

ภาคผนวกที่ 3

เอกสารขึ้นทะเบียนบริษัทวิเคราะห์

คุณภาพน้ำทิ้ง



ที่ อก ๐๓๑๐(๑)/ ๕๐๖

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๑ ๘ มกราคม ๒๕๖๗

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท สเปเชียล แล็บ เอ็นไว แอนด์ คอนซัลแตนท์ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๑ พฤศจิกายน ๒๕๖๖

สิ่งที่ส่งมาด้วย เอกสารแนบท้ายหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
บริษัท สเปเชียล แล็บ เอ็นไว แอนด์ คอนซัลแตนท์ จำกัด จำนวน ๒ แผ่น

ตามหนังสือที่อ้างถึง บริษัท สเปเชียล แล็บ เอ็นไว แอนด์ คอนซัลแตนท์ จำกัด ห้องปฏิบัติการ
วิเคราะห์เอกชน เลขทะเบียน ว-๑๓๓ สถานที่ตั้งเลขที่ ๔๗/๙๑-๙๓ หมู่ที่ ๓ ตำบลท่าอิฐ อำเภอปากเกร็ด
จังหวัดนนทบุรี ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท สเปเชียล แล็บ เอ็นไว แอนด์ คอนซัลแตนท์ จำกัด
ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์

- | | |
|-------------------------|----------------------------|
| ๑) นางสาวฟาติฮะห์ สุหลง | ทะเบียนเลขที่ ว-๑๓๓-ค-๐๐๐๑ |
| ๒) นางสาวอัสวณีย์ ยูโซะ | ทะเบียนเลขที่ ว-๑๓๓-ค-๐๐๐๒ |
| ๓) นายมะปารี อาแวกือจิ | ทะเบียนเลขที่ ว-๑๓๓-ค-๐๐๐๓ |

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์

- | | |
|-----------------------------|----------------------------|
| ๑) นางสาวบุศรียา ยีชา | ทะเบียนเลขที่ ว-๑๓๓-จ-๐๐๐๒ |
| ๒) นางสาวนุรีโลลา มะแซ | ทะเบียนเลขที่ ว-๑๓๓-จ-๐๐๐๓ |
| ๓) นางสาวซาอิดา สาแม | ทะเบียนเลขที่ ว-๑๓๓-จ-๐๐๐๔ |
| ๔) นางสาวนุรีสา สอเลาะห์ | ทะเบียนเลขที่ ว-๑๓๓-จ-๐๐๐๕ |
| ๕) นางสาวณัฐกานต์ บากาโชติ | ทะเบียนเลขที่ ว-๑๓๓-จ-๐๐๐๖ |
| ๖) นางสาวซารินา บัวโซ | ทะเบียนเลขที่ ว-๑๓๓-จ-๐๐๐๗ |
| ๗) นางสาวบักกีส ทะยีกาจิ | ทะเบียนเลขที่ ว-๑๓๓-จ-๐๐๐๘ |
| ๘) นางสาวโนรีโซเฟีย มะนอ | ทะเบียนเลขที่ ว-๑๓๓-จ-๐๐๐๙ |
| ๙) นางสาวอามีรา แวหะแน | ทะเบียนเลขที่ ว-๑๓๓-จ-๐๐๑๐ |
| ๑๐) นางสาวนุรอยมี อาแวกือจิ | ทะเบียนเลขที่ ว-๑๓๓-จ-๐๐๑๑ |
| ๑๑) นางสาวอิฟตีซาน หะมะ | ทะเบียนเลขที่ ว-๑๓๓-จ-๐๐๑๒ |
| ๑๒) นายเสรี จันทวี | ทะเบียนเลขที่ ว-๑๓๓-จ-๐๐๑๓ |

ค. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย ตามสิ่งที่ส่งมาด้วย

หนังสือ...

