

ภาคผนวก จ

เอกสารสอบเทียบเครื่องมือตรวจวัด

รายการใบรับรองสอบเทียบ/ทวนสอบ เครื่องมือหลักประจำห้องปฏิบัติการวิเคราะห์ สำหรับวิเคราะห์คุณภาพสิ่งแวดล้อม

| No. | Instrument/Equipment | Parameter | Manufacturer | Model/Serial No. | Calibrator | Certification No. | Date of Calibration | Due date of Calibration* | Remark |
|---|---|---|-----------------|----------------------------------|--|-------------------|---------------------|--------------------------|--------|
| เครื่องมือหลักประจำห้องปฏิบัติการวิเคราะห์คุณภาพน้ำ | | | | | | | | | |
| 1 | pH Meter | ความเป็นกรดและด่าง | Mettler-Toledo | Seven Easy S20 / 1231155210 | National Food Institute, Ministry of Industry, Thailand | 2301846-001-01 | 24 Feb 23 | 23 Feb 24 | - |
| 2 | pH Meter | | Mettler-Toledo | Seven Easy S20 / 1230525212 | National Food Institute, Ministry of Industry, Thailand | 2302181-001-01 | 24 Mar 23 | 22 Mar 24 | - |
| 3 | Analytical Balance (Readability 0.01 mg) | ของแข็งแขวนลอย ของแข็งละลายน้ำทั้งหมด | Mettler-Toledo | XSR205DU / C210685394 | Technology Promotion Association (Thailand-Japan) | 23MM113 | 26 Apr 23 | 24 Apr 24 | - |
| 4 | Hot Air Oven | | Memmert | UF55 / B216.1666 | Technology Promotion Association (Thailand-Japan) | 22TM1490 | 19 Oct 22 | 18 Oct 23 | - |
| 5 | Analytical Balance (Readability 0.1 mg) | น้ำมันและไขมัน | Mettler-Toledo | XSR204 / C117635043 | National Food Institute, Ministry of Industry, Thailand | 2302827-001-01 | 10 May 23 | 8 May 24 | - |
| 6 | BOD Incubator | บีโอดี | Arco | UC4-1320 / (UAE.WAO.015/2561) | Technology Promotion Association (Thailand-Japan) | 23TM249 | 15 Feb 23 | 14 Feb 24 | - |
| 7 | BOD Incubator | | Arco | UR-1320 / (UAE.WAO.018/2551) | Technology Promotion Association (Thailand-Japan) | 23TM375 | 12 Apr 23 | 10 Apr 24 | - |
| 8 | Digester Unit | ไนโตรเจนในรูปทีเคเอ็น | FOSS TECATOR | 2520auto / 91794469 | National Food Institute, Ministry of Industry, Thailand | 2302413-001-01 | 30 Mar 23 | 28 Mar 24 | - |
| 9 | Distillation Unit (Kjeldahl Method) | | FOSS TECATOR | KT8100/ 91889052 | FOSS South East Asia | 8411 | 29 May 23 | 27 May 24 | |
| 10 | Incubator | โคลิฟอร์มแบคทีเรีย ฟิคอลโคลิฟอร์มแบคทีเรีย | Memmert | IPP 260 / V615.0187 | Technology Promotion Association (Thailand-Japan) | 23TM378 | 12 Apr 23 | 10 Apr 24 | - |
| 11 | Incubator | | Memmert | IPP 260 / V618.0033 | Technology Promotion Association (Thailand-Japan) | 23TM729 | 27 Apr 23 | 25 Apr 24 | - |
| 12 | Water Bath | | Memmert | WNE 14 / L416.0606 | Technology Promotion Association (Thailand-Japan) | 23TM193 | 15 Feb 23 | 14 Feb 24 | - |

รายการใบรับรองสอบเทียบ/ทวนสอบ เครื่องมือหลักประจำห้องปฏิบัติการวิเคราะห์ สำหรับวิเคราะห์คุณภาพสิ่งแวดล้อม

| No. | Instrument/Equipment | Parameter | Manufacturer | Model/Serial No. | Calibrator | Certification No. | Date of Calibration | Due date of Calibration* | Remark |
|---|----------------------|---|--------------|-----------------------|--|-------------------|---------------------|--------------------------|--------|
| เครื่องมือหลักประจำห้องปฏิบัติการวิเคราะห์คุณภาพน้ำ | | | | | | | | | |
| 13 | Water Bath | โคลิฟอร์มแบคทีเรีย ฟิคอลโคลิฟอร์มแบคทีเรีย | Memmert | WNE 14 / L416.0612 | Technology Promotion Association (Thailand-Japan) | 23TM194 | 15 Feb 23 | 14 Feb 24 | - |
| 14 | Auto Clave | | ALP | CL-40L / 808763 | Technology Promotion Association (Thailand-Japan) | 23TM763 | 27 Apr 23 | 25 Apr 24 | - |
| 15 | Auto Clave | | ALP | CL-40L / 810010 | DKSH (Thailand) Ltd. | C11230106 | 9 Jun 23 | 7 Jun 24 | - |
| 16 | Analytical Balance | | OHAUS | PX623 / C236754745 | DKSH (Thailand) Ltd. | C01223732 | 9 Dec 22 | 8 Dec 23 | - |

Due Date of Calibration* : Based on the annual calibration plan. At least 1 time per year.

Calibration Certificate

Certificate No.: 2301846-001-01
Client name: UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.
Address: 3 Soi Udomsuk 41, Sukhumvit Road,
Bangchack, Prakhonong, Bangkok 10260

Page 1 of 5

Equipment: pH Meter
Manufacturer: Mettler Toledo
Model: SevenEasy TM S20 pH
Serial No.: 1231155210
ID No.: UAE.WAT.010/2553
Order No.: 2301846
Operation No.: 2301846-001
Date of Receipt: 17 February 2023
Date of Calibration: 24 February 2023

Calibrated by Mr.Worapob Sooktong
Scientist

Approved by 
(Mr.Nuttapol Niyomchart)

Specialist, Division of Calibration Laboratory

Date of Issue: 24 February 2023

Responsible for the Technical Management Team

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 standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the National Food Institute.

F-CS-009 Revision: 01 Date: 20-04-65



Calibration Report

Certificate No.: 2301846-001-01

Equipment:

pH Meter

Resolution: 0.01 pH ; 1 mV

Manufacturer: Mettler Toledo

Model: SevenEasy TM S20 pH

Serial No.: 1231155210

Type: Bench top

ID No.: UAE.WAT.010/2553

Date of Calibration: 24 February 2023

Page 2 of 5

Location: Chemical Calibration Laboratory, National Food Institute

Environment Condition: **Ambient Temperature:** (25.1 ± 1.5) °C **Relative Humidity:** (50 ± 5) %

Condition of Equipment: Good Condition

Condition of this Results of Calibration

1. Calibration Method In house method : W-CC-002 based on direct measurement by using standard voltage calibrator and certified reference material (CRM)

2. Reference Standards / Certified Reference Material

| <u>Instruments</u> | <u>Serial / ID No.</u> | <u>Manufacturer</u> | <u>Certificate No.</u> | <u>Due Date</u> |
|--|------------------------|---------------------|------------------------|--------------------|
| 2.1 DC Voltage Calibrator | 2709007 | Fluke | 22E1959 | 17 June 2023 |
| 2.2 Digital Thermometer | 2709007 | Fluke | CC 650577-01 | 30 October 2023 |
| 2.3 Thermo-Hygro Meter | NFI.BTH 007/18 | PONPE 490 | QR22-0886 | 26 April 2023 |
| <u>Certified Reference Material</u> | <u>Lot. No.</u> | <u>Manufacturer</u> | <u>Ref N</u> | <u>Expire Date</u> |
| 2.4 pH buffer 4.008 (Primary pH buffer Solution) | 832606 | CPAchem | PH216.L5 | 8 August 2024 |
| 2.5 pH buffer 6.865 (Primary pH buffer Solution) | 832607 | CPAchem | PH217.L5 | 8 August 2024 |
| 2.6 pH buffer 10.01 (Primary pH buffer Solution) | 832609 | CPAchem | PH220.L5 | 8 August 2023 |
| 2.7 pH buffer 7.00 (Standard pH buffer Solution) | 832610 | CPAchem | PH107.L5 | 8 August 2023 |

3. This certification is traceable to The International System of Unit (SI Unit)

| | | |
|---|--------------|---|
| 3.1 Instruments No.2.1 | through | NSC-TISI-TIS 17025 Laboratory Accreditation of Calibration No.0008 |
| 3.2 Instruments No.2.2 | through | NSC-TISI-TIS 17025 Laboratory Accreditation of Calibration No.0061 |
| 3.3 Instruments No.2.3 | through | NSC-TISI-TIS 17025 Laboratory Accreditation of Calibration No.0292 |
| 3.4 Certified Reference Material No. 2.4 to 2.6 | traceable to | Primary measurement method- Harned cell using calibrated thermometer, barometer, and nanovoltmeter. The Standard Solution preparation and certified by CPAchem Ltd is accredited to ISO 17034 and ISO/IEC 17025 |
| 3.5 Certified Reference Material No.2.7 | traceable to | BIM RefN HI-27 LotN 04.06.2021; BIM RefN HI-28 LotN 28.05.2021; BIM RefN HI-27 LotN 04.06.2021; BIM RefN HI-28 LotN 28.05.2021, the Standard Solution preparation and certified by CPAchem Ltd is accredited to ISO 17034 and ISO/IEC 17025 |

4. This certificate was certified only for the instrument we calibrated.

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

F-CS-012 Revision: 01 Date: 20-04-65

N. Nigudant



Calibration Report

Certificate No.: 2301846-001-01

Equipment:

pH Meter

Resolution: 0.01 pH ; 1 mV

Manufacturer: Mettler Toledo

Model: SevenEasy TM S20 pH

Serial No.: 1231155210

Type: Bench top

ID No.: UAE.WAT.010/2553

Date of Calibration: 24 February 2023

Page 3 of 5

Calibration Results:

1. Calibration of pH Meter

(Manual Temperature Compensation at 25 °C)

| Nominal pH | DC Voltage Standard (mV) | Average Indicator Reading | | Uncertainty (±mV) | Coverage Factor (k) |
|------------|----------------------------|---------------------------|-------|---------------------|-----------------------|
| | | mV | pH | | |
| 0 | 414.120 | 414 | 0.00 | 0.58 | 2.00 |
| 2 | 295.814 | 296 | 2.00 | 0.58 | 2.00 |
| 4 | 177.464 | 178 | 4.00 | 0.58 | 2.00 |
| 6 | 59.160 | 59 | 6.00 | 0.58 | 2.00 |
| 7 | 0.000 | 0 | 7.00 | 0.58 | 2.00 |
| 8 | -59.158 | -59 | 8.00 | 0.58 | 2.00 |
| 10 | -177.460 | -177 | 10.00 | 0.58 | 2.00 |
| 12 | -295.811 | -296 | 12.00 | 0.58 | 2.00 |
| 14 | -414.117 | -414 | 14.00 | 0.58 | 2.00 |

2. Calibration of pH Meter with Electrode (Manual Temperature Compensation at 25 °C)

Equipment: pH Electrode

Type: Combined Electrode

Manufacturer: Mettler Toledo

Model: InLab Solids

Serial No.: 9018311

ID.No. N/A

Performance of Electrode system (Three-Point Calibration at pH 4, pH 7 and pH 10)

| Certified Value @25 °C (pH) | Average Indicator Reading | | Relative Slope (%) | Uncertainty (± pH) | Coverage Factor (k) |
|-----------------------------|---------------------------|------|--------------------|----------------------|-----------------------|
| | pH | mV | | | |
| 4.008 | 4.01 | 186 | - | 0.0071 | 2.00 |
| 6.865 | 6.90 | 19 | 97.68 | 0.0075 | 2.00 |
| 10.008 | 10.01 | -160 | 97.29 | 0.0095 | 2.00 |
| 6.985 | 6.99 | 15 | - | 0.0092 | 2.00 |

Calibration Report

Certificate No.: 2301846-001-01

Equipment: Digital Thermometer with RTD

Resolution: 0.1 °C Model: SevenEasy TM S20 pH

Serial No.: 1231155210 ID No.: UAE.WAT.010/2553

Manufacturer: Mettler Toledo

Date of Calibration: 24 February 2023

Page 4 of 5

Location: Chemical Calibration Laboratory, National Food Institute

Environment Condition: Ambient Temperature 25 °C ± 1 °C

Relative Humidity 48 % ± 3 %

Condition of this results of Calibration:

- Calibration Method : - In house method: W-TE-025 by comparison with standard thermometer.
- The Calibration is determined by comparing with a known temperature from a standard resistance thermometer.
- The temperature scale in use at this laboratory is the International Temperature scale of 1990 (ITS-90).

