The dose meter (Unit Under Calibration) was preconditioning 24 hours at ambient conditions prior to calibration being performed.

### STANDARD USED DURING CALIBRATION:

Instrument name: DoseBadge Reader Manufacturer: Cirrus Research plc Model: RC-110A Serial number: R1051

Remark: DoseBadge Reader Unit with Internal Acoustic Calibrator to IEC 60942: 2003 Class 2.

### CALIBRATION RESULTS:

Table 1: The results of dose meter calibration are reported in the table below.

| DoseBadge Reader Level <sup>1</sup><br>(dB) | Noise Dosimeter reading <sup>1</sup><br>(dB) | Error<br>(dB) | Status |
|---------------------------------------------|----------------------------------------------|---------------|--------|
| 114.0                                       | 114.0                                        | 0.0           | ✓      |

Calibrated by:

Mr. Sorawat Thachalad

Miss Jitraporn Lertsomphol



Approved signatory:

Mr. Parinya Booncharoen

Calibration Department Manager

### Remark:

<sup>1</sup>The decibel level of standard doseBadge reader that supplied to Unit Under Calibration.

<sup>2</sup>The measurement reading of Unit Under Calibration.

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CALIBRATION 0367

Acoustic calibration laboratory  
Calibration services department.

Calibration report Number  
CDM-119-68

REVIEW BY: *Handwritten signature*  
APPROVED BY: *Handwritten signature*  
NEXT CAL DATE: 29/09/26

Page 1 of 1 Pages

MEASUREMENT ITEM: Dose meter  
MANUFACTURER: Cirrus Research plc  
MODEL/TYPE: CR-110A15  
SERIAL NUMBER: YF466  
ID NUMBER: BKX\_F50082  
CONDITION AS-RECEIVED  
CUSTOMER: ALS laboratory group (Thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,  
Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE: 26 Sep 2025  
MEASUREMENT DATE: 30 Sep 2025  
ISSUE DATE: 30 Sep 2025

ENVIRONMENTAL CONDITIONS:  
Ambient condition in the laboratory are as follow:  
Temperature: 23.0 ± 3.0 °C  
Relative Humidity: 55.0 ± 15.0 %RH  
Atmospheric Pressure: 1010 ± 10 hPa

PRECONDITIONING: The dose meter (Unit Under Calibration) was preconditioning 24 hours at ambient conditions prior to calibration being performed.

STANDARD USED DURING CALIBRATION:  
Instrument name: doseBadge Reader Manufacturer: Cirrus Research plc Model: RC-110A Serial number: 81051  
Remark: doseBadge Reader Unit with Internal Acoustic Calibrator to IEC 60942: 2003 Class 2.

CALIBRATION RESULTS:  
Table 1: The results of dose meter calibration are reported in the table below.

| DoseBadge Reader Level <sup>1</sup><br>(dB) | Noise Dosimeter reading <sup>2</sup><br>(dB) | Error<br>(dB) | Status |
|---------------------------------------------|----------------------------------------------|---------------|--------|
| 114.0                                       | 114.0                                        | 0.0           |        |

Calibrated by: ☒ Mr. Sorawit Thachalad  
☐ Miss Jitraporn Lertsomphol

Approved signatory: *Handwritten signature* Mr. Parinya Booncharoen  
Calibration Department Manager

Remark:  
<sup>1</sup>The decimal level of standard doseBadge reader that supplied to Unit Under Calibration.  
<sup>2</sup>The measurement reading of Unit Under Calibration.

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ISO/IEC 17025:2017  
NSC-TSI-TS 17025  
CALIBRATION 0367

Acoustic calibration laboratory  
Calibration services department.

Calibration report Number  
CDM-102-68

REVIEW BY: *Handwritten signature*  
APPROVED BY: *Handwritten signature*  
NEXT CAL DATE: 18/09/26

Page 1 of 1 Pages

MEASUREMENT ITEM: Dose meter  
MANUFACTURER: Cirrus Research plc  
MODEL/TYPE: CR-110A15  
SERIAL NUMBER: YF467  
ID NUMBER: BKX\_F50083  
CONDITION AS-RECEIVED  
CUSTOMER: ALS laboratory group (Thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,  
Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE: 18 Sep 2025  
MEASUREMENT DATE: 19 Sep 2025  
ISSUE DATE: 19 Sep 2025

ENVIRONMENTAL CONDITIONS:  
Ambient condition in the laboratory are as follow:  
Temperature: 23.0 ± 3.0 °C  
Relative Humidity: 55.0 ± 15.0 %RH  
Atmospheric Pressure: 1010 ± 10 hPa

PRECONDITIONING: The dose meter (Unit Under Calibration) was preconditioning 24 hours at ambient conditions prior to calibration being performed.

STANDARD USED DURING CALIBRATION:  
Instrument name: doseBadge Reader Manufacturer: Cirrus Research plc Model: RC-110A Serial number: 81051  
Remark: doseBadge Reader Unit with Internal Acoustic Calibrator to IEC 60942: 2003 Class 2.

CALIBRATION RESULTS:  
Table 1: The results of dose meter calibration are reported in the table below.

| DoseBadge Reader Level <sup>1</sup><br>(dB) | Noise Dosimeter reading <sup>2</sup><br>(dB) | Error<br>(dB) | Status |
|---------------------------------------------|----------------------------------------------|---------------|--------|
| 114.0                                       | 114.0                                        | 0.0           |        |

Calibrated by: ☒ Mr. Sorawit Thachalad  
☐ Miss Jitraporn Lertsomphol

Approved signatory: *Handwritten signature* Mr. Parinya Booncharoen  
Calibration Department Manager

Remark:  
<sup>1</sup>The decimal level of standard doseBadge reader that supplied to Unit Under Calibration.  
<sup>2</sup>The measurement reading of Unit Under Calibration.

THIS CALIBRATION REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

CERTIFICATE OF CALIBRATION

ISSUED BY: Cirrus Research plc

DATE OF ISSUE: 18 February 2026 CERTIFICATE NUMBER: 259698

REVIEW BY: *Handwritten signature*  
APPROVED BY: *Handwritten signature*  
NEXT CAL DATE: 17/02/27

Page 1 of 2

Approved signatory: N.Smith  
Electronically signed: *Handwritten signature*

Cirrus Research plc  
Acoustic House  
Bridlington Road  
Hunmanby  
North Yorkshire  
YO14 0PH  
United Kingdom

## doseBadge Reader : IEC 60942:2003

Instrument information

Manufacturer: Cirrus Research plc  
Model: RC-110A  
Serial number: 83554  
Class: 2

Notes:

Test summary

Date of calibration: 18 February 2026

The doseBadge reader detailed above has been calibrated to the published data as described in the operating manual and in the half-inch configuration. The procedures and techniques used are as described in IEC60942\_2003 Annex B – Periodic Tests and three determinations of the sound pressure level, frequency and total distortion were made.

The sound pressure level was measured using a WS2F condenser microphone type MK-224 manufactured by Cirrus Research plc.

The results have been corrected to the reference pressure of 101.33 kPa using the manufacturer's data.

The doseBadge Reader has been shown to conform to the Class 2 requirements for periodic testing, described in Annex B of IEC 60942:2003 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed.

However, as public evidence was not available, from a testing organisation responsible for pattern approval, to demonstrate that the model of doseBadge Reader conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2003, no general statement or conclusion can be made about conformance of the doseBadge Reader to the requirements of IEC 60942:2003.

Notes:

This certificate provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory. The results within this certificate relate only to the items calibrated. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a coverage probability of approximately 95%.

CERTIFICATE OF CALIBRATION

Environmental conditions

The following conditions were recorded at the time of the test:  
Before Pressure: 99.85 kPa Temperature: 23.0 °C Humidity: 32.6 %  
After Pressure: 99.84 kPa Temperature: 23.3 °C Humidity: 30 %

Test equipment

| Equipment             | Manufacturer | Model | Serial number |
|-----------------------|--------------|-------|---------------|
| Distortion Meter      | Keithley     | 2015  | 0939404       |
| Environmental Monitor | Comet        | T7518 | 21962628      |

Acoustic Results

|                | Expected | Sample 1 | Sample 2 | Sample 3 | Average | Deviation | Tolerance | Uncertainty |
|----------------|----------|----------|----------|----------|---------|-----------|-----------|-------------|
| Level (dB)     | 114.00   | 114.03   | 114.01   | 114.02   | 114.02  | 0.02      | ±0.75     | 0.11 dB     |
| Distortion (%) | < 4.00   | 0.16     | 0.16     | 0.16     | 0.16    | 0.16      | +4.00     | 0.13 %      |
| Frequency (Hz) | 1000.0   | 1001.3   | 1001.3   | 1001.3   | 1001.3  | 1.3       | ±20.0     | 0.1 Hz      |

The measured quantities or deviations (as applicable), extended by the expanded combined uncertainty of measurement, must not exceed the corresponding tolerance.

### Functionality Results

| Function      | Result |
|---------------|--------|
| Keypad        | Pass   |
| Battery Power | Pass   |
| Display       | Pass   |
| Communication | Pass   |
| 2 way IR link | Pass   |
| Clock         | Pass   |

End of results

J  
NAC  
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CALIBRATION 0367

Acoustic calibration laboratory  
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E-mail: jnac-calibration@iranatee.com  
Web site: www.jiranatee.com

REVIEW BY: *Manon P.*  
APPROVED BY: *[Signature]*  
NEXT CAL DATE: 18/09/26

Calibration report Number  
CDM-094-68

## CALIBRATION REPORT

Page 1 of 1 Pages

MEASUREMENT ITEM : Dose meter  
MANUFACTURER : Cirrus Research plc  
MODEL/TYPE : CR-110AIS  
SERIAL NUMBER : YE429  
ID NUMBER : BKV\_F50051  
CONDITION AS-RECEIVED : Used item  
CUSTOMER : ALS laboratory group (Thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,  
Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE : 18 Sep 2025  
MEASUREMENT DATE : 19 Sep 2025  
ISSUE DATE : 19 Sep 2025

ENVIRONMENTAL CONDITIONS:  
Ambient condition in the laboratory are as follow:  
Temperature :  $23.0 \pm 3.0$  °C  
Relative Humidity :  $55.0 \pm 15.0$  %RH  
Atmospheric Pressure : 1010± 10 hPa

PRECONDITIONING : The dose meter (Unit Under Calibration) was preconditioning 24 hours at ambient conditions prior to calibration being performed.

Calibration procedure:  
The Noise dosimeter (Unit Under Calibration) was calibrated against standard dosimetry, reader model: RC-110A which the calibration was performed respecting the requirements of ISO/IEC 17025:2017 and carried out in accordance with the requirements of IEC 60942:2003 where applicable.

Traceability:  
This certificate provides a traceability of the measurement to "Recognized the national standards, and to realization of the international system of units (SI) through Cirrus research plc via Certificate number: 248239

| Instrument name  | Manufacturer        | Model   | Serial number |
|------------------|---------------------|---------|---------------|
| doseBadge Reader | Cirrus Research plc | RC-110A | 81051         |

Remark: doseBadge Reader Unit with Internal Acoustic Calibrator to IEC 60942: 2003 Class 2.

| DoseBadge Reader Level <sup>1</sup><br>(dB) | Noise Dosimeter reading <sup>2</sup><br>(dB) | Error<br>(dB) | Status |
|---------------------------------------------|----------------------------------------------|---------------|--------|
| 114.0                                       | 114.0                                        | 0.0           | ✓      |

Calibrated by:  
☒ Mr. Sorawat Thachalad  
☐ Miss Jitragorn Laertsomphol

Approved signatory:  
*[Signature]*  
Mr. Parinya Booncharoen  
Calibration Department Manager

Remark:  
<sup>1</sup> The decibel level of standard doseBadge reader that supplied to Unit Under Calibration.  
<sup>2</sup> The measurement reading of Unit Under Calibration.

THIS CALIBRATION REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

J  
NAC  
JIRANATEE ASSOCIATES CO.,LTD.

Accredited calibration laboratory  
ISO/IEC 17025:2017  
NSC-TIS-75 17025  
CALIBRATION 0367

Acoustic calibration laboratory  
Calibration services department.

iranatee Associates Co.,Ltd  
63/14-15, 67/35-36  
Petchkasem 7,7/1, Rd. Watthana, Bangkok,14,  
Bangkok 10600 (Thailand)  
Tel: +66(0)868082  
Mobile: +66(0)8399453  
E-mail: jnac-calibration@iranatee.com  
Web site: www.jiranatee.com

REVIEW BY: *Manon P.*  
APPROVED BY: *[Signature]*  
NEXT CAL DATE: 18/09/26

Calibration report Number  
CDM-094-68

## CALIBRATION REPORT

Page 1 of 1 Pages

MEASUREMENT ITEM : Dose meter  
MANUFACTURER : Cirrus Research plc  
MODEL/TYPE : CR-110AIS  
SERIAL NUMBER : YE429  
ID NUMBER : BKV\_F50051  
CONDITION AS-RECEIVED : Used item  
CUSTOMER : ALS laboratory group (Thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,  
Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE : 18 Sep 2025  
MEASUREMENT DATE : 19 Sep 2025  
ISSUE DATE : 19 Sep 2025

ENVIRONMENTAL CONDITIONS:  
Ambient condition in the laboratory are as follow:  
Temperature :  $23.0 \pm 3.0$  °C  
Relative Humidity :  $55.0 \pm 15.0$  %RH  
Atmospheric Pressure : 1010± 10 hPa

PRECONDITIONING : The dose meter (Unit Under Calibration) was preconditioning 24 hours at ambient conditions prior to calibration being performed.

Calibration procedure:  
The Noise dosimeter (Unit Under Calibration) was calibrated against standard dosimetry, reader model: RC-110A which the calibration was performed respecting the requirements of ISO/IEC 17025:2017 and carried out in accordance with the requirements of IEC 60942:2003 where applicable.

Traceability:  
This certificate provides a traceability of the measurement to "Recognized the national standards, and to realization of the international system of units (SI) through Cirrus research plc via Certificate number: 248239

| Instrument name  | Manufacturer        | Model   | Serial number |
|------------------|---------------------|---------|---------------|
| doseBadge Reader | Cirrus Research plc | RC-110A | 81051         |

Remark: doseBadge Reader Unit with Internal Acoustic Calibrator to IEC 60942: 2003 Class 2.

| DoseBadge Reader Level <sup>1</sup><br>(dB) | Noise Dosimeter reading <sup>2</sup><br>(dB) | Error<br>(dB) | Status |
|---------------------------------------------|----------------------------------------------|---------------|--------|
| 114.0                                       | 114.0                                        | 0.0           | ✓      |

Calibrated by:  
☒ Mr. Sorawat Thachalad  
☐ Miss Jitragorn Laertsomphol

Approved signatory:  
*[Signature]*  
Mr. Parinya Booncharoen  
Calibration Department Manager

Remark:  
<sup>1</sup> The decibel level of standard doseBadge reader that supplied to Unit Under Calibration.  
<sup>2</sup> The measurement reading of Unit Under Calibration.

THIS CALIBRATION REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

J  
NAC  
JIRANATEE ASSOCIATES CO.,LTD.

Accredited calibration laboratory  
ISO/IEC 17025:2017  
NSC-TIS-75 17025  
CALIBRATION 0367

Acoustic calibration laboratory  
Calibration services department.

iranatee Associates Co.,Ltd  
63/14-15, 67/35-36  
Petchkasem 7,7/1, Rd. Watthana, Bangkok,14,  
Bangkok 10600 (Thailand)  
Tel: +66(0)868082  
Mobile: +66(0)8399453  
E-mail: jnac-calibration@iranatee.com  
Web site: www.jiranatee.com

REVIEW BY: *Manon P.*  
APPROVED BY: *[Signature]*  
NEXT CAL DATE: 18/09/26

Calibration report Number  
CDM-095-68

## CALIBRATION REPORT

Page 1 of 1 Pages

MEASUREMENT ITEM : Dose meter  
MANUFACTURER : Cirrus Research plc  
MODEL/TYPE : CR-110AIS  
SERIAL NUMBER : YE431  
ID NUMBER : BKV\_F50053  
CONDITION AS-RECEIVED : Used item  
CUSTOMER : ALS laboratory group (Thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,  
Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE : 18 Sep 2025  
MEASUREMENT DATE : 19 Sep 2025  
ISSUE DATE : 19 Sep 2025

ENVIRONMENTAL CONDITIONS:  
Ambient condition in the laboratory are as follow:  
Temperature :  $23.0 \pm 3.0$  °C  
Relative Humidity :  $55.0 \pm 15.0$  %RH  
Atmospheric Pressure : 1010± 10 hPa

PRECONDITIONING : The dose meter (Unit Under Calibration) was preconditioning 24 hours at ambient conditions prior to calibration being performed.

Calibration procedure:  
The Noise dosimeter (Unit Under Calibration) was calibrated against standard dosimetry, reader model: RC-110A which the calibration was performed respecting the requirements of ISO/IEC 17025:2017 and carried out in accordance with the requirements of IEC 60942:2003 where applicable.

Traceability:  
This certificate provides a traceability of the measurement to "Recognized the national standards, and to realization of the international system of units (SI) through Cirrus research plc via Certificate number: 248239

| Instrument name  | Manufacturer        | Model   | Serial number |
|------------------|---------------------|---------|---------------|
| doseBadge Reader | Cirrus Research plc | RC-110A | 81051         |

Remark: doseBadge Reader Unit with Internal Acoustic Calibrator to IEC 60942: 2003 Class 2.

| DoseBadge Reader Level <sup>1</sup><br>(dB) | Noise Dosimeter reading <sup>2</sup><br>(dB) | Error<br>(dB) | Status |
|---------------------------------------------|----------------------------------------------|---------------|--------|
| 114.0                                       | 114.0                                        | 0.0           | ✓      |

Calibrated by:  
☒ Mr. Sorawat Thachalad  
☐ Miss Jitragorn Laertsomphol

Approved signatory:  
*[Signature]*  
Mr. Parinya Booncharoen  
Calibration Department Manager

Remark:  
<sup>1</sup> The decibel level of standard doseBadge reader that supplied to Unit Under Calibration.  
<sup>2</sup> The measurement reading of Unit Under Calibration.

THIS CALIBRATION REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

CERTIFICATE OF CALIBRATION

ISSUED BY Cirrus Research plc

DATE OF ISSUE 30 June 2025 CERTIFICATE NUMBER 243797

Page 1 of 6

Approved signatory  
N.Smith  
Electronically signed:  
*[Signature]*

Cirrus Research plc  
Acoustic House  
Bridlington Road  
Hunmanby  
North Yorkshire  
YO14 0PH  
United Kingdom

## Dosimeter : IEC 61252-1993+A1:2000

| Instrument information |                     |
|------------------------|---------------------|
| Manufacturer:          | Cirrus Research plc |
| Model:                 | CR:110AIS           |
| Serial number:         | YE485               |
| Firmware version:      | 5.4                 |

| Test summary                                                                                                                                                                                 |              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Date of calibration:                                                                                                                                                                         | 27 June 2025 |
| The calibration was performed respecting the requirements of ISO/IEC 17025:2017.<br>The dosimeter submitted for testing successfully completed the periodic tests of IEC 61252-1993+A1:2000. |              |
| The dosimeter submitted for testing conforms to the specifications in IEC 61252-1993+A1:2000.                                                                                                |              |

| Equipment             | Manufacturer        | Model    | Serial number  |
|-----------------------|---------------------|----------|----------------|
| Signal Generator      | SIGLENT             | SDG1032X | SDG1XDEX6R4732 |
| Attenuator            | Cirrus Research     | ZE-952   | 64370          |
| Environmental Monitor | Comet               | T7510    | 16986334       |
| doseBadge Reader      | Cirrus Research plc | RC-110A  | 100498         |

Notes

This certificate provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory. The results within this certificate relate only to the items calibrated. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a coverage probability of approximately 95%.

Environmental conditions

The following conditions were recorded at the time of the test:

**Before**    Pressure: 100.91 kPa    Temperature: 22.5 °C    Humidity: 46.1 %

**After**    Pressure: 100.91 kPa    Temperature: 22.3 °C    Humidity: 46.8 %

Test results summary

| Test                          | Result   |
|-------------------------------|----------|
| Absolute Acoustic Sensitivity | Complies |
| Linearity                     | Complies |
| Short Duration                | Complies |
| Overload Latching             | Complies |
| Frequency weighting           | Complies |

Laboratory uncertainties

| Requirement                       | Value   |
|-----------------------------------|---------|
| Absolute acoustic sensitivity     | 0.2 dB  |
| Level linearity                   | 0.15 dB |
| Short duration signals            | 0.2 dB  |
| Overload latching indication      | 0.2 dB  |
| Electrical freq. weighting 125 Hz | 0.15 dB |
| Electrical freq. weighting 8 kHz  | 0.15 dB |

B1: Absolute Acoustical Sensitivity

Frequency: 1000 Hz    Uncertainty: 0.2 dB    Result: **Passed**

| Name     | Input Level (dB) | Reading (dB) | Deviation (dB) | Limits (dB) |
|----------|------------------|--------------|----------------|-------------|
| Initial  | 114              | 114.20       | -0.2           | 113 / 115   |
| Adjusted | 114              | 114.00       | 0              | 113 / 115   |

B2: Linearity Of Responce To Steady Signals

Frequency: 1000 Hz    Uncertainty: 0.2 dB    Range: 80 – 130 dB    Result: **Passed**

| Input Level (dB) | Expected Exposure (Pa²h) | Exposure (Pa²h) | Duration (s) | Deviation (Pa²h) | Limits (Pa²h)         | Deviation (%) | Limits (%) |
|------------------|--------------------------|-----------------|--------------|------------------|-----------------------|---------------|------------|
| 80               | 0.000222                 | 0.000249        | 20           | -0.000027        | 0.000175 / 0.000280   | 12            | -21 / +26  |
| 90               | 0.002222                 | 0.002172        | 20           | 0.000050         | 0.001755 / 0.002800   | -2            | -21 / +26  |
| 100              | 0.022222                 | 0.021222        | 20           | 0.001000         | 0.017555 / 0.028000   | -5            | -21 / +26  |
| 110              | 0.222222                 | 0.207390        | 20           | 0.014832         | 0.175555 / 0.280000   | -7            | -21 / +26  |
| 120              | 2.222222                 | 2.073898        | 20           | 0.148324         | 1.755555 / 2.800000   | -7            | -21 / +26  |
| 130              | 22.222223                | 20.738985       | 20           | 1.483238         | 17.555556 / 28.000001 | -7            | -21 / +26  |

B3: Frequency Weightings

Reference Frequency: 1000 Hz    Reference Exposure: 5.0787577853665    Result: **Passed**

Reference Input Level: 127 dB    Duration: 10 Seconds

| Frequency (Hz) | Exposure (Pa²h) | Exposure Ratio | Ratio Limit     | Uncertainty |
|----------------|-----------------|----------------|-----------------|-------------|
| 125            | 0.130544        | 0.0257         | 0.0174 / 0.0347 | 0.15        |
| 8000           | 3.513642        | 0.6918         | 0.246 / 2.455   | 0.15        |

B4: Short-Duration Signals

Uncertainty: 0.2 dB    Frequency: 4000 Hz    Result: **Passed**

| Input Level (dB) | Burst Level (dB) | Ratio  | Duration (s) | Burst Duration (ms) | Duration Between Bursts (ms) | Expected Exposure (Pa²h) | Exposure (Pa²h) | Deviation (%) | Limits (%) |
|------------------|------------------|--------|--------------|---------------------|------------------------------|--------------------------|-----------------|---------------|------------|
| 114              | 95               | 1:100  | 10           | 10                  | 990                          | 0.003942                 | 0.003679        | -7            | -21 / +26  |
| 129              | 100              | 1:1000 | 10           | 1                   | 999                          | 0.012467                 | 0.010611        | -15           | -29 / +41  |

# CERTIFICATE OF CALIBRATION

Certificate Number:

243797

Page 6 of 6

## B6: Latching Overload Indicator

Frequency: 1000 Hz

Uncertainty: 0.2 dB

Result: **Passed**

| Level (dB) | Expected To Overload | Overloaded |
|------------|----------------------|------------|
| 130        | No                   | No         |
| 133        | Yes                  | Yes        |

End of results



JIRANATEE ASSOCIATES CO., LTD.

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Web site: www.jirantee.com

Accredited calibration laboratory  
ISO/IEC 17025:2017  
NSC-TSI-TS 17025  
CALIBRATION 0367

Acoustic calibration laboratory  
Calibration services department.

REVIEW BY: *Manish P.*

APPROVED BY: *[Signature]*

NEXT CAL DATE: 19/02/27

Calibration Report Number

CDM-001-69

## CALIBRATION REPORT

Page 1 of 1 Pages

MEASUREMENT ITEM : Dose meter  
MANUFACTURER : Cirrus Research plc  
MODEL/TYPE : CR-110A15  
SERIAL NUMBER : YE486  
ID NUMBER : BKK\_F50655  
CONDITION AS-RECEIVED : Used item  
CUSTOMER : ALS laboratory group (Thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Suan Luang,  
Khet Suan Luang, Bangkok 10250 Thailand.

