# List of Instruments Certification for Water Quality Analysis

| No. | Instrument/Equipment | Parameter | Manufacturer | Model/Serial No. | Calibrator | Certification No. | Date of Calibration | Due date of Calibration | Remark |
|---|---|---|---|---|---|---|---|---|---|
| **Water** | | | | | | | | | |
| 1 | pH Meter | pH | EcoSence | pH100A<br>JC03335 | Technology Promotion Association (Thailand-Japan) | 26CH64 | 15 Jan 26 | 14 Jan 27 | - |
| 2 | pH Meter | pH | Horiba | LAQUA-PH210<br>HA9M0046 | Technology Promotion Association (Thailand-Japan) | 25CH1432 | 11 Dec 25 | 10 Dec 26 | - |
| 3 | Do Meter | Do | Horiba | LAQUA-DO210<br>HE1D0007 | Technology Promotion Association (Thailand-Japan) | 26TW15 | 16 Jan 26 | 15 Jan 27 | - |

## 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 | pH | Horiba | LAQUA-PH210 / HA0C0025 | Technology Promotion Association (Thailand-Japan) | 25CH261 | 26 Feb 25 | 25 Feb 26 | - |
| 2 | pH Meter | pH | Horiba | LAQUA-PH210 / HA0A0005 | Technology Promotion Association (Thailand-Japan) | 25CH1433 | 11 Dec 25 | 10 Dec 26 | - |
| 3 | Analytical Balance | Total Suspended Solids | Mettler-Toledo | XSR205DU / C009071872 | National Food Institute, Ministry of Industry, Thailand | 2502226-001-01 | 20 Mar 25 | 19 Mar 26 | - |
| 4 | Analytical Balance | Total Suspended Solids | Mettler-Toledo | XSR205DU / C009071872 | United Analyst and Engineering Consultant Co.; Ltd. | 260311-2-BL002-26 | 12 Mar 26 | 11 Mar 27 | - |
| 5 | Analytical Balance | Total Dissolved Solids | Mettler-Toledo | XSR205DU / C210685394 | National Food Institute, Ministry of Industry, Thailand | 2502226-002-01 | 20 Mar 25 | 19 Mar 26 | - |
| 6 | Analytical Balance | Total Dissolved Solids | Mettler-Toledo | XSR205DU / C210685394 | United Analyst and Engineering Consultant Co.; Ltd. | 260311-2-BL001-26 | 12 Mar 26 | 11 Mar 27 | - |
| 7 | Analytical Balance | Oil & Grease, Fat | Mettler-Toledo | AB204-S / FACT 1129361010 | United Analyst and Engineering Consultant Co.; Ltd. | 250422 1 BL 002 25 | 23 Apr 25 | 22 Apr 26 | - |
| 8 | Analytical Balance | Oil & Grease, Fat | Mettler-Toledo | AB204-S / FACT 1129361010 | United Analyst and Engineering Consultant Co.; Ltd. | 260318-1- BL007-26 | 3 Apr 26 | 2 Apr 27 | - |
| 9 | BOD Incubator | BOD | Arco | UC4-1320 / 1021 | Technology Promotion Association (Thailand-Japan) | 25TM1001 | 7 Jul 25 | 6 Jul 26 | - |
| 10 | DO Meter | BOD | YSI | 5100 / 11B 101863 | Technology Promotion Association (Thailand-Japan) | 25TW29 | 18 Feb 25 | 17 Feb 26 | - |
| 11 | DO Meter | BOD | YSI | 5100 / 11B 101863 | Technology Promotion Association (Thailand-Japan) | 26TW50 | 2 Mar 26 | 1 Mar 27 | - |

**รายการใบรับรองสอบเทียบ/ทวนสอบ เครื่องมือหลักประจำห้องปฏิบัติการวิเคราะห์ สำหรับวิเคราะห์คุณภาพสิ่งแวดล้อม**

| No. | Instrument/Equipment | Parameter | Manufacturer | Model/Serial No. | Calibrator | Certification No. | Date of Calibration | Due date of Calibration* | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 12 | Digestor Unit | Nitrogen (TKN) | FOSS Tecator | 2520 Auto / 91794469 | National Food Institute, Ministry of Industry, Thailand | 2501440-001-01 | 27 Jan 25 | 26 Jan 26 | - |
| 13 | Digestor Unit | Total Kjeldahl Nitrogen | FOSS Analytical Co.,Ltd. (China) | DT2508/2520/ 91905060 | FOSS South East Asia | 15257 | 12 Feb 26 | 11 Feb 27 | - |
| 14 | Kjeltec Distillation Unit | Total Kjeldahl Nitrogen | FOSS | Kjeltec 8100 / 91889052 | FOSS South East Asia | 13854 | 24 Feb 25 | 23 Feb 26 | - |
| 15 | UV-VIS Spectrophotometer | Ammonia, Nitrate | Hitachi High-Tech Science Corporation Tokyo Japan | U-5100 / 23A4-008 | DQE Services Co.,Ltd. | SP25-024 | 17 Jun 25 | 16 Jun 26 | - |
| 16 | Incubator | S. aureus | Memmert | IPP 260 / V615.0187 | National Food Institute, Ministry of Industry, Thailand | 2602303 001 01 | 11 Mar 26 | 10 Mar 27 | - |
| 17 | Cooled Incubator | E.coli , Total Coliform Bacteria Fecal Cloliform Bacteria | Binder | KB400 / WTB20200000015535 | National Food Institute, Ministry of Industry, Thailand | 2502229-006-01 | 19 Mar 25 | 18 Mar 26 | - |
| 18 | Incubator | P.aeruginosa | Memmert | IN75/ D317.0307 | National Food Institute, Ministry of Industry, Thailand | 2602303-005-01 | 11 Mar 26 | 10 Mar 27 | - |

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

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# Certificate of Calibration

Cert.No.: 26CH64
Page.: 1 of 3

| | |
|---|---|
| **Equipment :** | pH Meter |
| **Manufacturer :** | EcoSence |
| **Model :** | pH100A |
| **Serial No. :** | JC03335 |
| **ID No. :** | UAE.EFM.062/2562(ENV.pH.02/62) |
| **Condition As-Received:** | Used Item |
| **Received Date :** | 14 January 2026 |
| **Calibration Date :** | 15 January 2026 |
| **Reference :** | 2601-0395WSC-1 |
| **Submitted by :** | United Analyst and Engineering Consultant Co.,Ltd.<br>3 Soi Udomsuk 41, Sukhumvit Road,<br>Bangchak, Phrakhanong, Bangkok 10260 |
| **Ambient Temperature :** | (25 ± 2.5) °C |
| **Relative Humidity :** | (50 ± 15) % |
| **Calibration Procedure :** | In - house method :<br>- CP-CH5 by direct measurement with DC voltage standard and direct measurement with certified reference material (CRM)<br>- CP-CH8 by comparison with temperature standard |
| **Calibrated by :** | |
| **Approved by :** | Approved Signatory |

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**Issue Date :** 16 January 2026

**The Uncertainties are for a confidence probability of approximately 95%**

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**Condition of this calibration result**

1. Reference Standard Instrument

| Instrument | Serial No. | ID No. | Cert. No. | Due Date |
|---|---|---|---|---|
| 1) Document Process Calibrator | 54030049 | 130RC116 | 25E2743 | 25 Aug 2026 |
| 2) Ref. Standard Thermometer | 4982054 | 110RC044 | 25I708 | 03 July 2026 |

- This measurement result is traceable to SI throught Technology Promotion Association (Thailand - Japan)

2. Certified Reference Materials : The measurement results are traceable to SI through CPA chem Ltd., ANSI-ASQ National Accreditation Board, Accredited No. AR-1835
:The measurement results are traceable to SI through Hach Lenge GmbH Ltd., Deutsche Akkreditierungsstelle, Accredited No.D-RM-15184-01-00

| Buffer Solution | Manufacturer | Lot No. | Exp. date |
|---|---|---|---|
| pH 4.008 | CPA chem | 1150491 | 30 Oct 2027 |
| pH 7.000 | Hach Lenge GmbH | C03319 | 17 Oct 2027 |
| pH 10.010 | CPA chem | 1135355 | 16 Aug 2026 |

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

**Calibration Results**

**Function : mV Measurement**

**Performing standard curve by Document Process Calibrator at pH (4,7)(7,10)**

| Unit Under Calibration | Nominal Value | Standard Voltage Input | Actual Reading | | Uncertainty of Measurement | Coverage factor |
|---|---|---|---|---|---|---|
| | pH | mV | mV | pH | ( ±mV ) | *k* |
| pH Meter | 4.00 | 177.48 | 177 | 4.01 | 0.58 | 2.00 |
| S/N.: JC03335 | 7.00 | 0.00 | 0 | 7.00 | 0.58 | 2.00 |
| | 7.00 | 0.00 | 0 | 7.00 | 0.58 | 2.00 |
| | 10.00 | -177.48 | -177 | 10.01 | 0.58 | 2.00 |

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**Calibration Results**

**Function : pH Measurement**

**Performing three buffers standard curve by using buffer nominal pH (4,7)(7,10)**

| Unit Under Calibration | Standard pH Buffer Solution | Actual pH Reading | Actual mV Reading (mV) | Uncertainty of pH Measurement (±) | Coverage factor *k* |
|---|---|---|---|---|---|
| pH Electrode | 4.008 | 4.01 | 169 | 0.0044 | 2.00 |
| S/N.: 240904SIA605377 | 7.000 | 7.00 | -6 | 0.0095 | 2.00 |
| | 7.000 | 6.99 | -6 | 0.0092 | 2.00 |
| | 10.010 | 10.01 | -181 | 0.0095 | 2.00 |

**Function : Temperature Measurement**

**( * ) Without adjustment**

This equipment was connected with Temperature Probe;

- Model : -
- Serial No. : 240904SIA605377

Dimension of probe

- Length : 110 mm.
- Diameter : 12 mm.
- Immersion Depth : 100 mm.

| Calibration Point ( °C ) | Standard Temperature ( °C ) | UUC* Reading ( °C ) | Error ( °C ) | Uncertainty of measurement ( ± °C ) | Coverage factor *k* |
|---|---|---|---|---|---|
| 15.0 | 15.002 | 15.1 | 0.098 | 0.13 | 2.00 |
| 30.0 | 30.003 | 30.1 | 0.097 | 0.13 | 2.00 |
| 45.0 | 45.001 | 45.0 | -0.001 | 0.13 | 2.00 |

**Remark** - UUC* = Unit Under Calibration

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

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# Certificate of Calibration

Cert.No.: 25CH1432
Page.: 1 of 3

| | |
|---|---|
| **Equipment :** | pH Meter |
| **Manufacturer :** | Horiba |
| **Model :** | LAQUA-PH210 |
| **Serial No. :** | HA9M0046 |
| **ID No. :** | UAE.EFM.001/2563(EFM.pH.01/63) |
| **Condition As-Received:** | Used Item |
| **Received Date :** | 09 December 2025 |
| **Calibration Date :** | 11 December 2025 |
| **Reference :** | 2512-0243WSC-1 |
| **Submitted by :** | United Analyst and Engineering Consultant Co.,Ltd.<br>3 Soi Udomsuk 41, Sukhumvit Road, Bangchak,<br>Phrakhanong, Bangkok 10260 |
| **Ambient Temperature :** | (25 ± 2.5) °C |
| **Relative Humidity :** | (50 ± 15) % |
| **Calibration Procedure :** | In - house method :<br>- CP-CH5 by direct measurement with DC voltage standard and direct measurement with certified reference material (CRM)<br>- CP-CH8 by comparison with temperature standard |
| **Calibrated by :** | |
| **Approved by :** | Approved Signatory |

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**Issue Date :** 12 December 2025

**The Uncertainties are for a confidence probability of approximately 95%**

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**Condition of this calibration result**

1. Reference Standard Instrument

| Instrument | Serial No. | ID No. | Cert. No. | Due Date |
|---|---|---|---|---|
| 1) Document Process Calibrator | 54030049 | 130RC116 | 25E2743 | 25 Aug 2026 |
| 2) Ref. Standard Thermometer | 4982054 | 110RC044 | 25I708 | 03 July 2026 |

- This measurement result is traceable to SI throught Technology Promotion Association (Thailand - Japan)

2. Certified Reference Materials :The measurement results are traceable to SI through Hach Lenge GmbH Ltd., Deutsche Akkreditierungsstelle, Accredited No.D-RM-15184-01-00
:The measurement results are traceable to SI through CPA chem Ltd., ANSI-ASQ National Accreditation Board, Accredited No. AR-1835

| Buffer Solution | Manufacturer | Lot No. | Exp. date |
|---|---|---|---|
| pH 4.007 | CPA chem | 1114384 | 12 June 2027 |
| pH 6.999 | Hach Lenge GmbH | C03273 | 13 May 2027 |
| pH 10.010 | CPA chem | 1114385 | 08 June 2026 |

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

**Calibration Results**

**Function : mV Measurement**

**Performing standard curve by Document Process Calibrator at pH (4,7)(7,10)**

| Unit Under Calibration | Nominal Value | Standard Voltage Input | Actual Reading | | Uncertainty of Measurement | Coverage factor |
|---|---|---|---|---|---|---|
| | pH | mV | mV | pH | ( ±mV ) | k |
| pH Meter | 4.00 | 177.48 | 177.6 | 4.01 | 0.058 | 2.00 |
| S/N.: HA9M0046 | 7.00 | 0.00 | 0.2 | 7.00 | 0.058 | 2.00 |
| | 7.00 | 0.00 | 0.2 | 7.00 | 0.058 | 2.00 |
| | 10.00 | -177.48 | -177.1 | 10.01 | 0.058 | 2.00 |

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**Calibration Results**

**Function : pH Measurement**

**Performing three buffers standard curve by using buffer nominal pH (4,7)(7,10)**

| Unit Under Calibration | Standard pH Buffer Solution | Actual pH Reading | Actual mV Reading (mV) | Uncertainty of pH Measurement (±) | Coverage factor k |
|---|---|---|---|---|---|
| pH Electrode | 4.007 | 4.00 | 173.1 | 0.0079 | 2.00 |
| S/N.: Q9AA0227 | 6.999 | 6.99 | -1.6 | 0.0085 | 2.00 |
| | 6.999 | 7.00 | -0.8 | 0.0092 | 2.00 |
| | 10.010 | 10.00 | -165.5 | 0.0095 | 2.00 |

**Function : Temperature Measurement**

**( * ) Without adjustment**

This equipment was connected with Temperature Probe;

- Model : 9652-10D
- Serial No. : Q9AA0227

Dimension of probe

- Length : 112 mm.
- Diameter : 16 mm.
- Immersion Depth : 100 mm.