2. Reference Standard Instrument :

| Instrument | Model | Serial No. | Certificate No. | Due Date | Through |
|---------------------------------------|-------|------------|-----------------|-----------|---------|
| HANDHELD THERMOMETER | 1523 | 2118154 | PSL-T 0673/65 | 07-Jun-23 | TISTR |
| Platinum Resistance Thermometer (PRT) | 5627A | 877332 | | | |

Support Equipment : - Low Temperature Bath (Micro Bath), Model: 7103, S/N: A39538,AN65 A85181.

- This certificate is traceable to International System of Units (SI Units).
- This certificate was certified only for the instrument we calibrated.
- This result of calibration was found accurate as shown on date and place of calibration only.
- Condition of Calibrated item : Good
- Result of Calibration : ☒ Without adjustment ☐ After adjustment

N. Ingpradit

F-CS-012 Revision: 01 Date: 20-04-65



Calibration Report

Certificate No.: 2301846-001-01

Equipment: Digital Thermometer with RTD

Resolution: 0.1 °C Model: SevenEasy TM S20 pH

Serial No.: 1231155210 ID No.: UAE.WAT.010/2553

Manufacturer: Mettler Toledo

Date of Calibration: 24 February 2023

Page 5 of 5

Calibration point: 15.0, 25.0 and 35.0 °C

Calibration result:

- The probe was immersed in liquid bath or dry bath to a minimum depth of 120 mm.
- Description of probe, model : - S/N : -
- Dimension of probe : Diameter 9 mm., Length 120 mm.,
- Sheath material : Stainless Steel

| UUC* Reading (°C) | Standard Temperature (°C) | Correction Value (°C) | Uncertainty ± (°C) |
|----------------------|------------------------------|--------------------------|-----------------------|
| 15.1 | 15.015 | - 0.1 | 0.11 |
| 25.0 | 25.014 | 0.0 | 0.11 |
| 35.1 | 35.016 | - 0.1 | 0.11 |

Note

- UUC* : Unit Under Calibration

The report uncertainty of measurement was based on standard uncertainty multiplied by coverage factor $k=2$, providing a level of confidence of approximately 95 %.

----- End -----

N. Ingubant

F-CS-012 Revision: 01 Date: 20-04-65



Calibration Certificate

Certificate No.: 2302181-001-01
Client name: UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.
Address: 3 Soi Udomsuk 41, Sukhumvit Road,
Bangchack, Prakhnong, Bangkok 10260

Page 1 of 5

Equipment: pH Meter
Manufacturer: METTLER TOLEDO
Model: SevenEasy pH
Serial No.: 1230525212
ID No.: UAE.WAS.003/2553
Order No.: 2302181
Operation No.: 2302181-001
Date of Receipt: 14 March 2023
Date of Calibration: 24 March 2023

Calibrated by Mr.Pheraphat Tuanjit
Scientist

Approved by 
(Mr.Nuttapol Niyomchart)

Specialist, Division of Calibration Laboratory

Date of Issue: 24 March 2023

Responsible for the Technical Management Team

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 standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the National Food Institute.

F-CS-009 Revision: 01 Date: 20-04-65



Calibration Report

Certificate No.: 2302181-001-01

Equipment:

pH Meter

Resolution: 0.01 pH ; 1 mV

Manufacturer: METTLER TOLEDO

Model: SevenEasy pH

Serial No.: 1230525212

Type: Bench top

ID No.: UAE.WAS.003/2553

Date of Calibration: 24 March 2023

Page 2 of 5

Location: Chemical Calibration Laboratory, National Food Institute

Environment Condition: **Ambient Temperature:** (23.4 ± 1.5) °C **Relative Humidity:** (52 ± 3) %

Condition of Equipment: Good Condition

Condition of this Results of Calibration

1. Calibration Method In house method : W-CC-002 based on direct measurement by using standard voltage calibrator and certified reference material (CRM)

2. Reference Standards / Certified Reference Material

| <u>Instruments</u> | <u>Serial / ID No.</u> | <u>Manufacturer</u> | <u>Certificate No.</u> | <u>Due Date</u> |
|--|------------------------|---------------------|------------------------|--------------------|
| 2.1 DC Voltage Calibrator | 2709007 | Fluke | 22E1959 | 17 June 2023 |
| 2.2 Digital Thermometer | 2709007 | Fluke | CC-650557-01 | 30 October 2023 |
| 2.3 Thermo-Hygro Meter | NFI.BTH003/17 | PONPE | TE 650555-01 | 21 September 2023 |
| <u>Certified Reference Material</u> | <u>Lot. No.</u> | <u>Manufacturer</u> | <u>Ref N</u> | <u>Expire Date</u> |
| 2.4 pH buffer 4.008 (Primary pH buffer Solution) | 873608 | CPAchem | PH216.L5 | 16 February 2025 |
| 2.5 pH buffer 6.865 (Primary pH buffer Solution) | 873609 | CPAchem | PH217.L5 | 16 February 2025 |
| 2.6 pH buffer 10.01 (Primary pH buffer Solution) | 873611 | CPAchem | PH220.L5 | 16 February 2024 |
| 2.7 pH buffer 7.00 (Standard pH buffer Solution) | 873612 | CPAchem | PH107.L5 | 16 February 2024 |

3. This certification is traceable to The International System of Unit (SI Unit)

| | | |
|---|--------------|---|
| 3.1 Instruments No.2.1 | through | NSC-TISI-TIS 17025 Laboratory Accreditation of Calibration No.0008 |
| 3.2 Instruments No.2.2 | through | NSC-TISI-TIS 17025 Laboratory Accreditation of Calibration No.0061 |
| 3.3 Instruments No.2.3 | through | NSC-TISI-TIS 17025 Laboratory Accreditation of Calibration No.0061 |
| 3.4 Certified Reference Material No. 2.4 to 2.6 | traceable to | Primary measurement method- Harned cell using calibrated thermometer, barometer, and nanovoltmeter. The Standard Solution preparation and certified by CPAchem Ltd is accredited to ISO 17034 and ISO/IEC 17025 |
| 3.5 Certified Reference Material No.2.7 | traceable to | BIM RefN HI-13 LotN 25.05.2022; BIM RefN HI-16 LotN 02.06.2022; BIM RefN HI-13 LotN 25.05.2022; BIM RefN HI-16 LotN 02.06.2022, the Standard Solution preparation and certified by CPAchem Ltd is accredited to ISO 17034 and ISO/IEC 17025 |

4. This certificate was certified only for the instrument we calibrated.

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

N. Niyadot

F-CS-012 Revision: 01 Date: 20-04-65



Calibration Report

Certificate No.: 2302181-001-01

Equipment:

pH Meter

Resolution: 0.01 pH ; 1 mV

Manufacturer: METTLER TOLEDO

Model: SevenEasy pH

Serial No.: 1230525212

Type: Bench top

ID No.: UAE.WAS.003/2553

Date of Calibration: 24 March 2023

Page 3 of 5

Calibration Results:

1. Calibration of pH Meter

(Manual Temperature Compensation at 25 °C)

| Nominal pH | DC Voltage Standard (mV) | Average Indicator Reading | | Uncertainty (±mV) | Coverage Factor (k) |
|------------|----------------------------|---------------------------|-------|---------------------|-----------------------|
| | | mV | pH | | |
| 0 | 414.120 | 414 | 0.00 | 0.58 | 2.00 |
| 2 | 295.814 | 296 | 2.00 | 0.58 | 2.00 |
| 4 | 177.464 | 178 | 4.00 | 0.58 | 2.00 |
| 6 | 59.160 | 59 | 6.00 | 0.58 | 2.00 |
| 7 | 0.000 | 0 | 7.00 | 0.58 | 2.00 |
| 8 | -59.158 | -59 | 8.00 | 0.58 | 2.00 |
| 10 | -177.460 | -177 | 10.00 | 0.58 | 2.00 |
| 12 | -295.811 | -296 | 12.00 | 0.58 | 2.00 |
| 14 | -414.117 | -414 | 14.00 | 0.58 | 2.00 |

2. Calibration of pH Meter with Electrode (Manual Temperature Compensation at 25 °C)

Equipment: pH Electrode

Type: Combined Electrode

Manufacturer: METTLER TOLEDO

Model: InLab Solids

Serial No.: 1156883

ID.No. N/A

Performance of Electrode system (Three-Point Calibration at pH 4, pH 7 and pH 10)

| Certified Value @25 °C (pH) | Average Indicator Reading | | Relative Slope (%) | Uncertainty (± pH) | Coverage Factor (k) |
|-----------------------------|---------------------------|------|--------------------|----------------------|-----------------------|
| | pH | mV | | | |
| 4.008 | 4.01 | 187 | - | 0.0071 | 2.00 |
| 6.865 | 6.86 | 22 | 97.86 | 0.0075 | 2.00 |
| 10.010 | 10.01 | -160 | 97.66 | 0.0086 | 2.00 |
| 6.985 | 6.99 | 14 | - | 0.0093 | 2.00 |

F-CS-012 Revision: 01 Date: 20-04-65

N. Niponrat



Calibration Report

Certificate No.: 2302181-001-01

Equipment: Digital Thermometer with RTD (pH Meter)

Resolution: 0.1 °C Model: SevenEasy pH

Serial No.: 1230525212 ID No.: UAE.WAS.003/2553

Manufacturer: METTLER TOLEDO

Date of Calibration: 24 March 2023

Page 4 of 5

Location: Chemical Calibration Laboratory, National Food Institute

Environment Condition: Ambient Temperature 25 °C ± 1 °C

Relative Humidity 55 % ± 5 %

Condition of this results of Calibration:

- Calibration Method : - In house method: W-TE-025 by comparison with standard thermometer.
 - The Calibration is determined by comparing with a known temperature from a standard resistance thermometer.
 - The temperature scale in use at this laboratory is the International Temperature scale of 1990 (ITS-90).

2. Reference Standard Instrument :

| Instrument | Model | Serial No. | Certificate No. | Due Date | Through |
|---------------------------------------|-------|------------|-----------------|-----------|-------------------------|
| HANDHELD THERMOMETER | 1521 | A85997 | TE 660039-01 | 10-Dec-23 | NATIONAL FOOD INSTITUTE |
| Platinum Resistance Thermometer (PRT) | 385 | 509201 | | | |

Support Equipment : - Low Temperature Bath (ISOCAL-6), Model: Europa-6 Plus Basic, S/N: 341592/2

- This certificate is traceable to International System of Units (SI Units).
- This certificate was certified only for the instrument we calibrated.
- This result of calibration was found accurate as shown on date and place of calibration only.
- Condition of Calibrated item : Good
- Result of Calibration : ☒ Without adjustment ☐ After adjustment

N. mignobert

F-CS-012 Revision: 01 Date: 20-04-65



Calibration Report

Certificate No.: 2302181-001-01

Equipment: Digital Thermometer with RTD (pH Meter)

Resolution: 0.1 °C Model: SevenEasy pH

Serial No.: 1230525212 ID No.: UAE.WAS.003/2553

Manufacturer: METTLER TOLEDO

Date of Calibration: 24 March 2023

Page 5 of 5

Calibration point: 15.0, 25.0 and 30.0 °C

Calibration result:

- The probe was immersed in liquid bath or dry bath to a minimum depth of 120 mm.
- Description of probe, model : N/A S/N : N/A
- Dimension of probe : Diameter 3 mm., Length 120 mm.,
- Sheath material : N/A

| UUC* Reading (°C) | Standard Temperature (°C) | Correction Value (°C) | Uncertainty ± (°C) |
|-------------------|---------------------------|-----------------------|--------------------|
| 15.2 | 14.999 | - 0.2 | 0.12 |
| 25.2 | 24.999 | - 0.2 | 0.12 |
| 30.2 | 29.999 | - 0.2 | 0.12 |

Note

- UUC* : Unit Under Calibration

The report uncertainty of measurement was based on standard uncertainty multiplied by coverage factor k= 2, providing a level of confidence of approximately 95 %.

----- End -----

N. Vinyuth

F-CS-012 Revision: 01 Date: 20-04-65





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



Cert.No.: 23MM113

Page.: 1 of 3

Certificate of Calibration

Equipment : Electronic Balance

Manufacturer : Mettler Toledo

Model : XSR205

Serial No. : C210685394

ID No. : UAE.WAO.010/2565

Submitted by : United Analyst and Engineering Consultant Co.,Ltd.
3 Soi Udomsuk 41, Sukhumvit Road,
Bangchak, Phakhanong,
Bangkok 10260

Location : Balance Room


Received order : 26 April 2023

Calibration Date : 26 April 2023

Ambient Temperature : 15 °C to 40 °C

Relative Humidity : 30 % to 90 %

Calibrated by : Man Pattanapongpaiboon

Approved by : 
Approved Signatory

() Pornthippa Tameyakul
() Malee Butkruea
(☒) Suwit Imjai

Issue Date : 2 May 2023

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.