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หนังสือฉบับนี้จะหมดอายุในวันที่ ๒๕ มกราคม ๒๕๗๐ หากประสงค์จะต่ออายุหนังสือ
รับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อกรมโรงงาน
อุตสาหกรรมภายใน ๓๐ วัน ก่อนวันสิ้นอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ทั้งนี้
สามารถยื่นคำขอผ่านระบบอิเล็กทรอนิกส์ได้ที่หน้าเว็บไซต์กรมโรงงานอุตสาหกรรม

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ



(นายสิระ จันทร์เจ็ด)

นักวิทยาศาสตร์เชี่ยวชาญ รักษาการแทน
ผู้อำนวยการกองวิจัยและเตือนภัยมลพิษโรงงาน
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน
กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ
โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕
โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๔๔
ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th



เอกสารแนบท้ายหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท สเปเชียล แล็บ เอ็นไว แอนด์ คอนซัลแตนท์ จำกัด

เลขทะเบียน ๖-๑๓๓

ที่ อก ๐๓๑๐(๑)/ ๕๐๖

ลงวันที่ ๑๘ มกราคม ๒๕๖๗

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๒๖ รายการ

น้ำเสีย จำนวน 26 รายการ

| ลำดับที่ | สารมลพิษ | วิธีวิเคราะห์ |
|----------|---------------------------|--|
| 1 | Arsenic | Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[2] |
| 2 | Barium | Digestion, Direct Nitrous Oxide-Acetylene Flame Method ^[2] |
| 3 | Biochemical Oxygen Demand | 1) 5-Day BOD Test, Azide Modification Method ^[2] 2) 5-Day BOD Test, Membrane Electrode Method ^[2] |
| 4 | Cadmium | Digestion, Direct Air-Acetylene Flame Method ^[2] |
| 5 | Chemical Oxygen Demand | Closed Reflux, Colorimetric Method ^[2] |
| 6 | Color | ADMI Weighted-Ordinate Spectrophotometric Method ^[2] |
| 7 | Copper | Digestion, Direct Air-Acetylene Flame Method ^[2] |
| 8 | Cyanide | Distillation, Colorimetric Method ^[2] |
| 9 | Formaldehyde | Distillation, Colorimetric Method ^[1] |
| 10 | Free Chlorine | DPD Colorimetric Method ^[2] |
| 11 | Hexavalent Chromium | Colorimetric Method ^[2] |
| 12 | Lead | Digestion, Direct Air-Acetylene Flame Method ^[2] |
| 13 | Manganese | Digestion, Direct Air-Acetylene Flame Method ^[2] |
| 14 | Mercury | Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^[2] |
| 15 | Nickel | Digestion, Direct Air-Acetylene Flame Method ^[2] |
| 16 | Oil & Grease | Liquid-Liquid, Partition-Gravimetric Method ^[2] |
| 17 | pH | Electrometric Method ^[2] |
| 18 | Phenols | 1) Distillation, Chloroform Extraction Method ^[2] 2) Distillation, Direct Photometric Method ^[2] |
| 19 | Selenium | Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[2] |
| 20 | Sulfide | Iodometric Method ^[2] |
| 21 | Temperature | Laboratory and Field Methods ^[2] |
| 22 | Total Dissolved Solids | Dried at 180 °C ^[2] |

23 Total Kjeldahl Nitrogen...

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| ลำดับที่ | สารมลพิษ | วิธีวิเคราะห์ |
|----------|-------------------------|--|
| 23 | Total Kjeldahl Nitrogen | Macro-Kjeldahl Method ^[2] |
| 24 | Total Suspended Solids | Dried from 103-105 °C ^[2] |
| 25 | Trivalent Chromium | Digestion, Direct Air-Acetylene Flame Method; Colorimetric Method; Calculation ^[2] |
| 26 | Zinc | Digestion, Direct Air-Acetylene Flame Method ^[2] |

เอกสารอ้างอิง

1. สมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย. คู่มือวิเคราะห์น้ำเสีย. พิมพ์ครั้งที่ 4. กรุงเทพฯ: เรือนแก้วการพิมพ์, 2547.
2. APHA, AWWA, WEF. Standard Methods for the Examination of Water and Wastewater. 24th ed. Washington, DC: APHA, 2023.

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ กองวิจัยและเฝ้าระวังมลพิษโรงงาน กรมโรงงานอุตสาหกรรม โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

CAL

Calibratech Co.,Ltd.

