

ภาคผนวก ค

ใบรับรองผลการตรวจวิเคราะห์

ภาคผนวก ค-1

คุณภาพอากาศจากปล่องระบาย



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand
21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633440

Date Received : May 11, 2026

Date Reported : May 21, 2026

Report Number: 3554401-1

Page 1 of 1

Sample Number 2633440-1
Sampled Date May 11, 2026
Sample Description Emission from Stationary Source
Location Weigh Hopper (TK-229 A)
Date Analysis Commenced May 12, 2026
Condition of Sample Extracted into one 10-L air sampling bag

Stack Description

Ambient Pressure	756	mmHg	Diameter	0.80	m	Oxygen	20.9	%
Ambient Temperature	31.3	°C	Shape	Circle		Carbon Dioxide	0.0	%
Type of Process	Process		Stack Temperature	39.0	°C	Gas Velocity	19.7	m/s
Type of Fuel	-		Moisture	2.69	%	Flow Rate (Actual O2)	32998	Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Ethylene	10:10 AM - 10:20 AM	ppm	-	1.0	<1.0	Gas Chromatography	Bangkok
Propane	10:10 AM - 10:20 AM	ppm	-	1.0	<1.0	Gas Chromatography	Bangkok

Sampling By : Kitsanapon Panyawong

Remark :

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

Approved by

Orawan R.

Orawan Rakyong
Scientist (3)

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report may be reproduced in any form without written consent from the laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand
21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633441

Date Received : May 11, 2026

Date Reported : Jul 07, 2026

Report Number: 3615105-1

Page 1 of 1

Sample Number 2633441-1
Sampled Date May 11, 2026
Sample Description Emission from Stationary Source
Location Degassing Hopper(TK-234B)
Date Analysis Commenced May 12, 2026
Condition of Sample Extracted into one 10-L air sampling bag

Stack Description

Ambient Pressure	756	mmHg	Diameter	0.70	m	Oxygen	20.9	%
Ambient Temperature	31.3	°C	Shape	Circle		Carbon Dioxide	0.0	%
Type of Process	Process		Stack Temperature	35.0	°C	Gas Velocity	2.2	m/s
Type of Fuel	-		Moisture	3.13	%	Flow Rate (Actual O2)	2843	Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Ethylene	09:40 AM - 09:50 AM	ppm	-	1.0	<1.0	Gas Chromatography	Bangkok
Propane	09:40 AM - 09:50 AM	ppm	-	1.0	<1.0	Gas Chromatography	Bangkok

Note:

This Analysis test report is reissued to supersede report No. 3554402-1, Date Reported: May 21, 2026 due to the additional of 3554402-1

Sampling By : Kitsanapon Panyawong

Remark :

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

Approved by

Saranya C.

Saranya Chalermthamrong
Scientist (4)

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report may be reproduced in any form without written consent from the laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

ภาคผนวก ค-2

คุณภาพอากาศในบรรยากาศ



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 2633431

Date Received : May 15, 2026
Date Reported : May 26, 2026
Report Number : 3554389-1

Page 1 of 14

Sample Number : 2633431-1
Sampled Date : May 07, 2026
Sample Description : Air Quality
Location : โรงเรียนบ้านหนองแฟบ ทิศทางลมตะวันตกเฉียงใต้ (GPS 47P 0729823, 1403307)
Date Analysis Commenced : May 16, 2026

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Ethylene	07/05/26 - 08/05/26	ppm	-	1.0	<1.0	Based on ASTM, D 2712-23	Bangkok
Propane	07/05/26 - 08/05/26	ppm	-	1.0	<1.0	Based on ASTM, D2712-23	Bangkok

Sampled By : Sawai Tonpho

Remark :

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

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.

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 2633431

Date Received : May 15, 2026
Date Reported : May 26, 2026
Report Number : 3554389-1

Page 2 of 14

Sample Number : 2633431-2
Sampled Date : May 08, 2026
Sample Description : Air Quality
Location : โรงเรียนบ้านหนองแฟบ ทิศทางลมตะวันตกเฉียงใต้ (GPS 47P 0729823, 1403307)
Date Analysis Commenced : May 16, 2026

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Ethylene	08/05/26 - 09/05/26	ppm	-	1.0	<1.0	Based on ASTM, D 2712-23	Bangkok
Propane	08/05/26 - 09/05/26	ppm	-	1.0	<1.0	Based on ASTM, D2712-23	Bangkok

Sampled By : Sawai Tonpho

Remark :

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

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.

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 2633431

Date Received : May 15, 2026
Date Reported : May 26, 2026
Report Number : 3554389-1

Page 3 of 14

Sample Number : 2633431-3
Sampled Date : May 09, 2026
Sample Description : Air Quality
Location : โรงเรียนบ้านหนองแฟบ ทิศทางลมตะวันตกเฉียงใต้ (GPS 47P 0729823, 1403307)
Date Analysis Commenced : May 16, 2026

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Ethylene	09/05/26 - 10/05/26	ppm	-	1.0	<1.0	Based on ASTM, D 2712-23	Bangkok
Propane	09/05/26 - 10/05/26	ppm	-	1.0	<1.0	Based on ASTM, D2712-23	Bangkok

Sampled By : Sawai Tonpho

Remark :

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

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.

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 2633431

Date Received : May 15, 2026
Date Reported : May 26, 2026
Report Number : 3554389-1

Page 4 of 14

Sample Number : 2633431-4
Sampled Date : May 10, 2026
Sample Description : Air Quality
Location : โรงเรียนบ้านหนองแฟบ ทิศทางลมตะวันตกเฉียงใต้ (GPS 47P 0729823, 1403307)
Date Analysis Commenced : May 16, 2026

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Ethylene	10/05/26 - 11/05/26	ppm	-	1.0	<1.0	Based on ASTM, D 2712-23	Bangkok
Propane	10/05/26 - 11/05/26	ppm	-	1.0	<1.0	Based on ASTM, D2712-23	Bangkok

Sampled By : Sawai Tonpho

Remark :

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

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.

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 2633431

Date Received : May 15, 2026
Date Reported : May 26, 2026
Report Number : 3554389-1

Page 5 of 14

Sample Number : 2633431-5
Sampled Date : May 11, 2026
Sample Description : Air Quality
Location : โรงเรียนบ้านหนองแฟบ ทิศทางลมตะวันตกเฉียงใต้ (GPS 47P 0729823, 1403307)
Date Analysis Commenced : May 16, 2026

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Ethylene	11/05/26 - 12/05/26	ppm	-	1.0	<1.0	Based on ASTM, D 2712-23	Bangkok
Propane	11/05/26 - 12/05/26	ppm	-	1.0	<1.0	Based on ASTM, D2712-23	Bangkok

Sampled By : Sawai Tonpho

Remark :

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

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.

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 2633431

Date Received : May 15, 2026
Date Reported : May 26, 2026
Report Number : 3554389-1

Page 6 of 14

Sample Number : 2633431-6
Sampled Date : May 12, 2026
Sample Description : Air Quality
Location : โรงเรียนบ้านหนองแฟบ ทิศทางลมตะวันตกเฉียงใต้ (GPS 47P 0729823, 1403307)
Date Analysis Commenced : May 16, 2026

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Ethylene	12/05/26 - 13/05/26	ppm	-	1.0	<1.0	Based on ASTM, D 2712-23	Bangkok
Propane	12/05/26 - 13/05/26	ppm	-	1.0	<1.0	Based on ASTM, D2712-23	Bangkok

Sampled By : Sawai Tonpho

Remark :

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

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.

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 2633431

Date Received : May 15, 2026
Date Reported : May 26, 2026
Report Number : 3554389-1

Page 7 of 14

Sample Number : 2633431-7
Sampled Date : May 13, 2026
Sample Description : Air Quality
Location : โรงเรียนบ้านหนองแฟบ ทิศทางลมตะวันตกเฉียงใต้ (GPS 47P 0729823, 1403307)
Date Analysis Commenced : May 16, 2026

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Ethylene	13/05/26 - 14/05/26	ppm	-	1.0	<1.0	Based on ASTM, D 2712-23	Bangkok
Propane	13/05/26 - 14/05/26	ppm	-	1.0	<1.0	Based on ASTM, D2712-23	Bangkok

Sampled By : Sawai Tonpho

Remark :

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

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.

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 2633431

Date Received : May 15, 2026
Date Reported : May 26, 2026
Report Number : 3554389-1

Page 8 of 14

Sample Number : 2633431-8
Sampled Date : May 07, 2026
Sample Description : Air Quality
Location : บ้านบางชลูด ทิศทางลมเหนือ-ใต้ (GPS 47P 07030820, 1407376)
Date Analysis Commenced : May 16, 2026

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Ethylene	07/05/26 - 08/05/26	ppm	-	1.0	<1.0	Based on ASTM, D 2712-23	Bangkok
Propane	07/05/06 - 08/05/26	ppm	-	1.0	<1.0	Based on ASTM, D2712-23	Bangkok

Sampled By : Sawai Tonpho

Remark :

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

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.

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 2633431

Date Received : May 15, 2026
Date Reported : May 26, 2026
Report Number : 3554389-1

Page 9 of 14

Sample Number : 2633431-9
Sampled Date : May 08, 2026
Sample Description : Air Quality
Location : บ้านมาบชลด ทิศทางลมเหนือ-ใต้ (GPS 47P 07030820, 1407376)
Date Analysis Commenced : May 16, 2026

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Ethylene	08/05/26 - 09/05/26	ppm	-	1.0	<1.0	Based on ASTM, D 2712-23	Bangkok
Propane	08/05/26 - 09/05/26	ppm	-	1.0	<1.0	Based on ASTM, D2712-23	Bangkok

Sampled By : Sawai Tonpho

Remark :

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

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.

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 2633431

Date Received : May 15, 2026
Date Reported : May 26, 2026
Report Number : 3554389-1

Page 10 of 14

Sample Number : 2633431-10
Sampled Date : May 09, 2026
Sample Description : Air Quality
Location : บ้านมาบชลด ทิศทางลมเหนือ-ใต้ (GPS 47P 07030820, 1407376)
Date Analysis Commenced : May 16, 2026

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Ethylene	09/05/26 - 10/05/26	ppm	-	1.0	<1.0	Based on ASTM, D 2712-23	Bangkok
Propane	09/05/26 - 10/05/26	ppm	-	1.0	<1.0	Based on ASTM, D2712-23	Bangkok

Sampled By : Sawai Tonpho

Remark :

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

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.

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 2633431

Date Received : May 15, 2026
Date Reported : May 26, 2026
Report Number : 3554389-1

Page 11 of 14

Sample Number : 2633431-11
Sampled Date : May 10, 2026
Sample Description : Air Quality
Location : บ้านบางชลูด ทิศทางลมเหนือ-ใต้ (GPS 47P 07030820, 1407376)
Date Analysis Commenced : May 16, 2026

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Ethylene	10/05/26 - 11/05/26	ppm	-	1.0	<1.0	Based on ASTM, D 2712-23	Bangkok
Propane	10/05/26 - 11/05/26	ppm	-	1.0	<1.0	Based on ASTM, D2712-23	Bangkok

Sampled By : Sawai Tonpho

Remark :

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

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.

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 2633431

Date Received : May 15, 2026
Date Reported : May 26, 2026
Report Number : 3554389-1

Page 12 of 14

Sample Number : 2633431-12
Sampled Date : May 11, 2026
Sample Description : Air Quality
Location : บ้านบางชลูด ทิศทางลมเหนือ-ใต้ (GPS 47P 07030820, 1407376)
Date Analysis Commenced : May 16, 2026

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Ethylene	11/05/26 - 12/05/26	ppm	-	1.0	<1.0	Based on ASTM, D 2712-23	Bangkok
Propane	11/05/26 - 12/05/26	ppm	-	1.0	<1.0	Based on ASTM, D2712-23	Bangkok

Sampled By : Sawai Tonpho

Remark :

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

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.

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 2633431

Date Received : May 15, 2026
Date Reported : May 26, 2026
Report Number : 3554389-1

Page 13 of 14

Sample Number : 2633431-13
Sampled Date : May 12, 2026
Sample Description : Air Quality
Location : บ้านบางชลูด ทิศทางลมเหนือ-ใต้ (GPS 47P 07030820, 1407376)
Date Analysis Commenced : May 16, 2026

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Ethylene	12/05/26 - 13/05/26	ppm	-	1.0	<1.0	Based on ASTM, D 2712-23	Bangkok
Propane	12/05/26 - 13/05/26	ppm	-	1.0	<1.0	Based on ASTM, D2712-23	Bangkok

Sampled By : Sawai Tonpho

Remark :

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

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.

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 2633431

Date Received : May 15, 2026
Date Reported : May 26, 2026
Report Number : 3554389-1

Page 14 of 14

Sample Number : 2633431-14
Sampled Date : May 13, 2026
Sample Description : Air Quality
Location : บ้านบางชลูด ทิศทางลมเหนือ-ใต้ (GPS 47P 07030820, 1407376)
Date Analysis Commenced : May 16, 2026

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Ethylene	13/05/26 - 14/05/26	ppm	-	1.0	<1.0	Based on ASTM, D 2712-23	Bangkok
Propane	13/05/26 - 14/05/26	ppm	-	1.0	<1.0	Based on ASTM, D2712-23	Bangkok

Sampled By : Sawai Tonpho

Remark :

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

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.

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand
21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : TPE Site 1

Lot ID: 2633436

Date Received : May 15, 2026

Date Reported : May 23, 2026

Report Number : 3554391-1

Page 1 of 2

Sample Number : 2633436-1 to 7
Parameter : Wind Speed / Wind Direction
Location : โรงเรียนบ้านหนองแฟบ ทิศทางลมตะวันตกเฉียงใต้ (GPS 47P 0729823, 1403307)
Sampling Date : May 07 - May 14, 2026
Sampling by : Sawai Tonpho

Time	May 07 - May 08, 2026			May 08 - May 09, 2026			May 09 - May 10, 2026			May 10 - May 11, 2026			May 11 - May 12, 2026			May 12 - May 13, 2026			May 13 - May 14, 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	0.9	179.0	S	1.0	148.0	SSE	1.1	135.0	SE	1.7	93.0	E	1.0	187.0	S	1.1	111.0	ESE	0.8	230.0	SW
11:00 AM - 12:00 PM	0.4	105.0	ESE	1.2	141.0	SE	1.8	164.0	SSE	1.8	172.0	S	1.3	148.0	SSE	0.2	-	-	1.5	178.0	S
12:00 PM - 01:00 PM	0.3	145.0	SE	1.1	88.0	E	0.7	174.0	S	1.7	154.0	SSE	0.9	186.0	S	1.5	116.0	ESE	0.9	178.0	S
01:00 PM - 02:00 PM	1.0	159.0	SSE	2.6	171.0	S	1.4	143.0	SE	0.3	142.0	SE	1.2	183.0	S	0.1	-	-	1.2	162.0	SSE
02:00 PM - 03:00 PM	0.8	159.0	SSE	3.3	213.0	SSW	2.0	149.0	SSE	0.9	76.0	ENE	0.9	136.0	SE	0.0	-	-	1.8	205.0	SSW
03:00 PM - 04:00 PM	1.1	82.0	E	0.1	-	-	1.0	173.0	S	0.8	138.0	SE	0.3	115.0	ESE	0.5	106.0	ESE	0.8	177.0	S
04:00 PM - 05:00 PM	1.3	133.0	SE	0.0	-	-	2.7	140.0	SE	0.0	-	-	0.3	124.0	SE	0.7	104.0	ESE	1.2	146.0	SE
05:00 PM - 06:00 PM	1.4	127.0	SE	0.0	-	-	0.7	122.0	ESE	0.6	189.0	S	0.5	114.0	ESE	0.8	97.0	E	2.4	156.0	SSE
06:00 PM - 07:00 PM	0.6	123.0	ESE	0.9	224.0	SW	0.4	145.0	SE	0.6	95.0	E	1.1	125.0	SE	0.0	-	-	1.3	170.0	S
07:00 PM - 08:00 PM	0.2	-	-	0.5	159.0	SSE	0.0	-	-	1.4	131.0	SE	0.5	180.0	S	0.6	98.0	E	0.7	184.0	S
08:00 PM - 09:00 PM	0.3	150.0	SSE	0.8	227.0	SW	0.6	162.0	SSE	0.5	114.0	ESE	0.8	123.0	ESE	0.9	109.0	ESE	1.2	104.0	ESE
09:00 PM - 10:00 PM	1.1	129.0	SE	0.8	225.0	SW	0.2	-	-	0.6	122.0	ESE	0.2	-	-	0.2	-	-	2.4	125.0	SE
10:00 PM - 11:00 PM	0.0	-	-	1.0	0.0	N	0.5	122.0	ESE	0.8	144.0	SE	0.3	125.0	SE	0.2	-	-	2.4	152.0	SSE
11:00 PM - 12:00 AM	0.0	-	-	0.5	0.0	N	0.8	150.0	SSE	0.6	0.0	N	0.0	-	-	0.2	-	-	0.3	156.0	SSE
12:00 AM - 01:00 AM	0.0	-	-	0.2	-	-	0.4	163.0	SSE	0.0	-	-	0.2	-	-	0.0	-	-	1.2	0.0	N
01:00 AM - 02:00 AM	0.0	-	-	0.5	0.0	N	0.0	-	-	0.0	-	-	0.1	-	-	0.0	-	-	1.3	200.0	SSW
02:00 AM - 03:00 AM	0.0	-	-	0.0	-	-	0.3	107.0	ESE	0.0	-	-	0.8	106.0	ESE	0.4	72.0	ENE	0.0	-	-
03:00 AM - 04:00 AM	0.0	-	-	0.5	0.0	N	0.0	-	-	2.3	0.0	N	2.1	86.0	E	0.0	-	-	0.0	-	-
04:00 AM - 05:00 AM	0.0	-	-	0.3	198.0	SSW	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-
05:00 AM - 06:00 AM	0.0	-	-	0.5	0.0	N	0.0	-	-	0.0	-	-	1.1	170.0	S	0.0	-	-	0.0	-	-
06:00 AM - 07:00 AM	0.0	-	-	0.4	0.0	N	0.0	-	-	0.0	-	-	0.5	78.0	ENE	0.0	-	-	0.0	-	-
07:00 AM - 08:00 AM	0.0	-	-	1.1	80.0	E	0.7	100.0	E	0.6	80.0	E	0.0	-	-	0.3	0.0	N	0.0	-	-
08:00 AM - 09:00 AM	1.1	105.0	ESE	1.1	64.0	ENE	0.5	143.0	SE	1.5	145.0	SE	0.0	-	-	1.6	170.0	S	0.5	87.0	E
09:00 AM - 10:00 AM	0.7	111.0	ESE	0.2	-	-	0.8	112.0	ESE	0.8	162.0	SSE	0.1	-	-	1.1	189.0	S	0.1	-	-

Reference Method : Cup Anemometer & Anodized Aluminium Vane Method

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Sarayuth Jittranont
Assistant General Manager



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand
21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : TPE Site 1

Lot ID: 2633436

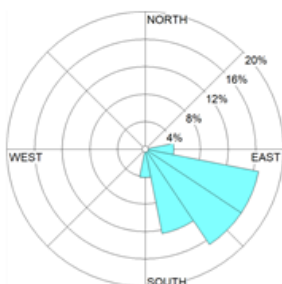
Date Received : May 15, 2026

Date Reported : May 23, 2026

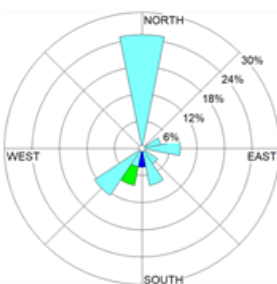
Report Number : 3554391-1

Page 2 of 2

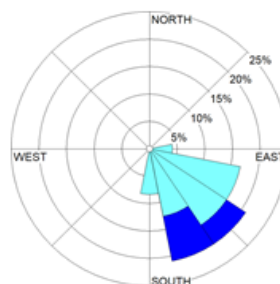
Wind Rose



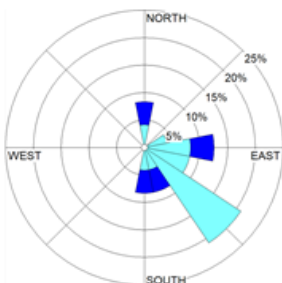
Date : May 07-08, 2026



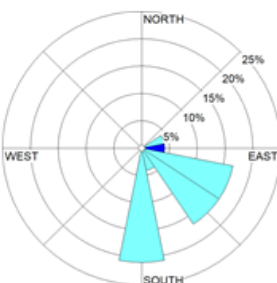
Date : May 08-09, 2026



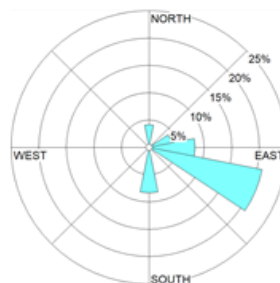
Date : May 09-10, 2026



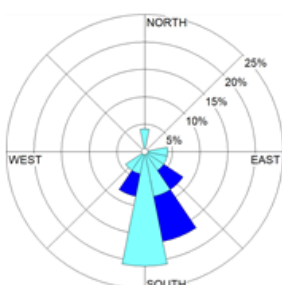
Date : May 10-11, 2026



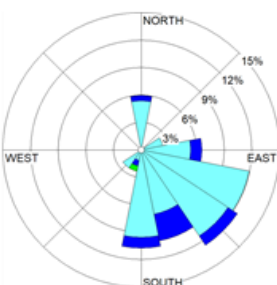
Date : May 11-12, 2026



Date : May 12-13, 2026



Date : May 13-14, 2026



Date : May 07-14, 2026

WS (m/s)	%
≥ 10.0	0.00
8.0-10.0	0.00
5.5-8.0	0.00
3.3-5.5	0.60
1.7-3.3	7.74
0.3-1.7	56.55
Calms	35.12

Location : โรงเรียนบ้านหนองแฟบ ทิศทางลมตะวันตกเฉียงใต้ (GPS 47P 0729823, 1403307)

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Sarayuth Jitranont
Assistant General Manager



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand
21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : TPE Site 1

Lot ID: 2633439

Date Received : May 15, 2026

Date Reported : May 23, 2026

Report Number : 3554400-1

Page 1 of 2

Sample Number : 2633439-1 to 7
Parameter : Wind Speed / Wind Direction
Location : บ้านมาบชลด ทิศทางลมเหนือ-ใต้ (GPS 47P 0730820, 1407376)
Sampling Date : May 07 - May 14, 2026
Sampling by : Sawai Tonpho

Time	May 07 - May 08, 2026			May 08 - May 09, 2026			May 09 - May 10, 2026			May 10 - May 11, 2026			May 11 - May 12, 2026			May 12 - May 13, 2026			May 13 - May 14, 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)	
11:00 AM - 12:00 PM	0.0	-	-	1.0	62.0	ENE	1.2	17.0	NNE	0.0	-	-	0.8	56.0	NE	1.3	124.0	SE	0.0	-	-
12:00 PM - 01:00 PM	0.3	141.0	SE	0.0	-	-	1.1	319.0	NW	0.0	-	-	0.7	90.0	E	0.3	102.0	ESE	0.0	-	-
01:00 PM - 02:00 PM	0.0	-	-	0.2	-	-	0.1	-	-	0.5	198.0	SSW	0.0	-	-	0.6	108.0	ESE	0.0	-	-
02:00 PM - 03:00 PM	0.6	184.0	S	1.7	246.0	WSW	0.1	-	-	1.0	181.0	S	1.1	108.0	ESE	0.9	63.0	ENE	0.9	220.0	SW
03:00 PM - 04:00 PM	0.0	-	-	1.0	126.0	SE	0.7	198.0	SSW	0.5	218.0	SW	1.7	77.0	ENE	0.0	-	-	0.7	231.0	SW
04:00 PM - 05:00 PM	0.7	217.0	SW	0.9	357.0	N	0.8	180.0	S	0.7	187.0	S	1.2	163.0	SSE	0.0	-	-	1.4	169.0	S
05:00 PM - 06:00 PM	0.0	-	-	0.7	334.0	NNW	1.2	231.0	SW	1.0	230.0	SW	0.5	209.0	SSW	0.0	-	-	1.6	195.0	SSW
06:00 PM - 07:00 PM	1.0	243.0	WSW	0.0	-	-	0.3	177.0	S	0.0	-	-	0.2	-	-	0.7	121.0	ESE	1.8	167.0	SSE
07:00 PM - 08:00 PM	0.4	229.0	SW	1.1	0.0	N	0.4	228.0	SW	0.0	-	-	1.2	236.0	SW	0.5	145.0	SE	0.6	125.0	SE
08:00 PM - 09:00 PM	0.7	192.0	SSW	1.8	346.0	NNW	0.0	-	-	0.0	-	-	0.1	-	-	1.6	74.0	ENE	0.9	122.0	ESE
09:00 PM - 10:00 PM	0.0	-	-	1.6	351.0	N	0.0	-	-	0.0	-	-	0.5	39.0	NE	2.1	75.0	ENE	0.0	-	-
10:00 PM - 11:00 PM	0.5	220.0	SW	0.2	-	-	0.0	-	-	0.0	-	-	1.0	118.0	ESE	0.3	65.0	ENE	0.0	-	-
11:00 PM - 12:00 AM	0.6	259.0	W	1.7	353.0	N	0.0	-	-	1.3	349.0	N	0.0	-	-	0.0	-	-	0.0	-	-
12:00 AM - 01:00 AM	0.0	-	-	0.5	357.0	N	0.0	-	-	0.9	338.0	NNW	0.0	-	-	0.0	-	-	1.4	213.0	SSW
01:00 AM - 02:00 AM	0.0	-	-	0.3	357.0	N	0.0	-	-	1.2	359.0	N	0.0	-	-	0.0	-	-	1.9	74.0	ENE
02:00 AM - 03:00 AM	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.7	51.0	NE	1.3	31.0	NNE
03:00 AM - 04:00 AM	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.3	198.0	SSW	0.5	83.0	E	1.6	79.0	E
04:00 AM - 05:00 AM	0.7	355.0	N	0.0	-	-	0.0	-	-	0.8	359.0	N	4.2	48.0	NE	0.3	74.0	ENE	0.3	65.0	ENE
05:00 AM - 06:00 AM	0.4	356.0	N	0.8	359.0	N	0.0	-	-	0.9	359.0	N	0.0	-	-	0.5	72.0	ENE	0.2	-	-
06:00 AM - 07:00 AM	1.3	352.0	N	0.0	-	-	0.7	358.0	N	0.7	359.0	N	0.1	-	-	1.1	106.0	ESE	0.1	-	-
07:00 AM - 08:00 AM	0.0	-	-	0.5	359.0	N	0.5	359.0	N	1.1	353.0	N	0.3	89.0	E	1.5	64.0	ENE	0.6	89.0	E
08:00 AM - 09:00 AM	0.6	359.0	N	0.6	348.0	NNW	0.6	358.0	N	1.1	6.0	N	0.6	68.0	ENE	2.1	165.0	SSE	1.1	56.0	NE
09:00 AM - 10:00 AM	0.9	350.0	N	1.1	359.0	N	0.0	-	-	2.8	356.0	N	1.2	74.0	ENE	2.3	178.0	S	0.2	-	-
10:00 AM - 11:00 AM	0.0	-	-	0.5	49.0	NE	0.0	-	-	0.3	10.0	N	1.0	141.0	SE	0.7	191.0	S	0.0	-	-

Reference Method : Cup Anemometer & Anodized Aluminium Vane Method

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Sarayuth Jittrantont
Assistant General Manager



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand
21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : TPE Site 1

Lot ID: 2633439

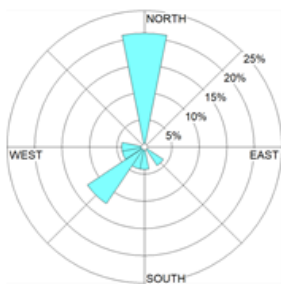
Date Received : May 15, 2026

Date Reported : May 23, 2026

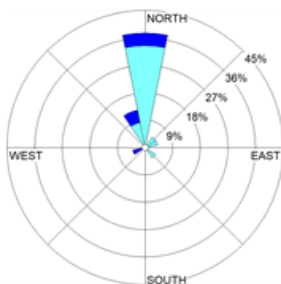
Report Number : 3554400-1

Page 2 of 2

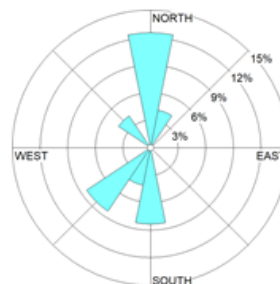
Wind Rose



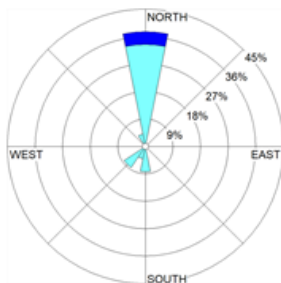
Date : May 07-08, 2026



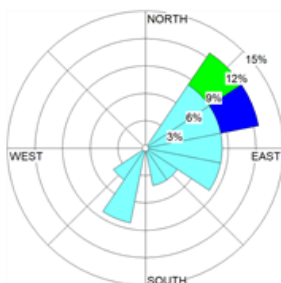
Date : May 08-09, 2026



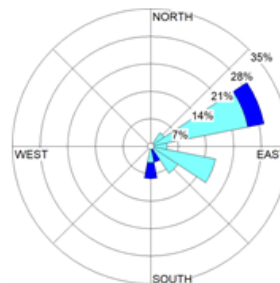
Date : May 09-10, 2026



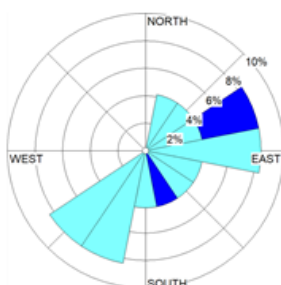
Date : May 10-11, 2026



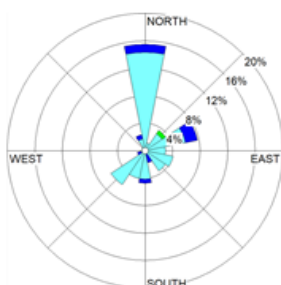
Date : May 11-12, 2026



Date : May 12-13, 2026



Date : May 13-14, 2026



Date : May 07-14, 2026

WS (m/s)	%
≥ 10.0	0.00
8.0-10.0	0.00
5.5-8.0	0.00
3.3-5.5	0.60
1.7-3.3	5.95
0.3-1.7	53.57
Calms	39.88

Location : บ้านมาบชลด ทิศทางลมเหนือ-ใต้ (GPS 47P 0730820, 1407376)

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Sarayuth Jitranont
Assistant General Manager

ภาคผนวก ค-3

คุณภาพน้ำ



Analysis / Test Report

TESTING

No.0042

Lot ID: 262283

Date Received : Jan 09, 2026

Date Reported : Jan 17, 2026

Report Number : 3485218-1

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location : TPE Site 1

Page 1 of 2

Sample Number	262283-1
Sampled Date	Jan 09, 2026 10:48 AM
Sample Description	Wastewater
Location	Final Check Pond ของโรงงาน LDPE
Date Analysis Commenced	Jan 09, 2026
Condition of Sample	Contained in two glass vials, one amber glass bottle and three plastic bottles. Sample containers comply to pretreatment - preservation standards. (APHA / USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	-	2.0	5.2	≤20	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	36	≤120	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5220 D	Rayong
Color (at Original pH)	ADMI	-	5	9	≤300	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F	Rayong
Color (at pH 7.0)	ADMI	-	5	8	≤300	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F	Rayong
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	Rayong
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)	Rayong
Temperature *	Degree C	-	-	28.9	≤40	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	552	≤3000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	14	≤50	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 D	Rayong

Technical Management

Photchanas

Photchanas Seeda

Scientist (4)

ทะเบียนเลขที่ ว-323-จ-0028

Approved by

D. Changchon.

Dej Changchon

Senior Manager

ทะเบียนเลขที่ ว-323-ค-0001

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.

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location: TPE Site 1

Lot ID: 262283

Date Received : Jan 09, 2026

Date Reported : Jan 17, 2026

Report Number : 3485218-1

Page 2 of 2

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 : Wasan Kinunti ทะเบียนเลขที่ ว-323-จ-0019 , Kardbundit Kitisupavanit ทะเบียนเลขที่ ว-204-จ-0001

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

Photchanas

Photchana Seeda

Scientist (4)

ทะเบียนเลขที่ ว-323-จ-0028

Approved by

D. Chumson.

Dej Changchon

Senior Manager

ทะเบียนเลขที่ ว-323-ค-0001

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.

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : TPE Site 1

Lot ID: 265681

Date Received : Feb 06, 2026

Date Reported : Feb 14, 2026

Report Number : 3491104-1

Page 1 of 2

Sample Number	265681-1
Sampled Date	Feb 06, 2026 10:46 AM
Sample Description	Wastewater
Location	Final Check Pond ของโรงงาน LDPE
Date Analysis Commenced	Feb 06, 2026
Condition of Sample	Contained in two glass vials, one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	-	2.0	3.3	≤20	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	<25	≤120	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5220 D	Rayong
Color (at Original pH)	ADMI	-	5	7	≤300	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F	Rayong
Color (at pH 7.0)	ADMI	-	5	7	≤300	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F	Rayong
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	Rayong
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)	Rayong
Temperature *	Degree C	-	-	34.1	≤40	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	664	≤3000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	19	≤50	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 D	Rayong

Technical Management

Jitsupa P.

Jitsupa Pratuangsuk
Scientist (2)

ทะเบียนเลขที่ ว-323-จ-0004

Approved by

D. Changchon.

Dej Changchon
Senior Manager

ทะเบียนเลขที่ ว-323-ค-0001

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.

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location: TPE Site 1

Lot ID: 265681

Date Received : Feb 06, 2026

Date Reported : Feb 14, 2026

Report Number : 3491104-1

Page 2 of 2

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 : Wasan Kinunti ทะเบียนเลขที่ ว-323-จ-0019

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

Jitsupa P.

Jitsupa Pratuangsuk
Scientist (2)

ทะเบียนเลขที่ ว-323-จ-0004

Approved by

D. Changchon

Dej Changchon
Senior Manager

ทะเบียนเลขที่ ว-323-ค-0001

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.

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING

No.0042

Lot ID: 2610286

Date Received : Mar 06, 2026

Date Reported : Mar 14, 2026

Report Number : 3499634-1

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location: TPE Site 1

Page 1 of 2

Sample Number	2610286-1
Sampled Date	Mar 06, 2026 11:02 AM
Sample Description	Wastewater
Location	Final Check Pond ของโรงงาน LDPE
Date Analysis Commenced	Mar 06, 2026
Condition of Sample	Contained in two glass vials, one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
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	Rayong
COD	mg/L	1.5	25	<25	≤120	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5220 D	Rayong
Color (at Original pH)	ADMI	-	5	7	≤300	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F	Rayong
Color (at pH 7.0)	ADMI	-	5	6	≤300	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F	Rayong
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	Rayong
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)	Rayong
Temperature *	Degree C	-	-	35.8	≤40	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	552	≤3000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C	Rayong
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	Rayong

Technical Management

Photchana S

Photchana Seeda

Scientist (4)

ทะเบียนเลขที่ ว-323-จ-0028

Approved by

D. Chumon.

Dej Changchon

Senior Manager

ทะเบียนเลขที่ ว-323-ค-0001

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.

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location: TPE Site 1

TESTING

No.0042

Lot ID: 2610286

Date Received : Mar 06, 2026

Date Reported : Mar 14, 2026

Report Number : 3499634-1

Page 2 of 2

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 : Sansoen Khuiyoksui ทะเบียนเลขที่ ว-323-จ-0005

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

Photchana S

Photchana Seeda

Scientist (4)

ทะเบียนเลขที่ ว-323-จ-0028

Approved by

D. Chumson

Dej Changchon

Senior Manager

ทะเบียนเลขที่ ว-323-ค-0001

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.

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING

No.0042

Lot ID: 2623267

Date Received : Apr 03, 2026

Date Reported : Apr 11, 2026

Report Number : 3528333-1

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location: TPE Site 1

Page 1 of 2

Sample Number	2623267-1
Sampled Date	Apr 03, 2026 10:25 AM
Sample Description	Wastewater
Location	Final Check Pond ของโรงงาน LDPE
Date Analysis Commenced	Apr 03, 2026
Condition of Sample	Contained in one amber glass bottle, two glass vials and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
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	Rayong
COD	mg/L	1.5	25	25	≤120	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5220 D	Rayong
Color (at Original pH)	ADMI	-	5	10	≤300	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F	Rayong
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	Rayong
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	Rayong
pH at 25 degree C		-	-	7.8	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	35.1	≤40	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	300	≤3000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C	Rayong
Total Suspended Solids Dried from 103-105 degree C	mg/L	-	5	<5	≤50	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 D	Rayong

Technical Management

Photchana S

Photchana Seeda

Scientist (4)

ทะเบียนเลขที่ ว-323-จ-0028

Approved by

D. Chumon.

Dej Changchon

Senior Manager

ทะเบียนเลขที่ ว-323-ค-0001

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.

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING

No.0042

Lot ID: 2623267

Date Received : Apr 03, 2026

Date Reported : Apr 11, 2026

Report Number : 3528333-1

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location: TPE Site 1

Page 2 of 2

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 : Sansoen Khuiyoksui ทะเบียนเลขที่ ว-323-จ-0005 , Pattarapol Sawangjaitam ทะเบียนเลขที่ ว-204-จ-0002

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

Photchana S

Photchana Seeda

Scientist (4)

ทะเบียนเลขที่ ว-323-จ-0028

Approved by

D. Johnson

Dej Changchon

Senior Manager

ทะเบียนเลขที่ ว-323-ค-0001

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.

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING

No.0042

Lot ID: 2630061

Date Received : May 08, 2026

Date Reported : May 16, 2026

Report Number : 3545581-1

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location: TPE Site 1

Page 1 of 2

Sample Number	2630061-1
Sampled Date	May 08, 2026 10:51 AM
Sample Description	Wastewater
Location	Final Check Pond ของโรงงาน LDPE
Date Analysis Commenced	May 08, 2026
Condition of Sample	Contained in two glass vials, one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
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	Rayong
COD	mg/L	1.5	25	30	≤120	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5220 D	Rayong
Color (at Original pH)	ADMI	-	5	10	≤300	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F	Rayong
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	Rayong
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	Rayong
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)	Rayong
Temperature *	Degree C	-	-	36.0	≤40	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	644	≤3000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C	Rayong
Total Suspended Solids Dried from 103-105 degree C	mg/L	-	5	6	≤50	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 D	Rayong

Technical Management

Photchana S

Photchana Seeda

Scientist (4)

ทะเบียนเลขที่ ว-323-จ-0028

Approved by

D. Changchon

Dej Changchon

Senior Manager

ทะเบียนเลขที่ ว-323-ค-0001

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.

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location: TPE Site 1

TESTING

No.0042

Lot ID: 2630061

Date Received : May 08, 2026

Date Reported : May 16, 2026

Report Number : 3545581-1

Page 2 of 2

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 : Phongthep Sitthiloh ทะเบียนเลขที่ ว-323-จ-0023

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

Photchana S

Photchana Seeda

Scientist (4)

ทะเบียนเลขที่ ว-323-จ-0028

Approved by

D. Changchon

Dej Changchon

Senior Manager

ทะเบียนเลขที่ ว-323-ค-0001

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.

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING

No.0042

Lot ID: 2643181

Date Received : Jun 05, 2026

Date Reported : Jun 13, 2026

Report Number : 3573930-1

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location: TPE Site 1

Page 1 of 2

Sample Number	2643181-1
Sampled Date	Jun 05, 2026 11:15 AM
Sample Description	Wastewater
Location	Final Check Pond ของโรงงาน LDPE
Date Analysis Commenced	Jun 05, 2026
Condition of Sample	Contained in one amber glass bottle, two glass vials and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
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	Rayong
COD	mg/L	1.5	25	<25	≤120	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5220 D	Rayong
Color (at Original pH)	ADMI	-	5	7	≤300	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F	Rayong
Color (at pH 7.0)	ADMI	-	5	6	≤300	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2120 F	Rayong
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	Rayong
pH at 25 degree C		-	-	7.5	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	37.6	≤40	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	384	≤3000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C	Rayong
Total Suspended Solids Dried from 103-105 degree C	mg/L	-	5	12	≤50	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 D	Rayong

Technical Management

Photchana S

Photchana Seeda

Scientist (4)

ทะเบียนเลขที่ ว-323-จ-0028

Approved by

D. Chumon.

Dej Changchon

Senior Manager

ทะเบียนเลขที่ ว-323-ค-0001

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.

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING

No.0042

Lot ID: 2643181

Date Received : Jun 05, 2026

Date Reported : Jun 13, 2026

Report Number : 3573930-1

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location: TPE Site 1

Page 2 of 2

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 : Sansoen Khuiyoksui ทะเบียนเลขที่ ว-323-จ-0005 , Akkarin Budsaktee ทะเบียนเลขที่ ว-204-จ-0196

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

Photchana S

Photchana Seeda

Scientist (4)

ทะเบียนเลขที่ ว-323-จ-0028

Approved by

D. Johnson

Dej Changchon

Senior Manager

ทะเบียนเลขที่ ว-323-ค-0001

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.