เอกสารไม่ควบคุม



Equipment : Electronic Balance
Condition As-Received : Used Item
Reference : 2304-0459OC-2

Cert.No.: 23MM113

Page: 2 of 3

Procedure used :-

Calibration were conducted using in-house calibration procedure CP-OB01 according to direct measurement method against standard weight.

Condition of this result of calibration

1. Reference standard instruments:-

| <u>Instruments</u> | <u>Model</u> | <u>Serial No.</u> | <u>ID No.</u> | <u>Test report No.</u> | <u>Due date</u> |
|-----------------------------|--------------|-------------------|---------------|------------------------|-----------------|
| 1) Standard Weight Set (E2) | 15884 | 24053 | 70RC007 | MM-0010-22 | 20 Jan 2024 |

2. This certificate is valid only to the item calibrated on date and place of calibration.
3. This result of calibration was made on requested at the point specified by customer.
4. This certificate is not certified for any commercial transaction.
5. This certification is traceable to the International System of Unit.

Result of calibration () Without Adjustment (*) After Adjustment by Internal Calibration

| | | | |
|------------------|---------------|------------|-----------|
| Range capacity : | 0 g to 81 g | Resolution | 0.00001 g |
| | 81 g to 220 g | Resolution | 0.0001 g |

Before Adjustment :

| <u>Applied Weight</u> (g) | <u>Balance Reading</u> (g) | <u>Correction</u> (g) | <u>Measurement Uncertainty</u> (± mg) | <u>Coverage Factor</u> (k) |
|--------------------------------|---------------------------------|----------------------------|--|---------------------------------|
| 80 | 79.99992 | +0.00008 | 0.15 | 2.00 |
| 200 | 199.9995 | +0.0005 | 0.29 | 2.00 |

After Adjustment :

1. Determination of the standard deviation of weighing machine

(n = 10)

| <u>Applied Weight</u> (g) | <u>Standard Deviation of Reading (g)</u> |
|--------------------------------|--|
| 80 | 0.000007 |
| 200 | 0.00004 |

เอกสารไม่ควบคุม



Equipment : Electronic Balance
Condition As-Received : Used Item
Reference : 2304-0459OC-2

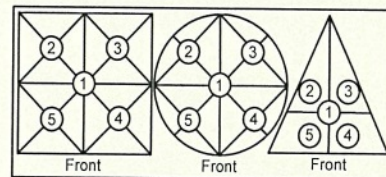
Cert.No.: 23MM113

Page: 3 of 3

Result of calibration

2. Effect of off center loading

A mass of 100 g was placed to various position on the pan.
The weighing machine reading error obtained is given in the table



Maximum difference between
off-center and central loading
(g)
0.0001

| Position 1 | Position 2 | Position 3 | Position 4 | Position 5 |
|------------|------------|------------|------------|------------|
| (g) | (g) | (g) | (g) | (g) |
| -0.0001 | -0.0001 | 0.0000 | -0.0001 | -0.0001 |

3. Departure from nominal value

| Applied Weight | Balance Reading | Correction | Measurement Uncertainty | Coverage Factor |
|----------------|-----------------|------------|-------------------------|-----------------|
| (g) | (g) | (g) | (\pm mg) | (k) |
| Unload | 0.00000 | 0.00000 | 0.014 | 2.11 |
| 0.05 | 0.04999 | +0.00001 | 0.015 | 2.09 |
| 0.1 | 0.09999 | +0.00001 | 0.015 | 2.07 |
| 1 | 1.00000 | 0.00000 | 0.018 | 2.04 |
| 5 | 5.00000 | 0.00000 | 0.026 | 2.00 |
| 20 | 20.00002 | -0.00002 | 0.045 | 2.00 |
| 50 | 50.00002 | -0.00002 | 0.080 | 2.00 |
| 80 | 80.00002 | -0.00002 | 0.15 | 2.00 |
| 100 | 100.0000 | 0.0000 | 0.17 | 2.00 |
| 150 | 150.0000 | 0.0000 | 0.29 | 2.00 |
| 200 | 199.9999 | +0.0001 | 0.29 | 2.00 |

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor k , providing a level of confidence of approximately 95 %.

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TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250
TEL. 0-2717-3000-27 FAX. 0-2719-9484



Cert. No.: 22TM1490

Page : 1 of 3

Certificate of Calibration

Equipment : Hot Air Oven

Manufacturer : Memmert

Model : UF 55

Serial No. : B216.1666

ID No. : UAE.WAO.027/2559

Submitted by : United Analyst and Engineering Consultant Co.,Ltd.
3 Soi Udomsuk 41, Sukhumvit Road,
Bangchak, Phrakhanong,
Bangkok 10260

Location : Lab Floor 2

Received Order : 19 October 2022
Calibration Date : 19 October 2022
Ambient Temperature : (26 ± 10) °C
Relative Humidity : (50 ± 30) %

Calibrated by : Preecha Hlahib

Approved by :

Approved Signatory

- () Pornthippa Tameyakul
() Malee Butkruea
(✓) Suwit Imjai

Issue Date : 31 October 2022

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.

เอกสารไม่ควบคุม

A 0046800



Equipment : Hot Air Oven
Condition As-Received : Used Item
Reference : 2210-0575OC-1

Cert. No.: 22TM1490

Page : 2 of 3

Procedure Used :-

Calibration were conducted using calibration procedure CP-OT02 according to direct measurement method with Data Acquisition which connected with Resistance Temperature Detector (RTD) and Thermocouple Type T.

The temperature scale used was based on ITS-90.

Condition of this result of calibration

1. Reference standard instrument:-

| <u>Instrument</u> | <u>Model</u> | <u>Serial No.</u> | <u>Cert. No.</u> | <u>Due Date</u> |
|----------------------|--------------|-------------------|------------------|-----------------|
| 1) Data Acquisition | 34970A | MY41021843 | 22LM4 | 10 Jan 2023 |

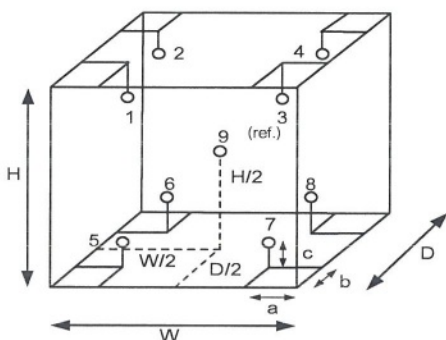
2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This certification is traceable to the International System of Unit.

Result of Calibration :- (*) Without Adjustment

Function of UUC* : Temperature Source

Fresh air setting : Close



| Environment during calibration | | |
|--------------------------------|-----------|----------|
| | Beginning | Finished |
| Temp. (°C) | 29 | 30 |
| REL.Humid. (%) | 47 | 40 |
| AC Supply (Volt) | 221 | 220 |

| Probe Installation Details : | | Dimension of Chamber : | |
|------------------------------|--------|------------------------|----------------------|
| a = | 5.0 cm | D = | 0.33 m |
| b = | 5.0 cm | W = | 0.40 m |
| c = | 5.0 cm | H = | 0.40 m |
| | | Capacity = | 0.053 m ³ |

| Ref. Std. ID No.: @ Calibration Point | | |
|---------------------------------------|-------------|----------------|
| Position : | (104) °C | (140,180) °C |
| 1 | 18-04RTD-01 | 21-04TC-01 |
| 2 | 18-04RTD-02 | 21-04TC-02 |
| 3 | 18-04RTD-03 | 21-04TC-03 |
| 4 | 18-04RTD-04 | 21-04TC-04 |
| 5 | 18-04RTD-05 | 21-04TC-05 |
| 6 | 18-04RTD-06 | 21-04TC-06 |
| 7 | 18-04RTD-07 | 21-04TC-07 |
| 8 | 18-04RTD-08 | 21-04TC-08 |
| 9 (ref.) | 18-04RTD-09 | 21-04TC-09 |

เอกสารไม่ควบคุม



Equipment : Hot Air Oven
Condition As-Received : Used Item
Reference : 2210-0575OC-1
Result of Calibration :- (*) Without Adjustment
Function of UUC* : Temperature Source
Fresh air setting : Close

Cert. No.: 22TM1490

Page : 3 of 3

| Calibration Point (°C) | UUC* Setting (°C) | UUC* Reading (°C) | Temperature stability (± °C) | Temperature uniformity (°C) | Overall Variation (°C) | Uncertainty (± °C) | Coverage Factor <i>k</i> |
|-----------------------------|------------------------|------------------------|-----------------------------------|----------------------------------|-----------------------------|-------------------------|-----------------------------|
| 104.0 | 104.0 | 104.0 | 0.061 | 1.3 | 1.7 | 0.42 | 2 |
| 140.0 | 140.0 | 140.0 | 0.14 | 2.3 | 2.4 | 1.1 | 2 |
| 180.0 | 180.0 | 180.0 | 0.21 | 3.5 | 3.6 | 1.3 | 2 |

| Calibration Point (°C) | Measured Temperature (°C) | | | | | | | | |
|-----------------------------|-----------------------------|---------|---------|---------|---------|---------|---------|---------|----------|
| | Position | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 (ref.) |
| 104.0 | 103.076 | 103.876 | 103.777 | 104.124 | 104.667 | 104.426 | 104.012 | 103.928 | 104.370 |
| 140.0 | 138.199 | 139.189 | 138.808 | 139.550 | 140.266 | 139.622 | 139.293 | 139.385 | 140.369 |
| 180.0 | 177.930 | 179.267 | 178.643 | 179.753 | 181.011 | 180.093 | 179.496 | 179.743 | 181.278 |

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 %.

-o0o-

เอกสารไม่ควบคุม

a 1133251

Calibration Certificate

Certificate No.: 2302827-001-01
Client name: UNITED ANALYST AND ENGINEERING CONSULTANT CO., LTD.
Address: 3 Soi Udomsuk 41, Sukhumvit Road,
Bangchak, Phrakhanong, Bangkok 10260

Page 1 of 4

Equipment: Electronic Balance
Manufacturer: METTLER TOLEDO
Model: XSR204
Serial No.: C117635043
ID No.: UAE.WAS.012/2564
Order No.: 2302827
Operation No.: 2302827-001
Date of Receipt: 10 May 2023
Date of Calibration: 10 May 2023

Calibrated by Mr.Manas Somsak
Specialist

Approved by 
(Mr.Pheraphat Tuanjit)

Manager, Division of Calibration Laboratory

Date of Issue: 18 May 2023

Responsible for the Technical Management Team

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 standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the National Food Institute.

F-CS-009 Revision: 01 Date: 20-04-65

Calibration Report

Certificate No.: 2302827-001-01

Equipment:

Electronic Balance

Manufacturer: METTLER TOLEDO

Model: XSR204

Resolution: 0.0001 g

Serial No.: C117635043

ID No.: UAE.WAS.012/2564

Capacity: 220 g

Date of Calibration: 10 May 2023

Page 2 of 4

Environment Condition: Ambient Temperature 21.4 ± 0.2 °C Relative Humidity: 43.4 ± 0.9 %

Place of Calibration: Balance room (Water Analysis Unit), UNITED ANALYST AND ENGINEERING CONSULTANT CO., LTD.

Condition of Equipment: Good Condition

Condition of This Results of Calibration:

1. Calibration Method: NFI Method W-MA-001 In-House Method based on UKAS Lab 14 : 2019

2. Reference Standards:

| Reference Standard | Model | Serial No. | Calibrated By | Certificate No. | Due Date |
|--------------------------|-------------|------------|---------------|-----------------|--------------|
| Standard Weight Class E2 | 1mg to 200g | B505567572 | TCS | M2304053S | 8 April 2024 |

| Instrument | Model | Serial No. | Calibrated By | Certificate No. | Due Date |
|--------------------|--------|----------------|----------------|-----------------|------------------|
| Thermo-Hygro Meter | 608-H1 | NFI.BTH 016/23 | Quality Reborn | QR23-0489 | 21 February 2024 |

3. This certification is traceable to SI UNIT

4. This certificate was certified only for the instrument we calibrated.

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

Calibration Results:

1. Repeatability of Reading:

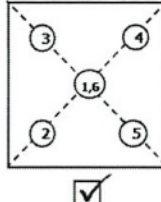
| Nominal Value (g) | Standard Deviation of Reading (g) |
|---------------------|-------------------------------------|
| 100 | 0.000032 |
| 200 | 0.000032 |

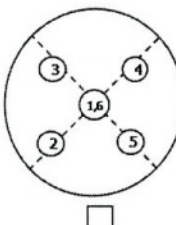
2. Off-Center Error:

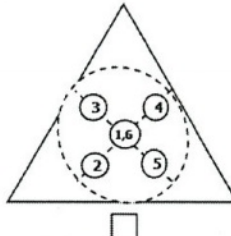
A mass of 100 g was placed and moved to various position on pan.