Calibration procedure:  
The Noise dosimeter (Unit Under Calibration) was calibrated against Standard dosimetry reader model: RC-210A which the calibration was performed respecting the requirements of ISO/IEC 17025:2017 and carried out in accordance with the requirements of IEC 60942:2003 where applicable.

Traceability:  
This certificate provides a traceability of the measurement to recognized the national standards and to realization of the international system of units (SI) through Cirrus research plc via Certificate number: 248239

RECEIVED DATE : 19 Feb 2026  
MEASUREMENT DATE : 20 Feb 2026  
ISSUE DATE : 20 Feb 2026

ENVIRONMENTAL CONDITIONS:  
Ambient condition in the laboratory are as follow:  
Temperature :  $23.0 \pm 3.0$  °C  
Relative Humidity :  $55.0 \pm 15.0$  %RH  
Atmospheric Pressure : 1010st 10 hPa

PRECONDITIONING : The dose meter (Unit Under Calibration) was preconditioning 24 hours at ambient conditions prior to calibration being performed.

### STANDARD USED DURING CALIBRATION:

Instrument name: dosebadge reader Manufacturer: Cirrus Research plc. Model: RC-110A Serial number: #1051  
Remark: doseBadge Reader Unit with Internal Acoustic Calibrator to IEC 60942: 2003 Class 2.

### CALIBRATION RESULTS:

Table 1: The results of dose meter calibration are reported in the table below.

| DoseBadge Reader Level <sup>1</sup><br>(dB) | Noise Dosimeter reading <sup>1</sup><br>(dB) | Error<br>(dB) | Status |
|---------------------------------------------|----------------------------------------------|---------------|--------|
| 114.0                                       | 114.0                                        | 0.0           | ✓      |

Calibrated by:  
☒ Mr. Sorawit Thachalad  
☐ Miss Jitraporn Lertsomphol



Approved signatory: *[Signature]*  
Mr. Parinya Booncharoen  
Calibration Department Manager

Remark:  
<sup>1</sup> The decimal level of standard dosebadge reader that supplied to Unit Under Calibration.  
<sup>2</sup> The measurement reading of Unit Under Calibration.

THIS CALIBRATION REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY



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63/14-15, 67/35-36  
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Web site: www.jirantee.com

Accredited calibration laboratory  
ISO/IEC 17025:2017  
NSC-TSI-TS 17025  
CALIBRATION 0367

Temperature measurement laboratory  
Calibration services department.



NSC - TSI - TIS 17025  
CALIBRATION 0367

## CERTIFICATE OF CALIBRATION

Certificate No. : CDT-168-68

Page 1 of 2 Pages

MEASUREMENT ITEM : Heat Stress Monitor  
MANUFACTURER : Delta OHM  
MODEL/TYPE : HD32.2  
SERIAL NUMBER : 15036014  
ID NUMBER : BKK\_F50675  
CONDITION AS-RECEIVED : Used item  
CUSTOMER : ALS laboratory group (Thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Suan Luang, Khet Suan Luang,  
Bangkok 10250 Thailand.

RECEIVED DATE : 09 Sep 2025  
MEASUREMENT DATE : 15 Sep 2025  
ISSUE DATE : 15 Sep 2025

ENVIRONMENTAL CONDITIONS:  
Ambient condition in the laboratory are as follow:  
Temperature :  $23.0 \pm 3.0$  °C  
Relative Humidity :  $55.0 \pm 15.0$  %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

### TABULATION OF RESULTS:

The table on next page give the measured values.

REVIEW BY: *Manish P.*  
APPROVED BY: *[Signature]*  
NEXT CAL DATE: 14/09/26



Calibrated by:  
☒ Mr. Sorawit Thachalad  
☐ Miss Jitraporn Lertsomphol  
☐ Miss Ruangrumpai Phoommitt

Approved signatory: *[Signature]*  
Mr. Parinya Booncharoen  
Calibration Department Manager

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY



JIRANATEE ASSOCIATES CO., LTD.

Continuation of Certificate of Calibration Number CDT-168-68

Page 2 of 2 Pages

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 10 °C to 50 °C

### Function:

Table 1: This equipment was connected with wet bulb probe Model: HP3201.2, S/N: 16008218.  
Dimension: Diameter 3.3 mm. Length 170 mm.

| Immersion Depth<br>(mm) | Standard Reading<br>(°C) | UUC Reading<br>(°C) | Error<br>(°C) | Uncertainty<br>(°C) |
|-------------------------|--------------------------|---------------------|---------------|---------------------|
| 80                      | 10.053                   | 10.8                | -0.1          | 0.099               |
| 80                      | 20.045                   | 20.0                | 0.0           | 0.099               |
| 80                      | 30.028                   | 29.9                | -0.1          | 0.099               |
| 80                      | 40.008                   | 39.9                | -0.1          | 0.099               |
| 80                      | 50.000                   | 49.9                | -0.1          | 0.099               |

Table 2: This equipment was connected with Globe thermometer probe Model: TP3276.2, S/N: 16008200.  
Dimension: Diameter 3.3 mm. Length 205 mm.

| Immersion Depth<br>(mm) | Standard Reading<br>(°C) | UUC Reading<br>(°C) | Error<br>(°C) | Uncertainty<br>(°C) |
|-------------------------|--------------------------|---------------------|---------------|---------------------|
| 110                     | 10.053                   | 10.1                | 0.0           | 0.099               |
| 110                     | 20.045                   | 20.1                | 0.1           | 0.099               |
| 110                     | 30.028                   | 29.9                | -0.1          | 0.099               |
| 110                     | 40.008                   | 40.0                | 0.0           | 0.099               |
| 110                     | 50.000                   | 50.0                | 0.0           | 0.099               |

Table 3: This equipment was connected with temperature probe Model: TP3207.2, S/N: 16010563.  
Dimension: Diameter 14 mm. Length 150 mm.

| Immersion Depth<br>(mm) | Standard Reading<br>(°C) | UUC Reading<br>(°C) | Error<br>(°C) | Uncertainty<br>(°C) |
|-------------------------|--------------------------|---------------------|---------------|---------------------|
| 75                      | 10.053                   | 10.4                | 0.3           | 0.099               |
| 75                      | 20.045                   | 20.1                | 0.1           | 0.099               |
| 75                      | 30.028                   | 29.9                | -0.1          | 0.099               |
| 75                      | 40.008                   | 39.6                | -0.4          | 0.099               |
| 75                      | 50.000                   | 49.5                | -0.5          | 0.099               |

UUC\*: Unit Under Calibration

\*\*\*End of Certificate of Calibration\*\*\*



## CERTIFICATE OF CALIBRATION

Certificate No. : CDT-112-68

Page 1 of 2 Pages

**MEASUREMENT ITEM** : Heat Stress Monitor  
**MANUFACTURER** : Delta OHM  
**MODEL/TYPE** : HD32.2  
**SERIAL NUMBER** : 15036018  
**ID NUMBER** : BKK\_F50677  
**CONDITION AS-RECEIVED** : Used Item  
**CUSTOMER** : ALS laboratory group (thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwang Suan Luang, Khet Suan Luang,  
Bangkok 10250 Thailand.

**RECEIVED DATE** : 26 Jun 2025  
**MEASUREMENT DATE** : 07 Jul 2025  
**ISSUE DATE** : 08 Jul 2025

### ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:  
Temperature : 23.0 ± 3.0 °C  
Relative Humidity : 55.0 ± 15.0 %RH

**NOTED:** The certificate is valid only to the item calibrated on date and place of calibration.

### TABULATION OF RESULTS:

The table on next page give the measured values.

REVIEW BY: *[Signature]*  
APPROVED BY: *[Signature]*  
NEXT CAL DATE: 07/07/26

Calibrated by:  
☐ Mr. Sorawit Thachalad  
☒ Miss Jitraporn Lertsomphol  
☐ Miss Ruangrumpai Phoommit



Approved signatory: *[Signature]*  
Mr. Parinya Booncharoen  
Calibration Department Manager

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

## CERTIFICATE OF CALIBRATION

Certificate No. : CDT-095-68

Page 1 of 2 Pages

**MEASUREMENT ITEM** : Heat Stress Monitor  
**MANUFACTURER** : Delta OHM  
**MODEL/TYPE** : HD32.2  
**SERIAL NUMBER** : 15036012  
**ID NUMBER** : BKK\_F50673  
**CONDITION AS-RECEIVED** : Used Item  
**CUSTOMER** : ALS laboratory group (thailand) Co., Ltd.  
104 Phutthanakan 40, Phutthanakan Rd.,  
Khwang Suan Luang, Khet Suan Luang,  
Bangkok 10250 Thailand.

**RECEIVED DATE** : 15 May 2025  
**MEASUREMENT DATE** : 17 Jun 2025  
**ISSUE DATE** : 17 Jun 2025

### ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:  
Temperature : 23.0 ± 3.0 °C  
Relative Humidity : 55.0 ± 15.0 %RH

**NOTED:** The certificate is valid only to the item calibrated on date and place of calibration.

### TABULATION OF RESULTS:

The table on next page give the measured values.

REVIEW BY: *[Signature]*  
APPROVED BY: *[Signature]*  
NEXT CAL DATE: 17/06/26

Calibrated by:  
☐ Mr. Sorawit Thachalad  
☒ Miss Jitraporn Lertsomphol  
☐ Miss Ruangrumpai Phoommit



Approved signatory: *[Signature]*  
Mr. Parinya Booncharoen  
Calibration Department Manager

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

Continuation of Certificate of Calibration Number CDT-112-68

Page 2 of 2 Pages

**Result of Calibration:** ☒ Without Adjustment ☐ With Adjustment

**Calibration Range:** 20 °C to 40 °C

### Function:

Table 1: This equipment was connected with wet bulb probe Model: HP3201.2, S/N: 22035256.  
Dimension: Diameter 3.3 mm. Length 170 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 80                   | 20.045                | 19.9             | -0.1       | 0.099            |
| 80                   | 25.049                | 24.9             | -0.1       | 0.099            |
| 80                   | 30.034                | 29.9             | -0.1       | 0.099            |
| 80                   | 35.019                | 34.9             | -0.1       | 0.099            |
| 80                   | 40.006                | 39.9             | -0.1       | 0.099            |

Table 2: This equipment was connected with Globe thermometer probe Model: TP3276.2, S/N: 22035463.  
Dimension: Diameter 3.3 mm. Length 205 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 110                  | 20.045                | 20.0             | 0.0        | 0.099            |
| 110                  | 25.049                | 25.0             | 0.0        | 0.099            |
| 110                  | 30.034                | 30.1             | 0.1        | 0.099            |
| 110                  | 35.019                | 35.0             | 0.0        | 0.099            |
| 110                  | 40.006                | 40.1             | 0.1        | 0.099            |

Table 3: This equipment was connected with temperature probe Model: TP3207.2, S/N: 15037318.  
Dimension: Diameter 14 mm. Length 150 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 75                   | 20.045                | 20.1             | 0.1        | 0.099            |
| 75                   | 25.049                | 24.9             | -0.1       | 0.099            |
| 75                   | 30.034                | 29.8             | -0.2       | 0.099            |
| 75                   | 35.019                | 34.7             | -0.3       | 0.099            |
| 75                   | 40.006                | 39.6             | -0.4       | 0.099            |

UUC: Unit Under Calibration

\*\*\*End of Certificate of Calibration\*\*\*



Continuation of Certificate of Calibration Number CDT-095-68

Page 2 of 2 Pages

**Result of Calibration:** ☒ Without Adjustment ☐ With Adjustment

**Calibration Range:** 20 °C to 40 °C

### Function:

Table 1: This equipment was connected with wet bulb probe Model: HP3201.2, S/N: 13035040.  
Dimension: Diameter 3.3 mm. Length 170 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 80                   | 20.057                | 20.1             | 0.0        | 0.099            |
| 80                   | 25.042                | 25.0             | 0.0        | 0.099            |
| 80                   | 30.026                | 30.0             | 0.0        | 0.099            |
| 80                   | 35.009                | 34.9             | -0.1       | 0.099            |
| 80                   | 39.996                | 39.9             | -0.1       | 0.099            |

Table 2: This equipment was connected with Globe thermometer probe Model: TP3276.2, S/N: 20008276.  
Dimension: Diameter 3.3 mm. Length 205 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 110                  | 20.057                | 20.1             | 0.0        | 0.099            |
| 110                  | 25.045                | 25.0             | 0.0        | 0.099            |
| 110                  | 30.026                | 30.0             | 0.0        | 0.099            |
| 110                  | 35.009                | 35.0             | 0.0        | 0.099            |
| 110                  | 39.996                | 40.0             | 0.0        | 0.099            |

Table 3: This equipment was connected with temperature probe Model: TP3207.2, S/N: 24035133.  
Dimension: Diameter 14 mm. Length 150 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 75                   | 20.057                | 19.9             | -0.2       | 0.099            |
| 75                   | 25.045                | 24.8             | -0.2       | 0.099            |
| 75                   | 30.025                | 29.7             | -0.3       | 0.099            |
| 75                   | 35.009                | 34.7             | -0.3       | 0.099            |
| 75                   | 39.996                | 39.6             | -0.4       | 0.099            |

UUC: Unit Under Calibration

\*\*\*End of Certificate of Calibration\*\*\*



## CERTIFICATE OF CALIBRATION

Certificate No. : CDT-196-68

Page 1 of 2 Pages

**MEASUREMENT ITEM** : Heat Stress Monitor  
**MANUFACTURER** : Delta OHM  
**MODEL/TYPE** : HD32.2  
**SERIAL NUMBER** : 16002004  
**ID NUMBER** : BKK\_F50681  
**CONDITION AS-RECEIVED** : Used item  
**CUSTOMER** : ALS laboratory group (thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Suan Luang, Khet Suan Luang,  
Bangkok 10250 Thailand.

**RECEIVED DATE** : 12 Nov 2025  
**MEASUREMENT DATE** : 19 Nov 2025  
**ISSUE DATE** : 19 Nov 2025

### ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:  
Temperature : 23.0 ± 3.0 °C  
Relative Humidity : 55.0 ± 15.0 %RH

**NOTED:** The certificate is valid only to the item calibrated on date and place of calibration.

### TABULATION OF RESULTS:

The table on next page give the measured values.

REVIEW BY: *[Signature]*  
APPROVED BY: *[Signature]*  
NEXT CAL DATE: 18/11/26



Approved signatory: *[Signature]*  
Mr. Parinya Booncharoen  
Calibration Department Manager

Calibrated by:  
☐ Mr. Sorawit Thachalad  
☒ Miss Jitraporn Lertsomphol  
☐ Miss Ruangrumpai Phoommit

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

## CERTIFICATE OF CALIBRATION

Certificate No. : CDT-090-68

Page 1 of 2 Pages

**MEASUREMENT ITEM** : Heat Stress Monitor  
**MANUFACTURER** : Delta OHM  
**MODEL/TYPE** : HD32.2  
**SERIAL NUMBER** : 15036132  
**ID NUMBER** : BKK\_F50680  
**CONDITION AS-RECEIVED** : Used item  
**CUSTOMER** : ALS laboratory group (thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Suan Luang, Khet Suan Luang,  
Bangkok 10250 Thailand.

**RECEIVED DATE** : 15 May 2025  
**MEASUREMENT DATE** : 06 Jun 2025  
**ISSUE DATE** : 10 Jun 2025

### ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:  
Temperature : 23.0 ± 3.0 °C  
Relative Humidity : 55.0 ± 15.0 %RH

**NOTED:** The certificate is valid only to the item calibrated on date and place of calibration.

### TABULATION OF RESULTS:

The table on next page give the measured values.

REVIEW BY: *[Signature]*  
APPROVED BY: *[Signature]*  
NEXT CAL DATE: 06/06/26



Approved signatory: *[Signature]*  
Mr. Parinya Booncharoen  
Calibration Department Manager

Calibrated by:  
☐ Mr. Sorawit Thachalad  
☒ Miss Jitraporn Lertsomphol  
☐ Miss Ruangrumpai Phoommit

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

Continuation of Certificate of Calibration Number CDT-196-68

Page 2 of 2 Pages

**Result of Calibration:** ☒ Without Adjustment ☐ With Adjustment

**Calibration Range:** 10 °C to 45 °C

### Function:

Table 1: This equipment was connected with wet bulb probe Model: HP3201.2, S/N: 15008207.  
Dimension: Diameter 3.3 mm. Length 170 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 80                   | 10.061                | 10.1             | 0.0        | 0.099            |
| 80                   | 20.058                | 20.0             | -0.1       | 0.099            |
| 80                   | 25.054                | 25.0             | -0.1       | 0.099            |
| 80                   | 30.042                | 30.0             | 0.0        | 0.099            |
| 80                   | 35.021                | 35.0             | 0.0        | 0.099            |
| 80                   | 45.009                | 44.9             | -0.1       | 0.099            |

Table 2: This equipment was connected with Globe thermometer probe Model: TP3276.2, S/N: 22035458.  
Dimension: Diameter 3.3 mm. Length 205 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 110                  | 10.061                | 10.1             | 0.0        | 0.099            |
| 110                  | 20.058                | 20.1             | 0.0        | 0.099            |
| 110                  | 25.054                | 25.0             | -0.1       | 0.099            |
| 110                  | 30.042                | 30.0             | 0.0        | 0.099            |
| 110                  | 35.021                | 35.0             | 0.0        | 0.099            |
| 110                  | 45.009                | 45.0             | 0.0        | 0.099            |

Table 3: This equipment was connected with temperature probe Model: TP3207.2, S/N: 15008020.  
Dimension: Diameter 14 mm. Length 150 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 75                   | 10.061                | 10.4             | 0.3        | 0.099            |
| 75                   | 20.058                | 20.1             | 0.0        | 0.099            |
| 75                   | 25.054                | 25.0             | -0.1       | 0.099            |
| 75                   | 30.042                | 30.0             | 0.0        | 0.099            |
| 75                   | 35.021                | 34.9             | -0.1       | 0.099            |
| 75                   | 45.009                | 44.8             | -0.2       | 0.099            |

UUC\*: Unit Under Calibration



Continuation of Certificate of Calibration Number CDT-090-68

Page 2 of 2 Pages

**Result of Calibration:** ☒ Without Adjustment ☐ With Adjustment

**Calibration Range:** 20 °C to 40 °C

### Function:

Table 1: This equipment was connected with wet bulb probe Model: HP3201.2, S/N: 15015846.  
Dimension: Diameter 3.3 mm. Length 170 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 80                   | 20.057                | 20.1             | 0.0        | 0.099            |
| 80                   | 25.046                | 25.1             | 0.1        | 0.099            |
| 80                   | 30.036                | 30.1             | 0.1        | 0.099            |
| 80                   | 35.019                | 35.1             | 0.1        | 0.099            |
| 80                   | 40.002                | 40.1             | 0.1        | 0.099            |

Table 2: This equipment was connected with Globe thermometer probe Model: TP3276.2, S/N: 15015972.  
Dimension: Diameter 3.3 mm. Length 205 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 110                  | 20.057                | 20.0             | -0.1       | 0.099            |
| 110                  | 25.046                | 25.0             | 0.0        | 0.099            |
| 110                  | 30.036                | 30.0             | 0.0        | 0.099            |
| 110                  | 35.019                | 35.0             | 0.0        | 0.099            |
| 110                  | 40.002                | 40.0             | 0.0        | 0.099            |

Table 3: This equipment was connected with temperature probe Model: TP3207.2, S/N: 14032362.  
Dimension: Diameter 14 mm. Length 150 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 75                   | 20.057                | 20.3             | 0.2        | 0.099            |
| 75                   | 25.046                | 25.1             | 0.1        | 0.099            |
| 75                   | 30.036                | 30.0             | 0.0        | 0.099            |
| 75                   | 35.019                | 34.9             | -0.1       | 0.099            |
| 75                   | 40.002                | 39.9             | -0.1       | 0.099            |

UUC\*: Unit Under Calibration



## CERTIFICATE OF CALIBRATION

Certificate No. : CDT-124-68

Page 1 of 2 Pages

**MEASUREMENT ITEM** : Heat Stress Monitor  
**MANUFACTURER** : Delta OHM  
**MODEL/TYPE** : HD32.2  
**SERIAL NUMBER** : 15006698  
**ID NUMBER** : BKK\_F50669  
**CONDITION AS-RECEIVED** : Used item  
**CUSTOMER** : ALS laboratory group (thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwang Suan Luang, Khet Suan Luang,  
Bangkok 10250 Thailand.

**RECEIVED DATE** : 14 Jul 2025  
**MEASUREMENT DATE** : 24 Jul 2025  
**ISSUE DATE** : 24 Jul 2025

**ENVIRONMENTAL CONDITIONS:**  
Ambient condition in the laboratory are as follow:  
Temperature : 23.0 ± 3.0 °C  
Relative Humidity : 55.0 ± 15.0 %RH

**NOTED:** The certificate is valid only to the item calibrated on date and place of calibration.

### TABULATION OF RESULTS:

The table on next page give the measured values.

REVIEW BY: *[Signature]*  
APPROVED BY: *[Signature]*  
NEXT CAL DATE: 23/07/26



Approved signature: *[Signature]*  
Mr. Parinya Booncharoen  
Calibration Department Manager

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

**Calibration procedure:**  
The temperature calibration was done by In-House calibration method as WI-CL-001 according to comparison method with standard digital temperature indicator and standard temperature probe. The temperature scale use was based on ITS-90.

**Traceability:**  
The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT) Certificate number: TT-1013-25, Certificate number: ER-0061-25.

**Reference Used During Calibration:**  
1. Standard Temperature Probe  
Model: STS-100 AS00, Serial No.: 667682-09,  
Due date: 9 Apr 2026  
2. Digital Temperature Indicator  
Model: DTI-1000-A MK II, Serial No.: 671407-00591 Due date: 22 Apr 2026

**Uncertainty of Measurement:**  
The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2. Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM 'Evaluation of measurement data - Guide to the expression of uncertainty in measurement'

Continuation of Certificate of Calibration Number CDT-124-68

Page 2 of 2 Pages

**Result of Calibration:** ☒ Without Adjustment ☐ With Adjustment

**Calibration Range:** 20 °C to 40 °C

### Function:

Table 1: This equipment was connected with wet bulb probe Model: HP3201.2, S/N: 15015840.  
Dimension: Diameter 3.3 mm. Length 170 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 80                   | 20.059                | 20.2             | 0.1        | 0.099            |
| 80                   | 25.048                | 25.2             | 0.2        | 0.099            |
| 80                   | 30.030                | 30.2             | 0.2        | 0.099            |
| 80                   | 35.015                | 35.2             | 0.2        | 0.099            |
| 80                   | 39.997                | 40.1             | 0.1        | 0.099            |

Table 2: This equipment was connected with Globe thermometer probe Model: TP3276.2, S/N: 22035465.  
Dimension: Diameter 3.3 mm. Length 205 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 110                  | 20.059                | 20.2             | 0.1        | 0.099            |
| 110                  | 25.048                | 25.2             | 0.2        | 0.099            |
| 110                  | 30.030                | 30.2             | 0.2        | 0.099            |
| 110                  | 35.015                | 35.2             | 0.2        | 0.099            |
| 110                  | 39.997                | 40.2             | 0.2        | 0.099            |

Table 3: This equipment was connected with temperature probe Model: TP3207.2, S/N: 15015490.  
Dimension: Diameter 14 mm. Length 150 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 75                   | 20.059                | 20.4             | 0.3        | 0.099            |
| 75                   | 25.048                | 25.2             | 0.2        | 0.099            |
| 75                   | 30.030                | 30.0             | 0.0        | 0.099            |
| 75                   | 35.015                | 34.9             | -0.1       | 0.099            |
| 75                   | 39.997                | 39.8             | -0.2       | 0.099            |

UUC\*: Unit Under Calibration

\*\*\*End of Certificate of Calibration\*\*\*



## CERTIFICATE OF CALIBRATION

Certificate No. : CDT-125-68

Page 1 of 2 Pages

**MEASUREMENT ITEM** : Heat Stress Monitor  
**MANUFACTURER** : Delta OHM  
**MODEL/TYPE** : HD32.2  
**SERIAL NUMBER** : 15006704  
**ID NUMBER** : BKK\_F50670  
**CONDITION AS-RECEIVED** : Used item  
**CUSTOMER** : ALS laboratory group (thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwang Suan Luang, Khet Suan Luang,  
Bangkok 10250 Thailand.

**RECEIVED DATE** : 14 Jul 2025  
**MEASUREMENT DATE** : 24 Jul 2025  
**ISSUE DATE** : 24 Jul 2025

**ENVIRONMENTAL CONDITIONS:**  
Ambient condition in the laboratory are as follow:  
Temperature : 23.0 ± 3.0 °C  
Relative Humidity : 55.0 ± 15.0 %RH

**NOTED:** The certificate is valid only to the item calibrated on date and place of calibration.

### TABULATION OF RESULTS:

The table on next page give the measured values.