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

ภาคผนวก ค-4

ระดับเสียงทั่วไป



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : TPE Site 1

Lot ID: 2630013

Date Received : May 18, 2026

Date Reported : May 22, 2026

Report Number: 3577564-1

Page 1 of 1

Sample Number 2630013-1
Parameter Noise (Leq 24 hrs.)
Location อาคารสำนักงานของกลุ่มโรงงาน TPE Site#1 (GPS 47P 0731744, 1404884)
Measurement Date May 07 - May 08, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 1122607

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	60.4	82.1	59.1
11:00 AM - 12:00 PM	61.5	75.3	59.7
12:00 PM - 01:00 PM	61.3	78.4	59.1
01:00 PM - 02:00 PM	60.2	78.3	58.6
02:00 PM - 03:00 PM	60.1	76.6	58.6
03:00 PM - 04:00 PM	59.6	79.1	57.0
04:00 PM - 05:00 PM	59.9	78.6	58.0
05:00 PM - 06:00 PM	60.1	76.4	58.3
06:00 PM - 07:00 PM	61.3	79.0	59.3
07:00 PM - 08:00 PM	59.9	77.2	57.8
08:00 PM - 09:00 PM	60.0	77.6	58.6
09:00 PM - 10:00 PM	59.7	78.1	57.9
10:00 PM - 11:00 PM	59.9	80.5	58.5
11:00 PM - 12:00 AM	60.0	78.6	58.9
12:00 AM - 01:00 AM	60.9	80.0	59.8
01:00 AM - 02:00 AM	60.3	79.3	59.0
02:00 AM - 03:00 AM	60.5	79.9	59.2
03:00 AM - 04:00 AM	59.8	76.0	58.4
04:00 AM - 05:00 AM	60.3	76.4	59.5
05:00 AM - 06:00 AM	58.7	76.6	56.8
06:00 AM - 07:00 AM	60.0	76.7	59.0
07:00 AM - 08:00 AM	60.6	77.8	59.1
08:00 AM - 09:00 AM	60.1	80.0	57.8
09:00 AM - 10:00 AM	60.1	78.1	58.8

Leq Average 24 hrs. (dB(A)) 60.3
Lmax (dB(A)) 82.1
L90 (dB(A)) 58.6
Ldn (dB(A)) 66.5

Standard (dB(A)) 70 115

Reference Method : ISO 1996-1 : 2016

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

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : TPE Site 1

Lot ID: 2630013

Date Received : May 18, 2026

Date Reported : May 22, 2026

Report Number: 3577565-1

Page 1 of 1

Sample Number 2630013-2
Parameter Noise (Leq 24 hrs.)
Location อาคารสำนักงานของกลุ่มโรงงาน TPE Site#1 (GPS 47P 0731744, 1404884)
Measurement Date May 08 - May 09, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 1122607

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	59.9	79.1	58.5
11:00 AM - 12:00 PM	60.5	73.3	58.7
12:00 PM - 01:00 PM	60.3	89.9	57.9
01:00 PM - 02:00 PM	59.9	78.6	57.7
02:00 PM - 03:00 PM	60.1	85.4	57.7
03:00 PM - 04:00 PM	60.0	83.2	57.6
04:00 PM - 05:00 PM	59.3	71.5	58.5
05:00 PM - 06:00 PM	59.2	64.3	58.2
06:00 PM - 07:00 PM	59.6	64.2	57.9
07:00 PM - 08:00 PM	58.7	66.6	57.0
08:00 PM - 09:00 PM	59.5	71.2	57.8
09:00 PM - 10:00 PM	60.6	70.5	58.5
10:00 PM - 11:00 PM	59.4	72.5	58.3
11:00 PM - 12:00 AM	59.9	71.2	59.1
12:00 AM - 01:00 AM	59.9	75.7	58.7
01:00 AM - 02:00 AM	59.8	64.1	59.0
02:00 AM - 03:00 AM	59.6	70.9	58.8
03:00 AM - 04:00 AM	59.6	75.4	58.4
04:00 AM - 05:00 AM	59.5	63.8	58.7
05:00 AM - 06:00 AM	58.4	76.3	56.5
06:00 AM - 07:00 AM	59.7	76.4	58.7
07:00 AM - 08:00 AM	60.3	77.5	58.8
08:00 AM - 09:00 AM	59.2	72.3	58.1
09:00 AM - 10:00 AM	59.5	69.8	58.4

Leq Average 24 hrs. (dB(A))

59.7

Lmax (dB(A))

89.9

L90 (dB(A))

58.4

Ldn (dB(A))

66.0

Standard (dB(A))

70

115

Reference Method : ISO 1996-1 : 2016

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป

2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : TPE Site 1

Lot ID: 2630013

Date Received : May 18, 2026

Date Reported : May 22, 2026

Report Number: 3577566-1

Page 1 of 1

Sample Number 2630013-3
Parameter Noise (Leq 24 hrs.)
Location อาคารสำนักงานของกลุ่มโรงงาน TPE Site#1 (GPS 47P 0731744, 1404884)
Measurement Date May 09 - May 10, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 1122607

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	59.4	69.9	57.8
11:00 AM - 12:00 PM	59.2	71.9	57.7
12:00 PM - 01:00 PM	59.9	79.8	57.6
01:00 PM - 02:00 PM	59.9	77.9	58.6
02:00 PM - 03:00 PM	59.7	78.9	58.3
03:00 PM - 04:00 PM	59.3	69.6	58.2
04:00 PM - 05:00 PM	59.2	69.7	57.6
05:00 PM - 06:00 PM	59.0	71.7	57.5
06:00 PM - 07:00 PM	59.3	71.0	57.6
07:00 PM - 08:00 PM	60.4	70.3	58.3
08:00 PM - 09:00 PM	59.2	72.3	58.1
09:00 PM - 10:00 PM	59.7	71.0	58.9
10:00 PM - 11:00 PM	59.7	75.5	58.5
11:00 PM - 12:00 AM	59.6	63.9	58.8
12:00 AM - 01:00 AM	59.1	71.3	58.3
01:00 AM - 02:00 AM	59.0	64.1	58.0
02:00 AM - 03:00 AM	59.4	64.0	57.7
03:00 AM - 04:00 AM	58.5	66.4	56.8
04:00 AM - 05:00 AM	58.5	76.4	56.6
05:00 AM - 06:00 AM	59.8	76.5	58.8
06:00 AM - 07:00 AM	60.4	77.6	58.9
07:00 AM - 08:00 AM	60.3	73.1	58.5
08:00 AM - 09:00 AM	60.1	89.7	57.7
09:00 AM - 10:00 AM	59.7	78.4	57.5

Leq Average 24 hrs. (dB(A)) 59.5
Lmax (dB(A)) 89.7
L90 (dB(A)) 58.0
Ldn (dB(A)) 65.8

Standard (dB(A))

70

115

Reference Method : ISO 1996-1 : 2016

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

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : TPE Site 1

Lot ID: 2630013

Date Received : May 18, 2026

Date Reported : May 22, 2026

Report Number: 3577567-1

Page 1 of 1

Sample Number 2630013-4
Parameter Noise (Leq 24 hrs.)
Location อาคารสำนักงานของกลุ่มโรงงาน TPE Site#1 (GPS 47P 0731744, 1404884)
Measurement Date May 10 - May 11, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 1122607

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	59.9	85.2	57.5
11:00 AM - 12:00 PM	59.8	83.0	57.4
12:00 PM - 01:00 PM	58.4	72.8	56.3
01:00 PM - 02:00 PM	58.3	76.7	56.6
02:00 PM - 03:00 PM	58.2	76.1	56.4
03:00 PM - 04:00 PM	58.4	75.4	56.2
04:00 PM - 05:00 PM	59.3	85.9	55.7
05:00 PM - 06:00 PM	59.8	78.1	57.7
06:00 PM - 07:00 PM	61.0	79.6	59.2
07:00 PM - 08:00 PM	60.6	79.3	57.7
08:00 PM - 09:00 PM	58.6	70.9	57.1
09:00 PM - 10:00 PM	59.4	83.1	57.8
10:00 PM - 11:00 PM	59.2	71.1	57.9
11:00 PM - 12:00 AM	57.8	78.0	56.0
12:00 AM - 01:00 AM	58.3	76.5	56.8
01:00 AM - 02:00 AM	58.7	69.8	57.7
02:00 AM - 03:00 AM	59.1	72.4	57.2
03:00 AM - 04:00 AM	61.5	82.8	59.2
04:00 AM - 05:00 AM	62.4	85.7	59.1
05:00 AM - 06:00 AM	66.5	86.7	58.3
06:00 AM - 07:00 AM	59.9	77.5	58.5
07:00 AM - 08:00 AM	59.6	79.9	57.8
08:00 AM - 09:00 AM	60.0	82.1	58.5
09:00 AM - 10:00 AM	58.4	74.4	56.9

Leq Average 24 hrs. (dB(A))

60.2

Lmax (dB(A))

86.7

L90 (dB(A))

57.5

Ldn (dB(A))

67.5

Standard (dB(A))

70

115

Reference Method : ISO 1996-1 : 2016

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป

2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : TPE Site 1

Lot ID: 2630013

Date Received : May 18, 2026

Date Reported : May 22, 2026

Report Number: 3577568-1

Page 1 of 1

Sample Number 2630013-5
Parameter Noise (Leq 24 hrs.)
Location อาคารสำนักงานของกลุ่มโรงงาน TPE Site#1 (GPS 47P 0731744, 1404884)
Measurement Date May 11 - May 12, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 1122607

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	59.7	72.1	57.4
11:00 AM - 12:00 PM	60.6	80.1	59.2
12:00 PM - 01:00 PM	60.0	79.0	58.4
01:00 PM - 02:00 PM	59.5	78.0	58.1
02:00 PM - 03:00 PM	60.1	78.0	58.7
03:00 PM - 04:00 PM	59.3	75.6	57.9
04:00 PM - 05:00 PM	58.9	74.4	56.8
05:00 PM - 06:00 PM	59.0	81.6	57.4
06:00 PM - 07:00 PM	60.1	80.7	57.9
07:00 PM - 08:00 PM	60.5	72.6	58.0
08:00 PM - 09:00 PM	58.8	78.2	57.2
09:00 PM - 10:00 PM	59.3	73.9	58.1
10:00 PM - 11:00 PM	58.9	79.7	57.2
11:00 PM - 12:00 AM	59.3	78.0	57.8
12:00 AM - 01:00 AM	59.1	73.6	57.4
01:00 AM - 02:00 AM	59.0	72.9	57.9
02:00 AM - 03:00 AM	59.2	74.7	57.8
03:00 AM - 04:00 AM	59.8	79.9	58.5
04:00 AM - 05:00 AM	59.7	80.4	58.2
05:00 AM - 06:00 AM	59.4	72.3	58.2
06:00 AM - 07:00 AM	59.9	73.8	58.6
07:00 AM - 08:00 AM	59.6	74.4	57.9
08:00 AM - 09:00 AM	59.2	73.9	57.7
09:00 AM - 10:00 AM	59.2	78.4	57.5

Leq Average 24 hrs. (dB(A))

59.5

Lmax (dB(A))

81.6

L90 (dB(A))

57.9

Ldn (dB(A))

65.8

Standard (dB(A))

70

115

Reference Method : ISO 1996-1 : 2016

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป

2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : TPE Site 1

Lot ID: 2630013

Date Received : May 18, 2026

Date Reported : May 22, 2026

Report Number: 3577569-1

Page 1 of 1

Sample Number 2630013-6
Parameter Noise (Leq 24 hrs.)
Location อาคารสำนักงานของกลุ่มโรงงาน TPE Site#1 (GPS 47P 0731744, 1404884)
Measurement Date May 12 - May 13, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 1122607

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	61.8	77.3	60.3
11:00 AM - 12:00 PM	62.4	78.3	60.2
12:00 PM - 01:00 PM	58.6	74.6	57.1
01:00 PM - 02:00 PM	59.9	72.3	57.6
02:00 PM - 03:00 PM	60.8	80.3	59.4
03:00 PM - 04:00 PM	60.4	76.8	58.9
04:00 PM - 05:00 PM	59.8	70.1	58.4
05:00 PM - 06:00 PM	60.8	79.1	59.5
06:00 PM - 07:00 PM	61.6	74.0	60.2
07:00 PM - 08:00 PM	62.4	82.8	60.0
08:00 PM - 09:00 PM	60.1	77.7	58.4
09:00 PM - 10:00 PM	59.4	74.9	58.0
10:00 PM - 11:00 PM	60.0	80.1	58.7
11:00 PM - 12:00 AM	59.9	80.6	58.4
12:00 AM - 01:00 AM	59.6	72.5	58.4
01:00 AM - 02:00 AM	59.6	83.3	58.0
02:00 AM - 03:00 AM	59.4	71.3	58.1
03:00 AM - 04:00 AM	58.0	78.2	56.2
04:00 AM - 05:00 AM	58.5	76.7	57.0
05:00 AM - 06:00 AM	58.8	73.0	57.1
06:00 AM - 07:00 AM	60.7	77.2	58.7
07:00 AM - 08:00 AM	62.0	77.5	60.5
08:00 AM - 09:00 AM	62.6	78.5	60.4
09:00 AM - 10:00 AM	60.8	78.3	59.3

Leq Average 24 hrs. (dB(A))

60.5

Lmax (dB(A))

83.3

L90 (dB(A))

58.4

Ldn (dB(A))

66.1

Standard (dB(A))

70

115

Reference Method : ISO 1996-1 : 2016

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป

2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : TPE Site 1

Lot ID: 2630013

Date Received : May 18, 2026

Date Reported : May 22, 2026

Report Number: 3577570-1

Page 1 of 1

Sample Number 2630013-7
Parameter Noise (Leq 24 hrs.)
Location อาคารสำนักงานของกลุ่มโรงงาน TPE Site#1 (GPS 47P 0731744, 1404884)
Measurement Date May 13 - May 14, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 1122607

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	61.2	85.5	59.6
11:00 AM - 12:00 PM	60.3	77.6	59.0
12:00 PM - 01:00 PM	66.7	86.9	58.5
01:00 PM - 02:00 PM	60.1	77.7	58.7
02:00 PM - 03:00 PM	59.8	80.1	58.0
03:00 PM - 04:00 PM	60.2	82.3	58.7
04:00 PM - 05:00 PM	60.5	81.2	59.1
05:00 PM - 06:00 PM	60.6	76.4	59.4
06:00 PM - 07:00 PM	61.6	92.6	59.6
07:00 PM - 08:00 PM	62.0	78.2	60.3
08:00 PM - 09:00 PM	60.4	73.5	58.7
09:00 PM - 10:00 PM	60.1	74.0	58.8
10:00 PM - 11:00 PM	59.8	74.6	58.1
11:00 PM - 12:00 AM	59.4	74.1	57.9
12:00 AM - 01:00 AM	59.4	78.6	57.7
01:00 AM - 02:00 AM	58.9	70.0	57.9
02:00 AM - 03:00 AM	59.3	72.6	57.4
03:00 AM - 04:00 AM	61.7	83.0	59.4
04:00 AM - 05:00 AM	62.6	85.9	59.3
05:00 AM - 06:00 AM	58.9	73.6	57.5
06:00 AM - 07:00 AM	59.2	71.6	58.0
07:00 AM - 08:00 AM	60.2	76.5	58.5
08:00 AM - 09:00 AM	59.7	73.3	57.9
09:00 AM - 10:00 AM	58.5	74.2	56.9

Leq Average 24 hrs. (dB(A)) 60.9
Lmax (dB(A)) 92.6
L90 (dB(A)) 58.5
Ldn (dB(A)) 66.7

Standard (dB(A))

70

115

Reference Method : ISO 1996-1 : 2016

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

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633433

Date Received : May 18, 2026

Date Reported : May 21, 2026

Report Number: 3576699-1

Page 1 of 1

Sample Number 2633433-1
Parameter Noise (Leq 24 hrs.)
Location กิ่งกลางรั้วด้านทิศใต้ของโรงงาน LDPE ติดกับถนนของนิคม (GPS 47P 0731925, 1404867)
Measurement Date May 07 - May 08, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 709746

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	68.0	90.1	66.4
11:00 AM - 12:00 PM	67.5	75.7	66.3
12:00 PM - 01:00 PM	68.6	71.2	68.2
01:00 PM - 02:00 PM	68.2	69.9	65.9
02:00 PM - 03:00 PM	68.5	70.8	68.0
03:00 PM - 04:00 PM	67.3	70.4	65.2
04:00 PM - 05:00 PM	68.1	70.4	67.6
05:00 PM - 06:00 PM	66.8	73.3	65.3
06:00 PM - 07:00 PM	68.4	73.9	68.0
07:00 PM - 08:00 PM	67.4	71.9	65.3
08:00 PM - 09:00 PM	68.5	73.0	68.1
09:00 PM - 10:00 PM	67.9	69.8	65.6
10:00 PM - 11:00 PM	68.5	70.1	68.2
11:00 PM - 12:00 AM	67.7	69.7	66.4
12:00 AM - 01:00 AM	71.2	73.2	70.8
01:00 AM - 02:00 AM	68.4	72.8	65.9
02:00 AM - 03:00 AM	71.3	73.2	70.8
03:00 AM - 04:00 AM	68.2	73.1	66.0
04:00 AM - 05:00 AM	71.3	72.8	70.9
05:00 AM - 06:00 AM	70.1	72.6	66.3
06:00 AM - 07:00 AM	71.3	72.7	71.0
07:00 AM - 08:00 AM	69.3	75.7	65.9
08:00 AM - 09:00 AM	71.2	73.1	70.7
09:00 AM - 10:00 AM	68.1	76.4	65.6

Leq Average 24 hrs. (dB(A))

69.1

Lmax (dB(A))

90.1

L90 (dB(A))

66.4

Ldn (dB(A))

76.2

Standard (dB(A))

70

115

Reference Method : ISO 1996-1 : 2016

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป

2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633433

Date Received : May 18, 2026

Date Reported : May 21, 2026

Report Number: 3576700-1

Page 1 of 1

Sample Number 2633433-2
Parameter Noise (Leq 24 hrs.)
Location กิ่งกลางรั้วด้านทิศใต้ของโรงงาน LDPE ติดกับถนนของนิคม (GPS 47P 0731925, 1404867)
Measurement Date May 08 - May 09, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 709746

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	70.9	74.5	70.5
11:00 AM - 12:00 PM	67.8	83.0	65.6
12:00 PM - 01:00 PM	67.7	69.4	67.5
01:00 PM - 02:00 PM	67.2	93.1	65.4
02:00 PM - 03:00 PM	67.8	89.5	67.2
03:00 PM - 04:00 PM	67.6	77.6	66.2
04:00 PM - 05:00 PM	68.6	71.5	68.3
05:00 PM - 06:00 PM	67.4	69.5	66.6
06:00 PM - 07:00 PM	68.5	70.1	68.3
07:00 PM - 08:00 PM	67.6	70.1	66.8
08:00 PM - 09:00 PM	68.8	69.9	68.5
09:00 PM - 10:00 PM	68.4	70.8	67.0
10:00 PM - 11:00 PM	68.8	70.4	68.6
11:00 PM - 12:00 AM	68.0	71.6	66.9
12:00 AM - 01:00 AM	69.4	71.4	69.0
01:00 AM - 02:00 AM	68.1	70.9	67.1
02:00 AM - 03:00 AM	69.5	71.1	69.2
03:00 AM - 04:00 AM	67.9	70.5	66.9
04:00 AM - 05:00 AM	69.5	73.2	69.0
05:00 AM - 06:00 AM	68.7	73.7	67.0
06:00 AM - 07:00 AM	69.5	71.1	69.2
07:00 AM - 08:00 AM	68.1	71.3	66.4
08:00 AM - 09:00 AM	68.7	81.0	68.2
09:00 AM - 10:00 AM	66.6	73.0	65.1

Leq Average 24 hrs. (dB(A))

68.5

Lmax (dB(A))

93.1

L90 (dB(A))

67.1

Ldn (dB(A))

75.2

Standard (dB(A))

70

115

Reference Method : ISO 1996-1 : 2016

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป

2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633433

Date Received : May 18, 2026

Date Reported : May 21, 2026

Report Number: 3576701-1

Page 1 of 1

Sample Number 2633433-3
Parameter Noise (Leq 24 hrs.)
Location กิ่งกลางรั้วด้านทิศใต้ของโรงงาน LDPE ติดกับถนนของนิคม (GPS 47P 0731925, 1404867)
Measurement Date May 09 - May 10, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 709746

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	68.0	72.1	67.6
11:00 AM - 12:00 PM	66.0	86.8	64.9
12:00 PM - 01:00 PM	70.0	72.3	66.6
01:00 PM - 02:00 PM	69.6	81.0	65.4
02:00 PM - 03:00 PM	74.9	96.5	69.6
03:00 PM - 04:00 PM	68.2	72.5	65.1
04:00 PM - 05:00 PM	70.5	74.7	69.9
05:00 PM - 06:00 PM	67.8	73.7	65.2
06:00 PM - 07:00 PM	70.6	72.9	70.1
07:00 PM - 08:00 PM	67.6	72.4	65.4
08:00 PM - 09:00 PM	70.5	72.1	70.1
09:00 PM - 10:00 PM	69.4	71.8	65.6
10:00 PM - 11:00 PM	70.7	71.9	70.3
11:00 PM - 12:00 AM	68.4	71.9	65.6
12:00 AM - 01:00 AM	67.6	69.0	67.4
01:00 AM - 02:00 AM	66.4	68.7	65.4
02:00 AM - 03:00 AM	67.9	69.6	67.6
03:00 AM - 04:00 AM	66.2	68.7	65.3
04:00 AM - 05:00 AM	67.9	69.1	67.6
05:00 AM - 06:00 AM	67.6	73.2	66.0
06:00 AM - 07:00 AM	68.2	69.8	68.0
07:00 AM - 08:00 AM	66.8	70.2	65.4
08:00 AM - 09:00 AM	67.5	70.8	67.2
09:00 AM - 10:00 AM	66.2	69.6	65.2

Leq Average 24 hrs. (dB(A))

69.1

Lmax (dB(A))

96.5

L90 (dB(A))

66.0

Ldn (dB(A))

74.7

Standard (dB(A))

70

115

Reference Method : ISO 1996-1 : 2016

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป

2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633433

Date Received : May 18, 2026

Date Reported : May 21, 2026

Report Number: 3576702-1

Page 1 of 1

Sample Number 2633433-4
Parameter Noise (Leq 24 hrs.)
Location กิ่งกลางรั้วด้านทิศใต้ของโรงงาน LDPE ติดกับถนนของนิคม (GPS 47P 0731925, 1404867)
Measurement Date May 10 - May 11, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 709746

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	67.7	69.3	67.4
11:00 AM - 12:00 PM	66.2	69.4	65.2
12:00 PM - 01:00 PM	68.0	70.6	67.6
01:00 PM - 02:00 PM	67.3	70.8	65.1
02:00 PM - 03:00 PM	68.2	72.7	67.7
03:00 PM - 04:00 PM	66.7	70.9	64.8
04:00 PM - 05:00 PM	67.9	69.9	67.5
05:00 PM - 06:00 PM	66.5	69.7	65.3
06:00 PM - 07:00 PM	68.7	74.9	68.1
07:00 PM - 08:00 PM	66.3	70.7	65.1
08:00 PM - 09:00 PM	68.2	70.9	67.9
09:00 PM - 10:00 PM	67.3	69.3	65.1
10:00 PM - 11:00 PM	68.4	71.9	67.9
11:00 PM - 12:00 AM	67.7	73.2	65.9
12:00 AM - 01:00 AM	71.6	75.5	71.0
01:00 AM - 02:00 AM	69.6	73.3	67.2
02:00 AM - 03:00 AM	71.6	73.5	71.3
03:00 AM - 04:00 AM	68.6	73.3	66.6
04:00 AM - 05:00 AM	71.8	73.3	71.3
05:00 AM - 06:00 AM	70.5	73.0	66.7
06:00 AM - 07:00 AM	71.7	74.2	71.3
07:00 AM - 08:00 AM	69.7	73.5	66.4
08:00 AM - 09:00 AM	71.4	73.4	71.0
09:00 AM - 10:00 AM	67.9	73.5	65.6

Leq Average 24 hrs. (dB(A))

69.1

Lmax (dB(A))

75.5

L90 (dB(A))

67.2

Ldn (dB(A))

76.6

Standard (dB(A))

70

115

Reference Method : ISO 1996-1 : 2016

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป

2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633433

Date Received : May 18, 2026

Date Reported : May 21, 2026

Report Number: 3576703-1

Page 1 of 1

Sample Number 2633433-5
Parameter Noise (Leq 24 hrs.)
Location กึ่งกลางรั้วด้านทิศใต้ของโรงงาน LDPE ติดกับถนนของนิคม (GPS 47P 0731925, 1404867)
Measurement Date May 11 - May 12, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 709746

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	71.2	80.6	70.5
11:00 AM - 12:00 PM	66.9	72.1	65.4
12:00 PM - 01:00 PM	67.5	69.3	67.2
01:00 PM - 02:00 PM	67.3	82.0	65.4
02:00 PM - 03:00 PM	67.8	78.6	67.0
03:00 PM - 04:00 PM	67.3	88.0	65.2
04:00 PM - 05:00 PM	68.8	80.8	67.1
05:00 PM - 06:00 PM	66.2	71.1	65.2
06:00 PM - 07:00 PM	67.6	69.4	67.3
07:00 PM - 08:00 PM	66.4	69.4	65.3
08:00 PM - 09:00 PM	67.6	68.7	67.3
09:00 PM - 10:00 PM	67.1	70.9	65.3
10:00 PM - 11:00 PM	67.7	69.3	67.3
11:00 PM - 12:00 AM	66.6	71.7	65.3
12:00 AM - 01:00 AM	68.3	70.1	67.9
01:00 AM - 02:00 AM	67.1	70.2	65.4
02:00 AM - 03:00 AM	68.6	70.3	68.2
03:00 AM - 04:00 AM	80.9	114.9	65.4
04:00 AM - 05:00 AM	75.5	107.0	70.2
05:00 AM - 06:00 AM	69.5	80.2	68.1
06:00 AM - 07:00 AM	70.3	80.2	68.5
07:00 AM - 08:00 AM	70.0	76.6	67.6
08:00 AM - 09:00 AM	69.5	77.6	67.4
09:00 AM - 10:00 AM	69.1	75.2	67.2

Leq Average 24 hrs. (dB(A)) 71.1
Lmax (dB(A)) 114.9
L90 (dB(A)) 67.2
Ldn (dB(A)) 79.6
Standard (dB(A)) 70 115

Reference Method : ISO 1996-1 : 2016

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

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633433

Date Received : May 18, 2026

Date Reported : May 21, 2026

Report Number: 3576704-1

Page 1 of 1

Sample Number 2633433-6
Parameter Noise (Leq 24 hrs.)
Location กิ่งกลางรั้วด้านทิศใต้ของโรงงาน LDPE ติดกับถนนของนิคม (GPS 47P 0731925, 1404867)
Measurement Date May 12 - May 13, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 709746

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	69.4	85.4	67.3
11:00 AM - 12:00 PM	68.9	85.3	66.9
12:00 PM - 01:00 PM	70.2	73.1	66.7
01:00 PM - 02:00 PM	71.5	73.0	71.1
02:00 PM - 03:00 PM	70.5	73.4	66.9
03:00 PM - 04:00 PM	71.0	73.2	66.9
04:00 PM - 05:00 PM	67.5	71.0	67.0
05:00 PM - 06:00 PM	71.1	73.9	67.4
06:00 PM - 07:00 PM	70.2	73.7	67.3
07:00 PM - 08:00 PM	68.7	70.5	67.7
08:00 PM - 09:00 PM	67.8	73.0	66.6
09:00 PM - 10:00 PM	68.5	70.1	66.7
10:00 PM - 11:00 PM	68.8	70.2	67.7
11:00 PM - 12:00 AM	68.4	70.1	66.9
12:00 AM - 01:00 AM	68.4	69.7	66.8
01:00 AM - 02:00 AM	68.6	70.1	67.0
02:00 AM - 03:00 AM	67.7	69.4	66.4
03:00 AM - 04:00 AM	68.2	69.8	66.5
04:00 AM - 05:00 AM	68.2	70.0	66.7
05:00 AM - 06:00 AM	68.5	72.3	66.8
06:00 AM - 07:00 AM	69.0	73.6	67.7
07:00 AM - 08:00 AM	69.2	72.1	67.2
08:00 AM - 09:00 AM	68.6	80.8	66.5
09:00 AM - 10:00 AM	68.3	70.9	66.4

Leq Average 24 hrs. (dB(A))

69.2

Lmax (dB(A))

85.4

L90 (dB(A))

66.9

Ldn (dB(A))

75.0

Standard (dB(A))

70

115

Reference Method : ISO 1996-1 : 2016

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป

2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633433

Date Received : May 18, 2026

Date Reported : May 21, 2026

Report Number: 3576705-1

Page 1 of 1

Sample Number 2633433-7
Parameter Noise (Leq 24 hrs.)
Location กิ่งกลางรั้วด้านทิศใต้ของโรงงาน LDPE ติดกับถนนของนิคม (GPS 47P 0731925, 1404867)
Measurement Date May 13 - May 14, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 709746

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	67.8	76.9	66.1
11:00 AM - 12:00 PM	66.6	82.8	65.8
12:00 PM - 01:00 PM	68.4	72.1	68.0
01:00 PM - 02:00 PM	66.8	90.7	65.5
02:00 PM - 03:00 PM	68.7	91.2	68.1
03:00 PM - 04:00 PM	68.2	79.9	66.3
04:00 PM - 05:00 PM	70.6	74.0	70.1
05:00 PM - 06:00 PM	69.1	73.2	65.7
06:00 PM - 07:00 PM	70.8	76.5	70.2
07:00 PM - 08:00 PM	68.6	73.5	66.0
08:00 PM - 09:00 PM	70.8	72.6	70.2
09:00 PM - 10:00 PM	68.1	72.6	65.9
10:00 PM - 11:00 PM	70.9	72.7	70.4
11:00 PM - 12:00 AM	69.9	72.6	65.8
12:00 AM - 01:00 AM	70.8	73.3	70.2
01:00 AM - 02:00 AM	69.1	74.1	65.8
02:00 AM - 03:00 AM	72.3	78.5	71.1
03:00 AM - 04:00 AM	71.6	83.4	68.9
04:00 AM - 05:00 AM	69.8	82.8	69.6
05:00 AM - 06:00 AM	68.8	71.1	67.8
06:00 AM - 07:00 AM	69.5	71.3	69.2
07:00 AM - 08:00 AM	68.4	74.0	67.2
08:00 AM - 09:00 AM	69.0	73.0	68.7
09:00 AM - 10:00 AM	67.8	72.7	66.7

Leq Average 24 hrs. (dB(A))

69.5

Lmax (dB(A))

91.2

L90 (dB(A))

67.8

Ldn (dB(A))

76.7

Standard (dB(A))

70

115

Reference Method : ISO 1996-1 : 2016

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป

2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633433

Date Received : May 18, 2026

Date Reported : May 21, 2026

Report Number: 3576706-1

Page 1 of 1

Sample Number 2633433-8
Parameter Noise (Leq 24 hrs.)
Location กิ่งกลางรั้วด้านทิศตะวันออกของโรงงาน LDPE ติดกับโรงงาน BIG (GPS 47P 0732108, 1404917)
Measurement Date May 07 - May 08, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 900071

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	68.1	101.7	65.4
11:00 AM - 12:00 PM	66.5	92.5	65.4
12:00 PM - 01:00 PM	66.0	73.6	65.6
01:00 PM - 02:00 PM	65.8	85.2	65.4
02:00 PM - 03:00 PM	65.7	73.4	65.3
03:00 PM - 04:00 PM	65.5	79.9	65.0
04:00 PM - 05:00 PM	66.2	86.1	65.5
05:00 PM - 06:00 PM	65.9	79.6	65.5
06:00 PM - 07:00 PM	65.8	70.9	65.5
07:00 PM - 08:00 PM	66.0	68.9	65.6
08:00 PM - 09:00 PM	65.9	70.0	65.5
09:00 PM - 10:00 PM	65.8	70.4	65.5
10:00 PM - 11:00 PM	65.8	69.5	65.5
11:00 PM - 12:00 AM	65.8	72.9	65.5
12:00 AM - 01:00 AM	66.0	67.8	65.7
01:00 AM - 02:00 AM	66.0	73.9	65.7
02:00 AM - 03:00 AM	66.1	67.6	65.8
03:00 AM - 04:00 AM	66.1	67.4	65.8
04:00 AM - 05:00 AM	66.1	67.3	65.8
05:00 AM - 06:00 AM	66.2	68.8	65.9
06:00 AM - 07:00 AM	66.3	81.0	65.9
07:00 AM - 08:00 AM	66.0	79.8	65.7
08:00 AM - 09:00 AM	66.1	85.2	65.7
09:00 AM - 10:00 AM	65.9	79.0	65.5

Leq Average 24 hrs. (dB(A))

66.1

Lmax (dB(A))

101.7

L90 (dB(A))

65.5

Ldn (dB(A))

72.5

Standard (dB(A))

70

115

Reference Method : ISO 1996-1 : 2016

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป

2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633433

Date Received : May 18, 2026

Date Reported : May 21, 2026

Report Number: 3576707-1

Page 1 of 1

Sample Number 2633433-9
Parameter Noise (Leq 24 hrs.)
Location กิ่งกลางวัดด้านทิศตะวันออกของโรงงาน LDPE ติดกับโรงงาน BIG (GPS 47P 0732108, 1404917)
Measurement Date May 08 - May 09, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 900071

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	65.8	85.1	65.4
11:00 AM - 12:00 PM	66.0	76.5	65.6
12:00 PM - 01:00 PM	65.8	70.4	65.5
01:00 PM - 02:00 PM	65.5	74.2	65.1
02:00 PM - 03:00 PM	65.6	85.9	65.0
03:00 PM - 04:00 PM	66.7	85.0	66.1
04:00 PM - 05:00 PM	66.8	92.3	66.0
05:00 PM - 06:00 PM	66.3	73.4	66.0
06:00 PM - 07:00 PM	66.2	68.8	65.9
07:00 PM - 08:00 PM	66.3	73.5	66.0
08:00 PM - 09:00 PM	66.4	70.6	66.1
09:00 PM - 10:00 PM	66.4	68.7	66.1
10:00 PM - 11:00 PM	66.6	70.0	66.3
11:00 PM - 12:00 AM	66.4	73.0	66.1
12:00 AM - 01:00 AM	66.3	69.0	66.0
01:00 AM - 02:00 AM	66.3	67.7	66.0
02:00 AM - 03:00 AM	66.3	68.6	66.0
03:00 AM - 04:00 AM	66.2	67.8	65.9
04:00 AM - 05:00 AM	66.4	68.9	66.0
05:00 AM - 06:00 AM	66.3	68.0	66.0
06:00 AM - 07:00 AM	66.6	80.5	66.2
07:00 AM - 08:00 AM	66.4	76.8	66.0
08:00 AM - 09:00 AM	66.1	80.0	65.7
09:00 AM - 10:00 AM	66.4	82.7	65.5

Leq Average 24 hrs. (dB(A))

66.3

Lmax (dB(A))

92.3

L90 (dB(A))

66.0

Ldn (dB(A))

72.8

Standard (dB(A))

70

115

Reference Method : ISO 1996-1 : 2016

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป

2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633433

Date Received : May 18, 2026

Date Reported : May 21, 2026

Report Number: 3576708-1

Page 1 of 1

Sample Number 2633433-10
Parameter Noise (Leq 24 hrs.)
Location กิ่งกลางรั้วด้านทิศตะวันออกของโรงงาน LDPE ติดกับโรงงาน BIG (GPS 47P 0732108, 1404917)
Measurement Date May 09 - May 10, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 900071

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	65.5	80.4	65.1
11:00 AM - 12:00 PM	65.6	83.8	65.2
12:00 PM - 01:00 PM	65.7	80.6	65.3
01:00 PM - 02:00 PM	65.7	78.5	65.3
02:00 PM - 03:00 PM	73.8	94.6	65.2
03:00 PM - 04:00 PM	65.6	77.2	65.2
04:00 PM - 05:00 PM	66.2	87.1	65.5
05:00 PM - 06:00 PM	65.8	73.7	65.2
06:00 PM - 07:00 PM	65.8	72.3	65.4
07:00 PM - 08:00 PM	65.9	68.7	65.4
08:00 PM - 09:00 PM	65.8	68.5	65.5
09:00 PM - 10:00 PM	65.8	69.7	65.4
10:00 PM - 11:00 PM	65.9	71.1	65.6
11:00 PM - 12:00 AM	65.9	72.1	65.5
12:00 AM - 01:00 AM	65.8	69.8	65.5
01:00 AM - 02:00 AM	65.7	67.4	65.4
02:00 AM - 03:00 AM	65.9	67.7	65.6
03:00 AM - 04:00 AM	65.8	68.9	65.5
04:00 AM - 05:00 AM	65.9	67.5	65.6
05:00 AM - 06:00 AM	66.1	68.2	65.7
06:00 AM - 07:00 AM	66.0	70.7	65.7
07:00 AM - 08:00 AM	65.8	81.4	65.4
08:00 AM - 09:00 AM	65.6	82.0	65.2
09:00 AM - 10:00 AM	65.4	80.0	65.0

Leq Average 24 hrs. (dB(A))

66.7

Lmax (dB(A))

94.6

L90 (dB(A))

65.4

Ldn (dB(A))

72.5

Standard (dB(A))

70

115

Reference Method : ISO 1996-1 : 2016

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป

2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633433

Date Received : May 18, 2026

Date Reported : May 21, 2026

Report Number: 3576709-1

Page 1 of 1

Sample Number 2633433-11
Parameter Noise (Leq 24 hrs.)
Location กิ่งกลางรั้วด้านทิศตะวันออกของโรงงาน LDPE ติดกับโรงงาน BIG (GPS 47P 0732108, 1404917)
Measurement Date May 10 - May 11, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 900071

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	65.4	70.5	65.1
11:00 AM - 12:00 PM	65.2	70.6	64.9
12:00 PM - 01:00 PM	65.2	74.0	64.9
01:00 PM - 02:00 PM	65.1	77.5	64.7
02:00 PM - 03:00 PM	65.3	71.5	64.7
03:00 PM - 04:00 PM	65.4	79.5	64.8
04:00 PM - 05:00 PM	65.4	75.1	65.0
05:00 PM - 06:00 PM	65.6	78.1	65.1
06:00 PM - 07:00 PM	65.7	68.5	65.3
07:00 PM - 08:00 PM	65.8	70.3	65.3
08:00 PM - 09:00 PM	65.6	71.5	65.3
09:00 PM - 10:00 PM	65.6	70.8	65.3
10:00 PM - 11:00 PM	65.7	71.9	65.3
11:00 PM - 12:00 AM	66.3	83.6	65.5
12:00 AM - 01:00 AM	66.9	77.6	66.4
01:00 AM - 02:00 AM	66.8	79.4	66.5
02:00 AM - 03:00 AM	66.4	72.7	66.1
03:00 AM - 04:00 AM	66.3	68.0	66.0
04:00 AM - 05:00 AM	66.6	68.2	66.3
05:00 AM - 06:00 AM	66.6	68.0	66.2
06:00 AM - 07:00 AM	66.3	84.1	65.9
07:00 AM - 08:00 AM	66.2	79.3	65.8
08:00 AM - 09:00 AM	65.8	67.9	65.5
09:00 AM - 10:00 AM	65.5	85.5	65.0

Leq Average 24 hrs. (dB(A))

65.9

Lmax (dB(A))

85.5

L90 (dB(A))

65.3

Ldn (dB(A))

72.7

Standard (dB(A))

70

115

Reference Method : ISO 1996-1 : 2016

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป

2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633433

Date Received : May 18, 2026

Date Reported : May 21, 2026

Report Number: 3576710-1

Page 1 of 1

Sample Number 2633433-12
Parameter Noise (Leq 24 hrs.)
Location กึ่งกลางรั้วด้านทิศตะวันออกของโรงงาน LDPE ติดกับโรงงาน BIG (GPS 47P 0732108, 1404917)
Measurement Date May 11 - May 12, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 900071

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	65.4	75.0	65.0
11:00 AM - 12:00 PM	65.6	93.0	64.9
12:00 PM - 01:00 PM	65.3	75.7	65.0
01:00 PM - 02:00 PM	66.1	95.9	65.0
02:00 PM - 03:00 PM	65.7	87.6	65.1
03:00 PM - 04:00 PM	66.1	96.2	65.0
04:00 PM - 05:00 PM	66.0	88.5	64.9
05:00 PM - 06:00 PM	65.6	83.1	65.0
06:00 PM - 07:00 PM	65.6	70.5	65.2
07:00 PM - 08:00 PM	65.9	72.7	65.4
08:00 PM - 09:00 PM	65.7	71.0	65.4
09:00 PM - 10:00 PM	65.7	70.4	65.3
10:00 PM - 11:00 PM	65.9	67.8	65.4
11:00 PM - 12:00 AM	65.9	68.0	65.5
12:00 AM - 01:00 AM	66.2	68.5	65.8
01:00 AM - 02:00 AM	66.1	69.4	65.7
02:00 AM - 03:00 AM	66.3	67.8	65.9
03:00 AM - 04:00 AM	77.9	113.7	65.8
04:00 AM - 05:00 AM	77.2	110.6	70.4
05:00 AM - 06:00 AM	69.6	76.8	69.2
06:00 AM - 07:00 AM	69.2	85.7	68.8
07:00 AM - 08:00 AM	68.6	77.2	68.3
08:00 AM - 09:00 AM	68.3	81.2	67.9
09:00 AM - 10:00 AM	67.7	79.9	67.3

Leq Average 24 hrs. (dB(A)) 69.6
Lmax (dB(A)) 113.7
L90 (dB(A)) 65.4
Ldn (dB(A)) 78.2
Standard (dB(A)) 70 115

Reference Method : ISO 1996-1 : 2016

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

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633433

Date Received : May 18, 2026

Date Reported : May 21, 2026

Report Number: 3576711-1

Page 1 of 1

Sample Number 2633433-13
Parameter Noise (Leq 24 hrs.)
Location กิ่งกลางรั้วด้านทิศตะวันออกของโรงงาน LDPE ติดกับโรงงาน BIG (GPS 47P 0732108, 1404917)
Measurement Date May 12 - May 13, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 900071

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	67.2	78.2	66.9
11:00 AM - 12:00 PM	66.8	74.5	66.4
12:00 PM - 01:00 PM	66.4	72.4	66.0
01:00 PM - 02:00 PM	67.2	77.2	65.9
02:00 PM - 03:00 PM	66.5	89.5	65.8
03:00 PM - 04:00 PM	66.4	89.1	65.8
04:00 PM - 05:00 PM	66.6	76.8	66.1
05:00 PM - 06:00 PM	68.8	85.1	66.5
06:00 PM - 07:00 PM	66.9	75.1	66.4
07:00 PM - 08:00 PM	67.0	69.4	66.3
08:00 PM - 09:00 PM	66.4	72.5	66.1
09:00 PM - 10:00 PM	66.5	73.9	66.2
10:00 PM - 11:00 PM	66.8	71.7	66.3
11:00 PM - 12:00 AM	66.7	72.9	66.4
12:00 AM - 01:00 AM	66.9	70.0	66.5
01:00 AM - 02:00 AM	66.7	68.5	66.3
02:00 AM - 03:00 AM	66.3	68.3	65.9
03:00 AM - 04:00 AM	66.2	67.7	65.8
04:00 AM - 05:00 AM	66.3	68.0	66.0
05:00 AM - 06:00 AM	66.4	68.9	66.0
06:00 AM - 07:00 AM	66.4	78.1	65.9
07:00 AM - 08:00 AM	66.0	72.4	65.7
08:00 AM - 09:00 AM	65.6	78.7	65.2
09:00 AM - 10:00 AM	66.4	87.0	65.0

Leq Average 24 hrs. (dB(A))

66.7

Lmax (dB(A))

89.5

L90 (dB(A))

66.0

Ldn (dB(A))

73.0

Standard (dB(A))

70

115

Reference Method : ISO 1996-1 : 2016

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป

2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

TESTING
No.0042

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633433

Date Received : May 18, 2026

Date Reported : May 21, 2026

Report Number: 3576712-1

Page 1 of 1

Sample Number 2633433-14
Parameter Noise (Leq 24 hrs.)
Location กิ่งกลางรั้วด้านทิศตะวันออกของโรงงาน LDPE ติดกับโรงงาน BIG (GPS 47P 0732108, 1404917)
Measurement Date May 13 - May 14, 2026
Measurement by Sawai Tonpho
Sound Level meter Serial No. 900071

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	68.4	87.5	65.9
11:00 AM - 12:00 PM	67.5	93.8	65.1
12:00 PM - 01:00 PM	65.4	78.8	64.9
01:00 PM - 02:00 PM	65.3	77.7	64.9
02:00 PM - 03:00 PM	65.4	75.4	65.0
03:00 PM - 04:00 PM	65.5	79.9	63.8
04:00 PM - 05:00 PM	65.6	88.7	64.8
05:00 PM - 06:00 PM	65.4	72.7	65.0
06:00 PM - 07:00 PM	65.7	68.6	65.3
07:00 PM - 08:00 PM	66.0	73.0	65.4
08:00 PM - 09:00 PM	65.8	69.1	65.4
09:00 PM - 10:00 PM	66.0	73.8	65.6
10:00 PM - 11:00 PM	65.8	70.0	65.5
11:00 PM - 12:00 AM	65.8	67.8	65.5
12:00 AM - 01:00 AM	66.2	68.7	65.8
01:00 AM - 02:00 AM	66.4	83.7	65.9
02:00 AM - 03:00 AM	67.1	90.8	66.3
03:00 AM - 04:00 AM	70.6	83.7	67.5
04:00 AM - 05:00 AM	68.1	80.4	67.6
05:00 AM - 06:00 AM	67.3	68.8	67.1
06:00 AM - 07:00 AM	67.1	81.8	66.8
07:00 AM - 08:00 AM	66.3	68.3	65.9
08:00 AM - 09:00 AM	66.2	67.7	65.8
09:00 AM - 10:00 AM	65.9	68.0	65.5

Leq Average 24 hrs. (dB(A))

66.7

Lmax (dB(A))

93.8

L90 (dB(A))

65.5

Ldn (dB(A))

73.7

Standard (dB(A))

70

115

Reference Method : ISO 1996-1 : 2016

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป

2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

ภาคผนวก ค-5

คุณภาพอากาศในสถานประกอบการ



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 25114027

Date Received : Feb 19, 2026
Date Reported : Feb 25, 2026
Report Number : 3476488-1

Page 1 of 3

Sample Number : 25114027-1
Sampled Date : Feb 18, 2026
Sample Description : Air Quality
Location : Compressor House
Date Analysis Commenced : Feb 20, 2026
Condition of Sample : Drawn into two 10-L air sampling bags
Barometric Pressure : 754 mmHg
Atmospheric Temperature : 30.2 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Ethylene	08:00 AM - 10:00 AM	ppm	-	1.0	<1.0	200	Based on ASTM, D 2712-18	ACGIH	Bangkok
Propane	08:00 AM - 10:00 AM	ppm	-	1.0	<1.0	No Standard	Based on ASTM, D 2712-91	-	Bangkok
Total Hydrocarbon as Methane	08:00 AM - 10:00 AM	ppm	-	1.0	8.2	No Standard	Total Hydrocarbon Analyzer	-	Rayong

Guideline :

ACGIH : The American Conference of Governmental Industrial Hygiene, The 6th edition of the Documentation of the Threshold Limit Values and Biological Exposure Indices (2025).