The balance reading obtained is given in the table.

Reading obtained is given in the table.







| | | | | | | |
|------------|------------|------------|------------|------------|------------|-------------------------------|
| 1 (g) | 2 (g) | 3 (g) | 4 (g) | 5 (g) | 6 (g) | (Maximum Difference) (g) |
| 100.0002 | 100.0002 | 100.0002 | 100.0002 | 100.0003 | 100.0002 | 0.0001 |

F-CS-012 Revision: 01 Date: 20-04-65

Calibration Report

Certificate No.: 2302827-001-01

Equipment: Electronic Balance

Manufacturer: METTLER TOLEDO

Model: XSR204

Resolution: 0.0001 g

Serial No.: C117635043

ID No.: UAE.WAS.012/2564

Capacity: 220 g

Date of Calibration: 10 May 2023

Page 3 of 4

Calibration Results: (Continued)

Calibration Range: 0 - 200 g

Calibration Adjustment: Internal Calibration

3. Departure from Nominal Value:

| Nominal Value (g) | Standard Value (g) | Average Reading (g) | Correction (g) | Uncertainty (± g) | Coverage Factor k |
|------------------------|-------------------------|--------------------------|---------------------|------------------------|----------------------|
| Unload | 0.00000 | 0.0000 | 0.0000 | 0.000085 | 2.00 |
| 0.01 | 0.01000 | 0.0100 | 0.0000 | 0.000085 | 2.00 |
| 0.02 | 0.02001 | 0.0200 | 0.0000 | 0.000085 | 2.00 |
| 0.05 | 0.05000 | 0.0500 | 0.0000 | 0.000085 | 2.00 |
| 0.1 | 0.10001 | 0.1000 | 0.0000 | 0.000085 | 2.00 |
| 0.2 | 0.20001 | 0.2000 | 0.0000 | 0.000085 | 2.00 |
| 0.5 | 0.50002 | 0.5000 | 0.0000 | 0.000085 | 2.00 |
| 1 | 1.00000 | 1.0000 | 0.0000 | 0.000086 | 2.00 |
| 2 | 2.00002 | 2.0000 | 0.0000 | 0.000086 | 2.00 |
| 3 | 3.00003 | 3.0000 | 0.0000 | 0.000087 | 2.00 |
| 5 | 5.00002 | 5.0000 | 0.0000 | 0.000087 | 2.00 |
| 10 | 10.00001 | 10.0000 | 0.0000 | 0.000088 | 2.00 |
| 20 | 20.00003 | 20.0000 | 0.0000 | 0.000092 | 2.00 |
| 30 | 30.00004 | 30.0000 | 0.0000 | 0.000098 | 2.00 |
| 40 | 40.00007 | 40.0000 | 0.0000 | 0.00011 | 2.00 |
| 45 | 45.00009 | 45.0001 | 0.0000 | 0.00013 | 2.00 |

F-CS-012 Revision: 01 Date: 20-04-65

RT

Calibration Report

Certificate No.: 2302827-001-01

Equipment:

Electronic Balance

Manufacturer: METTLER TOLEDO

Model: XSR204

Resolution: 0.0001 g

Serial No.: C117635043

ID No.: UAE.WAS.012/2564

Capacity: 220 g

Date of Calibration: 10 May 2023

Page 4 of 4

Calibration Results: (Continued)

Calibration Range: 0 - 200 g

Calibration Adjustment: Internal Calibration

3. Departure from Nominal Value:

| Nominal Value (g) | Standard Value (g) | Average Reading (g) | Correction (g) | Uncertainty (± g) | Coverage Factor k |
|------------------------|-------------------------|--------------------------|---------------------|------------------------|----------------------|
| 50 | 50.00003 | 50.0000 | 0.0000 | 0.00011 | 2.00 |
| 55 | 55.00005 | 55.0000 | 0.0000 | 0.00012 | 2.00 |
| 60 | 60.00004 | 60.0000 | 0.0000 | 0.00012 | 2.00 |
| 65 | 65.00005 | 65.0000 | 0.0000 | 0.00013 | 2.00 |
| 70 | 70.00006 | 70.0001 | -0.0001 | 0.00013 | 2.00 |
| 75 | 75.00008 | 75.0002 | -0.0001 | 0.00013 | 2.00 |
| 80 | 80.00007 | 80.0002 | -0.0001 | 0.00014 | 2.00 |
| 85 | 85.00009 | 85.0002 | -0.0001 | 0.00014 | 2.00 |
| 90 | 90.00010 | 90.0002 | -0.0001 | 0.00015 | 2.00 |
| 100 | 100.00006 | 100.0002 | -0.0001 | 0.00016 | 2.00 |
| 120 | 120.00009 | 120.0002 | -0.0001 | 0.00018 | 2.00 |
| 150 | 150.00009 | 150.0002 | -0.0001 | 0.00021 | 2.00 |
| 200 | 200.00016 | 200.0003 | -0.0001 | 0.00028 | 2.00 |

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 %.

----- End -----

F-CS-012 Revision: 01 Date: 20-04-65






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



Cert. No.: 23TM249

Page : 1 of 3

Certificate of Calibration

Equipment : BOD Incubator

Manufacturer : Arco

Model : UC4-1320

Serial No. : 13URC4S013201

ID No. : UAE.WAO.015/2561

Submitted by : United Analyst and Engineering Consultant Co.,Ltd.
3 Soi Udomsuk 41, Sukhumvit Road,
Bangchak, Phrakhanong,
Bangkok 10260

Location : Lab Floor 2

Received Order : 15 February 2023
Calibration Date : 15 February 2023
Ambient Temperature : (26 ± 10) °C
Relative Humidity : (50 ± 30) %

Calibrated by : Preecha Hlahib

Approved by :

Approved Signatory

- () Pornthippa Tameyakul
(✓) Malee Butkruea
() Suwit Imjai

Issue Date : 24 February 2023

The Uncertainties are for a confidence probability of approximately 95%

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Approval of the head of Corporate Services 3 : Equipment Calibration and Testing Services.

เอกสารไม่ควบคุม

A 0051476



Equipment : BOD Incubator
 Condition As-Received : Used Item
 Reference : 2302-0297OC-1

Cert. No.: 23TM249
 Page : 2 of 3

Procedure Used :-

Calibration were conducted using calibration procedure CP-OT02 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 | Model | Serial No. | Cert. No. | Due Date |
|----------------------|--------|------------|-----------|-------------|
| 1) Data Acquisition | 34972A | MY57013711 | 22LM93 | 02 Jul 2023 |

2. This certificate is valid only to the item calibrated on date and place of calibration.

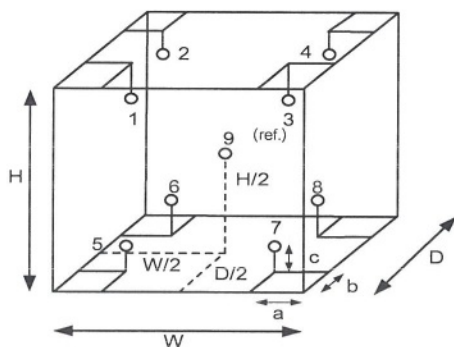
3. This certification is traceable to the International System of Unit.

Result of Calibration :- (*) Without Adjustment

Function of UUC* : Temperature Source

Fresh air setting : Not Available

| Environment during calibration | | |
|--------------------------------|-----------|----------|
| | Beginning | Finished |
| Temp. (°C) | 29 | 31 |
| REL.Humid. (%) | 63 | 67 |
| AC Supply (Volt) | 220 | 220 |



| Position : | Ref. Std. ID No.: |
|------------|-------------------|
| 1 | 22-18RTD-2/1 |
| 2 | 18RTD-2/2 |
| 3 | 18RTD-2/3 |
| 4 | 18RTD-2/4 |
| 5 | 18RTD-2/5 |
| 6 | 18RTD-2/6 |
| 7 | 18RTD-2/7 |
| 8 | 18RTD-2/8 |
| 9 (ref.) | 18RTD-2/9 |

Probe Installation Details :

Dimension of Chamber :

| | | | | | |
|-----|----|----|------------|------|----------------|
| a = | 10 | cm | D = | 0.62 | m |
| b = | 10 | cm | W = | 1.2 | m |
| c = | 10 | cm | H = | 1.2 | m |
| | | | Capacity = | 0.89 | m ³ |

เอกสารไม่ควบคุม *Malu.*



Equipment : BOD Incubator
Condition As-Received : Used Item
Reference : 2302-0297OC-1
Result of Calibration :- (*) Without Adjustment
Function of UUC* : Temperature Source
Fresh air setting : Not Available

Cert. No.: 23TM249

Page : 3 of 3

| Calibration Point (°C) | UUC* Setting (°C) | UUC* Reading (°C) | Temperature stability (± °C) | Temperature uniformity (°C) | Overall Variation (°C) | Uncertainty (± °C) | Coverage Factor <i>k</i> |
|-----------------------------|------------------------|------------------------|-----------------------------------|----------------------------------|-----------------------------|-------------------------|-----------------------------|
| 20.0 | 20.0 | 19.3 | 0.32 | 0.57 | 1.0 | 0.60 | 2 |

| Calibration Point (°C) | Measured Temperature (°C) | | | | | | | | |
|-----------------------------|-----------------------------|--------|--------|--------|--------|--------|--------|--------|----------|
| | Position | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 (ref.) |
| 20.0 | 20.086 | 19.916 | 20.386 | 19.976 | 19.973 | 19.838 | 19.837 | 19.821 | 19.949 |

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 %.

-oOo-

เอกสารไม่ควบคุม

Malu.

a 1149512



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



Cert. No.: 23TM375

Page : 1 of 3

Certificate of Calibration

Equipment : BOD Incubator

Manufacturer : ARCO

Model : UR-1320

Serial No. : -

ID No. : UAE.WAO.018/2551

Submitted by : United Analyst and Engineering Consultant Co.,Ltd.
3 Soi Udomsuk 41, Sukhumvit Road,
Bangchak, Phrakhanong,
Bangkok 10260

Location : Lab Floor 2

Received Order : 11 April 2023

Calibration Date : 12 April 2023

Ambient Temperature : (26 ± 10) °C

Relative Humidity : (50 ± 30) %

Calibrated by : Krisda Malee

Approved by :

Malee .

Approved Signatory

- () Pornthippa Tameyakul
(✓) Malee Butkruea
() Suwit Imjai

Issue Date : 24 April 2023

The Uncertainties are for a confidence probability of approximately 95%

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Approval of the head of Corporate Services 3 : Equipment Calibration and Testing Services.

เอกสารไม่ควบคุม

A 0053360



Equipment : BOD Incubator
Condition As-Received : Used Item
Reference : 2304-0156OC-2

Cert. No.: 23TM375

Page : 2 of 3

Procedure Used :-

Calibration were conducted using calibration procedure CP-OT02 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 | Model | Serial No. | Cert. No. | Due Date |
|----------------------|--------|------------|-----------|-------------|
| 1) Data Acquisition | 34972A | MY59003411 | 22LM165 | 26 Nov 2023 |

2. This certificate is valid only to the item calibrated on date and place of calibration.

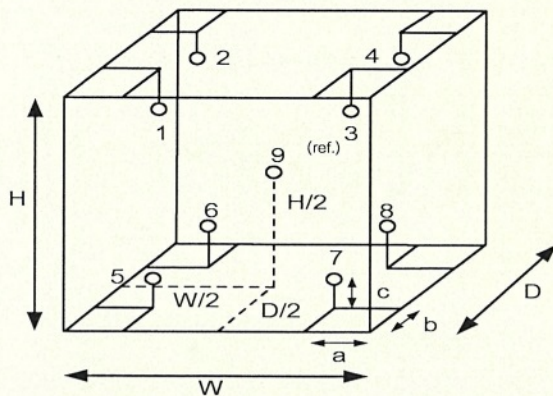
3. This certification is traceable to the International System of Unit.