7/106-7 Moo 2, Sukhprachasan 3 Rd., Bangpood, Pakkred, Nonthaburi 11120

Tel.(02) 964-6211 Fax.(02) 964-5155, e-mail : calibratech.cal@yahoo.com, calibratech.cal@hotmail.com



NSC-TISI-TIS17025
CALIBRATION 0030

Certificate of Calibration

Certificate No. : 68-300307-6

Page : 1 of 2

Submitted by : Special Lab Envi and Consultant Co., Ltd.
47/91-93 Moo 3, Tambol Tha-It, Pakkret, Nonthaburi 11120

Equipment : Burette
Manufacturer : Witeg Class : A
Capacity : 25 ml Graduation : 0.05 ml
ID No. : LB-Gw-001

Environment : Ambient Temperature : (20 ± 3) °C
Relative Humidity : (50 ± 10) %
Air Pressure : 1009.5 mbar.

Date of Received : 19 April 2025

Date of Calibration : 25 April 2025

Date of Issue : 25 April 2025

Calibrated by : Areerat Sombun

Calibration Method : In-house method CAL-M3001 based on ASTM E 542-22

Reference Standard Instruments : This certification is traceable to the International System of Units

Electronic Balance

| ID No. | Cert. No. | Due Date | Traceability |
|--------|-------------|-------------|---|
| 241005 | 67-200410-4 | 02 Jun 2025 | National Institute of Metrology (Thailand) (NIMT) |

Approved by :

(Wipa Tovadee)

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 68-300307-6

Page : 2 of 2

Result of Calibration : This result of true Volume is referred to standard temperature at 20 °C

UUC Condition As-Received : Good

Delivery Time : 40.04 sec.

| Nominal Volume (ml) | Measuring Volume (ml) |
|-----------------------|-------------------------|
| 10 | 10.0003 |
| 20 | 20.0098 |
| 25 | 25.0101 |

Uncertainty of measurement with in \pm 0.0066 ml

This result of calibration was found accurate as shown on date and place of calibration only.

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.00$, providing a level of confidence of approximately 95%

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NSC-TISI-TIS 17025
CALIBRATION 0030

Certificate of Calibration

Certificate No. : 68-200127-1

Page : 1 of 2

Submitted by : Special Lab Envi and Consultant Co., Ltd.
47/91-93 Moo 3, Tambol Tha-It, Pakkret, Nonthaburi 11120

Equipment : Electronic Balance
Manufacturer : AND Model : GR-200
Serial No. : 14245322 ID No. : LB-Eq-016
Capacity : 210 g Resolution : 0.0001 g

Environment : On site calibration was carried out at the Laboratory,
Special Lab Envi and Consultant Co., Ltd.

Ambient Temperature : (25.5 to 26.1) °C

Relative Humidity : (56.6 to 57.0) %

Air Pressure : 1008.0 mbar

Date of Received : 19 April 2025

Date of Calibration : 19 April 2025

Date of Issue : 22 April 2025

Calibrated by : Satja Sangkhum

Calibration Method : In-house method CAL-M2001 based on UKAS Publication ref : LAB 14
Edition 7 - November 2022

Reference Standard Instruments : This certification is traceable to the International System of Units

Standard Weights

| ID No. | Cert. No. | Due Date | Traceability |
|------------|-----------|-------------|--|
| E261-E2624 | C02242009 | 07 Nov 2025 | National Institute of Metrology (Thailand), (NIMT) |

Approved by :

(Surachai Promthong)

Laboratory Manager

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 68-200127-1

Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Departure of indication from nominal value

| Nominal Value (g) | Correction (g) | Uncertainty \pm (g) |
|----------------------|-------------------|--------------------------|
| 0.001 | 0.0000 | 0.00011 |
| 0.01 | 0.0000 | 0.00011 |
| 0.1 | 0.0000 | 0.00011 |
| 0.5 | 0.0000 | 0.00011 |
| 2 | 0.0000 | 0.00011 |
| 5 | 0.0000 | 0.00011 |
| 10 | 0.0000 | 0.00011 |
| 50 | 0.0001 | 0.00014 |
| 100 | 0.0001 | 0.00020 |
| 200 | 0.0000 | 0.00038 |

This result of calibration was found accurate as shown on date and place of calibration only.