Sampled By : Tarin Octjinda

Remark :

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

Approved by

Thanita K.

Thanita Kulsuriwong
Scientist (4)

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.

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 25114027

Date Received : Feb 19, 2026
Date Reported : Feb 25, 2026
Report Number : 3476488-1

Page 2 of 3

Sample Number : 25114027-2
Sampled Date : Feb 18, 2026
Sample Description : Air Quality
Location : Degassing Hopper
Date Analysis Commenced : Feb 20, 2026
Condition of Sample : Drawn into two 10-L air sampling bags
Barometric Pressure : 754 mmHg
Atmospheric Temperature : 30.2 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Ethylene	08:00 AM - 10:00 AM	ppm	-	1.0	<1.0	200	Based on ASTM, D 2712-18	ACGIH	Bangkok
Propane	08:00 AM - 10:00 AM	ppm	-	1.0	<1.0	No Standard	Based on ASTM, D 2712-91	-	Bangkok
Total Hydrocarbon as Methane	08:00 AM - 10:00 AM	ppm	-	1.0	4.1	No Standard	Total Hydrocarbon Analyzer	-	Rayong

Guideline :

ACGIH : The American Conference of Governmental Industrial Hygiene, The 6th edition of the Documentation of the Threshold Limit Values and Biological Exposure Indices (2025).

Sampled By : Tarin Octjinda

Remark :

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

Approved by

Thanita K.

Thanita Kulsuriwong
Scientist (4)

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.

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 25114027

Date Received : Feb 19, 2026
Date Reported : Feb 25, 2026
Report Number : 3476488-1

Page 3 of 3

Sample Number 25114027-3
Sampled Date Feb 18, 2026
Sample Description Air Quality
Location Recycle Gas Cooler
Date Analysis Commenced Feb 20, 2026
Condition of Sample Drawn into two 10-L air sampling bags
Barometric Pressure 754 mmHg
Atmospheric Temperature 30.2 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Ethylene	08:00 AM - 10:00 AM	ppm	-	1.0	<1.0	200	Based on ASTM, D 2712-18	ACGIH	Bangkok
Propane	08:00 AM - 10:00 AM	ppm	-	1.0	<1.0	No Standard	Based on ASTM, D 2712-91	-	Bangkok
Total Hydrocarbon as Methane	08:00 AM - 10:00 AM	ppm	-	1.0	4.9	No Standard	Total Hydrocarbon Analyzer	-	Rayong

Guideline :

ACGIH : The American Conference of Governmental Industrial Hygiene, The 6th edition of the Documentation of the Threshold Limit Values and Biological Exposure Indices (2025).

Sampled By : Tarin Octjinda

Remark :

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

Approved by

Thanita K.

Thanita Kulsuriwong
Scientist (4)

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.

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 2633442

Date Received : May 28, 2026
Date Reported : Jun 08, 2026
Report Number : 3554403-1

Page 1 of 3

Sample Number : 2633442-1
Sampled Date : May 27, 2026
Sample Description : Air Quality
Location : Compressor House
Date Analysis Commenced : May 30, 2026
Condition of Sample : Drawn into two 10-L air sampling bags
Barometric Pressure : 754 mmHg
Atmospheric Temperature : 30.1 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Ethylene	09:00 AM - 11:00 AM	ppm	-	1.0	<1.0	200	Based on ASTM, D 2712-18	ACGIH	Bangkok
Propane	09:00 AM - 11:00 AM	ppm	-	1.0	<1.0	No Standard	Based on ASTM, D 2712-91	-	Bangkok
Total Hydrocarbon as Methane	09:00 AM - 11:00 AM	ppm	-	1.0	5.4	No Standard	Total Hydrocarbon Analyzer	-	Rayong

Guideline :

ACGIH : The American Conference of Governmental Industrial Hygiene, The 6th edition of the Documentation of the Threshold Limit Values and Biological Exposure Indices (2025).

Sampled By : Thanathip Itiwutta

Remark :

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

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.



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 2633442

Date Received : May 28, 2026
Date Reported : Jun 08, 2026
Report Number : 3554403-1

Page 2 of 3

Sample Number : 2633442-2
Sampled Date : May 27, 2026
Sample Description : Air Quality
Location : Degassing Hopper
Date Analysis Commenced : May 30, 2026
Condition of Sample : Drawn into two 10-L air sampling bags
Barometric Pressure : 754 mmHg
Atmospheric Temperature : 30.1 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Ethylene	09:00 AM - 11:00 AM	ppm	-	1.0	<1.0	200	Based on ASTM, D 2712-18	ACGIH	Bangkok
Propane	09:00 AM - 11:00 AM	ppm	-	1.0	<1.0	No Standard	Based on ASTM, D 2712-91	-	Bangkok
Total Hydrocarbon as Methane	09:00 AM - 11:00 AM	ppm	-	1.0	3.5	No Standard	Total Hydrocarbon Analyzer	-	Rayong

Guideline :

ACGIH : The American Conference of Governmental Industrial Hygiene, The 6th edition of the Documentation of the Threshold Limit Values and Biological Exposure Indices (2025).

Sampled By : Thanathip Itiwutta

Remark :

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

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.



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 2633442

Date Received : May 28, 2026
Date Reported : Jun 08, 2026
Report Number : 3554403-1

Page 3 of 3

Sample Number : 2633442-3
Sampled Date : May 27, 2026
Sample Description : Air Quality
Location : Recycle Gas Cooler
Date Analysis Commenced : May 30, 2026
Condition of Sample : Drawn into two 10-L air sampling bags
Barometric Pressure : 754 mmHg
Atmospheric Temperature : 30.1 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Ethylene	09:00 AM - 11:00 AM	ppm	-	1.0	<1.0	200	Based on ASTM, D 2712-18	ACGIH	Bangkok
Propane	09:00 AM - 11:00 AM	ppm	-	1.0	<1.0	No Standard	Based on ASTM, D 2712-91	-	Bangkok
Total Hydrocarbon as Methane	09:00 AM - 11:00 AM	ppm	-	1.0	8.7	No Standard	Total Hydrocarbon Analyzer	-	Rayong

Guideline :

ACGIH : The American Conference of Governmental Industrial Hygiene, The 6th edition of the Documentation of the Threshold Limit Values and Biological Exposure Indices (2025).

Sampled By : Thanathip Itiwutta

Remark :

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

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.

ภาคผนวก ค-6

ระดับเสียงในสถานประกอบการ



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 25114035

Date Received : Feb 19, 2026

Date Reported : Feb 25, 2026

Report Number: 3515465-1

Page 1 of 1

Sample Number 25114035-1
Parameter Noise (Leq 8 hrs.)
Location ภายนอก Compressor House
Measurement Date Feb 18, 2026
Measurement by Anawat Kongplik

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
08:52 AM - 09:52 AM	79.5	81.4	79.4
09:52 AM - 10:52 AM	79.3	80.1	79.2
10:52 AM - 11:52 AM	79.4	82.9	79.2
11:52 AM - 12:52 PM	79.3	79.8	79.2
12:52 PM - 01:52 PM	79.2	79.6	79.1
01:52 PM - 02:52 PM	79.2	79.6	79.1
02:52 PM - 03:52 PM	79.3	79.9	79.2
03:52 PM - 04:52 PM	79.5	79.9	79.4

Leq Average 8 hrs. (dB(A))

79.3

Lmax (dB(A))

82.9

Standard (dB(A))

90

140

Reference Method : ISO 1996-1 : 2016

Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัย
ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ. ๒๕๔๖

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 25114035

Date Received : Feb 19, 2026

Date Reported : Feb 25, 2026

Report Number: 3515466-1

Page 1 of 1

Sample Number 25114035-2
Parameter Noise (Leq 8 hrs.)
Location Degassing Hopper
Measurement Date Feb 18, 2026
Measurement by Anawat Kongpik

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
08:35 AM - 09:35 AM	83.2	88.1	82.1
09:35 AM - 10:35 AM	82.2	83.9	80.4
10:35 AM - 11:35 AM	80.7	86.6	80.0
11:35 AM - 12:35 PM	85.1	87.0	83.1
12:35 PM - 01:35 PM	86.2	87.6	84.8
01:35 PM - 02:35 PM	85.1	87.7	83.0
02:35 PM - 03:35 PM	86.1	87.7	84.9
03:35 PM - 04:35 PM	85.3	87.9	84.3

Leq Average 8 hrs. (dB(A))

84.6

Lmax (dB(A))

88.1

Standard (dB(A))

90

140

Reference Method : ISO 1996-1 : 2016

Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัย
ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ. ๒๕๔๖

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 25114035

Date Received : Feb 19, 2026

Date Reported : Feb 25, 2026

Report Number: 3515467-1

Page 1 of 1

Sample Number 25114035-3
Parameter Noise (Leq 8 hrs.)
Location Recycle Gas Cooler
Measurement Date Feb 18, 2026
Measurement by Anawat Kongpik

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
08:45 AM - 09:45 AM	70.5	80.0	69.9
09:45 AM - 10:45 AM	70.2	74.6	69.9
10:45 AM - 11:45 AM	69.9	75.5	69.6
11:45 AM - 12:45 PM	70.1	72.7	69.8
12:45 PM - 01:45 PM	69.8	71.1	69.5
01:45 PM - 02:45 PM	69.6	71.3	69.3
02:45 PM - 03:45 PM	70.0	71.5	69.7
03:45 PM - 04:45 PM	70.1	72.5	69.8

Leq Average 8 hrs. (dB(A))

70.0

Lmax (dB(A))

80.0

Standard (dB(A))

90

140

Reference Method : ISO 1996-1 : 2016

Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัย
ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ. ๒๕๔๖

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 25114035

Date Received : Feb 19, 2026

Date Reported : Feb 25, 2026

Report Number: 3515469-1

Page 1 of 1

Sample Number 25114035-5
Parameter Noise (Leq 8 hrs.)
Location Bagging Area
Measurement Date Feb 18, 2026
Measurement by Anawat Kongpik

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
09:04 AM - 10:04 AM	79.8	107.5	75.2
10:04 AM - 11:04 AM	78.7	86.3	75.5
11:04 AM - 12:04 PM	76.8	87.8	73.4
12:04 PM - 01:04 PM	77.7	87.5	75.9
01:04 PM - 02:04 PM	76.7	87.6	75.5
02:04 PM - 03:04 PM	75.8	81.4	73.6
03:04 PM - 04:04 PM	77.1	81.1	75.8
04:04 PM - 05:04 PM	78.9	83.0	76.5

Leq Average 8 hrs. (dB(A))

77.9

Lmax (dB(A))

107.5

Standard (dB(A))

90

140

Reference Method : ISO 1996-1 : 2016

Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัย
ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ. ๒๕๔๖

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S.

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 25114035

Date Received : Feb 19, 2026

Date Reported : Feb 25, 2026

Report Number: 3515470-1

Page 1 of 1

Sample Number 25114035-6
Parameter Noise (Leq 8 hrs.)
Location Storage Area
Measurement Date Feb 18, 2026
Measurement by Anawat Kongpik

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
08:46 AM - 09:46 AM	75.4	81.9	75.0
09:46 AM - 10:46 AM	75.0	76.3	74.7
10:46 AM - 11:46 AM	74.9	77.8	74.6
11:46 AM - 12:46 PM	75.0	75.8	74.7
12:46 PM - 01:46 PM	74.9	75.6	74.5
01:46 PM - 02:46 PM	74.4	75.0	74.2
02:46 PM - 03:46 PM	74.5	75.2	74.2
03:46 PM - 04:46 PM	74.8	76.4	74.5

Leq Average 8 hrs. (dB(A))

74.9

Lmax (dB(A))

81.9

Standard (dB(A))

90

140

Reference Method : ISO 1996-1 : 2016

Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัย
ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ. ๒๕๔๖

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 25114035

Date Received : Feb 19, 2026

Date Reported : Feb 25, 2026

Report Number: 3515471-1

Page 1 of 1

Sample Number 25114035-7
Parameter Noise (Leq 8 hrs.)
Location กึ่งกลางรั้วทิศเหนือระหว่าง LDPE & HDPE
Measurement Date Feb 18, 2026
Measurement by Anawat Kongpik

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
08:55 AM - 09:55 AM	80.5	86.4	79.8
09:55 AM - 10:55 AM	80.4	86.3	79.7
10:55 AM - 11:55 AM	80.7	86.6	80.0
11:55 AM - 12:55 PM	79.9	81.3	78.5
12:55 PM - 01:55 PM	80.3	81.7	78.9
01:55 PM - 02:55 PM	80.3	82.9	78.2
02:55 PM - 03:55 PM	80.4	82.0	79.2
03:55 PM - 04:55 PM	80.9	83.5	79.9

Leq Average 8 hrs. (dB(A))

80.4

Lmax (dB(A))

86.6

Standard (dB(A))

90

140

Reference Method : ISO 1996-1 : 2016

Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัย
ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ. ๒๕๔๖

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633445

Date Received : May 28, 2026

Date Reported : Jun 05, 2026

Report Number: 3588732-1

Page 1 of 1

Sample Number 2633445-1
Parameter Noise (Leq 8 hrs.)
Location ภายนอก Compressor House
Measurement Date May 27, 2026
Measurement by Thanathip Itiwutta

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
08:20 AM - 09:20 AM	79.1	79.8	79.0
09:20 AM - 10:20 AM	79.2	80.9	79.0
10:20 AM - 11:20 AM	79.2	85.2	79.0
11:20 AM - 12:20 PM	79.1	79.5	79.0
12:20 PM - 01:20 PM	79.0	79.4	78.8
01:20 PM - 02:20 PM	79.0	79.6	78.8
02:20 PM - 03:20 PM	79.0	79.4	78.9
03:20 PM - 04:20 PM	79.2	79.7	79.0

Leq Average 8 hrs. (dB(A))

79.1

Lmax (dB(A))

85.2

Standard (dB(A))

90

140

Reference Method : ISO 1996-1 : 2016

Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัย
ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ. ๒๕๔๖

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633445

Date Received : May 28, 2026

Date Reported : Jun 05, 2026

Report Number: 3588733-1

Page 1 of 1

Sample Number 2633445-2
Parameter Noise (Leq 8 hrs.)
Location Degassing Hopper
Measurement Date May 27, 2026
Measurement by Thanathip Itiwutta

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
08:16 AM - 09:16 AM	82.4	93.0	80.9
09:16 AM - 10:16 AM	82.6	85.0	81.0
10:16 AM - 11:16 AM	82.7	87.2	80.9
11:16 AM - 12:16 PM	81.2	84.2	80.5
12:16 PM - 01:16 PM	78.8	84.1	74.1
01:16 PM - 02:16 PM	75.0	86.2	74.0
02:16 PM - 03:16 PM	75.3	77.7	73.9
03:16 PM - 04:16 PM	78.4	82.2	75.6

Leq Average 8 hrs. (dB(A))

80.4

Lmax (dB(A))

93.0

Standard (dB(A))

90

140

Reference Method : ISO 1996-1 : 2016

Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัย

ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ. ๒๕๔๖

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633445

Date Received : May 28, 2026

Date Reported : Jun 05, 2026

Report Number: 3588734-1

Page 1 of 1

Sample Number 2633445-3
Parameter Noise (Leq 8 hrs.)
Location Recycle Gas Cooler
Measurement Date May 27, 2026
Measurement by Thanathip Itiwutta

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
08:19 AM - 09:19 AM	70.7	74.4	70.6
09:19 AM - 10:19 AM	71.0	81.3	70.7
10:19 AM - 11:19 AM	71.3	80.9	70.7
11:19 AM - 12:19 PM	70.7	71.2	70.6
12:19 PM - 01:19 PM	70.7	72.2	70.5
01:19 PM - 02:19 PM	70.7	79.7	70.5
02:19 PM - 03:19 PM	70.8	71.5	70.7
03:19 PM - 04:19 PM	71.0	72.6	70.8

Leq Average 8 hrs. (dB(A))

70.9

Lmax (dB(A))

81.3

Standard (dB(A))

90

140

Reference Method : ISO 1996-1 : 2016

Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัย
ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ. ๒๕๔๖

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633445

Date Received : May 28, 2026

Date Reported : Jun 05, 2026

Report Number: 3588736-1

Page 1 of 1

Sample Number 2633445-5
Parameter Noise (Leq 8 hrs.)
Location Bagging Area
Measurement Date May 27, 2026
Measurement by Thanathip Itiwutta

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
08:31 AM - 09:31 AM	74.5	81.0	68.1
09:31 AM - 10:31 AM	74.1	79.4	67.1
10:31 AM - 11:31 AM	73.0	89.2	65.7
11:31 AM - 12:31 PM	72.5	78.0	66.9
12:31 PM - 01:31 PM	69.0	80.7	66.8
01:31 PM - 02:31 PM	68.5	78.0	67.9
04:31 PM - 05:31 PM	71.8	77.4	68.2
03:31 PM - 04:31 PM	73.8	80.3	68.0

Leq Average 8 hrs. (dB(A))

72.6

Lmax (dB(A))

89.2

Standard (dB(A))

90

140

Reference Method : ISO 1996-1 : 2016

Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัย
ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ. ๒๕๔๖

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633445

Date Received : May 28, 2026

Date Reported : Jun 05, 2026

Report Number: 3588737-1

Page 1 of 1

Sample Number 2633445-6
Parameter Noise (Leq 8 hrs.)
Location Storage Area
Measurement Date May 27, 2026
Measurement by Thanathip Itiwutta

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
08:41 AM - 09:41 AM	76.2	78.2	75.9
09:41 AM - 10:41 AM	76.2	82.9	75.9
10:41 AM - 11:41 AM	76.6	84.4	75.7
11:41 AM - 12:41 PM	75.7	76.9	75.5
12:41 PM - 01:41 PM	75.8	78.0	75.5
01:41 PM - 02:41 PM	75.7	78.7	75.4
02:41 PM - 03:41 PM	75.4	78.9	75.1
03:41 PM - 04:41 PM	75.5	79.8	75.1

Leq Average 8 hrs. (dB(A))

75.9

Lmax (dB(A))

84.4

Standard (dB(A))

90

140

Reference Method : ISO 1996-1 : 2016

Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัย
ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ. ๒๕๔๖

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633445

Date Received : May 28, 2026

Date Reported : Jun 05, 2026

Report Number: 3588738-1

Page 1 of 1

Sample Number 2633445-7
Parameter Noise (Leq 8 hrs.)
Location กึ่งกลางรั้วทิศเหนือระหว่าง LDPE & HDPE
Measurement Date May 27, 2026
Measurement by Thanathip Itiwutta

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
08:49 AM - 09:49 AM	84.3	85.3	84.1
09:49 AM - 10:49 AM	84.5	85.5	84.2
10:49 AM - 11:49 AM	84.6	88.1	84.3
11:49 AM - 12:49 PM	84.3	85.3	84.1
12:49 PM - 01:49 PM	84.2	85.2	84.0
01:49 PM - 02:49 PM	84.3	85.4	84.1
02:49 PM - 03:49 PM	84.3	85.3	84.1
03:49 PM - 04:49 PM	84.4	87.4	84.2

Leq Average 8 hrs. (dB(A))

84.4

Lmax (dB(A))

88.1

Standard (dB(A))

90

140

Reference Method : ISO 1996-1 : 2016

Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัย
ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ. ๒๕๔๖

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 25114029

Date Received : Feb 19, 2026

Date Reported : Feb 25, 2026

Report Number: 3515431-1

Page 1 of 1

Sample Number 25114029-4
Parameter Noise (Leq 12 hrs.)
Location CCR
Measurement Date Feb 18, 2026
Measurement by Anawat Kongpik

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
08:33 AM - 09:33 AM	62.9	79.6	54.9
09:33 AM - 10:33 AM	60.5	76.3	53.7
10:33 AM - 11:33 AM	59.1	73.4	53.8
11:33 AM - 12:33 PM	66.5	83.1	54.1
12:33 PM - 01:33 PM	63.3	80.2	56.1
01:33 PM - 02:33 PM	62.5	78.7	56.2
02:33 PM - 03:33 PM	64.5	77.5	56.8
03:33 PM - 04:33 PM	65.2	79.1	56.2
04:33 PM - 05:33 PM	68.8	84.8	54.3
05:33 PM - 06:33 PM	62.3	83.1	53.4
06:33 PM - 07:33 PM	65.5	79.4	56.5
07:33 PM - 08:33 PM	64.9	77.9	57.2
Leq Average 12 hrs. (dB(A))	64.6		
Lmax (dB(A))		84.8	
Standard (dB(A))	87	140	
Reference Method : ISO 1996-1 : 2016			
Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัย ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ.๒๕๕๖			

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633443

Date Received : May 28, 2026

Date Reported : Jun 05, 2026

Report Number: 3588727-1

Page 1 of 1

Sample Number 2633443-4
Parameter Noise (Leq 12 hrs.)
Location CCR
Measurement Date May 27, 2026
Measurement by Thanathip Itiwutta

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
08:25 AM - 09:25 AM	63.3	77.6	55.8
09:25 AM - 10:25 AM	60.7	75.6	55.3
10:25 AM - 11:25 AM	63.7	77.3	55.5
11:25 AM - 12:25 PM	65.4	82.7	56.1
12:25 PM - 01:25 PM	63.4	78.6	56.4
01:25 PM - 02:25 PM	65.7	78.1	57.6
02:25 PM - 03:25 PM	64.9	80.7	56.6
03:25 PM - 04:25 PM	64.4	77.4	57.5
04:25 PM - 05:25 PM	63.9	80.1	56.0
05:25 PM - 06:25 PM	64.5	81.9	56.4
06:25 PM - 07:25 PM	64.2	80.4	56.3
07:25 PM - 08:25 PM	65.2	81.0	56.9

Leq Average 12 hrs. (dB(A))

64.3

Lmax (dB(A))

82.7

Standard (dB(A))

87

140

Reference Method : ISO 1996-1 : 2016

Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัย

ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ.๒๕๔๖

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 25114043

Date Received : Feb 19, 2026

Date Reported : Feb 20, 2026

Report Number : 3512837-1

Page 1 of 1

Sample Number 25114043-1
Parameter Octave band (12 hrs.)
Location ภาชนะ Compressor House
Measurement Date Feb 18, 2026
Measurement By Anawat Kongplik

Time	Result (dB(A))											
	Leq	16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
08:52 AM - 09:52 AM	79.5	25.0	40.6	58.5	67.9	73.5	71.8	71.4	72.5	70.2	65.2	52.2
09:52 AM - 10:52 AM	79.3	25.1	40.6	58.6	67.8	73.6	71.1	71.2	72.4	69.9	65.0	51.9
10:52 AM - 11:52 AM	79.4	25.1	40.4	58.6	67.8	73.4	71.3	71.3	72.4	69.8	65.2	51.7
11:52 AM - 12:52 PM	79.3	25.1	39.9	58.4	68.1	73.3	71.4	71.3	72.2	69.9	65.4	52.0
12:52 PM - 01:52 PM	79.2	24.9	40.0	58.4	68.0	73.1	71.2	71.2	72.1	69.7	65.1	51.8
01:52 PM - 02:52 PM	79.2	24.7	40.1	58.7	68.1	73.0	71.3	71.2	72.1	69.8	65.2	51.8
02:52 PM - 03:52 PM	79.3	24.9	40.1	58.5	68.1	73.2	71.7	71.3	72.2	69.9	65.2	51.9
03:52 PM - 04:52 PM	79.5	25.2	40.5	58.3	68.3	73.3	71.9	71.4	72.3	69.9	65.2	52.2
04:52 PM - 05:52 PM	79.5	25.4	40.5	58.3	68.5	73.5	72.0	71.5	72.4	69.8	65.0	52.3
05:52 PM - 06:52 PM	79.7	25.6	40.7	58.5	68.7	73.7	72.2	71.7	72.6	70.0	65.2	52.5
06:52 PM - 07:52 PM	80.0	25.9	41.0	58.8	69.0	74.0	72.5	72.0	72.9	70.3	65.5	52.8
07:52 PM - 08:52 PM	79.9	25.6	40.9	58.7	68.7	73.7	72.3	71.8	72.7	70.3	65.6	52.6
Average	79.5	25.2	40.5	58.5	68.3	73.5	71.7	71.4	72.4	70.0	65.2	52.2

Reference Method : ANSI Standard S1.6-1984

Technical Management

Orawan R.

Orawan Rakyong
Scientist (3)

Approved by

Supot S.

Supot Salamteh
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.



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 25114043

Date Received : Feb 19, 2026

Date Reported : Feb 20, 2026

Report Number : 3512838-1

Page 1 of 1

Sample Number 25114043-2
Parameter Octave band (12 hrs.)
Location Degassing Hopper
Measurement Date Feb 18, 2026
Measurement By Anawat Kongplik

Time	Result (dB(A))											
	Leq	16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
08:35 AM - 09:35 AM	83.2	13.1	37.2	55.0	60.4	68.4	72.5	77.0	79.2	76.4	66.9	49.4
09:35 AM - 10:35 AM	82.2	12.2	37.4	55.1	59.2	67.4	71.7	76.3	77.9	75.3	65.7	47.7
10:35 AM - 11:35 AM	80.7	13.3	37.9	55.4	59.5	67.2	71.9	75.6	76.1	72.1	63.9	47.0
11:35 AM - 12:35 PM	85.1	14.4	40.4	57.4	69.8	73.0	78.3	78.7	79.3	77.7	69.5	52.0
12:35 PM - 01:35 PM	86.2	14.8	41.9	57.8	70.9	75.9	80.2	79.9	79.8	77.7	70.0	52.5
01:35 PM - 02:35 PM	85.1	15.4	41.0	57.6	68.6	74.3	78.3	78.7	79.5	77.0	68.9	51.0
02:35 PM - 03:35 PM	86.1	16.8	41.6	57.8	71.0	75.5	80.2	79.7	79.7	77.7	70.0	52.6
03:35 PM - 04:35 PM	85.3	18.1	41.9	58.1	71.1	75.7	79.7	79.0	78.3	75.4	69.3	52.6
04:35 PM - 05:35 PM	84.9	18.3	41.0	57.8	67.8	73.2	77.4	78.1	79.9	77.4	68.4	50.4
05:35 PM - 06:35 PM	85.6	19.7	41.2	58.1	70.0	73.8	79.1	78.8	80.3	77.7	69.1	51.6
06:35 PM - 07:35 PM	85.3	19.4	40.9	57.8	69.7	73.5	78.8	78.5	80.0	77.4	68.8	51.3
07:35 PM - 08:35 PM	84.4	18.5	40.0	56.9	68.8	72.6	77.9	77.6	79.1	76.5	67.9	50.4
Average	84.8	16.9	40.5	57.2	68.8	73.4	78.0	78.3	79.2	76.8	68.5	51.0

Reference Method : ANSI Standard S1.6-1984

Technical Management

Orawan R.

Orawan Rakyong
Scientist (3)

Approved by

Supot S.

Supot Salamteh
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.



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 25114043

Date Received : Feb 19, 2026

Date Reported : Feb 20, 2026

Report Number : 3512839-1

Page 1 of 1

Sample Number 25114043-3
Parameter Octave band (12 hrs.)
Location Recycle Gas Cooler
Measurement Date Feb 18, 2026
Measurement By Anawat Kongplik

Time	Result (dB(A))											
	Leq	16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
08:45 AM - 09:45 AM	70.5	22.1	37.9	53.4	59.2	63.9	64.2	63.7	62.3	58.5	53.6	41.6
09:45 AM - 10:45 AM	70.2	22.0	37.8	53.1	58.7	63.6	63.3	63.6	62.5	58.7	53.6	41.5
10:45 AM - 11:45 AM	69.9	21.8	37.2	52.7	57.9	63.1	62.8	63.6	62.4	58.7	53.8	41.2
11:45 AM - 12:45 PM	70.1	22.6	37.7	53.0	58.0	63.3	63.6	63.8	62.3	58.6	54.1	41.4
12:45 PM - 01:45 PM	69.8	21.6	36.9	52.3	57.8	63.1	63.1	63.2	62.2	58.6	54.0	41.2
01:45 PM - 02:45 PM	69.6	21.1	36.8	52.2	57.6	62.5	63.3	63.0	61.8	58.4	53.9	41.0
02:45 PM - 03:45 PM	70.0	21.7	37.7	52.7	58.0	63.2	63.8	63.5	61.8	58.3	53.8	41.1
03:45 PM - 04:45 PM	70.1	22.5	38.1	53.1	58.0	63.2	63.9	63.7	62.1	58.3	53.9	41.4
04:45 PM - 05:45 PM	70.2	22.6	38.3	53.4	58.4	63.2	64.1	63.9	62.1	58.2	53.8	41.5
05:45 PM - 06:45 PM	70.6	23.3	38.6	53.8	58.9	63.7	64.6	64.2	62.2	58.2	53.9	41.6
06:45 PM - 07:45 PM	70.3	22.0	38.0	53.0	58.3	63.5	64.1	63.8	62.1	58.6	54.1	41.4
07:45 PM - 08:45 PM	69.9	21.6	37.6	52.6	57.9	63.1	63.7	63.4	61.7	58.2	53.7	41.0
Average	70.1	22.1	37.7	53.0	58.3	63.3	63.7	63.6	62.1	58.4	53.9	41.3

Reference Method : ANSI Standard S1.6-1984

Technical Management

Orawan R.

Orawan Rakyong
Scientist (3)

Approved by

Supot S.

Supot Salamteh
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.



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 25114043

Date Received : Feb 19, 2026

Date Reported : Feb 20, 2026

Report Number : 3512840-1

Page 1 of 1

Sample Number 25114043-4
Parameter Octave band (12 hrs.)
Location CCR
Measurement Date Feb 18, 2026
Measurement By Anawat Kongplik

Time	Result (dB(A))											
	Leq	16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
08:33 AM - 09:33 AM	62.9	11.1	22.5	26.4	40.7	49.9	58.2	58.0	56.5	49.8	53.6	41.6
09:33 AM - 10:33 AM	60.5	10.6	22.1	25.8	38.3	47.2	55.6	55.9	53.8	47.8	38.0	22.0
10:33 AM - 11:33 AM	59.1	10.6	22.6	25.9	38.1	46.1	53.7	54.1	53.2	48.3	38.1	22.0
11:33 AM - 12:33 PM	66.5	10.8	22.9	26.1	40.4	50.9	61.7	62.4	59.6	53.8	40.0	22.1
12:33 PM - 01:33 PM	63.3	11.2	23.0	26.1	40.5	49.6	58.5	58.8	56.5	50.1	38.7	23.4
01:33 PM - 02:33 PM	62.5	11.0	22.7	25.6	39.7	47.5	56.5	57.8	57.3	51.4	39.1	23.6
02:33 PM - 03:33 PM	64.5	10.9	22.7	25.7	40.8	49.6	59.2	60.2	58.3	51.2	39.1	23.1
03:33 PM - 04:33 PM	65.2	11.1	23.0	26.2	41.0	50.7	60.7	60.5	58.6	53.0	40.5	24.2
04:33 PM - 05:33 PM	68.8	10.6	22.8	26.2	40.0	51.8	63.8	64.5	62.5	55.4	41.6	24.6
05:33 PM - 06:33 PM	62.3	12.3	22.9	26.2	39.1	48.2	56.5	58.1	56.2	50.7	39.5	23.2
06:33 PM - 07:33 PM	65.5	11.4	23.3	26.5	41.3	51.0	61.0	60.8	58.9	53.3	40.8	24.5
07:33 PM - 08:33 PM	64.9	11.3	23.1	26.1	41.2	50.0	59.6	60.6	58.7	51.6	39.5	23.5
Average	64.6	11.1	22.8	26.1	40.2	49.7	59.6	60.1	58.2	51.9	44.4	31.5

Reference Method : ANSI Standard S1.6-1984

Technical Management

Orawan R.

Orawan Rakyong
Scientist (3)

Approved by

Supot S.

Supot Salamteh
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.



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 25114043

Date Received : Feb 19, 2026

Date Reported : Feb 20, 2026

Report Number : 3512841-1

Page 1 of 1

Sample Number 25114043-5
Parameter Octave band (12 hrs.)
Location Bagging Area
Measurement Date Feb 18, 2026
Measurement By Anawat Kongplik

Time	Result (dB(A))											
	Leq	16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
09:04 AM - 10:04 AM	79.8	25.2	42.9	56.2	62.6	69.0	71.8	74.0	73.9	71.5	67.3	57.5
10:04 AM - 11:04 AM	78.7	20.3	40.6	55.2	60.6	66.1	69.9	72.6	73.4	71.2	66.7	56.9
11:04 AM - 12:04 PM	76.8	22.4	40.6	54.2	60.1	64.4	67.3	70.7	71.6	69.2	65.4	55.3
12:04 PM - 01:04 PM	77.7	22.7	40.0	52.8	60.0	64.3	67.3	69.7	72.7	71.6	68.5	58.6
01:04 PM - 02:04 PM	76.7	23.4	40.6	52.9	59.9	63.9	66.4	68.7	70.2	71.4	68.1	57.3
02:04 PM - 03:04 PM	75.8	24.2	40.2	52.4	59.8	63.9	66.1	68.0	69.6	70.1	66.6	55.8
03:04 PM - 04:04 PM	77.1	24.2	40.6	53.3	60.2	64.3	66.7	68.8	71.3	71.6	68.0	56.3
04:04 PM - 05:04 PM	78.9	24.3	40.7	53.9	60.6	65.5	69.1	71.5	73.6	72.8	68.9	57.8
05:04 PM - 06:04 PM	79.4	24.0	40.7	54.5	60.7	65.8	69.9	72.5	74.6	72.6	68.4	57.7
06:04 PM - 07:04 PM	79.2	23.8	40.5	54.3	60.5	65.6	69.7	72.3	74.4	72.4	68.2	57.5
07:04 PM - 08:04 PM	79.1	24.5	40.9	54.1	60.8	65.7	69.3	71.7	73.8	73.0	69.1	58.0
08:04 PM - 09:04 PM	78.6	24.0	40.4	53.6	60.3	65.2	68.8	71.2	73.3	72.5	68.6	57.5
Average	78.3	23.7	40.8	54.1	60.6	65.6	68.9	71.3	73.0	71.8	67.9	57.3

Reference Method : ANSI Standard S1.6-1984

Technical Management

Orawan R.

Orawan Rakyong
Scientist (3)

Approved by

Supot S.

Supot Salamteh
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.



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 25114043

Date Received : Feb 19, 2026

Date Reported : Feb 20, 2026

Report Number : 3512842-1

Page 1 of 1

Sample Number 25114043-6
Parameter Octave band (12 hrs.)
Location Storage Area
Measurement Date Feb 18, 2026
Measurement By Anawat Kongplik

Time	Result (dB(A))											
	Leq	16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
08:46 AM - 09:46 AM	75.4	22.1	37.3	53.4	61.2	68.0	68.4	67.6	68.9	67.1	60.4	42.7
09:46 AM - 10:46 AM	75.0	22.2	37.3	53.1	60.8	67.4	67.7	67.1	68.8	67.3	60.5	42.5
10:46 AM - 11:46 AM	74.9	21.9	36.9	52.7	60.2	66.5	67.7	67.2	68.7	67.0	61.3	41.9
11:46 AM - 12:46 PM	75.0	22.4	37.3	53.1	60.6	66.8	67.8	67.0	68.8	67.1	61.8	42.3
12:46 PM - 01:46 PM	74.9	21.8	36.9	53.2	60.5	66.5	67.6	66.7	68.9	67.2	62.0	42.5
01:46 PM - 02:46 PM	74.4	21.1	36.6	53.1	60.3	65.7	67.3	66.3	68.3	66.6	61.7	41.9
02:46 PM - 03:46 PM	74.5	21.9	37.1	53.2	60.3	66.2	67.7	66.6	68.2	66.5	61.0	41.8
03:46 PM - 04:46 PM	74.8	22.4	37.4	53.1	60.5	66.8	67.8	66.9	68.5	66.8	61.4	42.1
04:46 PM - 05:46 PM	74.9	22.4	37.5	53.2	60.9	66.9	67.8	67.1	68.5	67.0	61.1	42.4
05:46 PM - 06:46 PM	75.5	22.9	37.8	53.6	61.5	67.8	68.6	67.9	68.9	67.2	61.2	42.2
06:46 PM - 07:46 PM	76.1	23.5	38.4	54.2	62.1	68.4	69.2	68.5	69.5	67.8	61.8	42.8
07:46 PM - 08:46 PM	75.5	23.0	38.1	53.8	61.5	67.5	68.4	67.7	69.1	67.6	61.7	43.0
Average	75.1	22.3	37.4	53.3	60.9	67.1	68.0	67.3	68.8	67.1	61.4	42.4

Reference Method : ANSI Standard S1.6-1984

Technical Management

Orawan R.

Orawan Rakyong
Scientist (3)

Approved by

Supot S.

Supot Salamteh
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.



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 25114043

Date Received : Feb 19, 2026

Date Reported : Feb 20, 2026

Report Number : 3512843-1

Page 1 of 1

Sample Number 25114043-7
Parameter Octave band (12 hrs.)
Location กึ่งกลางรั้วทิศเหนือระหว่าง LDPE & HDPE
Measurement Date Feb 18, 2026
Measurement By Anawat Kongplik

Time	Result (dB(A))											
	Leq	16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
08:55 AM - 09:55 AM	80.5	13.1	37.7	55.2	59.3	67.0	71.7	75.4	75.9	71.9	63.7	46.8
09:55 AM - 10:55 AM	80.4	13.0	37.6	55.1	59.2	66.9	71.6	75.3	75.8	71.8	63.6	46.7
10:55 AM - 11:55 AM	80.7	13.3	37.9	55.4	59.5	67.2	71.9	75.6	76.1	72.1	63.9	47.0
11:55 AM - 12:55 PM	79.9	8.5	35.6	51.5	64.6	69.6	73.9	73.6	73.5	71.4	63.7	46.2
12:55 PM - 01:55 PM	80.3	8.9	36.0	51.9	65.0	70.0	74.3	74.0	73.9	71.8	64.1	46.6
01:55 PM - 02:55 PM	80.3	10.6	36.2	52.8	63.8	69.5	73.5	73.9	74.7	72.2	64.1	46.2
02:55 PM - 03:55 PM	80.4	11.1	35.9	52.1	65.3	69.8	74.5	74.0	74.0	72.0	64.3	46.9
03:55 PM - 04:55 PM	80.9	13.7	37.5	53.7	66.7	71.3	75.3	74.6	73.9	71.0	64.9	48.2
04:55 PM - 05:55 PM	80.4	13.8	36.5	53.3	63.3	68.7	72.9	73.6	75.4	72.9	63.9	45.9
05:55 PM - 06:55 PM	80.1	14.2	35.7	52.6	64.5	68.3	73.6	73.3	74.8	72.2	63.6	46.1
06:55 PM - 07:55 PM	80.2	19.3	40.8	57.7	69.6	73.4	78.7	78.4	79.9	77.3	68.7	51.2
07:55 PM - 08:55 PM	80.5	19.6	41.1	58.0	69.9	73.7	79.0	78.7	80.2	77.6	69.0	51.5
Average	80.4	14.7	37.8	54.6	65.5	70.2	75.0	75.4	76.3	73.5	65.3	47.9

Reference Method : ANSI Standard S1.6-1984

Technical Management

Orawan R.

Orawan Rakyong
Scientist (3)

Approved by

Supot S.

Supot Salamteh
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.



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633447

Date Received : May 28, 2026

Date Reported : Jun 05, 2026

Report Number : 3588662-1

Page 1 of 1

Sample Number 2633447-1
Parameter Octave band (12 hrs.)
Location ภาชนะ Compressor House
Measurement Date May 27, 2026
Measurement By Thanathip Itiwutta

Time	Result (dB(A))											
	Leq	16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
08:20 AM - 09:20 AM	79.1	25.4	41.3	58.0	67.8	72.4	72.8	71.6	71.6	68.6	64.2	51.5
09:20 AM - 10:20 AM	79.2	25.3	41.3	58.1	67.8	72.4	72.8	71.7	71.6	68.7	64.3	51.5
10:20 AM - 11:20 AM	79.2	25.9	41.4	57.9	67.6	72.8	72.4	71.8	71.9	68.7	64.2	51.4
11:20 AM - 12:20 PM	79.1	25.6	41.2	58.1	67.8	72.2	72.7	71.8	71.6	68.7	64.1	51.3
12:20 PM - 01:20 PM	79.0	25.1	41.1	57.9	67.7	71.9	72.6	71.8	71.5	68.5	64.0	51.2
01:20 PM - 02:20 PM	79.0	25.3	41.2	57.7	67.6	71.8	72.6	71.8	71.5	68.5	64.0	51.4
02:20 PM - 03:20 PM	79.0	25.3	41.3	57.3	67.6	72.2	72.4	71.8	71.6	68.5	64.0	51.4
03:20 PM - 04:20 PM	79.2	25.5	41.6	57.6	67.7	72.6	72.5	71.9	71.7	68.7	64.2	51.7
04:20 PM - 05:20 PM	79.3	25.8	41.7	57.6	67.9	72.8	72.4	72.0	71.9	68.9	64.3	51.8
05:20 PM - 06:20 PM	80.1	26.4	42.5	58.5	68.6	73.5	73.4	72.8	72.6	69.6	65.1	52.6
06:20 PM - 07:20 PM	79.7	26.2	41.8	58.7	68.4	72.8	73.3	72.4	72.2	69.3	64.7	51.9
07:20 PM - 08:20 PM	79.9	26.2	42.1	58.8	68.6	73.2	73.6	72.4	72.4	69.4	65.0	52.3
Average	79.3	25.7	41.6	58.0	67.9	72.6	72.8	72.0	71.9	68.9	64.4	51.7

Reference Method : ANSI Standard S1.6-1984

Technical Management

Orawan R.

Orawan Rakyong
Scientist (3)

Approved by

Supot S.

Supot Salamteh
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.



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633447

Date Received : May 28, 2026

Date Reported : Jun 05, 2026

Report Number : 3588663-1

Page 1 of 1

Sample Number 2633447-2
Parameter Octave band (12 hrs.)
Location Degassing Hopper
Measurement Date May 27, 2026
Measurement By Thanathip Itiwutta

Time	Result (dB(A))											
	Leq	16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
08:16 AM - 09:16 AM	82.4	24.0	42.9	61.2	72.3	71.2	74.3	76.0	76.3	73.8	68.1	52.2
09:16 AM - 10:16 AM	82.6	19.7	42.0	61.4	72.8	71.9	75.0	76.0	76.4	74.0	68.3	52.1
10:16 AM - 11:16 AM	82.7	24.7	41.9	60.5	72.8	72.1	74.8	76.2	76.6	74.2	68.5	52.3
11:16 AM - 12:16 PM	81.2	25.1	40.1	60.4	71.2	69.8	72.5	74.7	75.7	72.7	66.6	51.5
12:16 PM - 01:16 PM	78.8	16.6	39.1	58.3	66.9	68.3	72.4	72.4	72.0	69.7	65.4	51.3
01:16 PM - 02:16 PM	75.0	17.4	39.1	57.3	58.5	64.4	69.3	68.5	66.7	66.5	64.1	51.1
02:16 PM - 03:16 PM	75.3	16.6	39.3	57.6	58.8	64.5	69.8	68.9	67.0	66.9	64.3	51.2
03:16 PM - 04:16 PM	78.4	17.7	41.1	59.7	67.7	69.4	71.9	72.0	70.2	68.8	65.4	51.5
04:16 PM - 05:16 PM	80.7	19.3	42.2	61.0	70.6	71.8	74.2	74.0	72.7	71.3	67.3	51.9
05:16 PM - 06:16 PM	79.7	19.2	41.6	60.8	68.9	70.4	73.6	73.3	71.7	70.0	66.4	51.8
06:16 PM - 07:16 PM	80.6	20.1	42.5	61.7	69.8	71.3	74.5	74.2	72.6	70.9	67.3	52.7
07:16 PM - 08:16 PM	81.1	20.6	43.0	62.2	70.3	71.8	75.0	74.7	73.1	71.4	67.8	53.2
Average	80.5	21.1	41.4	60.4	70.0	70.4	73.5	74.0	73.6	71.5	66.9	51.9

Reference Method : ANSI Standard S1.6-1984

Technical Management

Orawan R.