REVIEW BY: *[Signature]*  
APPROVED BY: *[Signature]*  
NEXT CAL DATE: 23/07/26



Approved signature: *[Signature]*  
Mr. Parinya Booncharoen  
Calibration Department Manager

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

**Calibration procedure:**  
The temperature calibration was done by In-House calibration method as WI-CL-001 according to comparison method with standard digital temperature indicator and standard temperature probe. The temperature scale use was based on ITS-90.

**Traceability:**  
The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT) Certificate number: TT-1013-25, Certificate number: ER-0061-25.

**Reference Used During Calibration:**  
1. Standard Temperature Probe  
Model: STS-100 AS00, Serial No.: 667682-09,  
Due date: 9 Apr 2026  
2. Digital Temperature Indicator  
Model: DTI-1000-A MK II, Serial No.: 671407-00591 Due date: 22 Apr 2026

**Uncertainty of Measurement:**  
The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2. Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM 'Evaluation of measurement data - Guide to the expression of uncertainty in measurement'

Continuation of Certificate of Calibration Number CDT-125-68

Page 2 of 2 Pages

**Result of Calibration:** ☒ Without Adjustment ☐ With Adjustment

**Calibration Range:** 20 °C to 40 °C

### Function:

Table 1: This equipment was connected with wet bulb probe Model: HP3201.2, S/N: 20030502.  
Dimension: Diameter 3.3 mm. Length 170 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 80                   | 20.050                | 20.2             | 0.2        | 0.099            |
| 80                   | 25.053                | 25.2             | 0.1        | 0.099            |
| 80                   | 30.027                | 30.1             | 0.1        | 0.099            |
| 80                   | 35.013                | 35.1             | 0.1        | 0.099            |
| 80                   | 39.995                | 40.1             | 0.1        | 0.099            |

Table 2: This equipment was connected with Globe thermometer probe Model: TP3276.2, S/N: 15021838.  
Dimension: Diameter 3.3 mm. Length 205 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 110                  | 20.050                | 20.1             | 0.0        | 0.099            |
| 110                  | 25.053                | 25.1             | 0.0        | 0.099            |
| 110                  | 30.027                | 30.1             | 0.1        | 0.099            |
| 110                  | 35.013                | 35.1             | 0.1        | 0.099            |
| 110                  | 39.995                | 40.1             | 0.1        | 0.099            |

Table 3: This equipment was connected with temperature probe Model: TP3207.2, S/N: 15015488.  
Dimension: Diameter 14 mm. Length 150 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 75                   | 20.050                | 20.2             | 0.1        | 0.099            |
| 75                   | 25.053                | 25.1             | 0.0        | 0.099            |
| 75                   | 30.027                | 30.0             | 0.0        | 0.099            |
| 75                   | 35.013                | 35.0             | 0.0        | 0.099            |
| 75                   | 39.995                | 39.9             | -0.1       | 0.099            |

UUC\*: Unit Under Calibration

\*\*\*End of Certificate of Calibration\*\*\*



Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 10 °C to 45 °C

Function:

Table 1: This equipment was connected with wet bulb probe Model: HP3201.2, S/N: 15003283.  
Dimension: Diameter 3.3 mm. Length 170 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 80                   | 10.064                | 10.1             | 0.0        | 0.099            |
| 80                   | 20.060                | 20.1             | 0.0        | 0.099            |
| 80                   | 25.051                | 25.1             | 0.0        | 0.099            |
| 80                   | 30.043                | 30.1             | 0.1        | 0.099            |
| 80                   | 35.026                | 35.1             | 0.1        | 0.099            |
| 80                   | 45.006                | 45.1             | 0.1        | 0.099            |

Table 2: This equipment was connected with Globe thermometer probe Model: TP3276.2, S/N: 16006602.  
Dimension: Diameter 3.3 mm. Length 205 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 110                  | 10.064                | 10.1             | 0.0        | 0.099            |
| 110                  | 20.060                | 20.1             | 0.0        | 0.099            |
| 110                  | 25.051                | 25.1             | 0.0        | 0.099            |
| 110                  | 30.043                | 30.1             | 0.1        | 0.099            |
| 110                  | 35.026                | 35.1             | 0.1        | 0.099            |
| 110                  | 45.006                | 45.1             | 0.1        | 0.099            |

Table 3: This equipment was connected with temperature probe Model: TP3207.2, S/N: 15008014.  
Dimension: Diameter 14 mm. Length 150 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 75                   | 10.064                | 10.3             | 0.2        | 0.099            |
| 75                   | 20.060                | 20.1             | 0.0        | 0.099            |
| 75                   | 25.051                | 25.0             | -0.1       | 0.099            |
| 75                   | 30.043                | 30.0             | 0.0        | 0.099            |
| 75                   | 35.026                | 35.0             | 0.0        | 0.099            |
| 75                   | 45.006                | 44.9             | -0.1       | 0.099            |

UUC\*: Unit Under Calibration

\*\*\*End of Certificate of Calibration\*\*\*



## CERTIFICATE OF CALIBRATION

Certificate No. : CDT-192-68

Page 1 of 2 Pages

MEASUREMENT ITEM : Heat Stress Monitor  
MANUFACTURER : Delta OHM  
MODEL/TYPE : HD32.2  
SERIAL NUMBER : 15001968  
ID NUMBER : BKK\_F50655  
CONDITION AS-RECEIVED : Used item  
CUSTOMER : ALS laboratory group (thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Suan Luang, Khet Suan Luang,  
Bangkok 10250 Thailand.

RECEIVED DATE : 12 Nov 2025  
MEASUREMENT DATE : 18 Nov 2025  
ISSUE DATE : 19 Nov 2025

### ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:  
Temperature : 23.0 ± 3.0 °C  
Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

### TABULATION OF RESULTS:

The table on next page give the measured values.

REVIEW BY: *[Signature]*  
APPROVED BY: *[Signature]*  
NEXT CAL DATE: 17/11/26



Approved signatory:

Mr. Parinya Booncharoen  
Calibration Department Manager

Calibrated by:  
☐ Mr. Sorawit Thachalad  
☒ Miss Jittrapon Lertsomphol  
☐ Miss Ruangrumpai Phoommit

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 20 °C to 40 °C

Function:

Table 1: This equipment was connected with wet bulb probe Model: HP3201.2, S/N: 15008697.  
Dimension: Diameter 3.3 mm. Length 170 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 80                   | 20.065                | 19.9             | -0.2       | 0.099            |
| 80                   | 25.050                | 24.9             | -0.2       | 0.099            |
| 80                   | 30.035                | 29.9             | -0.1       | 0.099            |
| 80                   | 35.019                | 34.9             | -0.1       | 0.099            |
| 80                   | 40.005                | 39.8             | -0.2       | 0.099            |

Table 2: This equipment was connected with Globe thermometer probe Model: TP3276.2, S/N: 18009534.  
Dimension: Diameter 3.3 mm. Length 205 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 110                  | 20.065                | 19.9             | -0.2       | 0.099            |
| 110                  | 25.050                | 24.9             | -0.2       | 0.099            |
| 110                  | 30.035                | 29.9             | -0.1       | 0.099            |
| 110                  | 35.019                | 34.9             | -0.1       | 0.099            |
| 110                  | 40.006                | 39.8             | -0.2       | 0.099            |

Table 3: This equipment was connected with temperature probe Model: TP3207.2, S/N: 15003274.  
Dimension: Diameter 14 mm. Length 150 mm.

| Immersion Depth (mm) | Standard Reading (°C) | UUC Reading (°C) | Error (°C) | Uncertainty (°C) |
|----------------------|-----------------------|------------------|------------|------------------|
| 75                   | 20.065                | 20.2             | 0.1        | 0.099            |
| 75                   | 25.050                | 25.0             | -0.1       | 0.099            |
| 75                   | 30.035                | 29.9             | -0.1       | 0.099            |
| 75                   | 35.019                | 34.8             | -0.2       | 0.099            |
| 75                   | 40.005                | 39.8             | -0.2       | 0.099            |

UUC\*: Unit Under Calibration

\*\*\*End of Certificate of Calibration\*\*\*



## CERTIFICATE OF CALIBRATION

Certificate No. : CDT-119-68

Page 1 of 2 Pages

MEASUREMENT ITEM : Heat Stress Monitor  
MANUFACTURER : Delta OHM  
MODEL/TYPE : HD32.2  
SERIAL NUMBER : 15002056  
ID NUMBER : BKK\_F50658  
CONDITION AS-RECEIVED : Used item  
CUSTOMER : ALS laboratory group (thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Suan Luang, Khet Suan Luang,  
Bangkok 10250 Thailand.

RECEIVED DATE : 14 Jul 2025  
MEASUREMENT DATE : 23 Jul 2025  
ISSUE DATE : 24 Jul 2025

### ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:  
Temperature : 23.0 ± 3.0 °C  
Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

### TABULATION OF RESULTS:

The table on next page give the measured values.

REVIEW BY: *[Signature]*  
APPROVED BY: *[Signature]*  
NEXT CAL DATE: 22/07/26



Approved signatory:

Mr. Parinya Booncharoen  
Calibration Department Manager

Calibrated by:  
☐ Mr. Sorawit Thachalad  
☒ Miss Jittrapon Lertsomphol  
☐ Miss Ruangrumpai Phoommit

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 10 °C to 45 °C

Function:

Table 1: This equipment was connected with wet bulb probe Model: HP3201.2, S/N: 15003275.  
Dimension: Diameter 3.3 mm. Length 170 mm.

| Immersion Depth<br>(mm) | Standard Reading<br>(°C) | UUC Reading<br>(°C) | Error<br>(°C) | Uncertainty<br>(°C) |
|-------------------------|--------------------------|---------------------|---------------|---------------------|
| 80                      | 10.064                   | 10.1                | 0.0           | 0.099               |
| 80                      | 20.062                   | 20.1                | 0.0           | 0.099               |
| 80                      | 25.051                   | 25.1                | 0.0           | 0.099               |
| 80                      | 30.043                   | 30.1                | 0.1           | 0.099               |
| 80                      | 35.027                   | 35.1                | 0.1           | 0.099               |
| 80                      | 45.007                   | 45.0                | 0.0           | 0.099               |

Table 2: This equipment was connected with Globe thermometer probe Model: TP3276.2, S/N: 15008168.  
Dimension: Diameter 3.3 mm. Length 205 mm.

| Immersion Depth<br>(mm) | Standard Reading<br>(°C) | UUC Reading<br>(°C) | Error<br>(°C) | Uncertainty<br>(°C) |
|-------------------------|--------------------------|---------------------|---------------|---------------------|
| 110                     | 10.064                   | 10.1                | 0.0           | 0.099               |
| 110                     | 20.062                   | 20.1                | 0.0           | 0.099               |
| 110                     | 25.051                   | 25.1                | 0.0           | 0.099               |
| 110                     | 30.043                   | 30.1                | 0.1           | 0.099               |
| 110                     | 35.027                   | 35.0                | 0.0           | 0.099               |
| 110                     | 45.007                   | 45.0                | 0.0           | 0.14                |

Table 3: This equipment was connected with temperature probe Model: TP3207.2, S/N: 15031950.  
Dimension: Diameter 14 mm. Length 150 mm.

| Immersion Depth<br>(mm) | Standard Reading<br>(°C) | UUC Reading<br>(°C) | Error<br>(°C) | Uncertainty<br>(°C) |
|-------------------------|--------------------------|---------------------|---------------|---------------------|
| 75                      | 10.064                   | 10.4                | 0.3           | 0.099               |
| 75                      | 20.062                   | 20.1                | 0.0           | 0.099               |
| 75                      | 25.051                   | 25.0                | -0.1          | 0.099               |
| 75                      | 30.043                   | 29.9                | -0.1          | 0.099               |
| 75                      | 35.027                   | 34.8                | -0.2          | 0.099               |
| 75                      | 45.007                   | 44.7                | -0.3          | 0.099               |

UUC\*: Unit Under Calibration

\*\*\*End of Certificate of Calibration\*\*\*



## CERTIFICATE OF CALIBRATION

Certificate No. : CDT-193-68

Page 1 of 2 Pages

MEASUREMENT ITEM : Heat Stress Monitor  
MANUFACTURER : Delta OHM  
MODEL/TYPE : HD32.2  
SERIAL NUMBER : 15006300  
ID NUMBER : BKK\_F50661  
CONDITION AS-RECEIVED : Used item  
CUSTOMER : ALS laboratory group (thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Suan Luang, Khet Suan Luang,  
Bangkok 10250 Thailand.

RECEIVED DATE : 12 Nov 2025  
MEASUREMENT DATE : 18 Nov 2025  
ISSUE DATE : 19 Nov 2025

### ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:  
Temperature : 23.0 ± 3.0 °C  
Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

### TABULATION OF RESULTS:

The table on next page give the measured values.

REVIEW BY: *P. Parinya*  
APPROVED BY: *[Signature]*  
NEXT CAL DATE: 17/11/26



Calibrated by:  
☐ Mr. Sorawit Thachalad  
☒ Miss Jittraporn Lertsomphol  
☐ Miss Ruangrumpai Phoommit

Approved signatory:

Mr. Parinya Booncharoen  
Calibration Department Manager

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 20 °C to 40 °C

Function:

Table 1: This equipment was connected with wet bulb probe Model: HP3201.2, S/N: 14039058.  
Dimension: Diameter 3.3 mm. Length 170 mm.

| Immersion Depth<br>(mm) | Standard Reading<br>(°C) | UUC Reading<br>(°C) | Error<br>(°C) | Uncertainty<br>(°C) |
|-------------------------|--------------------------|---------------------|---------------|---------------------|
| 80                      | 20.047                   | 20.0                | 0.0           | 0.099               |
| 80                      | 25.045                   | 25.0                | 0.0           | 0.099               |
| 80                      | 30.021                   | 30.0                | 0.0           | 0.099               |
| 80                      | 35.013                   | 35.0                | 0.0           | 0.099               |
| 80                      | 39.996                   | 40.0                | 0.0           | 0.099               |

Table 2: This equipment was connected with Globe thermometer probe Model: TP3276.2, S/N: 25000692.  
Dimension: Diameter 3.3 mm. Length 205 mm.

| Immersion Depth<br>(mm) | Standard Reading<br>(°C) | UUC Reading<br>(°C) | Error<br>(°C) | Uncertainty<br>(°C) |
|-------------------------|--------------------------|---------------------|---------------|---------------------|
| 110                     | 20.047                   | 20.0                | 0.0           | 0.099               |
| 110                     | 25.045                   | 25.0                | 0.0           | 0.099               |
| 110                     | 30.021                   | 30.0                | 0.0           | 0.099               |
| 110                     | 35.013                   | 35.0                | 0.0           | 0.099               |
| 110                     | 39.996                   | 40.0                | 0.0           | 0.099               |

Table 3: This equipment was connected with temperature probe Model: TP3207.2, S/N: 15008013.  
Dimension: Diameter 14 mm. Length 150 mm.

| Immersion Depth<br>(mm) | Standard Reading<br>(°C) | UUC Reading<br>(°C) | Error<br>(°C) | Uncertainty<br>(°C) |
|-------------------------|--------------------------|---------------------|---------------|---------------------|
| 75                      | 20.047                   | 20.2                | 0.2           | 0.099               |
| 75                      | 25.045                   | 25.0                | 0.0           | 0.099               |
| 75                      | 30.021                   | 29.9                | -0.1          | 0.099               |
| 75                      | 35.013                   | 34.8                | -0.2          | 0.099               |
| 75                      | 39.996                   | 39.7                | -0.3          | 0.099               |

UUC\*: Unit Under Calibration

\*\*\*End of Certificate of Calibration\*\*\*



## CERTIFICATE OF CALIBRATION

Certificate No. : CDT-094-68

Page 1 of 2 Pages

MEASUREMENT ITEM : Heat Stress Monitor  
MANUFACTURER : Delta OHM  
MODEL/TYPE : HD32.2  
SERIAL NUMBER : 15006301  
ID NUMBER : BKK\_F50662  
CONDITION AS-RECEIVED : Used item  
CUSTOMER : ALS laboratory group (thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Suan Luang, Khet Suan Luang,  
Bangkok 10250 Thailand.

RECEIVED DATE : 15 May 2025  
MEASUREMENT DATE : 17 Jun 2025  
ISSUE DATE : 17 Jun 2025

### ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:  
Temperature : 23.0 ± 3.0 °C  
Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

### TABULATION OF RESULTS:

The table on next page give the measured values.

REVIEW BY: *P. Parinya*  
APPROVED BY: *[Signature]*  
NEXT CAL DATE: 17/06/26



Calibrated by:  
☐ Mr. Sorawit Thachalad  
☒ Miss Jittraporn Lertsomphol  
☐ Miss Ruangrumpai Phoommit

Approved signatory:

Mr. Parinya Booncharoen  
Calibration Department Manager

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## Certificate of Calibration

Certificate No.: 25PH508  
Page: 1 of 2

Equipment : Lux Meter  
Manufacturer: Extach  
Model : 407028  
Serial No.: A.060289  
ID No.: BKK\_FS1219

Condition As-Received: Used Item  
Received Date: 22 October 2025  
Calibration Date: 28 October 2025

Reference: 2510-0638WSC  
Ambient Temperature: ( 23 ± 2 ) °C  
Relative Humidity: ( 50 ± 15 ) %

Submitted by: ALS Laboratory Group (Thailand) Co., Ltd.

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except with the prior written approval of the head of  
Corporate Services 3: Equipment Calibration and Testing Services.

104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Phatthanakan, Khet Suan Luang,  
Bangkok 10250 Thailand

Procedure used: Calibration were conducted using calibration procedure No. CP-PH01 based on inverse square law technique.

### Condition of this result of calibration

#### 1. Reference standards Instruments :

| Instrument              | Model         | Serial No. | Certificate No. | Due Date    |
|-------------------------|---------------|------------|-----------------|-------------|
| 1) Photometry & Encoder | LMguide 9.6 m | 120RC003   | DL-0030-25      | 18 Jul 2028 |
| 2) STANDARD LAMP        | OL FEL-U      | F-1783     | TP-1013-25      | 30 Dec 2025 |

2. This result of calibration was made on requested at the point specified by customer.

3. Test Equipment : Programmable Voltage/Current Source ( Model : QL83A, SN : 16221394 ).

4. Test Equipment : Illuminance Meter ( Model : S1002, SN : 080129 ).

5. The certificate is valid only to the item calibrated on date and place of calibration.

6. This measurement result is traceable to the International System of Unit maintained through:-

-National Institute of Metrology Thailand (NIMT)

-National Institute of Metrology (Thailand), NSC-ONSC Accredited No. Calibration 0144

REVIEW BY: *Monkan P.*  
APPROVED BY: *[Signature]*  
NEXT CAL DATE: 27/10/26

Calibrated by : Nivat Nilas  
Issue Date : 28 October 2025

Approved Signatory : *[Signature]*

[ ] Phalinee Prabpaipai  
[ ] Chatchawan Khurpiluek  
[✓] Nuntawat Khamchai



Cert. No.: 25PH508  
Page.: 2 of 2

### Result of calibration:-

Function : Illuminance Measurement Range : 2000 lx

| Standard Value | UUC* Reading | Error  | Uncertainty |
|----------------|--------------|--------|-------------|
| ( lx )         | ( lx )       | ( lx ) | ( ± lx )    |
| 0              | 0            | 0      | -           |
| 15             | 15           | 0      | 0.60        |
| 100            | 102          | 2      | 1.3         |
| 500            | 508          | 8      | 6.5         |
| 1000           | 1010         | 10     | 13          |
| 1500           | 1502         | 2      | 20          |
| 1900           | 1890         | -10    | 25          |

Function : Illuminance Measurement Range : 20000 lx

| Standard Value | UUC* Reading | Error  | Uncertainty |
|----------------|--------------|--------|-------------|
| ( lx )         | ( lx )       | ( lx ) | ( ± lx )    |
| 2000           | 2000         | 0      | 26          |
| 3000           | 2960         | -40    | 39          |
| 4000           | 3930         | -70    | 52          |
| 5000           | 4900         | -100   | 65          |

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level of confidence of approximately 95 %

Light source factor setting mode : L

UUC\* = Unit Under Calibration.

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## Certificate of Calibration

Cert.No.: 25CH1162  
Page.: 1 of 3

Equipment : pH Meter  
Manufacturer: Hach  
Model : HQ411d  
Serial No.: 200100031163  
ID No.: BKK\_EJ0342  
Condition As-Received: Used Item  
Received Date: 08 October 2025  
Calibration Date : 09 October 2025  
Reference : 2510-0271DSC-1  
Submitted by : ALS Laboratory Group (Thailand) Co., Ltd.

Ambient Temperature : (25 ± 2.5) °C  
Relative Humidity : (50 ± 15) %  
Calibration Procedure :  
In - house method :  
- CP-CH5 by direct measurement with certified reference material (CRM)  
- CP-CH8 by comparison with temperature standard

Calibrated by : Walalak Sirthean

Approved by :

Approved Signatory

( ) Chakrit Waewwanjua  
( ) Ponpan Paipim  
(✓) Sathip Meangmai

Issue Date : 10 October 2025

REVIEW BY: *Jinda K*  
APPROVED BY: *Sathip P*  
NEXT CAL DATE: 09/10/26



Cert.No.: 25CH1162  
Page.: 2 of 3

### Condition of this calibration result

#### 1. Reference Standard Instrument

| Instrument                   | Serial No. | ID No.   | Cert. No. | Due Date     |
|------------------------------|------------|----------|-----------|--------------|
| 1) Ref. Standard Thermometer | 4982054    | 110RC044 | 25I708    | 03 July 2026 |

- This measurement result is traceable to SI through Technology Promotion Association (Thailand - Japan)

2. Certified Reference Materials : The measurement results are traceable to SI through CPA chem Ltd., ANSL-ASQ National Accreditation Board, Accredited No. AR-1835

| Buffer Solution | Manufacturer | Lot No. | Exp. date    |
|-----------------|--------------|---------|--------------|
| pH 4.007        | CPA chem     | 1114384 | 12 June 2027 |
| pH 6.965        | CPA chem     | 1066667 | 18 Jan 2026  |
| pH 10.010       | CPA chem     | 1135355 | 16 Aug 2026  |

3. This certificate is valid only to the item calibrated on date and place of calibration.

### Calibration Results

#### Function : pH Measurement

Performing three buffers standard curve by using buffer nominal pH (4,7,10)

| Unit Under Calibration            | Standard pH Buffer Solution | Actual pH Reading | Actual mV Reading (mV) | Uncertainty of pH Measurement (±) | Coverage factor k |
|-----------------------------------|-----------------------------|-------------------|------------------------|-----------------------------------|-------------------|
| pH Electrode<br>S/N: 252063043080 | 4.007                       | 3.996             | 176.6                  | 0.0046                            | 2.00              |
|                                   | 6.965                       | 6.974             | 1.1                    | 0.0084                            | 2.00              |
|                                   | 10.010                      | 9.996             | -176.9                 | 0.0070                            | 2.00              |

Remark : Can not connect the BNC because the plug does not match with the socket.

The Uncertainties are for a confidence probability of approximately 95%

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Approval of the head of Corporate Services 3: Equipment Calibration and Testing Services.



Cert.No.: 25CH1162  
Page.: 3 of 3

#### Calibration Results

##### Function : Temperature Measurement

(\*) Without adjustment

This equipment was connected with Temperature Probe;

- Model : PHC281  
- Serial No. : 252063043080  
Dimension of probe  
- Length : 103 mm.  
- Diameter : 12 mm.  
- Immersion Depth : 90 mm.

| Calibration Point (°C) | Standard Temperature (°C) | UUC* Reading (°C) | Error (°C) | Uncertainty of measurement (± °C) | Coverage factor k |
|------------------------|---------------------------|-------------------|------------|-----------------------------------|-------------------|
| 25.0                   | 25.001                    | 25.0              | -0.001     | 0.13                              | 2.00              |

Remark : - UUC\* = Unit Under Calibration

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor k, providing a level of confidence of approximately 95 %.

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## Certificate of Calibration

Equipment: SPECTROPHOTOMETER  
Model: DR6000  
Serial No. (or ID.): 1627845 (RYG\_EN0037)  
Manufacturer: HACH  
Condition: In Condition  
Certificate No.: C06250108  
Issued Date: 18 March 2025  
Job No.: WO-00064379  
Page: 1 of 3

Customer: ALS Laboratory Group (Thailand) Co.,Ltd. (Rayong Branch)  
616/10 Moo 5 T.Maenam Khu,  
A.Pluakdaeng, Rayong 21140, Thailand.

Environment Condition: Temperature 24.4 °C ± 0.3 °C  
Humidity 60.8 %RH ± 3.5 %RH

Calibration Place: ALS Laboratory Group (Thailand) Co.,Ltd. (Rayong Branch)  
( Wet Chemistry Lab )  
616/10 Moo 5 T.Maenam Khu, A.Pluakdaeng, Rayong 21140, Thailand.

Calibration By: Mr.Preecha Phooarsai  
Calibration Date: 18 March 2025  
The Method used: In house method, CAL-WI-24, base on ASTM E 275-08 and ASTM E 387-04  
Traceability: This certificate is traceable to the CRM maintained by National Institute of Standards and Technology (NIST) through Sarna Scientific Limited.