Result of Calibration :- (*) Without Adjustment

Function of UUC* : Temperature Source

Fresh air setting : Not Available

| Environment during calibration | | |
|--------------------------------|-----------|----------|
| | Beginning | Finished |
| Temp. (°C) | 28 | 27 |
| REL.Humid. (%) | 42 | 45 |
| AC Supply (Volt) | 219 | 220 |



| Position : | Ref. Std. ID No.: |
|------------|-------------------|
| 1 | 20RTD-2/1 |
| 2 | 20RTD-2/2 |
| 3 | 20RTD-2/3 |
| 4 | 20RTD-2/4 |
| 5 | 20RTD-2/5 |
| 6 | 20RTD-2/6 |
| 7 | 20RTD-2/7 |
| 8 | 20RTD-2/8 |
| 9 (ref.) | 20RTD-2/9 |

Probe Installation Details :

a = 10 cm
b = 10 cm
c = 10 cm

Dimension of Chamber :

D = 0.62 m
W = 1.2 m
H = 1.2 m
Capacity = 0.89 m³

Malu.

เอกสารไม่ควบคุม

a 1158259



Equipment : BOD Incubator
Condition As-Received : Used Item
Reference : 2304-0156OC-2
Result of Calibration :- (*) Without Adjustment
Function of UUC* : Temperature Source
Fresh air setting : Not Available

Cert. No.: 23TM375

Page : 3 of 3

| Calibration Point (°C) | UUC* Setting (°C) | UUC* Reading (°C) | Temperature stability (± °C) | Temperature uniformity (°C) | Overall Variation (°C) | Coverage Factor <i>k</i> |
|-----------------------------|------------------------|------------------------|-----------------------------------|----------------------------------|-----------------------------|-----------------------------|
| 20.0 | 20.0 | 20.0 | 0.48 | 0.42 | 1.2 | 2 |

| Calibration Point (°C) | Measured Temperature (°C) | | | | | | | | | Uncertainty (± °C) |
|--------------------------------|-----------------------------|--------|--------|--------|--------|--------|--------|--------|----------|-----------------------------|
| | Position | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 (ref.) | |
| 20.0 | 20.040 | 20.170 | 20.263 | 20.093 | 19.749 | 19.704 | 19.920 | 20.191 | 20.020 | 0.66 |

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 %.

-o0o-

Malu

เอกสารไม่ควบคุม

a 1158258

Verification Certificate

Certificate No.: 2302413-001-01
Client name: UNITED ANALYST AND ENGINEERING CONSULTANT CO., LTD.
Address: 3 Soi Udomsuk 41, Sukhumvit Road,
Bangchack, Prakhonong, Bangkok 10260

Page 1 of 4

Equipment: HEATING BLOCK DIGESTION

Manufacturer: FOSS

Model: 2520

Serial No.: 91794469

ID No.: UAE.WAS.011/2560

Order No.: 2302413

Operation No.: 2302413-001

Date of Receipt: 28 March 2023

Date of Calibration: 30-31 March 2023

Calibrated by Mr.Nuttapol Niyomchat
Specialist

Approved by

(Mr.Pheraphat Tuanjit)

Manager, Division of Calibration Laboratory

Date of Issue: 10 April 2023

Responsible for the Technical Management Team

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 standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the National Food Institute.

F-CS-009 Revision: 01 Date: 20-04-65



Verification Report

Certificate No.: 2302413-001-01
Equipment: HEATING BLOCK DIGESTION
Model: 2520 Serial No.: 91794469
Resolution: 1 °C ID No.: UAE.WAS.011/2560
Manufacturer: FOSS
Date of Calibration: 30-31 March 2023

Page 2 of 4

Location: Laboratory Room, NATIONAL FOOD INSTITUTE
Environment Condition: Ambient Temperature (25 ± 3) °C
Relative Humidity (55 ± 15) %
Line Voltage (220 ± 10) Volt

Condition of this results of Calibration:

- This instrument was calibrated by insert standard thermocouples type R into its heating block digestion and compared to temperature obtained from reference standards thermometer at calibrated point.
 - The temperature scale used was based on ITS - 90 .
 - All data show below were final values and the initial data may be obtained upon request.
- Reference Standard Instrument :

| Instrument | Model | Serial No. | Certificate No. | Due Date | Through |
|---------------------------------------|--------|-------------------------|-----------------|------------|----------------------------------|
| Digital Thermometer with Thermocouple | 34970A | MY44045576/MY41194453 | TC22/0044 | 5-May-2023 | N.M. Technical Center Laboratory |
| | Type R | TC#101-103 / CH#101-103 | | | |

- This certificate is traceable to international system of units (SI Units).
- This certificate was certified only for the instrument we calibrated.
- This result of calibration was found accurate as shown on date and place of calibration only.
- Condition of Calibrated item : Good

UUC* Description

Time of Record - Hour 30 Minute At 380 °C

7. Result of Calibration : ☒ Without adjustment ☐ After adjustment



F-CS-009 Revision: 01 Date: 20-04-65

Verification Report

Certificate No.:

2302413-001-01

Equipment:

HEATING BLOCK DIGESTION

Model: 2520

Serial No.: 91794469

Resolution: 1 °C

ID No.: UAE.WAS.011/2560

Manufacturer: FOSS

Date of Calibration:

30-31 March 2023

Page 3 of 4

Calibration point:

380 °C

Calibration result:

Reporting of Temperature

| Block No. | UUC* Setting (°C) | UUC* Reading (°C) | Stability (±°C) | Standard Thermometer (°C) | Uncertainty (±°C) |
|-----------|-------------------|-------------------|-----------------|---------------------------|-------------------|
| 1 | 380 | 380 | 0.96 | 377.74 | 2.1 |
| 2 | 380 | 380 | 0.40 | 377.28 | 2.1 |
| 3 | 380 | 380 | 1.18 | 377.82 | 2.1 |
| 4 | 380 | 380 | 0.44 | 377.19 | 1.6 |
| 5 | 380 | 380 | 0.11 | 377.30 | 1.6 |
| 6 | 380 | 380 | 0.14 | 377.90 | 1.6 |
| 7 | 380 | 380 | 1.17 | 373.85 | 2.1 |
| 8 | 380 | 380 | 0.33 | 376.96 | 2.1 |
| 9 | 380 | 380 | 0.14 | 374.18 | 2.1 |
| 10 | 380 | 380 | 0.96 | 378.56 | 2.0 |
| 11 | 380 | 380 | 1.04 | 378.34 | 2.0 |
| 12 | 380 | 380 | 0.35 | 378.06 | 2.0 |
| 13 | 380 | 380 | 0.48 | 377.05 | 1.6 |
| 14 | 380 | 380 | 0.38 | 379.19 | 1.6 |
| 15 | 380 | 380 | 0.50 | 377.48 | 1.6 |
| 16 | 380 | 380 | 0.48 | 378.33 | 1.7 |
| 17 | 380 | 380 | 0.71 | 377.60 | 1.7 |
| 18 | 380 | 380 | 0.35 | 376.77 | 1.7 |
| 19 | 380 | 380 | 0.84 | 377.06 | 1.8 |
| 20 | 380 | 380 | 0.41 | 378.58 | 1.8 |

Note:

- UUC* = Unit Under Calibration
- Immersion depth of standard thermometer in tube level high of sand is equal heater plate of UUC.
- Stability = One-half of the greatest maximum difference of measured temperatures at one sensors, for at least half an hour after reaching steady state.

ATZ

F-CS-009 Revision: 01 Date: 20-04-65



Verification Report

Certificate No.: 2302413-001-01

Equipment: HEATING BLOCK DIGESTION

Model: 2520 Serial No.: 91794469

Resolution: 1 °C ID No.: UAE.WAS.011/2560

Manufacturer: FOSS

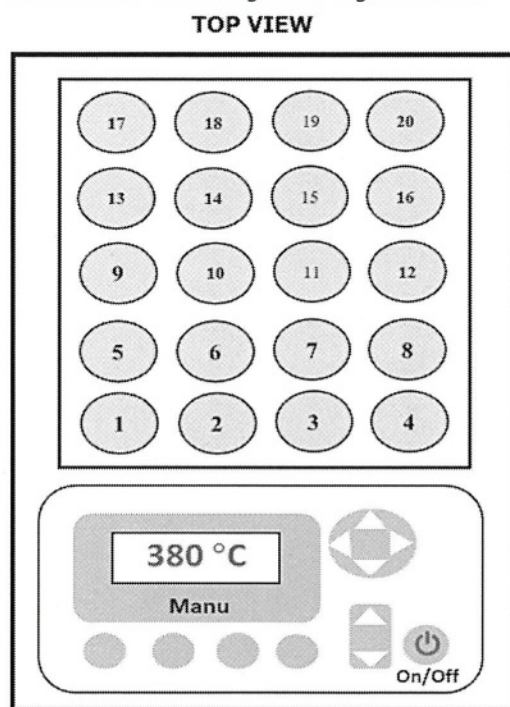
Date of Calibration: 30-31 March 2023

Calibration point: 380 °C

Calibration result: Continued

Page 4 of 4

Figure 1. Location of Reference Standard and Block Diagram of Digestion Unit



Sensor Installation Location

Note:

- UUC* = Unit Under Calibration
- Immersion depth of standard thermometer in tube level high of sand is equal heater plate of UUC.
- Stability = One-half of the greatest maximum difference of measured temperatures at one sensors, for at least half an hour after reaching steady state.

The report uncertainty of measurement was based on standard uncertainty multiplied by coverage factor $k=2$, providing a level of confidence of approximately 95 %.

----- End -----

F-CS-009 Revision: 01 Date: 20-04-65



FOSS

Customer Service Report

FOSS South East Asia

3388 Sirinrat Building, 25th – 26th Floor, Unit No. 3388/90,
Rama IV Road, Klongton , Klongtoey, Bangkok, Thailand 10110

Report No:

8411

Date:

29/05/23

Customer:

UAE

Address:

Bangkok, Thailand

Instrument:

KT8100

Serial:

91829052

Hours

Travel To Customer

07:00

1.5 hr

Start

08:30

Finish

Labour

09:00

15:00

6 hr.

Travel From Customer

16:30

18:30

2 hr

Job Type

| Application | Special | Standard |
|-----------------|----------------|--------------|
| Normal | Courtesy Visit | Installation |
| Distributor | PMA Onboarding | Quote |
| Internal | Warranty | Repair |
| Digital Service | Sales Support | Remote |
| | | Training |
| | | In House |
| | | PM |
| | | Other |

PO/Quote Number:

if applicable

PMA Type

For score if applicable

Contract No.

if applicable

Details of Work / Test

Condition / Status

| | |
|---|---------------------|
| - นกข Function Test 100% OK | OK |
| - ตรวจสอบ Part 12 Mo PM - kit 8100/8200 12 Mo | OK |
| - ตรวจสอบ Heating coil = 32.3 Ω | OK |
| - ตรวจสอบ Splash head, Steam Generator | OK |
| - ตรวจสอบ Steam valve = 54.8 Ω | OK |
| - ตรวจสอบ Condenser Water Cooling Valve A, B = 54.8 Ω | OK |
| - ตรวจสอบ water 100 ml → 100 ml Alkal 10ml → 10 ml | OK |
| - ตรวจสอบ water 170 ml | OK |
| - ตรวจสอบ Blank = 0.12 Recovery = 100% | |
| Instrument Ready for Use | OK |
| Not OK | If not OK - Comment |

| Part No: | Batch | Description | Qty |
|----------|------------|--------------------------------|-----|
| 60031807 | 18.07.2022 | Foss PM kit KT8100/8200 12 Mo. | 1 |
| | | | |
| | | | |
| | | | |
| | | | |

I confirm this report is accurate and complete

| | | | |
|-------------|-------------------|-----------------|--------|
| Signed FOSS | | Signed Customer | นางสาว |
| Name | Patchara Dechaeng | Name | |

Would you be willing to participate in a brief survey in order to tell us how we performed?

karnphong.b@uaeconsultant.co.th

เอกสารไม่ควบคุม



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



Cert. No.: 23TM378

Page : 1 of 3

Certificate of Calibration

Equipment : Incubator

Manufacturer : Memmert

Model : IPP 260

Serial No. : V615.0187

ID No. : UAE.MIC.003/2559

Submitted by : United Analyst and Engineering Consultant Co.,Ltd.
3 Soi Udomsuk 41, Sukhumvit Road,
Bangchak, Phrakhanong,
Bangkok 10260

Location : Microbiology Laboratory

Received Order : 11 April 2023

Calibration Date : 12 April 2023

Ambient Temperature : (26 ± 10) °C

Relative Humidity : (50 ± 30) %

Calibrated by : Preecha Hlahib

Approved by :

Malee

Approved Signatory

- () Pornthippa Tameyakul
(/) Malee Butkruea
() Suwit Imjai

Issue Date :

24 April 2023

The Uncertainties are for a confidence probability of approximately 95%

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Approval of the head of Corporate Services 3 : Equipment Calibration and Testing Services.