| Calibration Point ( °C ) | Standard Temperature ( °C ) | UUC* Reading ( °C ) | Error ( °C ) | Uncertainty of measurement ( ± °C ) | Coverage factor k |
|---|---|---|---|---|---|
| 15.0 | 15.005 | 15.0 | -0.005 | 0.13 | 2.00 |
| 30.0 | 30.005 | 30.0 | -0.005 | 0.13 | 2.00 |
| 45.0 | 45.003 | 45.0 | -0.003 | 0.13 | 2.00 |

**Remark** - UUC* = Unit Under Calibration

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

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# Certificate of Testing



**Equipment :** DO Meter
**Manufacturer :** Horiba
**Model :** LAQUA-DO210
**Serial No. :** HE1D0007
**ID No. :** UAE.EFM.206/2564 (EFM.DO.08/64)
**Received Date :** 15 January 2026
**Test Date :** 16 January 2026
**Reference :** 2601-0460WSC-5
**Submitted by :** United Analyst and Engineering Consultant Co.,Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
**Laboratory Condition :** Temperature ( 25 ± 5 ) °C
Humidity ( 50 ± 20 ) %
**Test Procedure :** In - house method : CP-CH9
by Comparison Technique with Azide Modification Method
**Tested by :**
**Approved by :**

Approved Signatory

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**Issue Date :** 19 January 2026

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**Condition of this result of calibration**

1. Reference Standard Instruments :
This measurement result is traceable to the International System of Unit through the reference standards laboratory of Industrial Calibration Center, Technology Promotion Association (Thailand-Japan).

| Instruments | ID No. | Certificate No. | Due Date |
|---|---|---|---|
| 1. Burette | 130BU10 | 25CG1126 | 18 Mar 2027 |
| 2. Balance | 110RC001 | 25MM316 | 02 July 2026 |

2. Standard Material :-

| Material | Manufacturer | Lot.No. | Assay |
|---|---|---|---|
| Sodium Thiosulfate 5-Hydrate AR | KEMAUS | 2203162447 | 99.6% |

**Result :** **Dissolved Oxygen Meter Adjustment With Air 100 %**
**Dissolved Oxygen Probe No.:** 9K1B0013

| Titration Method (Azide Modification Method) (mg/L) | DO Meter Reading (mg/L) | Standard Deviation (mg/L) |
|---|---|---|
| 8.20 | 8.21 | 0.0089 |

This report was certified only for the instrument we tested.It is allowable to use for study Intend to use for advertising and referral purpose is prohibited.This report may not be reproduced other in full, without written approval of the laboratory

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NSC-TISI-TIS17025 CALIBRATION 0008

# Certificate of Calibration

**Cert. No.:** 26LM11
**Page.:** 1 of 2

**Equipment :** DO Meter with Sensor
**Manufacturer :** Horiba
**Model :** LAQUA-DO210
**Serial No. :** HE1D0007
**ID No. :** UAE.EFM.206/2564 (EFM.DO.08/64)
**Submitted by :** United Analyst and Engineering Consultant Co.,Ltd.
3 Soi Udomsuk 41, Sukhumvit Road,
Bangchak, Phrakhanong, Bangkok 10260
**Location :** TPA On Site Calibration Laboratory
**Received Order :** 15 January 2026
**Calibrated Date :** 19 January 2026
**Ambient Temperature :** ( 26 ± 10 ) ℃
**Relative Humidity :** ( 50 ± 30 ) %
**AC Line Voltage :** ( 220 ± 22 ) V
**Calibrated by :**

**Approved by :**
Approved Signatory

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**Issue Date :** 22 January 2026

**The Uncertainties are for a confidence probability of approximately 95%**

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**Equipment :** DO Meter with Sensor
**Condition As-Received :** Used Item
**Reference :** 2601-0460WSC-6
**Cert. No.:** 26LM11
**Page.:** 2 of 2

**Procedure Used :-**
Calibration were conducted using in-house calibration procedure CP-OT01 according to comparison with Industrial Platinum Resistance Thermometer ( IPRT ) into Temperature Bath.
The temperature scale used was based on ITS-90.

**Condition of this result of calibration**
1. Reference standard instrument:-

| Instrument | Serial No. | Cert. No. | Traceable | Due Date |
|---|---|---|---|---|
| 1) Digital Thermometer | 2188080 | 25I953 | TPA | 05 Sep 2026 |

2. This certificate is valid only to the item calibrated on date and place of calibration.
3. This measurement result is traceable to the International System of Unit maintained through :
**Remark :** TPA : Technology Promotion Association ( Thailand - Japan )

**Result of Calibration :-** ( * ) Without Adjustment
**Function :** Temperature measurement.
This instrument was connected with temperature sensor, S/N.: 9K1B0013

| Calibration Point ( ℃ ) | Immersion Depth ( mm ) | Standard Temperature ( ℃ ) | UUC* Reading ( ℃ ) | Error ( ℃ ) | Uncertainty ( ± ℃ ) | Coverage Factor *k* |
|---|---|---|---|---|---|---|
| 15.0 | 80 | 15.004 | 15.0 | -0.004 | 0.16 | 2.00 |
| 30.0 | 80 | 30.003 | 30.0 | -0.003 | 0.16 | 2.00 |
| 45.0 | 80 | 45.004 | 44.9 | -0.104 | 0.16 | 2.00 |

**UUC* :** Unit Under Calibration

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

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NSC-TISI-TIS17025 CALIBRATION 0008

# Certificate of Calibration

**Cert.No.:** 25CH261
**Page.:** 1 of 3

**Equipment :** pH Meter
**Manufacturer :** Horiba
**Model :** LAQUA-PH210
**Serial No. :** HA0C0025
**ID No. :** UAE.EFM.117/2563(EFM.pH.07/63)
**Condition As-Received:** Used Item
**Received Date :** 25 February 2025
**Calibration Date :** 26 to 28 February 2025
**Reference :** 2502-0783WSC-1
**Submitted by :** United Analyst and Engineering Consultant Co.,Ltd.
3 Soi Udomsuk 41, Sukhumvit Road,
Bangchak, Phrakhanong, Bangkok 10260
**Ambient Temperature :** (25 ± 2.5) °C
**Relative Humidity :** (50 ± 15) %
**Calibration Procedure :** In - house method :
- CP-CH5 by direct measurement with DC voltage standard and direct measurement with certified reference material (CRM)
- CP-CH8 by comparison with temperature standard

**Calibrated by :**

**Approved by :**
Approved Signatory

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**Issue Date :** 28 February 2025

**The Uncertainties are for a confidence probability of approximately 95%**

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**Cert.No.:** 25CH261
**Page.:** 2 of 3

**Condition of this calibration result**
1. Reference Standard Instrument

| Instrument | Serial No. | ID No. | Cert. No. | Due Date |
|---|---|---|---|---|
| 1)Document Process Calibrator | 54030049 | 130RC116 | 24E2759 | 25 Aug 2025 |
| 2)Ref. Standard Thermometer | 4982054 | 110RC044 | 24I757 | 14 July 2025 |

- This Certification is traceable to SI Throught Technology Promotion Association (Thailand - Japan)

2. Certified Reference Materials :The measurement results are traceable to SI through Hach Lenge GmbH Ltd., Deutsche Akkreditierungsstelle, Accredited No.D-RM-15184-01-00
: The measurement results are traceable to SI through CPA chem Ltd., ANSI-ASQ National Accreditation Board, Accredited No. AR-1835

| Buffer Solution | Manufacturer | Lot No. | Exp. date |
|---|---|---|---|
| pH 4.007 | CPA chem | 1066665 | 18 Jan 2027 |
| pH 6.999 | Hach Lenge GmbH | C03220 | 29 Oct 2026 |
| pH 10.010 | CPA chem | 1066669 | 18 Jan 2026 |

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

**Calibration Results**
**Function : mV Measurement**
**Performing standard curve by Document Process Calibrator at pH (4,7)(7,10)**

| Unit Under Calibration | Nominal Value | Standard Voltage Input | Actual Reading | | Uncertainty of Measurement ( ±mV ) | Coverage factor *k* |
|---|---|---|---|---|---|---|
| | pH | mV | mV | pH | | |
| pH Meter | 4.00 | 177.48 | 177.5 | 4.01 | 0.058 | 2.00 |
| S/N.: HA0C0025 | 7.00 | 0.00 | 0.0 | 7.02 | 0.058 | 2.00 |
| | 7.00 | 0.00 | 0.0 | 7.02 | 0.058 | 2.00 |
| | 10.00 | -177.48 | -177.5 | 10.01 | 0.058 | 2.00 |

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**Calibration Results**

**Function : pH Measurement**

**Performing three buffers standard curve by using buffer nominal pH (4,7)(7,10)**

| Unit Under Calibration | Standard pH Buffer Solution | Actual pH Reading | Actual mV Reading (mV) | Uncertainty of pH Measurement (±) | Coverage factor *k* |
|---|---|---|---|---|---|
| pH Electrode | 4.007 | 4.01 | 178.4 | 0.0071 | 2.00 |
| S/N.: Q9AG0214 | 6.999 | 7.00 | 4.1 | 0.0092 | 2.00 |
| | 6.999 | 7.00 | 3.0 | 0.0095 | 2.00 |
| | 10.010 | 10.01 | -169.8 | 0.0092 | 2.00 |

**Function : Temperature Measurement**

**( * ) Without adjustment**

This equipment was connected with Temperature Probe;

- Model : 9652-10D
- Serial No. : Q9AG0214

Dimension of probe

- Length : 110 mm.
- Diameter : 16 mm.
- Immersion Depth : 80 mm.

| Calibration Point ( °C ) | Standard Temperature ( °C ) | UUC* Reading ( °C ) | Error ( °C ) | Uncertainty of measurement ( ± °C ) | Coverage factor *k* |
|---|---|---|---|---|---|
| 15.0 | 15.002 | 15.0 | -0.002 | 0.13 | 2.00 |
| 30.0 | 30.003 | 30.0 | -0.003 | 0.13 | 2.00 |
| 45.0 | 45.002 | 44.9 | -0.102 | 0.13 | 2.00 |

**Remark** - UUC* = Unit Under Calibration

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

-o0o-

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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

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NSC-TISI-TIS17025 CALIBRATION 0008

# Certificate of Calibration



**Equipment :** pH Meter
**Manufacturer :** Horiba
**Model :** LAQUA-PH210
**Serial No. :** HA0A0005
**ID No. :** UAE.EFM.004/2563(EFM.pH.04/63)
**Condition As-Received:** Used Item
**Received Date :** 09 December 2025
**Calibration Date :** 11 December 2025
**Reference :** 2512-0243WSC-2
**Submitted by :** United Analyst and Engineering Consultant Co.,Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak,
Phrakhanong, Bangkok 10260

**Ambient Temperature :** (25 ± 2.5) °C
**Relative Humidity :** (50 ± 15) %
**Calibration Procedure :** In - house method :
- CP-CH5 by direct measurement with DC voltage standard and direct measurement with certified reference material (CRM)
- CP-CH8 by comparison with temperature standard

**Calibrated by :**

**Approved by :**

Approved Signatory

(✓)
( )
( )

**Issue Date :** 12 December 2025

**The Uncertainties are for a confidence probability of approximately 95%**

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**Condition of this calibration result**

1. Reference Standard Instrument

| Instrument | Serial No. | ID No. | Cert. No. | Due Date |
|---|---|---|---|---|
| 1) Document Process Calibrator | 54030049 | 130RC116 | 25E2743 | 25 Aug 2026 |
| 2) Ref. Standard Thermometer | 4982054 | 110RC044 | 25I708 | 03 July 2026 |

- This measurement result is traceable to SI throught Technology Promotion Association (Thailand - Japan)

2. Certified Reference Materials :The measurement results are traceable to SI through Hach Lenge GmbH Ltd., Deutsche Akkreditierungsstelle, Accredited No.D-RM-15184-01-00
:The measurement results are traceable to SI through CPA chem Ltd., ANSI-ASQ National Accreditation Board, Accredited No. AR-1835

| Buffer Solution | Manufacturer | Lot No. | Exp. date |
|---|---|---|---|
| pH 4.007 | CPA chem | 1114384 | 12 June 2027 |
| pH 6.999 | Hach Lenge GmbH | C03273 | 13 May 2027 |
| pH 10.010 | CPA chem | 1114385 | 08 June 2026 |

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

**Calibration Results**

**Function : mV Measurement**

**Performing standard curve by Document Process Calibrator at pH (4,7)(7,10)**

| Unit Under Calibration | Nominal Value | Standard Voltage Input | Actual Reading | | Uncertainty of Measurement ( ±mV ) | Coverage factor *k* |
|---|---|---|---|---|---|---|
| | pH | mV | mV | pH | | |
| pH Meter | 4.00 | 177.48 | 177.4 | 4.01 | 0.058 | 2.00 |
| S/N.: HA0A0005 | 7.00 | 0.00 | 0.1 | 7.00 | 0.058 | 2.00 |
| | 7.00 | 0.00 | 0.1 | 7.00 | 0.058 | 2.00 |
| | 10.00 | -177.48 | -177.2 | 10.01 | 0.058 | 2.00 |

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**Calibration Results**

**Function : pH Measurement**

**Performing three buffers standard curve by using buffer nominal pH (4,7)(7,10)**

| Unit Under Calibration | Standard pH Buffer Solution | Actual pH Reading | Actual mV Reading (mV) | Uncertainty of pH Measurement (±) | Coverage factor *k* |
|---|---|---|---|---|---|
| pH Electrode | 4.007 | 4.01 | 175.4 | 0.0085 | 2.05 |
| S/N.: - | 6.999 | 7.00 | -0.3 | 0.0095 | 2.00 |
| | 6.999 | 7.01 | -0.5 | 0.0096 | 2.00 |
| | 10.010 | 10.01 | -170.6 | 0.0092 | 2.00 |

**Function : Temperature Measurement**

**( * ) Without adjustment**

This equipment was connected with Temperature Probe;

- Model : -
- Serial No. : -

Dimension of probe

- Length : 112 mm.
- Diameter : 16 mm.
- Immersion Depth : 100 mm.

| Calibration Point ( °C ) | Standard Temperature ( °C ) | UUC* Reading ( °C ) | Error ( °C ) | Uncertainty of measurement ( ± °C ) | Coverage factor *k* |
|---|---|---|---|---|---|
| 15.0 | 15.002 | 15.0 | -0.002 | 0.13 | 2.00 |
| 30.0 | 30.002 | 30.0 | -0.002 | 0.13 | 2.00 |
| 45.0 | 45.003 | 45.0 | -0.003 | 0.13 | 2.00 |