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.00$, providing a level of confidence of approximately 95%

Eccentric error Load test : 50 g

| | | | | |
|---------|--------|--------|--------|--------|
| A | B | C | D | E |
| -0.0005 | 0.0002 | 0.0004 | 0.0002 | 0.0000 |

g



Repeatability Load test : 200 g

Stdev. : 0.00005 g

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NSC-TISI-TIS 17025
CALIBRATION 0030

Certificate of Calibration

Certificate No. : 68-400223-2

Page : 1 of 2

Submitted by : Special Lab Envi and Consultant Co., Ltd.
47/91 Moo 3 Tambol Tha-it, Pakkret, Nonthaburi 11120

Equipment : Temperature controlled enclosure(Incubator)
Manufacturer : Lovibond Model : FKU 1800
Range : N/A °C Resolution : 0.1 °C
Serial No. : 0914643-01 ID No. : LB-Eq-004

Environment : On site calibration was carried out at the Laboratory, Special Lab Envi and Consultant Co., Ltd.
Ambient Temperature : (26.0 to 26.5) °C
Relative Humidity : (45 to 50) %
Line Voltage : (226.0 to 226.5) V

Date of Received : 19 April 2025

Date of Calibration : 19 April 2025

Date of Issue : 25 April 2025

Calibrated by : Permpoon Chanpu

Calibration Method : CAL-M4004, TLAS G-20
The temperature scale used was based on ITS-90

Reference Standard Instruments : This certification is traceable to the International System of Units
Standard Digital Thermometer with RTD Probe

| ID No. | Cert. No. | Due Date | Traceability |
|-----------------|-------------|-------------|---|
| 400046 & 400042 | 68-400007-1 | 28 Jul 2025 | National Institute of Metrology Thailand (NIMT) |

Approved by :

(Permpoon Chanpu)

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 68-400223-2

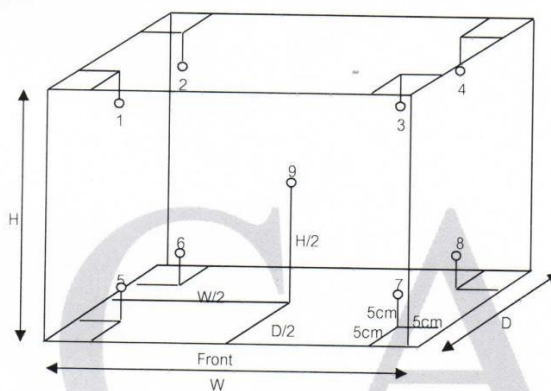
Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Function : Temperature measurement

This instrument was setting air ventilation at position 0 (close)



Inside of Chamber

W = 0.55 m

D = 0.73 m

H = 0.50 m

Capacity = 0.20 m³

| Test Point (° C) | Setting Temperature (° C) | Indicating Temperature (° C) | Measured Temperature (° C) @ Sensor No. | | | | | | | | | | Uncertainty (± ° C) |
|-----------------------|--------------------------------|-----------------------------------|---|-------|-------|-------|-------|-------|-------|-------|-------|----|--------------------------|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
| 20.0 | 20.0 | 20.0 | 20.35 | 20.26 | 20.28 | 20.31 | 20.21 | 20.09 | 20.29 | 20.17 | 20.22 | | 0.63 |

| Test Point (° C) | Setting Temperature (° C) | Indicating Temperature (° C) | Measured Uniformity (° C) | Measured Stability (° C) | Overall Variation (° C) |
|-----------------------|--------------------------------|-----------------------------------|--------------------------------|-------------------------------|------------------------------|
| 20.0 | 20.0 | 20.0 | 0.22 | 0.34 | 0.85 |

Remark The uncertainty is not combine uniformity of the air chamber

This result of calibration was found accurate as shown on date and place of calibration only.