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Equipment : Incubator
Condition As-Received : Used Item
Reference : 2304-0155OC-1

Cert. No.: 23TM378

Page : 2 of 3

Procedure Used :-

Calibration were conducted using calibration procedure CP-OT02 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 | Model | Serial No. | Cert. No. | Due Date |
|----------------------|--------|------------|-----------|-------------|
| 1) Data Acquisition | 34972A | MY49001451 | 23LM27 | 25 Feb 2024 |

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.

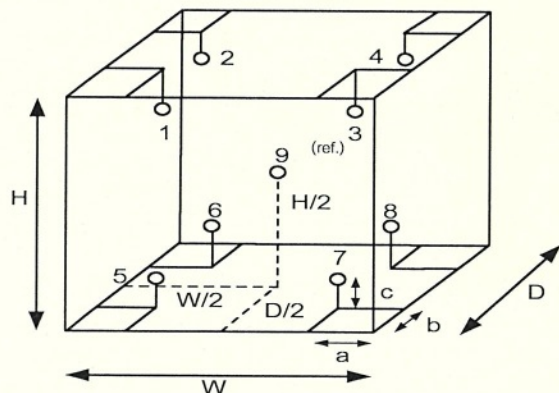
Result of Calibration :- (*) Without Adjustment

Function of UUC* : Temperature Source

Fresh air setting : Not Available

Environment during calibration

| | Beginning | Finished |
|--------------------|-----------|----------|
| Temp. (°C) | 25 | 26 |
| REL.Humid. (%) | 57 | 61 |
| AC Supply (Volt) | 220 | 220 |



| Position : | Ref. Std. ID No.: |
|------------|-------------------|
| 1 | 19RTD-2/1 |
| 2 | 19RTD-2/2 |
| 3 | 19RTD-2/3 |
| 4 | 19RTD-2/4 |
| 5 | 19RTD-2/5 |
| 6 | 19RTD-2/6 |
| 7 | 19RTD-2/7 |
| 8 | 19RTD-2/8 |
| 9 (ref.) | 19RTD-2/9 |

Probe Installation Details :

a = 5.0 cm
b = 5.0 cm
c = 5.0 cm

Dimension of Chamber :

D = 0.50 m
W = 0.64 m
H = 0.80 m
Capacity = 0.26 m³

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Equipment : Incubator
Condition As-Received : Used Item
Reference : 2304-0155OC-1
Result of Calibration :- (*) Without Adjustment
Function of UUC* : Temperature Source
Fresh air setting : Not Available

Cert. No.: 23TM378

Page : 3 of 3

| Calibration Point (°C) | UUC* Setting (°C) | UUC* Reading (°C) | Temperature stability (± °C) | Temperature uniformity (°C) | Overall Variation (°C) | Coverage Factor <i>k</i> |
|-----------------------------|------------------------|------------------------|-----------------------------------|----------------------------------|-----------------------------|-----------------------------|
| 35.0 | 35.0 | 35.0 | 0.052 | 0.53 | 0.60 | 2 |

| Calibration Point (°C) | Measured Temperature (°C) | | | | | | | | | Uncertainty (± °C) |
|--------------------------------|-----------------------------|--------|--------|--------|--------|--------|--------|--------|----------|-----------------------------|
| | Position | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 (ref.) | |
| 35.0 | 35.092 | 35.148 | 34.817 | 35.149 | 34.894 | 35.323 | 34.773 | 35.058 | 34.802 | 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 %.

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TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
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534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250
TEL. 0-2717-3000-29 FAX. 0-2719-9484



Cert. No.: 23TM729

Page : 1 of 3

Certificate of Calibration

Equipment : Incubator

Manufacturer : Memmert

Model : IPP 260

Serial No. : V618.0033

ID No. : UAE.MIC.021/2561

Submitted by : United Analyst and Engineering Consultant Co.,Ltd.
3 Soi Udomsuk 41, Sukhumvit Road,
Bangchak, Phrakhanong,
Bangkok 10260

Location : Microbiology Laboratory (302)

Received Order : 27 April 2023

Calibration Date : 27 April 2023

Ambient Temperature : (26 ± 10) °C

Relative Humidity : (50 ± 30) %

Calibrated by : Tawatchai Pama

Approved by :

Malu.

Approved Signatory

- (☒) Pornthippa Tameyakul
(☒) Malee Butkruea
(☐) Suwit Imjai

Issue Date : 11 May 2023

The Uncertainties are for a confidence probability of approximately 95%

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Approval of the head of Corporate Services 3 : Equipment Calibration and Testing Services.

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Equipment : Incubator
Condition As-Received : Used Item
Reference : 2304-0461OC-7

Cert. No.: 23TM729

Page : 2 of 3

Procedure Used :-

Calibration were conducted using calibration procedure CP-OT02 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 | Model | Serial No. | Cert. No. | Due Date |
|----------------------|--------|------------|-----------|-------------|
| 1) Data Acquisition | 34972A | MY57013711 | 22LM93 | 02 Jul 2023 |

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.

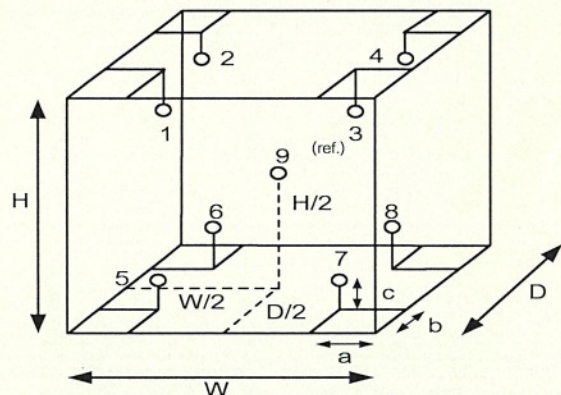
Result of Calibration :- (*) Without Adjustment

Function of UUC* : Temperature Source

Fresh air setting : Close

Environment during calibration

| | Beginning | Finished |
|--------------------|-----------|----------|
| Temp. (°C) | 20 | 21 |
| REL.Humid. (%) | 72 | 77 |
| AC Supply (Volt) | 230 | 231 |



| Position : | Ref. Std. ID No.: |
|------------|-------------------|
| 1 | 18-18RTD-01 |
| 2 | 18-18RTD-02 |
| 3 | 18-18RTD-03 |
| 4 | 18-18RTD-04 |
| 5 | 18-18RTD-05 |
| 6 | 18-18RTD-10 |
| 7 | 18-18RTD-07 |
| 8 | 22-18RTD-08 |
| 9 (ref.) | 18-18RTD-09 |

Probe Installation Details :

a = 10 cm
b = 10 cm
c = 10 cm

Dimension of Chamber :

D = 0.50 m
W = 0.64 m
H = 0.80 m
Capacity = 0.26 m³

เอกสารไม่ควบคุม



Equipment : Incubator
Condition As-Received : Used Item
Reference : 2304-0461OC-7
Result of Calibration :- (*) Without Adjustment
Function of UUC* : Temperature Source
Fresh air setting : Close

Cert. No.: 23TM729

Page : 3 of 3

| Calibration Point (°C) | UUC* Setting (°C) | UUC* Reading (°C) | Temperature stability (± °C) | Temperature uniformity (°C) | Overall Variation (°C) | Coverage Factor <i>k</i> |
|-----------------------------|------------------------|------------------------|-----------------------------------|----------------------------------|-----------------------------|-----------------------------|
| 22.0 | 22.0 | 22.0 | 0.058 | 0.11 | 0.19 | 2 |
| 44.0 | 44.0 | 44.0 | 0.066 | 0.50 | 0.87 | 2 |

| Calibration Point (°C) | Measured Temperature (°C) | | | | | | | | | Uncertainty (± °C) |
|--------------------------------|-----------------------------|--------|--------|--------|--------|--------|--------|--------|----------|-----------------------------|
| | Position | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 (ref.) | |
| 22.0 | 22.009 | 22.038 | 21.971 | 22.005 | 22.004 | 22.009 | 21.941 | 21.959 | 22.022 | 0.30 |
| 44.0 | 44.393 | 44.447 | 44.029 | 44.204 | 43.899 | 43.895 | 43.637 | 43.923 | 44.085 | 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 %.

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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



Cert. No.: 23TM193

Page : 1 of 3

Certificate of Calibration

Equipment : Water Bath

Manufacturer : Memmert

Model : WNE 14

Serial No. : L416.0606

ID No. : UAE.MIC.002/2560

Submitted by : United Analyst and Engineering Consultant Co.,Ltd.
3 Soi Udomsuk 41, Sukhumvit Road,
Bangchak, Phrakhanong,
Bangkok 10260

Location : Microbiology Laboratory

Received Order : 15 February 2023
Calibration Date : 15 February 2023
Ambient Temperature : (26 ± 10) °C
Relative Humidity : (50 ± 30) %

Calibrated by : Suwit Imjai

Approved by :

Approved Signatory

() Pornthippa Tameyakul
(/) Malee Butkruea

Issue Date : 24 February 2023

The Uncertainties are for a confidence probability of approximately 95%

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Approval of the head of Corporate Services 3 : Equipment Calibration and Testing Services.

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Equipment : Water Bath
Condition As-Received : Used Item
Reference : 2302-0295OC-2

Cert. No.: 23TM193

Page : 2 of 3

Procedure Used :-

Calibration were conducted using in-house calibration procedure CP-OT04 according to direct measurement method with Data Acquisition which connected with Industrial Platinum Resistance Thermometer (IPRT).

The temperature scale used was based on ITS-90.

Condition of this result of calibration

1. Reference standard instrument:-

| <u>Instrument</u> | <u>Model</u> | <u>Serial No.</u> | <u>Cert. No.</u> | <u>Due Date</u> |
|----------------------|--------------|-------------------|------------------|-----------------|
| 1) Data Acquisition | 34972A | MY59003411 | 22LM165 | 26 Nov 2023 |

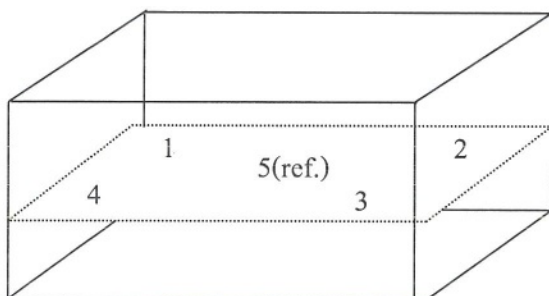
2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This certification is traceable to the International System of Unit.

Result of Calibration :- (*) Without Adjustment

Function of UUC* : Temperature Source

| | Environmental | | AC Voltage Supply |
|--------------------------|---------------|-----------|-------------------|
| | (°C) | (%R.H.) | (Volt) |
| Beginning of Calibration | 22 | 65 | 231 |
| Finished of Calibration | 23 | 61 | 231 |



Front

| Position : | Ref. Std. ID No.: |
|------------|----------------------|
| 1 | 4804539-001 |
| 2 | 4804539-002 |
| 3 | 4804539-003 |
| 4 | 4804539-004 |
| 5(ref.) | 4804539-005 |

เอกสารไม่ควบคุม



Equipment : Water Bath
Condition As-Received : Used Item
Reference : 2302-0295OC-2
Result of Calibration :- (*) Without Adjustment
Function of UUC* : Temperature Source

Cert. No.: 23TM193

Page : 3 of 3

| Calibration point (°C) | UUC* Setting (°C) | UUC* Reading (°C) | Average* Standard Reading (°C) | | | | |
|--------------------------------|---------------------------|---------------------------|----------------------------------|--------|--------|--------|----------|
| | | | Position | | | | |
| | | | 1 | 2 | 3 | 4 | 5 (ref.) |
| 44.5 | 44.5 | 44.5 | 44.453 | 44.437 | 44.428 | 44.477 | 44.459 |

| Calibration point (°C) | Uniformity (°C) | Stability (± °C) | Uncertainty (± °C) | Coverage Factor <i>k</i> |
|--------------------------------|----------------------|-----------------------|-------------------------|--------------------------------|
| 44.5 | 0.079 | 0.038 | 0.15 | 2 |

Average* : The average of 30 values in each position.

Uniformity : The maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.

Stability : One-half of the greatest maximum difference of measured temperature at any one probe.

UUC* : Unit Under Calibration

Note : The reported uncertainty of measurement was included stability and excluded uniformity.