The standard for Wavelength Certificate No. 111583 and 111584  
The standard for Photometric Certificate No. 9114984 and 111588  
The standard for Stray light Certificate No. 111586 and 111585  
The standard for Spectral resolution Certificate No. 111587

(Mr. Preecha Phooarsai)  
Person in charge

(Miss Kaewkan Suradech)  
Authorized signatory

This certificate is issued the units of measurement according to the International System of Units (SI). It provides traceability of measurement to international or national standard or other recognized national standard laboratories.  
The measurement uncertainty stated in the expanded uncertainty which is obtained from the standard uncertainty multiplied by the coverage factor (k=2) to provide a level of confidence of approximately 95%. It is determined in accordance with the Guide to Expression of Uncertainty in Measurement (GUM).  
These results may be affected by deviations from specified conditions. The results relate only to the items tested, calibrated or sampled. The report shall not be reproduced except in full without approval of DKSH Technology Limited.

DKSH Technology Limited  
2533 Sukhumvit Road, Bangkok, Phraekhong, Bangkok 10260  
Phone: +66 2639 7000 Email: info.calibration@dksh.com Website: www.dksh.com/scientific-thailand

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CAL-FM-C06-16: 11 Mar 2024



Certificate No.: C06250108 Page 2 of 3

#### Calibration Results:

##### Without Adjustment

Wavelength Accuracy (nm), The spectral bandwidth of Std at 2 nm and UUC at 2 nm

| Standard Wavelength | Unit Under Calibration | Correction | Uncertainty |
|---------------------|------------------------|------------|-------------|
| 418.61              | 418.5                  | 0.11       | 0.13        |
| 536.66              | 536.7                  | -0.04      | 0.13        |
| 637.98              | 638.3                  | -0.32      | 0.13        |
| 748.48              | 748.8                  | -0.32      | 0.13        |
| 807.03              | 807.5                  | -0.47      | 0.13        |

Photometric Accuracy (Absorbance)

| Wavelength | Standard absorbance | Unit Under Calibration | Correction | Uncertainty |
|------------|---------------------|------------------------|------------|-------------|
| 420 nm     | 0.0000              | 0.000                  | 0.0000     | 0.0045      |
|            | 0.2930              | 0.291                  | 0.0020     | 0.0045      |
|            | 0.5168              | 0.518                  | -0.0012    | 0.0045      |
| 440 nm     | 1.0298              | 1.031                  | -0.0012    | 0.0045      |
|            | 0.0000              | 0.000                  | 0.0000     | 0.0045      |
|            | 0.2867              | 0.285                  | 0.0017     | 0.0045      |
| 465 nm     | 0.5073              | 0.508                  | -0.0007    | 0.0045      |
|            | 1.0083              | 1.009                  | -0.0007    | 0.0045      |
|            | 0.0000              | 0.000                  | 0.0000     | 0.0045      |
| 546.1 nm   | 0.2516              | 0.250                  | 0.0016     | 0.0045      |
|            | 0.4595              | 0.461                  | -0.0015    | 0.0045      |
|            | 0.9334              | 0.935                  | -0.0016    | 0.0045      |
| 590 nm     | 0.0000              | 0.000                  | 0.0000     | 0.0045      |
|            | 0.2461              | 0.246                  | 0.0001     | 0.0045      |
|            | 0.4652              | 0.466                  | -0.0008    | 0.0045      |
| 635 nm     | 0.9468              | 0.948                  | -0.0012    | 0.0045      |
|            | 0.0000              | 0.000                  | 0.0000     | 0.0045      |
|            | 0.2594              | 0.259                  | 0.0004     | 0.0045      |
|            | 0.5040              | 0.505                  | -0.0010    | 0.0045      |
|            | 1.0032              | 1.004                  | -0.0008    | 0.0045      |
|            | 0.0000              | 0.000                  | 0.0000     | 0.0045      |
|            | 0.2579              | 0.258                  | -0.0001    | 0.0045      |
|            | 0.4971              | 0.497                  | 0.0001     | 0.0045      |
|            | 0.9720              | 0.973                  | -0.0010    | 0.0045      |

DKSH Technology Limited  
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Phone: +66 2639 7000 Email: info.calibration@dksh.com Website: www.dksh.com/scientific-thailand

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CAL-FM-C06-16: 11 Mar 2024



Certificate No.: C06250108 Page 3 of 3

#### Calibration Results:

##### Without Adjustment

Photometric Accuracy (Absorbance)

| Wavelength | Standard absorbance | Unit Under Calibration | Correction | Uncertainty |
|------------|---------------------|------------------------|------------|-------------|
| 235 nm     | 0.0000              | 0.000                  | 0.0000     | 0.0080      |
|            | 0.7355              | 0.738                  | -0.0025    | 0.0080      |
| 257 nm     | 0.0000              | 0.000                  | 0.0000     | 0.0080      |
|            | 0.8574              | 0.857                  | 0.0004     | 0.0080      |
| 313 nm     | 0.0000              | 0.000                  | 0.0000     | 0.0080      |
|            | 0.2864              | 0.290                  | -0.0036    | 0.0080      |
| 350 nm     | 0.0000              | 0.000                  | 0.0000     | 0.0080      |
|            | 0.6374              | 0.637                  | 0.0004     | 0.0080      |

Stray light \*

| Standard: cut-off  | UUC: Wavelength (nm) | UUC: Transmission (%) | Absorbance (A) |
|--------------------|----------------------|-----------------------|----------------|
| 260.62 +/- 0.11 nm | 260.6                | 1.7                   | 1.770          |
| 391.44 +/- 0.11 nm | 391.4                | 1.4                   | 1.854          |

Spectral Resolution \*

| Nominal Concentration 0.02 % v/v | Peak   | Trough | Ratio | SBW  |
|----------------------------------|--------|--------|-------|------|
| Standard Wavelength ( nm )       | 268.66 | 268.69 | 1.38  | 2.00 |
| UUC: Wavelength (nm)             | 268.2  | 266.2  |       |      |
| Std Absorbance ( A )             | 0.4566 | 0.2780 |       |      |
| UUC: Absorbance ( A )            | 0.413  | 0.299  |       |      |

\* Calibration Marked " Not TISI Accredited " in this Certificate have been included for completeness.

The End of Certificate

DKSH Technology Limited  
2533 Sukhumvit Road, Bangkok, Phraekhong, Bangkok 10260  
Phone: +66 2639 7000 Email: info.calibration@dksh.com Website: www.dksh.com/scientific-thailand

Delivering Growth - in Asia and Beyond.

CAL-FM-C06-16: 11 Mar 2024

# ใบตรวจสอบสภาพเครื่องวัดสิ่งแวดล้อม



เลขที่ใบงาน: WO-00064379

ชนิดเครื่องมือ: SPECTROPHOTOMETER รุ่น: DR6000

หมายเลขเครื่อง: 1627845

| ตรวจสอบ (รับ)                       |                          | รายการตรวจเช็ค                                         | ตรวจสอบ (ส่ง)                       |                          | หมายเหตุ    |
|-------------------------------------|--------------------------|--------------------------------------------------------|-------------------------------------|--------------------------|-------------|
| 18 Mar 2025                         |                          |                                                        | 18 Mar 2025                         |                          |             |
| ปกติ                                | ไม่ปกติ                  |                                                        | ปกติ                                | ไม่ปกติ                  |             |
| General                             |                          |                                                        |                                     |                          |             |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 1. ความสมบูรณ์เครื่อง                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |             |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 2. ความสะอาด (ช่องใส่ตัวอย่าง, ภายใน-นอกเครื่อง)       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |             |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. สวิตช์ ปิด - เปิด เครื่อง (On-Off Switch)           | <input checked="" type="checkbox"/> | <input type="checkbox"/> |             |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. ปุ่มกด (Keypad)                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/> |             |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 5. หน้าจอ (Display, Screen Contrast)                   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |             |
| Spectrophotometer                   |                          |                                                        |                                     |                          |             |
| <input type="checkbox"/>            | <input type="checkbox"/> | 6. แรงดันไฟฟ้า (Battery Backup) $\geq 2.5$ VDC         | <input type="checkbox"/>            | <input type="checkbox"/> |             |
| <input type="checkbox"/>            | <input type="checkbox"/> | 7. ตัวควบคุมเลือกความยาวคลื่น (Wavelength Control)     | <input type="checkbox"/>            | <input type="checkbox"/> |             |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 8. ความยาวคลื่น (Wavelength Check)                     | <input checked="" type="checkbox"/> | <input type="checkbox"/> | *           |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 9. แสงยูวีเกินแสง (UV < 3,000 hour)                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 13.5 Hours  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 10. แสงที่มองเห็นแสง (Visible < 5,000 hour)            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 893.0 Hours |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 11. ซองวัดหลายตัวอย่าง (Carousel Module)               | <input checked="" type="checkbox"/> | <input type="checkbox"/> |             |
| pH Meter and Conductivity Meter     |                          |                                                        |                                     |                          |             |
| <input type="checkbox"/>            | <input type="checkbox"/> | 12. อิเล็กโทรด ( Electrode and Connection Cable )      | <input type="checkbox"/>            | <input type="checkbox"/> |             |
| <input type="checkbox"/>            | <input type="checkbox"/> | 13. ระดับสารละลายใน Electrode (Level KCl )             | <input type="checkbox"/>            | <input type="checkbox"/> |             |
| <input type="checkbox"/>            | <input type="checkbox"/> | 14. ฝาปิดกันปลาย Electrode (Dust Protection Hood)      | <input type="checkbox"/>            | <input type="checkbox"/> |             |
| <input type="checkbox"/>            | <input type="checkbox"/> | 15. ขาตั้งอิเล็กโทรด (Stand)                           | <input type="checkbox"/>            | <input type="checkbox"/> |             |
| Turbidimeter                        |                          |                                                        |                                     |                          |             |
| <input type="checkbox"/>            | <input type="checkbox"/> | 16. ค่าความขุ่นที่ต่ำสุด (No Sample)                   | <input type="checkbox"/>            | <input type="checkbox"/> |             |
| <input type="checkbox"/>            | <input type="checkbox"/> | 17. ระดับการส่องสว่างของแสง ( $\geq 2.5$ ไม่นเกิน 3.0) | <input type="checkbox"/>            | <input type="checkbox"/> |             |
| Automatic titrator                  |                          |                                                        |                                     |                          |             |
| <input type="checkbox"/>            | <input type="checkbox"/> | 18. สภาว Piston Burettes                               | <input type="checkbox"/>            | <input type="checkbox"/> |             |
| <input type="checkbox"/>            | <input type="checkbox"/> | 19. Function Rinsing and Dosing                        | <input type="checkbox"/>            | <input type="checkbox"/> |             |
| <input type="checkbox"/>            | <input type="checkbox"/> | 20. ระบบท่อสายยางและอุปกรณ์ประกอบ                      | <input type="checkbox"/>            | <input type="checkbox"/> |             |

เงื่อนไขข้อแนะนำ: \* 656.1nm = 656.1nm

\* 486.0nm = 485.7nm

Mr.Preecha Phooanai  
Service Engineer

บริษัท เทคโนโลยี เซอร์วิส จำกัด  
2634 Technology Limited  
2533 Sukhumvit Road, Bangkok, Phatthanaong, Bangkok 10250  
Phone: +66 2639 7000 Email: info.calibration@dksh.com Website: www.dksh.com/calibration-thailand

Delivering Growth - in Asia and Beyond.

CAL-FM-R31-03, 20 Jul 2022



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES  
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250  
TEL.0-2717-3000-29 FAX.0-2719-9484



## Certificate of Calibration

Cert.No.: 25CG3385  
Page.: 1 of 2

Equipment : Burette  
Capacity : 50 mL  
Serial No. : -  
ID. No. : BKK\_EN0422  
Manufacturer : Wileg  
Made in : Germany  
Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwang Phatthanakan, Khet Suan Luang,  
Bangkok 10250 Thailand  
Ambient Temperature : (20  $\pm$  2.5) °C  
Relative Humidity : (50  $\pm$  10) %  
Barometric Pressure : 753 mmHg  
Calibration Procedure : ASTM E 542 - 01  
Calibrated by : Srisuda Khamthia  
Approved by :   
( ) Porpan Paipim  
(✓) Chakrit Waewwanjua

Issue Date : 3 September 2025

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written approval of the head of Corporate Services 3: Equipment Calibration and Testing Services.



Equipment : Burette  
Received Date : 1 September 2025  
Condition As-Received : Used Item  
Calibration Date : 3 September 2025  
Reference : 2509-0049DSC-1

Cert.No.: 25CG3385  
Page.: 2 of 2

### Condition of this result of calibration

#### 1. Reference Standard Instruments :

| Instruments            | Model   | Serial No. | ID. No.  | Certificate No. | Traceability | Due date    |
|------------------------|---------|------------|----------|-----------------|--------------|-------------|
| 1) Balance             | MS204TS | C226356983 | 140RC010 | 24MM603         | TPA          | 10 Oct 2025 |
| 2) Data Logger         | HL-20D  | 20683159   | 140EC012 | 24H2129         | TPA          | 15 Oct 2025 |
| 3) Digital Thermometer | HH376   | 230806555  | 140EC013 | 25I1740         | TPA          | 17 Jan 2026 |

This measurement result is traceable to SI Unit

2. The certificate is valid only to the item calibrated on date and place of calibration.

3. True value is converted to true volume at the standard temperature of 20 °C

#### Calibration result :

| Nominal capacity (mL) | Reading (mL) | Uncertainty ( $\pm$ mL) | k Factor |
|-----------------------|--------------|-------------------------|----------|
| 10                    | 9.9941       | 0.0082                  | 2.00     |
| 25                    | 24.9804      | 0.0087                  | 2.00     |
| 50                    | 49.9819      | 0.010                   | 2.00     |

Remark mL = cm<sup>3</sup>

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor k, providing a level of confidence of approximately 95 %.

-000-



## Metrology Center SCI ECO Services Company Limited

51 Moo 8, Tubkiwang, Kaeng Khoi, Saraburi, Thailand 18260  
Bangkok Tel : +668 9205 6851, +669 81924 0059  
Saraburi Tel : +669 8247 2360  
Website : www.scieco.co.th E-Mail : calibrate@scg.co.th



Certificate No. T250873

## Certificate of Calibration

Page 1 of 4

Equipment : Chamber (Cooling Room)  
Manufacturer : KOLDTECH  
Model : KM 320  
Serial No. : TBN-1012061/05  
Customer Code : BKK\_EN0167  
ID No. : T2463A3  
Customer : ALS Laboratory Group (Thailand) Co.,Ltd.  
104 Phatthanakan 40, Phatthanakan Rd., Khwang Phatthanakan,  
Khet Suan Luang, Bangkok 10250

Customer Location : Laboratory Room

Date of Receipt : 28 May 2025

Calibrated By : Atiphong Rongrat (Technician)

Approved By : / Boonchai Suriyawong (Site Calibration Manager)

Date of Issue : 19 JUN 2025

The uncertainties are for a confidence probability of approximately 95%.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrology Center.

Certificate No. T250873

Page 2 of 4

**Calibration Report**

Equipment : Chamber ( Cooling Room )  
Date of Calibration : 4 June 2025  
Environment : Temperature : 23.4-24.9 °C  
Line Voltage : 221.4-230.2 V  
Relative Humidity : 55 - 65 %RH

**Condition of this results of calibration :**

- This equipment was calibrated by insert 16 standard thermocouples type T into its chamber , the other one standard thermocouples type T use for ambient temperature measurement . The calibration was done in according to WI-T20 ( based on ASTM E145-94 ( Reapproved 2001) and AS2853-1986 ). All data show below were final values and the initial data from customer request . The temperature scale used was based on ITS - 90 .
- Reference Standard Instrument :

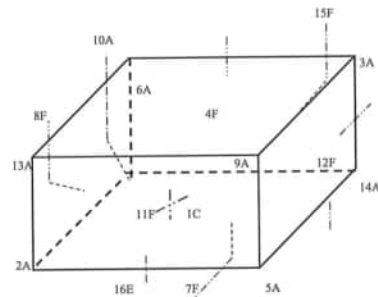
| Instrument  | Model  | Instrument No. | Certificate No. | Due Date        |
|-------------|--------|----------------|-----------------|-----------------|
| TC          | TYPE T | TN91-TN100     | T242036         | 3 December 2025 |
| TC          | TYPE T | TN101-TN110    | T242036         | 3 December 2025 |
| DATA LOGGER | 34970A | T121           | T242036         | 3 December 2025 |
- This certificate is traceable to :  
National Institute of Metrology ( Thailand ) through Metrological Center ( NSC-TISI-TIS 17025 CALIBRATION 0244.)
- Condition of calibrated item : good  
Equipment Description :  
Time Constant ☒ 2 Hour ☐ 20 Minute At ☐ 3 °C  
Fresh Air Damper ☐ Open ☐ Min ☐ Medium ☐ Max  
☐ Close  
☒ Not Available
- Adjustment :  
( X ) without adjustment ( ) after adjustment

Approved By. 

FM-TL07 102/27-03-68

Certificate No. T250873

Page 3 of 4

**Calibration Report**

C = Centre , F = Centre of Face , A = Corner , E = Centre of Edge

|             |             |
|-------------|-------------|
| 1C = TN91   | 12F = TN102 |
| 2A = TN92   | 13A = TN103 |
| 3A = TN93   | 14A = TN104 |
| 4F = TN94   | 15F = TN105 |
| 5A = TN95   | 16E = TN106 |
| 6A = TN96   |             |
| 7F = TN97   |             |
| 8F = TN98   |             |
| 9A = TN99   |             |
| 10A = TN100 |             |
| 11F = TN101 |             |

Approved By. 

FM-TL07 102/27-03-68

Certificate No. T250873

Page 4 of 4

**Calibration Report****Measurement Results**

| Calibration Point | Average Standard Reading at each position (°C) |       |       |       |      |      |      |      |      |       |       |       |
|-------------------|------------------------------------------------|-------|-------|-------|------|------|------|------|------|-------|-------|-------|
|                   | TN91                                           | TN92  | TN93  | TN94  | TN95 | TN96 | TN97 | TN98 | TN99 | TN100 | TN101 | TN102 |
| 3.0               | 2.95                                           | 2.92  | 3.09  | 2.92  | 3.16 | 3.50 | 3.40 | 3.03 | 3.14 | 2.98  | 3.44  | 3.13  |
|                   | TN103                                          | TN104 | TN105 | TN106 |      |      |      |      |      |       |       |       |
|                   | 3.19                                           | 3.06  | 3.46  | 2.92  |      |      |      |      |      |       |       |       |

| Chamber ( Cooling Room ) |              |         | Temperature Distribution |                  |                 |                    |                   |
|--------------------------|--------------|---------|--------------------------|------------------|-----------------|--------------------|-------------------|
| Setting (°C)             | Reading (°C) |         | Average (°C)             | Stability (± °C) | Uniformity (°C) | Uncertainty (± °C) | Coverage Factor k |
|                          | Min , Max    | Average |                          |                  |                 |                    |                   |
| 3.0                      | 2.8 , 3.9    | 3.4     | 3.14                     | 1.20             | 1.30            | 1.90               | 2.04              |

The calibration result apply only the above calibrated item.  
The result of test was found accurate as shown on date and place of test only.  
The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k which for a t-distribution, providing a level of confidence of approximately 95 % .

Approved By. 

FM-TL07 102/27-03-68

Accredited by

NSC-TISI-TIS 17025  
Calibration 0426**Calibration certificate**

Calibration Certificate No. 25BCI0265

|                        |                                                                                                  |                                                                                                                                                                    |
|------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Object                 | Electronic non-automatic weighing instrument                                                     | This calibration certificate documents the traceability to national standards.                                                                                     |
| Manufacturer           | Sartorius                                                                                        | Uncertainties of measurements are taken into account when only statements of compliance are made.                                                                  |
| Type                   | MSE224S-100-DU                                                                                   | This certificate was prepared by Sartorius Corporation in accordance to the current ISO/IEC 17025:2017 standard and Sartorius Work Instruction (Method) SOP WI 08. |
| Serial   QM Ident. no. | 27405555   BKK_EN0003                                                                            | This certificate relate and apply this equipment only.                                                                                                             |
| Customer               | ALS Laboratory Group (Thailand)Co., Ltd.                                                         |                                                                                                                                                                    |
|                        | 104 Phatthanakarn 40, Phatthanakarn Rd., Khwaeng Phatthanakarn<br>Khet Suan Luang, Bangkok 10250 |                                                                                                                                                                    |
| Order no.              | 265054                                                                                           |                                                                                                                                                                    |
| Number of pages        | 4                                                                                                |                                                                                                                                                                    |
| Date of calibration    | 17 Jul 2025                                                                                      |                                                                                                                                                                    |

This calibration certificate may not be reproduced other than in full except with the permission of NSC-TISI-TIS-17025 and the issuing laboratory. Calibration certificates without signature are not valid.

The user is obliged to have the object recalibrated at appropriate intervals.

|               |             |                                         |                  |
|---------------|-------------|-----------------------------------------|------------------|
| Date of issue | 17 Jul 2025 | Approval of the Calibration Certificate | Person in charge |
|---------------|-------------|-----------------------------------------|------------------|



Mr. Chonchai Inthana



Chonchai Inthana

Calibration object

Single range instrument

|                              |                 |
|------------------------------|-----------------|
| Model                        | MSE224S-100-DU  |
| Serial Number                | 27405555        |
| QM Ident. no   Inventory no. | BKK_EN0003   -- |

|                              |            |
|------------------------------|------------|
| Maximum capacity (Max. load) | 220.0000 g |
| Measured up to               | 220.0000 g |
| Scale interval               | 0.0001 g   |

Place of calibration

|                                                       |                      |
|-------------------------------------------------------|----------------------|
| Address                                               | According to page 1  |
| Department   Cost center                              | ENVI Department   -- |
| Building   Floor                                      | --   1st Floor.      |
| Room                                                  | Laboratory Room.     |
| Maximum temperature variation at place of calibration | 5 K                  |

Calibration procedure

EURAMET Calibration Guide No. 18, Version 4.0 (11/2015) - Guidelines on the Calibration of Non-Automatic Weighing Instruments

Test equipment

| Test equipment type          | Test equipment ID                                             | Valid until |
|------------------------------|---------------------------------------------------------------|-------------|
| Thermomeler                  | Teslo 174(Traceable to SI unit through ENTECH)                | 11 Nov 2025 |
| Test weight set OIML R111 E2 | Certificate No.M2308197S_E2(Traceable to SI unit through TCS) | 23 Aug 2025 |

Adjustment Status

The measuring device was internally adjusted before the calibration.

Environmental and measuring conditions

|                                                   |                                                                                                   |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Date of calibration                               | 17 Jul 2025                                                                                       |
| Temperature at place of calibration   Temp. diff. | 22.5 °C   0.7 K                                                                                   |
| Weights - T <sub>place</sub>                      |                                                                                                   |
| Measuring conditions                              | The installation site is suitable. The device is level. Balance was loaded up to Max before test. |
| Comments                                          | Humidity 58.0 %RH.                                                                                |

Measurement results | Measurement uncertainties

| Repeatability                     |       | Eccentricity                                      |  |
|-----------------------------------|-------|---------------------------------------------------|--|
| Test load (nominal): 10 g   200 g |       | Test load (nominal): 100 g                        |  |
| 10 g                              | 200 g | 100 g                                             |  |
| 1 10.0000 g 200.0000 g            |       | Center 100.0000 g                                 |  |
| 2 10.0000 g 199.9999 g            |       | Front left 100.0001 g                             |  |
| 3 10.0000 g 200.0000 g            |       | Back left 100.0000 g                              |  |
| 4 10.0000 g 200.0000 g            |       | Back right 100.0001 g                             |  |
| 5 10.0001 g 199.9999 g            |       | Front right 100.0001 g                            |  |
| 6 10.0000 g 200.0000 g            |       | Maximum deviation from centric loading indication |  |
| 7 10.0000 g 200.0000 g            |       | Δ <sub>ecc</sub>   max = 0.0001 g                 |  |
| 8 10.0001 g 200.0000 g            |       |                                                   |  |
| 9 10.0000 g 200.0000 g            |       |                                                   |  |
| 10 10.0000 g 199.9999 g           |       |                                                   |  |
| s = 0.00004 g s = 0.00005 g       |       |                                                   |  |

| Testload                    | Indication | Error                         | Expansion factor | Uncertainty | Uncertainty relative |
|-----------------------------|------------|-------------------------------|------------------|-------------|----------------------|
| L                           | I          | E                             | k                | U(E)        | U <sub>rel</sub> (E) |
| 0.0100 g                    | 0.0100 g   | 0.0000 g                      | 2.00             | 0.00012 g   | 1.2 %                |
| 0.1000 g                    | 0.1000 g   | 0.0000 g                      | 2.00             | 0.00013 g   | 0.13 %               |
| 1.0000 g                    | 1.0000 g   | 0.0000 g                      | 2.00             | 0.00013 g   | 0.013 %              |
| 2.0000 g                    | 2.0000 g   | 0.0000 g                      | 2.00             | 0.00013 g   | 0.006 %              |
| 5.0000 g                    | 5.0000 g   | 0.0000 g                      | 2.00             | 0.00013 g   | 0.0026 %             |
| 10.0000 g                   | 10.0000 g  | 0.0000 g                      | 2.00             | 0.00013 g   | 0.0013 %             |
| 20.0000 g                   | 20.0000 g  | 0.0000 g                      | 2.00             | 0.00014 g   | 0.00068 %            |
| 50.0000 g                   | 50.0000 g  | 0.0000 g                      | 2.00             | 0.00015 g   | 0.00029 %            |
| 100.0000 g                  | 100.0000 g | 0.0000 g                      | 2.00             | 0.00018 g   | 0.00018 %            |
| 200.0000 g                  | 200.0000 g | 0.0000 g                      | 2.00             | 0.00028 g   | 0.00014 %            |
| 220.0000 g                  | 220.0001 g | 0.0001 g                      | 2.00             | 0.00032 g   | 0.00015 %            |
| Maximum error of indication |            | E <sub>max</sub>   = 0.0001 g |                  |             |                      |

U<sub>rel</sub>(E) is the quotient of U(E) and test load L. The uncertainty of measurement U(E) is valid only if error E is considered. You will find reference notes on the uncertainty of measurement in use under: Appendix to the calibration certificate | Interpretation of measurement results.  
Reference note: The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the documented Expansion factor, determined in accordance with the European Calibration Guideline EURAMET cg-18, V4.0. There is a 95 % probability that the value of the measured will be in the assigned value range.