This 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%

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[Signature]



CAL-F0031-03

| | | | |
|---|--|---|---|
|  Calibratech Co.,Ltd. 7/106-7 Moo 2, Sukhaprachasan 3 Rd., Bangpood, Pakkred, Nonthaburi 11120 Tel.(02) 964-6211 Fax.(02) 964-5155, e-mail : calibratech_cal@yahoo.com, calibratech_cal@hotmail.com | |   NSC-TISI-TIS17025 CALIBRATION 0030 | |
| Certificate of Calibration | | | |
| Certificate No. : | 68-400223-1 | Page : 1 of 2 | |
| Submitted by : | Special Lab Envi and Consultant Co., Ltd. 47/91 Moo 3 Thambol Tha-it, Pakkret, Nonthaburi 11120 | | |
| Equipment : | Temperature controlled enclosure(Incubator) Manufacturer : Lovibond Range : N/A °C Serial No. : 0925481-19 | | |
| | Model : FKU 1800 Resolution : 0.1 °C ID No. : LB-Eq-005 | | |
| Environment : | On site calibration was carried out at the Laboratory, Special Lab Envi and Consultant Co., Ltd. Ambient Temperature : (24.5 to 25.0) °C Relative Humidity : (40 to 45) % Line Voltage : (226.0 to 226.5) V | | |
| Date of Received : | 19 April 2025 | | |
| Date of Calibration : | 19 April 2025 | | |
| Date of Issue : | 25 April 2025 | | |
| Calibrated by : | Permpon Chanpu | | |
| Calibration Method : | CAL-M4004, TLAS G-20 The temperature scale used was based on ITS-90 | | |
| Reference Standard Instruments : | This certification is traceable to the International System of Units Standard Digital Thermometer with RTD Probe | | |
| ID No. | Cert. No. | Due Date | Traceability |
| 400046 & 400047 | 68-400007-2 | 29 Jul 2025 | National Institute of Metrology Thailand (NIMT) |
| Approved by :  (Permpon Chanpu) Supervisor | | | |
| 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 Calibratech Co.,Ltd. | | | |
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Certificate of Calibration

Certificate No. : 68-400223-1

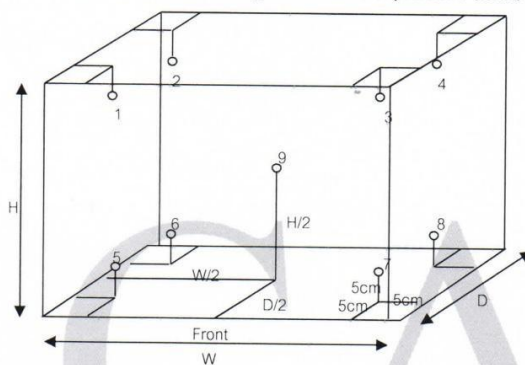
Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Function : Temperature measurement

This instrument was setting air ventilation at position 0 (close)



Inside of Chamber

W = 0.55 m

D = 0.73 m

H = 0.50 m

Capacity = 0.20 m³

| Test Point (° C) | Setting Temperature (° C) | Indicating Temperature (° C) | Measured Temperature (° C) @ Sensor No. | | | | | | | | | Uncertainty (± ° C) |
|-----------------------|--------------------------------|-----------------------------------|---|-------|-------|-------|-------|-------|-------|-------|-------|--------------------------|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| 30.0 | 30.0 | 30.0 | 29.91 | 29.93 | 29.97 | 30.23 | 30.01 | 30.03 | 30.31 | 30.66 | 30.14 | 0.33 |
| 35.0 | 35.0 | 35.0 | 34.77 | 34.83 | 34.79 | 35.23 | 34.92 | 35.02 | 35.22 | 35.63 | 35.12 | 0.33 |
| 37.0 | 37.0 | 37.0 | 36.70 | 36.85 | 36.73 | 37.32 | 36.95 | 37.11 | 37.23 | 37.59 | 37.13 | 0.35 |

| Test Point (° C) | Setting Temperature (° C) | Indicating Temperature (° C) | Measured Uniformity (° C) | Measured Stability (° C) | Overall Variation (° C) |
|-----------------------|--------------------------------|-----------------------------------|--------------------------------|-------------------------------|------------------------------|
| 30.0 | 30.0 | 30.0 | 0.55 | 0.06 | 0.81 |
| 35.0 | 35.0 | 35.0 | 0.55 | 0.06 | 0.92 |
| 37.0 | 37.0 | 37.0 | 0.54 | 0.09 | 1.06 |

Remark The uncertainty is not combine uniformity of the air chamber

This result of calibration was found accurate as shown on date and place of calibration only.