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor *k*, providing a level of confidence of approximately 95 %.

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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



Cert. No.: 23TM194

Page : 1 of 3

Certificate of Calibration

Equipment : Water Bath

Manufacturer : Memmert

Model : WNE 14

Serial No. : L416.0612

ID No. : UAE.MIC.003/2560

Submitted by : United Analyst and Engineering Consultant Co.,Ltd.
3 Soi Udomsuk 41, Sukhumvit Road,
Bangchak, Phrakhanong,
Bangkok 10260

Location : Microbiology Laboratory

Received Order : 15 February 2023
Calibration Date : 15 February 2023
Ambient Temperature : (26 ± 10) °C
Relative Humidity : (50 ± 30) %

Calibrated by : Suwit Imjai

Approved by :

Malu.

Approved Signatory

() Pornthippa Tameyakul

(✓) Malee Butkruea

Issue Date :

24 February 2023

The Uncertainties are for a confidence probability of approximately 95%

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Approval of the head of Corporate Services 3 : Equipment Calibration and Testing Services.

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Equipment : Water Bath
Condition As-Received : Used Item
Reference : 2302-0295OC-3

Cert. No.: 23TM194

Page : 2 of 3

Procedure Used :-

Calibration were conducted using in-house calibration procedure CP-OT04 according to direct measurement method with Data Acquisition which connected with Industrial Platinum Resistance Thermometer (IPRT).

The temperature scale used was based on ITS-90.

Condition of this result of calibration

1. Reference standard instrument:-

| <u>Instrument</u> | <u>Model</u> | <u>Serial No.</u> | <u>Cert. No.</u> | <u>Due Date</u> |
|----------------------|--------------|-------------------|------------------|-----------------|
| 1) Data Acquisition | 34972A | MY59003411 | 22LM165 | 26 Nov 2023 |

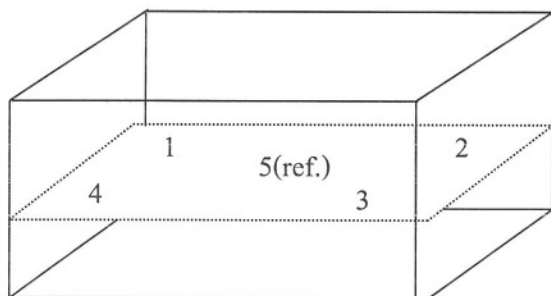
2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This certification is traceable to the International System of Unit.

Result of Calibration :- (*) Without Adjustment

Function of UUC* : Temperature Source

| | Environmental | | AC Voltage Supply |
|--------------------------|---------------|-----------|-------------------|
| | (°C) | (%R.H.) | (Volt) |
| Beginning of Calibration | 22 | 65 | 231 |
| Finished of Calibration | 22 | 63 | 230 |



Front

| Position : | Ref. Std. ID No.: |
|------------|----------------------|
| 1 | 4804539-001 |
| 2 | 4804539-002 |
| 3 | 4804539-003 |
| 4 | 4804539-004 |
| 5(ref.) | 4804539-005 |

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Equipment : Water Bath
Condition As-Received : Used Item
Reference : 2302-0295OC-3
Result of Calibration :- (*) Without Adjustment
Function of UUC* : Temperature Source

Cert. No.: 23TM194

Page : 3 of 3

| Calibration point (°C) | UUC* Setting (°C) | UUC* Reading (°C) | Average* Standard Reading (°C) | | | | |
|--------------------------------|---------------------------|---------------------------|----------------------------------|--------|--------|--------|----------|
| | | | Position | | | | |
| | | | 1 | 2 | 3 | 4 | 5 (ref.) |
| 44.5 | 44.5 | 44.6 | 44.520 | 44.509 | 44.498 | 44.552 | 44.530 |

| Calibration point (°C) | Uniformity (°C) | Stability (± °C) | Uncertainty (± °C) | Coverage Factor <i>k</i> |
|--------------------------------|----------------------|-----------------------|-------------------------|--------------------------------|
| 44.5 | 0.077 | 0.037 | 0.15 | 2 |

Average* : The average of 30 values in each position.

Uniformity : The maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.

Stability : One-half of the greatest maximum difference of measured temperature at any one probe.

UUC* : Unit Under Calibration

Note : The reported uncertainty of measurement was included stability and excluded uniformity.

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor *k*, providing a level of confidence of approximately 95 %.

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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



Cert. No.: 23TM763

Page : 1 of 3

Certificate of Calibration

Equipment : Autoclave

Manufacturer : ALP

Model : CL-40L

Serial No. : 808763

ID No. : UAE.MIC.026/2563

Submitted by : United Analyst and Engineering Consultant Co.,Ltd.
3 Soi Udomsuk 41, Sukhumvit Road,
Bangchak, Phrakhanong,
Bangkok 10260

Location : Microbiology Laboratory (301)

Received Order : 27 April 2023

Calibration Date : 27 April 2023

Ambient Temperature : (26 ± 10) °C

Relative Humidity : (50 ± 30) %

Calibrated by : Preecha Hlahib

Approved by :

Malee

Approved Signatory

- () Pornthippa Tameyakul
(✓) Malee Butkruea
() Suwit Imjai

Issue Date :

11 May 2023

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.

เอกสารไม่ควบคุม

A 0053944



Equipment : Autoclave
Condition As-Received : Used Item
Reference : 2304-04610C-2

Cert. No.: 23TM763

Page : 2 of 3

Procedure Used :-

Calibration were conducted using in-house calibration procedure CP-OT03 according to direct measurement method with Data Acquisition which connected with Thermocouple Type T

The temperature scale used was based on ITS-90.

Condition of this result of calibration

1. Reference standard instrument:-

| <u>Instrument</u> | <u>Model</u> | <u>Serial No.</u> | <u>Cert. No.</u> | <u>Due Date</u> |
|----------------------|--------------|-------------------|------------------|-----------------|
| 1) Data Acquisition | 34972A | MY59003411 | 22LM165 | 26 Nov 2023 |

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.

4. This result of calibration covers laboratory autoclaves for the sterilization of goods and material which could be infected with organisms categorized as Hazard Group 1, 2 and 3**

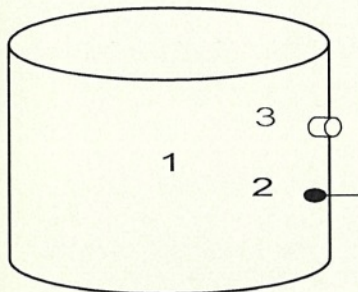
(** = Categorization of pathogens according to hazard and categories of containment, second edition, 1990)

It does not cover autoclaves for use with material infect with organisms in Hazard Group 4, for which complete containment and sterilization of infected condensate is considered to be essential.

This result of calibration does not apply to sterilizers or disinfectors used for medical, dental, pharmaceutical or veterinary purposes which are directly concerned with patient care, or those used for fabrics subjected to sterilization which are required to be dry at the end of cycle.

Result of Calibration :- (*) Without Adjustment

Function of UUC* : Temperature Source



| | <u>Environmental</u> | | |
|---------------------------------|----------------------|-----------|----------|
| | (°C) | (%R.H.) | (Volt) |
| Beginning of Calibration | 27 | 60 | 220 |
| Finished of Calibration | 27 | 58 | 220 |

| <u>Position</u> | <u>Description</u> | <u>Ref. Std. ID No.:</u> |
|-----------------|--------------------|--------------------------|
| 1 = | Center of chamber | 18-20TC-04 |
| 2 = | Temperature sensor | 18-20TC-05 |
| 3 = | Exhaust port | 18-20TC-06 |

Malu.

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a 1159968



Equipment : Autoclave
Condition As-Received : Used Item
Reference : 2304-0461OC-2
Result of Calibration :- (*) Without Adjustment
Function of UUC* : Temperature Source

Cert. No.: 23TM763

Page : 3 of 3

Operating parameter Set : Temperature = 115.0 °C
Sterilization period = 15 minute

| UUC* Setting (°C) | UUC* Reading (°C) | Position | Average* Standard Reading (°C) | Stability (± °C) | Pressure Reading (MPa) | Uncertainty (± °C) | Coverage Factor <i>k</i> |
|---------------------------|---------------------------|----------|--|-----------------------|--------------------------------|-------------------------|--------------------------------|
| 115.0 | 115.0 | 1 | 115.213 | 0.22 | 0.08 | 0.75 | 2 |
| | | 2 | 115.166 | | | | |
| | | 3 | 115.260 | | | | |

Operating parameter Set : Temperature = 121.0 °C
Sterilization period = 30 minute

| UUC* Setting (°C) | UUC* Reading (°C) | Position | Average* Standard Reading (°C) | Stability (± °C) | Pressure Reading (MPa) | Uncertainty (± °C) | Coverage Factor <i>k</i> |
|---------------------------|---------------------------|----------|--|-----------------------|--------------------------------|-------------------------|--------------------------------|
| 121.0 | 121.0 | 1 | 121.260 | 0.29 | 1.1 | 0.75 | 2 |
| | | 2 | 121.224 | | | | |
| | | 3 | 121.284 | | | | |

Average* : The average of 30 values in each position.

Stability : One-half of the greatest maximum difference of measured temperature at any one probe.

UUC* : Unit Under Calibration

Note : The reported uncertainty of measurement was included stability and excluded uniformity .

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor *k*, providing a level of confidence of approximately 95 %.

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Malu.

เอกสารไม่ควบคุม

a 1159967



Certificate of Calibration

| | | | |
|-----------------------------|--------------|-------------------------|--------------|
| Equipment: | Autoclave | Certificate No.: | C11230106 |
| Model: | CL-40L | Issued Date: | 11 June 2023 |
| Serial No. (or ID.): | 810010 | Job No.: | KSPR2308770 |
| Manufacturer: | ALP | Page: | 1 of 4 |
| Condition: | In Condition | | |

Customer: United Analyst and Engineering Consultant Company Limited.
3 Soi Udomsuk 41 Sukhumvit Road,
Bangkok, Prakanong, Bangkok 10260 Thailand.

Environment Condition: Temperature: 22 °C ± 0.8 °C
Humidity: 58 %RH ± 4.0 %RH
Voltage: 229 VAC ± 1.3 VAC

Calibration Place: United Analyst and Engineering Consultant Company Limited. (301 Room)
3 Soi Udomsuk 41 Sukhumvit Road,
Bangkok, Prakanong, Bangkok 10260 Thailand.

Calibration By: Mr. Amornthep Phumppo

Calibration Date: 09 June 2023

The Method used: In house method, CAL-WI-18, base on BS 2646 : Part 5

Traceability: This certificate is traceable to the SI Units maintained by National Institute of Metrology (NIMT), Thailand through Quality reborn Co., Ltd.
Certificate No.QR23-0086



(Mr. Amornthep Phumppo)

Person in charge



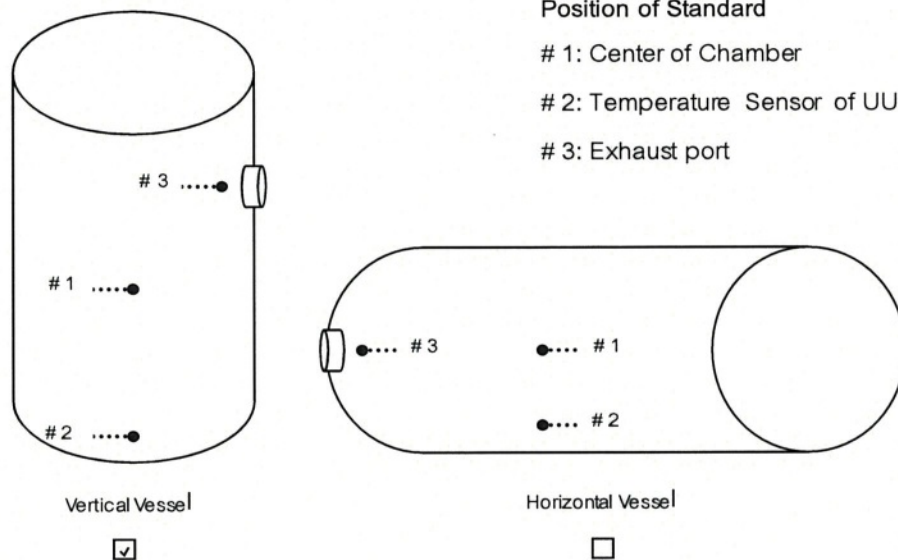
(Mr. Udon Srichana)

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.



Standard Installation Locations

- Standard Locations (#1): Geometric center of the chamber
- Standard Locations (#2): Distance from temperature sensor of UUC 2 (cm.)
- Standard Locations (#3): Distance from the wall 5 (cm.)

| Position of Std | #1 | #2 | #3 |
|-------------------|----|----|----|
| Channel of Logger | 4 | 5 | 6 |

Definitions

Indicating Temperature: The average reading of indicating device which forms the integral part of the enclosure.

Measured Temperature: The average reading of standards at any positions or location.

Measured Stability: The one-half of greatest maximum difference of measured temperatures at any one probe.

Calibration Results:
Without adjustment

Measurement Temperature at Spread Locations, Indicating of Unit Under Calibration: 115.0 °C

| Locations | Measured Temperature (°C) | Correction of UUC. (°C) | Uncertainty (± °C) |
|-----------|------------------------------|----------------------------|-----------------------|
| #1 | 115.34 | 0.34 | 0.35 |
| #2 | 115.43 | 0.43 | 0.35 |
| #3 | 115.43 | 0.43 | 0.35 |

Temperature Distribution

| Temperature | | | Pressure | Measured Temperature at Spread Locations | | | Uncertainty (± °C)* |
|-----------------|-----------------|--------------------|-------------------|--|------------|------------|------------------------|
| Desired (°C) | Setting (°C) | Indicating (°C) | Indicating Mpa | #1 (°C) | #2 (°C) | #3 (°C) | |
| 115 | 115 | 115.0 | 0.08 | 115.34 | 115.43 | 115.43 | 0.35 |

Chamber Characterization

| Indicating Temperature (°C) | Indicating Pressure Mpa | Measured Stability (± °C) |
|--------------------------------|----------------------------|------------------------------|
| 115.0 | 0.08 | 0.15 |

Note: * Maximum uncertainty of the each position

Record every 10 seconds after reaching steady state or after one achieved complete cycle.

Without adjustment

Measurement Temperature at Spread Locations, Indicating of Unit Under Calibration: 121.0 °C

| Locations | Measured Temperature (°C) | Correction of UUC. (°C) | Uncertainty (± °C) |
|-----------|------------------------------|----------------------------|-----------------------|
| #1 | 121.34 | 0.34 | 0.35 |
| #2 | 121.40 | 0.40 | 0.35 |
| #3 | 121.26 | 0.26 | 0.35 |

Temperature Distribution

| Temperature | | | Pressure | Measured Temperature at Spread Locations | | | Uncertainty (± °C)* |
|-----------------|-----------------|--------------------|-------------------|--|------------|------------|------------------------|
| Desired (°C) | Setting (°C) | Indicating (°C) | Indicating Mpa | #1 (°C) | #2 (°C) | #3 (°C) | |
| 121 | 121 | 121.0 | 0.12 | 121.34 | 121.40 | 121.26 | 0.35 |

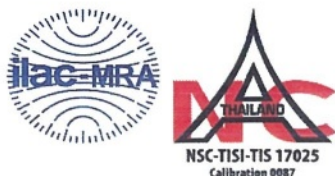
Chamber Characterization

| Indicating Temperature (°C) | Indicating Pressure Mpa | Measured Stability (± °C) |
|--------------------------------|----------------------------|------------------------------|
| 121.0 | 0.12 | 0.07 |

Note: * Maximum uncertainty of the each position

Record every 10 seconds after reaching steady state or after one achieved complete cycle.

The End of Certificate



Certificate of Calibration

| | | | |
|----------------------|------------|------------------|------------------|
| Equipment: | Balance | Certificate No.: | C01223732 |
| Model: | PX623 | Issued Date: | 09 December 2022 |
| Serial No. (or ID.): | C236754745 | Job No.: | KSPR2215576 |
| Manufacturer: | Ohaus | Page: | 1 of 2 |
| Condition: | New | | |

Customer: United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak Sub-District,
Phrakhanong District, Bangkok, THAILAND 10260

Environment Condition: Temperature 26 °C \pm 0.5 °C
Humidity 53 %RH \pm 3.9 %RH

Calibration Place: United Analyst and Engineering Consultant Co., Ltd. (301 Microbiology Room)
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak Sub-District,
Phrakhanong District, Bangkok, THAILAND 10260

Calibration By: Mr. Adisai Maknoi

Calibration Date: 09 December 2022

The Method used: In-house method, CAL-WI-47, based on UKAS Lab 14

Traceability: This certificate is traceable to the SI Units maintained by National Institute of Metrology (NIMT), Thailand through DKSH Technology Co., Ltd. Certificate No. C02221765



(Mr. Adisai Maknoi)

Person in charge



(Mr. Rungrod Jenkitrakulchai)

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.

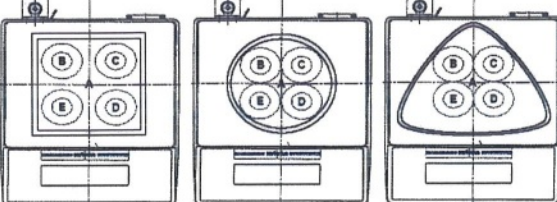
The measurement uncertainty stated is the expanded uncertainty which is obtained from the standard uncertainty multiplied by the coverage factor ($k=2$) to provide a level of confidence of approximately 95%. It is determined in accordance with the Guide to Expression of Uncertainty in Measurement (GUM).

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.

Calibration Results:

Without Adjustment

Eccentric Error: Weight to be 1/3 or 1/2 of Maximum capacity, taken from the center of the pan as a zero reference.

| | | | | | | |
|---|--|-------|--------------------|-------|-----|-------|
|  | | | Nominal Test Value | | 200 | (g) |
| Reference Points (g) | | | | | | |
| A | | B | | C | | E |
| - | | 0.000 | | 0.000 | | 0.000 |

Repeatability: Determination of the standard deviation of weighing balance., Readability 0.001 (g)

| Nominal test value (g) | Standard Deviation |
|------------------------|--------------------|
| 50 | 0.0004 |
| 500 | 0.0005 |

Error of Indication from nominal or conventional mass value., Readability 0.001 (g)

| Nominal Value (g) | Conventional Mass (g) | Displayed Value (g) | Error of Indication (g) | Uncertainty (g) | k |
|----------------------|--------------------------|------------------------|----------------------------|--------------------|------|
| 1 | 1.0000 | 1.000 | 0.000 | 0.0010 | 2.03 |
| 5 | 5.0001 | 5.000 | 0.000 | 0.0010 | 2.03 |
| 10 | 10.0001 | 10.000 | 0.000 | 0.0010 | 2.03 |
| 20 | 20.0001 | 20.000 | 0.000 | 0.0010 | 2.03 |
| 50 | 50.0001 | 50.000 | 0.000 | 0.0010 | 2.03 |
| 100 | 100.0001 | 100.000 | 0.000 | 0.0011 | 2.03 |
| 200 | 200.0004 | 200.000 | 0.000 | 0.0011 | 2.02 |
| 300 | 300.0005 | 300.000 | -0.001 | 0.0013 | 2.01 |
| 400 | 400.0008 | 400.001 | 0.000 | 0.0014 | 2.01 |
| 500 | 500.0003 | 500.000 | 0.000 | 0.0017 | 2.00 |
| 600 | 600.0004 | 600.000 | 0.000 | 0.0019 | 2.00 |

The End of Certificate

Statements of conformity:

This conformity certificate documents the validity of the following statements of conformity based on the measurement results of corresponding calibration certificate:

The error of indication determined during calibration are under given measurement and environmental conditions and considering the expanded measurement uncertainty (coverage probability 95%) within the specification. The given measurement uncertainty already includes other all effects by according to the standard method, UKAS Lab14. Therefore, those parameters have not been assessed separately.

Tolerance and Decision rules:

Assessment of the conformity of the measurement device are done based on direct comparison of the relevant measurement results with the tolerances and decision rule are prescribed by the customer.

- Decision rule :** ☐ Choice A Binary Statement for Simple Acceptance Rule ($w = 0$), Specific Risk < 50% PFA.
- ☒ Choice B Non-binary statement with guard band ($w = 1 U$), Pass or Fail Specific Risk < 2.5% PFA and Condition Pass or Condition Fail Specific Risk < 50% PFA.
- ☐ Choice C Customer defined, Customers may define arbitrary multiple of r to have applied as guard band ($w = r U$).
- ; PFA – Probability of False Accept



(Mr. Rungrod Jenkitrakulchai)

Authorized signatory

Statements of conformity:

Without Adjustment

Readability; 0.001 g

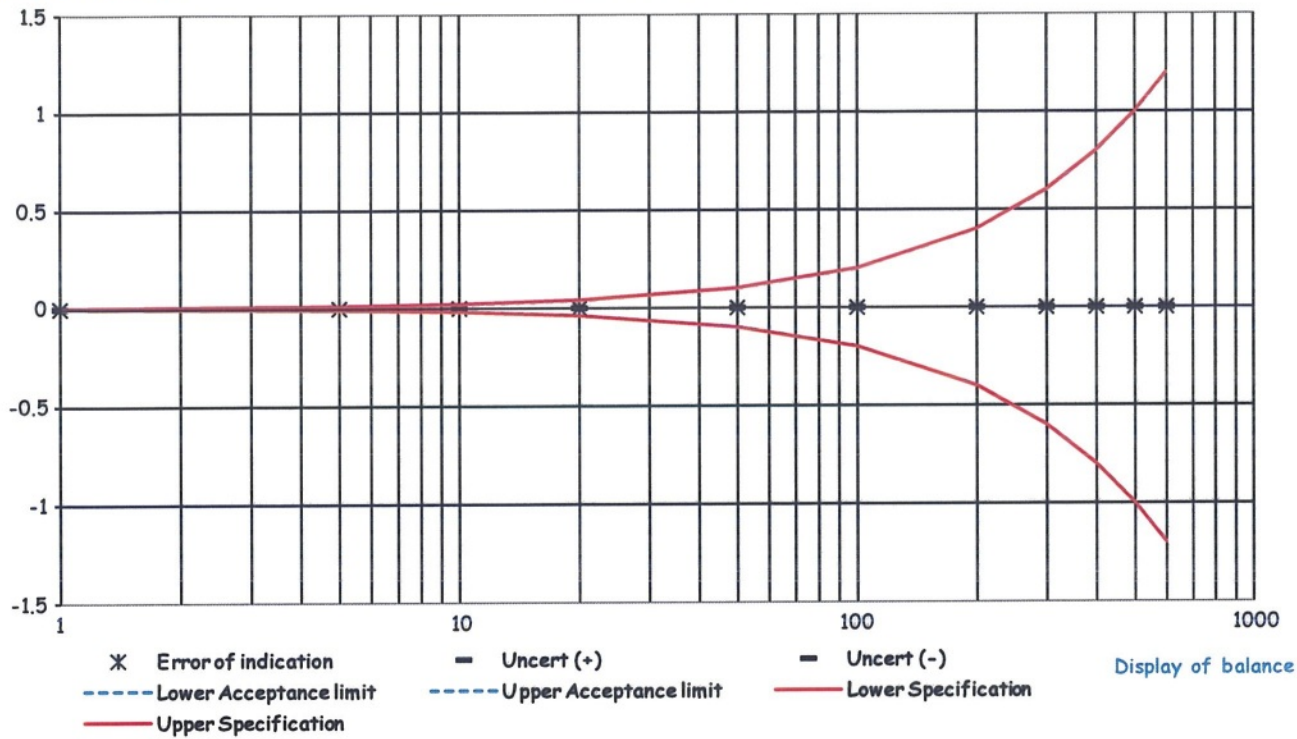
| Nominal Value g | Error of indication g | Guard band (w) g | Tolerance (\pm) g | Conformity |
|--------------------|-----------------------------|---------------------|--------------------------|------------|
| 1 | 0.000 | 0.0010 | 0.002 | Pass |
| 5 | 0.000 | 0.0010 | 0.010 | Pass |
| 10 | 0.000 | 0.0010 | 0.020 | Pass |
| 20 | 0.000 | 0.0010 | 0.040 | Pass |
| 50 | 0.000 | 0.0010 | 0.100 | Pass |
| 100 | 0.000 | 0.0011 | 0.200 | Pass |
| 200 | 0.000 | 0.0011 | 0.400 | Pass |
| 300 | -0.001 | 0.0013 | 0.600 | Pass |
| 400 | 0.000 | 0.0014 | 0.800 | Pass |
| 500 | 0.000 | 0.0017 | 1.000 | Pass |
| 600 | 0.000 | 0.0019 | 1.200 | Pass |

The validity of the statements of conformity cannot be guaranteed for different places of use, environmental conditions or improper use.

The End of Statements of conformity

Without Adjustment
Job No. KSPR2215576
Readability: 0.001g

Error of indication



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