**Remark** - UUC* = Unit Under Calibration

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

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# FOSS

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

## Customer Service Report

| | | | |
|---|---|---|---|
| Report No.: | 15257 | | |
| Date: | Feb 12, 2026 | Customer: | UAE |
| Job No.: | 14590 | Address: | Bangkok |
| Instrument: | DT2520 | Serial: | 99905060 |

| | Travel To Customer (Hrs) | | Labour (Hrs) | | Travel From Customer (Hrs) | |
|---|---|---|---|---|---|---|
| Start | – | | 13.30 | 1.5 | – | |
| Finish | – | – | 15.00 | | – | – |

| Job Type | | | | | | |
|---|---|---|---|---|---|---|
| Application | | Special | | Standard | | |
| Distributor | | Courtesy Visit | | Installation | In House | |
| Digital Service | | PMA Approval Check | | Quote | PM | X |
| Internal | | Warranty - | | Repair | HC Visit | |
| Training | | Sales Support | | Investigate | Others | |

| PMA Type | | | | | |
|---|---|---|---|---|---|
| Smartcare | | Smartcare Pro | | Fosscare | X |
| Smartcare Advance | | Fosscare Pro | | N/A | |

| Details of Work / Test |
|---|
| -PM |
| -Visual Check |
| + No leak -ok |
| + No damage -ok |
| - Change PM kit x 1 Set -ok |
| - Function Check |
| + Quick mode |
| + Set Temp /Timer -ok |
| + Run -ok |
| -heating -ok |
| - Lift - up/down -ok |
| - Clean x20 holes with brush head |

| Instrument Ready for Use | OK | X | Not OK* |
|---|---|---|---|

| Part No: | Batch | Description | Q'ty |
|---|---|---|---|
| 60079730 | 29.09.2025 | FOSS PM kit, Digester 20 per, 12 month | 1 |

I confirm this report is accurate and complete

| Signed FOSS | | Signed Customer | |
|---|---|---|---|
| Name: | | Name | |
| Tel: | | Tel: | |
| Email: | | Email: | |

*Remark:

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ศูนย์บริการห้องปฏิบัติการอุตสาหกรรมอาหาร
Foundation for Industrial Development National Food Institute
Food Industrial Laboratory Service Center

ilac-MRA

NSC-TISI-TIS 17025
CALIBRATION 0061

# Calibration Certificate

**Certificate No.:** 2502226-001-01
**Client name:** UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.
**Address:** 3 Soi Udomsuk 41, Sukhumvit Road,
Bangchack, Prakhanong, Bangkok 10260



**Equipment:** Electronic Balance
**Manufacturer:** METTLER TOLEDO
**Model:** XSR205DU
**Serial No.:** C009071872
**ID No.:** UAE.WAO.012/2563
**Order No.:** 2502226
**Operation No.:** 2502226-001
**Date of Receipt:** 19 March 2025
**Date of Calibration:** 20 March 2025

**Calibrated by** Scientist
**Approved by** Manager, Division of Calibration Laboratory
Responsible for the Technical Management Team

**Date of Issue:** 25 March 2025

**The uncertainties are for a confidence probability of approximately 95%**

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the National Food Institute.



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สุดสาหกรรมพัฒนาอุตสาหกรรมอาหาร
ศูนย์บริการห้องปฏิบัติการอุตสาหกรรมอาหาร
Foundation for Industrial Development National Food Institute
Food Industrial Laboratory Service Center

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NSC-TISI-TIS 17025
CALIBRATION 0061

# Calibration Report

**Certificate No.:** 2502226-001-01
**Equipment:** Electronic Balance
**Manufacturer:** METTLER TOLEDO
**Model:** XSR205DU
**Resolution:** 0.00001 g / 0.0001 g
**Serial No.:** C009071872
**ID No.:** UAE.WAO.012/2563
**Capacity:** 82 g / 220 g

**Date of Calibration:** 20 March 2025



**Environment Condition:** Ambient Temperature: 21.2 ± 0.6 °C Relative Humidity: 48 ± 3.5 %
**Place of Calibration:** 208 Balance Room, 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 | M2404100S | 19 April 2025 |
| **Instrument** | **Model** | **Serial No.** | **Calibrated By** | **Certificate No.** | **Due Date** |
| Thermo-Hygro Meter | 608-H1 | NFI.BTH 017/23 | Quality Reborn | QR25-0542 | 10 February 2026 |

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.

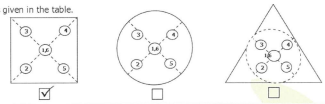
**Calibration Results:**

**1. Repeatability of Reading:**

| Nominal Value ( g ) | Standard Deviation of Reading ( g ) |
|---|---|
| 40 | 0.0000052 |
| 80 | 0.0000042 |
| 100 | 0.0000000 |
| 200 | 0.0000000 |

**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.



☑ ☐ ☐

| 1 ( g ) | 2 ( g ) | 3 ( g ) | 4 ( g ) | 5 ( g ) | 6 ( g ) | (Maximum Difference) ( g ) |
|---|---|---|---|---|---|---|
| 100.0001 | 100.0001 | 100.0001 | 100.0001 | 100.0001 | 100.0002 | 0.0001 |



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Foundation for Industrial Development National Food Institute
Food Industrial Laboratory Service Center

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NSC-TISI-TIS 17025
CALIBRATION 0061

# Calibration Report

**Certificate No.:** 2502226-001-01
**Equipment:** Electronic Balance
**Manufacturer:** METTLER TOLEDO
**Model:** XSR205DU
**Resolution:** 0.00001 g / 0.0001 g
**Serial No.:** C009071872
**ID No.:** UAE.WAO.012/2563
**Capacity:** 82 g / 220 g

**Date of Calibration:** 20 March 2025



**Calibration Results:** (Continued)
**Calibration Range:** 0-80 g
**Calibration Adjustment:** Internal Calibration
**3. Departure from Nominal Value:** (Range: 0 - 82 g ; Resolution: 0.00001 g )

| Nominal Value ( g ) | Standard Value ( g ) | Average Reading ( g ) | Correction ( g ) | Uncertainty ( ± g ) | Coverage Factor k |
|---|---|---|---|---|---|
| Unload | 0.000000 | 0.00000 | 0.00000 | 0.0000089 | 2.00 |
| 0.001 | 0.001003 | 0.00100 | 0.00000 | 0.0000092 | 2.00 |
| 0.005 | 0.005002 | 0.00500 | 0.00000 | 0.0000094 | 2.00 |
| 0.01 | 0.010003 | 0.01000 | 0.00000 | 0.0000091 | 2.00 |
| 0.05 | 0.049996 | 0.05000 | 0.00000 | 0.0000098 | 2.00 |
| 0.1 | 0.100011 | 0.10000 | 0.00001 | 0.000011 | 2.00 |
| 0.5 | 0.500016 | 0.50000 | 0.00002 | 0.000014 | 2.00 |
| 1 | 1.000003 | 1.00001 | -0.00001 | 0.000016 | 2.00 |
| 2 | 2.000023 | 2.00005 | -0.00003 | 0.000017 | 2.00 |
| 5 | 5.000015 | 5.00005 | -0.00003 | 0.000021 | 2.00 |
| 10 | 10.000009 | 10.00005 | -0.00004 | 0.000026 | 2.00 |
| 20 | 20.000030 | 20.00012 | -0.00009 | 0.000037 | 2.00 |
| 30 | 30.000039 | 30.00012 | -0.00008 | 0.000050 | 2.00 |
| 50 | 50.000028 | 50.00014 | -0.00011 | 0.000068 | 2.00 |
| 80 | 80.000067 | 80.00020 | -0.00013 | 0.00011 | 2.00 |



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สุขภาพกรรมพัฒนาอุตสาหกิจเพื่อสภาพแวดล้อมการ
ศูนย์บริการห้องปฏิบัติการอุตสาหกรรมอาหาร
Foundation for Industrial Development National Food Institute
Food Industrial Laboratory Service Center

# Calibration Report

**Certificate No.:** 2502226-001-01

**Equipment:** Electronic Balance — **Manufacturer:** METTLER TOLEDO

**Model:** XSR205DU — **Resolution:** 0.00001 g / 0.0001 g

**Serial No.:** C009071872 — **ID No.:** UAE.WAO.012/2563

**Capacity:** 82 g / 220 g

**Date of Calibration:** 20 March 2025 — 

**Calibration Results:** **(Continued)**

**Calibration Range:** >80-200 g

**Calibration Adjustment:** Internal Calibration

**3. Departure from Nominal Value:** (Range: >80 - 200 g ; Resolution: 0.0001 g )

| Nominal Value ( g ) | Standard Value ( g ) | Average Reading ( g ) | Correction ( g ) | Uncertainty ( ± g ) | Coverage Factor *k* |
|---|---|---|---|---|---|
| 90 | 90.00010 | 90.0002 | -0.0001 | 0.00015 | 2.00 |
| 100 | 100.00006 | 100.0001 | 0.0000 | 0.00016 | 2.00 |
| 110 | 110.00007 | 110.0001 | 0.0000 | 0.00017 | 2.00 |
| 120 | 120.00009 | 120.0002 | -0.0001 | 0.00018 | 2.00 |
| 130 | 130.00010 | 130.0002 | -0.0001 | 0.00019 | 2.00 |
| 140 | 140.00013 | 140.0002 | -0.0001 | 0.00019 | 2.00 |
| 150 | 150.00009 | 150.0002 | -0.0001 | 0.00021 | 2.00 |
| 160 | 160.00010 | 160.0002 | -0.0001 | 0.00022 | 2.00 |
| 170 | 170.00012 | 170.0002 | -0.0001 | 0.00023 | 2.00 |
| 200 | 200.00013 | 200.0002 | -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 ----------



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Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

## Certificate of Calibration

Certificate No.: 260311-2-BL002-26

Code No.: BL002-26



Customer Name: United Analyst and Engineering Consultant Co., Ltd.

Address: 3 Soi Udom suk 41, Sukhumvit Rd., Bang Chak, Phar Khanong, Bangkok 10260

Equipment: Electronic Balance

Manufacturer: Mettler Toledo

Model: XSR205DU

Serial No.: C009071872

Asset No. : UAE.WAO.012/2563

Building : UAE number 3 — Floor : 2 — Room : 208

Received Date: March 11, 2026

Date of Calibation : March 12, 2026

Calibration Conditions: Temperature 23.8 °C to 24.1 °C

Humidity 50.0 % to 59.0 %

Pressure 755.5 mmHg to 755.6 mmHg

Calibrated by:

Approved by: Signature:

Issued Date: March 16, 2026

Note : 1) The Uncertainties are for a confidence probability of approximately 95%

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

3) 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 United Analyst and Engineering Consultant Co.,Ltd. (UAE)

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United Analyst and Engineering Consultant Co., Ltd.
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Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

Certificate No.: 260311-2-BL002-26

Code No.: BL002-26



Equipment: Electronic Balance — Manufacturer: Mettler Toledo

Model: XSR205DU — Readability: 0 to 81 (g): 0.01 mg > 80 to 200 (g) : 01 mg

Serial No.: C009071872 — ID No.: UAE.WAO.012/2563

Max. Capacity: 81 g / 220 g

Calibration Date: March 12, 2026

Condition As-Received: In Condition

Condition of Equipment

Condition of This Result of Calibration:

1. Calibration Method: This instrument was calibrated by method UAE.CP.CAL.006 In-House Method based on UKAS Lab 14 : 2022

2. Reference Standrads:

| Reference Standard: | Model | Serial No. | Calibrated By | Certificate No. | Traceability | Due Date |
|---|---|---|---|---|---|---|
| Standard Weight Class E2 (OIML) | 1 mg to 1 kg | C510641605 | METTLER TOLEDO GmbH | C510641605 | Mettler-Toledo GmbH | 03-Mar-27 |
| Standard Weight Class E2 (OIML) | 1 mg to 1 kg | B749109122 | AMARC | 25-009359 | Mettler-Toledo | 21-Jan-27 |

| Instrument | Model | Serial No. | Calibrated By | Certificate No. | Traceability | Due Date |
|---|---|---|---|---|---|---|
| Thermo-Hygro-Baro Meter | MHB-382SD | AK.46457 | SUCCESS | SG-H-00992/68 | Success Gateway | 26-Nov-26 |
| Thermo-Hygro-Baro Meter | MHB-382SD | AK.46457 | TPA | 25P4464 | TPA | 18-Dec-26 |

3. This certification is traceable to SI Unit

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

5. This result of calibration wae found accurate as show on date and place of calibration only.

6. Through the reference standard laboratory of Mettler-Toledo GmbH C510641605, SAS accreditation number SCS 0032

7. Through the reference standard laboratory of AMARC 25-009359, TISI accreditation number 0152

Calibraton Result:

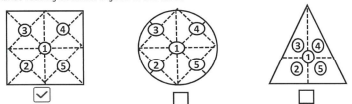
1. Repeatability of Reading:

| Nominal Value (g) | Standard Deviation of Reading (g) |
|---|---|
| 80 | 0.000008 |
| 200* | 0.000045 |

2. Eccentric or off-center loading

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

The Balance reading obtained is given in the table.



| 1 (g) | 2 (g) | 3 (g) | 4 (g) | 5 (g) | Maximum Difference (g) |
|---|---|---|---|---|---|
| 100.0000 | 100.0000 | 100.0000 | 100.0000 | 100.0000 | 0.0000 |

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Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

Certificate No.: 260311-2-BL002-26

Code No.: BL002-26



Equipment: Electronic Balance — Manufacturer: Mettler Toledo

Model: XSR205DU — Readability: 0 to 81 (g): 0.01 mg > 80 to 200 (g) : 01 mg

Serial No.: C009071872 — ID No.: UAE.WAO.012/2563

Max. Capacity: 81 g / 220 g

Calibration Date: March 12, 2026

Calibraton Result: (Continued)

Calibraton Range: 0 to 80 (g)