End of calibration certificate

Interpretation of measurement results | Appendix to the calibration certificate

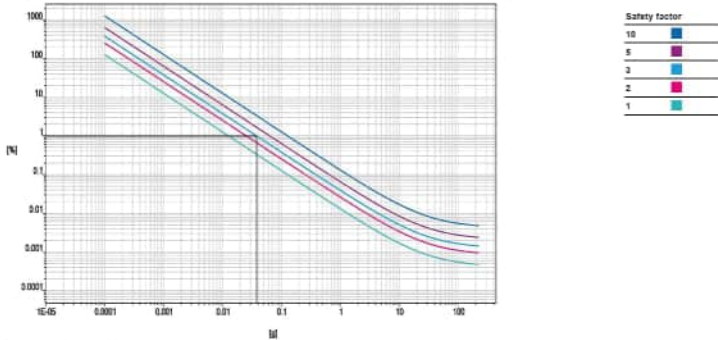
Uncertainty of measurement in use

|                                                       |                                                              |
|-------------------------------------------------------|--------------------------------------------------------------|
| Device adjusted before measurement                    | Yes                                                          |
| Temperature deviation considered                      | 1.5 K (isoCAL active)                                        |
| Temperature coefficient considered                    | 1 · 10 <sup>-4</sup> /K                                      |
| Uncertainty of the weighing result U <sub>G</sub> (W) | U <sub>G</sub> (W) = 0.00013 g + 4.19 · 10 <sup>-4</sup> · R |

Reference note: The current uncertainty of measurement is calculated by entering of the reading R into this formula. In relation to this, there is no need for a correction of the indication error. The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied with an Expansion factor of 2, determined in accordance with the European Calibration Guideline EURAMET cg-18, V4.0. There is a 95 % probability that the value of the measured will be in the assigned value range.

| Indication in % from max load | Net indication | Uncertainty        | Uncertainty relative              |
|-------------------------------|----------------|--------------------|-----------------------------------|
|                               | R              | U <sub>G</sub> (W) | U <sub>G</sub> (W) <sub>rel</sub> |
| 1 %                           | 2.2000 g       | 0.00014 g          | 0.0063 %                          |
| 25 %                          | 55.0000 g      | 0.00036 g          | 0.0006 %                          |
| 50 %                          | 110.0000 g     | 0.00059 g          | 0.00054 %                         |
| 75 %                          | 165.0000 g     | 0.00082 g          | 0.00050 %                         |
| 100 %                         | 220.0000 g     | 0.0011 g           | 0.00048 %                         |

Graphic realization of the relative uncertainty of measurement | process accuracy



Displayed example

|                       |          |
|-----------------------|----------|
| Process accuracy      | 1.00 %   |
| Safety factor         | 3        |
| Minimum sample weight | 0.0380 g |



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES  
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250  
TEL 0-2717-3000-29 FAX 0-2719-9484



Certificate of Calibration

Cert. No.: 25TM528  
Page : 1 of 3

Equipment : Water Bath

Manufacturer : Memmert

Model : WNE 29

Serial No. : L622.0282

ID No. : BKK\_EN0439

Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Phatthanakan, Khet Suan Luang,  
Bangkok 10250 Thailand

Location : Organic Preparation Lab

Received Order : 08 October 2025  
Calibration Date : 09 October 2025  
Ambient Temperature : ( 26 ± 10 ) °C  
Relative Humidity : ( 50 ± 30 ) %  
AC Line Voltage : ( 220 ± 22 ) V

Calibrated by : Kunchit Promprat

Approved by :  
( ) Chakrit Waowwanjua  
( ) Ponpan Paipin  
(✓) Suwit Imjai

Issue Date : 28 October 2025

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written Approval of the head of Corporate Services 3 : Equipment Calibration and Testing Services.



Equipment : Water Bath  
Condition As-Received : Used Item  
Reference : 2510-00420C-13  
Procedure Used :-

Cert. No.: 25TM528  
Page : 2 of 3

Calibration were conducted using in-house calibration procedure CP-OT04 Based on ASTM E715 according to direct measurement method with Data Acquisition which connected with Industrial Platinum Resistance Thermometer ( IPRT ).

The temperature scale used was based on ITS-90.

#### Condition of this result of calibration

1. Reference standard instrument:-

| Instrument           | Serial No. | Cert. No. | Traceable | Due Date    |
|----------------------|------------|-----------|-----------|-------------|
| 1 ) Data Acquisition | MYS8041391 | 25LM20    | TPA       | 08 Feb 2026 |

2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This measurement result is traceable to the International System of Unit maintained through :

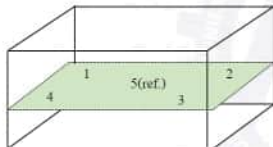
Remark : TPA : Technology Promotion Association ( Thailand - Japan )

Result of Calibration :- ( \* ) Without Adjustment

Function of UUC\* : Temperature Source

Heat transfer medium used : Water

|                          | Environmental |           | AC Voltage Supply |
|--------------------------|---------------|-----------|-------------------|
|                          | ( °C )        | ( %R.H. ) | ( Volt )          |
| Beginning of Calibration | 24            | 63        | 224               |
| Finished of Calibration  | 24            | 58        | 224               |



Front

| Position : | Ref. Std. ID No.: |
|------------|-------------------|
| 1          | 70RC143           |
| 2          | 70RC144           |
| 3          | 70RC145           |
| 4          | 70RC146           |
| 5(ref.)    | 70RC147           |



Equipment : Water Bath  
Condition As-Received : Used Item  
Reference : 2510-00420C-13  
Result of Calibration :- ( \* ) Without Adjustment  
Function of UUC\* : Temperature Source

Cert. No.: 25TM528  
Page : 3 of 3

| Calibration point ( °C ) | UUC* Setting ( °C ) | UUC* Reading ( °C ) | Average* Standard Reading ( °C ) |        |        |        |          | Uncertainty ( ± °C ) |
|--------------------------|---------------------|---------------------|----------------------------------|--------|--------|--------|----------|----------------------|
|                          |                     |                     | 1                                | 2      | 3      | 4      | 5 (ref.) |                      |
| 85.0                     | 85.0                | 85.0                | 84.863                           | 84.748 | 84.869 | 84.990 | 84.966   | 0.21                 |

| Calibration point ( °C ) | Uniformity ( °C ) | Stability ( ± °C ) | Coverage Factor k |
|--------------------------|-------------------|--------------------|-------------------|
| 85.0                     | 0.33              | 0.12               | 2                 |

Average\* : The average of 30 values in each position.

Uniformity : The maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.

Stability : One-half of the greatest maximum difference of measured temperature at any one probe.

UUC\* : Unit Under Calibration

Note : The reported uncertainty of measurement was included stability and excluded uniformity.

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor *k*, providing a level of confidence of approximately 95 %.

-000-



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Certificate No. T251785

Page 2 of 3

Certificate No. T251785

### Certificate of Calibration

Page 1 of 3

Equipment : Chamber ( Oven )  
Manufacturer : Memmert  
Model : UF110  
Serial No. : B423.1549  
Customer Code : BKK\_EN0425  
ID No. : T4671A5  
Customer : ALS Laboratory Group (Thailand) Co.,Ltd.  
104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan,  
Khet Suan Luang, Bangkok 10250  
Customer Location : Oven Room  
Date of Receipt : 1 October 2025  
Calibrated By : Sujjar Naknakred ( Site Calibration Manager )  
Approved By : Boonchai Suriyawong (Site Calibration Manager)  
Date of Issue : 10 OCT 2025

REVIEW BY: Junda K  
APPROVED BY: Sujjar P  
NEXT CAL DATE: 01/10/26

The uncertainties are for a confidence probability of approximately 95%.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrological Center.

### Calibration Report

Equipment : Chamber ( Oven )  
Date of Calibration : 6 October 2025  
Environment : Temperature : 24.4-25.8 °C  
Line Voltage : 220.5-225.2 V  
Relative Humidity : 55 - 65 %RH

#### Condition of this results of calibration :

1. This equipment was calibrated by insert nine resistance thermometer detectors into its chamber , the other one resistance thermometer detector use for ambient temperature measurement . The calibration was done in according to WI-T20 ( based on ASTM E145-94 ( Reapproved 2019 ) and AS2853-1986 ). All data show below were final values and the initial data from customer request . The temperature scale used was based on ITS - 90 .

2. Reference Standard Instrument :

| Instrument  | Model   | Instrument No. | Certificate No. | Due Date     |
|-------------|---------|----------------|-----------------|--------------|
| RTD         | 100 ohm | 23-(CHI1-10)   | T250314         | 6 April 2026 |
| DATA LOGGER | 34970A  | TI95           | T250314         | 6 April 2026 |

3. This certificate is traceable to :

National Institute of Metrology ( Thailand ) through Metrological Center ( NSC-TISI-TIS 17025 CALIBRATION 0244.

4. Condition of calibrated item : good

Equipment Description :

Time Constant : 2 Hour 14 Minute At 104 °C  
Fresh Air Damper : ☒ Open ☒ Min ☐ Medium ☐ Max  
☐ Close  
☐ Not Available

5. Adjustment :

( ) without adjustment

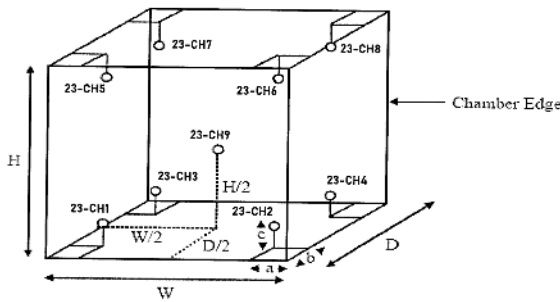
( X ) after adjustment

Approved By: Boonchai

Certificate No. T251785

Page 3 of 3

## Calibration Report



Remark : Internal Dimensions of Chamber : W (Width) = 56 cm, H (Height) = 48 cm, and D (Depth) = 40 cm.  
Size of Installed Standard sensor number 23-CH1 to number 23-CH8 : a = 5 cm, b = 5 cm, and c = 5 cm.  
Size of Installed Standard sensor number 23-CH9 : W/2 = 56 cm/2, H/2 = 48 cm/2 and D/2 = 40 cm/2

## Measurement Results

| Calibration Point | Average Standard Reading at each position (°C) |        |        |        |        |        |        |        |        |
|-------------------|------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
|                   | 23-CH1                                         | 23-CH2 | 23-CH3 | 23-CH4 | 23-CH5 | 23-CH6 | 23-CH7 | 23-CH8 | 23-CH9 |
| 104               | 104.13                                         | 103.54 | 103.92 | 104.37 | 104.40 | 104.51 | 104.18 | 103.86 | 103.80 |
| 180               | 180.05                                         | 179.82 | 179.64 | 179.52 | 181.20 | 180.29 | 180.19 | 179.35 | 179.59 |

| Setting °C | Reading (°C) |         | Temperature Distribution |                  |                 |                    |  | Coverage Factor k |
|------------|--------------|---------|--------------------------|------------------|-----------------|--------------------|--|-------------------|
|            | Min, Max     | Average | Average (°C)             | Stability (± °C) | Uniformity (°C) | Uncertainty (± °C) |  |                   |
| 104.0      | -            | 104.0   | 104.06                   | 0.28             | 0.67            | 0.45               |  | 2.00              |
| 180.0      | 180.0, 180.1 | 180.0   | 179.99                   | 0.37             | 1.49            | 0.61               |  | 2.00              |

\* The quoted uncertainty includes "uniformity".  
The calibration result apply only to the above calibrated item.  
The result of test was found accurate as shown on date and place of test only.  
The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k (usually for a t-distribution, providing a level of confidence of approximately 95 %).

End of Certificate

Approved By.

FM-FL07 302/23-03-68

## Customer Contact:

ALS Laboratory Group (Thailand) Co  
Ltd Head Office  
104 Phatthanakan 40 Phatthanakan Rd  
Khwang Phatthanakan Khet Suan  
TAX ID : 0105540004859  
Chanattagarn.lmchom@alsglobal.com  
27603068

## Invoice To:

ALS Laboratory Group (Thailand) Co  
Ltd Head Office  
104 Phatthanakan 40 Phatthanakan Rd  
Khwang Phatthanakan Khet Suan

## Delivery Site:

ALS Laboratory Group (Thailand) Co  
Ltd Head Office  
104 Phatthanakan 40 Phatthanakan Rd  
Khwang Phatthanakan Khet Suan

Location:  
Room:  
Bldg:  
Lab:  
Dept:

Products | Applications | Software | Services

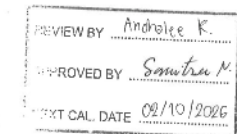
Agilent Technologies (Thailand) Limited, Head Office  
U Chu Liang Bldg. 22/F Unit A.D  
988 Rama 4 Road, Silom, Bangkok,  
Bangkok 10600 Thailand  
Tax ID : 0105542068218

## SERVICE REPORT

|                                 |                                  |
|---------------------------------|----------------------------------|
| Customer Purchase Order Number: | Customer Number: 70371013        |
| Service Request:                | Service Request Date:            |
| Service Order: 6807607368       | Service Confirmation: 6906615981 |

## Direct Inquiries to:

Contact Name: Customer Contact Center  
Contact E-mail: ccc-smi@agilent.com  
Contact Telephone: +662 637 6363  
Contact Fax: +662 632 4334



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Chitbank N.A. Bangkok Branch  
388 Interchange 21 Building, Sukhumvit Road, Klongtoey Nuea Sub-district, Wattana District, Bangkok 10110 Thailand  
Acc. No: 012-4452-007,  
THB/Krung Thai Bank PCL  
Siam Square Bldg, 415/1-2 Rama 1 Rd, Pathumwan, BKK 10330 Thailand

ORIGINAL

Page 1 of 3

Service Confirmation Number: 6906615981

Service Confirmation Date: 03.10.2025

## Service Instrument:

| Model Number | Model Description                 | Serial Number | System Handle | Parent Asset |
|--------------|-----------------------------------|---------------|---------------|--------------|
| SYS-IM-7900  | ICPMS 7900 System                 |               |               |              |
| G8418A       | SPS 4 Autosampler                 | AU15430722    | ICP MS 7900   | SYS-IM-7900  |
| G8411A       | ISIS 3 for Agilent 7850/7900/8900 | JP15510227    | ICP MS 7900   | SYS-IM-7900  |
| G3292A       | PSC 6106T Chiller                 | 2U15A1948     | ICP MS 7900   | SYS-IM-7900  |
| G8403A       | Agilent 7900 ICP-MS               | JP15471189    | ICP MS 7900   | SYS-IM-7900  |

## Service Items:

| Item | Service/Part # | Description                          | Qty  | Entitlement                           | Service Start | Service End |
|------|----------------|--------------------------------------|------|---------------------------------------|---------------|-------------|
| 1000 | EOQ            | Enterprise Operational Qualification | 1.00 | Agreement Entitlement - 100 % covered | 03.10.2025    | 03.10.2025  |
| 1010 | 5185-5850      | ICP-MS Checkout Solutions            | 1.00 | Agreement Entitlement - 100 % covered |               |             |

## Additional Information:

Service Confirmation Number: 6906615981

Service Confirmation Date: 03.10.2025

## Service Information:

|                                                                                                                                                                                            |                                                             |                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------|
| <b>Problem Description:</b><br>*WU-EQO-IM-7900-5001413366                                                                                                                                  |                                                             |                             |
| <b>Service Provided:</b><br>Perform OQ hardware control. Test logon, tune, BG and stability.<br>Test OQ control of instrument ICPMS=BKK_EL0043<br>After done the instrument test all pass. |                                                             |                             |
| <b>Service Overview Code:</b><br>Reason Code: Scheduled Service<br>Diagnosis Code: Scheduled Service<br>Resolution Code: Scheduled Service                                                 |                                                             |                             |
| <b>Reported Hours:</b><br>5.0                                                                                                                                                              | <b>Travel Hours:</b><br>1.5                                 |                             |
| <b>Customer Field Service Representative Name:</b><br>Panthap Kurasathain                                                                                                                  | <b>Customer Field Service Representative Signature:</b><br> | <b>Date:</b><br>03 Oct 2025 |
| <b>Customer Name:</b><br>Anchalee Khanjan                                                                                                                                                  | <b>Customer Signature:</b><br>Anchalee K.                   | <b>Date:</b><br>03 Oct 2025 |
| <b>Additional Comments:</b>                                                                                                                                                                |                                                             |                             |



## Metrological Center

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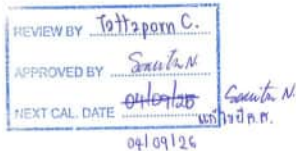
Website : www.scieco.co.th E-Mail : calibrate@scg.co.th

Certificate No. T250355

Page 1 of 6

### Certificate of Calibration

Equipment : HEATING BLOCK  
Manufacturer : Environmental Express  
Model : SC 196  
Serial No. : 6974CECW3285  
Customer Code : BKK\_EL0054  
ID No. : T5306A3  
Customer : ALS Laboratory Group (Thailand) Co.,Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250  
Customer Location : Acid Digestion Lab  
Date of Receipt : 26 February 2025  
Calibrated By : Atiphong Rongrat ( Technician )  
Approved By : Boonchai Suriyawong (Site Calibration Manager)  
Date of Issue : 7 MAR 2025



The uncertainties are for a confidence probability of approximately 95%.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrological Center.

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Certificate No. T250355

Page 2 of 6

### Calibration Report

Equipment : HEATING BLOCK  
Date of Calibration : 4 March 2025  
Environment : Temperature : 24.4-24.9 °C  
Line Voltage : 221.6-226.3 V  
Relative Humidity : 55 - 65 %RH

#### Condition of this results of calibration :

1. This equipment was calibrated by insert nine standard thermocouples type T into its chamber , the other one standard thermocouples type T use for ambient temperature measurement . The calibration was done in according to WI-T20.

All data show below were final values and the initial data from customer request . The temperature scale used was based on ITS - 90 .

#### 2. Reference Standard Instrument :

| Instrument  | Model  | Instrument No. | Certificate No. | Due Date      |
|-------------|--------|----------------|-----------------|---------------|
| TC          | TYPE T | TN221-TN230    | T240712         | 19 April 2025 |
| TC          | TYPE T | TN231-TN240    | T240712         | 19 April 2025 |
| TC          | TYPE T | TN241-TN250    | T240401         | 16 March 2025 |
| TC          | TYPE T | TN251-TN260    | T240401         | 16 March 2025 |
| DATA LOGGER | 34970A | T193           | T240401         | 16 March 2025 |

#### 3. This certificate is traceable to :

National Institute of Metrology ( Thailand ) through Metrological Center ( NSC-TISI-TIS 17025 CALIBRATION 0244.)

#### 4. Condition of calibrated item : good

##### Equipment Description :

Time Constant 2 Hour 40 Minute At 95 °C  
Fresh Air Damper ☐ Open ☐ Min ☐ Medium ☐ Max  
☐ Close  
☒ Not Available

#### 5. Adjustment :

( ) without adjustment ( X ) after adjustment

Approved By: Boonchai Suriyawong

FM-L13 108/30-05-57



## Metrological Center

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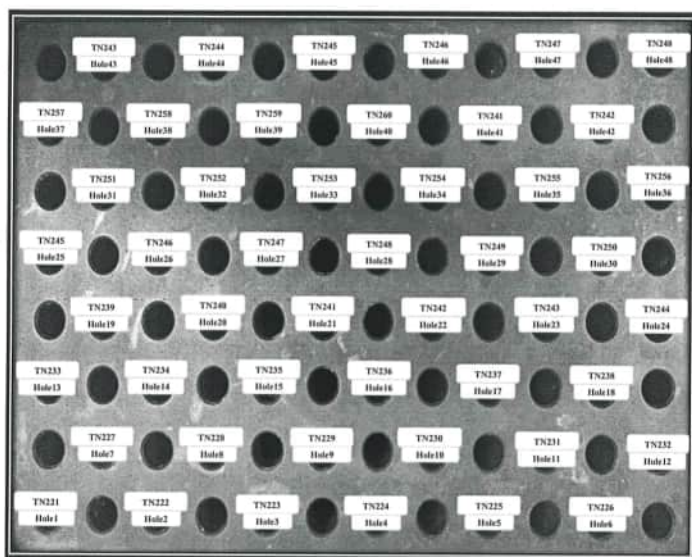
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Certificate No. T250355

Page 3 of 6

### Calibration Report



#### FRONT CONTROL

Approved By: Boonchai Suriyawong

FM-L13 108/30-05-57



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Certificate No. T250355

Page 4 of 6

### Calibration Report

#### Measurement Results

| Calibration Point | Average Standard Reading at each position ( °C ) |       |       |       |       |       |
|-------------------|--------------------------------------------------|-------|-------|-------|-------|-------|
| R1 Hole1-Hole6    | TN221                                            | TN222 | TN223 | TN224 | TN225 | TN226 |
| CAL POINT         | Max                                              | 94.85 | 95.37 | 95.03 | 95.25 | 94.75 |
| 95                | Min                                              | 94.17 | 94.66 | 94.38 | 94.63 | 94.87 |
| Average           | 94.51                                            | 95.02 | 94.70 | 94.94 | 95.20 | 94.43 |
| R2 Hole7-Hole12   | TN227                                            | TN228 | TN229 | TN230 | TN231 | TN232 |
| Max               | 94.71                                            | 94.56 | 94.79 | 95.32 | 95.44 | 95.06 |
| Min               | 94.05                                            | 93.88 | 94.10 | 94.65 | 94.90 | 94.65 |
| Average           | 94.38                                            | 94.22 | 94.44 | 94.99 | 95.17 | 94.85 |
| R3 Hole13-Hole18  | TN233                                            | TN234 | TN235 | TN236 | TN237 | TN238 |
| Max               | 95.26                                            | 95.43 | 95.40 | 95.71 | 95.41 | 95.06 |
| Min               | 94.54                                            | 94.64 | 94.71 | 95.10 | 94.86 | 94.42 |
| Average           | 94.90                                            | 95.03 | 95.06 | 95.41 | 95.13 | 94.74 |
| R4 Hole19-Hole24  | TN239                                            | TN240 | TN241 | TN242 | TN243 | TN244 |
| Max               | 95.13                                            | 95.06 | 95.68 | 96.16 | 95.35 | 95.80 |
| Min               | 94.39                                            | 94.43 | 94.86 | 95.51 | 94.88 | 95.12 |
| Average           | 94.76                                            | 94.75 | 95.27 | 95.83 | 95.12 | 95.46 |
| R5 Hole25-Hole30  | TN245                                            | TN246 | TN247 | TN248 | TN249 | TN250 |
| Max               | 94.95                                            | 95.81 | 95.39 | 95.82 | 95.66 | 95.66 |
| Min               | 94.47                                            | 95.03 | 94.67 | 94.99 | 94.84 | 94.87 |
| Average           | 94.71                                            | 95.42 | 95.03 | 95.41 | 95.25 | 95.27 |
| R6 Hole31-Hole36  | TN251                                            | TN252 | TN253 | TN254 | TN255 | TN256 |
| Max               | 96.07                                            | 95.34 | 96.28 | 95.39 | 94.95 | 95.12 |
| Min               | 95.28                                            | 94.55 | 95.51 | 94.62 | 94.13 | 94.35 |
| Average           | 95.67                                            | 94.95 | 95.90 | 95.00 | 94.54 | 94.73 |
| R7 Hole37-Hole42  | TN257                                            | TN258 | TN259 | TN260 | TN241 | TN242 |
| Max               | 95.15                                            | 95.63 | 96.11 | 95.09 | 95.34 | 95.51 |
| Min               | 94.38                                            | 94.88 | 95.32 | 94.28 | 94.54 | 94.72 |
| Average           | 94.76                                            | 95.25 | 95.71 | 94.69 | 94.94 | 95.11 |
| R8 Hole43-Hole48  | TN243                                            | TN244 | TN245 | TN246 | TN247 | TN248 |
| Max               | 95.84                                            | 95.87 | 95.44 | 95.72 | 95.65 | 95.75 |
| Min               | 95.06                                            | 95.10 | 94.60 | 94.95 | 94.87 | 94.98 |
| Average           | 95.45                                            | 95.48 | 95.02 | 95.34 | 95.26 | 95.36 |