Orawan Rakyong
Scientist (3)

Approved by

Supot S.

Supot Salamteh
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.



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633447

Date Received : May 28, 2026

Date Reported : Jun 05, 2026

Report Number : 3588664-1

Page 1 of 1

Sample Number 2633447-3
Parameter Octave band (12 hrs.)
Location Recycle Gas Cooler
Measurement Date May 27, 2026
Measurement By Thanathip Itiwutta

Time	Result (dB(A))											
	Leq	16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
08:19 AM - 09:19 AM	70.7	22.0	37.5	50.8	59.2	62.7	63.2	63.5	63.2	62.1	59.8	46.8
09:19 AM - 10:19 AM	71.0	21.6	37.5	50.8	59.5	63.1	63.6	63.7	63.4	62.2	59.7	46.8
10:19 AM - 11:19 AM	71.3	21.9	38.0	51.4	59.8	63.4	64.1	64.5	63.6	62.2	59.7	46.8
11:19 AM - 12:19 PM	70.7	22.0	37.5	51.0	59.6	63.0	63.0	63.4	63.1	62.0	59.6	46.7
12:19 PM - 01:19 PM	70.7	21.8	37.3	51.2	59.5	63.1	62.9	63.3	63.1	61.9	59.5	46.6
01:19 PM - 02:19 PM	70.7	22.1	37.6	51.1	59.3	63.1	62.9	63.4	63.2	61.9	59.5	46.7
02:19 PM - 03:19 PM	70.8	22.2	38.0	51.7	59.7	63.3	63.0	63.5	63.2	62.0	59.7	46.9
03:19 PM - 04:19 PM	71.0	22.3	37.9	51.9	59.9	63.3	63.3	63.6	63.3	62.2	59.8	46.9
04:19 PM - 05:19 PM	71.1	22.6	37.8	51.6	60.1	63.5	63.5	63.8	63.4	62.2	59.8	46.9
05:19 PM - 06:19 PM	71.6	22.2	38.1	51.4	60.1	63.7	64.2	64.3	64.0	62.8	60.3	47.4
06:19 PM - 07:19 PM	71.6	22.9	38.5	52.5	60.5	63.9	63.9	64.2	63.9	62.8	60.4	47.5
07:19 PM - 08:19 PM	71.5	22.9	38.4	51.9	60.1	63.9	63.7	64.2	64.0	62.7	60.3	47.5
Average	71.1	22.2	37.9	51.5	59.8	63.3	63.5	63.8	63.5	62.3	59.9	47.0

Reference Method : ANSI Standard S1.6-1984

Technical Management

Orawan R.

Orawan Rakyong
Scientist (3)

Approved by

Supot S.

Supot Salamteh
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.



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633447

Date Received : May 28, 2026

Date Reported : Jun 05, 2026

Report Number : 3588665-1

Page 1 of 1

Sample Number 2633447-4
Parameter Octave band (12 hrs.)
Location CCR
Measurement Date May 27, 2026
Measurement By Thanathip Itiwutta

Time	Result (dB(A))											
	Leq	16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
08:25 AM - 09:25 AM	63.3	13.7	26.3	29.4	40.9	49.0	57.9	59.1	56.8	51.0	59.8	46.8
09:25 AM - 10:25 AM	60.7	13.7	26.1	28.5	39.1	47.4	54.3	57.0	54.0	48.9	37.6	21.1
10:25 AM - 11:25 AM	63.7	14.1	26.3	29.1	40.0	50.4	58.4	59.4	57.1	51.7	41.1	23.8
11:25 AM - 12:25 PM	65.4	13.7	26.1	29.3	40.2	49.9	59.8	61.8	58.6	51.7	39.4	22.7
12:25 PM - 01:25 PM	63.4	13.0	26.1	28.7	40.3	49.8	58.2	59.3	56.8	49.8	38.7	21.9
01:25 PM - 02:25 PM	65.7	13.7	26.0	29.5	41.5	52.0	60.8	61.3	59.1	51.8	40.5	24.1
02:25 PM - 03:25 PM	64.9	13.9	26.2	29.3	40.8	51.3	60.3	60.7	57.7	50.8	40.0	23.5
03:25 PM - 04:25 PM	64.4	14.1	26.2	28.9	40.5	50.4	59.4	60.6	57.1	50.1	39.2	23.0
04:25 PM - 05:25 PM	63.9	13.3	26.3	29.2	40.3	50.7	58.9	59.8	56.8	50.5	39.3	22.2
05:25 PM - 06:25 PM	64.5	13.1	26.2	29.1	40.1	50.4	59.4	60.6	57.1	51.2	39.4	23.4
06:25 PM - 07:25 PM	64.2	13.6	26.6	29.5	40.6	51.0	59.2	60.1	57.1	50.8	39.6	22.5
07:25 PM - 08:25 PM	65.2	14.2	26.5	29.6	41.1	51.6	60.6	61.0	58.0	51.1	40.3	23.8
Average	64.3	13.7	26.2	29.2	40.5	50.5	59.2	60.2	57.3	50.9	49.4	36.2

Reference Method : ANSI Standard S1.6-1984

Technical Management

Orawan R.

Orawan Rakyong
Scientist (3)

Approved by

Supot S.

Supot Salamteh
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.



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633447

Date Received : May 28, 2026

Date Reported : Jun 05, 2026

Report Number : 3588666-1

Page 1 of 1

Sample Number 2633447-5
Parameter Octave band (12 hrs.)
Location Bagging Area
Measurement Date May 27, 2026
Measurement By Thanathip Itiwutta

Time	Result (dB(A))											
	Leq	16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
08:31 AM - 09:31 AM	74.5	20.4	37.1	46.6	53.6	61.0	61.8	63.3	66.9	70.8	67.8	54.2
09:31 AM - 10:31 AM	74.1	20.1	36.9	46.1	54.2	60.8	61.3	62.6	66.4	70.4	67.4	53.5
10:31 AM - 11:31 AM	73.0	19.8	36.2	45.8	54.5	60.7	63.8	68.8	65.1	65.3	62.4	49.3
11:31 AM - 12:31 PM	72.5	18.9	36.1	45.4	54.8	60.6	61.6	61.4	64.6	68.4	65.5	52.1
12:31 PM - 01:31 PM	69.0	14.5	35.9	45.3	54.4	60.8	61.1	61.6	62.0	61.3	58.3	49.1
01:31 PM - 02:31 PM	68.5	14.9	36.0	45.3	54.6	60.8	61.8	62.0	61.2	59.1	55.2	46.0
04:31 PM - 05:31 PM	71.8	18.0	36.4	46.0	54.7	60.9	62.0	62.7	64.2	66.9	63.8	50.5
03:31 PM - 04:31 PM	73.8	20.1	37.0	46.5	54.4	60.9	61.5	63.0	66.1	69.8	67.1	54.0
04:31 PM - 05:31 PM	73.4	19.8	37.5	46.9	52.9	60.7	60.5	61.0	65.4	69.7	66.8	52.7
05:31 PM - 06:31 PM	72.8	19.0	37.4	47.0	55.7	61.9	63.0	63.7	65.2	67.9	64.8	51.5
06:31 PM - 07:31 PM	70.2	15.7	37.1	46.5	55.6	62.0	62.3	62.8	63.2	62.5	59.5	50.3
07:31 PM - 08:31 PM	73.3	19.2	35.9	45.4	52.4	59.8	60.6	62.1	65.7	69.6	66.6	53.0
Average	72.6	18.8	36.7	46.1	54.4	60.9	61.9	63.5	65.0	68.0	65.1	51.9

Reference Method : ANSI Standard S1.6-1984

Technical Management

Orawan R.

Orawan Rakyong
Scientist (3)

Approved by

Supot S.

Supot Salamteh
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.



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633447

Date Received : May 28, 2026

Date Reported : Jun 05, 2026

Report Number : 3588667-1

Page 1 of 1

Sample Number 2633447-6
Parameter Octave band (12 hrs.)
Location Storage Area
Measurement Date May 27, 2026
Measurement By Thanathip Itiwutta

Time	Result (dB(A))											
	Leq	16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
08:41 AM - 09:41 AM	76.2	24.2	39.0	53.6	62.4	71.1	69.6	68.1	68.6	65.3	56.3	41.9
09:41 AM - 10:41 AM	76.2	23.9	39.0	53.4	62.2	70.7	69.5	68.2	68.9	65.7	56.6	42.1
10:41 AM - 11:41 AM	76.6	24.0	40.0	54.0	62.0	72.1	69.6	68.3	68.9	65.7	56.4	41.9
11:41 AM - 12:41 PM	75.7	23.7	38.9	53.5	61.5	70.6	68.5	67.5	68.8	65.6	56.4	41.6
12:41 PM - 01:41 PM	75.8	23.5	38.9	53.2	61.2	70.8	68.5	67.3	68.8	65.6	56.5	41.7
01:41 PM - 02:41 PM	75.7	23.9	39.0	52.9	61.3	70.4	68.5	67.3	68.9	65.6	56.5	41.8
02:41 PM - 03:41 PM	75.4	23.6	38.9	52.6	61.1	70.3	67.8	67.2	68.7	65.5	56.4	41.6
03:41 PM - 04:41 PM	75.5	23.8	38.7	53.3	61.4	70.7	68.1	67.3	68.2	65.3	56.2	41.6
04:41 PM - 05:41 PM	76.0	24.5	38.9	53.8	62.2	71.5	68.8	67.5	68.2	65.0	56.0	41.5
05:41 PM - 06:41 PM	75.7	23.9	39.2	52.9	61.4	70.6	68.1	67.5	69.0	65.8	56.7	41.9
06:41 PM - 07:41 PM	74.8	22.5	37.9	52.2	60.2	69.8	67.5	66.3	67.8	64.6	55.5	40.7
07:41 PM - 08:41 PM	76.1	23.8	39.2	53.5	61.5	71.1	68.8	67.6	69.1	65.9	56.8	42.0
Average	75.8	23.8	39.0	53.3	61.6	70.8	68.7	67.5	68.7	65.5	56.4	41.7

Reference Method : ANSI Standard S1.6-1984

Technical Management

Orawan R.

Orawan Rakyong
Scientist (3)

Approved by

Supot S.

Supot Salamteh
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.



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.

10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150

P/O : PMM-2025-336

Project Name : Environmental Monitoring

Project Location : LDPE

Lot ID: 2633447

Date Received : May 28, 2026

Date Reported : Jun 05, 2026

Report Number : 3588668-1

Page 1 of 1

Sample Number 2633447-7
Parameter Octave band (12 hrs.)
Location กึ่งกลางรั้วทิศเหนือระหว่าง LDPE & HDPE
Measurement Date May 27, 2026
Measurement By Thanathip Itiwutta

Time	Result (dB(A))											
	Leq	16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
08:49 AM - 09:49 AM	84.3	24.3	37.0	54.7	66.7	65.8	65.5	65.1	72.6	81.4	79.7	68.2
09:49 AM - 10:49 AM	84.5	24.3	37.2	54.4	67.4	66.7	65.7	65.3	72.7	81.5	79.8	68.3
10:49 AM - 11:49 AM	84.6	25.9	37.0	54.9	67.1	66.8	69.7	66.0	73.1	81.5	79.8	68.3
11:49 AM - 12:49 PM	84.3	24.6	36.6	54.0	66.6	65.8	65.0	64.9	72.4	81.4	79.8	68.2
12:49 PM - 01:49 PM	84.2	23.6	37.1	53.4	66.1	65.3	64.2	64.9	72.3	81.3	79.7	68.1
01:49 PM - 02:49 PM	84.3	23.6	36.6	53.1	66.7	65.8	66.9	65.0	72.3	81.3	79.7	68.2
02:49 PM - 03:49 PM	84.3	23.8	36.7	53.6	67.3	66.5	68.2	65.2	72.4	81.3	79.7	68.2
03:49 PM - 04:49 PM	84.4	24.3	37.1	55.0	67.5	66.9	67.8	65.1	72.6	81.4	79.8	68.4
04:49 PM - 05:49 PM	84.5	24.2	37.1	54.5	67.3	67.2	67.7	65.2	72.6	81.5	79.8	68.4
05:49 PM - 06:49 PM	84.9	24.4	37.3	54.2	67.9	67.1	68.8	65.8	73.0	81.9	80.3	68.8
06:49 PM - 07:49 PM	84.0	23.4	36.9	53.2	65.9	65.1	64.0	64.7	72.1	81.1	79.5	67.9
07:49 PM - 08:49 PM	84.1	23.9	36.8	54.0	67.0	66.3	65.3	64.9	72.3	81.1	79.4	67.9
Average	84.4	24.2	37.0	54.1	67.0	66.3	66.9	65.2	72.5	81.4	79.8	68.2

Reference Method : ANSI Standard S1.6-1984

Technical Management

Orawan R.

Orawan Rakyong
Scientist (3)

Approved by

Supot S.

Supot Salamteh
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.



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 25114042

Date Received : Feb 19, 2026
Date Reported : Feb 25, 2026
Report Number : 3515348-1

Page 1 of 2

Sample Number : 25114042-1
Sampled Date : Feb 18, 2026
Sample Description : Noise Dose
Location : พนักงาน Operator ของ LDPE 1 คน
Personal Sampling : XXXXXXXXXX
Date Analysis Commenced : Feb 20, 2026

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Noise Dose (12 hrs.) (Calculated from Lavg)	08:00 AM - 08:00 PM	%	-	1	7.8	No Standard	MOL, Department Labour Protection and Welfare (B.E.2561)	MOL	Rayong
Noise Dose (8 hrs.)	08:00 AM - 08:00 PM	%	-	1	7.2	No Standard	MOL, Department Labour Protection and Welfare (B.E.2561)	MOL	Rayong
TWA (12 hrs.) (Calculated from Lavg)	08:00 AM - 08:00 PM	dB(A)	-	-	71.9	83*	MOL, Department Labour Protection and Welfare (B.E.2561)	MOL	Rayong
TWA (8 hrs.)	08:00 AM - 08:00 PM	dB(A)	-	-	73.6	85	MOL, Department Labour Protection and Welfare (B.E.2561)	MOL	Rayong

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 : Anawat Kongplik

Remark :

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

Approved by

Supot Salamteh
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.

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Thai Polyethylene Co., Ltd.
10, Map Ta Phut Industrial Estate I-1 Road, Map Ta Phut, Muang District, Rayong
Thailand 21150
P/O : PMM-2025-336
Project Name : Environmental Monitoring
Project Location : LDPE

Lot ID: 2633446

Date Received : May 28, 2026
Date Reported : May 30, 2026
Report Number : 3554406-1

Page 1 of 2

Sample Number 2633446-1
Sampled Date May 27, 2026
Sample Description Noise Dose
Location พนักงาน Operator ของ LDPE 1 คน
Personal Sampling XXXXXXXXXX
Date Analysis Commenced May 29, 2026

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Noise Dose (12 hrs.) (Calculated from Lavg)	08:30 AM - 08:30 PM	%	-	1	14.8	No Standard	MOL, Department Labour Protection and Welfare (B.E.2561)	MOL	Rayong
Noise Dose (8 hrs.)	08:30 AM - 08:30 PM	%	-	1	14.1	No Standard	MOL, Department Labour Protection and Welfare (B.E.2561)	MOL	Rayong
TWA (12 hrs.) (Calculated from Lavg)	08:30 AM - 08:30 PM	dB(A)	-	-	74.7	83*	MOL, Department Labour Protection and Welfare (B.E.2561)	MOL	Rayong
TWA (8 hrs.)	08:30 AM - 08:30 PM	dB(A)	-	-	76.5	85	MOL, Department Labour Protection and Welfare (B.E.2561)	MOL	Rayong

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 : Thanathip Itiwutta

Remark :

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

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

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

ภาคผนวก ง

เอกสารการสอบเทียบเครื่องมือตรวจวิเคราะห์



รายการเครื่องมือที่ใช้ในการวิเคราะห์ / ทดสอบ

right solutions.
right partner.

Sample Name	Parameter	Equipment Name	ID No.	Calibrated Date	Next Cal	Freq. Calibrate (Months)
Stack	Ethylene	Probe	RYG_FS0747	6-Jan-26	6-Jul-26	6
Stack	Ethylene	Fuel Gas Analyzer	RYG_FS0565	23-Dec-25	22-Dec-26	12
Stack	Ethylene	DRYCAL FLOWMETER	BKK_FS0614	10-Sep-25	9-Sep-26	12
Stack	Ethylene	DRYCAL FLOWMETER	BKK_FS0619	10-Sep-25	9-Sep-26	12
Stack	Ethylene	Air Sampling Pump	RYG_FS0124	6-Apr-26	6-Jul-26	3
Stack	Ethylene	Air Sampling Pump	RYG_FS0691	19-Apr-26	19-Jul-26	3
Stack	Propane	Probe	RYG_FS0747	6-Jan-26	6-Jul-26	6
Stack	Propane	Fuel Gas Analyzer	RYG_FS0565	23-Dec-25	22-Dec-26	12
Stack	Propane	DRYCAL FLOWMETER	BKK_FS0614	10-Sep-25	9-Sep-26	12
Stack	Propane	DRYCAL FLOWMETER	BKK_FS0619	10-Sep-25	9-Sep-26	12
Stack	Propane	Air Sampling Pump	RYG_FS0124	6-Apr-26	6-Jul-26	3
Stack	Propane	Air Sampling Pump	RYG_FS0691	19-Apr-26	19-Jul-26	3
Ambient	Propylene	DRYCAL FLOWMETER	BKK_FS0614	10-Sep-25	9-Sep-26	12
Ambient	Propylene	DRYCAL FLOWMETER	BKK_FS0619	10-Sep-25	9-Sep-26	12
Ambient	Ethylene	DRYCAL FLOWMETER	BKK_FS0614	10-Sep-25	9-Sep-26	12
Ambient	Ethylene	DRYCAL FLOWMETER	BKK_FS0619	10-Sep-25	9-Sep-26	12
Ambient	Wind Speed / Wind Direction	Wind Speed / Wind Direction	RYG_FS0647	15-Jan-25	14-Jul-26	18
Ambient	Wind Speed / Wind Direction	Wind Speed / Wind Direction	RYG_FS0724	16-Feb-26	15-Aug-27	18
Noise	Leq 24 hrs	Sound Calibrator	RYG_FS0213	9-Jan-26	8-Jan-27	12
Noise	Leq 24 hrs	Sound Level Meter	RYG_FS0019	21-Jan-26	20-Jan-27	12
Noise	Leq 24 hrs	Sound Level Meter	RYG_FS0491	28-Jan-26	27-Jan-27	12
Noise	Leq 24 hrs	Sound Level Meter	RYG_FS0492	28-Jan-26	27-Jan-27	12
Noise	Leq 8 hrs / Leq 12 hrs	Sound Calibrator	RYG_FS0213	9-Jan-26	8-Jan-27	12
Noise	Leq 8 hrs / Leq 12 hrs	Sound Level Meter	RYG_FS0437	18-Dec-25	17-Dec-26	12
Noise	Leq 8 hrs / Leq 12 hrs	Sound Level Meter	RYG_FS0434	21-Jan-26	20-Jan-27	12
Noise	Leq 8 hrs / Leq 12 hrs	Sound Level Meter	RYG_FS0439	5-Nov-25	4-Nov-26	12
Noise	Leq 8 hrs / Leq 12 hrs	Sound Level Meter	RYG_FS0389	28-Jan-26	27-Jan-27	12
Noise	Leq 8 hrs / Leq 12 hrs	Sound Level Meter	RYG_FS0433	18-Dec-25	17-Dec-26	12
Noise	Leq 8 hrs / Leq 12 hrs	Sound Level Meter	RYG_FS0438	29-Oct-25	28-Oct-26	12
Noise	Leq 8 hrs / Leq 12 hrs	Sound Level Meter	RYG_FS0432	21-Jan-26	20-Jan-27	12
Noise	Leq 8 hrs / Leq 12 hrs	Sound Calibrator	RYG_FS0213	9-Jan-26	8-Jan-27	12
Noise	Leq 8 hrs / Leq 12 hrs	Sound Level Meter	RYG_FS0493	28-Jan-26	27-Jan-27	12
Noise	Leq 8 hrs / Leq 12 hrs	Sound Level Meter	RYG_FS0492	28-Jan-26	27-Jan-27	12
Noise	Leq 8 hrs / Leq 12 hrs	Sound Level Meter	RYG_FS0494	28-Jan-26	27-Jan-27	12
Noise	Leq 8 hrs / Leq 12 hrs	Sound Level Meter	NKH_FS0132	14-Jul-25	14-Jul-26	12
Noise	Leq 8 hrs / Leq 12 hrs	Sound Level Meter	RYG_FS0491	28-Jan-26	27-Jan-27	12
Noise	Leq 8 hrs / Leq 12 hrs	Sound Level Meter	RYG_FS0439	5-Nov-25	4-Nov-26	12
Noise	Leq 8 hrs / Leq 12 hrs	Sound Level Meter	RYG_FS0438	29-Oct-25	28-Oct-26	12
Noise	Noise Dose, TWA	Dose Badge Reader	RYG_FS0211	12-Jan-26	11-Jan-27	12
Noise	Noise Dose, TWA	Dosimeter	RYG_FS0045	4-Sep-25	3-Sep-26	12
Noise	Noise Dose, TWA	Dosimeter	RYG_FS0044	16-Sep-25	15-Sep-26	12
Noise	Noise Dose, TWA	Dose Badge Reader	BKK_FS1367	14-Jul-25	14-Jul-26	12
Noise	Noise Dose, TWA	Dosimeter	RYG_FS0636	19-Sep-25	18-Sep-26	12
Noise	Noise Dose, TWA	Dosimeter	RYG_FS0637	24-Oct-25	23-Oct-26	12
Noise	Noise Contour	Sound Calibrator	RYG_FS0213	9-Jan-26	8-Jan-27	12
Noise	Noise Contour	Sound Level Meter	RYG_FS0024	28-Jan-26	27-Jan-27	12
Workplace	Ethylene	DRYCAL FLOWMETER	BKK_FS0614	10-Sep-25	9-Sep-26	12
Workplace	Ethylene	DRYCAL FLOWMETER	BKK_FS0619	10-Sep-25	9-Sep-26	12
Workplace	Propane	DRYCAL FLOWMETER	BKK_FS0614	10-Sep-25	9-Sep-26	12
Workplace	Propane	DRYCAL FLOWMETER	BKK_FS0619	10-Sep-25	9-Sep-26	12
Workplace	Total Hydrocarbon as Methane	DRYCAL FLOWMETER	BKK_FS0614	10-Sep-25	9-Sep-26	12
Workplace	Total Hydrocarbon as Methane	DRYCAL FLOWMETER	BKK_FS0619	10-Sep-25	9-Sep-26	12
Workplace	Total Hydrocarbon as Methane	Total Hydrocarbon Analyzer	RYG_FS0762	15-Jan-26	14-Jan-27	12

1

alsglobal.com



รายการเครื่องมือที่ใช้ในการวิเคราะห์ / ทดสอบ

right solutions.
right partner.

Sample Name	Parameter	Equipment Name	ID No.	Calibrated Date	Next Cal	Freq. Calibrate (Months)
Rayong Lab	pH at 25 °C	pH meter	RYG_EN0183	18-Jul-25	18-Jan-27	18
Rayong Lab	BOD	DO meter with Sensor	RYG_EN0032	20-Jan-25	20-Jul-26	18
Rayong Lab	BOD	Incubator	RYG_EN0154	18-Mar-26	18-Sep-27	18
Rayong Lab	BOD	Burette	RYG_EN0216	18-Sep-25	18-Sep-26	12
Rayong Lab	COD	Spectrophotometer	RYG_EN0037	18-Mar-25	18-Sep-26	18
Rayong Lab	Total Suspended Solids	Electronic Balance	RYG_EN0165	3-Feb-26	3-Feb-27	12
Rayong Lab	Total Suspended Solids	Chamber (Oven)	RYG_EN0012	10-Sep-25	10-Mar-27	18
Rayong Lab	Total Dissolved Solids 180°C	Electronic Balance	RYG_EN0163	3-Feb-26	3-Feb-27	18
Rayong Lab	Total Dissolved Solids 180°C	Chamber (Oven)	RYG_EN0012	10-Sep-25	10-Mar-27	18
Rayong Lab	Oil & Grease	Electronic Balance	RYG_EN0003	3-Feb-26	3-Feb-27	12
Rayong Lab	Oil & Grease	Liquid Bath (Water)	RYG_EN0220	27-Nov-25	27-Nov-26	12
Rayong Lab	Temperature	pH meter	RYG_FS0714	25-Aug-25	25-Aug-26	12

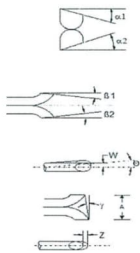
2

alsglobal.com



Type S Pitot Tube Calibration

Date Calibration 6-Jan-26 Due Date 6-Jul-26
Pitot ID RYG_FS0747 Inclinator ID BKK_FS1131
Pitot SN A12038 Vernier ID RYG_FS0539



Parameter	Value	Allowable Range	Check
$\alpha 1$	1	$-10^\circ < \alpha 1 < +10^\circ$	OK
$\alpha 2$	1	$-10^\circ < \alpha 2 < +10^\circ$	OK
$\beta 1$	0	$-5^\circ < \beta 1 < +5^\circ$	OK
$\beta 2$	0	$-5^\circ < \beta 2 < +5^\circ$	OK
γ	0	-	-
θ	1	-	-
$Z = A \tan \gamma$	0.000	$Z \leq 0.125"$	OK
$W = A \tan \theta$	0.016	$W \leq 0.031"$	OK
Dt	0.375	0.188" to 0.375"	OK
A/2Dt	1.211	$1.05 \leq A/2Dt \leq 1.5$	OK
A	0.908	$2.1Dt \leq A \leq 3Dt$	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 fact of 0.84 . See 40 CFR Pt. 60, App. A, EPA Method 2.

Calibrated by :
(Mr. Warawut Pubpa)
RYG Field Services Scientist (3)

Approved by :
(Mr. Natthapol Jengwareewong)
RYG Field Services Specialist (1)



Calibration Certificate



Certificate No: G 250438
Date of issue : 23-Dec-25

Instrument description : Flue Gas Analyzer
Instrument model : Testo 340
Instrument serial no. : 63119028
Control unit serial no. : -
ID no. or control no. : RYG_FS0565
Manufacturer : Testo SE & Co. KGaA
Probe description : -
Probe model : -
Probe serial no. : -
Customer name : ALS LABORATORY GROUP (THAILAND) CO.,LTD.
Customer address : 104 Phatthanakan 40, Phatthanakan Road, Khwaeng Phatthanakan, Khet Suan Luang, Bangkok, 10250 Thailand
Total pages of certificate : 2 Pages
Receiving no. : L-254985
Receiving date. : 19-Dec-25
Parameter of calibration : Gas Calibration (Oxygen, Carbon Monoxide, Nitric Oxide, Sulphur Dioxide)

REVIEW BY :
APPROVED BY :
NEXT CAL DATE : 22/ 12/ 2026

Condition of UUC. : Used
Ambient condition : All of the Measurement were carried out the stabilized laboratory
Temperature : 23 ± 5 °C
Humidity : 55 ± 15 %RH

Calibration place : 17/121 Soi Ngamwongwan 47 Yaek 48, Toongsonghong, Laksi, Bangkok 10210

Calibration procedure no : This instrument was calibrated by comparison with Standard gas mixture according to calibration Work Instruction no. WI-CL-28-C

The calibration certificate expanded uncertainty of measurement is stated as the standard uncertainty of measurement Multiplied by coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.
This certificate is applied only to item under test Environmental condition.
This Calibration Certificate may not be reproduced other than in full except with the permission of the issuing laboratory.
Calibration certificates without signature and seal not valid and The results relate only to the items tested/calibrated.
This calibration certificate documents are traceability to national standards, which realize measurement according to the International System of Units (SI).

Date of calibration : 23-Dec-25

Mr. Kwanchai Khamdoug
Calibration Technician

Mrs. Nongluck Wongsattae
Technical Manager

Certificate No.: G 250438

Standard References (Table 1)

Standard	Certificate No.	Vendor	Due date
Oxygen (O2) 2.506 % Vol	1287/25	Linde	08-May-29
Oxygen (O2) 9.984 % Vol	CG-0090-25	Nimt	24-Jun-30
Oxygen (O2) 21.01 % Vol	CG-0112-24	Nimt	01-Aug-29
Carbon monoxide (CO) 80.47 ppm	3276/25	Linde	09-Nov-27
Carbon monoxide (CO) 300.9 ppm	1422/25	Linde	21-May-29
Carbon monoxide (CO) 1000 ppm	3131/25	Linde	27-Oct-29
Nitric Oxide (NO) 30.0 ppm	CG-0065-24	Nimt	06-May-26
Nitric Oxide (NO) 151.8 ppm	0404/25	Linde	09-Feb-27
Nitric Oxide (NO) 322 ppm	1234/25	Linde	04-May-27
Sulphur Dioxide (SO2) 50.4 ppm	1306/25	Linde	12-May-27
Sulphur Dioxide (SO2) 100.7 ppm	2662/24	Linde	25-Aug-26
Sulphur Dioxide (SO2) 605.9 ppm	1229/25	Linde	04-May-27

Measured room conditions

Temperature : 23.2 °C Humidity : 67.7 %RH Pressure : 1011.2 mbar

Calibration conditions

Gas Temperature : 23 °C Flow rate : 700 ml/min Gas pressure : 1015.9 mbar

Calibration Results (Without adjustment) (Table 2)

Parameter of Standard	Standard Values	Mean of UUC	Error	Uncertainty (±)
O2 (%Vol)	2.506	2.44	-0.066	0.15
O2 (%Vol)	9.984	9.88	-0.104	0.20
O2 (%Vol)	21.01	21.12	0.11	0.30
CO (ppm)	80.47	81	0.53	3.0
CO (ppm)	300.9	300	-0.9	6.0
CO (ppm)	1000	998	-2	13
NO (ppm)	30.0	30	0.0	8.0
NO (ppm)	151.8	152	0.2	8.0
NO (ppm)	322	321	-1	12
SO2 (ppm)	50.4	49	-1.4	6.0
SO2 (ppm)	100.7	100	-0.7	6.0
SO2 (ppm)	605.9	605	-0.9	13

Remark : 1 cmol/mol = 1 %vol. 1 µmol/mol = 1 ppm, Sensor(CO, NO, SO2)New.

End of Certificate of Calibration

FM-CL-09-C Rev.8

Page 2 of 2

Issued Date 26/02/16

Entech Industrial Solution Co., Ltd.

17/121 Soi Ngamwongwan 47 Yaek 48, Toongsonghong, Lakki, Bangkok 10210 THAILAND Tel. 0-2779-8888 Calibration@entech.co.th
Tax ID : 0105536035591 www.entech.co.th

INNOVATIVE INSTRUMENT CALIBRATION LAB

INNOVATIVE INSTRUMENT CO., LTD. HEAD OFFICE

7/139 MOO 13, SOI SUNTINAKORN 11 TAMBON BANG KAE0,

AMPHOE BANG PHU SAMUT PRAKAN PROVINCE 10540 THAILAND

TEL: (660-2116-5860-1 FAX: (660-2116-7140)



Page 1/2.

Certificate of Calibration

Customer

Name : ALS Laboratory Group Thailand Co., Ltd.

Address : 104 Soi Phatthanakan 40, Phatthanakan Road, Suan Luang, Bangkok

10250

Unit Under Calibration Details

Measurement Item : Air Flow Meter

Manufacturer : Mesa Labs

Model : 200-510M

Serial Number : 151114

ID : BKK_FS0614

Location of Calibration : LAB 4 AIR VELOCITY METER

Calibration Environment and Details

Temperature : 23 °C ± 3 °C

Humidity : 55 %RH ± 20 %RH

Barometric Pressure : 1013 hPa ± 10 hPa

Received Date : 3 September 2025

Calibration Date : 10 September 2025

Calibration Procedure : In-house method CP-AFM-01 by Comparison technique with Standard Primary Flow Calibrator

Reference Standard	Model	Serial Number	Traceble	Due Calibration
Air Flow Meter	Gilibrator 3 Low flow	18501010006	Sensidyne	5 May 2026
Air Flow Meter	Gilibrator 3 Standard flow	19031011003	Sensidyne	6 May 2026
Temperature meter	GT 11	08000057	Qreborn	15 October 2025
Pressure meter	CPG2400	41000KDU/651882	TPA	21 October 2025

Traceability :

This Certificate is traceable to SI Unit through Sensidyne A2LA Accreditation No. 3943.01 and MIT NSC-TIS-TIS Accreditation No. 0052

Note :

The reported uncertainty is based on standard uncertainty multiplied by the Coverage Factor $k = 2$, providing a level of confidence approximately 95 %.

Calibration By :

Mr. Noppadon Luangart

Service Calibration Engineer

Approved By :

Mr. Pacit Mathavorn

Calibration Engineer Supervisor

Issue Date :

10 September 2025

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-AFM-01 Rev.06 Issue date 21/2/25

INNOVATIVE INSTRUMENT CALIBRATION LAB

INNOVATIVE INSTRUMENT CO., LTD. HEAD OFFICE

7/139 MOO 13, SOI SUNTINAKORN 11 TAMBON BANG KAE0,

AMPHOE BANG PHU SAMUT PRAKAN PROVINCE 10540 THAILAND

TEL: (660-2116-5860-1 FAX: (660-2116-7140)



Page 2/2.

Certificate No : 25-AFM-208

Request No : Req-2025-1986

Result of Calibration : Without Adjustment

STD Reading			UUC Reading			Error (cc/min)	Uncertainty		
Temperature (°C)	Pressure (kPa)	Flow (cc/min)	Temperature (°C)	Pressure (kPa)	Flow (cc/min)		(cc/min)	(°C)	(kPa)
25.5	100.98	100	-	-	100.02	0.0	3.6	1.0	0.50
25.7	100.97	503	-	-	500.81	-2.2	9.5	1.0	0.50
25.8	100.89	1003	-	-	1000.4	-3	19	1.0	0.50
26.1	100.88	2000	-	-	2001.9	2	38	1.0	0.50
26.5	100.85	3014	-	-	3002.2	-12	57	1.0	0.50
26.7	100.81	4027	-	-	4000.9	-26	76	1.0	0.50
27.0	100.74	5048	-	-	5001.8	-46	95	1.0	0.50

Note

STD : Standard UUC : Unit Under Calibration

- UUC Reference Condition : At atmospheric pressure and room temperature condition, Air

- Flow Rate was corrected for non-standard operating condition by using equation :

$$Q_{meas} = Q_{ref} \times \frac{P_{ref}}{P_{meas}} \times \frac{T_{meas}}{T_{ref}}$$

where Q = Flow Rate P = Absolute Pressure T = Absolute Temperature

meas = Measurement Condition ref = Standard Condition

* Indicates non accredited

End of Certificate

INNOVATIVE INSTRUMENT CALIBRATION LAB

INNOVATIVE INSTRUMENT CO., LTD. HEAD OFFICE

7/139 MOO 13, SOI SUNTINAKORN 11 TAMBON BANG KAE0,

AMPHOE BANG PHU SAMUT PRAKAN PROVINCE 10540 THAILAND

TEL: (660-2116-5860-1 FAX: (660-2116-7140)



Page 1/2.

Certificate of Calibration

Customer

Name : ALS Laboratory Group Thailand Co., Ltd.

Address : 104 Soi Phatthanakan 40, Phatthanakan Road, Suan Luang, Bangkok

10250

Unit Under Calibration Details

Measurement Item : Air Flow Meter

Manufacturer : Mesa Labs

Model : 200-510L

Serial Number : 130026

ID : BKK_FS0619

Location of Calibration : LAB 4 AIR VELOCITY METER

Calibration Environment and Details

Temperature : 23 °C ± 3 °C

Humidity : 55 %RH ± 20 %RH

Barometric Pressure : 1013 hPa ± 10 hPa

Received Date : 3 September 2025

Calibration Date : 10 September 2025

Calibration Procedure : In-house method CP-AFM-01 by Comparison technique with Standard Primary Flow Calibrator

Reference Standard	Model	Serial Number	Traceble	Due Calibration
Air Flow Meter	Gilibrator 3 Low flow	18501010006	Sensidyne	5 May 2026
Air Flow Meter	Gilibrator 3 Standard flow	19031011003	Sensidyne	6 May 2026
Temperature meter	GT 11	08000057	Qreborn	15 October 2025
Pressure meter	CPG2400	41000KDU/651882	TPA	21 October 2025

Traceability :

This Certificate is traceable to SI Unit through Sensidyne A2LA Accreditation No. 3943.01 and MIT NSC-TIS-TIS Accreditation No. 0052

Note :

The reported uncertainty is based on standard uncertainty multiplied by the Coverage Factor $k = 2$, providing a level of confidence approximately 95 %.

Calibration By :

Mr. Noppadon Luangart

Service Calibration Engineer

Approved By :

Mr. Pacit Mathavorn

Calibration Engineer Supervisor

Issue Date :

10 September 2025

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-AFM-01 Rev.06 Issue date 21/2/25

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-AFM-01 Rev.06 Issue date 21/2/25

Certificate No : 25-AFM-207
Request No : Req-2025-1987

Result of Calibration : Without Adjustment

STD Reading			UUC Reading			Error		Uncertainty	
Temperature (°C)	Pressure (kPa)	Flow (cc/min)	Temperature (°C)	Pressure (kPa)	Flow (cc/min)	(cc/min)	(cc/min)	(°C)	(kPa)
25.5	100.98	20	-	-	20.042	0.0	1.6	1.0	0.50
25.5	100.90	50	-	-	49.921	-0.1	4.0	1.0	0.50
25.5	100.91	100	-	-	100.09	0.1	3.6	1.0	0.50
25.4	100.86	150	-	-	150.34	0.3	5.4	1.0	0.50
25.6	100.93	199	-	-	200.17	1.2	7.2	1.0	0.50
25.6	100.95	301	-	-	300.05	-1	11	1.0	0.50
25.7	100.96	402	-	-	401.03	-1	14	1.0	0.50
25.7	100.95	503	-	-	500.26	-3	10	1.0	0.50

Note: STD : Standard UUC : Unit Under Calibration
- UUC Reference Condition : At atmospheric pressure and room temperature condition, Air ☐
- Flow Rate was corrected for non-standard operating condition by using equation :

$$Q_{meas} = Q_{ref} \times \frac{P_{ref}}{P_{meas}} \times \frac{T_{meas}}{T_{ref}}$$

where Q = Flow Rate P = Absolute Pressure T = Absolute Temperature
meas = Measurement Condition ref = Standard Condition

* Indicates non accredited

End of Certificate

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-AFM-01 Rev.06 Issue date 21/2/25

ALS Laboratory Group (Thailand) Co., Ltd.

104 Phatthanakan 40, Phatthanakan Rd.
Phatthanakan, Suan Luang, Bangkok 10250
T +66 2 760 3000 F +66 2 760 3197



Certificate of Calibration

Certificate No. C-060426-RYG_FS0124

Air Sampling Pump Detail

Equipment name : Personal Air Sampling Pump
Brand : Gilian
Model/Type : GilAir Plus

Equipment ID : RYG_FS0124
Serial No. : 20150310180
Calibration Date : 06-Apr-26
Next calibration date : 06-Jul-26

Reference Standard Low Flow Meter

Equipment name : Air Flow Meter
Brand : MesaLabs
Model/Type : Defender 510-L

Equipment ID : BKK_FS0619
Serial No. : 130026
Calibration Date : 10-Sep-25
Due Date : 09-Sep-26

Reference Standard High Flow Meter

Equipment name : Air Flow Meter
Brand : MesaLabs
Model/Type : Defender 510-M

Equipment ID : BKK_FS0614
Serial No. : 151114
Calibration Date : 10-Sep-25
Due Date : 09-Sep-26

Calibration Data

Air Sampling Pump setting (cc/min)	Reference Std. Flow Reading (cc/min)			Avg. (cc/min)	%Error acceptance	Acceptable range (cc/min)	Evaluation (Pass/ Fail)
	1	2	3				
Low Flow							
20	19.5	20.4	21.0	20.3	5%	19 - 21	Passed
50	51.0	50.9	49.9	50.6	5%	48 - 53	Passed
100	99.8	99.7	101.9	100.5	5%	95 - 105	Passed
200	201.4	200.7	201.1	201.1	5%	190 - 210	Passed
High Flow							
500	506.4	505.7	509.8	507.3	3%	485 - 515	Passed
1000	997.8	1000.9	998.2	999.0	3%	970 - 1030	Passed
2000	2012.6	2004.1	2014.8	2010.5	3%	1940 - 2060	Passed
2500	2496.2	2495.0	2498.1	2496.4	3%	2425 - 2575	Passed
4000	3999.6	4006.7	3997.0	4001.1	3%	3880 - 4120	Passed

END OF REPORT

Calibrated By: 
(Mr. Natchapon Thamklang)
RYG Field Services Scientist (1)

Approved By: 
(Mr. Supot Salamteh)
Field Services Section Head

Issue date : 07-Apr-26

ALS Laboratory Group (Thailand) Co., Ltd.

104 Phatthanakan 40, Phatthanakan Rd.
Phatthanakan, Suan Luang, Bangkok 10250
T +66 2 760 3000 F +66 2 760 3197



Certificate of Calibration

Certificate No. C-190426-RYG_FS0691

Air Sampling Pump Detail

Equipment name : Personal Air Sampling Pump
Brand : Gilian
Model/Type : GilAir Plus

Equipment ID : RYG_FS0691
Serial No. : 20221010025
Calibration Date : 19-Apr-26
Next calibration date : 19-Jul-26

Reference Standard Low Flow Meter

Equipment name : Air Flow Meter
Brand : MesaLabs
Model/Type : Defender 510-L

Equipment ID : BKK_FS0619
Serial No. : 130026
Calibration Date : 10-Sep-25
Due Date : 09-Sep-26

Reference Standard High Flow Meter

Equipment name : Air Flow Meter
Brand : MesaLabs
Model/Type : Defender 510-M

Equipment ID : BKK_FS0614
Serial No. : 151114
Calibration Date : 10-Sep-25
Due Date : 09-Sep-26

Calibration Data

Air Sampling Pump setting (cc/min)	Reference Std. Flow Reading (cc/min)			Avg. (cc/min)	%Error acceptance	Acceptable range (cc/min)	Evaluation (Pass/ Fail)
	1	2	3				
Low Flow							
20	19.5	19.2	19.5	19.4	5%	19 - 21	Passed
50	50.8	50.3	50.6	50.6	5%	48 - 53	Passed
100	101.3	100.3	100.8	100.8	5%	95 - 105	Passed
200	200.7	201.1	201.0	200.9	5%	190 - 210	Passed
High Flow							
500	505.8	505.6	506.8	506.1	3%	485 - 515	Passed
1000	1001.3	1002.8	1001.7	1001.9	3%	970 - 1030	Passed
2000	2003.2	2000.5	2001.2	2001.6	3%	1940 - 2060	Passed
2500	2500.4	2502.7	2507.8	2503.6	3%	2425 - 2575	Passed
4000	4008.6	4006.0	4007.9	4007.5	3%	3880 - 4120	Passed

END OF REPORT

Calibrated By: 
(Mr. Watcharin Pongsamsuan)
RYG Field Services Scientist (1)

Approved By: 
(Mr. Supot Salamteh)
Field Services Section Head

Issue date : 20-Apr-26



JIRANATEE ASSOCIATES CO.,LTD.

Jirantee Associates Co.,Ltd
63/14-15, 67/35-36
Petchkasem 7/71, Rd. Wattphra, Bangkokkyl,
Bangkok 10500(Thailand)
Tel: +6686808012
Mobile: +66863999453
E-mail: jnac-calibration@jiranatee.com
Web site: www.jiranatee.com

Accredited calibration laboratory
ISO/IEC 17025:2017
TIS-715-17025
CALIBRATION 0367

Air speed measurement laboratory
Calibration services department.