Calibraton Adjustment: Internal Calibration

3. Error of indication from nominal or conventional mass value: (Range: 0 to 81 (g) ; Resolution: 0.00001 g )

| Nominal Value (g) | Reference Value (g) | Indication (g) | Correction (g) | Uncertainty ( ± mg) | Coverage Factor *k* |
|---|---|---|---|---|---|
| Unload | 0.0000000 | 0.00000 | 0.00000 | 0.015 | *2.25* |
| 0.001 | 0.0010020 | 0.00100 | 0.00000 | 0.015 | *2.23* |
| 0.005 | 0.0050025 | 0.00502 | -0.00002 | 0.015 | *2.23* |
| 0.01 | 0.0100005 | 0.01002 | -0.00002 | 0.015 | *2.23* |
| 0.05 | 0.0500003 | 0.05001 | -0.00001 | 0.015 | *2.21* |
| 0.10 | 0.1000083 | 0.10002 | -0.00001 | 0.015 | *2.20* |
| 0.50 | 0.5000121 | 0.50003 | -0.00002 | 0.016 | *2.15* |
| 1 | 1.0000119 | 1.00001 | 0.00000 | 0.016 | *2.12* |
| 2 | 2.0000125 | 2.00003 | -0.00001 | 0.017 | *2.09* |
| 5 | 5.0000146 | 5.00003 | -0.00002 | 0.020 | *2.05* |
| 10 | 10.0000330 | 10.00005 | -0.00002 | 0.023 | *2.00* |
| 20 | 20.000028 | 20.00008 | -0.00005 | 0.033 | *2.00* |
| 30 | 30.000061 | 30.00010 | -0.00004 | 0.051 | *2.00* |
| 40 | 40.000054 | 40.00009 | -0.00004 | 0.063 | *2.00* |
| 50 | 50.000037 | 50.00008 | -0.00005 | 0.064 | *2.00* |
| 60 | 60.000070 | 60.00011 | -0.00004 | 0.081 | *2.00* |
| 80 | 80.000098 | 80.00011 | -0.00001 | 0.11 | *2.00* |

เอกสารไม่ควบคุม

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com



Equipment: Electronic Balance
Model: XSR205DU
Serial No.: C009071872
Max. Capacity: 81 g / 220 g
Calibration Date: March 12, 2026

Manufacturer: Mettler Toledo
Readability: 0 to 81 (g): 0.01 mg > 80 to 200 (g) : 01 mg
ID No.: UAE.WAO.012/2563

Calibraton Result: (Continued)
Calibraton Range: > 80 to 200 (g)
Calibraton Adjustment: Internal Calibration

4. Error of indication from nominal or conventional mass value: (Range: > 80 to 200 (g) ; Resolution: 0.0001 g )

| Nominal Value (g) | Reference Value (g) | Indication (g) | Correction (g) | Uncertainty ( ± mg) | Coverage Factor k |
|---|---|---|---|---|---|
| Unload | 0.0000000 | 0.0000 | 0.0000 | 0.02 | 2.25 |
| 90 | 90.0000910 | 90.0000 | 0.0000 | 0.16 | 2.00 |
| 100 | 100.0000420 | 100.0000 | 0.0000 | 0.16 | 2.00 |
| 110 | 110.0000750 | 110.0000 | 0.0000 | 0.17 | 2.00 |
| 120 | 120.0000680 | 120.0000 | 0.0001 | 0.18 | 2.00 |
| 130 | 130.0001010 | 130.0000 | 0.0000 | 0.20 | 2.00 |
| 140 | 140.0000960 | 140.0003 | 0.0001 | 0.21 | 2.00 |
| 150 | 150.0000790 | 150.0003 | 0.0001 | 0.21 | 2.00 |
| 160 | 160.0001120 | 160.0003 | 0.0001 | 0.23 | 2.00 |
| 170 | 170.0001050 | 170.0003 | -0.0002 | 0.24 | 2.00 |
| 200 | 200.0001460 | 200.0004 | -0.0002 | 0.26 | 2.00 |

5. Effect of Tare test:

| Tare Load (g) | Test Load (g) | Indication (g) | Correction (g) |
|---|---|---|---|
| 100 | 20.000028 | 20.0000 | 0.0000 |
| | 40.000054 | 40.0002 | -0.0001 |
| | 60.000070 | 60.0002 | -0.0001 |
| | 80.000098 | 80.0002 | -0.0001 |
| | 100.000042 | 100.0003 | -0.0002 |

Remark:
The report uncertainty of measurment was based on standard uncertainty multiplied by coverage factor k, providing a level of confidence of approximetely 95%

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สุดสาหกรรมพัฒนาอุตสาหกรรมอาหาร
ศูนย์บริการห้องปฏิบัติการอุตสาหกรรมอาหาร
Foundation for Industrial Development National Food Institute
Food Industrial Laboratory Service Center

# Calibration Certificate

**Certificate No.:** 2502226-002-01
**Client name:** UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.
**Address:** 3 Soi Udomsuk 41, Sukhumvit Road, Bangchack, Prakhanong, Bangkok 10260



**Equipment:** Electronic Balance
**Manufacturer:** METTLER TOLEDO
**Model:** XSR205DU
**Serial No.:** C210685394
**ID No.:** UAE.WAO.010/2565
**Order No.:** 2502226
**Operation No.:** 2502226-002
**Date of Receipt:** 19 March 2025
**Date of Calibration:** 20 March 2025

**Calibrated by** Scientist
**Approved by** Manager, Division of Calibration Laboratory Responsible for the Technical Management Team

**Date of Issue:** 25 March 2025

**The uncertainties are for a confidence probability of approximately 95%**

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the National Food Institute.



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เอกสารไม่ควบคุม

สุดสาหกรรมพัฒนาอุตสาหกรรมอาหาร
ศูนย์บริการห้องปฏิบัติการอุตสาหกรรมอาหาร
Foundation for Industrial Development National Food Institute
Food Industrial Laboratory Service Center

# Calibration Report

**Certificate No.:** 2502226-002-01
**Equipment:** Electronic Balance
**Manufacturer:** METTLER TOLEDO
**Model:** XSR205DU
**Resolution:** 0.00001 g / 0.0001 g
**Serial No.:** C210685394
**ID No.:** UAE.WAO.010/2565
**Capacity:** 82 g / 220 g



**Date of Calibration:** 20 March 2025
**Environment Condition:** Ambient Temperature: 21.2 ± 0.6 °C Relative Humidity: 48 ± 3.5 %
**Place of Calibration:** 208 Balance Room, 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 | M2404100S | 19 April 2025 |
| **Instrumcnt** | **Model** | **Serial No.** | **Calibrated By** | **Certificate No.** | **Due Date** |
| Thermo-Hygro Meter | 608-H1 | NFI.BTH 017/23 | Quality Reborn | QR25-0542 | 10 February 2026 |

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.

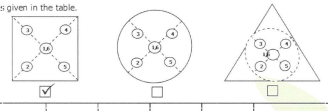
**Calibration Results:**

**1. Repeatability of Reading:**

| Nominal Value ( g ) | Standard Deviation of Reading ( g ) |
|---|---|
| 40 | 0.0000042 |
| 80 | 0.0000042 |
| 100 | 0.000000 |
| 200 | 0.000000 |

**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.



| 1 ( g ) | 2 ( g ) | 3 ( g ) | 4 ( g ) | 5 ( g ) | 6 ( g ) | (Maximum Difference) ( g ) |
|---|---|---|---|---|---|---|
| 100.0001 | 100.0001 | 100.0001 | 100.0001 | 100.0001 | 100.0001 | 0.0000 |



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ศูนย์บริการห้องปฏิบัติการอุตสาหกรรมอาหาร
Foundation for Industrial Development National Food Institute
Food Industrial Laboratory Service Center

# Calibration Report

**Certificate No.:** 2502226-002-01
**Equipment:** Electronic Balance
**Manufacturer:** METTLER TOLEDO
**Model:** XSR205DU
**Resolution:** 0.00001 g / 0.0001 g
**Serial No.:** C210685394
**ID No.:** UAE.WAO.010/2565
**Capacity:** 82 g / 220 g



**Date of Calibration:** 20 March 2025
**Calibration Results:** (Continued)
**Calibration Range:** 0-80 g
**Calibration Adjustment:** Internal Calibration

**3. Departure from Nominal Value:** (Range: 0 - 82 g ; Resolution: 0.00001 g )

| Nominal Value ( g ) | Standard Value ( g ) | Average Reading ( g ) | Correction ( g ) | Uncertainty ( ± g ) | Coverage Factor k |
|---|---|---|---|---|---|
| Unload | 0.000000 | 0.00000 | 0.00000 | 0.0000087 | 2.00 |
| 0.001 | 0.001003 | 0.00100 | 0.00000 | 0.0000090 | 2.00 |
| 0.005 | 0.005002 | 0.00501 | -0.00001 | 0.0000092 | 2.00 |
| 0.01 | 0.010003 | 0.01002 | -0.00002 | 0.0000089 | 2.00 |
| 0.05 | 0.049996 | 0.05001 | -0.00001 | 0.0000096 | 2.00 |
| 0.1 | 0.100011 | 0.10002 | -0.00001 | 0.000011 | 2.00 |
| 0.5 | 0.500016 | 0.50004 | -0.00002 | 0.000014 | 2.00 |
| 1 | 1.000003 | 1.00005 | -0.00005 | 0.000016 | 2.00 |
| 2 | 2.000023 | 2.00006 | -0.00004 | 0.000017 | 2.00 |
| 5 | 5.000015 | 5.00006 | -0.00005 | 0.000020 | 2.00 |
| 10 | 10.000009 | 10.00005 | -0.00004 | 0.000026 | 2.00 |
| 20 | 20.000030 | 20.00007 | -0.00004 | 0.000037 | 2.00 |
| 30 | 30.000039 | 30.00009 | -0.00005 | 0.000050 | 2.00 |
| 50 | 50.000028 | 50.00008 | -0.00005 | 0.000068 | 2.00 |
| 80 | 80.000067 | 80.00013 | -0.00006 | 0.00011 | 2.00 |



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ศูนย์บริการห้องปฏิบัติการสุดสาหกรรมอาหาร
Foundation for Industrial Development National Food Institute
Food Industrial Laboratory Service Center

# Calibration Report

**Certificate No.:** 2502226-002-01

**Equipment:** Electronic Balance — **Manufacturer:** METTLER TOLEDO
**Model:** XSR205DU — **Resolution:** 0.00001 g / 0.0001 g
**Serial No.:** C210685394 — **ID No.:** UAE.WAO.010/2565
**Capacity:** 82 g / 220 g

**Date of Calibration:** 20 March 2025 — **Page 4 of 4**

**Calibration Results:** **(Continued)**

**Calibration Range:** >80-200 g

**Calibration Adjustment:** Internal Calibration

**3. Departure from Nominal Value:** (Range: >80 - 200 g ; Resolution: 0.0001 g )

| Nominal Value ( g ) | Standard Value ( g ) | Average Reading ( g ) | Correction ( g ) | Uncertainty ( ± g ) | Coverage Factor *k* |
|---|---|---|---|---|---|
| 90 | 90.00010 | 90.0002 | -0.0001 | 0.00015 | 2.00 |
| 100 | 100.00006 | 100.0001 | 0.0000 | 0.00016 | 2.00 |
| 110 | 110.00007 | 110.0002 | -0.0001 | 0.00017 | 2.00 |
| 120 | 120.00009 | 120.0002 | -0.0001 | 0.00018 | 2.00 |
| 130 | 130.00010 | 130.0002 | -0.0001 | 0.00019 | 2.00 |
| 140 | 140.00013 | 140.0002 | -0.0001 | 0.00019 | 2.00 |
| 150 | 150.00009 | 150.0002 | -0.0001 | 0.00021 | 2.00 |
| 160 | 160.00010 | 160.0002 | -0.0001 | 0.00022 | 2.00 |
| 170 | 170.00012 | 170.0002 | -0.0001 | 0.00023 | 2.00 |
| 200 | 200.00013 | 200.0002 | -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

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## Certificate of Calibration

Certificate No.: 260311-2-BL001-26
Code No.: BL001-26
Page: 1 of 4

Customer Name: United Analyst and Engineering Consultant Co., Ltd.
Address: 3 Soi Udom suk 41, Sukhumvit Rd., Bang Chak, Phar Khanong, Bangkok 10260

Equipment: Electronic Balance
Manufacturer: Mettler Toledo
Model: XSR205DU
Serial No.: C210685394
Asset No. : UAE.WAO.010/2565
Building : UAE number 3 Floor : 2 Room : 208

Received Date: March 11, 2026
Date of Calibation : March 12, 2026
Calibration Conditions: Temperature 23.0 °C to 23.6 °C
Humidity 51.5 % to 54.4 %
Pressure 755.7 mmHg to 757.9 mmHg

Calibrated by:
Approved by: Signature
Issued Date: March 16, 2026

Note : 1) The Uncertainties are for a confidence probability of approximately 95%
2) This Certificate is valid only to the item calibrated on date and place of calibration.
3) 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 United Analyst and Engineering Consultant Co.,Ltd. (UAE)

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Certificate No.: 260311-2-BL001-26
Code No.: BL001-26
Page: 2 of 4

Equipment: Electronic Balance — Manufacturer: Mettler Toledo
Model: XSR205DU — Readability: 0 to 81 (g): 0.01 mg , > 80 to 200 (g) : 0.1 mg
Serial No.: C210685394 — ID No.: UAE.WAO.010/2565
Max. Capacity: 81 g / 220 g
Calibration Date: March 12, 2026
Condition As-Received: In Condition

Condition of Equipment:

Condition of This Result of Calibration:

1. Calibration Method: This instrument was calibrated by method UAE.CP.CAL.006 In-House Method based on UKAS Lab 14 : 2022
2. Reference Standrads:

| Reference Standard: | Model | Serial No. | Calibrated By | Certificate No. | Traceability | Due Date |
|---|---|---|---|---|---|---|
| Standard Weight Class E2 (OIML) | 1 mg to 1 kg | C510641605 | METTLER TOLEDO GmbH | C510641605 | METTLER TOLEDO GmbH | 3-Mar-27 |
| Standard Weight Class E2 (OIML) | 1 mg to 1 kg | B749109122 | AMARC | 25-009359 | AMARC | 21-Jan-27 |

| Instrument | Model | Serial No. | Calibrated By | Certificate No. | Traceability | Due Date |
|---|---|---|---|---|---|---|
| Thermo-Hygro-Baro Meter | MHB-382SD | AK.46457 | SUCCESS | SG-H-00992/68 | Success Gateway | 26-Nov-26 |
| Thermo-Hygro-Baro Meter | MHB-382SD | AK.46457 | TPA | 25P4464 | TPA | 18-Dec-26 |

3. This certification is traceable to SI Unit
4. This certification was certified only for the indtrument we calibrated
5. This result of calibration wae found accurate as show on date and place of calibration only.
6. Through the reference standard laboratory of Mettler-Toledo GmbH C510641605, SAS accreditation number SCS 0032
7. Through the reference standard laboratory of AMARC 25-009359, TISI accreditation number 0152

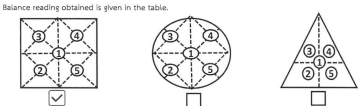
Calibraton Result:

1. Repeatability of Reading:

| Nominal Value (g) | Standard Deviation of Reading (g) |
|---|---|
| 80 | 0.000019 |
| 200* | 0.000055 |

2. Eccentric or off-center loading

A mass of 100 g was placed and moved to various position on pan
The Balance reading obtained is given in the table.



| 1 (g) | 2 (g) | 3 (g) | 4 (g) | 5 (g) | Maximum Difference (g) |
|---|---|---|---|---|---|
| 100.0002 | 100.0002 | 100.0003 | 100.0004 | 100.0003 | 0.0001 |

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Certificate No.: 260311-2-BL001-26
Code No.: BL001-26
Page: 3 of 4

Equipment: Electronic Balance — Manufacturer: Mettler Toledo
Model: XSR205DU — Readability: 0 to 81 (g): 0.01 mg , > 80 to 200 (g) : 0.1 mg
Serial No.: C210685394 — ID No.: UAE.WAO.010/2565
Max. Capacity: 81 g / 220 g
Calibration Date: March 12, 2026

Calibraton Result: (Continued)
Calibraton Range: 0 to 80 (g)
Calibraton Adjustment: Internal Calibration

3. Error of indication from nominal or conventional mass value: (Range: 0 to 81 (g) ; Resolution: 0.00001 g )

| Nominal Value (g) | Reference Value (g) | Indication (g) | Correction (g) | Uncertainty ( ± mg) | Coverage Factor *k* |
|---|---|---|---|---|---|
| Unload | 0.0000000 | 0.00000 | 0.00000 | 0.032 | 2.65 |
| 0.001 | 0.0010020 | 0.00101 | 0.00000 | 0.032 | 2.65 |
| 0.005 | 0.0050025 | 0.00501 | -0.00001 | 0.032 | 2.65 |
| 0.01 | 0.0100005 | 0.01001 | -0.00001 | 0.032 | 2.65 |
| 0.05 | 0.0500003 | 0.05001 | -0.00001 | 0.032 | 2.65 |
| 0.10 | 0.1000083 | 0.10000 | 0.00001 | 0.033 | 2.65 |
| 0.50 | 0.5000121 | 0.50001 | 0.00000 | 0.033 | 2.65 |
| 1 | 1.0000119 | 1.00003 | -0.00002 | 0.032 | 2.52 |
| 2 | 2.0000125 | 2.00003 | -0.00002 | 0.033 | 2.52 |
| 5 | 5.0000146 | 5.00003 | -0.00002 | 0.033 | 2.32 |
| 10 | 10.0000330 | 10.00006 | -0.00003 | 0.034 | 2.21 |
| 20 | 20.000028 | 20.00006 | -0.00003 | 0.041 | 2.07 |
| 30 | 30.000061 | 30.00017 | -0.00011 | 0.055 | 2.00 |
| 40 | 40.000054 | 40.00021 | -0.00016 | 0.066 | 2.00 |
| 50 | 50.000037 | 50.00023 | -0.00019 | 0.068 | 2.00 |
| 60 | 60.000070 | 60.00029 | -0.00022 | 0.084 | 2.00 |
| 80 | 80.000098 | 80.00039 | -0.00030 | 0.12 | 2.00 |

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| | | | |
|---|---|---|---|
| Equipment: | Electronic Balance | Manufacturer: | Mettler Toledo |
| Model: | XSR205DU | Readability: | 0 to 81 (g): 0.01 mg , > 80 to 200 (g) : 0.1 mg |
| Serial No.: | C210685394 | ID No.: | UAE.WAO.010/2565 |
| Max. Capacity: | 81 g / 220 g | | |
| Calibration Date: | March 12, 2026 | | |

Calibraton Result: (Continued)
Calibraton Range: > 81 to 200 (g)
Calibraton Adjustment: Internal Calibration

3. Error of indication from nominal or conventional mass value: (Range: > 81 - 220 (g) ; Resolution: 0.0001 g )

| Nominal Value (g) | Reference Value (g) | Indication (g) | Correction (g) | Uncertainty ( ± mg) | Coverage Factor k |
|---|---|---|---|---|---|
| Unload | 0.0000000 | 0.0000 | 0.0000 | 0.032 | 2.65 |
| 90 | 90.0000910 | 90.0004 | -0.0003 | 0.16 | 2.00 |
| 100 | 100.0000420 | 100.0003 | -0.0003 | 0.16 | 2.00 |
| 110 | 110.0000750 | 110.0004 | -0.0003 | 0.18 | 2.00 |
| 120 | 120.0000680 | 120.0004 | -0.0003 | 0.19 | 2.00 |
| 130 | 130.0001010 | 130.0005 | -0.0004 | 0.20 | 2.00 |
| 140 | 140.0000960 | 140.0004 | -0.0003 | 0.21 | 2.00 |
| 150 | 150.0000790 | 150.0005 | -0.0004 | 0.22 | 2.00 |
| 160 | 160.0001120 | 160.0004 | -0.0003 | 0.23 | 2.00 |
| 170 | 170.0001050 | 170.0003 | -0.0002 | 0.24 | 2.00 |
| 200 | 200.0001460 | 200.0001 | 0.0000 | 0.26 | 2.00 |

4. Effect of Tare test:

| Tare Load (g) | Test Load (g) | Indication (g) | Correction (g) |
|---|---|---|---|
| 100 | 20.000028 | 20.0001 | 0.0000 |
| | 40.000054 | 40.0001 | 0.0000 |
| | 60.000070 | 60.0000 | 0.0001 |
| | 80.000098 | 80.0000 | 0.0001 |
| | 100.000109 | 100.0000 | 0.0001 |

Remark: -
The report uncertainty of measurment was based on standard uncertainty multiplied by coverage factor k, providing a level of confidence of approximetely 95%

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## Certificate of Calibration

Certificate No.: 250422-1-BL002-25
Code No.: BL002-25
Page: 1 of 3

Customer Name: United Analyst and Engineering Consultant Co., Ltd.
Address: 3 Soi Udom suk 41, Sukhumvit Rd., Bang Chak, Phar Khanong, Bangkok 10260

Equipment: Electronic Balance
Manufacturer: Mettler Toledo
Model: AB204-S/FACT
Serial No.: 1129361010
Asset No. : UAE.WAS.002/2552
Building : N/A Floor : 1 Room : 107

Received Date: April 22, 2025
Date of Calibation : April 23, 2025
Calibration Conditions: Temperature 22.8 °C to 23.4 °C
Humidity 54.8 % to 68.9 %
Pressure 756.6 mmHg to 758.2 mmHg

Calibrated by:
Approved by: Signature:
Issued Date: April 25, 2025

Note : 1) The Uncertainties are for a confidence probability of approximately 95%
2) This Certificate is valid only to the item calibrated on date and place of calibration.
3) 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 United Analyst and Engineering Consultant Co.,Ltd. (UAE)

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| | | | |
|---|---|---|---|
| Equipment: | Electronic Balance | Manufacturer: | Mettler Toledo |
| Model: | AB204-S/FACT | Readability: | 0.0001 g |
| Serial No.: | 1129361010 | ID No.: | UAE.WAS.002/2552 |
| Max. Capacity: | 220 g | | |
| Calibration Date: | April 23, 2025 | | |
| Condition As-Received: | In Condition | | |

Condition of Equipment:
Condition of This Result of Calibration:
1. Calibration Method: This instrument was calibrated by method UAE.CP.CAL.006 In-House Method based on UKAS Lab 14 : 2022
2. Reference Standrads:

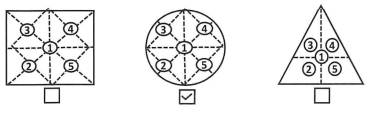
| Reference Standard: | Model | Serial No. | Calibrated By | Certificate No. | Traceability | Due Date |
|---|---|---|---|---|---|---|
| Standard Weight Class E2 (OIML) | 1 mg to 1 kg | B749109122 | AMARC | 25-009359 | Mettler-Toledo | 21-Jan-27 |
| Standard Weight Class F1 (OIML) | 1 mg to 200 g | 11119512 | AMARC | 24-013840 | Mettler-Toledo | 04-Feb-26 |
| **Instrument** | **Model** | **Serial No.** | **Calibrated By** | **Certificate No.** | **Traceability** | **Due Date** |
| Thermo-Hygro-Baro Meter | MHB-382SD | AK.46457 | SUCCESS | SG-H-00997/67 | Success Gateway | 21-Nov-25 |
| Thermo-Hygro-Baro Meter | MHB-382SD | AK.46457 | TPA | 25P795 | TPA | 25-Feb-26 |

3. This certification is traceable to SI Unit
4. This certification was certified only for the indtrument we calibrated
5. This result of calibration wae found accurate as show on date and place of calibration only.
6. Through the reference standard laboratory of AMARC 25-009359 Calibration 0152

Calibraton Result:
1. Repeatability of Reading:

| Nominal Value (g) | Standard Deviation of Reading (g) |
|---|---|
| 200* | 0.000045 |

2. Eccentric or off-center loading
A mass of 100 g was placed and moved to various position on pan
The Balance reading obtained is given in the table.




| 1 (g) | 2 (g) | 3 (g) | 4 (g) | 5 (g) | Maximum Difference (g) |
|---|---|---|---|---|---|
| 100.0000 | 99.9996 | 99.9997 | 100.0003 | 100.0005 | 0.0005 |

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United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com



| | | | |
|---|---|---|---|
| Equipment: | Electronic Balance | Manufacturer: | Mettler Toledo |
| Model: | AB204-S/FACT | Readability: | 0.0001 g |
| Serial No.: | 1129361010 | ID No.: | UAE.WAS.002/2552 |
| Max. Capacity: | 220 g | | |
| Calibration Date: | April 23, 2025 | | |

Calibraton Result: (Continued)
Calibraton Range: 0 - 200 g
Calibraton Adjustment: Internal Calibration

3. Error of indication from nominal or conventional mass value:

| Nominal Value (g) | Reference Value (g) | Indication (g) | Correction (g) | Uncertainty ( ± mg) | Coverage Factor k |
|---|---|---|---|---|---|
| Unload | 0.0000000 | 0.0000 | 0.0000 | 0.10 | 2.05 |
| 0.01 | 0.0100025 | 0.0099 | 0.0001 | 0.10 | 2.05 |
| 0.05 | 0.0500056 | 0.0500 | 0.0000 | 0.10 | 2.05 |
| 0.1 | 0.1000012 | 0.0999 | 0.0001 | 0.10 | 2.05 |
| 0.5 | 0.5000133 | 0.5000 | 0.0000 | 0.10 | 2.05 |
| 1 | 1.0000105 | 1.0000 | 0.0000 | 0.10 | 2.05 |
| 10 | 10.000010 | 10.0000 | 0.0000 | 0.11 | 2.04 |
| 40 | 40.000076 | 40.0000 | 0.0000 | 0.14 | 2.00 |
| 50 | 50.000056 | 50.0000 | 0.0001 | 0.13 | 2.00 |
| 80 | 80.000107 | 80.0000 | 0.0001 | 0.18 | 2.00 |
| 100 | 100.000109 | 99.9999 | 0.0002 | 0.17 | 2.00 |
| 120 | 120.00015 | 119.9999 | 0.0003 | 0.21 | 2.00 |
| 150 | 150.000165 | 149.9998 | 0.0003 | 0.24 | 2.00 |
| 160 | 160.000175 | 159.9997 | 0.0005 | 0.26 | 2.00 |
| 200 | 200.000129 | 199.9998 | 0.0004 | 0.30 | 2.00 |

4. Effect of Tare test:

| Tare Load (g) | Test Load (g) | Indication (g) | Correction (g) |
|---|---|---|---|
| 100 | 20.000041 | 19.9999 | 0.0001 |
| | 40.000076 | 39.9998 | 0.0002 |
| | 60.000066 | 59.9997 | 0.0003 |
| | 80.000107 | 79.9999 | 0.0002 |
| | 100.000168 | 100.0004 | -0.0003 |

Remark:
The report uncertainty of measurment was based on standard uncertainty multiplied by coverage factor k, providing a level of confidence of approximately 95%

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Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

NSC-TISI-TIS 17025 CALIBRATION 0416

# Certificate of Calibration

Certificate No.: 260318-1-BL007-26
Code No.: BL007-26


Customer Name: United Analyst and Engineering Consultant Co., Ltd.
Address: 3 Soi Udom suk 41, Sukhumvit Rd., Bang Chak, Phar Khanong, Bangkok 10260

Equipment: Electronic Balance
Manufacturer: Mettler Toledo
Model: AB204-S/FACT
Serial No.: 1129361010
Asset No. : UAE.WAS.002/2552
Building : UAE No.3 Floor : 1 Room : 107

Received Date: April 2, 2026
Date of Calibation : April 3, 2026
Calibration Conditions:

| | | | | |
|---|---|---|---|---|
| Temperature | 22.1 °C | to | 21.4 °C |
| Humidity | 65.5 % | to | 51.9 % |
| Pressure | 757.8 mmHg | to | 756.0 mmHg |

Calibrated by:
Approved by: Signature:
Issued Date: April 3, 2026

Note : 1) The Uncertainties are for a confidence probability of approximately 95%
2) This Certificate is valid only to the item calibrated on date and place of calibration.
3) 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 United Analyst and Engineering Consultant Co.,Ltd. (UAE)

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United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com
NSC-TISI-TIS 17025 CALIBRATION 0416



Equipment: Electronic Balance
Manufacturer: Mettler Toledo
Model: AB204-S/FACT
Readability: 0.0001 g
Serial No.: 1129361010
ID No.: UAE.WAS.002/2552
Max. Capacity: 220 g
Calibration Date: April 3, 2026
Condition As-Received: In Condition

Condition of Equipment:
Condition of This Result of Calibration:
1. Calibration Method: This instrument was calibrated by method UAE.CP.CAL.006 In-House Method based on UKAS Lab 14 : 2022
2. Reference Standrads:

| Reference Standard: | Model | Serial No. | Calibrated By | Certificate No. | Traceability | Due Date |
|---|---|---|---|---|---|---|
| Standard Weight Class E2 (OIML) | 1 mg to 1 kg | C510641605 | METTLER TOLEDO GmbH | C510641605 | METTLER TOLEDO GmbH | 3-Mar-27 |

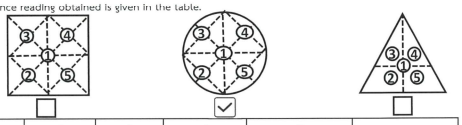
| Instrument | Model | Serial No. | Calibrated By | Certificate No. | Traceability | Due Date |
|---|---|---|---|---|---|---|
| Thermo-Hygro-Baro Meter | MHB-382SD | AK.46457 | SUCCESS | SG-H-00992/68 | Success Gateway | 26-Nov-26 |
| Thermo-Hygro-Baro Meter | MHB-382SD | AK.46457 | TPA | 25P4464 | TPA | 18-Dec-26 |