Approved By: Boonchai Suriyawong

FM-L13 108/30-05-57



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Certificate No. T250355

Page 5 of 6

### Calibration Report

#### Measurement Results

| Calibration Point | Average Standard Reading at each position (°C) |        |        |        |        |        |
|-------------------|------------------------------------------------|--------|--------|--------|--------|--------|
| R1 Hole1-Hole6    | TN221                                          | TN222  | TN223  | TN224  | TN225  | TN226  |
| CAL POINT         | Max                                            | 104.48 | 104.40 | 104.60 | 105.27 | 105.24 |
|                   | Min                                            | 104.15 | 104.02 | 104.25 | 104.94 | 104.91 |
|                   | Average                                        | 104.32 | 104.21 | 104.42 | 105.10 | 105.08 |
| R2 Hole7-Hole12   | TN227                                          | TN228  | TN229  | TN230  | TN231  | TN232  |
|                   | Max                                            | 105.20 | 105.45 | 105.58 | 105.96 | 105.81 |
|                   | Min                                            | 104.92 | 105.14 | 105.29 | 105.64 | 105.53 |
|                   | Average                                        | 105.06 | 105.29 | 105.43 | 105.80 | 105.67 |
| R3 Hole13-Hole18  | TN233                                          | TN234  | TN235  | TN236  | TN237  | TN238  |
|                   | Max                                            | 106.09 | 106.14 | 105.83 | 106.25 | 105.97 |
|                   | Min                                            | 105.80 | 105.89 | 105.57 | 106.00 | 105.69 |
|                   | Average                                        | 105.94 | 106.01 | 105.70 | 106.13 | 105.83 |
| R4 Hole19-Hole24  | TN239                                          | TN240  | TN241  | TN242  | TN243  | TN244  |
|                   | Max                                            | 105.87 | 105.75 | 105.30 | 105.07 | 105.22 |
|                   | Min                                            | 105.62 | 105.52 | 105.13 | 104.90 | 105.05 |
|                   | Average                                        | 105.74 | 105.63 | 105.21 | 104.98 | 105.14 |
| R5 Hole25-Hole30  | TN245                                          | TN246  | TN247  | TN248  | TN249  | TN250  |
|                   | Max                                            | 105.62 | 105.54 | 105.52 | 105.75 | 105.97 |
|                   | Min                                            | 105.45 | 105.35 | 105.31 | 105.57 | 105.81 |
|                   | Average                                        | 105.53 | 105.44 | 105.41 | 105.66 | 105.89 |
| R6 Hole31-Hole36  | TN251                                          | TN252  | TN253  | TN254  | TN255  | TN256  |
|                   | Max                                            | 106.19 | 106.34 | 106.47 | 105.96 | 105.76 |
|                   | Min                                            | 106.02 | 106.16 | 106.31 | 105.77 | 105.58 |
|                   | Average                                        | 106.10 | 106.25 | 106.39 | 105.87 | 105.67 |
| R7 Hole37-Hole42  | TN257                                          | TN258  | TN259  | TN260  | TN241  | TN242  |
|                   | Max                                            | 106.21 | 105.59 | 105.45 | 105.36 | 106.08 |
|                   | Min                                            | 106.04 | 105.42 | 105.28 | 105.20 | 105.90 |
|                   | Average                                        | 106.12 | 105.51 | 105.37 | 105.28 | 105.99 |
| R8 Hole43-Hole48  | TN243                                          | TN244  | TN245  | TN246  | TN247  | TN248  |
|                   | Max                                            | 106.54 | 106.33 | 105.78 | 105.38 | 105.42 |
|                   | Min                                            | 106.38 | 106.16 | 105.60 | 105.20 | 105.25 |
|                   | Average                                        | 106.46 | 106.25 | 105.69 | 105.29 | 105.33 |

Approved By:

FM-L13 108/30-05-57



## Metrological Center

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Certificate No. T250355

Page 6 of 6

### Calibration Report

#### Measurement Results:

| Setting (°C) | HEATING BLOCK |         | Temperature Distribution |                   |
|--------------|---------------|---------|--------------------------|-------------------|
|              | Reading (°C)  |         | Stability (±°C)          | Uncertainty (±°C) |
|              | Min           | Average |                          |                   |
| 102.0        | -             | 102.0   | 0.43                     | 0.83              |
| 107.0        | -             | 107.0   | 0.20                     | 0.70              |

\* The quoted uncertainty exclude " uniformity "

The calibration result apply only the above calibrated item.

The result of test was found accurate as shown on date and place of test only.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k which for a t-distribution, providing a level of confidence of approximately 95 % .

Approved By:

FM-L13 108/30-05-57



### Performance Verification Certificate for Mercury Analyzer

PRODUCT ID Quicktrace M-8000 , Teledyne Leeman Labs

Equipment ID BKK\_EL0128 Mercury Analyzer  
S/N: US22133002

BKK\_EL0129 Autosampler  
S/N: 05222A560

Customer Name ALS Laboratory Group (Thailand) Co., Ltd.

Address 104 Soi Pattana 40, Pattana Rd. Suan Luang, Suan Luang  
Bangkok 10250 Thailand

Date of Qualified November 27, 2025  
Next Due date November 27, 2026

This certifies for products which was performed in acceptable criteria specifications

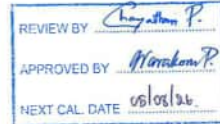
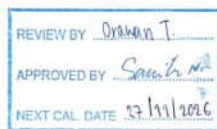
Autosampler & Sample Introduction PASSED  
Analyzer PASSED  
Gas Liquid Separator & Dryer PASSED  
CVAFS Detector PASSED  
Electronics/Mechanical PASSED  
Data station/PC PASSED  
Analytical test PASSED

Provided by

Scientist Instrument Co., Ltd.  
113 Soi Ekachai 44, Ekachai Road  
Khlong Bang Phran, Bangkok  
Bangkok 10150 Thailand

Certified by   
Thunraphol Sakdayos  
Service Engineer

BKK\_EL0128



Ref. Job number : #8208

#### Test Report

|                         |                                                                              |                   |            |
|-------------------------|------------------------------------------------------------------------------|-------------------|------------|
| Customers               | ALS Laboratory Group (Thailand) Co., Ltd.                                    |                   |            |
| Equipment               | Colorimeter                                                                  | Manufacturer      | HACH       |
| Controller Model        | <input checked="" type="checkbox"/> DH300 <input type="checkbox"/> Pocket II | ID No.            | BKK_LG0040 |
| Controller Serial No.   | 19040A000330                                                                 | Sensor Serial No. | -          |
| Date of test            | 05/08/2025                                                                   | Period            | 1 Year     |
| Environment temperature | 25.0 °C                                                                      | Humidity          | 62.3 %RH   |

#### Results

##### Instrument Checked

| Item | Characteristic               | Before                                                                 | After                                                                  | Remark |
|------|------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------|--------|
| 1    | Visual Inspect               | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail |        |
| 2    | Power Supply (4.5 - 6.0 VDC) | 5.8 VDC                                                                | 5.8 VDC                                                                |        |
| 3    | Display Check                | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail |        |
| 4    | Keyboard Check               | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail |        |
| 5    | Function System Program      | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail |        |

##### Warning and Error Checked

| Item | Event      | Before                                                                   | After                                                                    |
|------|------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|
| 6    | Error list | <input checked="" type="checkbox"/> None <input type="checkbox"/> Appear | <input checked="" type="checkbox"/> None <input type="checkbox"/> Appear |

##### Check with Standard

| Item            | Characteristic                         | Before    | After     | Remark |
|-----------------|----------------------------------------|-----------|-----------|--------|
| DPO-CHLORINE-LR |                                        |           |           |        |
| 7               | Blank ( 0.0 mg/l )                     | 0.00 mg/l | 0.00 mg/l |        |
| 8               | Standard C2 No. 1 ( 0.24 ± 0.09 mg/l ) | 0.27 mg/l | 0.27 mg/l |        |
| 9               | Standard C2 No. 2 ( 0.91 ± 0.1 mg/l )  | 0.93 mg/l | 0.93 mg/l |        |
| 10              | Standard C2 No. 3 ( 1.59 ± 0.14 mg/l ) | 1.81 mg/l | 1.81 mg/l |        |
| DPO-CHLORINE-IR |                                        |           |           |        |
| 11              | Blank ( 0.0 mg/l )                     | 0.0 mg/l  | 0.0 mg/l  |        |
| 12              | Standard C2 No. 1 ( 2.3 ± 0.2 mg/l )   | 2.1 mg/l  | 2.1 mg/l  |        |
| 13              | Standard C2 No. 2 ( 3.9 ± 0.3 mg/l )   | 3.9 mg/l  | 3.9 mg/l  |        |
| 14              | Standard C2 No. 3 ( 7.1 ± 0.6 mg/l )   | 7.0 mg/l  | 7.0 mg/l  |        |

บริษัท ฮาช (ประเทศไทย) จำกัด: อาคาร 8 ชั้น ถนนสุขุมวิท 111 ซอย 11 แขวงคลองตันใต้ เขตวัฒนา กรุงเทพมหานคร 10250

Tel: +66 (02) 026-3529 | Fax: +66(02) 026-3572 | Tax ID : 0105552107330 | Email: thmarketing@hach.com | www.th.hach.com

# Summary of checked

- ☐ The instrument can work normally and efficiently. (เครื่องมือสามารถทำงานได้ปกติและมีประสิทธิภาพ)  
☒ The instrument can work but it's requiring to maintenance. (เครื่องมือสามารถทำงานได้แต่ต้องบำรุงรักษา)  
☐ The instrument could not work it's requiring to repair. (เครื่องมือไม่สามารถทำงานได้และต้องซ่อมแซม)

# Remark:

พบค่าคลอไรด์มีค่าปกติ ผลการตรวจพบค่าคลอไรด์มีค่าปกติ

# Standard Equipment Used

| Equipment                           | Equipment I.D.                      |
|-------------------------------------|-------------------------------------|
| Standard Absorbance DPD-CHLORINE-IR | Lot No. A4150 Exp. date : Jun-26    |
| Standard Absorbance DPD-CHLORINE-IR | Lot No. A4162 Exp. date : Jun-26    |
| Digital multi meter                 | S/N : 92670084 Due date : 05-Nov-25 |
| Thermo hygrometer                   | S/N: 41432443 Due date : 29-Oct-25  |

Test By :

( Mr. Puthipong Duangsawat )

Service Engineer

Approved by :

( Mr. Poolaph Kongsungsorn )

Position :

Service Manager

บริษัท ฮาช (ประเทศไทย) จำกัด: อาคาร 3 ชั้น เลขที่ 735/4 ถนนพหลโยธิน แขวงจตุจักร เขตจตุจักร กรุงเทพฯ 10250  
Tel: +66 (02) 026-3529 | Fax: +66(02) 026-3572 | Tax ID : 0105552107330 | Email: thmarketing@hach.com | www.th.hach.com

# Certificate of Calibration

Cert.No.: 25CH1165  
Page.: 1 of 3

Equipment :

pH Meter

Manufacturer :

Mettler Toledo

Model :

Seven2Go

Serial No. :

B524047804

ID No. :

BKK\_LG0030

Condition As-Received:

Used Item

Received Date :

08 October 2025

Calibration Date :

09 October 2025

Reference :

2510-0271DSC-7

Submitted by :

ALS Laboratory Group (Thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Phatthanakan, Khet Suan Luang,  
Bangkok 10250 Thailand

Ambient Temperature :

(25 ± 2.5) °C

Relative Humidity :

(50 ± 15) %

Calibration Procedure :

In - house method :  
- CP-CH5 by direct measurement with DC voltage standard and direct measurement with certified reference material (CRM)  
- CP-CH8 by comparison with temperature standard

Calibrated by :

Walalak Sirithan

Approved by :

Approved Signatory

( ) Chakrit Waewwanjua

( ) Porpan Paipim

(✓) Sathip Meangmai

Issue Date :

10 October 2025

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written Approval of the head of Corporate Services 3: Equipment Calibration and Testing Services.

Cert.No.: 25CH1165  
Page.: 2 of 3

# Condition of this calibration result

1. Reference Standard Instrument

| Instrument                     | Serial No. | ID No.   | Cert. No. | Due Date     |
|--------------------------------|------------|----------|-----------|--------------|
| 1) Document Process Calibrator | 54030049   | 130RC116 | 25E2743   | 25 Aug 2026  |
| 2) Ref. Standard Thermometer   | 4982054    | 110RC044 | 25I708    | 03 July 2026 |

- This measurement result is traceable to SI through Technology Promotion Association (Thailand - Japan)

2. Certified Reference Materials : The measurement results are traceable to SI through CPA chem Ltd., ANSI-ASQ National Accreditation Board, Accredited No. AR-1835

| Buffer Solution | Manufacturer | Lot No. | Exp. date    |
|-----------------|--------------|---------|--------------|
| pH 4.007        | CPA chem     | 1114384 | 12 June 2027 |
| pH 6.965        | CPA chem     | 1086667 | 18 Jan 2026  |
| pH 10.010       | CPA chem     | 1135355 | 16 Aug 2026  |

3. This certificate is valid only to the item calibrated on date and place of calibration.

# Calibration Results

Function : mV Measurement

Performing standard curve by Document Process Calibrator at pH (4,7,10)

| Unit Under Calibration | Nominal Value | Standard Voltage Input | Actual Reading |       | Uncertainty of Measurement (±mV) | Coverage factor k |
|------------------------|---------------|------------------------|----------------|-------|----------------------------------|-------------------|
|                        | pH            | mV                     | mV             | pH    |                                  |                   |
| pH Meter               | 4.00          | 177.48                 | 177            | 4.00  | 0.58                             | 2.00              |
| S/N: B524047804        | 7.00          | 0.00                   | 0              | 7.00  | 0.58                             | 2.00              |
|                        | 10.00         | -177.48                | -178           | 10.00 | 0.58                             | 2.00              |

Cert.No.: 25CH1165  
Page.: 3 of 3

# Calibration Results

Function : pH Measurement

Performing three buffers standard curve by using buffer nominal pH (4,7,10)

| Unit Under Calibration | Standard pH Buffer Solution | Actual pH Reading | Actual mV Reading (mV) | Uncertainty of pH Measurement (±) | Coverage factor k |
|------------------------|-----------------------------|-------------------|------------------------|-----------------------------------|-------------------|
| pH Electrode           | 4.007                       | 4.01              | 185                    | 0.0071                            | 2.00              |
| S/N: 5154298           | 6.965                       | 6.97              | 8                      | 0.0099                            | 2.00              |
|                        | 10.010                      | 10.00             | -167                   | 0.0092                            | 2.00              |

Function : Temperature Measurement

(\*) Without adjustment

This equipment was connected with Temperature Probe;

- Model : InLab Expert Go-ISM

- Serial No. : 5154298

Dimension of probe

- Length : 120 mm.

- Diameter : 12 mm.

- Immersion Depth : 100 mm.

| Calibration Point (°C) | Standard Temperature (°C) | UUC* Reading (°C) | Error (°C) | Uncertainty of measurement (± °C) | Coverage factor k |
|------------------------|---------------------------|-------------------|------------|-----------------------------------|-------------------|
| 25.0                   | 25.002                    | 25.4              | 0.398      | 0.13                              | 2.00              |
| 45.0                   | 45.002                    | 45.5              | 0.438      | 0.13                              | 2.00              |

Remark : -UUC\* = Unit Under Calibration

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor k, providing a level of confidence of approximately 95 %.

# ภาคผนวก ช-1

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สำเนาหนังสืออนุญาตขึ้นทะเบียน  
ห้องปฏิบัติการวิเคราะห์เอกชน

- အသံ ၁" ၆.၆၂, ၈.၆၂



| ลำดับที่ | สารเคมี             | วิธีวิเคราะห์                                                                                                                                           |
|----------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 19       | Copper              | 1) Digestion, Inductively Coupled Plasma Method <sup>(K)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(K)</sup> |
| 20       | Cyanide             | Distillation, Colorimetric Method <sup>(J)</sup>                                                                                                        |
| 21       | 2,4'-DDX            | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                              |
| 22       | 4,4'-DDD            | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                              |
| 23       | 2,4'-DDE            | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                              |
| 24       | 4,4'-DDE            | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                              |
| 25       | 2,4'-DDT            | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                              |
| 26       | 4,4'-DDT            | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                              |
| 27       | Dieldrin            | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                              |
| 28       | Endosulfan Sulfate  | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(J)</sup>                                                              |
| 29       | Endosulfan I        | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                              |
| 30       | Endosulfan II       | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(J)</sup>                                                              |
| 31       | Endrin              | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                              |
| 32       | Endrin Alcohol      | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                              |
| 33       | Formaldehyde        | Distillation, Colorimetric Method <sup>(J)</sup>                                                                                                        |
| 34       | Free Chlorine       | 1) DPD Ferrous Titrimetric Method <sup>(K)</sup><br>2) DPD Colorimetric Method <sup>(K)</sup>                                                           |
| 35       | Heptachlor          | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                              |
| 36       | Heptachlor Epoxide  | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                              |
| 37       | Hexavalent Chromium | Colorimetric Method <sup>(J)</sup>                                                                                                                      |
| 38       | 3-Hydroxycarbofuran | High-Performance Liquid Chromatographic Method <sup>(J)</sup>                                                                                           |
| 39       | Lead                | 1) Digestion, Inductively Coupled Plasma Method <sup>(K)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(K)</sup> |

40 Manganese...

| ลำดับที่ | สารเคมี                | วิธีวิเคราะห์                                                                                                                                                                                                                   |
|----------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 40       | Manganese              | 1) Digestion, Inductively Coupled Plasma Method <sup>(K)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                         |
| 41       | Mercury                | 1) Digestion, Cold-Vapor Atomic Absorption<br>Spectrometric Method <sup>(K)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(K)</sup>                                                      |
| 42       | Methiocarb             | High-Performance Liquid Chromatographic Method <sup>(K)</sup>                                                                                                                                                                   |
| 43       | Methoxychlor           | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                                                                                      |
| 44       | Methomyl               | High-Performance Liquid Chromatographic Method <sup>(K)</sup>                                                                                                                                                                   |
| 45       | Nickel                 | 1) Digestion, Inductively Coupled Plasma Method <sup>(K)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                         |
| 46       | Oil & Grease           | 1) Liquid-Liquid, Partition-Gravimetric Method <sup>(K)</sup><br>2) Soxhlet Extraction Method <sup>(J)</sup>                                                                                                                    |
| 47       | Oxamyl                 | High-Performance Liquid Chromatographic Method <sup>(K)</sup>                                                                                                                                                                   |
| 48       | Propoxur               | High-Performance Liquid Chromatographic Method <sup>(K)</sup>                                                                                                                                                                   |
| 49       | Oil                    | Electrometric Method <sup>(K)</sup>                                                                                                                                                                                             |
| 50       | Phenols                | 1) Distillation, Chloroform Extraction Method <sup>(J)</sup><br>2) Distillation, Direct Photometric Method <sup>(J)</sup>                                                                                                       |
| 51       | Selenium               | 1) Digestion, Inductively Coupled Plasma Method <sup>(K)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                         |
| 52       | Sulfide                | Colorimetric Method <sup>(K)</sup>                                                                                                                                                                                              |
| 53       | Temperature            | Laboratory and Field Methods <sup>(K)</sup>                                                                                                                                                                                     |
| 54       | Total Dissolved Solids | Dried at 180 °C <sup>(J)</sup>                                                                                                                                                                                                  |
| 55       | Total Soluble Nitrogen | Semi-Micro Kjeldahl Method <sup>(K)</sup>                                                                                                                                                                                       |
| 56       | Total Phosphorus       | Digestion, Colorimetric Method <sup>(J)</sup>                                                                                                                                                                                   |
| 57       | Total Suspended Solids | Dried from 103-105 °C <sup>(J)</sup>                                                                                                                                                                                            |
| 58       | Toxaphene              | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                                                                                      |
| 59       | Trivalent Chromium     | 1) Digestion, Inductively Coupled Plasma Method/<br>Colorimetric Method/Calculation <sup>(K)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method/Colorimetric Method/<br>Calculation <sup>(K)</sup> |
| 60       | Zinc                   | 1) Digestion, Inductively Coupled Plasma Method <sup>(K)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                         |

61 Zinc...

หน้า 10 จาก 126 หน้า

| ลำดับที่ | สารเคมี                  | วิธีวิเคราะห์                                                                                                                                           |
|----------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | Acenanthrene             | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(J)</sup>                                                              |
| 2        | Acetone                  | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(J)</sup>                                                                        |
| 3        | Aldrin                   | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(J)</sup>                                                              |
| 4        | Anthracene               | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(J)</sup>                                                              |
| 5        | Antimony                 | 1) Digestion, Inductively Coupled Plasma Method <sup>(J)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(J)</sup> |
| 6        | Arsenic                  | 1) Digestion, Inductively Coupled Plasma Method <sup>(J)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(J)</sup> |
| 7        | Atrazine                 | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(J)</sup>                                                              |
| 8        | Barium                   | 1) Digestion, Inductively Coupled Plasma Method <sup>(J)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(J)</sup> |
| 9        | Benz(a)anthracene        | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(J)</sup>                                                              |
| 10       | Benzene                  | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(J)</sup>                                                                        |
| 11       | Benz(b)fluoranthene      | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(J)</sup>                                                              |
| 12       | Benz(k)fluoranthene      | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(J)</sup>                                                              |
| 13       | Benzoic Acid             | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                              |
| 14       | Benz(a)pyrene            | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                              |
| 15       | Benz(g,h)perylene        | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                              |
| 16       | Beryllium                | 1) Digestion, Inductively Coupled Plasma Method <sup>(K)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(K)</sup> |
| 17       | Bis(2-chloroethoxy)ether | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                              |

18 Bis(2-ethylhexyloxy)ethane...

| ลำดับที่ | สารเคมี                    | วิธีวิเคราะห์                                                                                                                                                                                                                   |
|----------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18       | Bis(2-ethylhexyloxy)ethane | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                                                                                      |
| 19       | Bromodibromomethane        | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                                                                                                |
| 20       | Bromoform                  | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                                                                                                |
| 21       | Butanol                    | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                                                                                                |
| 22       | Butyl, benzyl, phthalate   | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                                                                                      |
| 23       | Caesium                    | 1) Digestion, Inductively Coupled Plasma Method <sup>(K)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                         |
| 24       | Carbazole                  | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                                                                                      |
| 25       | Carbon disulfide           | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                                                                                                |
| 26       | Carbon tetrachloride       | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                                                                                                |
| 27       | Chloroane                  | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                                                                                      |
| 28       | p-Chloroaniline            | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                                                                                      |
| 29       | Chlorobenzene              | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                                                                                                |
| 30       | Chlorodibromomethane       | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                                                                                                |
| 31       | Chloroform                 | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                                                                                                |
| 32       | 2-Chlorophenol             | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                                                                                      |
| 33       | Chromium                   | 1) Digestion, Inductively Coupled Plasma Method <sup>(K)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(K)</sup>                                                                         |
| 34       | Chromium (II)              | 1) Digestion, Inductively Coupled Plasma Method/<br>Colorimetric Method/Calculation <sup>(K)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method/Colorimetric Method/<br>Calculation <sup>(K)</sup> |
| 35       | Chromium (VI)              | Colorimetric Method <sup>(K)</sup>                                                                                                                                                                                              |

36 Chrysene...

| ลำดับที่ | สารพิษ                     | วิธีวิเคราะห์                                                                              |
|----------|----------------------------|--------------------------------------------------------------------------------------------|
| 36       | Chrysene                   | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(1)</sup> |
| 37       | Cyanide                    | Distillation, Colorimetric Method <sup>(6)</sup>                                           |
| 38       | 2,4-D                      | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 39       | DDO                        | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 40       | DDE                        | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 41       | DDT                        | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 42       | Dibenz(a,h)anthracene      | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 43       | Dimethyl Phthalate         | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 44       | 1,2-Dichlorobenzene        | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>           |
| 45       | 1,3-Dichlorobenzene        | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>           |
| 46       | 1,4-Dichlorobenzene        | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>           |
| 47       | 3,3-Dichlorobenzidine      | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 48       | 1,1-Dichloroethane         | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>           |
| 49       | 1,2-Dichloroethane         | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>           |
| 50       | 1,1-Dichloroethylene       | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>           |
| 51       | dis-1,2-Dichloroethylene   | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>           |
| 52       | trans-1,2-Dichloroethylene | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>           |
| 53       | 2,4-Dichlorobenzene        | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 54       | 1,2-Dichloropropene        | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>           |
| 55       | 1,3-Dichloropropene        | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>           |