NSC - TIS1 - TIS 17025
CALIBRATION 0367

Certificate Number

CW5-004-68

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 follows:

Temperature : 23.0 ± 3.0 °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 CONDITIONS

Wind tunnel cross-section area : 900 cm²
Wind direction frontal area : 100 cm²
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 (24.1) °C, (54.2) %RH and (1016.4) hPa.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:
☒ Mr. Sorawit Thanglad
☐ Miss Jitraporn Leethamphol



Approved signatory: 
Mr. Parinya Booncharoen
Calibration Department Manager

REVIEW BY: 

APPROVED BY: 

NEXT CAL DATE 14/ 07/ 26

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

Certificate Number
CWS-004-68

Page 2 of 2 Pages

MEASUREMENT RESULTS⁵

The Cup anemometer, Unit Under Calibration (IUC) 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, IUC 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_{ref} (m/s)	Temp. wind tunnel (°C)	Temp. room (°C)	V_{ref} (m/s)	Error (m/s)	U (k=2) (m/s)
0.990	24.10	24.05	0.9	-0.1	0.45
2.203	24.20	24.05	2.1	-0.1	0.31
3.010	24.10	24.05	2.9	-0.1	0.55
4.200	24.10	24.05	4.1	-0.1	0.31
4.95	24.20	24.05	5.0	0.1	0.68
5.97	24.10	24.05	5.9	-0.1	0.36
7.03	24.20	24.05	6.9	-0.1	0.43
7.96	24.10	24.05	7.9	-0.1	0.61
9.01	24.10	24.05	9.0	-0.1	0.54
9.95	24.10	24.05	9.9	-0.1	0.66
11.06	24.00	24.05	10.9	-0.2	0.71
11.99	24.28	24.05	11.8	-0.2	0.63
13.03	24.04	24.05	13.0	0.0	0.89
13.95	24.30	24.05	14.0	0.0	0.83
15.02	24.12	24.05	14.9	-0.1	0.69
15.95	24.26	24.05	15.9	0.0	0.71

Remark:

¹ Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

² Velocity of standard

³ 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.



Jiranatee Associates Co., Ltd.
63/14-15, 67/35-36
Petchkasem 7/71, Rd. Wattapra, Bangkokkyl,
Bangkok 10600 (Thailand)
Tel: +6688680812
Mobile: +66883999453
E-mail: jnac-calibration@jiranatee.com
Web site: www.jiranatee.com

Accredited calibration laboratory
ISO/IEC 17025:2017
NSC-TIS-TIS 17025
CALIBRATION 0367

Wind direction measurement laboratory
Calibration services department.

Certificate Number

CWD-004-68

CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

MEASUREMENT ITEM

: Wind Direction Sensor

MANUFACTURER

: Novalynx

MODEL/TYPE

: Sensor: WS-02FA
Data logger: 110-WS-25DL-D

SERIAL NUMBER

: Sensor: WSD-A5977
Data logger: A5977

ID NUMBER

: RYG_F50647

CONDITION AS-RECEIVED

: Used item

CUSTOMER

: AIS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,
Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE

: 10 Jan 2025

MEASUREMENT DATE

: 15 Jan 2025

ISSUE DATE

: 20 Jan 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

PLACE OF CALIBRATION

: Eiffel-type wind tunnel of Jiranatee Associates Co., Ltd.

CALIBRATION CONDITION

: Wind tunnel cross-section area¹ 900 cm²
Wind direction from the area² 129 cm²
Diameter of mounting pipe³ - mm
Blockage ratio of test object⁴ 0.143 [-]

Preconditioning

: 24 hours at ambient conditions.

Measurement Condition

: The average values during measurement are (24.4)°C, (59.7) %RH and (1011.0) 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:

¹ Netting cross-section area of the wind tunnel

² Projected cross-section area of the tested object include mounting pipe

³ Diameter of mounting pipe

⁴ Ratio ¹ to ²

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

Certificate Number
CWD-004-68

Page 2 of 2 Pages

MEASUREMENT RESULTS⁵

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 m/s	D'_{ref} Degree (°)	D'_{ref} Degree (°)	Error Degree (°)	U (k=2) Degree (°)
	0.000	0	0	0.80
	45.000	41	-4	0.80
	90.000	87	-3	0.80
4.99	135.000	131	-4	0.80
	180.000	177	-3	0.80
	225.000	225	0	0.80
	270.000	274	4	0.80
	315.000	319	4	0.80

Remark:

¹ Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

² Direction of standard

³ Direction of Unit Under Calibration

End of Certificate of Calibration



Jiranatee Associates Co., Ltd.
63/14-15, 67/35-36
Petchkasem 7/71, Rd. Wattapra, Bangkokkyl,
Bangkok 10600 (Thailand)
Tel: +6688680812
Mobile: +66883999453
E-mail: jnac-calibration@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-028-68

Page 1 of 2 Pages

MEASUREMENT ITEM

: Data Logger with Temperature sensor

MANUFACTURER

: Novalynx

MODEL/TYPE

: 110-WS-25DL-D

SERIAL NUMBER

: A5977

ID NUMBER

: RYG_F50647

CONDITION AS-RECEIVED

: Used item

CUSTOMER

: AIS laboratory group (thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd.,
Khwaeng Suan Luang, Khet Suan Luang,
Bangkok 10250 Thailand.

RECEIVED DATE

: 10 Jan 2025

MEASUREMENT DATE

: 15 Jan 2025

ISSUE DATE

: 20 Jan 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.



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



JIRANATEE ASSOCIATES CO.,LTD.

Continuation of Certificate of Calibration Number CDT-028-68

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 temperature sensor Model: HMP60 S/N: V1920212.
Dimension: Diameter 12 mm. Length 80 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
80	20.077	19.8	-0.3	0.099
80	25.066	24.8	-0.3	0.099
80	30.053	29.8	-0.3	0.099
80	35.034	34.7	-0.3	0.099
80	40.019	39.7	-0.3	0.099

UUC*: Unit Under Calibration

End of Certificate of Calibration



JIRANATEE ASSOCIATES CO.,LTD.

Jiranatee Associates Co.,Ltd.
63/14-15, 67/35-36
Petchkasem 7,7/1, Rd. Watthapra, Bangkokkai,
Bangkok 10200(Thailand)
Tel: +668680812
Mobile: +66863999453
E-mail: jnac-calibration@jiranatee.com
Web site: www.jiranatee.com

Accredited calibration laboratory
ISO/IEC 17025:2017
NSC-TISI-TIS 17025
CALIBRATION 0367

Relative humidity and Air Temperature measurement laboratory
Calibration services department.



CERTIFICATE OF CALIBRATION

Certificate No. : CRT-002-68

Page 1 of 2 Pages

MEASUREMENT ITEM

: Relative humidity with data logger

MANUFACTURER

: Novalynx

MODEL/TYPE

: Data Logger: 110-WS-25DL-D

SERIAL NUMBER

: Sensor: HMP60

ID NUMBER

: Data Logger: AS977

CONDITION AS-RECEIVED

: Sensor: V1920212

CUSTOMER

: RYG_F50647

: Used item

: ALS laboratory group (Thailand) Co., Ltd.

: 104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,

: Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE

: 10 Jan 2025

MEASUREMENT DATE

: 15 Jan 2025

ISSUE DATE

: 20 Jan 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.

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-026-68.

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"

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



JIRANATEE ASSOCIATES CO.,LTD.

Continuation of Certificate of Calibration Number: CRT-002-68

Page 2 of 2 Pages

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 (°C)	Standard Reading (%RH)	UUC Reading (%RH)	Error (%RH)	Uncertainty (%RH)
29.72	19.84	18.6	-1.3	0.78
29.73	51.26	49.0	-2.3	1.3
29.74	82.85	79.7	-3.2	2.1

UUC*: Unit Under Calibration

End of Certificate of Calibration



JIRANATEE ASSOCIATES CO.,LTD.

Jiranatee Associates Co.,Ltd.
63/14-15, 67/35-36
Petchkasem 7,7/1, Rd. Watthapra, Bangkokkai,
Bangkok 10200(Thailand)
Tel: +668680812
Mobile: +66863999453
E-mail: jnac-calibration@jiranatee.com
Web site: www.jiranatee.com

Accredited calibration laboratory
ISO/IEC 17025:2017
NSC-TISI-TIS 17025
CALIBRATION 0367

Pressure measurement laboratory
Calibration services department.



CERTIFICATE OF CALIBRATION

Certificate No. : CPR-002-68

Page 1 of 2 Pages

MEASUREMENT ITEM

: Digital barometer

MANUFACTURER

: Novalynx

MODEL/TYPE

: Sensor: 110-WS-25BP

SERIAL NUMBER

: Data logger: 110-WS-25DL-D

ID NUMBER

: Sensor: BP-AS977

CONDITION AS-RECEIVED

: Data logger: AS977

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

: 10 Jan 2025

MEASUREMENT DATE

: 15 Jan 2025

ISSUE DATE

: 20 Jan 2025

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/m³
 - ρ_{air} : (62.422 5) %
 - t_{amb} : (23.540 1) °C
 - p_{amb} : (1011.0 ± 1.6) mbar
5. The certificate is valid only to the item calibrated on date and place of calibration

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-0009-24

Reference Used During Calibration:

1. Absolute Pressure Transducer
Model: PG2800, 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"

Calibrated by:

- ☒ Mr. Sorawit Thachalad
☐ Miss Jitraporn Lertsomphol



Approved signatory:

Mr. Parinya 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-002-68

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 (mbar)	UUC* (mbar)	Error (mbar)	Uncertainty (k=2) (mbar)
950.02	951.4	1.4	0.37
970.08	971.3	1.2	0.38
990.07	990.8	0.8	0.38
1010.07	1010.4	0.3	0.38
1030.02	1029.9	-0.1	0.37
1050.08	1049.5	-0.6	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

MEASUREMENT ITEM : Cup anemometer
MANUFACTURER : Novalyx
MODEL/TYPE : Sensor: WS-02FA
Data logger: 110-WS-25DL-D
SERIAL NUMBER : Sensor: WSD-AS986
Data logger: AS986
ID NUMBER : RYG_F50724
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 : 06 Feb 2026
MEASUREMENT DATE : 16 Feb 2026
ISSUE DATE : 16 Feb 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 Jiranatee Associates Co., Ltd.

CALIBRATION CONDITIONS : Wind tunnel cross-section area¹ 900 cm²
Cup anemometer frontal area² 100 cm²
Diameter of mounting pipe³ - mm
Blockage ratio of test object⁴ 0.111 [-]

Preconditioning : 24 hours at ambient conditions.
Measurement Condition : The average values during measurement are (23.4) °C, (55.8) %RH and (1012.4) 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:
¹ Nozzle cross-section area of the wind tunnel
² Projected cross-section area of the tested object include mounting pipe
³ Diameter of mounting pipe
⁴ Ratio "to"

Calibration procedure:
The Cup anemometer was calibrated against Standard air velocity transducer model: 845S-32 and pitot tube with precision differential pressure meter model: DPM2500 in an close test-section of Effel-type wind tunnel with 900 cm² cross test section area. The WH-CL-007 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 standards, 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: Sept. S.
APPROVED BY: [Signature]
NEXT CAL DATE: 15/08/2027

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

Certificate Number

CWS-013-69

Page 2 of 2 Pages

MEASUREMENT RESULTS⁵

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 _{std} ¹ (m/s)	Temp. wind tunnel (°C)	Temp. room (°C)	V _{uuc} ² (m/s)	Error (m/s)	U (k=2) (m/s)
0.981	23.50	23.35	0.8	-0.2	0.31
2.126	23.42	23.35	1.9	-0.2	0.31
3.009	23.36	23.35	2.8	-0.2	0.31
4.224	23.40	23.35	3.9	-0.3	0.31
5.01	23.14	23.35	5.0	0.0	0.31
6.00	23.54	23.35	5.9	-0.1	0.31
7.01	23.18	23.35	6.9	-0.2	0.31
8.01	23.42	23.35	7.9	-0.1	0.31
8.99	23.30	23.35	9.0	0.0	0.31
10.01	23.22	23.35	10.1	0.1	0.31
11.00	22.98	23.35	11.1	0.1	0.31
11.99	23.10	23.35	12.1	0.1	0.31
12.99	23.10	23.35	13.2	0.2	0.31
13.99	23.04	23.35	14.2	0.2	0.34
14.98	23.18	23.35	15.3	0.3	0.37
15.97	23.06	23.35	16.3	0.3	0.34

Remark:

¹ Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

² Velocity of standard

³ 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

Page 1 of 2 Pages

MEASUREMENT ITEM : Wind Direction Sensor
MANUFACTURER : Novalyx
MODEL/TYPE : Sensor: WS-02FA
Data logger: 110-WS-25DL-D
SERIAL NUMBER : Sensor: WSD-AS986
Data logger: AS986
ID NUMBER : RYG_F50724
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 : 06 Feb 2026
MEASUREMENT DATE : 16 Feb 2026
ISSUE DATE : 16 Feb 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 Jiranatee Associates Co., Ltd.

CALIBRATION CONDITION : Wind tunnel cross-section area¹ 900 cm²
Wind direction frontal area² 129 cm²
Diameter of mounting pipe³ - mm
Blockage ratio of test object⁴ 0.143 [-]

Preconditioning : 24 hours at ambient conditions.
Measurement Condition : The average values during measurement are (23.3) °C, (62.2) %RH and (1009.9) 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

Remark:
¹ Nozzle cross-section area of the wind tunnel
² Projected cross-section area of the tested object include mounting pipe
³ Diameter of mounting pipe
⁴ Ratio "to"

Calibration procedure:
The wind direction sensor was calibrated against Standard Rotary Encoder model: AX40025-DM04-P3-S-UD in an close test-section of Effel-type wind tunnel with 900 cm² cross test section area. The WH-CL-008 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 standards, and to realization of the international system of units (SI) through the NIMT (National Metrology Institute of Thailand) via Certificate number: DA 0027-24.

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)

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

MEASUREMENT RESULTS⁵

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 _{std}	D _{std}	Error	U (k=2)
m/s	Degree (°)	Degree (°)	Degree (°)	Degree (°)
5.00	0.000	0	0	0.60
	45.000	42	-3	0.60
	90.000	86	-4	0.60
	135.000	131	-4	0.60
	180.000	177	-3	0.82
	225.000	224	-1	0.82
	270.000	272	2	0.60
	315.000	320	5	0.60

Remark:

⁵ Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

⁶ Direction of standard

⁷ Direction of Unit Under Calibration

End of Certificate of Calibration



JIRANATEE ASSOCIATES CO., LTD.

Jiranatee Associates Co., Ltd.
63/14-15, 67/35-36
Petchkasem 7,7/1, Rd. Watthapra, Bangkokkai,
Bangkok 10600 (Thailand)
Tel: +668868812
Mobile: +6686399453
E-mail: jnac-calibration@jiranatee.com
Web site: www.jiranatee.com

Accredited calibration laboratory

ISO/IEC 17025:2017

NSC-TISI-TIS 17025

CALIBRATION 0367

Pressure measurement laboratory

Calibration services department.



CERTIFICATE OF CALIBRATION

Certificate No. : CPR-008-69

Page 1 of 2 Pages

MEASUREMENT ITEM : Digital barometer
MANUFACTURER : Novatymx
MODEL/TYPE : Sensor: 110-WS-25BP
Data logger: 110-WS-25DL-D
SERIAL NUMBER : Sensor: BP-A5986
Data logger: A5986
ID NUMBER : RYG_FS0724
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 : 06 Feb 2026
MEASUREMENT DATE : 16 Feb 2026
ISSUE DATE : 16 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: 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_1 (20°C, 1 bar) : 1.19 kg/m³
 H_{amb} : (65.1±5.8) %
 t_{amb} : (23.2±0.2) °C
 p_{amb} : (1004.7±1.1) mbar
5. The certificate is valid only to the item calibrated on date and place of calibration

Calibrated by:

- ☒ Mr. Sorawit Thachalad
☐ Miss Jittrapon Lertsomphol



Approved signatory:

Mr. Parinya 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



JIRANATEE ASSOCIATES CO., LTD.

Jiranatee Associates Co., Ltd.
63/14-15, 67/35-36
Petchkasem 7,7/1, Rd. Watthapra, Bangkokkai,
Bangkok 10600 (Thailand)
Tel: +668868812
Mobile: +6686399453
E-mail: jnac-calibration@jiranatee.com
Web site: www.jiranatee.com

Accredited calibration laboratory

ISO/IEC 17025:2017

NSC-TISI-TIS 17025

CALIBRATION 0367

Pressure measurement laboratory
Calibration services department.



CERTIFICATE OF CALIBRATION

Certificate No. : CPR-008-69

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 (mbar)	UUC* (mbar)	Error (mbar)	Uncertainty (k=2) (mbar)
949.98	952.1	2.1	0.38
969.96	971.3	1.3	0.37
990.00	990.7	0.7	0.37
1009.93	1010.0	0.0	0.39
1029.97	1029.3	-0.7	0.37
1049.95	1048.6	-1.3	0.40

Note: UUC* Unit Under Calibration

: To convert the result in report unit to Pa should be multiply by 100

End of certificate



INNOVATIVE INSTRUMENT CALIBRATION LAB

INNOVATIVE INSTRUMENT CO., LTD. HEAD OFFICE

7/139 MOO 13, SOI SUNTINAKORN 11 TAMBON BANG KAE0,
AMPHOE BANG PHLI SAMUT PRAKAN PROVINCE 10540 THAILAND
TEL: (66)0-2116-5860-1 FAX: (66)0-2116-7140



Page 1 of 2.

Certificate of Calibration

Customer

Name : ALS Laboratory Group Thailand Co., Ltd.
Address : 104 Soi Phatthanakan 40, Phatthanakan Road, Suan Luang,
Bangkok 10250

Certificate No : 26-ACT-007

Request No : Req-2026-0043

Unit Under Calibration Details

Measurement item : Acoustic Calibrator
Manufacturer : RION
Model : NC-74
Serial Number : 34178121
ID : RYG_FS0213

Class : 1
Range : 94 dB / 1000 Hz
Instrument Status : Used

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

REVIEW BY :
APPROVED BY :
NEXT CAL DATE : 08/01/2027

Reference Standard	Model	Serial Number	Traceable	Due Calibration
Sound Calibrator	SV 35A	58079	EEL	20 June 2026
THD Multimeter	2015	1047765	NIMT	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

Certificate No : 26-ACT-007
Request No : Req-2026-0043

Sound pressure level					
Calibration Results : Without Adjustment					
Calibration Range (dB)	Without Adjustment (dB)		Adjustment (dB)		Uncertainty (± dB)
	Measured	Deviated value	Measured	Deviated value	
94 dB / 1000 Hz	94.08	0.08	-	-	0.12

Frequency of Sound pressure level					
Calibration Range (Hz)	Without Adjustment		Adjustment		Uncertainty (± %)
	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 (Hz)	Without Adjustment	Adjustment	Uncertainty (± %)
	Measured (%)	Measured (%)	
94 dB / 1000 Hz	1.84	-	0.17

Note :

- The calibration results exclude the calibrator pressure correction
- The calibration results exclude the microphone volume correction

End of Calibration

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

SITHIPORN ASSOCIATES CO., LTD. CALIBRATION LABORATORY

451-451/1 Srinthorn Road, Bangburnru, Bangplud, Bangkok, 10700 Thailand
Tel. +66 2433 8331 Email : calibration@sithiporn.com



Cert. No. : ACL26075
Pages : 1 of 8

Calibration Certificate

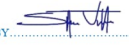
Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42 / Microphone UC-52 / Preamplifier NH-24
Serial No.: 01122607 / 145554 / 34375
ID No.: RYG_FS0019

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 : 05 JANUARY 2026
Calibration Date : 21 - 23 JANUARY 2026
Date of Issue : 26 JANUARY 2026

REVIEW BY : 
APPROVED BY : 
NEXT CAL DATE : 20/ 01/ 2027

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.



SITHIPORN ASSOCIATES CALIBRATION LABORATORY

Cert. No. : ACL26075
Job No. : VC69AC0053
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).





SITHIPORN ASSOCIATES CALIBRATION LABORATORY

Cert. No. : ACL26075
Job No. : VC69AC0053
Pages : 3 of 8

Summary of Measurement Result :

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of 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



Cert. No. : ACL26075
Job No. : VC69AC0053
Page : 4 of 8

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
18.8

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	10.8
C - weight	17.4
Flat	23.1

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.7	0.7	0.7	± 1.5
1000	0.1	0.1	0.1	± 1.0
8000	-1.3	-1.2	-1.2	±5.0

MPS/2020/5

Cert. No. : ACL26075
Job No. : VC69AC0053
Pages : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	-0.1	-0.1	-0.1	±2.0
125	-0.1	0.0	0.0	±1.5
250	-0.1	-0.1	-0.1	±1.5
500	0.0	0.0	-0.1	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±2.0
4000	0.0	0.0	0.0	±3.0
8000	0.0	0.0	0.0	±5.0

5. Frequency and time weightings at 1 kHz**5.1 Frequency weightings at 1 kHz**

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.3

MPS/2020/5

Cert. No. : ACL26075
Job No. : VC69AC0053
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	136.9	-0.1	± 1.1
136.0	135.9	-0.1	± 1.1
135.0	135.0	0.0	± 1.1
134.0	134.0	0.0	± 1.1
133.0	132.9	-0.1	± 1.1
132.0	131.9	-0.1	± 1.1
131.0	130.9	-0.1	± 1.1
129.0	128.9	-0.1	± 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	29.0	0.0	± 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	24.9	-0.1	± 1.1

MPS/2020/5

Cert. No. : ACL26075
Job No. : VC69AC0053
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	108.0	0.0	1.0 ; -5.0
	200	800	127.6	127.6	0.0	±1.0
SEL	0.25	1	99.0	98.8	-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

MPS/2020/5

Cert. No. : ACL26104
Job No. : VC69AC0058
Page : 4 of 8

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
14.8

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	12.0
C - weight	17.9
Flat	23.8

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.2	0.2	0.2	± 1.5
1000	0.0	0.0	0.0	± 1.0
8000	0.9	1.0	1.0	±5.0

M. M. M. M. S.

Cert. No. : ACL26104
Job No. : VC69AC0058
Pages : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	-0.1	0.0	±2.0
125	0.0	0.0	0.0	±1.5
250	0.0	0.0	0.0	±1.5
500	0.0	0.0	0.0	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.3

M. M. M. M. S.

Cert. No. : ACL26104
Job No. : VC69AC0058
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	38.9	-0.1	± 1.1
34.0	33.9	-0.1	± 1.1
30.0	29.9	-0.1	± 1.1
29.0	28.9	-0.1	± 1.1
28.0	27.9	-0.1	± 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

M. M. M. M. S.

Cert. No. : ACL26104
Job No. : VC69AC0058
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	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

M. M. M. M. S.

Cert. No. : ACL26104
Job No. : VC69AC0058
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, L _{peak} (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	89.6	0.0	±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

Nitinan S.

Cert. No. : ACL26106
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42 / Microphone UC-52 / Preamplifier NH-24
Serial No.: 00900071 / 188464 / 01733
ID No.: RYG_FS0492

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 JANUARY 2026
Calibration Date : 28-30 JANUARY 2026
Date of Issue : 02 FEBRUARY 2026

REVIEW BY	S. S.
APPROVED BY	Nitinun S.
NEXT CAL DATE	27/ 01/ 2027

Calibrated by : Nathakorn Pisutpaisan

Approved by : Nitinan S.
(Nitinan 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. : ACL26106
Job No. : VC69AC0058
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).

Nitinan S.

Cert. No. : ACL26106
Job No. : VC69AC0058
Pages : 3 of 8

Summary of Measurement Result :

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of 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

Nitinan S.

Cert. No. : ACL26106
Job No. : VC69AC0058
Page : 4 of 8

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
15.1

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	12.0
C - weight	18.5
Flat	24.2

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.5	0.5	0.5	± 1.5
1000	0.1	0.1	0.2	± 1.0
8000	0.1	0.2	0.2	±5.0

MTH/2020-5.

Cert. No. : ACL26106
Job No. : VC69AC0058
Pages : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	-0.1	-0.1	0.0	±2.0
125	-0.1	0.0	-0.1	±1.5
250	-0.1	0.0	-0.1	±1.5
500	0.0	0.0	-0.1	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±2.0
4000	0.0	0.0	0.0	±3.0
8000	0.0	0.0	0.0	±5.0

5. Frequency and time weightings at 1 kHz**5.1 Frequency weightings at 1 kHz**

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.3

MTH/2020-5.

Cert. No. : ACL26106
Job No. : VC69AC0058
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	137.1	0.1	± 1.1
136.0	136.1	0.1	± 1.1
135.0	135.1	0.1	± 1.1
134.0	134.1	0.1	± 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	129.1	0.1	± 1.1
124.0	124.0	0.0	± 1.1
119.0	119.1	0.1	± 1.1
114.0	114.1	0.1	± 1.1
109.0	109.1	0.1	± 1.1
104.0	104.1	0.1	± 1.1
99.0	99.1	0.1	± 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	29.9	-0.1	± 1.1
29.0	28.9	-0.1	± 1.1
28.0	27.9	-0.1	± 1.1
27.0	26.9	-0.1	± 1.1
26.0	25.9	-0.1	± 1.1
25.0	24.9	-0.1	± 1.1

MTH/2020-5.

Cert. No. : ACL26106
Job No. : VC69AC0058
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	116.9	-0.1	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

MTH/2020-5.

Cert. No. : ACL26106
Job No. : VC69AC0058
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		
89.5	89.5	0.0	±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

Nitinun S.

Cert. No. : ACL25495
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42 / Microphone UC-52 / Preamplifier NH-24
Serial No.: 00597167 / 179118 / 87525
ID No.: RYG_FS0437

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 : 08 DECEMBER 2025
Calibration Date : 18-19 DECEMBER 2025
Date of Issue : 22 DECEMBER 2025

REVIEW BY : *Supt S*
APPROVED BY : *[Signature]*
NEXT CAL DATE : 17/ 12/ 2026

Calibrated by : Nathakorn Pisutpaisan

Approved by : *Nitinun S.*
(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. : ACL25495
Job No. : VC69AC0043
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).

Nitinun S.

Cert. No. : ACL25495
Job No. : VC69AC0043
Pages : 3 of 8

Summary of Measurement Result :

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of 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

Nitinun S.

Cert. No. : ACL25495
Job No. : VC69AC0043
Page : 4 of 8

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
14.8

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	11.6
C - weight	17.7
Flat	23.2

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.1	0.2	0.2	± 1.5
1000	-0.1	-0.1	-0.1	± 1.0
8000	1.0	1.1	1.1	±5.0

MTEC0005

Cert. No. : ACL25495
Job No. : VC69AC0043
Pages : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	-0.1	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	0.1	±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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.1	0.1	± 0.3

MTEC0005

Cert. No. : ACL25495
Job No. : VC69AC0043
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	27.9	-0.1	± 1.1
27.0	27.0	0.0	± 1.1
26.0	26.0	0.0	± 1.1
25.0	24.9	-0.1	± 1.1

MTEC0005

Cert. No. : ACL25495
Job No. : VC69AC0043
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	108.0	0.0	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

MTEC0005

451-451/1 Sirinthorn Road, Bangburnru, Bangplud, Bangkok, 10700 Thailand
Tel. +66 2433 8331 Email : calibration@sithiporn.com

Cert. No. : ACL25495
Job No. : VC69AC0043
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	133.4	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		
89.5	89.6	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

NEFTNUN-5

Cert. No. : ACL26082
Pages : 1 of 8

Calibration Certificate

Equipment :	SOUND LEVEL METER
Manufacturer :	RION
Model :	NL-42 / Microphone UC-52 / Preamplifier NH-24
Serial No.:	00296517 / 135220 / 87527
ID No.:	RYG FS0434

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 : 05 JANUARY 2026
Calibration Date : 21 - 23 JANUARY 2026
Date of Issue : 26 JANUARY 2026

REVIEW BY Sept 5
APPROVED BY [Signature]
NEXT CAL DATE 20/01/2027

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. : ACL26082
Job No. : VC69AC0053
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-42KA1	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).

Metaphors

Cert. No. : ACL26082
Job No. : VC69AC0053
Pages : 3 of 8

Summary of Measurement Result :

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of 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

Mythology

Cert. No. : ACL26082
Job No. : VC69AC0053
Page : 4 of 8

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
19

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	15.8
C - weight	21.5
Flat	27.3

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	-0.3	-0.3	-0.2	± 1.5
1000	0.1	0.1	0.1	± 1.0
8000	2.2	2.3	2.3	±5.0

MST/rev-5

Cert. No. : ACL26082
Job No. : VC69AC0053
Pages : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	-0.2	-0.1	±2.0
125	0.0	0.0	-0.1	±1.5
250	0.0	0.0	-0.1	±1.5
500	0.0	0.0	-0.1	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±2.0
4000	0.0	0.0	0.0	±3.0
8000	0.0	0.0	0.1	±5.0

5. Frequency and time weightings at 1 kHz**5.1 Frequency weightings at 1 kHz**

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.3

MST/rev-5

Cert. No. : ACL26082
Job No. : VC69AC0053
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	137.1	0.1	± 1.1
136.0	136.1	0.1	± 1.1
135.0	135.1	0.1	± 1.1
134.0	134.1	0.1	± 1.1
133.0	133.1	0.1	± 1.1
132.0	132.1	0.1	± 1.1
131.0	131.0	0.0	± 1.1
129.0	129.1	0.1	± 1.1
124.0	124.1	0.1	± 1.1
119.0	119.1	0.1	± 1.1
114.0	114.1	0.1	± 1.1
109.0	109.1	0.1	± 1.1
104.0	104.1	0.1	± 1.1
99.0	99.1	0.1	± 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	29.9	-0.1	± 1.1
29.0	29.0	0.0	± 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	24.9	-0.1	± 1.1

MST/rev-5

Cert. No. : ACL26082
Job No. : VC69AC0053
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	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

MST/rev-5

Cert. No. : ACL26082
Job No. : VC69AC0053
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, L _{peak} (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		
89.5	89.5	0.0	±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

CP/Agum.S.

Cert. No. : ACL25414
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42 / Microphone UC-52 / Preamplifier NH-24
Serial No.: 00597169 / 158770 / 34370
ID No.: RYG_FS0439

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 : 20 OCTOBER 2025
Calibration Date : 05 NOVEMBER 2025
Date of Issue : 06 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.

REVIEW BY : 

APPROVED BY : 

NEXT CAL DATE : 04/11/2026

Cert. No. : ACL25414
Job No. : VC69AC0014
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 (EEL).

CP/Agum.S.

Cert. No. : ACL25414
Job No. : VC69AC0014
Pages : 3 of 8

Summary of Measurement Result :

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of 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

CP/Agum.S.

Cert. No. : ACL25414
Job No. : VC69AC0014
Page : 4 of 8

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
15.2

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	8.7
C - weight	15.8
Flat	21.5

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.9	0.9	0.9	± 1.5
1000	0.0	0.0	0.0	± 1.0
8000	-3.2	-3.1	-3.1	±5.0

C:\SITHIPORN\5.

Cert. No. : ACL25414
Job No. : VC69AC0014
Pages : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	-0.1	-0.1	0.0	±2.0
125	0.0	0.0	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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.3

C:\SITHIPORN\5.

Cert. No. : ACL25414
Job No. : VC69AC0014
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	29.9	-0.1	± 1.1
29.0	28.9	-0.1	± 1.1
28.0	27.9	-0.1	± 1.1
27.0	26.9	-0.1	± 1.1
26.0	25.9	-0.1	± 1.1
25.0	24.9	-0.1	± 1.1

C:\SITHIPORN\5.

Cert. No. : ACL25414
Job No. : VC69AC0014
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	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	128.0	0.0	±1.0

C:\SITHIPORN\5.

Cert. No. : ACL25414
Job No. : VC69AC0014
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Lpeak (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		
89.7	89.6	-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

01/01/2026

Cert. No. : ACL26110
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42 / Microphone UC-52 / Preamplifier NH-24
Serial No.: 01173610 / 171041 / 22619
ID No.: RYG_FS0389

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 JANUARY 2026
Calibration Date : 28-30 JANUARY 2026
Date of Issue : 02 FEBRUARY 2026

REVIEW BY : 
APPROVED BY : 
NEXT CAL DATE : 27/ 01/ 2027

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. : ACL26110
Job No. : VC69AC0058
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 (EEL).

01/01/2026

Cert. No. : ACL26110
Job No. : VC69AC0058
Pages : 3 of 8

Summary of Measurement Result :

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of 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

01/01/2026

Cert. No. : ACL26110
Job No. : VC69AC0058
Page : 4 of 8

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
14.2

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	16.5
C - weight	22.5
Flat	28.2

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.4	0.4	0.4	± 1.5
1000	0.0	0.0	0.0	± 1.0
8000	-0.5	-0.4	-0.4	±5.0

MTH/2016/5

Cert. No. : ACL26110
Job No. : VC69AC0058
Pages : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	-0.1	-0.1	0.0	±2.0
125	0.0	0.0	0.0	±1.5
250	0.0	0.0	-0.1	±1.5
500	0.0	0.0	-0.1	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±2.0
4000	0.0	0.0	0.0	±3.0
8000	0.0	0.0	0.1	±5.0

5. Frequency and time weightings at 1 kHz**5.1 Frequency weightings at 1 kHz**

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.3

MTH/2016/5

Cert. No. : ACL26110
Job No. : VC69AC0058
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	137.1	0.1	± 1.1
136.0	136.1	0.1	± 1.1
135.0	135.1	0.1	± 1.1
134.0	134.1	0.1	± 1.1
133.0	133.1	0.1	± 1.1
132.0	132.1	0.1	± 1.1
131.0	131.0	0.0	± 1.1
129.0	129.1	0.1	± 1.1
124.0	124.1	0.1	± 1.1
119.0	119.1	0.1	± 1.1
114.0	114.1	0.1	± 1.1
109.0	109.1	0.1	± 1.1
104.0	104.1	0.1	± 1.1
99.0	99.1	0.1	± 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	26.9	-0.1	± 1.1
26.0	25.9	-0.1	± 1.1
25.0	24.9	-0.1	± 1.1

MTH/2016/5

Cert. No. : ACL26110
Job No. : VC69AC0058
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	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

MTH/2016/5

Cert. No. : ACL26110
Job No. : VC69AC0058
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, L _{peak} (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		
89.5	89.5	0.0	±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

MITTANUN.S.

Cert. No. : ACL25494
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42 / Microphone UC-52 / Preamplifier NH-24
Serial No.: 00296516 / 180412 / 88182
ID No.: RYG_FS0433

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 : 08 DECEMBER 2025
Calibration Date : 18-19 DECEMBER 2025
Date of Issue : 22 DECEMBER 2025

REVIEW BY
APPROVED BY
NEXT CAL DATE 17/ 12/ 2026

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. : ACL25494
Job No. : VC69AC0043
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).

MITTANUN.S.

Cert. No. : ACL25494
Job No. : VC69AC0043
Pages : 3 of 8

Summary of Measurement Result :

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of 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

MITTANUN.S.

Cert. No. : ACL25494
Job No. : VC69AC0043
Page : 4 of 8

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
14.6

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	10.8
C - weight	17.0
Flat	22.7

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.3	0.4	0.4	± 1.5
1000	0.0	0.0	0.0	± 1.0
8000	-0.1	0.0	0.0	±5.0

M171000-5.

Cert. No. : ACL25494
Job No. : VC69AC0043
Pages : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	-0.1	0.0	±2.0
125	0.0	0.0	0.0	±1.5
250	0.0	0.0	0.0	±1.5
500	0.0	0.0	0.0	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.3

M171000-5.

Cert. No. : ACL25494
Job No. : VC69AC0043
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	78.9	-0.1	± 1.1
74.0	74.0	0.0	± 1.1
69.0	69.0	0.0	± 1.1
64.0	63.9	-0.1	± 1.1
59.0	59.0	0.0	± 1.1
54.0	53.9	-0.1	± 1.1
49.0	48.9	-0.1	± 1.1
44.0	43.9	-0.1	± 1.1
39.0	38.9	-0.1	± 1.1
34.0	33.9	-0.1	± 1.1
30.0	29.8	-0.2	± 1.1
29.0	28.8	-0.2	± 1.1
28.0	27.9	-0.1	± 1.1
27.0	26.8	-0.2	± 1.1
26.0	25.8	-0.2	± 1.1
25.0	24.8	-0.2	± 1.1

M171000-5.

Cert. No. : ACL25494
Job No. : VC69AC0043
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	28.8	-0.2	±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

M171000-5.

Cert. No. : ACL25494
Job No. : VC69AC0043
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, L _{peak} (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		
89.5	89.6	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

Nitinun Srihawan S.

Cert. No. : ACL25413
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42 / Microphone UC-52 / Preamplifier NH-24
Serial No.: 00597168 / 180411 / 88181
ID No.: RYG_FS0438

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 : 20 OCTOBER 2025
Calibration Date : 29 - 30 OCTOBER 2025
Date of Issue : 31 OCTOBER 2025

REVIEW BY : *Sgt S*
APPROVED BY : *Nitinun Srihawan S.*
NEXT CAL DATE : 28/10/2026

Calibrated by : Nathakorn Pisutpaisan

Approved by : *Nitinun Srihawan S.*
(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. : ACL25413
Job No. : VC69AC0014
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).

Nitinun Srihawan S.

Cert. No. : ACL25413
Job No. : VC69AC0014
Pages : 3 of 8

Summary of Measurement Result :

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of 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

Nitinun Srihawan S.

Cert. No. : ACL25413
Job No. : VC69AC0014
Page : 4 of 8

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
14.8

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	11.6
C - weight	18.0
Flat	23.5

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.1	0.1	0.1	± 1.5
1000	0.0	0.0	0.0	± 1.0
8000	1.3	1.4	1.4	±5.0

PES/2019-5.

Cert. No. : ACL25413
Job No. : VC69AC0014
Pages : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	-0.1	-0.1	±2.0
125	0.0	0.0	0.0	±1.5
250	0.0	0.0	0.0	±1.5
500	0.0	0.0	-0.1	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.3

PES/2019-5.

Cert. No. : ACL25413
Job No. : VC69AC0014
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	89.1	0.1	± 1.1
84.0	84.1	0.1	± 1.1
79.0	79.0	0.0	± 1.1
74.0	74.1	0.1	± 1.1
69.0	69.1	0.1	± 1.1
64.0	64.0	0.0	± 1.1
59.0	59.1	0.1	± 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	34.1	0.1	± 1.1
30.0	30.1	0.1	± 1.1
29.0	29.1	0.1	± 1.1
28.0	28.1	0.1	± 1.1
27.0	27.1	0.1	± 1.1
26.0	26.2	0.2	± 1.1
25.0	25.1	0.1	± 1.1

PES/2019-5.

Cert. No. : ACL25413
Job No. : VC69AC0014
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	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

PES/2019-5.

Cert. No. : ACL25413
Job No. : VC69AC0014
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Lpeak (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	Acceptance Limits
Positive one-half cycle	Negative one-half cycle	(dB)	(dB)
89.5	89.5	0.0	±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

CP-AC-01

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42 / Microphone UC-52 / Preamplifier NH-24
Serial No.: 00296515 / 179119 / 87526
ID No.: RYG_FS0432

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 : 05 JANUARY 2026
Calibration Date : 21 - 23 JANUARY 2026
Date of Issue : 26 JANUARY 2026

REVIEW BY : *Supt S*
APPROVED BY : *[Signature]*
NEXT CAL DATE : 20/ 01/ 2027

Calibrated by : Nathakorn Pisutpaisan

Approved by : *Nitinun S.*
(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. : ACL26081
Job No. : VC69AC0053
Pages : 2 of 8

Cert. No. : ACL26081
Job No. : VC69AC0053
Pages : 3 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).

CP-AC-01

Summary of Measurement Result :

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of 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

CP-AC-01

Cert. No. : ACL26081
Job No. : VC69AC0053
Page : 4 of 8

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
14.2

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	10.4
C - weight	17.2
Flat	22.9

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.3	0.3	0.3	± 1.5
1000	0.1	0.1	0.2	± 1.0
8000	-0.1	0.0	0.0	±5.0

D:\Pictor S.

Cert. No. : ACL26081
Job No. : VC69AC0053
Pages : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	-0.1	0.0	±2.0
125	0.0	0.0	0.0	±1.5
250	0.0	0.0	0.0	±1.5
500	0.0	0.0	0.0	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.3

D:\Pictor S.

Cert. No. : ACL26081
Job No. : VC69AC0053
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	38.9	-0.1	± 1.1
34.0	34.0	0.0	± 1.1
30.0	29.9	-0.1	± 1.1
29.0	28.9	-0.1	± 1.1
28.0	28.0	0.0	± 1.1
27.0	27.0	0.0	± 1.1
26.0	25.9	-0.1	± 1.1
25.0	24.9	-0.1	± 1.1

D:\Pictor S.

Cert. No. : ACL26081
Job No. : VC69AC0053
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	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

D:\Pictor S.

Cert. No. : ACL26081
Job No. : VC69AC0053
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, L _{peak} (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		
89.5	89.6	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

Nitinun Srihawan

Cert. No. : ACL26107
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42 / Microphone UC-52 / Preamplifier NH-24
Serial No.: 00900072 / 188465 / 01734
ID No.: RYG_FS0493

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 JANUARY 2026
Calibration Date : 28-30 JANUARY 2026
Date of Issue : 02 FEBRUARY 2026

REVIEW BY	
APPROVED BY	
NEXT CAL DATE	27/ 01/ 2027

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. : ACL26107
Job No. : VC69AC0058
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).

Nitinun Srihawan

Cert. No. : ACL26107
Job No. : VC69AC0058
Pages : 3 of 8**Summary of Measurement Result :**

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of 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

Nitinun Srihawan

Cert. No. : ACL26107
Job No. : VC69AC0058
Page : 4 of 8

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
14.2

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	10.4
C - weight	17.2
Flat	23.1

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			Acceptance Limits
	Flat	C-weight	A-weight	
125	0.6	0.6	0.6	± 1.5
1000	0.1	0.1	0.1	± 1.0
8000	-0.5	-0.4	-0.4	±5.0

NIST.gov

Cert. No. : ACL26107
Job No. : VC69AC0058
Pages : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	-0.1	-0.1	±2.0
125	0.0	0.0	0.0	±1.5
250	0.0	0.0	-0.1	±1.5
500	0.0	0.0	0.0	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.3

NIST.gov

Cert. No. : ACL26107
Job No. : VC69AC0058
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	78.9	-0.1	± 1.1
74.0	74.0	0.0	± 1.1
69.0	69.0	0.0	± 1.1
64.0	63.9	-0.1	± 1.1
59.0	58.9	-0.1	± 1.1
54.0	53.9	-0.1	± 1.1
49.0	48.9	-0.1	± 1.1
44.0	43.9	-0.1	± 1.1
39.0	38.9	-0.1	± 1.1
34.0	33.9	-0.1	± 1.1
30.0	29.9	-0.1	± 1.1
29.0	28.9	-0.1	± 1.1
28.0	27.9	-0.1	± 1.1
27.0	26.9	-0.1	± 1.1
26.0	25.9	-0.1	± 1.1
25.0	24.8	-0.2	± 1.1

NIST.gov

Cert. No. : ACL26107
Job No. : VC69AC0058
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	28.8	-0.2	±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

NIST.gov

Cert. No. : ACL26107
Job No. : VC69AC0058
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, L _{peak} (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

Nitiporn S.

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42 / Microphone UC-52 / Preamplifier NH-24
Serial No.: 00900073 / 188466 / 01735
ID No.: RYG_FS0494

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 JANUARY 2026
Calibration Date : 28-30 JANUARY 2026
Date of Issue : 02 FEBRUARY 2026REVIEW BY : 
APPROVED BY : 
NEXT CAL DATE : 27/ 01/ 2027

Calibrated by : Nathakorn Pisutpaisan

Approved by : 
(Nitiporn 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. : ACL26108
Job No. : VC69AC0058
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).

Nitiporn S.

Cert. No. : ACL26108
Job No. : VC69AC0058
Pages : 3 of 8

Summary of Measurement Result :

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of 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

Nitiporn S.