This 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%

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NSC-TISI-TIS 17025
CALIBRATION 0030

Certificate of Calibration

Certificate No. : 68-400223-4

Page : 1 of 2

Submitted by : Special Lab Envi and Consultant Co., Ltd.
47/91-93 Moo 3, Tambol Tha-It, Pakkret, Nonthaburi 11120

Equipment : Temperature controlled enclosure (Refrigerator)

Manufacturer : Frozen

Model : CC-2288F

Range : N/A °C

Resolution : 1 °C

Serial No. : CC-2288F-1163-003

ID No. : LB-Eq-046

Environment : On site calibration was carried out at the Laboratory, Special Lab Envi and Consultant Co., Ltd.

Ambient Temperature : (25.5 to 26.5) °C

Relative Humidity : (50 to 55) %

Line Voltage : (226.0 to 226.5) V

Date of Received : 19 April 2025

Date of Calibration : 19 April 2025

Date of Issue : 26 April 2025

Calibrated by : Permpon Chanpu

Calibration Method : CAL-M4004, TLAS G-20

The temperature scale used was based on ITS-90

Reference Standard Instruments : This certification is traceable to the International System of Units
Standard Digital Thermometer with Thermocouple probe

| ID No. | Cert. No. | Due Date | Traceability |
|-----------------|-------------|-------------|---|
| 400029 & 400032 | 67-400584-1 | 29 Apr 2025 | National Institute of Metrology Thailand (NIMT) |

Approved by :

(Permpon Chanpu)

Supervisor

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Certificate of Calibration

Certificate No. : 68-400223-4

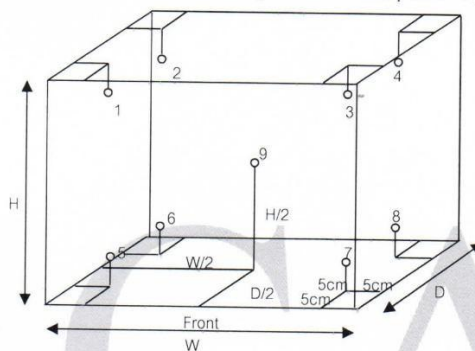
Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Function : Temperature measurement

This instrument was setting air ventilation at position 0 (close)



Inside of Chamber

W = 1.02 m

D = 0.47 m

H = 1.48 m

Capacity = 0.71 m³

| Test Point (°C) | Setting Temperature (°C) | Indicating Temperature (°C) | Measured Temperature (°C) @ Sensor No. | | | | | | | | | Uncertainty (± °C) |
|--------------------|-----------------------------|--------------------------------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----------------------|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| 3 | 3 | 3 | 4.0 | 3.0 | 2.8 | 2.6 | 4.0 | 4.0 | 2.2 | 2.0 | 3.0 | 1.0 |

| Test Point (°C) | Setting Temperature (°C) | Indicating Temperature (°C) | Measured Uniformity (°C) | Measured Stability (°C) | Overall Variation (°C) |
|--------------------|-----------------------------|--------------------------------|-----------------------------|----------------------------|---------------------------|
| 3 | 3 | 3 | 1.3 | 0.5 | 2.7 |

Remark The uncertainty is not combine uniformity of the air chamber

This result of calibration was found accurate as shown on date and place of calibration only.

This 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%

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NSC-TISI-TIS 17025
CALIBRATION 0030

Certificate of Calibration

Certificate No. : 68-400223-3

Page : 1 of 2

Submitted by : Special Lab Envi and Consultant Co., Ltd.
47/91-93 Moo 3 Tambol Tha-It, Pakkret, Nonthaburi 11120

Equipment : Water Bath

Manufacturer : Memmert

Model : WNB22

Range : N/A °C

Resolution : 0.1 °C

Serial No. : L520.0201

ID No. : LB-Eq-041

Environment : On site calibration was carried out at the Laboratory, Special Lab Envi and Consultant Co., Ltd.