56 1,3-Dichloropropene...

| ลำดับที่ | สารพิษ                   | วิธีวิเคราะห์                                                                              |
|----------|--------------------------|--------------------------------------------------------------------------------------------|
| 56       | 1,3-Dichloropropene      | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>           |
| 57       | Dieldrin                 | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 58       | Diethyl Phthalate        | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 59       | 2,4-Dimethylnonol        | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 60       | 2,4-Dinitrophenol        | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 61       | 2,4-Dinitrotoluene       | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 62       | 2,5-Dinitrotoluene       | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 63       | Dihexyl phthalate        | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 64       | Endosulfan               | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 65       | Endrin                   | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 66       | Ethylbenzene             | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>           |
| 67       | Fluoranthene             | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 68       | Fluorene                 | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 69       | Heptachlor               | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 70       | Heptachlor epoxide       | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 71       | Hexachlorobenzene        | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 72       | Hexachloro-1,3-butadiene | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>           |
| 73       | n-Hexane                 | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>           |
| 74       | $\alpha$ -HCH            | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 75       | $\beta$ -HCH             | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |

76  $\gamma$ -HCH...

| ลำดับที่ | สารพิษ                    | วิธีวิเคราะห์                                                                                                                                                              |
|----------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 76       | $\gamma$ -HCH             | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                 |
| 77       | Hexachlorocyclopentadiene | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                 |
| 78       | Hexachloroethene          | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                 |
| 79       | Indeno(1,2,3-cd)pyrene    | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                 |
| 80       | Isophorone                | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                 |
| 81       | Lead                      | 1) Digestion, Inductively Coupled Plasma Method <sup>(2)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(2)</sup>                    |
| 82       | Manganese                 | 1) Digestion, Inductively Coupled Plasma Method <sup>(2)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(2)</sup>                    |
| 83       | Mercury                   | 1) Digestion, Cold Vapor Atomic Absorption<br>Spectrometric Method <sup>(2)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 84       | Methanol                  | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                           |
| 85       | Methoxychlor              | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                 |
| 86       | Methyl bromide            | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                           |
| 87       | Methylene chloride        | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                           |
| 88       | 2-Methylpheno.            | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                 |
| 89       | 2-Methylnaphthalene       | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                 |
| 90       | Methyl, tert-butyl Ether  | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                           |
| 91       | Naphthalene               | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                 |
| 92       | Nickel                    | 1) Digestion, Inductively Coupled Plasma Method <sup>(2)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(2)</sup>                    |
| 93       | Nitrobenzene              | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                 |

94 N-Nitrosodiphenylamine...

| ลำดับที่ | สารพิษ                                                                                                                      | วิธีวิเคราะห์                                                                                                                                                                                                              |
|----------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 94       | N-Nitrosodiphenylamine                                                                                                      | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                                                                 |
| 95       | N-Nitrosodimethylpropylamine                                                                                                | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                                                                 |
| 96       | Polychlorinated Biphenyls<br>- PCB 1016<br>- PCB 1221<br>- PCB 1232<br>- PCB 1242<br>- PCB 1248<br>- PCB 1254<br>- PCB 1260 | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                                                                 |
| 97       | Pentachlorophenol                                                                                                           | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                                                                 |
| 98       | pH                                                                                                                          | Electrometric Method <sup>(2)</sup>                                                                                                                                                                                        |
| 99       | Phenanthrene                                                                                                                | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                                                                 |
| 100      | Phenol                                                                                                                      | 1) Distillation, Chloroform Extraction Method <sup>(2)</sup><br>2) Distillation, Direct Photometric Method <sup>(2)</sup><br>3) Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup> |
| 101      | Pyrene                                                                                                                      | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                                                                 |
| 102      | Selenium                                                                                                                    | 1) Digestion, Inductively Coupled Plasma Method <sup>(2)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                    |
| 103      | Silver                                                                                                                      | 1) Digestion, Inductively Coupled Plasma Method <sup>(2)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                    |
| 104      | Styrene                                                                                                                     | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                                                                           |
| 105      | 1,1,2,2-Tetrachloroethane                                                                                                   | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                                                                           |
| 106      | Tetrachlorobethylene                                                                                                        | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                                                                           |
| 107      | Toluene                                                                                                                     | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                                                                           |
| 108      | Toxaphene                                                                                                                   | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2)</sup>                                                                                                                                 |
| 109      | TPI (C <sub>8</sub> -C <sub>9</sub> )                                                                                       | Purge and Trap, Gas Chromatographic/<br>Mass Spectrometric Method <sup>(2,4,5)</sup>                                                                                                                                       |

110 1,2-(C<sub>8</sub>-C<sub>9</sub>)...

| ลำดับที่ | สารเคมี                                 | วิธีวิเคราะห์                                                                                                                                       |
|----------|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| 110      | TPH (C <sub>10</sub> -C <sub>26</sub> ) | Separatory Funnel, Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1,2,3</sup>                                                            |
| 111      | IPH (C <sub>10</sub> -C <sub>26</sub> ) | Separatory Funnel, Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1,2,3</sup>                                                            |
| 112      | 1,2,4-Trichlorobenzene                  | Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1,2</sup>                                                                        |
| 113      | 1,1,1-Trichloroethane                   | Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1,2</sup>                                                                        |
| 114      | 1,1,2-Trichloroethane                   | Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1,2</sup>                                                                        |
| 115      | Trichloroethylene                       | Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1,2</sup>                                                                        |
| 116      | 2,4,6-Trichlorophenol                   | Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>1,2</sup>                                                              |
| 117      | 2,4,5-Trichlorophenol                   | Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>1,2</sup>                                                              |
| 118      | 1,2,3-Trimethylbenzene                  | Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1,2</sup>                                                                        |
| 119      | Vanadium                                | 1) Digestion, Inductively Coupled Plasma Method <sup>1,2</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2</sup> |
| 120      | Vinyl acetate                           | Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1,2</sup>                                                                        |
| 121      | Vinyl chloride                          | Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1,2</sup>                                                                        |
| 122      | m-Xylene                                | Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1,2</sup>                                                                        |
| 123      | o-Xylene                                | Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1,2</sup>                                                                        |
| 124      | p-Xylene                                | Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1,2</sup>                                                                        |
| 125      | Xylene (Total)                          | Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1,2</sup>                                                                        |
| 126      | Zinc                                    | 1) Digestion, Inductively Coupled Plasma Method <sup>1,2</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2</sup> |

ธาตุเคมี...

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ธาตุเคมี (ไม่ต่อเนื่อง) จำนวน 28 รายการ

| ลำดับที่ | สารเคมี           | วิธีวิเคราะห์                                                                                                                                                                                 |
|----------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | Antimony          | 1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>1,2</sup><br>2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2</sup> |
| 2        | Arsenic           | 1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>1,2</sup><br>2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2</sup> |
| 3        | Beryllium         | 1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>1,2</sup><br>2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2</sup> |
| 4        | Cadmium           | 1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>1,2</sup><br>2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2</sup> |
| 5        | Carbon Monoxide   | 1) Instrumental Analyzer Method <sup>1,2</sup><br>2) Sampling Bag Non-Dispersive Infrared Method <sup>1,2</sup>                                                                               |
| 6        | Chlorine          | 1) Adsorption Sampling, Ion Chromatographic Method <sup>1,2</sup><br>2) Isokinetic Sampling, Ion Chromatographic Method <sup>1,2</sup>                                                        |
| 7        | Chromium          | 1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>1,2</sup><br>2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2</sup> |
| 8        | Cobalt            | 1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>1,2</sup><br>2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2</sup> |
| 9        | Copper            | 1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>1,2</sup><br>2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2</sup> |
| 10       | Cresol            | Adsorption Sampling, Gas Chromatographic Method <sup>1,2</sup>                                                                                                                                |
| 11       | Dioxins           | Isokinetic Sampling <sup>1,2</sup>                                                                                                                                                            |
| 12       | Hydrogen Chloride | 1) Adsorption Sampling, Ion Chromatographic Method <sup>1,2</sup><br>2) Isokinetic Sampling, Ion Chromatographic Method <sup>1,2</sup>                                                        |
| 13       | Hydrogen Fluoride | 1) Adsorption Sampling, Ion Chromatographic Method <sup>1,2</sup><br>2) Isokinetic Sampling, Ion Chromatographic Method <sup>1,2</sup>                                                        |
| 14       | Hydrogen Sulfide  | Adsorption Sampling, Isokinetic Method <sup>1,2</sup>                                                                                                                                         |

15 Lead...

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| ลำดับที่ | สารเคมี                     | วิธีวิเคราะห์                                                                                                                                                                                                |
|----------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15       | Lead                        | 1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>1,2</sup><br>2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2</sup>                |
| 16       | Manganese                   | 1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>1,2</sup><br>2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2</sup>                |
| 17       | Mercury                     | 1) Isokinetic Sampling, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>1,2</sup><br>2) Isokinetic Sampling, Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method <sup>1,2</sup> |
| 18       | Nickel                      | 1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>1,2</sup><br>2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2</sup>                |
| 19       | Opacity                     | Ringmann's Method <sup>1,2</sup>                                                                                                                                                                             |
| 20       | Oxides of Nitrogen          | 1) Adsorption Sampling, Phenoldiazoic Acid Method <sup>1,2</sup><br>2) Adsorption Sampling, Alkaline Permanganate/Colorimetric Method <sup>1,2</sup>                                                         |
| 21       | Selenium                    | 1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>1,2</sup><br>2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2</sup>                |
| 22       | Sulfur Dioxide              | 1) Adsorption Sampling, Barium-Thion Thimetric Method <sup>1,2</sup><br>2) Instrumental Analyzer Method <sup>1,2</sup>                                                                                       |
| 23       | Sulfuric Acid               | Isokinetic Sampling, Barium-Thion Thimetric Method <sup>1,2</sup>                                                                                                                                            |
| 24       | Thallium                    | 1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>1,2</sup><br>2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2</sup>                |
| 25       | Tin                         | 1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>1,2</sup><br>2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2</sup>                |
| 26       | Total Suspended Particulate | 1) Isokinetic Sampling, Gravimetric Method <sup>1,2</sup><br>2) Parallel Train, Isokinetic Sampling, Gravimetric Method <sup>1,2</sup>                                                                       |

27 Vanadium...

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| ลำดับที่ | สารเคมี  | วิธีวิเคราะห์                                                                                                                                                                                 |
|----------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 27       | Vanadium | 1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>1,2</sup><br>2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2</sup> |
| 28       | Xylene   | Adsorption Sampling, Gas Chromatographic Method <sup>1,2</sup>                                                                                                                                |

สิ่งปนเปื้อนหรือวัสดุที่ไม่ใช่ตัว จำนวน 35 รายการ

| ลำดับที่ | สารเคมี  | วิธีวิเคราะห์                                                                                                                                                                                                                                                                                                                                                  |
|----------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | Acid     | 1) Waste Extraction, Separatory Funnel, Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>1,2,3,4</sup><br>2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>1,2,3,4</sup><br>3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>1,2,3,4</sup>                             |
| 2        | Antimony | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>1,2,3,4</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2,3,4</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>1,2,3,4</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2,3,4</sup> |
| 3        | Arsenic  | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>1,2,3,4</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2,3,4</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>1,2,3,4</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2,3,4</sup> |
| 4        | Barium   | 1) Waste extraction, Digestion, Inductively Coupled Plasma Method <sup>1,2,3,4</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2,3,4</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>1,2,3,4</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>1,2,3,4</sup> |

5 Beryllium...

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| ลำดับที่ | สารเคมี      | วิธีวิเคราะห์                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5        | Beryllium    | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>11.6.19</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11.6.20</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>11.6.21</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11.6.22</sup>                                                                                                                                                                                                                                                 |
| 6        | Cadmium      | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>11.6.23</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11.6.24</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>11.6.25</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11.6.26</sup>                                                                                                                                                                                                                                                 |
| 7        | Chloroacne   | 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.27</sup><br>2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.28</sup><br>3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.29</sup>                                                                                                                                                                                                                                                                              |
| 8        | Chromium     | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>11.6.30</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11.6.31</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>11.6.32</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11.6.33</sup>                                                                                                                                                                                                                                                 |
| 9        | Chromium (I) | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method; Waste Extraction, Colorimetric Method; Calculation Method <sup>11.6.34</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method; Waste Extraction, Colorimetric Method; Calculation Method <sup>11.6.35</sup><br>3) Digestion, Inductively Coupled Plasma Method; Alkaline Digestion, Colorimetric Method; Calculation Method <sup>11.6.36</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method; Alkaline Digestion, Colorimetric Method; Calculation Method <sup>11.6.37</sup> |

19 Chromium (VI)...

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| ลำดับที่ | สารเคมี      | วิธีวิเคราะห์                                                                                                                                                                                                                                                                                                                                                  |
|----------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10       | Chromium (V) | 1) Waste Extraction, Colorimetric Method <sup>11.6.38</sup><br>2) Alkaline Digestion, Colorimetric Method <sup>11.6.39</sup>                                                                                                                                                                                                                                   |
| 11       | Copper       | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>11.6.40</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11.6.41</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>11.6.42</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11.6.43</sup> |
| 12       | Copper       | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>11.6.44</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11.6.45</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>11.6.46</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11.6.47</sup> |
| 13       | 2,4-D        | 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.48</sup><br>2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.49</sup><br>3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.50</sup>                              |
| 14       | DDC          | 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.51</sup><br>2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.52</sup><br>3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.53</sup>                              |
| 15       | DDs          | 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.54</sup><br>2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.55</sup><br>3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.56</sup>                              |
| 16       | DDT          | 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.57</sup><br>2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.58</sup><br>3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.59</sup>                              |

2) Soxhlet...

- ๑๖ -

| ลำดับที่ | สารเคมี    | วิธีวิเคราะห์                                                                                                                                                                                                                                                                                                                                                  |
|----------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 17       | Diachin    | 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.60</sup><br>3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.61</sup><br>4) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.62</sup>                              |
| 18       | Enzin      | 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.63</sup><br>2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.64</sup><br>3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.65</sup>                              |
| 19       | Heptachlor | 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.66</sup><br>2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.67</sup><br>3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.68</sup>                              |
| 20       | Lead       | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>11.6.69</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11.6.70</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>11.6.71</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11.6.72</sup> |
| 21       | Linane     | 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.73</sup><br>2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.74</sup><br>3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.75</sup>                              |

22 Mercury...

- ๑๖ -

| ลำดับที่ | สารเคมี                                                                                                                                                        | วิธีวิเคราะห์                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 22       | Mercury                                                                                                                                                        | 1) Waste Extraction, Digestion, Cold Vapor Atomic Absorption Spectrometric Method <sup>11.6.76</sup><br>2) Waste Extraction, Digestion, Cold Vapor Atomic Fluorescence Spectrometric Method <sup>11.6.77</sup><br>3) Digestion, Cold Vapor Atomic Absorption Spectrometric Method <sup>11.6.78</sup><br>4) Digestion, Cold Vapor Atomic Fluorescence Spectrometric Method <sup>11.6.79</sup><br>5) Thermal Decomposition Amalgamation and Atomic Absorption Spectrometric Method <sup>11.6.80</sup> |
| 23       | Methoxychlor                                                                                                                                                   | 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.81</sup><br>2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.82</sup><br>3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.83</sup>                                                                                                                                                                   |
| 24       | Nitex                                                                                                                                                          | 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.84</sup><br>2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.85</sup><br>3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.86</sup>                                                                                                                                                                   |
| 25       | Nolyscerum                                                                                                                                                     | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>11.6.87</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11.6.88</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>11.6.89</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11.6.90</sup>                                                                                                                                      |
| 26       | Nickel                                                                                                                                                         | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>11.6.91</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11.6.92</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>11.6.93</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11.6.94</sup>                                                                                                                                      |
| 27       | Polychlorinated biphenyls (PCBs)<br>- Aroclor 1016<br>- Aroclor 1221<br>- Aroclor 1232<br>- Aroclor 1242<br>- Aroclor 1218<br>- Aroclor 1254<br>- Aroclor 1260 | 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.95</sup><br>2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.96</sup><br>3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11.6.97</sup>                                                                                                                                                                   |

- 2-Chlorodiphenyl...

| ลำดับที่ | สารเคมี                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | วิธีวิเคราะห์                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 28       | <ul style="list-style-type: none"> <li>- 2-Chlorobiphenyl</li> <li>- 2,3-Dichlorobiphenyl</li> <li>- 2,2',5'-Trichlorobiphenyl</li> <li>- 2,4',5'-Trichlorobiphenyl</li> <li>- 2,2',3,5'-Tetrachlorobiphenyl</li> <li>- 2,2',5,5'-Tetrachlorobiphenyl</li> <li>- 2,3',4,4'-Tetrachlorobiphenyl</li> <li>- 2,2',3,4,5-Pentachlorobiphenyl</li> <li>- 2,2',4,5,5-Pentachlorobiphenyl</li> <li>- 2,3',4',5-Pentachlorobiphenyl</li> <li>- 2,2',3,4,4',5-Hexachlorobiphenyl</li> <li>- 2,2',3,4,5,5-Hexachlorobiphenyl</li> <li>- 2,2',3,5,5,6-Hexachlorobiphenyl</li> <li>- 2,2',4,4',5,5-Hexachlorobiphenyl</li> <li>- 2,2',3,3',4,4',5-Heptachlorobiphenyl</li> <li>- 2,2',3,4,4',5,5-Heptachlorobiphenyl</li> <li>- 2,2',3,4',5,5,6-Heptachlorobiphenyl</li> <li>- 2,2',3,3',4,4',5,5,6-Octachlorobiphenyl</li> <li>- 2,2',3,3',4,4',5,5,6,6-Nonachlorobiphenyl</li> <li>- Pentachlorophenol</li> </ul> | 1) Waste Extraction, Separatory Funnel, Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1)(2)(4)</sup> |
| 29       | pH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Electrometric Method <sup>(1)(3)(5)</sup>                                                                                                                                                                                                                                                                                                                                                                                           |
| 30       | Selenium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1)(2)(4)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(1)(2)(4)</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1)(2)(4)</sup>                                                              |

31 Silver...

| ลำดับที่ | สารเคมี   | วิธีวิเคราะห์                                                                                                                                                                                                                                                                                                                                                          |
|----------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 31       | Silver    | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1)(2)(4)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(1)(2)(4)</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1)(2)(4)</sup> |
| 32       | Thallium  | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1)(2)(4)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(1)(2)(4)</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1)(2)(4)</sup> |
| 33       | Toxaphene | 1) Waste Extraction, Separatory Funnel, Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup>                               |
| 34       | Vanadium  | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1)(2)(4)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(1)(2)(4)</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1)(2)(4)</sup> |
| 35       | Zinc      | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1)(2)(4)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(1)(2)(4)</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1)(2)(4)</sup> |

36

37

## Annex 125 รายการ

| ลำดับที่ | สารเคมี           | วิธีวิเคราะห์                                                                                                                                                                                    |
|----------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | Acenaphthene      | 1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup> |
| 2        | Acetone           | 1) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(3)</sup><br>2) Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(3)</sup>            |
| 3        | Adrin             | 1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup> |
| 4        | Anthracene        | 1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup> |
| 5        | Antimony          | 1) Digestion, Inductively Coupled Plasma Method <sup>(1)(2)(4)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1)(2)(4)</sup>                                  |
| 6        | Arsenic           | 1) Digestion, Inductively Coupled Plasma Method <sup>(1)(2)(4)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1)(2)(4)</sup>                                  |
| 7        | Atrazine          | 1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup> |
| 8        | Baflum            | 1) Digestion, Inductively Coupled Plasma Method <sup>(1)(2)(4)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1)(2)(4)</sup>                                  |
| 9        | Benz[a]anthracene | 1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup> |
| 10       | Benzene           | Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(3)</sup>                                                                                                               |

11 Benzofluoranthene

| ลำดับที่ | สารเคมี                    | วิธีวิเคราะห์                                                                                                                                                                                    |
|----------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11       | Benzofluoranthene          | 1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup> |
| 12       | Benzofluoranthene          | 1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup> |
| 13       | Benzoic acid               | 1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup> |
| 14       | Benzofluoranthene          | 1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup> |
| 15       | Benzofluoranthene          | 1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup> |
| 16       | Benzofluoranthene          | 1) Digestion, Inductively Coupled Plasma Method <sup>(1)(2)(4)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1)(2)(4)</sup>                                  |
| 17       | Bis(2-chlorophenyl)ether   | 1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup> |
| 18       | Bis(2-ethylhexyl)phthalate | 1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup> |
| 19       | Bromodichloromethane       | Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(3)</sup>                                                                                                               |
| 20       | Bromoform                  | Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(3)</sup>                                                                                                               |
| 21       | Butanol                    | Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(3)</sup>                                                                                                        |
| 22       | Butyl Benzyl Phthalate     | 1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1)(2)(4)</sup> |

23 Cadmium...

| ลำดับที่ | สารเคมี               | วิธีวิเคราะห์                                                                                                                                                                                                                                                                                  |
|----------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 23       | Caesium               | 1) Digestion, Inductively Coupled Plasma Method <sup>13,14</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>13,17</sup>                                                                                                                                    |
| 24       | Carbazole             | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,18</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,19</sup>                                                                                                 |
| 25       | Carbon Disulfide      | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,20</sup>                                                                                                                                                                                                              |
| 26       | Carbon tetrachloride  | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,21</sup>                                                                                                                                                                                                              |
| 27       | Chlordane             | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,22</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,23</sup>                                                                                                 |
| 28       | o-Chloroaniline       | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,24</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,25</sup>                                                                                                 |
| 29       | Chlorobenzene         | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,26</sup>                                                                                                                                                                                                              |
| 30       | Chlorodichloromethane | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,27</sup>                                                                                                                                                                                                              |
| 31       | Chloroform            | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,28</sup>                                                                                                                                                                                                              |
| 32       | 2-Chlorophenol        | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,29</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,30</sup>                                                                                                 |
| 33       | Chromium              | 1) Digestion, Inductively Coupled Plasma Method <sup>13,31</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>13,32</sup>                                                                                                                                    |
| 34       | Chromium (I)          | 1) Digestion, Inductively Coupled Plasma Method/<br>Azide Digestion, Colorimetric Method/Calculation<br>Method <sup>13,33,34</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method/Alkaline Digestion,<br>Colorimetric Method/Calculation Method <sup>13,34,35</sup> |
| 35       | Chromium (VI)         | Azide Digestion, Colorimetric Method <sup>13,36</sup>                                                                                                                                                                                                                                          |

36 Chrysene...

| ลำดับที่ | สารเคมี              | วิธีวิเคราะห์                                                                                                                                                                                  |
|----------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 36       | Chrysene             | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,37</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,38</sup> |
| 37       | Cymene               | Extraction, Distillation, Colorimetric Method <sup>13,39,40</sup>                                                                                                                              |
| 38       | 2,4-D                | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,41</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,42</sup> |
| 39       | DDO                  | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,43</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,44</sup> |
| 40       | DDE                  | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,45</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,46</sup> |
| 41       | DDT                  | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,47</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,48</sup> |
| 42       | Dibenzanthracene     | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,49</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,50</sup> |
| 43       | Di-n-Butyl Phthalate | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,51</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,52</sup> |
| 44       | 1,2-Dichlorobenzene  | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,53</sup>                                                                                                              |
| 45       | 1,3-Dichlorobenzene  | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,54</sup>                                                                                                              |
| 46       | 1,4-Dichlorobenzene  | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,55</sup>                                                                                                              |
| 47       | 3,3-Dichlorobenzene  | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,56</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,57</sup> |
| 48       | 1,1-Dichloroethane   | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,58</sup>                                                                                                              |

49 1,2-Dichloroethane...

| ลำดับที่ | สารเคมี                    | วิธีวิเคราะห์                                                                                                                                                                                  |
|----------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 49       | 1,2-Dichloroethane         | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,59</sup>                                                                                                              |
| 50       | 1,1-Dichloroethylene       | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,60</sup>                                                                                                              |
| 51       | cis-1,2-Dichloroethylene   | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,61</sup>                                                                                                              |
| 52       | trans-1,2-Dichloroethylene | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,62</sup>                                                                                                              |
| 53       | 2,4-Dichlorophenol         | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,63</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,64</sup> |
| 54       | 1,2-Dichloropropane        | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,65</sup>                                                                                                              |
| 55       | 1,3-Dichloropropane        | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,66</sup>                                                                                                              |
| 56       | 1,3-Dichloropropane        | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,67</sup>                                                                                                              |
| 57       | Dieldrin                   | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,68</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,69</sup> |
| 58       | Diethyl Phthalate          | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,70</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,71</sup> |
| 59       | 2,4-Dimethylphenol         | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,72</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,73</sup> |
| 60       | 2,4-Dinitrophenol          | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,74</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,75</sup> |
| 61       | 2,4-Dinitrotoluene         | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,76</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,77</sup> |
| 62       | 2,6-Dinitrotoluene         | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,78</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,79</sup> |

63 Di-n-Octyl Phthalate...

| ลำดับที่ | สารเคมี                  | วิธีวิเคราะห์                                                                                                                                                                                  |
|----------|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 63       | Di-n-Octyl Phthalate     | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,80</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,81</sup> |
| 64       | Endosulfan               | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,82</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,83</sup> |
| 65       | Endrin                   | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,84</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,85</sup> |
| 66       | Ethylbenzene             | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,86</sup>                                                                                                              |
| 67       | Fluorenone               | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,87</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,88</sup> |
| 68       | Fluorene                 | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,89</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,90</sup> |
| 69       | Heptachlor               | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,91</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,92</sup> |
| 70       | Heptachlor epoxide       | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,93</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,94</sup> |
| 71       | Hexachlorobenzene        | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,95</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,96</sup> |
| 72       | Hexachloro-1,3-butadiene | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,97</sup>                                                                                                              |
| 73       | n-Hexane                 | 1) Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,98</sup><br>2) Equilibrium Headspace, Gas Chromatography/<br>Mass Spectrometric Method <sup>13,99</sup>            |

73 n-Hexane...

| ลำดับที่ | สารเคมี                         | วิธีวิเคราะห์                                                                                                                                                                                                                                                                          |
|----------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 74       | CH <sub>3</sub> CH <sub>3</sub> | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                       |
| 75       | β-HCH                           | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                       |
| 76       | γ-HCH                           | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                       |
| 77       | Hexachlorocyclopentadiene       | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                       |
| 78       | Hexachlorosthane                | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                       |
| 79       | Indeno[1,2,3-cd]pyrene          | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                       |
| 80       | Isophorone                      | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                       |
| 81       | Lead                            | 1) Digestion, Inductively Coupled Plasma Method <sup>(1)(2)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                                                          |
| 82       | Manganese                       | 1) Digestion, Inductively Coupled Plasma Method <sup>(1)(2)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                                                          |
| 83       | Mercury                         | 1) Digestion, Cold-Vapor Atomic Absorption<br>Spectrometric Method <sup>(1)(2)</sup><br>2) Thermal Decomposition, Amalgamation, and<br>Atomic Absorption Spectrophotometry <sup>(1)(2)</sup><br>3) Digestion, Cold-Vapor Atomic Fluorescence<br>Spectrometric Method <sup>(1)(2)</sup> |

84 Methano...

| ลำดับที่ | สารเคมี                 | วิธีวิเคราะห์                                                                                                                                                                                    |
|----------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 85       | Nemano                  | 1) Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Equilibrium Headspace, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>            |
| 86       | Methoxychlor            | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup> |
| 87       | Methyl Bromide          | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                                               |
| 88       | Methylene Chloride      | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                                               |
| 89       | 2-methylphenol          | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup> |
| 90       | 2-Methylnaphthalene     | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup> |
| 91       | Methyl tert-Butyl Ether | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                                               |
| 92       | Naphthalene             | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup> |
| 93       | Nickel                  | 1) Digestion, Inductively Coupled Plasma Method <sup>(1)(2)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                    |
| 94       | Nitrobenzene            | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup> |
| 95       | N-Nitrosodiphenylamine  | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup> |
| 96       | N-Nitrosodipropylamine  | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup> |

96 Polychlorinated biphenyls (PCBs)

| ลำดับที่ | สารเคมี                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | วิธีวิเคราะห์                                                                                                                                                                                    |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 96       | Polychlorinated biphenyls (PCBs)<br>- Aroclor 1016<br>- Aroclor 1221<br>- Aroclor 1232<br>- Aroclor 1242<br>- Aroclor 1268<br>- Aroclor 1254<br>- Aroclor 1260<br>- 2-Chlorobiphenyl<br>- 2,2',3,5'-Tetrachlorobiphenyl<br>- 2,2',5,5'-Tetrachlorobiphenyl<br>- 2,3',4,4'-Tetrachlorobiphenyl<br>- 2,2',3,4,5-Pentachlorobiphenyl<br>- 2,2',4,5,5-Pentachlorobiphenyl<br>- 2,3,3',4,6-Pentachlorobiphenyl<br>- 2,2',3,4,5'-Hexachlorobiphenyl<br>- 2,2',3,4,5,5'-Hexachlorobiphenyl<br>- 2,2',3,3',4,4',5'-Heptachlorobiphenyl<br>- 2,2',3,4,4',5,5'-Heptachlorobiphenyl<br>- 2,2',3,4,4',5,5',6'-Octachlorobiphenyl<br>- 2,2',3,3',4,4',5,5',6'-Octachlorobiphenyl<br>- 2,2',3,3',4,4',5,5',6,6'-Nonaclorobiphenyl<br>- 2,2',3,3',4,4',5,5',6,6',7'-Decachlorobiphenyl | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup> |
| 97       | Phenanthrene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup> |
| 98       | Phenanthrene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup> |

99 Phenol...

| ลำดับที่ | สารเคมี                                 | วิธีวิเคราะห์                                                                                                                                                                                                       |
|----------|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 99       | Phenol                                  | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                    |
| 100      | Pyrene                                  | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                    |
| 101      | Selenium                                | 1) Digestion, Inductively Coupled Plasma Method <sup>(1)(2)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                       |
| 102      | Silver                                  | 1) Digestion, Inductively Coupled Plasma Method <sup>(1)(2)</sup><br>2) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                       |
| 103      | Styrene                                 | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                                                                  |
| 104      | 1,1,2,2-Tetrachloroethane               | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                                                                  |
| 105      | Tetrachloroethylene                     | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                                                                  |
| 106      | Toluene                                 | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                                                                  |
| 107      | Triphenylamine                          | 1) Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup><br>2) Automated Soxhlet Extraction, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                    |
| 108      | TPH (C <sub>8</sub> - C <sub>10</sub> ) | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                                                                  |
| 109      | TPH (C <sub>8</sub> - C <sub>10</sub> ) | 1) Automated Extraction, Gas Chromatography Method <sup>(1)(2)</sup><br>2) Solvent Extraction, Gas Chromatography Method <sup>(1)(2)</sup><br>3) Ultrasonic Extraction, Gas Chromatography Method <sup>(1)(2)</sup> |
| 110      | TPH (C <sub>8</sub> - C <sub>10</sub> ) | 1) Automated Extraction, Gas Chromatography Method <sup>(1)(2)</sup><br>2) Solvent Extraction, Gas Chromatography Method <sup>(1)(2)</sup><br>3) Ultrasonic Extraction, Gas Chromatography Method <sup>(1)(2)</sup> |
| 111      | 1,2,4-Trichlorobenzene                  | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                                                                  |
| 112      | 1,1,1-Trichloroethane                   | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                                                                  |
| 113      | 1,1,2-Trichloroethane                   | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                                                                  |
| 114      | Trichloroethylene                       | Purge and Trap, Gas Chromatography/<br>Mass Spectrometric Method <sup>(1)(2)</sup>                                                                                                                                  |

115 2,4,5-Trichlorophenol...



อนึ่ง หนังสือฉบับนี้จะรอดำอยู่หรือหนังสืออยู่รับขึ้นทะเบียนต้องปฏิบัติตามวิเคราะหณ์เอกชน  
ในวันที่ ๒ กันยายน ๒๕๖๔

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

นพ

(นายพรต กัณทรอ)  
รองอธิบดี ปฏิบัติราชการแทน  
อธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน  
กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบผลิตภัณฑ์และทะเบียนผู้ประกอบการ  
โทร. ๐ ๒๕๓๐ ๖๓๓๒ ต่อ ๒๑๐๓-๕  
โทรสาร ๐ ๒๕๓๐ ๖๓๓๒ ต่อ ๒๑๕๙  
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ที่ อ. ๐๓๑๐(๑)/ ๑๒๓๖ ๘ /

กรมโรงงานอุตสาหกรรม  
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท  
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๑๔ ธันวาคม ๒๕๖๔

เรื่อง ยกเลิกบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท เอลเอส แลบริทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน  
ลงวันที่ ๒ ธันวาคม ๒๕๖๔

ตามคำขอที่อ้างถึง บริษัท เอลเอส แลบริทอรี กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการ  
วิเคราะห์เอกชน เลขทะเบียน ๖-๒๐๔ สถานที่ตั้งเลขที่ ๑๐๔ ซอยพัฒนาการ ๕๐ ถนนพัฒนาการ แขวงพัฒนาการ  
เขตสวนหลวง กรุงเทพมหานคร ขอยกเลิกบุคลากร ความละเอียดดังนี้

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์  
จำนวน ๘ ราย ได้แก่

- ๑) นายประจักษ์ วรรณสุขชัย
- ๒) นายจิรพันธ์ ขาวละอ
- ๓) นายพิพัฒน์ คำคำ
- ๔) นางสาวธนา คำคอง
- ๕) นายกิตติพงศ์ แซ่
- ๖) นายจิรเมธ ประเสริฐศิริพงษ์
- ๗) นายไพรัชพงษ์ มณฑาทอง
- ๘) นางสาวจารุวรรณ กระทั่งพันธุ์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๒๐๐  
ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๒๐๑  
ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๒๐๒  
ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๒๐๓  
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ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๒๐๖

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

รณกร

(นายธีรทัศน์ อิศรางกูร ณ อยุธยา)  
รองอธิบดี ปฏิบัติราชการแทน  
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โทร. ๐ ๒๕๓๐ ๖๓๓๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๕๓๐ ๖๓๓๒ ต่อ ๒๑๕๙

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เขตสวนหลวง กรุงเทพมหานคร ขอยกเลิกบุคลากร ความละเอียดดังนี้

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์  
จำนวน ๒ ราย ได้แก่

- ๑) นายสิริพงศ์ บัวแดง
- ๒) นายมงคล ผลาพิชัย

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๒๐๒  
ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๒๐๓

จึงเรียนมาเพื่อทราบ

รณกร

(นายธีรทัศน์ อิศรางกูร ณ อยุธยา)  
รองอธิบดี ปฏิบัติราชการแทน  
อธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบผลิตภัณฑ์และทะเบียนผู้ประกอบการ

โทร. ๐ ๒๕๓๐ ๖๓๓๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๕๓๐ ๖๓๓๒ ต่อ ๒๑๕๙

ไปรษณีย์อิเล็กทรอนิกส์ saraban@dvw.mail.go.th



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



ที่ อ. ๐๓๑๐(๑)/ ๑๒๔๗ ๓

กรมโรงงานอุตสาหกรรม  
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท  
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๐๕ มิถุนายน ๒๕๖๔

เรื่อง เปลี่ยนแปลงบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท เอลเอส แลบริทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน  
ลงวันที่ ๗ พฤษภาคม ๒๕๖๔

ตามคำขอที่อ้างถึง บริษัท เอลเอส แลบริทอรี กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการ  
วิเคราะห์เอกชน เลขทะเบียน ๖-๒๐๔ สถานที่ตั้งเลขที่ ๑๐๔ ซอยพัฒนาการ ๕๐ ถนนพัฒนาการ แขวงพัฒนาการ  
เขตสวนหลวง กรุงเทพมหานคร ขอเปลี่ยนแปลงบุคลากร ความละเอียดดังนี้

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้เพิ่มเจ้าหน้าที่ห้องปฏิบัติการวิเคราะห์เอกชน  
จำนวน ๑๑ ราย ได้แก่

- ๑) นายศุภนาถ มโน
- ๒) นายอัมมกร แสนหา
- ๓) นายเอกวิทย์ บุตรสิทธิ์
- ๔) นายอัครานนท์ อังศรี
- ๕) นายศุภวราญ เลิศกันยา
- ๖) นายวิกรม มีศิริ
- ๗) นายศุภณันท์ คำจิราพร
- ๘) นายศิริวิทย์ มีฤทธิ์
- ๙) นายธีรพงษ์ ศรีคำแหง
- ๑๐) นายอภิสิทธิ์ ศรีจึงแก้ว
- ๑๑) ว่าที่ร้อยตรี ภาณุพงศ์ แสนศรี

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๒๐๔  
ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๒๐๕  
ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๒๐๖  
ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๒๐๗  
ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๒๐๘  
ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๒๐๙  
ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๒๑๐  
ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๒๑๑  
ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๒๑๒  
ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๒๑๓  
ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๒๑๔

อนึ่ง หนังสือฉบับนี้จะรอดำอยู่หรือหนังสืออยู่รับขึ้นทะเบียนต้องปฏิบัติตามวิเคราะหณ์เอกชน  
ในวันที่ ๒ กันยายน ๒๕๖๔

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

รณกร

(นายธีรทัศน์ อิศรางกูร ณ อยุธยา)  
รองอธิบดี ปฏิบัติราชการแทน  
อธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบผลิตภัณฑ์และทะเบียนผู้ประกอบการ

โทร. ๐ ๒๕๓๐ ๖๓๓๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๕๓๐ ๖๓๓๒ ต่อ ๒๑๕๙

ไปรษณีย์อิเล็กทรอนิกส์ saraban@dvw.mail.go.th



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



ที่ อก ๐๓๑๐(๑)/ ๖ ๕ ๐ ๘



กรมโรงงานอุตสาหกรรม  
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท  
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๒๑ สิงหาคม ๒๕๖๔

เรื่อง เปลี่ยนแปลงสารมลพิษที่วิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท เอลแอลเอส แลบริทอรี่ กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน ลงวันที่ ๒๗ มิถุนายน ๒๕๖๔

สิ่งที่ส่งมาด้วย เอกสารแนบท้ายหนังสือเปลี่ยนแปลงสารมลพิษที่วิเคราะห์  
บริษัท เอลแอลเอส แลบริทอรี่ กรุ๊ป (ประเทศไทย) จำกัด จำนวน ๖ แผ่น

ตามคำขอที่อ้างถึง บริษัท เอลแอลเอส แลบริทอรี่ กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ๖-๒๐๔ สถานที่ตั้งเลขที่ ๑๐๔ ซอยพัฒนาการ ๔๐ ถนนพัฒนาการ แขวงพัฒนาการ เขตสวนหลวง กรุงเทพมหานคร ขอเปลี่ยนแปลงสารมลพิษที่วิเคราะห์ ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้อำนาจ เอลแอลเอส แลบริทอรี่ กรุ๊ป (ประเทศไทย) จำกัด เพิ่มขอบข่ายชนิดสารมลพิษที่วิเคราะห์ใหม่ไว้ได้ดังนี้ สิ่งปฏิกลและวัสดุที่ไม่ใช่แล้ว และดิน ตามสิ่งที่ส่งมาด้วย

อนึ่ง หนังสือฉบับนี้จะสิ้นสุดอายุพร้อมหนังสือต่ออายุไว้ซึ่งระเบียบห้องปฏิบัติการวิเคราะห์เอกชน ในวันที่ ๒ กันยายน ๒๕๖๔

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นางสาวปัทมวรรณ คุณประเสริฐ)  
ผู้อำนวยการบริหารและหัวหน้า/รองผู้อำนวยการ  
ปฏิบัติการกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๕๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๕๓๐ ๖๓๑๒ ต่อ ๒๑๐๔

ไปรษณีย์อิเล็กทรอนิกส์ sarabangadw@mail.go.th



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



เอกสารแนบท้ายหนังสือเปลี่ยนแปลงสารมลพิษที่วิเคราะห์

บริษัท เอลแอลเอส แลบริทอรี่ กรุ๊ป (ประเทศไทย) จำกัด เลขทะเบียน ๖-๒๐๔

ที่ อก ๐๓๑๐(๑)/ ๖ ๕ ๐ ๘ ลงวันที่ ๒๑ สิงหาคม ๒๕๖๔

ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๔๐ รายการ

น้ำได้ดิน จำนวน ๔ รายการ

| ลำดับที่ | สารมลพิษ   | วิธีวิเคราะห์                                                                      |
|----------|------------|------------------------------------------------------------------------------------|
| 1        | Aluminum   | Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(1)</sup> |
| 2        | Copper     | Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(1)</sup> |
| 3        | Iron       | Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(1)</sup> |
| 4        | Molybdenum | Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(1)</sup> |

สิ่งปฏิกลหรือวัสดุที่ไม่ใช่แล้ว จำนวน 17 รายการ

| ลำดับที่ | สารมลพิษ | วิธีวิเคราะห์                                                                                                                                                                                                                                                                                                                                                        |
|----------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | Antimony | 1) Waste Extraction, Digestion, Inductively Coupled<br>Plasma Method <sup>(1,3,6)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled<br>Plasma/Mass Spectrometric Method <sup>(1,3,7)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>4) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(4,7)</sup> |
| 2        | Arsenic  | 1) Waste Extraction, Digestion, Inductively Coupled<br>Plasma Method <sup>(1,3,6)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled<br>Plasma/Mass Spectrometric Method <sup>(1,3,7)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>4) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(4,7)</sup> |
| 3        | Barium   | 1) Waste Extraction, Digestion, Inductively Coupled<br>Plasma Method <sup>(1,3,6)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled<br>Plasma/Mass Spectrometric Method <sup>(1,3,7)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>4) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(4,7)</sup> |

Beryllium

- ๒ -

| ลำดับที่ | สารมลพิษ       | วิธีวิเคราะห์                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4        | Beryllium      | 1) Waste Extraction, Digestion, Inductively Coupled<br>Plasma Method <sup>(1,3,6)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled<br>Plasma/Mass Spectrometric Method <sup>(1,3,7)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>4) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(4,7)</sup>                                                                                                                                                                                                                                                                            |
| 5        | Cadmium        | 1) Waste Extraction, Digestion, Inductively Coupled<br>Plasma Method <sup>(1,3,6)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled<br>Plasma/Mass Spectrometric Method <sup>(1,3,7)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>4) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(4,7)</sup>                                                                                                                                                                                                                                                                            |
| 6        | Chromium       | 1) Waste Extraction, Digestion, Inductively Coupled<br>Plasma Method <sup>(1,3,6)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled<br>Plasma/Mass Spectrometric Method <sup>(1,3,7)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>4) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(4,7)</sup>                                                                                                                                                                                                                                                                            |
| 7        | Chromium (III) | 1) Waste Extraction, Digestion, Inductively Coupled<br>Plasma Method; Waste Extraction, Colorimetric<br>Method; Calculation Method <sup>(1,3,6,8)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled<br>Plasma/Mass Spectrometric Method; Waste Extraction,<br>Colorimetric Method; Calculation Method <sup>(1,3,7,8)</sup><br>3) Digestion, Inductively Coupled Plasma Method;<br>Alkaline Digestion, Colorimetric Method; Calculation<br>Method <sup>(4,5,6,8)</sup><br>4) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method; Alkaline Digestion,<br>Colorimetric Method; Calculation Method <sup>(4,5,7,8)</sup> |
| 8        | Cobalt         | 1) Waste Extraction, Digestion, Inductively Coupled<br>Plasma Method <sup>(1,3,6)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled<br>Plasma/Mass Spectrometric Method <sup>(1,3,7)</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                           |

3) Digestion...

- ๓ -

| ลำดับที่ | สารมลพิษ   | วิธีวิเคราะห์                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9        | Copper     | 3) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>4) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(4,7)</sup><br>1) Waste Extraction, Digestion, Inductively Coupled<br>Plasma Method <sup>(1,3,6)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled<br>Plasma/Mass Spectrometric Method <sup>(1,3,7)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>4) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(4,7)</sup> |
| 10       | Lead       | 1) Waste Extraction, Digestion, Inductively Coupled<br>Plasma Method <sup>(1,3,6)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled<br>Plasma/Mass Spectrometric Method <sup>(1,3,7)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>4) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(4,7)</sup>                                                                                                                                                                |
| 11       | Molybdenum | 1) Waste Extraction, Digestion, Inductively Coupled<br>Plasma Method <sup>(1,3,6)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled<br>Plasma/Mass Spectrometric Method <sup>(1,3,7)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>4) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(4,7)</sup>                                                                                                                                                                |
| 12       | Nickel     | 1) Waste Extraction, Digestion, Inductively Coupled<br>Plasma Method <sup>(1,3,6)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled<br>Plasma/Mass Spectrometric Method <sup>(1,3,7)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>4) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(4,7)</sup>                                                                                                                                                                |
| 13       | Selenium   | 1) Waste Extraction, Digestion, Inductively Coupled<br>Plasma Method <sup>(1,3,6)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled<br>Plasma/Mass Spectrometric Method <sup>(1,3,7)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>4) Digestion, Inductively Coupled Plasma/<br>Mass Spectrometric Method <sup>(4,7)</sup>                                                                                                                                                                |

14 Silver...

| ลำดับที่ | สารมลพิษ | วิธีวิเคราะห์                                                                                                                                                                                                                                                                                                                                              |
|----------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14       | Silver   | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1,3,6)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(3,3,7)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup> |
| 15       | Thallium | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1,3,6)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(3,3,7)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup> |
| 16       | Vanadium | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1,3,6)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(3,3,7)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup> |
| 17       | Zinc     | 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1,3,6)</sup><br>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(3,3,7)</sup><br>3) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup> |

ดิน จำนวน 19 รายการ

| ลำดับที่ | สารมลพิษ | วิธีวิเคราะห์                                                                                                                                           |
|----------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | Aluminum | 1) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup> |
| 2        | Antimony | 1) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup> |

3 Arsenic...

| ลำดับที่ | สารมลพิษ       | วิธีวิเคราะห์                                                                                                                                                                                                                                                                             |
|----------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3        | Arsenic        | 1) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup>                                                                                                                                   |
| 4        | Barium         | 1) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup>                                                                                                                                   |
| 5        | Beryllium      | 1) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup>                                                                                                                                   |
| 6        | Cadmium        | 1) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup>                                                                                                                                   |
| 7        | Chromium       | 1) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup>                                                                                                                                   |
| 8        | Chromium (III) | 1) Digestion, Inductively Coupled Plasma Method; Alkaline Digestion, Colorimetric Method; Calculation Method <sup>(4,5,6,8)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method; Alkaline Digestion, Colorimetric Method; Calculation Method <sup>(4,5,7,8)</sup> |
| 9        | Copper         | 1) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup>                                                                                                                                   |
| 10       | Iron           | 1) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup>                                                                                                                                   |
| 11       | Lead           | 1) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup>                                                                                                                                   |
| 12       | Manganese      | 1) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup>                                                                                                                                   |
| 13       | Molybdenum     | 1) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup>                                                                                                                                   |
| 14       | Nickel         | 1) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup>                                                                                                                                   |

15 pH...

| ลำดับที่ | สารมลพิษ | วิธีวิเคราะห์                                                                                                                                           |
|----------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15       | pH       | Electrometric Method <sup>(7)</sup>                                                                                                                     |
| 16       | Selenium | 1) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup> |
| 17       | Silver   | 1) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup> |
| 18       | Vanadium | 1) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup> |
| 19       | Zinc     | 1) Digestion, Inductively Coupled Plasma Method <sup>(4,6)</sup><br>2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4,7)</sup> |

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กรม



กรมโรงงานอุตสาหกรรม  
ถนนพหลโยธิน ๖ แขวงทุ่งพญาไท  
เขตราชเทวี กรุงเทพมหานคร ๑๐๕๐๐

**๒๖ กันยายน ๒๕๖๕**

เรื่อง เปลี่ยนแปลงบุคลากร ชื่อตัวและชื่อสกุลของบุคลากร

เรียน กรรมการผู้จัดการ บริษัท เคมเทค แลบริทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอเป็นประธาน/รองประธาน/เปลี่ยนแปลงบุคลากร และขออนุมัติชื่อและชื่อสกุลของบุคลากรในครั้งที่ ๒๒ วันที่ ๒๖ สิงหาคม ๒๕๖๕

ตามที่ข้าพเจ้าในฐานะ บริษัท เคมเทค แลบริทอรี กรุ๊ป (ประเทศไทย) จำกัด ขอปฏิบัติภารกิจวิเคราะห์แยกแยะ เลขทะเบียน ๖-๒๐๕ สถานที่ตั้งเลขที่ ๒๐๕ ซอยพัฒนาการ ๕๐ ถนนพัฒนาการ แขวงพัฒนาการ เขตสวนหลวง กรุงเทพมหานคร ขอเปลี่ยนแปลงบุคลากร ชื่อตัวและชื่อสกุลของบุคลากร ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว มีความเห็นดังนี้

1. ให้อนุมัติคำขอที่ประธานกรรมการผู้จัดการในคราวที่ จำนวน ๒ ราย
  - ๑) นางสาวพายุศ คุณงาม ทะเบียนเลขที่ ๖-๒๐๕-๖-๐๐๓๗
  - ๒) นางสาวธนาธิก เขียวคำ ทะเบียนเลขที่ ๖-๒๐๕-๖-๐๐๓๗
๒. ให้เปลี่ยนชื่อตัวและชื่อสกุลของเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จากเดิม นายอาทิตย์ ศรีสน เป็น นายฐิติกร พริ้งพวงพจน์ ทะเบียนเลขที่ ๖-๒๐๕-๖-๐๐๓๗

อนึ่ง หนังสือฉบับนี้จะเป็นลายเซ็นของนายฐิติกรพริ้งพวงพจน์เป็นลายเซ็นเพื่อปฏิบัติภารกิจวิเคราะห์แยกแยะ ในครั้งที่ ๒ กันยายน ๒๕๖๕

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

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กรมโรงงานอุตสาหกรรม

กลุ่มวิจัยและพัฒนาระบบมาตรฐาน  
กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบและประเมินผลสิ่งแวดล้อมเพื่อปฏิบัติการ  
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