Cert. No. : ACL26108
Job No. : VC69AC0058
Page : 4 of 8

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
17.9

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	12.5
C - weight	18.5
Flat	24.1

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.3	0.3	0.3	± 1.5
1000	0.1	0.1	0.1	± 1.0
8000	-0.1	-0.1	-0.1	±5.0

NIST traceable

Cert. No. : ACL26108
Job No. : VC69AC0058
Pages : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	-0.1	-0.1	±2.0
125	-0.1	0.0	-0.1	±1.5
250	-0.1	0.0	-0.1	±1.5
500	-0.1	0.0	-0.1	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±2.0
4000	0.0	0.0	0.0	±3.0
8000	0.0	0.0	0.0	±5.0

5. Frequency and time weightings at 1 kHz**5.1 Frequency weightings at 1 kHz**

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	94.0	0.0	± 0.1
Slow	94.0	93.9	-0.1	± 0.1
Leq	94.0	93.9	-0.1	± 0.1

6. Long - term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.3

NIST traceable

Cert. No. : ACL26108
Job No. : VC69AC0058
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	135.1	0.1	± 1.1
134.0	134.1	0.1	± 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	129.1	0.1	± 1.1
124.0	124.0	0.0	± 1.1
119.0	119.1	0.1	± 1.1
114.0	114.1	0.1	± 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	25.9	-0.1	± 1.1
25.0	24.9	-0.1	± 1.1

NIST traceable

Cert. No. : ACL26108
Job No. : VC69AC0058
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	28.8	-0.2	±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	108.0	0.0	1.0 ; -5.0
	200	800	127.6	127.6	0.0	±1.0
SEL	0.25	1	99.0	98.8	-0.2	1.5 ; -5.0
	2	8	108.0	107.9	-0.1	1.0 ; -2.5
	200	800	128.0	128.0	0.0	±1.0

NIST traceable

Cert. No. : ACL26108
Job No. : VC69AC0058
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, L _{peak} (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		
89.5	89.5	0.0	±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

Cert. No. : ACL25273
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-52A / Microphone UC-59 / Preamplifier NH-25
Serial No. : 00531296 / 23161 / 32972
ID No. : NKH_FS0132

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 : 03 JULY 2025
Calibration Date : 14 -15 JULY 2025
Date of Issue : 16 JULY 2025

Calibrated by : Nathakorn Pisutpaisan

Approved by : Wichok Ekpongpradit

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. : ACL25273
Job No. : VC68AC0143
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).

Cert. No. : ACL25273
Job No. : VC68AC0143
Pages : 3 of 8

Summary of Measurement Result :

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of 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

Cert. No. : ACL25273
Job No. : VC68AC0143
Page : 4 of 8

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	94.0	0.0	±0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
14.2

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	11.2
C - weight	15.9
Flat	21.6

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.4	0.4	0.4	± 1.0
1000	0.3	0.3	0.3	± 0.7
8000	0.6	0.7	0.7	+ 1.5, - 2.5

nichon B.

Cert. No. : ACL25273
Job No. : VC68AC0143
Pages : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	-0.1	-0.1	±1.0
125	0.0	0.0	0.0	±1.0
250	0.0	0.0	-0.1	±1.0
500	0.0	0.0	-0.1	±1.0
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±1.0
4000	0.0	0.0	0.0	±1.0
8000	0.0	0.0	0.0	+ 1.5, - 2.5
16000	0.0	-1.2	-1.2	+ 2.5, -16.0

5. Frequency and time weightings at 1 kHz**5.1 Frequency weightings at 1 kHz**

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (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 Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.1

nichon B.

Cert. No. : ACL25273
Job No. : VC68AC0143
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	±0.8
136.0	136.1	0.1	±0.8
135.0	135.1	0.1	±0.8
134.0	134.1	0.1	±0.8
133.0	133.0	0.0	±0.8
132.0	132.0	0.0	±0.8
131.0	131.0	0.0	±0.8
129.0	129.0	0.0	±0.8
124.0	124.0	0.0	±0.8
119.0	119.1	0.1	±0.8
114.0	114.1	0.1	±0.8
109.0	109.1	0.1	±0.8
104.0	104.1	0.1	±0.8
99.0	99.1	0.1	±0.8
94.0	94.0	0.0	±0.8
89.0	89.0	0.0	±0.8
84.0	84.0	0.0	±0.8
79.0	79.0	0.0	±0.8
74.0	74.0	0.0	±0.8
69.0	69.0	0.0	±0.8
64.0	64.0	0.0	±0.8
59.0	59.0	0.0	±0.8
54.0	54.0	0.0	±0.8
49.0	49.0	0.0	±0.8
44.0	44.0	0.0	±0.8
39.0	39.0	0.0	±0.8
34.0	34.0	0.0	±0.8
30.0	29.9	-0.1	±0.8
29.0	28.9	-0.1	±0.8
28.0	27.9	-0.1	±0.8
27.0	26.9	-0.1	±0.8
26.0	25.9	-0.1	±0.8
25.0	24.9	-0.1	±0.8

nichon B.

Cert. No. : ACL25273
Job No. : VC68AC0143
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	±0.8

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	29.0	0.0	±0.8

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	1.0 ; -3.0
	2	8	117.0	116.9	-0.1	1.0 ; -1.5
	200	800	134.0	134.0	0.0	±0.5
Slow	2	8	108.0	108.0	0.0	1.0 ; -3.0
	200	800	127.6	127.6	0.0	±0.5
SEL	0.25	1	99.0	98.9	-0.1	1.0 ; -3.0
	2	8	108.0	108.0	0.0	1.0 ; -1.5
	200	800	128.0	128.0	0.0	±0.5

nichon B.

Cert. No. : ACL25273
Job No. : VC68AC0143
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, L _{peak} (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	±2.0
One	133.4	133.4	0.0	±2.0

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	±1.0
Positive half cycle	135.4	135.2	-0.2	±1.0
Negative half cycle	135.4	135.2	-0.2	±1.0

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	±0.1

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

richard D.

CERTIFICATE OF CALIBRATION

ISSUED BY Cirrus Research plc
DATE OF ISSUE 12 January 2026 CERTIFICATE NUMBER 256618

Cirrus Research plc
Acoustic House
Bridlington Road
Hunmanby
North Yorkshire
YO14 0PH
United Kingdom

Page 1 of 2

Approved signatory
N. Smith
Electronically signed:

doseBadge Reader : IEC 60942:2003

Instrument information

Manufacturer: Cirrus Research plc Notes:
Model: RC:110A
Serial number: 75996
Class: 2

Test summary

Date of calibration: 12 January 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 MK224 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:

REVIEW BY:
APPROVED BY:
NEXT CAL DATE: 11/01/2027

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

Certificate Number:
256618
Page 2 of 2

Environmental conditions

The following conditions were recorded at the time of the test:

Before Pressure: 98.87 kPa Temperature: 23.7 °C Humidity: 40.3 %
After Pressure: 98.86 kPa Temperature: 23.8 °C Humidity: 41 %

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	114.47	114.50	114.50	114.49	0.49	±0.75	0.11 dB
Distortion (%)	< 4.00	0.21	0.21	0.21	0.21	0.21	+4.00	0.13 %
Frequency (Hz)	1000.0	1004.0	1004.0	1004.0	1004.0	4.0	±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	114.02	114.02	114.02	114.02	0.02	±0.75	0.11 dB
Distortion (%)	< 4.00	0.20	0.20	0.20	0.20	0.20	+4.00	0.13 %
Frequency (Hz)	1000.0	1004.0	1004.0	1004.0	1004.0	4.0	±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



JIRANATEE ASSOCIATES CO., LTD.
Jiranatee Associates Co., Ltd
63/14-15, 6/35-36
Petchkasem 7/71, Rd. Watthapra, Bangkokyay,
Bangkok 10002 (Thailand)
Tel: +66288888812
Mobile: +6683999453
E-mail: jnac-calibration@jiranatee.com
Web site: www.jiranatee.com

Accredited calibration laboratory
ISO/IEC 17025:2017
MSC-753-715 17025
CALIBRATION 0367

Acoustic calibration laboratory
Calibration services department.

REVIEW BY:
APPROVED BY:
NEXT CAL DATE: 03/09/2026

Calibration report Number
CDM-051-68

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
: CR:110A15
: YF563
: RYG_FS0045
: Used Item
: ALS laboratory group (thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan luang,
Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE
MEASUREMENT DATE
ISSUE DATE

: 02 Sep 2025
: 04 Sep 2025
: 04 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 ¹ (dB)	Noise Dosimeter reading ² (dB)	Error (dB)	Status
114.0	114.0	0.0	✓

Calibrated by:
[x] Mr. Sorawit Thachalad
[] Miss Jitraporn Lertsomphol



Approved signatory:
Mr. Piniya Booncharoen
Calibration Department Manager

Remarks:

¹ The decibel level of standard doseBadge reader that supplied to Unit Under Calibration.
² The measurement reading of Unit Under Calibration.

CERTIFICATE OF CALIBRATION

ISSUED BY
Cirrus Research plc

DATE OF ISSUE 17 September 2025 CERTIFICATE NUMBER 249507

RYG_FS0044



Cirrus Research plc
Acoustic House
Bridlington Road
Hunmanby
North Yorkshire
YO14 0PH
United Kingdom

Page 1 of 6

Approved signatory
N.Smith
Electronically signed:

Dosemeter : IEC 61252-1993+A1:2000

Instrument information

Manufacturer: Cirrus Research plc Notes:

Model: CR:110AIS

Serial number: YF562

Firmware version: 5.4

Test summary

Date of calibration: 16 September 2025

The calibration was performed respecting the requirements of ISO/IEC 17025:2017.

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	SDG1XDDQ802965
Attenuator	Cirrus Research	ZE:952	101220
Environmental Monitor	Comet	T7510	16966334
doseBadge Reader	Cirrus Research plc	UNIDBA	109292

Notes

REVIEW BY
APPROVED BY
NEXT CAL DATE 15/ 09/ 2026

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

Certificate Number:
249507

Page 2 of 6

Environmental conditions

The following conditions were recorded at the time of the test:

Before Pressure: 100.62 kPa Temperature: 23.4 °C Humidity: 40.4 %

After Pressure: 100.63 kPa Temperature: 23.0 °C Humidity: 40.5 %

Test results summary

Test	Result
Absolute Acoustic Sensitivity	Complies
Linearity	Complies
Short Duration	Complies
Overload Latching	Complies
Frequency weighting	Complies

CERTIFICATE OF CALIBRATION

Certificate Number:
249507

Page 3 of 6

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

CERTIFICATE OF CALIBRATION

Certificate Number:
249507

Page 4 of 6

B1: Absolute Acoustical Sensitivity

Result: Passed

Frequency: 1000 Hz Uncertainty: 0.2 dB

Name	Input Level (dB)	Reading (dB)	Deviation (dB)	Limits (dB)
Initial	114	114.90	-0.9	113 / 115
Adjusted	114	114.00	0	113 / 115

B2: Linearity Of Responce To Steady Signals

Result: Passed

Frequency: 1000 Hz Uncertainty: 0.2 dB Range: 80 – 130 dB

Input Level (dB)	Expected Exposure (Pa²h)	Exposure (Pa²h)	Duration (s)	Deviation (Pa²h)	Limits (Pa²h)	Deviation (%)	Limits (%)
80	0.000222	0.000273	20	-0.000051	0.000175 / 0.000280	23	-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	2.122206	20	0.100016	1.755555 / 2.800000	-5	-21 / +26
130	22.222223	22.222223	20	0.000000	17.555556 / 28.000001	0	-21 / +26

B3: Frequency Weightings

Reference Frequency: 1000 HzReference Exposure: 5.3181122656930Reference Input Level: 127 dBDuration: 10 Seconds

Frequency (Hz)	Exposure (Pa²h)	Exposure Ratio	Ratio Limit	Uncertainty
125	0.127573	0.024	0.0174 / 0.0347	0.15
8000	2.321440	0.4365	0.246 / 2.455	0.15

B4: Short-Duration Signals

Result: Passed

Uncertainty: 0.2 dBFrequency: 4000 Hz

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	0.003204	0.003356	5	-21 / +26
129	100	1:1000	10	1	999	0.010133	0.009677	-5	-29 / +41

Certificate of Calibration

Customer

Name : ALS Laboratory Group Thailand Co., Ltd.
Address : 104 Soi Phatthanakan 40, Phatthanakan Road, Suan Luang,
Bangkok 10250

Certificate No : 25-ACT-108
Request No : Req-2025-1447

Unit Under Calibration Details

Measurement item : Acoustic Calibrator
Manufacturer : Cirrus
Model : CR-516
Serial Number : 100245
ID : BKK_FS1367

Class : 2
Range : 94 , 114 dB 1000 Hz
Instrument Status : Used

Calibration Environment and Details

Temperature : (23 ±2 °C)
Humidity : (50 ± 20 %RH)
Barometric Pressure : (1013 ±10.0 hPa)
Received Date : 24 June 2025
Calibration Date : 14 July 2025
Location of Calibration : LAB 1 Acoustic
Calibration Procedure : In-house method CP-ACT-02 based on IEC 60942:2017 Electroacoustics - Sound calibrators

REVIEW BY :
APPROVED BY :
NEXT CAL DATE : 14/07/26

Reference Standard	Model	Serial Number	Traceable	Due Calibration
Sound Calibrator	SV 35A	58079	EEL	20 June 2026
THD Multimeter	2015	1047765	NIMT	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 : 14 July 2025

B6: Latching Overload Indicator

Result: Passed

Frequency: 1000 HzUncertainty: 0.2 dB

Level (dB)	Expected To Overload	Overloaded
130	No	No
133	Yes	Yes

End of results

Certificate No : 25-ACT-108
Request No : Req-2025-1447

Sound pressure level

Calibration Results : Without Adjustment

Calibration Range (dB)	Without Adjustment (dB)		Adjustment (dB)		Uncertainty (± dB)
	Measured	Deviated value	Measured	Deviated value	
94 dB / 1000 Hz	94.08	0.08	-	-	0.11
114 dB / 1000 Hz	114.27	0.27	-	-	0.11

Frequency of Sound pressure level

Calibration Range (Hz)	Without Adjustment		Adjustment		Uncertainty (± %)
	Measured (Hz)	Deviated value	Measured (Hz)	Deviated value	
94 dB / 1000 Hz	1000.00	0.00	-	-	0.01
114 dB / 1000 Hz	1000.00	0.00	-	-	0.01

Total Harmonic Distortion plus Noise of Sound pressure level (THD+N %)

Calibration Range (Hz)	Without Adjustment	Adjustment	Uncertainty (± %)
	Measured (%)	Measured (%)	
94 dB / 1000 Hz	2.22	-	0.17
114 dB / 1000 Hz	1.30	-	0.17

Note :
- The calibration results exclude the calibrator pressure correction
- The calibration results exclude the microphone volume correction

End of Calibration

Calibration report Number

CDM-109-68

CALIBRATION REPORT

Page 1 of 1 Pages

MEASUREMENT ITEM : Dose meter
MANUFACTURER : Cirrus Research plc
MODEL/TYPE : CR-120A
SERIAL NUMBER : MK502815
ID NUMBER : RYG_F50636
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 ± 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: Sound Calibrator Manufacturer: Cirrus Research plc. Model: CR-516 Serial number: 99808

Remark: Sound Calibrator 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.

Sound Calibrator Level ¹ (dB)	Noise Dosimeter reading ² (dB)	Error (dB)	Status
114.0	114.0	0.0	✓

Calibrated by:
☒ Mr. Soravit Thairatlad
☐ Miss Jitragorn Lertsangphol
☐ Miss Ruangsirumjai Phoommit

REVIEW BY: 
APPROVED BY: 
NEXT CAL DATE: 18/ 09/ 2026

Approved signatory: _____
Mr. Parinya Booncharoen
Calibration Department Manager

Remark:
¹ The decibel level of standard Sound Calibrator that supplied to Unit Under Calibration.
² 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

Certificate Number:
252185

Page 2 of 8

Environmental conditions

The following conditions were recorded at the time of the test:

Before Pressure: 98.61 kPa Temperature: 22.0 °C Humidity: 41.4 %
After Pressure: 98.61 kPa Temperature: 22.4 °C Humidity: 42.9 %

Test results summary

Test	Result
Absolute Acoustic Sensitivity	Complies
Linearity	Complies
Short Duration	Complies
Response to unipolar pulses	Complies
Overload Latching	Complies
Frequency weighting	Complies

CERTIFICATE OF CALIBRATION

ISSUED BY Cirrus Research plc

DATE OF ISSUE 27 October 2025 CERTIFICATE NUMBER 252185

RYG_FS0637

REVIEW BY: APPROVED BY: 

NEXT CAL DATE: 23/ 10/ 2026

Page 1 of 8

Approved signatory

N.Smith

Electronically signed:



Cirrus Research plc
Acoustic House
Bridlington Road
Hunmanby
North Yorkshire
YO14 0PH
United Kingdom

Dosemeter : IEC 61252-1993+A1:2000

Instrument information

Manufacturer: Cirrus Research plc Notes:
Model: CR-120A
Serial number: MK502816
Firmware version: 1.1.1840

Test summary

Date of calibration: 24 October 2025

The calibration was performed respecting the requirements of ISO/IEC 17025:2017.

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.

Test equipment

Equipment	Manufacturer	Model	Serial number
Signal Generator	SIGLENT	SDG1032X	SDG1XDDD7R6629
Attenuator	Cirrus Research	ZE-952	96919
Environmental Monitor	Comet	T7510	16966334

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

Certificate Number:
252185

Page 3 of 8

Laboratory uncertainties

Requirement	Value
Absolute acoustic sensitivity	0.2 dB
Level linearity	0.15 dB
Short duration signals	0.2 dB
Unipolar Pulses	0.2 dB
Overload latching indication	0.2 dB
Electrical freq. weighting 63 Hz	0.15 dB
Electrical freq. weighting 125 Hz	0.15 dB
Electrical freq. weighting 250 Hz	0.15 dB
Electrical freq. weighting 500 Hz	0.15 dB
Electrical freq. weighting 2 kHz	0.15 dB
Electrical freq. weighting 4 kHz	0.15 dB
Electrical freq. weighting 8 kHz	0.15 dB

CERTIFICATE OF CALIBRATION

Certificate Number:
252185
Page 4 of 8

B1: Absolute Acoustical Sensitivity
Result: Passed

Frequency: 1000 Hz		Uncertainty: 0.2 dB			
Name	Input Level (dB)	Reading (dB)	Deviation (dB)	Limits (dB)	
Initial	94	93.77	0.23	93 / 95	
Adjusted	94	94.00	0	93 / 95	

B2: Linearity Of Responce To Steady Signals
Result: Passed

Frequency: 63 Hz		Uncertainty: 0.2 dB		Range: 93.8 – 113 dB			
Input Level (dB)	Expected Exposure (Pa²h)	Exposure (Pa²h)	Duration (s)	Deviation (Pa²h)	Limits (Pa²h)	Deviation (%)	Limits (%)
93.8	0.005331	0.005211	20	0.000120	0.004211 / 0.006717	-2	-21 / +26
98.8	0.016857	0.016542	20	0.000315	0.013317 / 0.021240	-2	-21 / +26
103.8	0.053307	0.054906	20	-0.001599	0.042113 / 0.067167	3	-21 / +26
108.8	0.168573	0.169942	20	-0.001369	0.133173 / 0.212402	1	-21 / +26
113	0.443392	0.436984	20	0.006408	0.350280 / 0.558674	-1	-21 / +26

CERTIFICATE OF CALIBRATION

Certificate Number:
252185
Page 5 of 8

Frequency: 1000 Hz		Uncertainty: 0.2 dB		Range: 65 – 140 dB			
Input Level (dB)	Expected Exposure (Pa²h)	Exposure (Pa²h)	Duration (s)	Deviation (Pa²h)	Limits (Pa²h)	Deviation (%)	Limits (%)
65	0.000007	0.000008	20	-0.000001	0.000006 / 0.000009	14	-21 / +26
70	0.000022	0.000022	20	-0.000000	0.000017 / 0.000028	0	-21 / +26
75	0.000070	0.000071	20	-0.000001	0.000055 / 0.000088	1	-21 / +26
80	0.000222	0.000215	20	0.000007	0.000175 / 0.000280	-3	-21 / +26
85	0.000703	0.000663	20	0.000040	0.000555 / 0.000866	-6	-21 / +26
90	0.002222	0.002151	20	0.000071	0.001755 / 0.002800	-3	-21 / +26
95	0.007027	0.007122	20	-0.000095	0.005551 / 0.008854	1	-21 / +26
100	0.022222	0.022196	20	0.000026	0.017555 / 0.028000	-0	-21 / +26
105	0.070273	0.071949	20	-0.001676	0.055516 / 0.088544	2	-21 / +26
110	0.222222	0.230012	20	-0.007790	0.175555 / 0.280000	4	-21 / +26
115	0.702728	0.713564	20	-0.010836	0.555155 / 0.885437	2	-21 / +26
120	2.222222	2.270663	20	-0.048441	1.755555 / 2.800000	2	-21 / +26
125	7.027284	7.024119	20	0.003165	5.551554 / 8.854378	-0	-21 / +26
130	22.222223	22.834055	20	-0.611832	17.555556 / 28.000001	3	-21 / +26
135	70.272839	70.635384	20	-0.362545	55.515543 / 88.543777	1	-21 / +26
140	222.222228	224.771851	20	-2.549623	175.555560 / 280.000007	1	-21 / +26

CERTIFICATE OF CALIBRATION

Certificate Number:
252185
Page 6 of 8

Frequency: 8000 Hz		Uncertainty: 0.2 dB		Range: 88.9 – 108.9 dB			
Input Level (dB)	Expected Exposure (Pa²h)	Exposure (Pa²h)	Duration (s)	Deviation (Pa²h)	Limits (Pa²h)	Deviation (%)	Limits (%)
88.9	0.001725	0.001680	20	0.000045	0.001363 / 0.002174	-3	-21 / +26
93.9	0.005455	0.005382	20	0.000073	0.004309 / 0.006873	-1	-21 / +26
98.9	0.017250	0.017047	20	0.000203	0.013628 / 0.021735	-1	-21 / +26
103.9	0.054549	0.052762	20	0.001787	0.043094 / 0.068732	-3	-21 / +26
108.9	0.172499	0.170635	20	0.001864	0.136274 / 0.217349	-1	-21 / +26

CERTIFICATE OF CALIBRATION

Certificate Number:
252185
Page 7 of 8

B3: Frequency Weightings
Reference Frequency: 1000 Hz
Reference Exposure: 111.92945098876
Reference Input Level: 137 dB
Duration: 20 Seconds

Frequency (Hz)	Exposure (Pa²h)	Exposure Ratio	Ratio Limit	Uncertainty
63	0.271906	0.0024	0.0015 / 0.0038	0.15
125	2.785332	0.0249	0.0174 / 0.0347	0.15
250	15.239908	0.1362	0.098 / 0.195	0.15
500	53.314217	0.4763	0.339 / 0.676	0.15
2000	145.463776	1.2996	0.832 / 2.089	0.15
4000	118.585121	1.0595	0.631 / 2.512	0.15
8000	66.246986	0.5919	0.246 / 2.455	0.15

B4: Short-Duration Signals
Result: Passed

Uncertainty: 0.2 dB			Frequency: 4000 Hz						
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	0.002791	0.003136	12	-21 / +26
124	95	1:1000	10	1	999	0.002791	0.003114	12	-21 / +26
129	100	1:1000	10	1	999	0.008826	0.009751	10	-29 / +41
129	100	1:1000	10	10	9990	0.008826	0.010142	15	-29 / +41
139	110	1:1000	10	1	999	0.088259	0.102458	16	-29 / +41

CERTIFICATE OF CALIBRATION

Certificate Number:
252185

Page 8 of 8

B5: Response to Unipolar Pulses

Result: Passed

Uncertainty: 0.2 dB Frequency: 1000 Hz

Positive Exposure (Pa·h)	Negative Exposure (Pa·h)	Integration Time (s)	Deviation (Pa·h)	Limits (Pa·h)	Deviation (%)	Limits (%)
11.450032	11.450032	30	0	9.045525 / 14.427041	0	-21 / +26

B6: Latching Overload Indicator

Result: Passed

Frequency: 1000 Hz Uncertainty: 0.2 dB

Level (dB)	Expected To Overload	Overloaded
140	No	No
143	Yes	Yes

CERTIFICATE OF CALIBRATION

ISSUED BY Cirrus Research plc

DATE OF ISSUE 27 October 2025 CERTIFICATE NUMBER 252184

Cirrus Research plc
Acoustic House
Bridlington Road
Hunmanby
North Yorkshire
YO14 0PH
United Kingdom

Page 1 of 3

Approved signatory
N.Smith
Electronically signed:

Octave-band filter : IEC 61260-3:2016

Instrument information

Manufacturer: Cirrus Research plc Notes:

Model: CR:120A

Serial number: MK502816

Firmware version: 1.1.1840

Test summary

Date of calibration: 24 October 2025

The calibration was performed respecting the requirements of ISO/IEC 17025:2017.

The dosimeter submitted for testing successfully completed the periodic tests of IEC 61260-3:2016.

The dosimeter submitted for testing conforms to the specifications in IEC 61260-3:2016.

Test equipment

Equipment	Manufacturer	Model	Serial number
Signal Generator	SIGLENT	SDG1032X	SDG1XDD7R6629
Attenuator	Cirrus Research	ZE:952	96919
Environmental Monitor	Comet	T7510	16966334

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

Certificate Number:
252184

Page 2 of 3

Environmental conditions

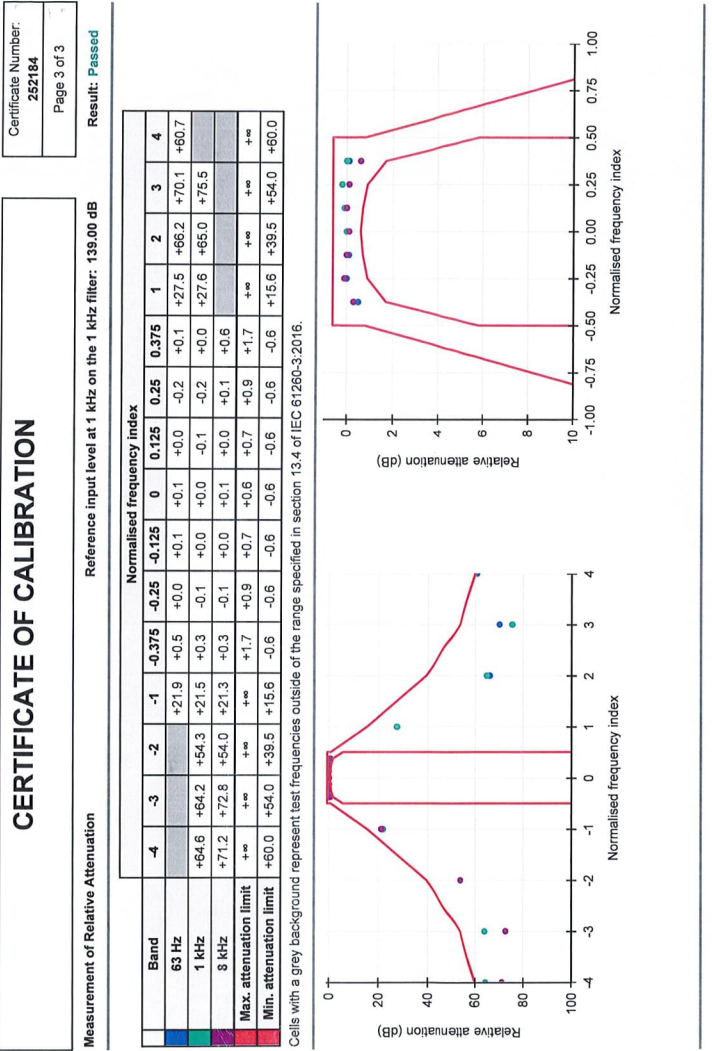
The following conditions were recorded at the time of the test:

Before Pressure: 98.61 kPa Temperature: 22.0 °C Humidity: 41.4 %

After Pressure: 98.61 kPa Temperature: 22.4 °C Humidity: 42.9 %

Test results summary

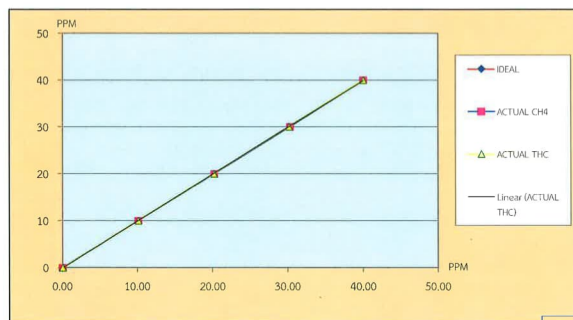
Test	Result
Relative attenuation	Complies



CUSTOMER NAME	: ALS Laboratory Group (Thailand) Co., Ltd. (บริษัท เอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด)		
EQUIPMENT NAME	: THC Analyzer		
MANUFACTURER	: HORIBA	MODEL	: APHA-370
STANDARD GAS CONCENTRATION (PPM) (CH4)	: 506.1 PPM	SERIAL NO	: U430GTHB
CYLINDER PRESSURE (psig)	: 1,600 PSI	CYLINDER NO	: CC734373
CERTIFIED BY	: AIRGAS	CERTIFIED DATE	: 12/05/2020
		EXPIRED DATE	: 12/05/2028

TEST RESULTS

POINT NO	TEST RESULTS						
	IDEAL	ACTUAL CH4	ERROR CH4	%ERROR CH4	ACTUAL THC	ERROR THC	%ERROR THC
ZERO	0.00	0.00	0.00	-	0.01	0.01	-
1	10.00	10.14	0.14	1.40	10.13	0.13	1.30
2	20.00	20.23	0.23	1.15	20.19	0.19	0.95
3	30.00	30.30	0.30	1.00	30.18	0.18	0.60
4	40.00	40.00	0.00	0.00	40.00	0.00	0.00
AVERAGE (%)				0.89			0.71



CALIBRATED BY :

 วัชรวิทย์ นพรัตน์
 ศิวะวิทย์ นพรัตน์

 J
 NAC
 JIRANATEE ASSOCIATES CO., LTD.

 DATE : 15/1/69
 DATE : 15/1/69

CHECKED BY :

REVIEW BY :

 Sign S.
 APPROVED BY :
 NEXT CAL DATE : 14/01/2027

ต้องการข้อมูลทางด้านเทคนิคเพิ่มเติม : เจ้าหน้าที่ฝ่ายบริการหลังการขาย โทร 02-868-0812 # 15,16 , E-Mail : Engineer@jiranatee.com
 เลขที่ 63/14-15,67/35-36 ซอยเพชรเกษม 7/7/1 แขวงวัดท่าพระ เขตบางกอกใหญ่ กรุงเทพฯ 10600 โทร 02-8680812-13 โทรสาร 02-868-1889

FO-EN-206 R01/22-10-14

CHECK LIST

CUSTOMER NAME	: ALS Laboratory Group (Thailand) Co., Ltd. (บริษัท เอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด)		
EQUIPMENT NAME	: THC Analyzer		
MANUFACTURER	: HORIBA	MODEL	: APHA-370
		SERIAL NO.	: U430GTHB

TEST VALUES

NO.	THC Analyzer (APHA - 370)	UNIT	BEFORE	AFTER
1	Signal (CH4)	mV	38.60	40.40
2	Signal (THC)	mV	44.20	45.00
3	Detector	Temp °C , Standard Value : Ambient temp±(5°Cto15°C)	46.40	46.00
		Pressure kPa , Standard Value : (Ambient/101.3x100-20)±4kPa	70.00	69.80
4	Ambient	kPa current atmospheric pressure	101.00	101.00
5	Purifier	°C , Standard Value : 390 °C to 430 °C	420.60	419.10
		kPa , Normal value : 8 kPa to 25 kPa	9.80	9.80
6	NMHC	°C , Standard Value : 230 °C to 260 °C	245.30	244.20
7	DC 24 V	V , Standard Value : 24 V ± 0.5 V	23.90	23.90
8	DC 5 V	V , Standard Value : 5 V ± 0.5 V	5.00	5.00
9	Bypass (Optional)	L/min, Normal value : 0.9 L/min ± 0.3 L/min	-	-
10	Over Flow (Optional)	L/min, Standard Value : 0.8 L/min or More	-	-
11	CH4 Sampling Reading	PPM	2.48	2.29
12	NMHC Sampling Reading	PPM	0.24	0.16
13	THC Sampling Reading	PPM	2.71	2.45
14	Zero Gas CH4/THC	PPM	0.25/0.25	0.00/0.01
15	Span Gas	PPM	39.79/39.92	40.00/40.00
G	Gas H2	20 PSI	20	20

Remark : Reference EX-EN-017-56 , Ambient HC Monitor APHA-370 Operation Manual Page #81

Remark : (Ambient temperature = 5°C to 40°C)

อาการที่ตรวจพบ

- Maintenance

รายละเอียดการดำเนินการ

- ทำ Calibration Zero/Span , Multipoint

ผลการดำเนินการ

- เครื่องมือ เครื่องมือสามารถดำเนินการตรวจวัดได้ตามปกติ

CALIBRATED BY :

 วัชรวิทย์ นพรัตน์
 ศิวะวิทย์ นพรัตน์

 J
 NAC
 JIRANATEE ASSOCIATES CO., LTD.

DATE : 15/1/69

CHECKED BY :

DATE : 15/1/69

ต้องการข้อมูลทางด้านเทคนิคเพิ่มเติม : เจ้าหน้าที่ฝ่ายบริการหลังการขาย โทร 02-868-0812 # 15-16 , E-Mail : Engineer@jiranatee.com

เลขที่ 63/14-15,67/35-36 ซอยเพชรเกษม 7/7/1 ถนนเพชรเกษม แขวงวัดท่าพระ เขตบางกอกใหญ่ กรุงเทพฯ 10600 โทร 02-8680812-13 โทรสาร 02-868-1889

FO-EN-207 R00/01-08-13



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.: 25CH847
 Page.: 1 of 3

Equipment :

pH Meter

Manufacturer :

Mettler Toledo

Model :

SevenCompact S220

Serial No. :

C104059460

ID No. :

RYG_EN0183

Condition As-Received:

Used Item

Received Date :

17 July 2025

Calibration Date :

18 July 2025

Reference :

2507-0561DSC-3

Submitted by :

 ALS Laboratory Group (Thailand) Co.,Ltd.
 Rayong Branch
 616/10 Moo 5, T.Maenam Khu,
 A.Plukdaeng, Rayong 21140, 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 :

 Sign
 Approved Signatory

 () Chakrit Waewwanjua
 () Ponpan Paipim
 (✓) Saitip Meangmai

Issue Date :

21 July 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.: 25CH847
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	24E2759	25 Aug 2025
2) Ref. Standard Thermometer	3240076	60RC033	25I394	01 Apr 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	1066665	18 Jan 2027
pH 6.965	CPA chem	1066667	18 Jan 2026
pH 10.010	CPA chem	1114385	08 June 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 ($\pm$ mV)	Coverage factor k
	pH	mV	mV	pH		
pH Meter S/N.: C104059460	4.000	177.48	177.3	4.000	0.058	2.00
	7.000	0.00	-0.2	7.000	0.058	2.00
	10.000	-177.48	-177.6	10.000	0.058	2.00



Cert.No.: 25CH847
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 ($\pm$)	Coverage factor k
pH Electrode S/N.: 5240606	4.007	4.008	184.6	0.0044	2.00
	6.965	6.966	10.2	0.0084	2.00
	10.010	10.009	-164.9	0.0065	2.00

Function : Temperature Measurement

(*) Without adjustment

This equipment was connected with Temperature Probe;

- Model : InLabExpert Pro-ISM
- Serial No. : 5240606

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 ($\pm$ °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 %.

-o0o-



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG, BANGKOK 10250
TEL. 0-2717-3000-24 FAX. 0-2719-9484



Certificate of Calibration

Certificate No.: 25E2372
Page: 1 of 2

Equipment : pH Meter
Manufacturer: Mettler Toledo
Model : SevenCompact S220
Serial No.: C104059460
ID No.: RYG_EN0183

Condition As-Received: Used Item

Received Date: 17 July 2025

Calibration Date: 22 July 2025

Reference: 2507-0561DSC

Ambient Temperature: (23 $\pm$ 2) °C

Relative Humidity: (50 $\pm$ 10) %

Submitted by: ALS Laboratory Group (Thailand) Co.,Ltd. Rayong Branch

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.

616/10 Moo 5, T.Maenam Khu, A.Pluakdaeng,
Rayong 21140, Thailand

Procedure used: Calibration were conducted using calibration procedure No. CP-E17 according to EURAMET cg-15.

Condition of this result of calibration

1.Reference standards instruments :

Instrument	Model	Serial No.	Certificate No.	Due Date
1) Multi-Product Calibrator	5500A	6315011	25E1627	19 May 2026

2.This result of calibration was made on requested at the point specified by customer.

3.The certificate is valid only to the item calibrated on date and place of calibration.

4.This measurement result is traceable to the International System of Unit maintained through:-

-Technology Promotion Association (Thailand-Japan), NISC-ONSC Accredited No. Calibration 0008



Cert. No.: 25E2372
Page.: 2 of 2

Result of calibration :- (*) Without adjustment () After adjustment

Function: DC voltage measurement

Range: 2000 mV

Standard Value (mV)	UUC* Reading (mV)	Error (mV)	Uncertainty ($\pm$ μ V)
-200.0000	-200.0	0.0	68
-150.0000	-150.0	0.0	65
-100.0000	-100.0	0.0	63
-50.0000	-50.0	0.0	61
0.0000	0.0	0.0	58
50.0000	49.9	-0.1	61
100.0000	99.9	-0.1	63
150.0000	149.9	-0.1	65
200.0000	199.9	-0.1	68

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 %

UUC* = Unit Under Calibration.

-o0o-

Calibrated by : Napachanok Prasomsosiri
Issue Date : 23 July 2025

Approved Signatory :
[] Phalinee Prabpaipai
[] Nuntawat Khamchai
[✓] Pongsagorn Boonyaporn



Certificate of Calibration

Cert. No.: 25LM10
Page.: 1 of 2

Equipment : DO Meter with Sensor

Manufacturer : YSI

Model : 5000-115V

Serial No. : 15E102796

ID No. : RYG_EN0032

Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.
(Rayong Branch)
616/10 Moo 5 T. Maenam Khu, A. Pluakdaeng,
Rayong 21140 Thailand

Location : TPA On Site Calibration Laboratory

Received Order : 17 January 2025

Calibrated Date : 20 January 2025

Ambient Temperature : (26 ± 10) °C

Relative Humidity : (50 ± 30) %

AC Line Voltage : (220 ± 22) V

Calibrated by : Warakorn Lemgagtrakul

Approved by :

- () Chakrit Waewwanjua
(✓) Suwit Imjai
() Kunchit Promprat

Issue Date : 23 January 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.

REVIEW BY Photchanna S.
APPROVED BY D. J. J.
NEXT CAL DATE 20/07/26



Equipment : DO Meter with Sensor
Condition As-Received : Used Item
Reference : 2501-0600DSC-2
Procedure Used :-

Cert. No.: 25LM10
Page.: 2 of 2

Calibration were conducted using in-house calibration procedure CP-OT01 according to comparison with Industrial Platinum Resistance Thermometer (IPRT) into Temperature Bath.
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) Digital Thermometer	2188080	2411022	TPA	17 Sep 2025

2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This certification is traceable to the International System of Unit.

Remark : TPA : Technology Promotion Association (Thailand - Japan)

Result of Calibration :- (*) Without Adjustment

Function : Temperature measurement.

This instrument was connected with temperature sensor, S/N.: 15E100464

Calibration Point (°C)	Immersion Depth (mm)	Standard Temperature (°C)	UUC* Reading (°C)	Error (°C)	Uncertainty (± °C)	Coverage Factor k
20.00	60	20.002	19.81	-0.192	0.15	2.00

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 %.

-o0o-



Certificate of Testing

Cert.No.: 25TW15
Page.: 1 of 2

Equipment : DO Meter

Manufacturer : YSI

Model : 5000-115V

Serial No. : 15E102796

ID No. : RYG_EN0032

Received Date : 17 January 2025

Test Date : 20 January 2025

Reference : 2501-0600DSC-1

Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.
(Rayong Branch)
616/10 Moo 5, T.Maenam Khu, A.Plukdaeng,
Rayong 21140, Thailand

Laboratory Condition : Temperature (25 ± 5) °C
Humidity (50 ± 20) %

Test Procedure : In - house method : CP-CH9
by Comparison Technique with Azide Modification Method

Tested by : Walalak Sirithean

Approved by :

- () Pornthippa Tameyakul
() Ponpan Paipim
(✓) Sathip Meangmai

Issue Date : 21 January 2025

Sathip
Approved Signatory



Cert.No.: 25TW15
Page.: 2 of 2

Condition of this result of calibration

1. Reference Standard Instruments :

This certification is traceable to the International System of Unit through the reference standards laboratory of Industrial Calibration Center, Technology Promotion Association (Thailand-Japan).

Instruments	Serial No.	ID No.	Certificate No.	Due Date
1. Burette	-	130BU10	23CG1172	22 Mar 2025
2. Balance	14233821	110RC001	24MM131	04 July 2025

2. Standard Material :-

Material	Manufacturer	Lot.No.	Assay
Sodium Thiosulfate 5-Hydrate AR	KEMAUS	2203162447	99.6%

Result : Dissolved Oxygen Meter Adjustment With Air 100 %

Dissolved Oxygen Probe No.: 15E100464

Titration Method (Azide Modification Method)	DO Meter Reading (mg/L)	Standard Deviation (mg/L)
8.20	8.20	0.0084

This report was certified only for the instrument we tested.It is allowable to use for study
Intend to use for advertising and referral purpose is prohibited.This report may not be reproduced
other in full, without written approval of the laboratory

-o0o-



Certificate of Calibration

Cert. No.: 26TM461
Page: 1 of 3

Equipment : Low Temp. Incubator
Manufacturer : Memmert
Model : IPP750
Serial No. : V818.0084
ID No. : RYG_EN0154
Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd. Rayong Branch
616/10 Moo 5, T.Maenamkoo, A.Pluakdaeng,
Rayong 21140, Thailand
Location : BOD Room
Received Order : 18 March 2026
Calibration Date : 18 March 2026
Ambient Temperature : (26 ± 10) °C
Relative Humidity : (50 ± 30) %
AC Line Voltage : (220 ± 22) V
Calibrated by : Preecha Hlahib
Approved by : Kunchit
() Chakrit Waewwanjua
() Suwit Imjai
(✓) Kunchit Promprat
Issue Date : 31 March 2026

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 : Low Temp. Incubator
Condition As-Received : New Item
Reference : 2603-0502OC-2
Procedure Used :-

Cert. No.: 26TM461
Page: 2 of 3

Calibration were conducted using calibration procedure CP-OT02 based on TLAS G-20 according to direct measurement method with Data Acquisition which connected with Resistance Temperature Detector (RTD).
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 MY49023932 25LM121 TPA, 27 Jul 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 :

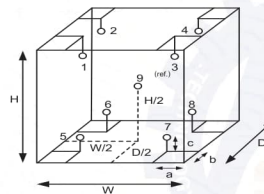
Remark : TPA : Technology Promotion Association (Thailand - Japan)

Result of Calibration :- () Without Adjustment

Function of UUC* : Temperature Source

Fresh air setting : Not Available

Environment during calibration		
	Beginning	Finished
Temp. (°C)	23	21
REL.Humid. (%)	37	33
AC Supply (Volt)	220	221



Probe Installation Details :

a = 10 cm
b = 10 cm
c = 10 cm

Dimension of Chamber :

D = 0.60 m
W = 1.0 m
H = 1.2 m
Capacity = 0.72 m³

Position :	Ref. Std. ID No.:
1	19-16RTD-01
2	19-16RTD-02
3	19-16RTD-03
4	23-16RTD-04
5	19-16RTD-05
6	19-14RTD-06
7	21-16RTD-07
8	19-16RTD-08
9 (ref.)	19-16RTD-09



Equipment : Low Temp. Incubator
Condition As-Received : New Item
Reference : 2603-0502OC-2
Result of Calibration :- () Without Adjustment
Function of UUC* : Temperature Source
Fresh air setting : Not Available

Cert. No.: 26TM461
Page: 3 of 3

Calibration Point (°C)	UUC* Setting (°C)	UUC* Reading (°C)	Temperature stability (± °C)	Temperature uniformity (°C)	Overall Variation (°C)	Coverage Factor k
20.0	20.0	20.0	0.019	0.19	0.34	2

Calibration Point (°C)	Measured Temperature (°C)									Uncertainty (± °C)
	1	2	3	4	5	6	7	8	9 (ref.)	
20.0	20.185	20.132	20.303	20.160	20.001	20.054	19.983	20.060	20.163	0.30

Average* : The average of 30 values in each position.