Ambient Temperature : (34.0 to 35.0) °C

Relative Humidity : (50 to 55) %

Line Voltage : (226.0 to 226.5)V

Date of Received : 19 April 2025

Date of Calibration : 19 April 2025


Date of Issue : 26 April 2025

Calibrated by : Permon Chanpu

Calibration Method : This instrument was calibrated by In-house method CAL-M4006 based on ASTM E715-80
The temperature scale used was based on ITS-90

Reference Standard Instruments : This certification is traceable to the International System of Units
Standard Digital Thermometer with RTD probe

| ID No. | Cert. No. | Due Date | Traceability |
|-----------------|-------------|-------------|---|
| 400029 & 400031 | 68-400214-1 | 25 Oct 2025 | National Institute of Metrology Thailand (NIMT) |


Approved by : 

(Permon Chanpu)

Supervisor

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Certificate of Calibration

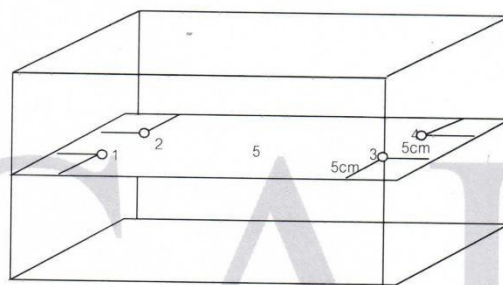
Certificate No. : 68-400223-3

Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Function : Temperature measurement



Front

| Test Point (° C) | Setting Temperature (° C) | Indicating Temperature (° C) | Measured Temperature (° C) @ Sensor No. | | | | | Uncertainty (± ° C) | Measured Uniformity (° C) | Measured Stability (° C) |
|-----------------------|--------------------------------|-----------------------------------|---|--------|--------|--------|--------|--------------------------|--------------------------------|-------------------------------|
| | | | 1 | 2 | 3 | 4 | 5 | | | |
| 62.0 | 62.0 | 62.0 | 62.03 | 62.05 | 62.01 | 62.04 | 62.00 | 0.19 | 0.12 | 0.07 |
| 85.0 | 85.0 | 85.0 | 84.82 | 84.76 | 84.94 | 84.85 | 84.86 | 0.20 | 0.16 | 0.08 |
| 95.0 | 95.0 | 95.0 | 94.78 | 94.73 | 94.88 | 94.82 | 94.82 | 0.19 | 0.15 | 0.07 |
| 100.0 | CCC | 101.0 | 100.58 | 100.92 | 100.61 | 100.57 | 100.63 | 0.24 | 0.40 | 0.12 |

Remark The uncertainty is not combine uniformity of the water bath

This result of calibration was found accurate as shown on date and place of calibration only.





This 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%

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CAL-F0031-03

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| Certificate of Calibration | | | | | |
| Certificate No. : | | 67-210308-1 | | Page : 1 of 2 | |
| Submitted by : | | Special Lab Envi and Consultant Co., Ltd. 47/91-93 Moo 3,Tambol Tha-It, Pakkret, Nonthaburi 11120 | | | |
| Equipment : | | Weight Manufacturer : LS Material : Stainless Steel Weight size : 1 g ID No. : LB-Eq-034 Assumed density of weight : 7950 kg / m ³ Assumed Air density : 1.2 kg / m ³ | | | |
| Environment : | | Ambient Temperature : (20 ± 2) °C Relative Humidity : (50 ± 10) % Air Pressure : 1008.5 mbar | | | |
| Date of Received : | | 02 August 2024 | | | |
| Date of Calibration : | | 06 August 2024 | | | |
| Date of Issue : | | 06 August 2024 | | | |
| Calibrated by : | | Wuttichai Swatphong | | | |
| Calibration Method : | | In-house method CAL-M2101 based on OIML R 111-1 : 2004(E) | | | |
| Reference Standard Instruments : | | This certification is traceable to the International System of Units | | | |
| Standard Weights | | | | | |
| ID No. | Cert. No. | Due Date | Traceability | | |
| E221-E2210 | MM-0042-22 | 21 Mar 2025 | National Institute of Metrology (Thailand), (NIMT) | | |
| Approved by :  (Satja Sangkhum) Supervisor | | | | | |
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Certificate of Calibration

Certificate No. : 67-210308-1

Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

| No. | Nominal Value | Id.Mark | Conventional mass Value | Measuring Uncertainty |
|-----|---------------|---------|-------------------------|-----------------------|
| 1 | 1 g | none | 1 g -0.036 mg | ± 0.023 mg |

This result of calibration was found accurate as shown on date and place of calibration only.