3. This certification is traceable to SI Unit
4. This certification was certified only for the indtrument we calibrated
5. This result of calibration wae found accurate as show on date and place of calibration only.
6. Through the reference standard laboratory of Mettler-Toledo GmbH C510641605, SAS accreditation number SCS 0032

Calibraton Result:
1. Repeatability of Reading:

| Nominal Value (g) | Standard Deviation of Reading (g) |
|---|---|
| 200* | 0.00008 |

2. Eccentric or off-center loading
A mass of 100 g was placed and moved to various position on pan
The Balance reading obtained is given in the table.



| 1 (g) | 2 (g) | 3 (g) | 4 (g) | 5 (g) | Maximum Difference (g) |
|---|---|---|---|---|---|
| 100.0001 | 99.9997 | 99.9997 | 100.0004 | 100.0006 | 0.0005 |

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3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com
NSC-TISI-TIS 17025 CALIBRATION 0416

UAE.FM.7.8.002-2(0)/01-AUG-2024



Equipment: Electronic Balance
Manufacturer: Mettler Toledo
Model: AB204-S/FACT
Readability: 0.0001 g
Serial No.: 1129361010
ID No.: UAE.WAS.002/2552
Max. Capacity: 220 g
Calibration Date: April 3, 2026

Calibraton Result: (Continued)
Calibraton Range: 0 - 200 g
Calibraton Adjustment: External Calibration

3. Error of indication from nominal or conventional mass value:

| Nominal Value (g) | Reference Value (g) | Indication (g) | Correction (g) | Uncertainty (± mg) | Coverage Factor k |
|---|---|---|---|---|---|
| Unload | 0.0000000 | 0.0000 | 0.0000 | 0.14 | 2.25 |
| 0.01 | 0.0100005 | 0.0099 | 0.0001 | 0.14 | 2.25 |
| 0.05 | 0.0500003 | 0.0500 | 0.0000 | 0.14 | 2.25 |
| 0.1 | 0.1000083 | 0.0999 | 0.0001 | 0.15 | 2.25 |
| 0.5 | 0.5000121 | 0.5000 | 0.0000 | 0.15 | 2.25 |
| 1.0 | 1.0000119 | 0.9999 | 0.0001 | 0.15 | 2.25 |
| 10.0 | 10.000033 | 10.0000 | 0.0000 | 0.15 | 2.23 |
| 40.0 | 40.000054 | 40.0001 | 0.0000 | 0.16 | 2.16 |
| 50.0 | 50.000037 | 50.0001 | 0.0000 | 0.16 | 2.15 |
| 80.0 | 80.000098 | 80.0002 | -0.0001 | 0.18 | 2.07 |
| 100.0 | 100.000042 | 100.0003 | -0.0003 | 0.19 | 2.06 |
| 120.0 | 120.000068 | 120.0001 | 0.0000 | 0.20 | 2.04 |
| 150.0 | 150.000079 | 150.0001 | 0.0000 | 0.23 | 2.00 |
| 160.0 | 160.000112 | 160.0003 | -0.0002 | 0.24 | 2.00 |
| 200.0 | 200.000146 | 200.0004 | -0.0002 | 0.27 | 2.00 |

4. Effect of Tare test:

| Tare Load (g) | Test Load (g) | Indication (g) | Correction (g) |
|---|---|---|---|
| 100 | 20.000028 | 20.0000 | 0.0000 |
| | 40.000054 | 40.0000 | 0.0000 |
| | 60.000070 | 60.0000 | 0.0001 |
| | 80.000098 | 80.0000 | 0.0001 |
| | 100.000042 | 100.0000 | 0.0000 |

Remark: -
The report uncertainty of measurment was based on standard uncertainty multiplied by coverage factor k, providing a level of confidence of approximetely 95%

o---o-End-o---o

รไม่ควบคุม

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

NSC-TISI-TIS17025 CALIBRATION 0008

# Certificate of Calibration

Cert. No.: 25TM1001


Equipment : BOD Incubator
Manufacturer : ARCO
Model : UC4-1320
Serial No. : -
ID No. : UAE.WAO.018/2559
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 : 07 July 2025
Calibration Date : 07 July 2025
Ambient Temperature : ( 26 ± 10 ) °C
Relative Humidity : ( 50 ± 30 ) %
AC Line Voltage : ( 220 ± 22 ) V
Calibrated by :
Approved by :
Approved Signatory
( )
( )
(✓)
Issue Date : 17 July 2025

The Uncertainties are for a confidence probability of approximately 95%
This certificate may not be reproduced other than in full, except with the prior written Approval of the head of Corporate Services 3 : Equipment Calibration and Testing Services.

เอกสารไม่ควบคุม

**Equipment :** BOD Incubator
**Condition As-Received :** Used Item
**Reference :** 2507-0146OC-2

**Cert. No.:** 25TM1001


**Procedure Used :-**

Calibration were conducted using calibration procedure CP-OT02 based on TLAS G-20 according to direct measurement method with Data Acquisition which connected with Resistance Temperature Detector ( RTD ).
The temperature scale used was based on ITS-90.

**Condition of this result of calibration**

1. Reference standard instrument:-

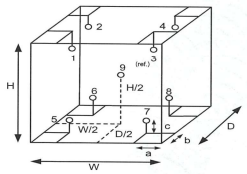
| Instrument | Serial No. | Cert. No. | Traceable | Due Date |
|---|---|---|---|---|
| 1 ) Data Acquisition | MY59003411 | 24LM192 | TPA | 24 Dec 2025 |

2. This certificate is valid only to the item calibrated on date and place of calibration.
3. This measurement result is traceable to the International System of Unit maintained through :

**Remark :** TPA : Technology Promotion Association ( Thailand - Japan )

**Result of Calibration :-** ( * ) Without Adjustment
**Function of UUC* :** Temperature Source
**Fresh air setting :** Not Available

| Environment during calibration | Beginning | Finished |
|---|---|---|
| Temp. ( °C ) | 28 | 28 |
| REL.Humid. ( % ) | 54 | 57 |
| AC Supply ( Volt ) | 224 | 226 |




| Position : | Ref. Std. ID No.: |
|---|---|
| 1 | 25-20RTD-2/1 |
| 2 | 25-20RTD-2/2 |
| 3 | 25-20RTD-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 |

เอกสารไม่ควบคุม

**Equipment :** BOD Incubator
**Condition As-Received :** Used Item
**Reference :** 2507-0146OC-2
**Result of Calibration :-** ( * ) Without Adjustment
**Function of UUC* :** Temperature Source
**Fresh air setting :** Not Available

**Cert. No.:** 25TM1001


| Calibration Point ( °C ) | UUC* Setting ( °C ) | UUC* Reading ( °C ) | Temperature stability ( ± °C ) | Temperature uniformity ( °C ) | Overall Variation ( °C ) | Coverage Factor *k* |
|---|---|---|---|---|---|---|
| 20.0 | 20.0 | 19.9 | 0.18 | 0.60 | 0.83 | 2 |

| Calibration Point ( °C ) | Measured Temperature ( °C ) Position | | | | | | | | | Uncertainty ( ±°C ) |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 (ref.) | |
| 20.0 | 20.202 | 19.900 | 20.390 | 20.077 | 20.111 | 20.044 | 20.275 | 20.173 | 19.835 | 0.38 |

**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-**

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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 FAX. 0-2719-9484

# Certificate of Testing

**Cert.No.:** 25TW29


**Equipment :** DO Meter
**Manufacturer :** YSI
**Model :** 5100
**Serial No. :** 11B 101863
**ID No. :** UAE.WAO.004/2554
**Received Date :** 14 February 2025
**Test Date :** 17 February 2025
**Reference :** 2502-0473DSC-1
**Submitted by :** United Analyst and Engineering Consultant Co.,Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak,
Phrakhanong, Bangkok 10260
**Laboratory Condition :** Temperature ( 25 ± 5 ) °C
Humidity ( 50 ± 20 ) %
**Test Procedure :** In - house method : CP-CH9
by Comparison Technique with Azide Modification Method

**Tested by :**

**Approved by :**

Approved Signatory

( )
( )
(✓)

**Issue Date :** 18 February 2025

เอกสารไม่ควบคุม

**Cert.No.:** 25TW29


**Condition of this result of calibration**

1. Reference Standard Instruments :
This certification is traceable to the International System of Unit through the reference standards laboratory of Industrial Calibration Center, Technology Promotion Association (Thailand-Japan).

| Instruments | Serial No. | ID No. | Certificate No. | Due Date |
|---|---|---|---|---|
| 1. Burette | - | 130BU10 | 23CG1172 | 22 Mar 2025 |
| 2. Balance | 14233821 | 110RC001 | 24MM131 | 04 July 2025 |

2. Standard Material :-

| Material | Manufacturer | Lot.No. | Assay |
|---|---|---|---|
| Sodium Thiosulfate 5-Hydrate AR | KEMAUS | 2203162447 | 99.6% |

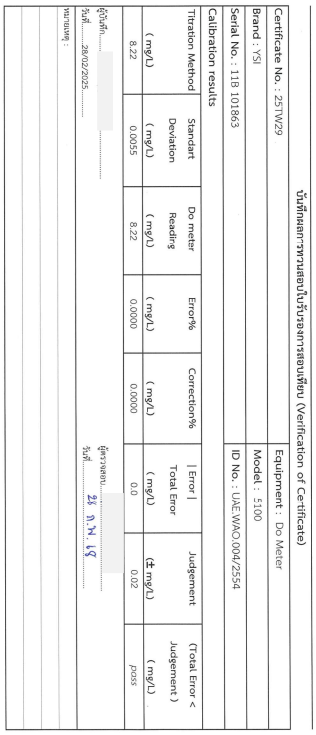
**Result :** **Dissolved Oxygen Meter Adjustment With Air 100 %**
**Dissolved Oxygen Probe No.:** 24F100202

| Titration Method (Azide Modification Method) (mg/L) | DO Meter Reading (mg/L) | Standard Deviation (mg/L) |
|---|---|---|
| 8.22 | 8.22 | 0.0055 |

This report was certified only for the instrument we tested.It is allowable to use for study Intend to use for advertising and referral purpose is prohibited.This report may not be reproduced other in full, without written approval of the laboratory

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บันทึกผลการทวนสอบน้ำบริสุทธิ์ (Verification of Certificate)

Certificate No. : 25TW29 | Equipment : Do Meter
Brand : YSI | Model : 5100
Serial No. : 11B 101863 | ID No. : UAE.WAO.004/2554
Calibration results

| Titration Method (mg/L) | Standard Deviation (mg/L) | Do meter Reading (mg/L) | Error% (mg/L) | Correction% (mg/L) | \| Error \| Total Error (mg/L) | Judgement (± mg/L) | (Total Error < Judgement ) (mg/L) |
|---|---|---|---|---|---|---|---|
| 8.22 | 0.0055 | 8.22 | 0.0000 | 0.0000 | 0.0 | 0.02 | pass |

ผู้ตรวจสอบ.....
วันที่.....28/02/2025.....
ผู้ทวนสอบ.....
วันที่.....28 ก.พ. 68.....
หมายเหตุ :

ลงชื่อ.....

UAE.WAO.004/2554

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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 FAX. 0-2719-9484

# Certificate of Testing

**Cert.No.:** 26TW50
**Page.:** 1 of 2

| | |
|---|---|
| **Equipment :** | DO Meter |
| **Manufacturer :** | YSI |
| **Model :** | 5100 |
| **Serial No. :** | 11B 101863 |
| **ID No. :** | UAE.WAO.004/2554 |
| **Received Date :** | 27 February 2026 |
| **Test Date :** | 02 March 2026 |
| **Reference :** | 2602-0915DSC-1 |
| **Submitted by :** | United Analyst and Engineering Consultant Co.,Ltd.<br>3 Soi Udomsuk 41, Sukhumvit Road, Bangchak,<br>Phrakhanong, Bangkok 10260 |
| **Laboratory Condition :** | Temperature ( 25 ± 5 ) °C<br>Humidity ( 50 ± 20 ) % |
| **Test Procedure :** | In - house method : CP-CH9<br>by Comparison Technique with Azide Modification Method |
| **Tested by :** | |
| **Approved by :** | Approved Signatory |

( ) Chakrit Waewwanjua
( ) Ponpan Paipim
(✓) Saithip Meangmai

**Issue Date :** 03 March 2026

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**Cert.No.:** 26TW50
**Page.:** 2 of 2

**Condition of this result of calibration**

1. Reference Standard Instruments :
   This measurement result is traceable to the International System of Unit through the reference standards laboratory of Industrial Calibration Center, Technology Promotion Association (Thailand-Japan).

| Instruments | ID No. | Certificate No. | Due Date |
|---|---|---|---|
| 1. Burette | 130BU10 | 25CG1126 | 18 Mar 2027 |
| 2. Balance | 110RC001 | 25MM316 | 02 July 2026 |

2. Standard Material :-

| Material | Manufacturer | Lot.No. | Assay |
|---|---|---|---|
| Sodium Thiosulfate 5-Hydrate AR | KEMAUS | 2203162447 | 99.6% |

**Result :** **Dissolved Oxygen Meter Adjustment With Air 100 %**
**Dissolved Oxygen Probe No.:** 24F100202

| Titration Method (Azide Modification Method) (mg/L) | DO Meter Reading (mg/L) | Standard Deviation (mg/L) |
|---|---|---|
| 8.20 | 8.20 | 0.0084 |

This report was certified only for the instrument we tested.It is allowable to use for study Intend to use for advertising and referral purpose is prohibited.This report may not be reproduced other in full, without written approval of the laboratory

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nfi national food institute ministry of industry
สุขสาหกรรมพัฒนามูลนิธิเพื่อสถาบันอาหาร
ศูนย์บริการห้องปฏิบัติการสุขสาหกรรมอาหาร
Foundation for Industrial Development National Food Institute
Food Industrial Laboratory Service Center

# Verification Certificate

| | |
|---|---|
| **Certificate No.:** | **2501440-001-01** |
| **Client name:** | **UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.** |
| **Address:** | **3 Soi Udomsuk 41, Sukhumvit Road, Bangchack, Prakhanong, Bangkok 10260** |



| | |
|---|---|
| **Equipment:** | **Digestion Unit (Heating Block)** |
| **Manufacturer:** | **FOSS** |
| **Model:** | **Tecator Digestor 2520** |
| **Serial No.:** | **91905060** |
| **ID No.:** | **UAE.WAS.030/2566** |
| **Order No.:** | **2501440** |
| **Operation No.:** | **2501440-001** |
| **Date of Receipt:** | **27 January 2025** |
| **Date of Calibration:** | **27 January 2025** |

**Calibrated by** ..... **Approved by** .....
**Scientist**
**Manager, Division of Calibration Laboratory**
**Responsible for the Technical Management Team**

**Date of Issue:** **29 January 2025**

**The uncertainties are for a confidence probability of approximately 95 %.**

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national 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

2008 ซอยอรุณอมรินทร์ 35 ถนนอรุณอมรินทร์ แขวงบางยี่เรือ เขตบางพลัด กรุงเทพมหานคร 10700
2008 Soi 35, Arun Amarin Road, Bang Yi Khan Subdistrict, Bang Phlat District, Bangkok 10700, Thailand
Tel: +66(0) 2422 8688 Fax: +66(0) 2422 8545
nfi.or.th

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# Verification Report

**Certificate No.:** 2501440-001-01

**Equipment:** Digestion Unit (Heating Block)
Model: Tecator Digestor 2520 Serial No.: 91905060
Resolution: 1 °C ID No : UAE.WAS.030/2566
Manufacturer: FOSS

**Date of Calibration:** 27 January 2025 

**Location:** Dry Laboratory (312), UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.
**Environment Condition:** Ambient Temperature ( 29 ± 1 ) °C
Relative Humidity ( 58 ± 2 ) %
Line Voltage ( 224 ± 1 ) Volt

**Condition of this results of Calibration:**

1. This instrument was calibrated by insert standard thermocouples type R into its Digestion blocks and Calibration according to NFI Method W-TE-026 based on BS 4309 : 1968
   - 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.
2. Reference Standard Instrument :

| Instrument | Model | Serial No. | Certificate No. | Due Date | Through |
|---|---|---|---|---|---|
| Digital Thermometer with Thermocouple | 34970A | MY44045576/MY41194453 | TC24/0063 | 5-Jun-2025 | N.M. Technical Center Laboratory |
| | Type R | S/CH1, R/CH2, R/CH3 | | | |

3. This certificate is traceable to International System of Units (SI Units).
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.
6. Condition of Calibrated item : Good
   UUC* Description
   Time of Record 1 Hour 6 Minute At 380 °C
7. Result of Calibration : [X] Without adjustment [ ] After adjustment



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ศูนย์บริการห้องปฏิบัติการอุตสาหกรรมอาหาร
Foundation for Industrial Development National Food Institute
Food Industrial Laboratory Service Center

# Verification Report

**Certificate No.:** 2501440-001-01

**Equipment:** Digestion Unit (Heating Block)
Model: Tecator Digestor 2520 Serial No.: 91905060
Resolution: 1 °C ID No : UAE.WAS.030/2566
Manufacturer: FOSS

**Date of Calibration:** 27 January 2025 

**Calibration point:** 380 °C
**Calibration result:**
**Table1 : Reporting of Temperature**

| Block No. | UUC* Setting (°C) | UUC* Reading (°C) | Stability (±°C) | Standard Thermometer (°C) | Uncertainty (±°C) |
|---|---|---|---|---|---|
| 1 | 380 | 380 | 0.22 | 377.84 | 2.0 |
| 2 | 380 | 380 | 0.19 | 378.68 | 2.0 |
| 3 | 380 | 380 | 0.13 | 378.70 | 2.0 |
| 4 | 380 | 380 | 0.12 | 379.82 | 2.0 |
| 5 | 380 | 380 | 0.20 | 381.01 | 2.0 |
| 6 | 380 | 380 | 0.16 | 380.48 | 2.0 |
| 7 | 380 | 380 | 0.16 | 378.22 | 2.0 |
| 8 | 380 | 380 | 0.19 | 377.99 | 2.0 |
| 9 | 380 | 380 | 0.09 | 378.48 | 2.0 |
| 10 | 380 | 380 | 0.15 | 378.17 | 2.0 |
| 11 | 380 | 380 | 0.18 | 377.64 | 2.0 |
| 12 | 380 | 380 | 0.11 | 379.27 | 2.0 |
| 13 | 380 | 380 | 0.13 | 378.14 | 2.0 |
| 14 | 380 | 380 | 0.25 | 379.11 | 2.0 |
| 15 | 380 | 380 | 0.15 | 379.83 | 2.0 |
| 16 | 380 | 380 | 0.18 | 378.05 | 2.0 |
| 17 | 380 | 380 | 0.31 | 378.44 | 2.0 |
| 18 | 380 | 380 | 0.18 | 378.29 | 2.0 |
| 19 | 380 | 380 | 0.17 | 378.41 | 2.0 |
| 20 | 380 | 380 | 0.13 | 379.24 | 2.0 |

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 %.



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Foundation for Industrial Development National Food Institute
Food Industrial Laboratory Service Center

# Verification Report

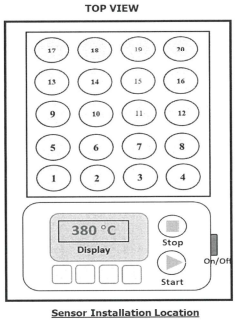
**Certificate No.:** 2501440-001-01

**Equipment:** Digestion Unit (Heating Block)
Model: Tecator Digestor 2520 Serial No.: 91905060
Resolution: 1 °C ID No.: UAE.WAS.030/2566
Manufacturer: FOSS

**Date of Calibration:** 27 January 2025 

**Calibration point:** 380 °C
**Calibration result:** Continued

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




Sensor Installation Location

---------- End ----------



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# FOSS

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

## Customer Service Report

**Report No.:** 13854

**Date:** 24 Febuary 2025
**Customer:** UAE
**Job No.:** 11735
**Address:** BANGKOK
**Instrument:** KT810U
**Serial:** 91887052

| | Travel To Customer (Hrs) | | Labour (Hrs) | | Travel From Customer (Hrs) | |
|---|---|---|---|---|---|---|
| Start | 07:00 | 2hrs | 09:00-13:00 | 8hrs | 15:00 | |
| Finish | 09:00 | | 13:00-14:00 | | 17:00 | |

**Job Type**

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

| PMA Type | | | | | | |
|---|---|---|---|---|---|---|
| | Smartcare | x | Smartcare Pro | x | Fosscare | x |
| | Smartcare Advance | x | Fosscare Pro | x | N/A | x |

**Details of Work / Test**

PM KT810U 12Mo
- test before PM
- Cleaning KT810U, 36 Mo replace
- flushing Alkali pump
- test operation
  - Digestion 80 - 90 ml
  - Distillation 5 min 150 - 170 ml
  - Alkali 50 - 80 ml
  - All pass

| Instrument Ready for Use | OK | x | Not OK* | |
|---|---|---|---|---|

| Part No: | Batch | Description | Qty |
|---|---|---|---|
| 60031810 | 08.01.2024 | FOSS PM kit KT810 8200 36M0 | 1 |

I confirm this report is accurate and complete

| Signed FOSS | | Signed Customer | |
|---|---|---|---|
| Name | | Name | |

| Email: | | Customer Contact.: | |
|---|---|---|---|

*Remark:

Please scan QR code

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DQE Services Co.,Ltd.
32 Soi Ladprao-Wanghin 55, Ladprao-Wanghin Rd., Ladprao, Ladprao, Bangkok 10230
Phone : +66 (0)2 538 2054, Email : dqeservicesinfo@gmail.com

# CERTIFICATE OF CALIBRATION



**Certificate No. :** SP25-024

**Customer :** United Analyst and Engineering Consultant Co.,Ltd. (Head Office)

**Address :** 3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260

**Location of calibration :** Instrument room (207)

**Equipment :** UV-Vis Spectrophotometer

**Manufacturer :** HITACHI

**Model :** U-5100

**Serial No. :** 23A4-008

**ID No. :** UAE.WAS.010/2567

**Received Date :** 17 June 2025

**Calibration Date :** 17 June 2025

**Issue Date :** 20 June 2025

**Condition Instrument :** Good

**Calibrated by :** _____ Technical Manager

**Approved by :** _____ Quality Manager

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

The measurement capability of the laboratory and its traceability to recognized national standards and to the unit 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 DQE Services Co., Ltd.

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# REPORT OF CALIBRATION



**Certificate No. :** SP25-024

**Environment Condition :** Ambient Temperature 25 ± 5 °C

Relative humidity 55 ± 20 %RH

**Calibration method :** In-house method CP-01 Based on ASTM E275-08

**Certified Reference Materials :**

| Material | Serial No. | Certificate No. | Due date |
|---|---|---|---|
| Absobance Standard set | 25760 | 115663 | 25 October 2025 |
| Absobance Standard set | 25757 | 115638 | 25 October 2025 |
| Wavelength Standard set | 25806 | 115657 | 25 October 2025 |
| Wavelength Standard set | 25758 | 115665 | 25 October 2025 |

**Traceability** : This certification is traceable to the International System of Unit maintained at National - Institute of Standards and Technology (NIST) through Starna Scientific Limited

**Spectral Band Width of UUC :** 5.0 nm.

**Scan Speed of UUC :** 40

**Scan Interval of UUC :** 0.1 nm.

**Resolution of UUC :** Photometric 0.001 Abs.

Wavelength 0.1 nm.

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# REPORT OF CALIBRATION



**Certificate No. :** SP25-024

**Calibration Results :** Without adjustment

**Photometric Accuracy :**

| Wavelength (nm.) | CRMs Values (Abs) | UUC Reading (Abs) | Correction (Abs) | Uncertainty (Abs) | Coverage factor k |
|---|---|---|---|---|---|
| 420 | 0.0000 | 0.000 | 0.0000 | 0.0028 | 2.00 |
| | 0.5780 | 0.574 | 0.0040 | 0.0031 | 2.00 |
| | 1.0484 | 1.044 | 0.0044 | 0.0029 | 2.00 |
| | 2.1876 | 2.185 | 0.0026 | 0.0075 | 2.00 |
| 440 | 0.0000 | 0.000 | 0.0000 | 0.0028 | 2.00 |
| | 0.5595 | 0.558 | 0.0015 | 0.0035 | 2.00 |
| | 1.0239 | 1.021 | 0.0029 | 0.0035 | 2.00 |
| | 2.1230 | 2.122 | 0.0010 | 0.0079 | 2.00 |
| 465 | 0.0000 | 0.000 | 0.0000 | 0.0028 | 2.00 |
| | 0.5230 | 0.519 | 0.0040 | 0.0030 | 2.00 |
| | 0.9633 | 0.961 | 0.0023 | 0.0029 | 2.00 |
| | 1.9753 | 1.975 | 0.0003 | 0.0071 | 2.00 |
| 546.1 | 0.0000 | 0.000 | 0.0000 | 0.0028 | 2.00 |
| | 0.5181 | 0.515 | 0.0031 | 0.0031 | 2.00 |
| | 1.0002 | 0.996 | 0.0042 | 0.0033 | 2.00 |
| | 1.9973 | 1.994 | 0.0033 | 0.0084 | 2.00 |
| 590 | 0.0000 | 0.000 | 0.0000 | 0.0028 | 2.00 |
| | 0.5517 | 0.549 | 0.0027 | 0.0030 | 2.00 |
| | 1.0803 | 1.078 | 0.0023 | 0.0030 | 2.00 |
| | 2.0373 | 2.031 | 0.0063 | 0.0082 | 2.00 |
| 635 | 0.0000 | 0.000 | 0.0000 | 0.0028 | 2.00 |
| | 0.5591 | 0.557 | 0.0021 | 0.0031 | 2.00 |
| | 1.0518 | 1.049 | 0.0028 | 0.0030 | 2.00 |
| | 1.9274 | 1.924 | 0.0034 | 0.0081 | 2.00 |

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# REPORT OF CALIBRATION



**Certificate No. :** SP25-024

**Photometric Accuracy :**

| Wavelength (nm.) | CRMs Values (Abs) | UUC Reading (Abs) | Correction (Abs) | Uncertainty (Abs) | Coverage factor k |
|---|---|---|---|---|---|
| 235 | 0.0000 | 0.000 | 0.0000 | 0.0050 | 2.00 |
| | 0.7469 | 0.747 | -0.0001 | 0.0057 | 2.00 |
| 257 | 0.0000 | 0.000 | 0.0000 | 0.0050 | 2.00 |
| | 0.8674 | 0.864 | 0.0034 | 0.0059 | 2.00 |
| 313 | 0.0000 | 0.000 | 0.0000 | 0.0050 | 2.00 |
| | 0.2919 | 0.293 | -0.0011 | 0.0051 | 2.00 |
| 350 | 0.0000 | 0.000 | 0.0000 | 0.0050 | 2.00 |
| | 0.6430 | 0.639 | 0.0040 | 0.0055 | 2.00 |

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NSC-TISI-TIS 17025 CALIBRATION 0404

# REPORT OF CALIBRATION

**Certificate No. :** SP25-024 Page 5 of 5

**Wavelength Accuracy :**

| CRMs Values (nm.) | UUC Reading (nm.) | Correction (nm.) | Uncertainty (nm.) | Coverage factor k |
|---|---|---|---|---|
| 241.00 | 240.4 | 0.60 | 0.18 | 2.00 |
| 279.30 | 278.8 | 0.50 | 0.18 | 2.00 |
| 288.90 | 288.3 | 0.60 | 0.18 | 2.00 |
| 334.50 | 333.9 | 0.60 | 0.18 | 2.00 |
| 361.40 | 360.8 | 0.60 | 0.18 | 2.00 |
| 418.40 | 417.9 | 0.50 | 0.18 | 2.00 |
| 447.20 | 446.6 | 0.60 | 0.18 | 2.00 |
| 459.30 | 459.1 | 0.20 | 0.18 | 2.00 |
| 537.00 | 536.4 | 0.60 | 0.18 | 2.00 |
| 638.00 | 637.5 | 0.50 | 0.18 | 2.00 |
| 441.29 | 440.7 | 0.59 | 0.18 | 2.00 |
| 479.88 | 479.4 | 0.48 | 0.18 | 2.00 |
| 513.75 | 513.3 | 0.45 | 0.18 | 2.00 |
| 528.59 | 528.2 | 0.39 | 0.18 | 2.00 |
| 575.10 | 574.5 | 0.60 | 0.18 | 2.00 |
| 585.56 | 585.4 | 0.16 | 0.20 | 2.00 |
| 684.70 | 684.1 | 0.60 | 0.18 | 2.00 |
| 740.51 | 740.2 | 0.31 | 0.20 | 2.00 |
| 747.61 | 747.0 | 0.61 | 0.18 | 2.00 |
| 807.04 | 806.4 | 0.64 | 0.18 | 2.00 |
| 879.68 | 879.1 | 0.58 | 0.18 | 2.00 |