Temperature stability : One-half of the greatest maximum difference of measured temperature at any one sensor.

Temperature 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.

Overall Variation : The Difference of the maximum and minimum measured temperatures throughout observation.

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-



Certificate of Calibration

Cert.No.: 25CG3668
Page.: 1 of 2

Equipment : Burette
Capacity : 50 mL
Serial No. : -
ID. No. : RYG_EN0216
Manufacturer : Witeg
Made in : Germany
Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.
Rayong Branch
616/10 Moo 5 T.MaenamKoo, A.Pluakdaeng
Rayong 21140, Thailand
Ambient Temperature : (20 ± 2.5) °C
Relative Humidity : (50 ± 10) %
Barometric Pressure : 753 mmHg
Calibration Procedure : ASTM E 542 - 01
Calibrated by : Srisuda Khamtha
Approved by : Approved Signatory
() Ponpan Paipim
(✓) Chakrit Waewwanjua
Issue Date : 19 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 : 16 September 2025
Condition As-Received : Used Item
Calibration Date : 18 September 2025
Reference : 2509-0564DSC-3

Cert.No.: 25CG3668
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	XP205	B134206712	140RC007	25MM296	TPA	16 July 2026
2) Humidity/Baro/Temp	MHB-382SD	AM.42259	140EC016	25H1616	TPA	14 Aug 2026
3) Digital Thermometer	HH376	230806555	140EC013	25H1740	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 (± mL)	k Factor
10	10.0264	0.0082	2.00
25	25.0141	0.0087	2.00
50	49.9952	0.010	2.00

Remark mL = cm³

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-

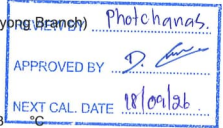


Certificate of Calibration

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 is 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, Phrakhanong, 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



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
	1.0298	1.031	-0.0012	0.0045
440 nm	0.0000	0.000	0.0000	0.0045
	0.2867	0.285	0.0017	0.0045
	0.5073	0.508	-0.0007	0.0045
	1.0083	1.009	-0.0007	0.0045
465 nm	0.0000	0.000	0.0000	0.0045
	0.2516	0.250	0.0016	0.0045
	0.4595	0.461	-0.0015	0.0045
	0.9334	0.935	-0.0016	0.0045
546.1 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
	0.9468	0.948	-0.0012	0.0045
590 nm	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
635 nm	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
2533 Sukhumvit Road, Bangkok, Phrakhanong, 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



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 (%T)	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	266.69	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, Phrakhanong, 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 (วัน)		รายการตรวจเช็ค	ตรวจสอบ (ส่ง)		หมายเหตุ
ปกติ	ไม่ปกติ		ปกติ	ไม่ปกติ	
		General			
☒	☐	1. ความสมบูรณ์เครื่อง	☒	☐	
☒	☐	2. ความสะอาด (ซองใส่ตัวอย่าง, ภายใน-นอกเครื่อง)	☒	☐	
☒	☐	3. สวิตช์ ปิด – เปิด เครื่อง (On-Off Switch)	☒	☐	
☒	☐	4. ปุ่มกด (Keypad)	☒	☐	
☒	☐	5. หน้าจอ (Display, Screen Contrast)	☒	☐	
		Spectrophotometer			
☐	☐	6. แรงดันไฟฟ้า (Battery Backup) >= 2.5 VDC	☐	☐	
☐	☐	7. ตัวหมุนเลือกความยาวคลื่น (Wavelength Control)	☐	☐	
☒	☐	8. ความยาวคลื่น (Wavelength Check)	☒	☐	*
☒	☐	9. แหล่งกำเนิดแสง (UV < 3,000 hour)	☒	☐	13.5 Hours
☒	☐	10. แหล่งกำเนิดแสง (Visible < 5,000 hour)	☒	☐	893.0 Hours
☒	☐	11. ข้องวัดหลายตัวอย่าง (Carousel Module)	☒	☐	
		pH Meter and Conductivity Meter			
☐	☐	12. อิเล็กโทรด (Electrode and Connection Cable)	☐	☐	
☐	☐	13. ระดับสารละลายใน Electrode (Level KCl)	☐	☐	
☐	☐	14. ฝาปิดกันปลาย Electrode (Dust Protection Hood)	☐	☐	
☐	☐	15. ขาจับอิเล็กโทรด (Stand)	☐	☐	
		Turbidimeter			
☐	☐	16. ค่าความขุ่นที่ต่ำสุด (No Sample)	☐	☐	
☐	☐	17. ระดับการส่องสว่างของแสง (>= 2.5 ไม่นเกิน 3.0)	☐	☐	
		Automatic titrator			
☐	☐	18. สภาพ Piston Burettes	☐	☐	
☐	☐	19. Function Rinsing and Dosing	☐	☐	
☐	☐	20. ระบบท่อสายยางและอุปกรณ์ประกอบ	☐	☐	

เพิ่มเติม/ข้อแนะนำ : * 656.1nm = 656.1nm

* 486.0nm = 485.7nm

Mr.Preecha Phooarsai
Service Engineerบริษัท ดีเคเอสเอ เอเชีย จำกัด
DKSH Technology Limited
2533 ถนนสุขุมวิท แขวงคลองเตย เขตพญาไท กรุงเทพมหานคร 10260
Phone : +66 2637 7000 Email : info.calibration@dksh.com Website : www.dksh.com/scientific-thailand

Delivering Growth - in Asia and Beyond.

CAL-FRM-31-03: 20 Jul 2022



Accredited by

NSC-TISI-TIS 17025

Calibration 0426

Calibration certificate

Calibration Certificate No. 26BCI0064

Object	Electronic non-automatic weighing instrument	This calibration certificate documents the traceability to national standards. Uncertainties of measurements are taken into account when only statements of compliance are made. 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. This certificate relate and apply this equipment only.
Manufacturer	Sartorius	
Type	MCE224S-2S00-U	
Serial QM Ident. no.	38101399 RYG_EN0163	
Customer	ALS Laboratory Group (Thailand) Co.,Ltd. (Rayong Branch)	
	616/10 Moo 5 T.Maenamkoo, A.Pluak Daeng, Rayong 21140, Thailand.	
Order no.	278579	REVIEW BY<i>Thanitak.</i> APPROVED BY<i>D. Inthana</i> NEXT CAL DATE.....03/02/27
Number of pages	4	
Date of calibration	03 Feb 2026	

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	03 Feb 2026	Approval of the Calibration Certificate	Person in charge
		<i>Chonchai Inthana</i>	<i>Chonchai Inthana</i>
		Mr. Chonchai Inthana	Chonchai Inthana

Sartorius (Thailand) Co., Ltd.
129 Rama 9 Road, Huaykwang
10310 BangkokVerical®
Version 6.7

Page 1 | 4

Calibration certificate No.: 26BCI0064

Calibration Certificate

Calibration object

Single range instrument

Model	MCE224S-2S00-U
Serial Number	38101399
QM Ident. no Inventory no.	RYG_EN0163 ---
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	Balance 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	Testo 174H H/T250743 (Traceable to Si unit through ENTECH)	18 Nov 2026
Test weight set OIML R111 E2	Certificate No.M2508149S_E2(Traceable to Si unit through TCS)	19 Aug 2027

Calibration certificate No.: 26BCI0064

Calibration Certificate

Adjustment Status

The measuring device was internally adjusted before the calibration.

Environmental and measuring conditions

Date of calibration	03 Feb 2026
Temperature at place of calibration Temp. diff.	25 °C 0.5 K
7weights - T _{place}	
Measuring conditions	The installation site is suitable. The device is level. Balance was loaded up to Max before test.
Comments	Humidity 49.0 %RH.

Measurement results | Measurement uncertainties

Repeatability			Eccentricity	
Test load (nominal): 10 g 200 g			Test load (nominal): 100 g	
	10 g	200 g	Center	100.0001 g
1	10.0000 g	200.0000 g	Front left	100.0002 g
2	10.0000 g	199.9999 g	Back left	100.0002 g
3	10.0000 g	200.0000 g	Back right	100.0000 g
4	10.0000 g	200.0001 g	Front right	100.0000 g
5	9.9999 g	199.9999 g	Maximum deviation from centric loading indication	
6	10.0000 g	200.0000 g	Δ _{ecc} max = 0.0001 g	
7	10.0000 g	199.9999 g		
8	10.0000 g	200.0000 g		
9	9.9999 g	200.0001 g		
10	10.0000 g	200.0000 g		
s = 0.00004 g		s = 0.00007 g		

Error of indication					
Testload	Indication	Error	Expansion factor	Uncertainty	Uncertainty relative
L	I	E	k	U(E)	U _{rel} (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	0.00017 g	0.17 %
0.5000 g	0.5000 g	0.0000 g	2.00	0.00017 g	0.034 %
1.0000 g	1.0000 g	0.0000 g	2.00	0.00017 g	0.017 %
5.0000 g	5.0000 g	0.0000 g	2.00	0.00017 g	0.0034 %
10.0000 g	10.0000 g	0.0000 g	2.00	0.00017 g	0.0017 %
20.0000 g	20.0000 g	0.0000 g	2.00	0.00018 g	0.0008 %
50.0000 g	50.0000 g	0.0000 g	2.00	0.00018 g	0.00037 %
100.0000 g	100.0001 g	0.0001 g	2.00	0.00021 g	0.00021 %
200.0000 g	200.0000 g	0.0000 g	2.00	0.00030 g	0.00015 %
220.0000 g	220.0001 g	0.0001 g	2.00	0.00034 g	0.00015 %
Maximum error of indication		E _{max} = 0.0001 g			

U_{rel}(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 measurand will be in the assigned value range.

End of calibration certificate

Uncertainty of measurement in use

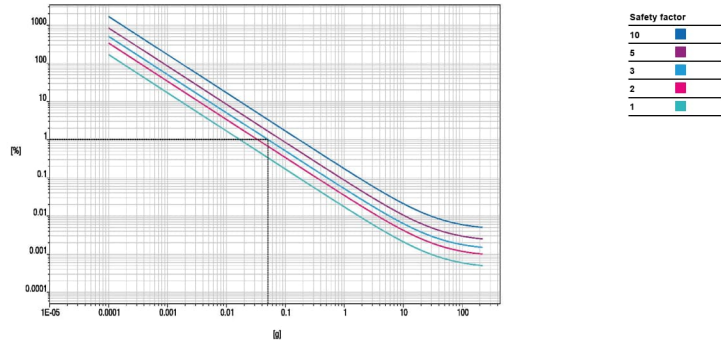
Device adjusted before measurement Yes
Temperature deviation considered 1.5 K (isoCAL active)
Temperature coefficient considered $1 \cdot 10^{-6}/K$

Uncertainty of the weighing result $U_{95}(W)$ $U_{95}(W) = 0.00017 \text{ g} + 4.25 \cdot 10^{-6} \cdot R$

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 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 $U_{95}(W)$	Uncertainty relative $U_{95}(W)/R$
1 %	2.2000 g	0.00018 g	0.0082 %
25 %	55.0000 g	0.00040 g	0.00073 %
50 %	110.0000 g	0.00064 g	0.00058 %
75 %	165.0000 g	0.00087 g	0.00053 %
100 %	220.0000 g	0.0011 g	0.00050 %

Graphic realization of the relative uncertainty of measurement | process accuracy



Displayed example

Process accuracy 1.00 %
Safety factor 3
Minimum sample weight 0.0507 g

Sartorius (Thailand) Co., Ltd.
129 Rama 9 Road, Huaykwang
10310 Bangkok

Verical®
Version 6.7

Page 4 | 4



Metrology Center

SCI ECO Services Company Limited

51 Moo 8, Tubkwang, 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. T251530

Certificate of Calibration

Page 1 of 3

Equipment : Chamber (Oven)

Manufacturer : MEMMERT

Model : UF 110

Serial No. : B416.2420

Customer Code : RYG_EN0012

ID No. : T6444A5

Customer : ALS Laboratory Group (Thailand) Co.,Ltd. (Rayong Branch)

616/10 Moo 5 T.Maenamkoo,

A.Pluakdaeng, Rayong 21140

Customer Location : ENVIRONMENT LABORATORY

Date of Receipt : 3 September 2025

Calibrated By : Sujjar Nakhakred (Site Calibration Manager)

Approved By : Boonchai Suriyawong (Site Calibration Manager)

Date of Issue : 17 SEP 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.

FM-TL06 102/27-03-68



Metrology Center

SCI ECO Services Company Limited

51 Moo 8, Tubkwang, Kaeng Khoi, Saraburi, Thailand 18260



Certificate No. T251530

Page 2 of 3

Calibration Report

Equipment : Chamber (Oven)
Date of Calibration : 10 September 2025
Environment : Temperature : 35.7-36.6 °C
Line Voltage : 226.8-233.7 V
Relative Humidity : 55 - 65 %RH

Condition of this results of calibration :

- 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	30-(CH1-10)	T242203	9 November 2025
DATA LOGGER	34970A	T47	T242203	9 November 2025

3. This certificate is traceable to :

National Institute of Metrology (Thailand) through Metrological Center (NSC-TISI-TIS 17025 CALIBRATION 6244.

4. Condition of calibrated item : good

Equipment Description :

Time Constant 3 Hour 29 Minute At 104 °C

Fresh Air Damper ☒ Open ☒ Min ☐ Medium ☐ Max
☐ Close
☐ Not Available

5. Adjustment :

() without adjustment

(X) after adjustment

Approved By.

FM-TL07 102/27-03-68



Metrology Center

SCI ECO Services Company Limited

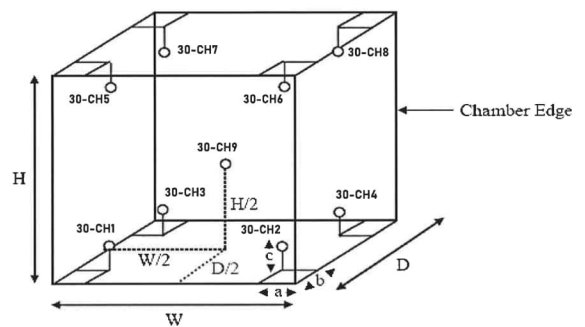
51 Moo 8, Tubkwang, Kaeng Khoi, Saraburi, Thailand 18260



Certificate No. T251530

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 30-CH1 to number 30-CH8 : a = 5 cm. , b = 5 cm. and c = 5 cm.
Size of Installed Standard sensor number 30-CH9 : W/2 = 56 cm/2 , H/2 = 48 cm/2 and D/2 = 40cm/2

Measurement Results

Calibration Point	Average Standard Reading at each position (°C)								
	30-CH1	30-CH2	30-CH3	30-CH4	30-CH5	30-CH6	30-CH7	30-CH8	30-CH9
104	104.02	103.70	104.01	104.16	104.11	104.08	104.01	104.33	103.61
180	180.67	178.78	180.38	179.85	179.16	180.27	180.98	181.04	179.49

Setting °C	Chamber (Oven)			Temperature Distribution				
	Reading (°C)			Average (°C)	Stability (± °C)	Uniformity (°C)	Uncertainty (± °C)	Coverage Factor k
	Min	Max	Average					
104.0	103.9	104.1	104.0	104.00	0.08	0.61	0.42	2.00
180.0	179.9	180.1	180.0	180.07	0.21	1.51	0.52	2.00

* 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 % .

End of Certificate.

Approved By.

FM-TL07 102/27-03-68

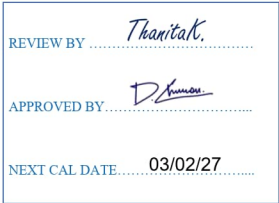
Accredited by

NSC-TISI-TIS 17025
Calibration 0426

Calibration certificate

Calibration Certificate No. 26BCI0066

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	MSU224S-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.	31709552 RYG_EN0003	This certificate relate and apply this equipment only.
Customer	ALS Laboratory Group (Thailand) Co.,Ltd. (Rayong Branch)	
	616/10 Moo 5 T.Maenamkoo, A.Pluak Daeng, Rayong 21140, Thailand.	
Order no.	278579	
Number of pages	4	
Date of calibration	03 Feb 2026	



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	03 Feb 2026	Approval of the Calibration Certificate	Person in charge
		Mr. Chonchai Inthana	Chonchai Inthana

Sartorius (Thailand) Co., Ltd.
129 Rama 9 Road, Huaykwang
10310 BangkokVerical®
Version 6.7

Page 1 | 4

Calibration object

Single range instrument

Model	MSU224S-100-DU
Serial Number	31709552
QM Ident. no Inventory no.	RYG_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	Laboratory Department. ---
Building Floor	--- 1st Floor.
Room	Balance 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	Testo 174H H/T250743 (Traceable to SI unit through ENTECH)	18 Nov 2026
Test weight set OIML R111 E2	Certificate No.M2508149S_E2(Traceable to SI unit through TCS)	19 Aug 2027

Sartorius (Thailand) Co., Ltd.
129 Rama 9 Road, Huaykwang
10310 BangkokVerical®
Version 6.7

Page 2 | 4

Calibration certificate No.: 26BCI0066

Calibration Certificate

Adjustment Status

The measuring device was internally adjusted before the calibration.

Environmental and measuring conditions

Date of calibration	03 Feb 2026
Temperature at place of calibration Temp. diff.	24.5 °C 0.5 K
Weights - T _{place}	
Measuring conditions	The installation site is suitable. The device is level. Balance was loaded up to Max before test.
Comments	Humidity 52.0 %RH.

Measurement results | Measurement uncertainties

Repeatability				Eccentricity			
Test load (nominal): 10 g 200 g				Test load (nominal): 100 g			
	10 g	200 g					
1	10.0000 g	200.0000 g		Center		100.0000 g	
2	10.0000 g	200.0001 g		Front left		100.0000 g	
3	10.0000 g	200.0001 g		Back left		99.9999 g	
4	10.0001 g	200.0001 g		Back right		100.0000 g	
5	10.0000 g	200.0001 g		Front right		100.0000 g	
6	10.0000 g	200.0000 g		Maximum deviation from centric loading indication			
7	10.0000 g	200.0000 g		Δecc max = 0.0001 g			
8	10.0000 g	200.0000 g					
9	10.0000 g	200.0000 g					
10	10.0000 g	200.0000 g					
		s = 0.00003 g	s = 0.00005 g				

Error of indication						
Testload	Indication	Error	Expansion factor	Uncertainty	Uncertainty relative	
<i>L</i>	<i>I</i>	<i>E</i>	<i>k</i>	<i>U(E)</i>	<i>U_{rel}(E)</i>	
0.0100 g	0.0100 g	0.0000 g	2.00	0.00010 g	1.0 %	
0.1000 g	0.1000 g	0.0000 g	2.00	0.00013 g	0.13 %	
0.5000 g	0.5000 g	0.0000 g	2.00	0.00013 g	0.027 %	
1.0000 g	1.0000 g	0.0000 g	2.00	0.00013 g	0.013 %	
5.0000 g	5.0000 g	0.0000 g	2.00	0.00014 g	0.0027 %	
10.0000 g	10.0000 g	0.0000 g	2.00	0.00014 g	0.0014 %	
20.0000 g	20.0000 g	0.0000 g	2.00	0.00014 g	0.00071 %	
50.0000 g	50.0001 g	0.0001 g	2.00	0.00015 g	0.00030 %	
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	220.0000 g	0.0000 g	2.00	0.00032 g	0.00015 %	
Maximum error of indication		E max = 0.0001 g				

U_{rel}(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 measurand will be in the assigned value range.

End of calibration certificate

Sartorius (Thailand) Co., Ltd.
129 Rama 9 Road, Huaykwang
10310 BangkokVerical®
Version 6.7

Page 3 | 4

Interpretation of measurement results | Appendix to the calibration certificate

Uncertainty of measurement in use

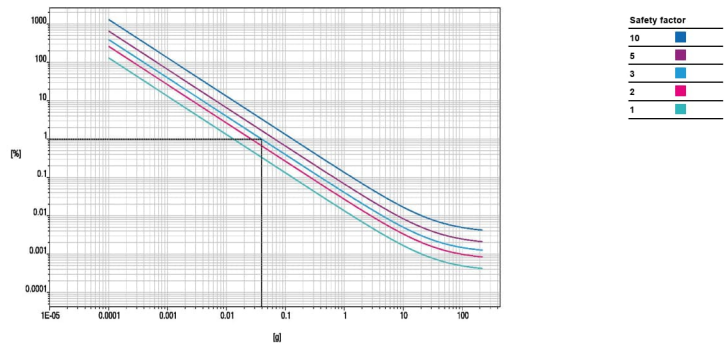
Device adjusted before measurement	Yes
Temperature deviation considered	1.5 K (isoCAL active)
Temperature coefficient considered	1 · 10 ⁻⁶ /K

Uncertainty of the weighing result U_g(W) U_g(W) = 0.00013 g + 3.65 · 10⁻⁶ · 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 _g (W)	Uncertainty relative U _g (W) _{rel}
1 %	2.2000 g	0.00014 g	0.0063 %
25 %	55.0000 g	0.00033 g	0.0060 %
50 %	110.0000 g	0.00053 g	0.0048 %
75 %	165.0000 g	0.00073 g	0.0044 %
100 %	220.0000 g	0.00093 g	0.0042 %

Graphic realization of the relative uncertainty of measurement | process accuracy



Displayed example

Process accuracy	1.00 %
Safety factor	3
Minimum sample weight	0.0395 g

Sartorius (Thailand) Co., Ltd.
129 Rama 9 Road, Huaykwang
10310 BangkokVerical®
Version 6.7

Page 4 | 4

Certificate No. T252169

Certificate of Calibration

Page 1 of 3

Equipment : Liquid Bath (Water)
Manufacturer : Memmert
Model : WNE29
Serial No. : L623.0105
Customer Code : RYG_EN0220
ID No. : T5650A5
Customer : ALS Laboratory Group (Thailand) Co.,Ltd. (Rayong Branch)
616/10 Moo 5 T.Maenamkoo,
A.Pluakdaeng, Rayong 21140
Customer Location : Wet Chemistry Lab
Date of Receipt : 19 November 2025
Calibrated By : Sujjar Nakhakred (Site Calibration Manager)
Approved By : Dr. S. / Boonchai Suriyawong (Site Calibration Manager)
Date of Issue : 01 DEC 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.

FM-TL06 102/27-03-68

Certificate No. T252169

Calibration Report

Page 2 of 3

Equipment : Liquid Bath (Water)
Date of Calibration : 27 November 2025
Environment : Temperature : 25.5-25.7 °C
Line Voltage : 221.8-225.5 V
Relative Humidity : 55 - 65 %RH

Condition of this results of calibration :

- This equipment was calibrated by insert five resistance thermometer detectors into its water bath , the other one thermocouple type T use for ambient temperature measurement . The calibration was done in according to WI-T36 (based on ASTM E715-80 (Reapproved 2022)).
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
RTD	100 OHM	M18 (CH1-CH5)	T251758	17 October 2026
DATA LOGGER	34970A	T261	T251758	17 October 2026
- 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 1 Hour 3 Minute At 63 °C
- Adjustment :
(X) without adjustment () after adjustment

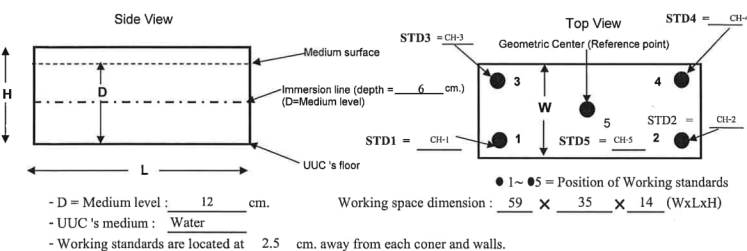
Approved By: Dr. S.

FM-TL07 102/27-03-68

Certificate No. T252169

Calibration Report

Page 3 of 3



Measurement Results:

Calibration Point	Average Standard Reading at each position (°C)				
	CH-1	CH-2	CH-3	CH-4	CH-5
63	62.93	63.13	62.94	63.10	63.09
85	85.15	85.33	85.21	85.43	85.20

Liquid Bath (Water)			Temperature Distribution				
Setting (°C)	Reading (°C)		Average (°C)	Stability (± °C)	Uniformity (± °C)	Uncertainty (± °C)	Coverage Factor k
	Min , Max	Average					
63.0	62.9 , 63.1	63.0	63.04	0.08	0.17	0.27	2.06
85.0	84.8 , 85.2	85.0	85.26	0.13	0.24	0.43	2.23

* 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 % .

End of Certificate.

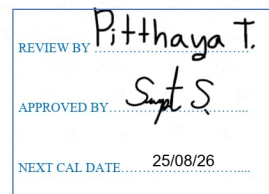
Approved By: Dr. S.

FM-TL07 102/27-03-68

Certificate of Calibration

Cert.No.: 25CH1004
Page.: 1 of 3

Equipment : pH Meter
Manufacturer : Mettler Toledo
Model : SevenGo S2
Serial No. : C423217388
ID No. : RYG_FS0714
Condition As-Received : Used Item
Received Date : 22 August 2025
Calibration Date : 25 August 2025
Reference : 2508-0746DSC-4
Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd. Rayong Branch
616/10 Moo 5, T.Maenam Khu, A.Pluakdaeng,
Rayong 21140, 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 Sirithean
Approved by : Saitip
Approved Signatory

() Chakrit Waewwanjua
() Ponpan Paipim
(✓) Saitip Meangmai

Issue Date : 26 August 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.: 25CH1004
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	58440003	130RC120	24E3731	25 Nov 2025
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	1086665	18 Jan 2027
pH 6.987	CPA chem	1034204	27 Sep 2025
pH 10.010	CPA chem	1114385	08 June 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 ($\pm$ mV)	Coverage factor k
	pH	mV	mV	pH		
pH Meter S/N.: C423217388	4.00	177.48	178	4.00	0.58	2.00
	7.00	0.00	0	7.00	0.58	2.00
	10.00	-177.48	-177	10.00	0.58	2.00



Cert.No.: 25CH1004
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 ($\pm$)	Coverage factor k
pH Electrode S/N.: 5232468	4.007	4.02	183	0.0079	2.00
	6.987	7.00	7	0.0095	2.00
	10.010	10.01	-166	0.0085	2.00

Function : Temperature Measurement

(*) Without adjustment

This equipment was connected with Temperature Probe;

- Model : InLab Expert Go-ISM
- Serial No. : 5232468

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 ($\pm$ °C)	Coverage factor k
25.0	25.001	25.2	0.199	0.13	2.00
45.0	45.001	45.3	0.299	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 %.

-o0o-

ภาคผนวก จ

สำเนาหนังสืออนุญาตขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

ที่ อก ๐๓๐๑(๑)/ ๑๖ ๑๖ ๘



กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๒๐ พฤศจิกายน ๒๕๖๖

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท เอลแอลเอส แลบริทอรี่ กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารเคมีของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๔ สิงหาคม ๒๕๖๖

สิ่งที่ส่งมาด้วย ๑. รายชื่อผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑ แผ่น

๒. รายชื่อเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๕ แผ่น

๓. ขอบข่ายสารเคมีที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๑ แผ่น

ตามหนังสือที่อ้างถึง บริษัท เอลแอลเอส แลบริทอรี่ กรุ๊ป (ประเทศไทย) จำกัด ขอต่ออายุหนังสือ
รับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ๖-๒๐๔-๑๐๐๔ สถานที่ตั้งเลขที่ ๑๐๔ ซอยพัฒนาการ ๔๐
ถนนพัฒนาการ แขวงพัฒนาการ เขตสวนหลวง กรุงเทพมหานคร ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท เอลแอลเอส แลบริทอรี่ กรุ๊ป (ประเทศไทย) จำกัด
ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๖ ราย ตามสิ่งที่ส่งมาด้วย ๑

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ ๑๘๑ ราย ตามสิ่งที่ส่งมาด้วย ๒

ค. ขอบข่ายสารเคมีที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย น้ำใต้ดิน อากาศเสีย สิ่งปฏิกูล
หรือวัสดุที่ไม่ใช่แล้ว และดิน ตามสิ่งที่ส่งมาด้วย ๓

หนังสือฉบับนี้จะหมดอายุในวันที่ ๒ กันยายน ๒๕๖๙ หากประสงค์จะต่ออายุหนังสือ
รับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อ
กรมโรงงานอุตสาหกรรม ภายใน ๓๐ วัน ก่อนวันสิ้นสุดของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
ทั้งนี้ สามารถยื่นคำขอผ่านระบบอิเล็กทรอนิกส์ได้ทั้งนี้เว็บไซต์กรมโรงงานอุตสาหกรรม

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นายธีระ จันทะโร)
นักวิทยาศาสตร์เชี่ยวชาญ วิชาการช่างเทคนิค
ผู้อำนวยการกองวิจัยและพัฒนากิจการโรงงาน
ปฏิบัติการตามนโยบายและแผนพัฒนาอุตสาหกรรม

กองวิจัยและพัฒนากิจการโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๕๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๕๓๐ ๖๓๑๒ ต่อ ๒๑๕๔

ไปรษณีย์อิเล็กทรอนิกส์ saraban@div.mail.go.th



"อุตสาหกรรมก้าวหน้า ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท เอลแอลเอส แลบริทอรี่ กรุ๊ป (ประเทศไทย) จำกัด เลขทะเบียน ๖-๒๐๔

ที่ อก ๐๓๐๑(๑)/ ๑๖ ๑๖ ๘

ลงวันที่ ๒๐ พฤศจิกายน ๒๕๖๖

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๖ ราย

๑) นางสาวอุฬาร จันทร์เป้ง

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๐๑

๒) นางสาวชัชชนา โจนารกุล ณ นคร

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๐๒

๓) นายศรายุทธ จิตราพันธ์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๐๓

๔) นางสาวกนกกร เอนก

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๐๔

๕) นายสุริยา สอนแก้ว

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๐๕

๖) นายวิฑูรย์ ชุมทรัพย์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๐๖

3/11

สิ่งที่ส่งมาด้วย ๒

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท เอลแอลเอส แลบริทอรี่ กรุ๊ป (ประเทศไทย) จำกัด เลขทะเบียน ๖-๒๐๔

ที่ อก ๐๓๐๑(๑)/ ๑๖ ๑๖ ๘

ลงวันที่ ๒๐ พฤศจิกายน ๒๕๖๖

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๑๘๑ ราย

๑) นายกอบิต คิตติคุณนิษฐ์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๐๑

๒) นายภัทรพล สว่างใจธรรม

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๐๒

๓) นายณธิป เพ็ญชัยคำ

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๐๓

๔) นายศิริโชค พงษ์ประสม

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๐๔

๕) นายณัฐวุฒิ ตัวแพง

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๐๕

๖) นางสาวจินดา ไขกุลธรรม

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๐๖

๗) นางสาวสิริวิทย์ น้อยเสงี่ยม

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๐๗

๘) นางสาวณัฐกาญจน์ อิมขม

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๐๘

๙) นางสาววันวิทย์ สายแสง

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๐๙

๑๐) นางสาวนันทิยา สมบูรณ์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๑๐

๑๑) นางสาวศรียา เอลิมฮ้างค์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๑๑

๑๒) นางสาวอัญญา มงคลจิรวุฒิ

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๑๒

๑๓) นางสาวศิริลักษณ์ ปูนาค

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๑๓

๑๔) นายเทพพงศ์ จันทร์พันธุ์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๑๔

๑๕) นายนครเศรษฐ์ โกมลย์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๑๕

๑๖) นายชินวาท จิรายุ

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๑๖

๑๗) นางสาวเกศรินทร์ แก้วมัน

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๑๗

๑๘) นางสาวสุวิมล ชัยเรืองวุฒิ

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๑๘

๑๙) นางสาวสุชาดา อรรณถาวร

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๑๙

๒๐) นางสาวเป็กกา ชัยเดชกุล

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๒๐

๒๑) นางสาวศศิธร พูลสวัสดิ์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๒๑

๒๒) นางสาวเสาวลักษณ์ ภูมิกายาพร

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๒๒

๒๓) นายอภิสิทธิ์ สิงหา

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๒๓

๒๔) นายศักดิ์สิทธิ์ โพธิ์สาทิพย์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๒๔

๒๕) ว่าที่ร้อยตรีหญิง พรรณิภา ช่างเจริญ

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๒๕

๒๖) นางจิตตา คำแก้ว

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๒๖

๒๗) นางสาวอรรณพ รักษ์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๒๗

๒๘) นางสาวนพรัตน์ แยมกรานต์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๒๘

๒๙) นายอุทิศ วารินทร์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๒๙

๓๐) นางสาวดาญรัตน์ ร้องคำ

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๓๐

๓๑) นายพนมมี ศรีบัณฑิต

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๓๑

๓๒) นายอุทิศ อุสมิ

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๓๒

๓๓) ว่าที่ร้อยตรี เฉลิมเกียรติ อมรศรีเสริม

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๓๓

๓๔) นางสาววันยา สร้างนา

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๓๔

๓๕) นายอนุพงษ์ รัตนศรีประเสริฐ

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๓๕

3/11

๓๖) นางสาวจุฑารัตน์...

- ๒ -

๓๖) นางสาวจุฑารัตน์ โอนสันเทียะ

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๓๖

๓๗) นางสาวจารุวรรณ พิมพ์กิจฤทัย

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๓๗

๓๘) นางสาวปรารถนาทิพย์ กิ่งโพธิ์ศักดิ์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๓๘

๓๙) นางสาวเดือนใจ ทางกลาง

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๓๙

๔๐) นางสาวจิราพร ศิริเวช

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๔๐

๔๑) นายวรากร ผูกักรัก

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๔๑

๔๒) นายพนม วิริยะสภกิจ

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๔๒

๔๓) นายธนิศ เจนจบ

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๔๓

๔๔) นายณิศร ชำเพชร

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๔๔

๔๕) นายภูววิศ พรหมเสอาด

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๔๕

๔๖) นายธนเดช โกศาพิพัฒน์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๔๖

๔๗) นายชฎาธิ์ วงษ์จันทร์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๔๗

๔๘) นายอาทิตย์ ศรีเสน

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๔๘

๔๙) นายเจตน์พร คงศักดิ์ไทย

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๔๙

๕๐) นายจรัส บุญใจ

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๕๐

๕๑) นายธนวัฒน์ เอนก

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๕๑

๕๒) นายอภิวัฒน์ ทุมหนู

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๕๒

๕๓) นางสาวสุภาวีย์ มาก

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๕๓

๕๔) นางสาวทิพร ขวาลสมบูรณ์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๕๔

๕๕) นางสาวธิดา บุญเพ็ง

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๕๕

๕๖) นางสาวภาณุมาศ นามวัฒน์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๕๖

๕๗) นางสาวสุวิรัตน์ ทุ่งสร้างแป้น

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๕๗

๕๘) นายธีรวัฒน์ ปองสุข

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๕๘

๕๙) นายอิทธิพล ยะโส

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๕๙

๖๐) นายประพจน์ วรรณพูนชัย

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๖๐

๖๑) นายชยธร พงษ์ทิพย์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๖๑

๖๒) นางสาวกนกวรรณ จันทร์บาล

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๖๒

๖๓) นายสิทธิโชค ธงเงิน

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๖๓

๖๔) นางศศิลาพรรณ ใจบุญ

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๖๔

๖๕) นางสาวพรรณธิดา พุ่มคง

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๖๕

๖๖) นายณวัฒน์ ศรีวิริยะ

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๖๖

๖๗) นายสุวิภา ทองอ่อน

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๖๗

๖๘) นายวิญญู บุญตะเนย

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๖๘

๖๙) นายสมบูรณ์ บุตรจันทร์

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๖๙

๗๐) นายวิรัตน์ โยชนะรา

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๗๐

๗๑) นายณวัฒน์ เพิ่มพูน

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๗๑

๗๒) นายจิรวัฒน์ ขาวละออ

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๗๒

๗๓) นายอิสริ นามบุรี

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๗๓

๗๔) นายอัครเดช จ่อสาร

ทะเบียนเลขที่ ๖-๒๐๔-๑-๐๐๗๔

3/11

๗๕) นายประเสริฐ...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
19	Copper	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
20	Cyanide	Distillation, Colorimetric Method ⁽⁴⁾
21	2,4'-DDD	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
22	4,4'-DDD	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
23	2,4'-DDE	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
24	4,4'-DDE	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
25	2,4'-DDT	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
26	4,4'-DDT	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
27	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
28	Endosulfan Sulfate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
29	Endosulfan I	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
30	Endosulfan II	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
31	Endrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
32	Endrin Aldehyde	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
33	Formaldehyde	Distillation, Colorimetric Method ⁽³⁾
34	Free Chlorine	1) DPD Ferrous Titrimetric Method ⁽⁴⁾ 2) DPD Colorimetric Method ⁽⁴⁾
35	Heptachlor	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
36	Heptachlor Epoxide	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
37	Hexavalent Chromium	Colorimetric Method ⁽⁴⁾
38	3-Hydroxycarbofuran	High-Performance Liquid Chromatographic Method ⁽⁴⁾
39	Lead	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾

40 Manganese...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
40	Manganese	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
41	Mercury	1) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
42	Methiocarb	High-Performance Liquid Chromatographic Method ⁽⁴⁾
43	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
44	Methomyl	High-Performance Liquid Chromatographic Method ⁽⁴⁾
45	Nickel	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
46	Oil & Grease	1) Liquid-Liquid, Partition-Gravimetric Method ⁽⁴⁾ 2) Soxhlet Extraction Method ⁽⁴⁾
47	Oxamyl	High-Performance Liquid Chromatographic Method ⁽⁴⁾
48	Propoxur	High-Performance Liquid Chromatographic Method ⁽⁴⁾
49	pH	Electrometric Method ⁽⁴⁾
50	Phenols	1) Distillation, Chloroform Extraction Method ⁽⁴⁾ 2) Distillation, Direct Photometric Method ⁽⁴⁾
51	Selenium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
52	Sulfide	Iodometric Method ⁽⁴⁾
53	Temperature	Laboratory and Field Methods ⁽⁴⁾
54	Total Dissolved Solids	Dried at 180 °C ⁽⁴⁾
55	Total Kjeldahl Nitrogen	Semi-Micro Kjeldahl Method ⁽⁴⁾
56	Total Phosphorous	Digestion, Colorimetric Method ⁽⁴⁾
57	Total Suspended Solids	Dried from 103-105 °C ⁽⁴⁾
58	Toxaphene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
59	Trivalent Chromium	1) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method; Colorimetric Method; Calculation ⁽⁴⁾
60	Zinc	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾

น้ำใต้ดิน...

น้ำใต้ดิน จำนวน 126 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
2	Acetone	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
3	Aldrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
4	Anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
5	Antimony	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
6	Arsenic	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
7	Atrazine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
8	Barium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
9	Benz(a)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
10	Benzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
11	Benzo(b)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
12	Benzo(k)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
13	Benzoic Acid	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
14	Benzo(a)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
15	Benzo(g,h,i)perylene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
16	Beryllium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
17	Bis(2-chloroethyl)ether	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾

18 Bis(2-ethylhexyl)phthalate...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
18	Bis(2-ethylhexyl)phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
19	Bromodichloromethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
20	Bromoform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
21	Butanol	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
22	Butyl benzyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
23	Cadmium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
24	Carbazole	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
25	Carbon disulfide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
26	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
27	Chlordane	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
28	p-Chloroaniline	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
29	Chlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
30	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
31	Chloroform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
32	2-Chlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
33	Chromium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
34	Chromium (III)	1) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method; Colorimetric Method; Calculation ⁽⁴⁾
35	Chromium (VI)	Colorimetric Method ⁽⁴⁾

36 Chrysene...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
36	Chrysene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
37	Cyanide	Distillation, Colorimetric Method ⁽⁴⁾
38	2,4-D	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
39	DDD	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
40	DDE	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
41	DDT	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
42	Dibenz(a,h)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
43	Di-n-Butyl Phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
44	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
45	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
46	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
47	3,3-Dichlorobenzidine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
48	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
49	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
50	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
51	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
52	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
53	2,4-Dichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
54	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
55	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾

56 1,3-Dichloropropene...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
56	1,3-Dichloropropene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
57	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
58	Diethyl Phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
59	2,4-Dimethylphenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
60	2,4-Dinitrophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
61	2,4-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
62	2,6-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
63	Di-n-octyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
64	Endosulfan	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
65	Endrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
66	Ethylbenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
67	Fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
68	Fluorene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
69	Heptachlor	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
70	Heptachlor epoxide	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
71	Hexachlorobenzene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
72	Hexachloro-1,3-butadiene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
73	n-Hexane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
74	α-HCH	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
75	β-HCH	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾

76 γ-HCH...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
76	γ-HCH	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
77	Hexachlorocyclopentadiene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
78	Hexachloroethane	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
79	Indeno(1,2,3-cd)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
80	Isophorone	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
81	Lead	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
82	Manganese	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
83	Mercury	1) Digestion, Cold Vapor Atomic Absorption Spectrometric Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
84	Methanol	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
85	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
86	Methyl bromide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
87	Methylene chloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
88	2-Methylphenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
89	2-Methylnaphthalene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
90	Methyl tert-butyl Ether	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
91	Naphthalene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
92	Nickel	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
93	Nitrobenzene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾

94 N-Nitrosodiphenylamine...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
94	N-Nitrosodiphenylamine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
95	N-Nitrosodi-n-Propylamine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
96	Polychlorinated Biphenyls - PCB 1016 - PCB 1221 - PCB 1232 - PCB 1242 - PCB 1248 - PCB 1254 - PCB 1260	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
97	Pentachlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
98	pH	Electrometric Method ⁽⁴⁾
99	Phenanthrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
100	Phenol	1) Distillation, Chloroform Extraction Method ⁽⁴⁾ 2) Distillation, Direct Photometric Method ⁽⁴⁾ 3) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
101	Pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
102	Selenium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
103	Silver	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
104	Styrene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
105	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
106	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
107	Toluene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
108	Toxaphene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
109	TPH (C ₅ -C ₆)	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,25)

110 TPH (C₈-C₁₆)...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
110	TPH (C ₈ -C ₁₆)	Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[9,22]
111	TPH (C ₁₆ -C ₃₅)	Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[9,22]
112	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
113	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
114	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
115	Trichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
116	2,4,5-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
117	2,4,6-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
118	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
119	Vanadium	1) Digestion, Inductively Coupled Plasma Method ^[4] 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[4]
120	Vinyl acetate	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
121	Vinyl chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
122	m-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
123	o-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
124	p-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
125	Xylene (Total)	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
126	Zinc	1) Digestion, Inductively Coupled Plasma Method ^[4] 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[4]

อากาศเสีย...