This 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%






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| Certificate of Calibration | | | |
| Certificate No. : | 67-210308-2 | Page : 1 of 2 | |
| Submitted by : | Special Lab Envi and Consultant Co., Ltd. 47/91-93 Moo 3,Tambol Tha-It, Pakkret, Nonthaburi 11120 | | |
| Equipment : | Weight Manufacturer : LS Weight size : 100 g ID No. : LB-Eq-035 Assumed density of weight : 7950 kg / m ³ Assumed Air density : 1.2 kg / m ³ Material : Stainless Steel | | |
| Environment : | Ambient Temperature : (20 ± 2) °C Relative Humidity : (50 ± 10) % Air Pressure : 1008.5 mbar | | |
| Date of Received : | 02 August 2024 | | |
| Date of Calibration : | 06 August 2024 | | |
| Date of Issue : | 06 August 2024 | | |
| Calibrated by : | Wuttichai Swatphong | | |
| Calibration Method : | In-house method CAL-M2101 based on OIML R 111-1 : 2004(E) | | |
| Reference Standard Instruments : | This certification is traceable to the International System of Units | | |
| Standard Weights | | | |
| <u>ID No.</u> | <u>Cert. No.</u> | <u>Due Date</u> | <u>Traceability</u> |
| E221-E2210 | MM-0042-22 | 21 Mar 2025 | National Institute of Metrology (Thailand), (NIMT) |
| Approved by :  (Satja Sangkhum) Supervisor | | | |
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Certificate of Calibration

Certificate No. : 67-210308-2

Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

| No. | Nominal Value | Id.Mark | Conventional mass Value | | Measuring Uncertainty |
|-----|---------------|---------|-------------------------|----------|-----------------------|
| 1 | 100 g | none | 100 g | +0.04 mg | ± 0.11 mg |

This result of calibration was found accurate as shown on date and place of calibration only.

This 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%

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Signature



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Certificate of Calibration

Certificate No. : 67-210308-3

Page : 1 of 2

Submitted by : Special Lab Envi and Consultant Co., Ltd.
47/91-93 Moo 3,Tambol Tha-It, Pakkret, Nonthaburi 11120

| | |
|-------------|--------|
| Equipment : | Weight |
|-------------|--------|

Manufacturer : LS

Material : Stainless Steel

Weight size : 200 g

ID No. : LB-Eq-036

Assumed density of weight : 7950 kg / m³

Assumed Air density : 1.2 kg/m^3

Environment : Ambient Temperature : $(20 \pm 2) ^\circ \text{C}$

Relative Humidity : $(50 \pm 10) \%$

Air Pressure : 1008.5 mbar

Date of Received : 02 August 2024

Date of Calibration : 06 August 2024

Date of Issue : 06 August 2024

Calibrated by : Wuttichai Swatphong

Calibration Method : In-house method CAL-M2101 based on OIML R 111-1 : 2004(E)

Reference Standard Instruments : This certification is traceable to the International System of Units

Standard Weights

ID No.

Cert. No.

Due Date

Traceability

E221-E2210

MM-0042-22

21 Mar 2025

National Institute of Metrology (Thailand), (NIMT)

Approved by :

(Satja Sangkhum)

Supervisor

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Certificate of Calibration

Certificate No. : 67-210308-3

Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

| No. | Nominal Value | Id.Mark | Conventional mass Value | | Measuring Uncertainty |
|-----|---------------|---------|-------------------------|----------|-----------------------|
| 1 | 200 g | none | 200 g | +0.05 mg | ± 0.17 mg |

This result of calibration was found accurate as shown on date and place of calibration only.

This 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%

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CAL-F0031-03