Remark : - UUC = Unit Under Calinration

- N/A = Not Avaiable

- The result expanded uncertainty of measurement U is stated as the standard uncertainty of measurement multiplied by the coverage factor *k*, which for a normal distribution corresponds to a coverage probability of approximately 95%

- End of Certificate -

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FM-708-02 R01 1/11/2021

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NSC-TISI-TIS 17025 CALIBRATION 0061

# Calibration Certificate

Certificate No.: 2602303-001-01
Page : 1 of 2

| | | | |
|---|---|---|---|
| **Equipment:** | CHAMBER (Incubator) | | |
| **Manufacturer:** | MEMMERT | **Customer Name:** | UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD. |
| **Model:** | IPP260 | **Address:** | 3 Soi Udomsuk 41, Sukhumvit Road, Bangchack, Prakhanong, Bangkok 10260 |
| **Serial No.:** | V615.0187 | | |
| **ID No.:** | UAE.MIC.003/2559 | | |
| **Order No.:** | 2602303 | | |
| **Operation No.:** | 2602303-001 | | |
| **Date of Receipt:** | 11 March 2026 | | |
| **Date of Calibration:** | 11 March 2026 | | |

**Metrological traceability:**

1. Calibration Method:
   - This instrument was calibrated by inserting 9 standard thermometers into its chamber, in accordance with W-TE-014. based on TLAS G-20-1/02-08 (E): Guidelines for Calibration and Checks of Temperature Controlled Enclosures.
   - The temperature scale used in this laboratory is the International Temperature Scale of 1990 (ITS-90).
   - All data shown below are final values, and the initial data may be obtained upon request.
2. Reference Standard Instrument:

| Instrument | Model/Type | Serial No./ID No. | Certificate No. | Due Date | Through |
|---|---|---|---|---|---|
| Digital Thermometer with sensor | DAQ973A<br>RTD | MY59008964<br>CH#101-109/ RTD#101-109 | 2502244-001-01 | 29 March 2026 | NATIONAL FOOD INSTITUTE |

3. This certificate is traceable to the International System of Units (SI).
4. This certificate is valid only for the instrument that was calibrated.
5. The result of this calibration was found to be accurate only on the date and at the place of calibration shown.

Calibrated by ____ Specialist

Approved by ____ Manager, Division of Calibration Laboratory
Responsible for the Technical Management Team

Date of Issue: 19 March 2026

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: 02 Date: 01-10-68

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NSC-TISI-TIS 17025 CALIBRATION 0061

# Calibration Certificate

Certificate No.: 2602303-001-01
Page : 2 of 2

**Calibration Condition:**

| | | | |
|---|---|---|---|
| Equipment: | CHAMBER (Incubator) | **Place of Calibration:** | Microbiology Laboratory UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD |
| UUC* Resolution: | 0.1 °C | **Environment Conditions:** | Ambient Temperature ( 17.2 ± 1 ) °C |
| Condition of the item: | Normal & Good | | Relative Humidity ( 51.5 ± 4 ) % |
| | Without adjustment / As Found | | Line Voltage ( 229 ± 2 ) V. |
| | - Time of record 1 hour 9 minute / point | | |

**Calibration Results:**

Table1 : Reporting of Temperature

| Calibration Point (°C) | Measured Temperature (°C) @ Sensor No. (Sensor No.9 is REF) Std.#1 | Std.#2 | Std.#3 | Std.#4 | Std.#5 | Std.#6 | Std.#7 | Std.#8 | Std.#9 | Measurement Uncertainty (±°C) |
|---|---|---|---|---|---|---|---|---|---|---|
| 35.0 | 35.01 | 34.94 | 35.20 | 35.15 | 35.26 | 34.99 | 34.79 | 34.83 | 35.02 | 0.28 |

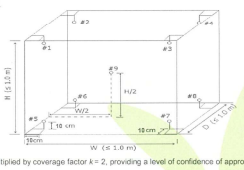
Table 2 : Reporting of Characterization Results

| UUC* Setting (°C) | UUC* Reading (°C) Max | Min | Average | Stability ± (°C) | Uniformity (°C) | Overall Variation (°C) |
|---|---|---|---|---|---|---|
| 35.0 | 35.0 | 35.0 | 35.0 | 0.069 | 0.24 | 0.53 |

Note
- UUC* : Unit Under Calibration
-The quoted uncertainty includes contributions from 'Stability' and 'Loading Effect (20% of Temperature Uniformity).
- Stability = One-half of the greatest maximum difference of measured temperatures at any one sensors, for at least half an hour after reaching steady state.
- 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.
- Overall Variation = The difference of The maximum and minimum measured temperatures througout observation time.

For more information, details of the sensor installation should be reported.

| | | | |
|---|---|---|---|
| Fresh air Damper | - | Open | - Position |
| | X | Close | 100% Fan speed |
| | - | Not Available | |
| Dimension of inside chamber and sensor installation location (cm) | | | |
| W x H x D | 64 | x 80 x | 50 |
| a x b x c | 10 | x 10 x | 10 |




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 of Report ---------

F-CS-009 Revision: 02 Date: 01-10-68

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Foundation for Industrial Development National Food Institute
Food Industrial Laboratory Service Center

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NSC-TISI-TIS 17025 CALIBRATION 0061

# Calibration Certificate

**Certificate No.:** 2502229-006-01
**Client name:** UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.
**Address:** 3 Soi Udomsuk 41, Sukhumvit Road, Bangchack, Prakhanong, Bangkok 10260

Page 1 of 3

| | |
|---|---|
| **Equipment:** | CHAMBER (Incubator) |
| **Manufacturer:** | BINDER |
| **Model:** | KB 400 |
| **Serial No.:** | 20200000015535 |
| **ID No.:** | UAE.MIC.018/2564 |
| **Order No.:** | 2502229 |
| **Operation No.:** | 2502229-006 |
| **Date of Receipt:** | 19 March 2025 |
| **Date of Calibration:** | 19 March 2025 |

**Calibrated by** ____ Scientist

**Approved by** ____ Manager, Division of Calibration Laboratory
Responsible for the Technical Management Team

**Date of Issue:** 25 March 2025

**The uncertainties are for a confidence probability of approximately 95 %.**

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

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# Calibration Report

**Certificate No.:** 2502229-006-01

**Equipment:** CHAMBER (Incubator)

Model: KB 400 Serial No.: 20200000015535

Resolution: 0.1 °C ID No.: UAE.MIC.018/2564

Manufacturer: BINDER

**Date of Calibration:** 19 March 2025



**Location:** LABORATORY, UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.

**Environment Condition:**
Ambient Temperature ( 18 ± 1 ) °C
Relative Humidity ( 50 ± 5 ) %
Line Voltage ( 223 ± 3 ) Volt

**Condition of this results of Calibration:**

1. This instrument was calibrated by insert 13 standard thermometer into its chamber and calibration according to W-TE-014 Based on TLAS G-20-1/02-08 (E): Guidelines for Calibration and Checks of Temperature Controlled Enclosures.
   - 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.
2. Reference Standard Instrument :

| Instrument | Model | Serial No./ID No. | Certificate No. | Due Date | Through |
|---|---|---|---|---|---|
| Digital Thermometer with sensor | 34972A | MY49016851 | TE 670477-01 | 4 May 2025 | NATIONAL FOOD INSTITUTE |
| | RTD | CH#201-303 / RTD#201-303 | | | |

3. This certificate is traceable to International System of Units (SI Units).
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.
6. Condition of Calibrated item : Good

UUC Description :
Time of Record 1 Hour 9 Minute At 35.0 °C
Fresh air Damper [-] Open Position [-]
[X] Close Fan [-]
[-] Not Available

7. Result of Calibration : [X] Without adjustment [ ] After adjustment

25 March 2025



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ศูนย์บริการห้องปฏิบัติการอุตสาหกรรมอาหาร
Foundation for Industrial Development National Food Institute
Food Industrial Laboratory Service Center
NSC-TISI-TIS 17025 CALIBRATION 0061

# Calibration Report

**Certificate No.:** 2502229-006-01

**Equipment:** CHAMBER (Incubator)

Model: KB 400 Serial No.: 20200000015535

Resolution: 0.1 °C ID No.: UAE.MIC.018/2564

Manufacturer: BINDER

**Date of Calibration:** 19 March 2025



**Calibration point:** 35.0 °C

**Calibration result:**

| Calibration Condition | Temperature (°C) | Relative Humidity (%) | Line Voltage (Volt) |
|---|---|---|---|
| MIN | 17.1 | 45 | 220.0 |
| MAX | 18.1 | 55 | 225.0 |

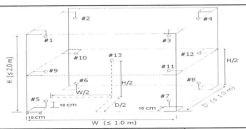



**Table1 : Reporting of Temperature**

| Calibration point (°C) | Measured Temperature (°C) @ Sensor No. (Sensor No.13 is REF) | | | | | | | | | | | | | Uncertainty ± (°C) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | # 1 | # 2 | # 3 | # 4 | # 5 | # 6 | # 7 | # 8 | # 9 | # 10 | # 11 | # 12 | # 13 | |
| 35.0 | 34.98 | 35.17 | 34.99 | 34.92 | 35.18 | 35.01 | 35.00 | 35.13 | 35.00 | 34.96 | 35.02 | 35.17 | 35.04 | 0.27 |

**Table 2 : Reporting of Characterization Result**

| UUC* Setting (°C) | UUC* Reading (°C) | | | Temperature Stability ± (°C) | Temperature Uniformity (°C) | Overall Variation (°C) |
|---|---|---|---|---|---|---|
| | MIN | MAX | Average | | | |
| 35.0 | 35.0 | 35.0 | 35.0 | 0.029 | 0.15 | 0.30 |

Note The quoted uncertainty include " Stability " and " Loading effect (20% of Temp Uniformity) "
UUC* = Unit Under Calibration
Stability = One-half of the greatest maximum difference of measured temperatures at any one sensors, for at least half an hour after reaching steady state.
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.
Overall Variation = The difference of the maximum and minimum measured temperatures througout observation time.
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 ---------

25 March 2025



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Foundation for Industrial Development National Food Institute
Food Industrial Laboratory Service Center
NSC-TISI-TIS 17025 CALIBRATION 0061

# Calibration Certificate

**Certificate No.: 2602303-005-01**



**Equipment:** CHAMBER (Incubator)
**Manufacturer:** MEMMERT
**Model:** IN75
**Serial No.:** D317.0307
**ID No.:** UAE.MIC.023/2561
**Order No.:** 2602303
**Operation No.:** 2602303-005
**Date of Receipt:** 11 March 2026
**Date of Calibration:** 11 March 2026

**Customer Name:** UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.
**Address:** 3 Soi Udomsuk 41, Sukhumvit Road, Bangchack, Prakhanong, Bangkok 10260

**Metrological traceability:**

1. Calibration Method:
   - This instrument was calibrated by inserting 9 standard thermometers into its chamber, in accordance with W-TE-014. based on TLAS G-20-1/02-08 (E): Guidelines for Calibration and Checks of Temperature Controlled Enclosures.
   - The temperature scale used in this laboratory is the International Temperature Scale of 1990 (ITS-90).
   - All data shown below are final values, and the initial data may be obtained upon request.
2. Reference Standard Instrument:

| Instrument | Model/Type | Serial No./ID No. | Certificate No. | Due Date | Through |
|---|---|---|---|---|---|
| Digital Thermometer with sensor | 34972A | MY59003377 | 2601300-001-01 | 10 January 2027 | NATIONAL FOOD INSTITUTE |
| | RTD | CH#201-209/ RTD#201-209 | | | |

3. This certificate is traceable to the International System of Units (SI).
4. This certificate is valid only for the instrument that was calibrated.
5. The result of this calibration was found to be accurate only on the date and at the place of calibration shown.

**Calibrated by** Specialist

**Approved by** Manager, Division of Calibration Laboratory
Responsible for the Technical Management Team

**Date of Issue:** 18 March 2026

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Foundation for Industrial Development National Food Institute
Food Industrial Laboratory Service Center
NSC-TISI-TIS 17025 CALIBRATION 0061

# Calibration Certificate

**Certificate No.: 2602303-005-01**



**Calibration Condition:**

Equipment: CHAMBER (Incubator)
UUC* Resolution: 0.1 °C
Condition of the item: Normal & Good
Without adjustment / As Found
- Time of record 1 hour 9 minute / point

**Place of Calibration:** Microbiology Laboratory (302)
UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD
**Environment Conditions:** Ambient Temperature ( 23.5 ± 1 ) °C
Relative Humidity ( 59.1 ± 3 ) %
Line Voltage ( 223 ± 3 ) V.

**Calibration Results:**

**Table1 : Reporting of Temperature**

| Calibration Point (°C) | Measured Temperature (°C) @ Sensor No. (Sensor No.9 is REF) | | | | | | | | | Measurement Uncertainty (±°C) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Std.#1 | Std.#2 | Std.#3 | Std.#4 | Std.#5 | Std.#6 | Std.#7 | Std.#8 | Std.#9 | |
| 41.5 | 41.84 | 41.85 | 41.80 | 41.76 | 40.96 | 41.18 | 41.12 | 41.32 | 41.33 | 0.29 |

**Table 2 : Reporting of Characterization Results**

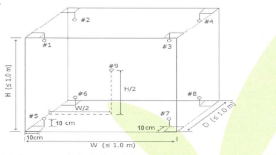
| UUC* Setting (°C) | UUC* Reading (°C) | | | Stability ± (°C) | Uniformity (°C) | Overall Variation (°C) |
|---|---|---|---|---|---|---|
| | Max | Min | Average | | | |
| 41.5 | 41.5 | 41.5 | 41.5 | 0.06 | 0.52 | 0.96 |

Note
- UUC* : Unit Under Calibration
-The quoted uncertainty includes contributions from 'Stability' and 'Loading Effect (20% of Temperature Uniformity).
- Stability = One-half of the greatest maximum difference of measured temperatures at any one sensors, for at least half an hour after reaching steady state.
- 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.
- Overall Variation = The difference of The maximum and minimum measured temperatures througout observation time.

For more information, details of the sensor installation should be reported.

Fresh air Damper
[-] Open [-] Position
[X] Close [-] Fan speed
[-] Not Available

| Dimension of inside chamber and sensor installation location (cm) | | | | | | |
|---|---|---|---|---|---|---|
| W x H x D | 40 | x | 56 | x | 33 |
| a x b x c | 10 | x | 10 | x | 10 |




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 of Report --------



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