อากาศเสีย (ปล่อยระบาย) จำนวน 28 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Antimony	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
2	Arsenic	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
3	Beryllium	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
4	Cadmium	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
5	Carbon Monoxide	1) Instrumental Analyzer Method ^[5]
6	Chlorine	2) Sampling Bag Non-Dispersive Infrared Method ^[5]
7	Chromium	1) Absorption Sampling, Ion Chromatographic Method ^[5] 2) Isokinetic Sampling, Ion Chromatographic Method ^[5]
8	Cobalt	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5]
9	Copper	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5]
10	Cresol	Absorption Sampling, Gas Chromatographic Method ^[5]
11	Dioxins	Isokinetic Sampling ^[5]
12	Hydrogen Chloride	1) Absorption Sampling, Ion Chromatographic Method ^[5] 2) Isokinetic Sampling, Ion Chromatographic Method ^[5]
13	Hydrogen Fluoride	1) Absorption Sampling, Ion Chromatographic Method ^[5] 2) Isokinetic Sampling, Ion Chromatographic Method ^[5]
14	Hydrogen Sulfide	Absorption Sampling, Iodometric Method ^[5]

15 Lead...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
15	Lead	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5]
16	Manganese	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5]
17	Mercury	1) Isokinetic Sampling, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^[5] 2) Isokinetic Sampling, Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method ^[5]
18	Nickel	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5]
19	Opacity	Ringelmann's Method ^[2]
20	Oxides of Nitrogen	1) Absorption Sampling, Phenoldisulfonic Acid Method ^[5] 2) Absorption Sampling, Alkaline Permanganate/Colorimetric Method ^[5] 3) Instrumental Analyzer Method ^[5]
21	Selenium	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5]
22	Sulfur Dioxide	1) Absorption Sampling, Barium-Thorin Titrimetric Method ^[5] 2) Instrumental Analyzer Method ^[5]
23	Sulfuric Acid	Isokinetic Sampling, Barium-Thorin Titrimetric Method ^[5]
24	Tellurium	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5]
25	Tin	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5]
26	Total Suspended Particulate	1) Isokinetic Sampling, Gravimetric Method ^[5] 2) Paired Train, Isokinetic Sampling, Gravimetric Method ^[5]

27 Vanadium...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
27	Vanadium	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5]
28	Xylene	Absorption Sampling, Gas Chromatographic Method ^[5]

สิ่งปลูกสรหรือวัตถุที่ไม่ใช่แล้ว จำนวน 35 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,26] 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26] 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
2	Antimony	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[1,6,17] 3) Digestion, Inductively Coupled Plasma Method ^[7,16] 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[7,17]
3	Arsenic	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[1,6,17] 3) Digestion, Inductively Coupled Plasma Method ^[7,16] 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[7,17]
4	Barium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[1,6,17] 3) Digestion, Inductively Coupled Plasma Method ^[7,16] 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[7,17]

5 Beryllium...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
5	Beryllium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1.4.14) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1.6.17) 3) Digestion, Inductively Coupled Plasma Method ^(7.14) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7.17)
6	Cadmium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1.4.14) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1.6.17) 3) Digestion, Inductively Coupled Plasma Method ^(7.14) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7.17)
7	Chlordane	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1.9.24) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10.26) 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11.26)
8	Chromium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1.4.14) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1.6.17) 3) Digestion, Inductively Coupled Plasma Method ^(7.14) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7.17)
9	Chromium (III)	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method; Waste Extraction, Colorimetric Method; Calculation Method ^(1.6.16,19) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method; Waste Extraction, Colorimetric Method; Calculation Method ^(1.6.17,19) 3) Digestion, Inductively Coupled Plasma Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^(7.8,16,19) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^(7.8,17,19)

10 Chromium (VI)...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
10	Chromium (VI)	1) Waste Extraction, Colorimetric Method ^(6.19) 2) Alkaline Digestion, Colorimetric Method ^(8.19)
11	Cobalt	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1.4.14) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1.6.17) 3) Digestion, Inductively Coupled Plasma Method ^(7.14) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7.17)
12	Copper	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1.4.14) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1.6.17) 3) Digestion, Inductively Coupled Plasma Method ^(7.14) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7.17)
13	2,4-D	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1.9.24) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10.26) 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11.26)
14	DDD	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1.9.24) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10.26) 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11.26)
15	DDE	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1.9.24) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10.26) 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11.26)
16	DDT	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1.9.24)

2) Soxhlet...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
17	Dieldrin	2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10.26) 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11.26) 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1.9.24) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10.26) 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11.26)
18	Endrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1.9.24) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10.26) 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11.26)
19	Heptachlor	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1.9.24) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10.26) 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11.26)
20	Lead	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1.4.14) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1.6.17) 3) Digestion, Inductively Coupled Plasma Method ^(7.14) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7.17)
21	Lindane	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1.9.24) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10.26) 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11.26)

22 Mercury...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
22	Mercury	1) Waste Extraction, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^(1.4.20) 2) Waste Extraction, Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method ^(1.6.30) 3) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ⁽²⁰⁾ 4) Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method ⁽³⁰⁾ 5) Thermal Decomposition Amalgamation and Atomic Absorption Spectrometric Method ⁽²¹⁾
23	Methoxychlor	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1.9.24) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10.26) 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11.26)
24	Mirex	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1.9.24) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10.26) 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11.26)
25	Molybdenum	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1.4.14) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1.6.17) 3) Digestion, Inductively Coupled Plasma Method ^(7.14) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7.17)
26	Nickel	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1.4.14) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1.6.17) 3) Digestion, Inductively Coupled Plasma Method ^(7.14) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7.17)
27	Polychlorinated biphenyls (PCBs) - Aroclor 1016 - Aroclor 1221 - Aroclor 1232 - Aroclor 1242 - Aroclor 1248 - Aroclor 1254 - Aroclor 1260	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1.9.24) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10.26) 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11.26)

- 2-Chlorobiphenyl...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
28	- 2-Chlorobiphenyl - 2,3-Dichlorobiphenyl - 2,2',5-Trichlorobiphenyl - 2,4',5-Trichlorobiphenyl - 2,2',3,5'-Tetrachlorobiphenyl - 2,2',5,5'-Tetrachlorobiphenyl - 2,3',4,4'-Tetrachlorobiphenyl - 2,2',3,4,5'-Pentachlorobiphenyl - 2,2',4,5,5'-Pentachlorobiphenyl - 2,3,3',4,6-Pentachlorobiphenyl - 2,2',3,4,4',5'-Hexachlorobiphenyl - 2,2',3,4,5,5'-Hexachlorobiphenyl - 2,2',3,5,5',6-Hexachlorobiphenyl - 2,2',4,4',5,5'-Hexachlorobiphenyl - 2,2',3,3',4,4',5-Heptachlorobiphenyl - 2,2',3,4,4',5,5'-Heptachlorobiphenyl - 2,2',3,4',5,5',6-Heptachlorobiphenyl - 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl Pentachlorophenol	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,9,24) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,26) 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,26) Electrometric Method ^(23,24) 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,16) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,17) 3) Digestion, Inductively Coupled Plasma Method ^(7,16) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,17)
29	pH	
30	Selenium	

31 Silver...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
31	Silver	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,16) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,17) 3) Digestion, Inductively Coupled Plasma Method ^(7,16) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,17)
32	Thallium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,16) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,17) 3) Digestion, Inductively Coupled Plasma Method ^(7,16) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,17)
33	Toxaphene	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,9,26) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,26) 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,26)
34	Vanadium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,16) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,17) 3) Digestion, Inductively Coupled Plasma Method ^(7,16) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,17)
35	Zinc	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,16) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,17) 3) Digestion, Inductively Coupled Plasma Method ^(7,16) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,17)

ดิน...

ดิน จำนวน 125 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,26)
2	Acetone	1) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(15,25) 2) Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method ⁽¹³⁾
3	Aldrin	1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,26)
4	Anthracene	1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,26)
5	Antimony	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,17)
6	Arsenic	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,17)
7	Atrazine	1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,26)
8	Barium	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,17)
9	Benz(a)anthracene	1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,26)
10	Benzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(15,25)

11 Benzo(b)fluoranthene

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
11	Benzo(b)fluoranthene	1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,26)
12	Benzo(k)fluoranthene	1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,26)
13	Benzoic acid	1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,26)
14	Benzo(a)pyrene	1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,26)
15	Benzo(g,h,i)perylene	1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,26)
16	Beryllium	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,17)
17	Bis(2-chloroethyl)ether	1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,26)
18	Bis(2-ethylhexyl)phthalate	1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,26)
19	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(15,25)
20	Bromoform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(15,25)
21	Butanol	Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method ^(13,25)
22	Butyl Benzyl Phthalate	1) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,26)

23 Cadmium...

ลำดับที่	สารเคมี	วิธีวิเคราะห์
23	Cadmium	1) Digestion, Inductively Coupled Plasma Method ^(7,14) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
24	Carbazole	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
25	Carbon Disulfide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
26	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
27	Chlordane	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
28	p-Chloroaniline	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
29	Chlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
30	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
31	Chloroform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
32	2-Chlorophenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
33	Chromium	1) Digestion, Inductively Coupled Plasma Method ^(7,14) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
34	Chromium (III)	1) Digestion, Inductively Coupled Plasma Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^(7,8,16,19) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^(7,8,17,19)
35	Chromium (VI)	Alkaline Digestion, Colorimetric Method ^(8,19)

36 Chrysene...

ลำดับที่	สารเคมี	วิธีวิเคราะห์
36	Chrysene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
37	Cyanide	Extraction, Distillation, Colorimetric Method ^(27,28,29)
38	2,4-D	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
39	DDD	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
40	DDE	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
41	DDT	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
42	Dibenz(a,h)anthracene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
43	Di-n-Butyl Phthalate	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
44	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
45	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
46	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
47	3,3-Dichlorobenzidine	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
48	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)

49 1,2-Dichloroethane...

ลำดับที่	สารเคมี	วิธีวิเคราะห์
49	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
50	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
51	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
52	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
53	2,4-Dichlorophenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
54	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
55	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
56	1,3-Dichloropropene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
57	Dieldrin	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
58	Diethyl Phthalate	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
59	2,4-Dimethylphenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
60	2,4-Dinitrophenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
61	2,4-Dinitrotoluene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
62	2,6-Dinitrotoluene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)

63 Di-n-Octyl Phthalate...

ลำดับที่	สารเคมี	วิธีวิเคราะห์
63	Di-n-Octyl Phthalate	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
64	Endosulfan	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
65	Endrin	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
66	Ethylbenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
67	Fluoranthene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
68	Fluorene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
69	Heptachlor	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
70	Heptachlor epoxide	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
71	Hexachlorobenzene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
72	Hexachloro-1,3-butadiene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
73	n-Hexane	1) Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25) 2) Equilibrium Headspace, Gas Chromatographic/ Mass Spectrometric Method ⁽¹¹⁾

73 n-Hexane...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
74	α-HCH	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
75	β-HCH	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
76	γ-HCH	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
77	Hexachlorocyclopentadiene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
78	Hexachloroethane	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
79	Indeno(1,2,3-cd)pyrene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
80	Isophorone	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
81	Lead	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
82	Manganese	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
83	Mercury	1) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ⁽²⁰⁾ 2) Thermal Decomposition, Amalgamation, and Atomic Absorption Spectrophotometry ⁽²¹⁾ 3) Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method ⁽²⁰⁾

84 Methanol...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
84	Methanol	1) Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25) 2) Equilibrium Headspace, Gas Chromatographic/ Mass Spectrometric Method ^(13,25)
85	Methoxychlor	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
86	Methyl Bromide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
87	Methylene Chloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
88	2-methylphenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
89	2-Methylnaphthalene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
90	Methyl tert-Butyl Ether	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
91	Naphthalene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
92	Nickel	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
93	Nitrobenzene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
94	N-Nitrosodiphenylamine	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
95	N-Nitrosodi-n-propylamine	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)

96 Polychlorinated biphenyls (PCBs)

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
96	Polychlorinated biphenyls (PCBs) - Aroclor 1016 - Aroclor 1221 - Aroclor 1232 - Aroclor 1242 - Aroclor 1248 - Aroclor 1254 - Aroclor 1260 - 2-Chlorobiphenyl - 2,2',3,5'-Tetrachlorobiphenyl - 2,2',5,5'-Tetrachlorobiphenyl - 2,3',4,4'-Tetrachlorobiphenyl - 2,2',3,4,5'-Pentachlorobiphenyl - 2,2',4,5,5'-Pentachlorobiphenyl - 2,3,3',4,6-Pentachlorobiphenyl - 2,2',3,4,4',5'-Hexachlorobiphenyl - 2,2',3,4,5,5'-Hexachlorobiphenyl - 2,2',3,5,5',6'-Hexachlorobiphenyl - 2,2',4,4',5,5'-Hexachlorobiphenyl - 2,2',3,3',4,4',5'-Heptachlorobiphenyl - 2,2',3,4,4',5,5'-Heptachlorobiphenyl - 2,2',3,4,4',5,5',6'-Heptachlorobiphenyl - 2,2',3,3',4,4',5,5',6'-Nonachlorobiphenyl Pentachlorophenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26) 1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
97	Phenanthrene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)

99 Phenol...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
99	Phenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
100	Pyrene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
101	Selenium	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
102	Silver	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
103	Styrene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
104	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
105	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
106	Toluene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
107	Toxaphene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
108	TPH (C ₅ -C ₆)	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
109	TPH (C ₈ - C ₁₆)	1) Automate Extraction, Gas Chromatographic Method ^(12,22) 2) Solvent Extraction, Gas Chromatographic Method ^(12,22) 3) Ultrasonic Extraction, Gas Chromatographic Method ^(22,31)
110	TPH (C ₁₆ - C ₃₃)	1) Automate Extraction, Gas Chromatographic Method ^(12,22) 2) Solvent Extraction, Gas Chromatographic Method ^(12,22) 3) Ultrasonic Extraction, Gas Chromatographic Method ^(22,31)
111	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
112	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
113	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
114	Trichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)

115 2,4,5-Trichlorophenol...

อนึ่ง หนังสือฉบับนี้จะหมดอายุพร้อมหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
ในวันที่ ๒ กันยายน ๒๕๖๙

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ


(นายพรศ กสินกรอง)
รองอธิบดี ปฏิบัติราชการแทน
อธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเคอโนมัลลิจโรงงาน
กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบและทะเบียนห้องปฏิบัติการ
โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕
โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๑๙๔
ไปรษณีย์อิเล็กทรอนิกส์ sarabon@diw.mail.go.th



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



ที่ อก ๐๓๑๐(๑)/ ๑๒๓๖ ๘ ๑

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๑๘ ธันวาคม ๒๕๖๗

เรื่อง ยกเลิกบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารเคมีของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๒ ธันวาคม ๒๕๖๗

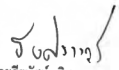
ตามคำขอที่ยังถึง บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการ
วิเคราะห์เอกชน เลขทะเบียน ๖-๒๐๔๔ สถานที่ตั้งเลขที่ ๑๐๔ ซอยพัฒนาการ ๔๐ ถนนพัฒนาการ แขวงพัฒนาการ
เขตสวนหลวง กรุงเทพมหานคร ขอยกเลิกบุคลากร ความละเอียดแจ้งแล้ว นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์
จำนวน ๘ ราย ได้แก่

- | | |
|-------------------------------|-----------------------------|
| ๑) นายประพนธ์ วรรณชัย | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๖๐ |
| ๒) นายจิรณัฐ ขาวละออ | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๖๒ |
| ๓) นายพิรพัฒน์ กำคำ | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๖๘ |
| ๔) นางสาวอรทัย ศักดิ์ทอง | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๖๙ |
| ๕) นายกิตติพงศ์ แซ่ตั้ง | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๗๔ |
| ๖) นายจิรเมธ ประเสริฐศิริพงษ์ | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๖๐ |
| ๗) นายภัทรพงษ์ มณฑาพอง | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๖๗ |
| ๘) นางสาวจาวรรณ กระจำพันธุ์ | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๘๑ |

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ


(นายธีรทัศน์ อิศรางกูร ณ อยุธยา)
รองอธิบดี ปฏิบัติราชการแทน
อธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเคอโนมัลลิจโรงงาน
กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบและทะเบียนห้องปฏิบัติการ
โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕
โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๑๙๔
ไปรษณีย์อิเล็กทรอนิกส์ sarabon@diw.mail.go.th



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



ที่ อก ๐๓๑๐(๑)/ ๓๑๔ ๐

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๑๐ เมษายน ๒๕๖๘

เรื่อง ยกเลิกบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารเคมีของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๒ เมษายน ๒๕๖๘

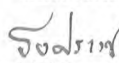
ตามคำขอที่ยังถึง บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการ
วิเคราะห์เอกชน เลขทะเบียน ๖-๒๐๔๔ สถานที่ตั้งเลขที่ ๑๐๔ ซอยพัฒนาการ ๔๐ ถนนพัฒนาการ แขวงพัฒนาการ
เขตสวนหลวง กรุงเทพมหานคร ขอยกเลิกบุคลากร ความละเอียดแจ้งแล้ว นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์
จำนวน ๒ ราย ได้แก่

- | | |
|------------------------|-----------------------------|
| ๑) นายอิทธิพงศ์ บัวแดง | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๖๒ |
| ๒) นายมงคล ผลาพิสัย | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๘๐ |

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ


(นายธีรทัศน์ อิศรางกูร ณ อยุธยา)
รองอธิบดี ปฏิบัติราชการแทน
อธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเคอโนมัลลิจโรงงาน
กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบและทะเบียนห้องปฏิบัติการ
โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕
โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๑๙๔
ไปรษณีย์อิเล็กทรอนิกส์ sarabon@diw.mail.go.th



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



ที่ อก ๐๓๑๐(๑)/ ๔๖๗ ๓

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๐๕ มิถุนายน ๒๕๖๘

เรื่อง เปลี่ยนแปลงบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารเคมีของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๗ พฤษภาคม ๒๕๖๘

ตามคำขอที่ยังถึง บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการ
วิเคราะห์เอกชน เลขทะเบียน ๖-๒๐๔๔ สถานที่ตั้งเลขที่ ๑๐๔ ซอยพัฒนาการ ๔๐ ถนนพัฒนาการ แขวงพัฒนาการ
เขตสวนหลวง กรุงเทพมหานคร ขอยกเลิกบุคลากร ความละเอียดแจ้งแล้ว นั้น

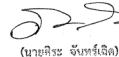
กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้เพิ่มเจ้าหน้าที่ห้องปฏิบัติการวิเคราะห์เอกชน
จำนวน ๑๑ ราย ได้แก่

- | | |
|-----------------------------------|-----------------------------|
| ๑) นายคุณากร มั่นชิน | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๘๔ |
| ๒) นายชัยมงคล แสนมาตร | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๘๕ |
| ๓) นายเอกรินทร์ บุตรสิทธิ์ | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๘๖ |
| ๔) นายพิชานนท์ อินทริโก | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๘๗ |
| ๕) นายศุภกร แก้วกันหา | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๘๘ |
| ๖) นายวิกรม มีศิริ | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๘๙ |
| ๗) นายคณินท์ คำจันทร์ | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๙๐ |
| ๘) นายศิริวิทย์ มีพุทธย์ | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๙๑ |
| ๙) นายธีรพงษ์ ศรีคำแหง | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๙๒ |
| ๑๐) นายอภิสิทธิ์ ศรีคงแก้ว | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๙๓ |
| ๑๑) ว่าที่ร้อยตรี ภาณุพงศ์ แสนศรี | ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๐๙๔ |

อนึ่ง หนังสือฉบับนี้จะสิ้นอายุพร้อมหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
ในวันที่ ๒ กันยายน ๒๕๖๙

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ


(นายธีรทัศน์ อิศรางกูร ณ อยุธยา)
รองอธิบดี ปฏิบัติราชการแทน
อธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเคอโนมัลลิจโรงงาน
กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบและทะเบียนห้องปฏิบัติการ
โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕
โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๑๙๔
ไปรษณีย์อิเล็กทรอนิกส์ sarabon@diw.mail.go.th



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



ที่ อก ๐๓๑๐(๑)/ ๒๕๐๘



กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๒๑ สิงหาคม ๒๕๖๔

เรื่อง เปลี่ยนแปลงสารมลพิษที่วิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบริทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๒๗ มิถุนายน ๒๕๖๔

สิ่งที่ส่งมาด้วย เอกสารแนบท้ายหนังสือเปลี่ยนแปลงสารมลพิษที่วิเคราะห์

บริษัท เอแอลเอส แลบริทอรี กรุ๊ป (ประเทศไทย) จำกัด จำนวน ๖ แผ่น

ตามคำขอที่อ้างถึง บริษัท เอแอลเอส แลบริทอรี กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการ
วิเคราะห์เอกชน เลขทะเบียน ๖-๒๐๔ สดงานที่ตั้งแต่เลขที่ ๑๐๔ ซอยพัฒนาการ ๔๐ ถนนพัฒนาการ แขวงพัฒนาการ
เขตสวนหลวง กรุงเทพมหานคร ขอเปลี่ยนแปลงสารมลพิษที่วิเคราะห์ ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท เอแอลเอส แลบริทอรี กรุ๊ป (ประเทศไทย) จำกัด
เพิ่มขอบข่ายชนิดสารมลพิษที่วิเคราะห์ที่ในน้ำใต้ดิน สิ่งปลูกสร้างวัสดุที่ไม่ใช่แล้ว และดิน ตามสิ่งที่ส่งมาด้วย

อนึ่ง หนังสือฉบับนี้จะสิ้นสุดอายุพร้อมหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
ในวันที่ ๒ กันยายน ๒๕๖๕

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นางสาวปัทมวรรณ คุณประเสริฐ)
ผู้อำนวยการวิจัยและพัฒนา/ฝ่ายโรงงาน
ปฏิบัติการกรมโรงงานอุตสาหกรรม

กองวิจัยและพัฒนากรมโรงงานอุตสาหกรรม

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๒๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๔๓๐ ๖๓๒๒ ต่อ ๒๑๕๔

ไปรษณีย์อิเล็กทรอนิกส์ saraban@div.mail.go.th



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



เอกสารแนบท้ายหนังสือเปลี่ยนแปลงสารมลพิษที่วิเคราะห์

บริษัท เอแอลเอส แลบริทอรี กรุ๊ป (ประเทศไทย) จำกัด

เลขทะเบียน ๖-๒๐๔

ที่ อก ๐๓๑๐(๑)/ ๒๕๐๘

ลงวันที่ ๒๑ สิงหาคม ๒๕๖๔

ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๔๐ รายการ

น้ำใต้ดิน จำนวน ๔ รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aluminum	Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽²⁾
2	Copper	Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽²⁾
3	Iron	Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽²⁾
4	Molybdenum	Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽²⁾

สิ่งปลูกสร้างหรือวัสดุที่ไม่ใช่แล้ว จำนวน 17 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Antimony	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,3,6) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,3,7) 3) Digestion, Inductively Coupled Plasma Method ^(4,6) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(4,7)
2	Arsenic	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,3,6) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,3,7) 3) Digestion, Inductively Coupled Plasma Method ^(4,6) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(4,7)
3	Barium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,3,6) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,3,7) 3) Digestion, Inductively Coupled Plasma Method ^(4,6) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(4,7)

๒๒

Beryllium

- ๒ -

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
4	Beryllium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,3,6) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,3,7) 3) Digestion, Inductively Coupled Plasma Method ^(4,6) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(4,7)
5	Cadmium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,3,6) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,3,7) 3) Digestion, Inductively Coupled Plasma Method ^(4,6) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(4,7)
6	Chromium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,3,6) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,3,7) 3) Digestion, Inductively Coupled Plasma Method ^(4,6) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(4,7)
7	Chromium (III)	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method; Waste Extraction, Colorimetric Method; Calculation Method ^(1,3,6,8) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method; Waste Extraction, Colorimetric Method; Calculation Method ^(1,3,7,8) 3) Digestion, Inductively Coupled Plasma Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^(4,5,6,8) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^(4,5,7,8)
8	Cobalt	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,3,6) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,3,7)

3) Digestion...

- ๓ -

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
9	Copper	3) Digestion, Inductively Coupled Plasma Method ^(4,6) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(4,7) 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,3,6) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,3,7) 3) Digestion, Inductively Coupled Plasma Method ^(4,6) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(4,7)
10	Lead	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,3,6) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,3,7) 3) Digestion, Inductively Coupled Plasma Method ^(4,6) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(4,7)
11	Molybdenum	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,3,6) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,3,7) 3) Digestion, Inductively Coupled Plasma Method ^(4,6) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(4,7)
12	Nickel	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,3,6) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,3,7) 3) Digestion, Inductively Coupled Plasma Method ^(4,6) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(4,7)
13	Selenium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,3,6) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,3,7) 3) Digestion, Inductively Coupled Plasma Method ^(4,6) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(4,7)

๒๓

14 Silver...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
14	Silver	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,3,6) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,3,7) 3) Digestion, Inductively Coupled Plasma Method ^(4,6) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)
15	Thallium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,3,6) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,3,7) 3) Digestion, Inductively Coupled Plasma Method ^(4,6) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)
16	Vanadium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,3,6) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,3,7) 3) Digestion, Inductively Coupled Plasma Method ^(4,6) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)
17	Zinc	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,3,6) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,3,7) 3) Digestion, Inductively Coupled Plasma Method ^(4,6) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)

ดิน จำนวน 19 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aluminum	1) Digestion, Inductively Coupled Plasma Method ^(4,6) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)
2	Antimony	1) Digestion, Inductively Coupled Plasma Method ^(4,6) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)

3 Arsenic...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
3	Arsenic	1) Digestion, Inductively Coupled Plasma Method ^(4,6) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)
4	Barium	1) Digestion, Inductively Coupled Plasma Method ^(4,6) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)
5	Beryllium	1) Digestion, Inductively Coupled Plasma Method ^(4,6) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)
6	Cadmium	1) Digestion, Inductively Coupled Plasma Method ^(4,6) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)
7	Chromium	1) Digestion, Inductively Coupled Plasma Method ^(4,6) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)
8	Chromium (III)	1) Digestion, Inductively Coupled Plasma Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^(4,5,6,8) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^(4,5,7,8)
9	Copper	1) Digestion, Inductively Coupled Plasma Method ^(4,6) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)
10	Iron	1) Digestion, Inductively Coupled Plasma Method ^(4,6) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)
11	Lead	1) Digestion, Inductively Coupled Plasma Method ^(4,6) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)
12	Manganese	1) Digestion, Inductively Coupled Plasma Method ^(4,6) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)
13	Molybdenum	1) Digestion, Inductively Coupled Plasma Method ^(4,6) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)
14	Nickel	1) Digestion, Inductively Coupled Plasma Method ^(4,6) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)

15 pH...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
15	pH	Electrometric Method ⁽⁹⁾
16	Selenium	1) Digestion, Inductively Coupled Plasma Method ^(4,6) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)
17	Silver	1) Digestion, Inductively Coupled Plasma Method ^(4,6) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)
18	Vanadium	1) Digestion, Inductively Coupled Plasma Method ^(4,6) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)
19	Zinc	1) Digestion, Inductively Coupled Plasma Method ^(4,6) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(4,7)

เอกสารอ้างอิง

- กระทรวงอุตสาหกรรม. ประกาศกระทรวงอุตสาหกรรม, พ.ศ. 2566. เรื่อง การจัดการสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว. ราชกิจจานุเบกษา. 31 พฤษภาคม 2566. เล่มที่ 140 ตอนพิเศษ 126 ง.
- APHA, AWWA, WEF. Standard Methods for the Examination of Water and Wastewater. 24th ed. Washington, DC: APHA, 2023.
- United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. SW-846.
- United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Acid Digestion of Sediments, Sludges, and Soils. SW-846 Method 3050B, 1996.
- United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Alkaline Digestion for Hexavalent Chromium. SW-846 Method 3060A, 1996.
- United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Inductively Coupled Plasma-Optical Emission Spectrometry. SW-846 Method 6010D, 2018.
- United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Inductively Coupled Plasma-Mass Spectrometry. SW-846 Method 6020B, 2014.
- United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Chromium, Hexavalent (Colorimetric). SW-846 Method 7196A, 1992.
- United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Soil and Waste pH. SW-846 Method 9045D, 2004.

๓๓



ที่ อก ๐๓๑๐(๑)๕๐ ๑ ๑

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๒๖ กันยายน ๒๕๖๕

เรื่อง เปลี่ยนแปลงบุคลากร ชื่อตัวและชื่อสกุลของบุคลากร
เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด
อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และขณิคารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๒๑ สิงหาคม ๒๕๖๔

ตามคำขอที่อ้างถึง บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัดห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ๖-๒๐๔ สสถานที่ตั้งเลขที่ ๑๐๔ ซอยพัฒนาการ ๔๐ ถนนพัฒนาการ แขวงพัฒนาการ เขตสวนหลวง กรุงเทพมหานคร ขอเปลี่ยนแปลงบุคลากร ชื่อตัวและชื่อสกุลของบุคลากร ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว มีความเห็นดังนี้

๑. ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ที่ จำนวน ๒ ราย

๑) นางสาวพาดิ คุณานาน ทะเบียนเลขที่ ๖-๒๐๔-จ-๐๑๓๔

๒) นางสาวอรนนิช เทียนคำ ทะเบียนเลขที่ ๖-๒๐๔-จ-๐๑๓๔

๒. ให้เปลี่ยนชื่อตัวและชื่อสกุลของเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จากเดิม นายอาทิตย์ ศรีเสน เป็น นายรัฐธีร์ ทวีกิจจรพจน์ ทะเบียนเลขที่ ๖-๒๐๔-จ-๐๐๔๔

อนึ่ง หนังสือฉบับนี้จะสำเนาพร้อมหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ในวันที่ ๒ กันยายน ๒๕๖๕

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

๒

(นางสาวปัทมวรรณ คุณประเสริฐ)
ผู้อำนวยการกองวิจัยและพัฒนายุทธศาสตร์
ปฏิบัติการทางเคมีกรมโรงงานอุตสาหกรรม

กองวิจัยและพัฒนายุทธศาสตร์โรงงาน
กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบและทะเบียนห้องปฏิบัติการ
โทร. ๐ ๒๕๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕
โทรสาร ๐ ๒๕๓๐ ๖๓๑๒ ต่อ ๒๑๐๔-๕
ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



อากาศเสีย...

อากาศเสีย (ปล่อยระบาย) จำนวน 7 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Carbon Monoxide	1) Sampling Bag, Non-Dispersive Infrared Method ^[5] 2) Instrumental Analyzer Method ^[9]
2	Hydrogen Sulfide	Absorption Sampling, Iodometric Method ^[3]
3	Opacity	Ringelmanns Method ^[3,4]
4	Oxide of Nitrogen	1) Absorption Sampling, Phenoldisulfonic Acid Method ^[8] 2) Instrumental Analyzer Method ^[10]
5	Sulfur Dioxide	1) Absorption Sampling, Barium-Thorin Titrimetric Acid Method ^[5] 2) Instrumental Analyzer Method ^[11]
6	Sulfuric Acid	Isokinetic Sampling, Barium - Titrimetric Method ^[6]
7	Total Suspended Particulate	Isokinetic Sampling, Gravimetric Method ^[7]

เอกสารอ้างอิง

1. ธงชัย พรหมสวัสดิ์ และวิบูลย์ลักษณ์ วิสุทธิศักดิ์, บรรณาธิการ. (2547) คู่มือวิเคราะห์น้ำเสีย. พิมพ์ครั้งที่ 4. กรุงเทพฯ: สมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย.
2. APHA, AWWA, WEF. Standard Methods for the Examination of Water and Wastewater. 24th ed. Washington, DC : APHA, 2023
3. กระทรวงอุตสาหกรรม. ประกาศกระทรวงอุตสาหกรรม, พ.ศ. 2549. เรื่อง กำหนดค่าปริมาณเขม่าควันที่เจือปนในอากาศที่ระบายออกจากปล่องของหม้อน้ำโรงสีข้าวที่ใช้แก๊สเป็นเชื้อเพลิง. ราชกิจจานุเบกษา. 4 ธันวาคม 2549. เล่มที่ 123 ตอนพิเศษ 125ง
4. กระทรวงอุตสาหกรรม. ประกาศกระทรวงอุตสาหกรรม, พ.ศ. 2549. เรื่อง กำหนดค่าปริมาณเขม่าควันที่เจือปนในอากาศที่ระบายออกจากปล่องของหม้อน้ำของโรงงาน. ราชกิจจานุเบกษา. 4 ธันวาคม 2549. เล่มที่ 123 ตอนพิเศษ 125ง
5. United States Environmental Protection Agency. Standards of Performance for New Stationary Sources. 40 CFR 60. Appendix A, 2017.
6. United States Environmental Protection Agency. Standards of Performance for New Stationary Sources. 40 CFR 60. Appendix A, 2019.

7. United States...

7. United States Environmental Protection Agency. Standards of Performance for New Stationary Sources. 40 CFR 60. Appendix A, 2020.
8. United States Environmental Protection Agency. Standards of Performance for New Stationary Sources. 40 CFR 60. Appendix A, 2023.
9. United States Environmental Protection Agency. Determination of Carbon Monoxide Emission from Stationary Sources; Instrumental Analyzer Procedure. 40 CFR 60. Appendix A Method 10, 2017.
10. United States Environmental Protection Agency. Determination of Oxide of Nitrogen Emission from Stationary Sources; Instrumental Analyzer Procedure. 40 CFR 60. Appendix A Method 7E, 2023.
11. United States Environmental Protection Agency. Determination of Sulfur dioxide Emission from Stationary Sources; Instrumental Analyzer Procedure. 40 CFR 60. Appendix A Method 6C, 2017.



ที่ อก ๐๓๑๐/ ๑ ๐ ๐๕ ๕



กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๐๕ ตุลาคม ๒๕๖๕

เรื่อง แก้ไขรายชื่อเจ้าหน้าที่ห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบริทอรี่ กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง หนังสือ บริษัท เอแอลเอส แลบริทอรี่ กรุ๊ป (ประเทศไทย) จำกัด เลขที่ Env 2024/005

ลงวันที่ ๓๐ สิงหาคม ๒๕๖๔

ตามหนังสือที่อ้างถึง บริษัท เอแอลเอส แลบริทอรี่ กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ๖-๒๒๓ สถานที่ตั้งเลขที่ ๖๑๖/๑๐ หมู่ที่ ๕ ตำบลแม่น้ำคู่ อำเภอปลวกแดง จังหวัดระยอง ขอแก้ไขชื่อเจ้าหน้าที่ห้องปฏิบัติการวิเคราะห์เอกชน เนื่องจากมีความคลาดเคลื่อน ความละเอียดแจ้งแล้ว นั้น

กรมโรงงานอุตสาหกรรม ได้รับทราบและดำเนินการแก้ไขรายชื่อเจ้าหน้าที่ห้องปฏิบัติการวิเคราะห์เอกชน จำนวน ๕ ราย ตามที่แจ้งเรียบร้อยแล้ว เป็นดังนี้

ลำดับที่ ๒๗ นางพจนา สิตา

ลำดับที่ ๒๘ นางสาวอนิศา กุลสุริวงศ์

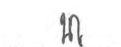
ลำดับที่ ๓๐ นางชลธิชา สุนทร

ลำดับที่ ๓๖ นายสุทธิศักดิ์ โชคปิตินันท์

ลำดับที่ ๔๒ นายกณตกร มณีสัมพันธ์

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ


(นายพรยศ กลิ่นกรอง)
รองอธิบดี ปฏิบัติราชการแทน
อธิบดีกรมโรงงานอุตสาหกรรม

ศูนย์วิจัยและเฝ้าระวังมลพิษโรงงานภาคตะวันออก
โทร. ๐ ๓๓๑๓ ๖๐๕๔ ต่อ ๕๐๐๑-๒
ไปรษณีย์อิเล็กทรอนิกส์ eirw@div.mail.go.th

 “อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว”



ที่ อก ๐๓๑๐(๓)/ ๕ ๒ ๕ ๖



กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๒๐ พฤษภาคม ๒๕๖๕

เรื่อง ยกเลิกบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบริทอรี่ กรุ๊ป (ประเทศไทย) จำกัด

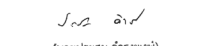
อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารเคมีของห้องปฏิบัติการวิเคราะห์เอกชน ลงวันที่ ๑๐ เมษายน ๒๕๖๔

ตามคำขอที่อ้างถึง บริษัท เอแอลเอส แลบริทอรี่ กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ๖-๒๒๓ สถานที่ตั้งเลขที่ ๖๑๖/๑๐ หมู่ที่ ๕ ตำบลแม่น้ำคู่ อำเภอปลวกแดง จังหวัดระยอง ขอยกเลิกบุคลากร ความละเอียดแจ้งแล้ว นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้ยกเลิกเจ้าหน้าที่ห้องปฏิบัติการวิเคราะห์เอกชน จำนวน ๑ ราย ได้แก่ นายปารามศ สัตยาคุณ ทะเบียนเลขที่ ๖-๒๒๓-๖-๐๐๕๑

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ


(นายประณต คาร์พงษ์)
ผู้อำนวยการกองวิจัยและเฝ้าระวังมลพิษโรงงาน
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

ศูนย์วิจัยและเฝ้าระวังมลพิษโรงงานภาคตะวันออก
โทร. ๐ ๓๓๑๓ ๖๐๕๔ ต่อ ๕๐๐๑-๒
ไปรษณีย์อิเล็กทรอนิกส์ eirw@div.mail.go.th



“อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว”



ที่ อก ๐๓๑๐(๓)/ ๕๕๐๕



กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๒๗ พฤษภาคม ๒๕๖๘

เรื่อง เปลี่ยนแปลงชื่อ-สกุลบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๑๕ พฤษภาคม ๒๕๖๘

ตามคำขอที่อ้างถึง บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการ
วิเคราะห์เอกชน เลขทะเบียน ๖-๓๒๓ สถานที่ตั้งเลขที่ ๖๑๖/๑๐ หมู่ที่ ๕ ตำบลแม่น้ำคู้ อำเภอลำลูกเกด
จังหวัดระยอง ขอเปลี่ยนแปลงชื่อ-สกุลบุคลากร ความละเอียดแจ้งแล้ว นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้เปลี่ยนแปลงชื่อ-สกุลบุคลากร จำนวน ๑ ราย
จากนายอะสิทธิ์ วงศ์ไชย เป็น นายอมลวิญญู วงศ์ไชย

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นายประณต ดำรงพงษ์)

ผู้อำนวยการกองวิจัยและเตือนภัยมลพิษโรงงาน
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

ศูนย์วิจัยและเตือนภัยมลพิษโรงงานภาคตะวันออก

โทร. ๐ ๓๓๑๓ ๖๐๕๔ ต่อ ๕๐๐๑-๒

ไปรษณีย์อิเล็กทรอนิกส์ einw@diw.mail.go.th



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



ที่ อก ๐๓๑๐(๓)/ ๕๗๖๔



กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๐๒ ธันวาคม ๒๕๖๘

เรื่อง เปลี่ยนแปลงสารมลพิษที่วิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๓๑ ตุลาคม ๒๕๖๘

สิ่งที่ส่งมาด้วย เอกสารแนบท้ายหนังสือเปลี่ยนแปลงสารมลพิษที่วิเคราะห์

บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด จำนวน ๒ แผ่น

ตามคำขอที่อ้างถึง บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการ
วิเคราะห์เอกชน เลขทะเบียน ๖-๓๒๓ สถานที่ตั้งเลขที่ ๖๑๖/๑๐ หมู่ที่ ๕ ตำบลแม่น้ำคู้ อำเภอลำลูกเกด
จังหวัดระยอง ขอเปลี่ยนแปลงสารมลพิษที่วิเคราะห์ ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด
เพิ่มขอขยายชนิดสารมลพิษที่วิเคราะห์ในน้ำเสีย และน้ำใต้ดิน ตามสิ่งที่ส่งมาด้วย

อนึ่ง หนังสือฉบับนี้จะส่งอายุพร้อมหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
ในวันที่ ๒๘ มิถุนายน ๒๕๗๑

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นางสาวปัทมวรรณ คุณประเสริฐ)

ผู้อำนวยการกองวิจัยและเตือนภัยมลพิษโรงงาน
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน

ศูนย์วิจัยและเตือนภัยมลพิษโรงงานภาคตะวันออก

โทร. ๐ ๓๓๑๓ ๖๐๕๔ ต่อ ๕๐๐๑-๒

ไปรษณีย์อิเล็กทรอนิกส์ einw@diw.mail.go.th



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



เอกสารแนบท้ายหนังสือเปลี่ยนแปลงสารมลพิษที่วิเคราะห์

บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด เลขทะเบียน ๖-๓๒๓

ที่ อก ๐๓๑๐(๓)/ ๕๗๖๔ ลงวันที่ ๐๒ ธันวาคม ๒๕๖๘

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๒๓ รายการ

น้ำเสีย จำนวน 13 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Arsenic	Digestion, Inductively Coupled Plasma Method
2	Barium	Digestion, Inductively Coupled Plasma Method
3	Cadmium	Digestion, Inductively Coupled Plasma Method
4	Chromium	Digestion, Inductively Coupled Plasma Method
5	Copper	Digestion, Inductively Coupled Plasma Method
6	Hexavalent Chromium	Colorimetric Method
7	Lead	Digestion, Inductively Coupled Plasma Method
8	Manganese	Digestion, Inductively Coupled Plasma Method
9	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method
10	Nickel	Digestion, Inductively Coupled Plasma Method
11	Selenium	Digestion, Inductively Coupled Plasma Method
12	Trivalent Chromium	Calculation
13	Zinc	Digestion, Inductively Coupled Plasma Method

น้ำใต้ดิน จำนวน 20 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aluminum	Digestion, Inductively Coupled Plasma Method
2	Antimony	Digestion, Inductively Coupled Plasma Method
3	Arsenic	Digestion, Inductively Coupled Plasma Method
4	Barium	Digestion, Inductively Coupled Plasma Method
5	Beryllium	Digestion, Inductively Coupled Plasma Method
6	Cadmium	Digestion, Inductively Coupled Plasma Method
7	Chromium	Digestion, Inductively Coupled Plasma Method
8	Chromium (III)	Calculation
9	Chromium (VI)	Colorimetric Method
10	Copper	Digestion, Inductively Coupled Plasma Method

-๒-

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
11	Iron	Digestion, Inductively Coupled Plasma Method
12	Lead	Digestion, Inductively Coupled Plasma Method
13	Manganese	Digestion, Inductively Coupled Plasma Method
14	Mercury	Digestion Cold-Vapor Atomic Absorption Spectrometric Method
15	Molybdenum	Digestion, Inductively Coupled Plasma Method
16	Nickel	Digestion, Inductively Coupled Plasma Method
17	Selenium	Digestion, Inductively Coupled Plasma Method
18	Silver	Digestion, Inductively Coupled Plasma Method
19	Vanadium	Digestion, Inductively Coupled Plasma Method
20	Zinc	Digestion, Inductively Coupled Plasma Method

เอกสารอ้างอิง

APHA, AWWA, WEF. Standard Methods for the Examination of Water and Wastewater. 24th ed. Washington, DC: APHA, 2023.



๐๖ มีนาคม ๒๕๖๔

เรื่อง เปลี่ยนแปลงบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๖ กุมภาพันธ์ ๒๕๖๔ตามคำขอที่อ้างถึง บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการ
วิเคราะห์เอกชน เลขทะเบียน ว-๓๒๓ สถานที่ตั้งเลขที่ ๖๑๖/๑๐ หมู่ที่ ๕ ตำบลแม่ไม้ อำเภอบลวก
จังหวัดระยอง ขอเปลี่ยนแปลงบุคลากร ความละเอียดแจ้งแล้ว นั้นกรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้เพิ่มเจ้าหน้าที่ห้องปฏิบัติการวิเคราะห์เอกชน
จำนวน ๗ ราย ได้แก่

๑) นายธนวิษ คังปลิก	ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๖๓๓
๒) นายธนาริป์ อิติวุตตะ	ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๖๔๔
๓) นายเฉลิมชัย บุญชู	ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๖๕๕
๔) นางสาวจิตรา งามเสียม	ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๖๖๖
๕) นางสาวลลิตา คำสมัย	ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๖๗๗
๖) นางสาวปิติตา ชูตินันท์	ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๖๘๘
๗) นายปฏิญญา ปานทองทา	ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๖๙๙

อนึ่ง หนังสือฉบับนี้จะส่งอายุพร้อมหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

ในวันที่ ๒๘ มิถุนายน ๒๕๖๔

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นายศิระ จันทน์เกิด)

นักวิทยาศาสตร์เชี่ยวชาญ วิชาการการแพทย์
ผู้อำนวยการวิจัยและเตือนภัยมลพิษโรงงาน
ปฏิบัติการตามพันธกิจกรมโรงงานอุตสาหกรรมกองวิจัยและเตือนภัยมลพิษโรงงาน
ศูนย์วิจัยและเตือนภัยมลพิษโรงงานภาคตะวันออก
โทร. ๐ ๓๓๑๓ ๖๐๕๔ ต่อ ๕๐๐๑-๒
ไปรษณีย์อิเล็กทรอนิกส์ eirw@diw.mail.go.th

“อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว”