

รายการใบรับรองสอบเทียบ/ควบคุม เครื่องมือที่ใช้ประจำห้องปฏิบัติการวิเคราะห์ สำหรับตรวจวัดคุณภาพผลิตภัณฑ์

No.	Instrument/Equipment	Parameter	Manufacturer	Model/Serial No.	Calibrator	Certification No.	Date of Calibration	Due date of Calibration	Remark
เครื่องมือที่ใช้สำหรับตรวจสอบคุณภาพ									
1	pH Meter	ความเป็นกรด-ด่าง (pH)	Mettler-Toledo	Seven Easy 320 / 120525212	National Food Institute, Ministry of Industry, Thailand	2202093_001_01	16 Mar 22	15 Mar 23	-
2	pH Meter		Hanna	HI91421 / 816345	National Food Institute, Ministry of Industry, Thailand	2202093_001_01	16 Mar 22	15 Mar 23	-
3	BOD Incubator	BOD	Arco	UC-1320 / (UAE-148.0142554)	Technology Promotion Association (Thailand-Japan)	2210190	17 Feb 22	16 Feb 23	-
4	BOD Incubator		Arco	UR-1320 / (UAE-148.0182555)	Technology Promotion Association (Thailand-Japan)	2110811	21 Apr 21	20 Apr 22	-
5	Analytical Balance (Responsibility 0.01 mg)	น้ำหนักมาตรฐาน	Mettler-Toledo	XS0505DU / C09071872	Calibration Laboratory Mettler-Toledo (Thailand) Limited	2102575-001-01	26 Apr 21	25 Apr 22	-
6	Hot Air Oven	การอบแห้ง	Mettler	UF55 / B216.1566	Technology Promotion Association (Thailand-Japan)	21101876	29 Oct 21	28 Oct 22	-
7	Analytical Balance (Responsibility 0.1 mg)	น้ำหนักมาตรฐาน	Mettler-Toledo	XS0004 / C117635043	National Food Institute, Ministry of Industry, Thailand	TH0004-005-02721-KCC-H	27 May 21	26 May 22	-
8	Digestor Unit	การย่อย	FOSS	2500auto / 91796669	Thailand Institute Of Science and Technological Research (TISTR)	5872	29 Nov 21	28 Nov 22	-
9	Dissolution Unit (Ig/dant Method)		FOSS	K2001 / 91796224	Shijon Associates Co.,Ltd.	5874	30 Nov 21	29 Nov 22	-
10	Incubator	การเพาะเชื้อ	Mettler	pin 260 / V616.0066	Technology Promotion Association (Thailand-Japan)	21101874	18 Oct 21	17 Oct 22	-
11	Incubator	(Total Coliform Bacteria) Legionella sp.	Mettler	pin 260 /	Technology Promotion Association (Thailand-Japan)	2210563	7 Apr 22	6 Apr 23	-

บริษัท ฟู๊ดส์ เอนเนลล์ แอนด์ เอ็นจิเนียริ่ง คอนซัลแตนท์ จำกัด  
ห้องปฏิบัติการมาตรฐาน ISO/IEC 17025

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รายการใบรับรองสอบเทียบ/ควบคุม เครื่องมือที่ใช้ประจำห้องปฏิบัติการวิเคราะห์ สำหรับตรวจวัดคุณภาพผลิตภัณฑ์

No.	Instrument/Equipment	Parameter	Manufacturer	Model/Serial No.	Calibrator	Certification No.	Date of Calibration	Due date of Calibration	Remark
เครื่องมือที่ใช้สำหรับตรวจสอบคุณภาพ									
12	Incubator	การเพาะเชื้อ (Total Coliform Bacteria)	Mettler	V613.0187	Technology Promotion Association (Thailand-Japan)	2210671	3 May 22	2 May 23	-
13	Water Bath	Legionella sp.	Mettler	WHE 14 / L416.0612	Technology Promotion Association (Thailand-Japan)	2210534	7 Nov 22	6 Nov 23	-
14	Water Bath		Mettler	WHE 14 / L414.1407	Technology Promotion Association (Thailand-Japan)	2210565	7 Apr 22	6 Apr 23	-
15	Analytical Balance		Mettler-Toledo	MS0625 / B007010311	National Food Institute, Ministry of Industry, Thailand	2207005-001-01	24 Nov 21	23 Nov 22	-
16	Auto Clave		AJP	CL-08 / 808763	Technology Promotion Association (Thailand-Japan)	2210681	27 May 22	26 May 23	-

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

บริษัท ฟู๊ดส์ เอนเนลล์ แอนด์ เอ็นจิเนียริ่ง คอนซัลแตนท์ จำกัด  
ห้องปฏิบัติการมาตรฐาน ISO/IEC 17025

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## Calibration Certificate

Certificate No.: 2202093-001-01  
Client name: UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.  
Address: 3 Soi Udomsuk 41, Sukhumvit Road,  
Bangchack, Prakhonong, Bangkok 10260

Page 1 of 5

Equipment: pH Meter  
Manufacturer: METTLER TOLEDO  
Model: SevenEasy pH  
Serial No.: 1230525212  
ID No.: UAE.WAS.003/2553  
Order No.: 2202093  
Operation No.: 2202093-001  
Date of Receipt: 11 March 2022  
Date of Calibration: 16 March 2022

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.

เอกสารไม่ควบคุม

## Calibration Report

Certificate No.: 2202093-001-01  
Equipment: pH Meter  
Resolution: 0.01 pH ; 1 mV  
Manufacturer: METTLER TOLEDO  
Model: SevenEasy pH  
Serial No.: 1230525212  
Type: Bench top  
ID No.: UAE.WAS.003/2553

Date of Calibration: 16 March 2022 Page 2 of 5

Location: Chemical Calibration Laboratory, National Food Institute.  
Environment Condition: Ambient Temperature: ( 23.0 ± 1.5 ) °C Relative Humidity: ( 49.5 ± 5 ) %  
Condition of Equipment: Good Condition  
Condition of this Results of Calibration

- Calibration Method In house method : W-CC-002 based on direct measurement by using standard voltage calibrator and certified reference material (CRM)
- Reference Standards / Certified Reference Material

Instruments	Serial / ID No.	Manufacturer	Certificate No.	Due Date
2.1 DC Voltage Calibrator	2709007	Fuke	SCL-21F-0687	24 June 2022
2.2 Digital Thermometer	2709007	Fuke	CC-640599-01	30 October 2022
2.3 Thermo-Hygro Meter	๓๖.๙1J.BTH 005/58	PONPE	QR21-2787	15 November 2022

- | Certified Reference Material                     | Lot No. | Manufacturer | Ref N    | Expire Date      |
|--|---------|--------------|----------|------------------|
| 2.4 pH buffer 4.008 (Primary pH buffer Solution) | 780012  | CPAchem      | PH216.L5 | 21 November 2023 |
| 2.5 pH buffer 6.865 (Primary pH buffer Solution) | 780013  | CPAchem      | PH217.L5 | 21 November 2023 |
| 2.6 pH buffer 10.01 (Primary pH buffer Solution) | 780015  | CPAchem      | PH220.L5 | 21 November 2022 |
| 2.7 pH buffer 7.00 (Standard pH buffer Solution) | 776840  | CPAchem      | PH107.L5 | 8 November 2022  |
- This certification is traceable to The International System of Unit (SI Unit)

3.1 Instruments No.2.1	through	NSC-TISI-TIS 17025 Laboratory Accreditation of Calibration No.0075
3.2 Instruments No.2.2	through	NSC-TISI-TIS 17025 Laboratory Accreditation of Calibration No.0061
3.3 Instruments No.2.3	through	NSC-TISI-TIS 17025 Laboratory Accreditation of Calibration No.0292
3.4 Certified Reference Material No. 2.4 to 2.6	traceable to	Primary measurement method- Hamed cell using calibrated thermometer, barometer, and nanovoltmeter. The Standard Solution preparation and certified by CPAchem Ltd is accredited to ISO 17034 and ISO/IEC 17025
3.5 Certified Reference Material No. 2.7	traceable to	BIM ReN Hi-7 LotN 30.04.2020; BIM ReN Hi-9 LotN 28.05.2020; BIM ReN Hi-8 LotN 30.04.2020; BIM ReN Hi-10 LotN 28.05.2020. The Standard Solution preparation and certified by CPAchem Ltd is accredited to ISO 17034 and ISO/IEC 17025
  - This certificate was certified only for the instrument we calibrated.
  - This result of calibration was found accurate as shown on date and place of calibration only.

เอกสารไม่ควบคุม

## Calibration Report

**Certificate No.:** 2202093-001-01  
**Equipment:** pH Meter  
**Resolution:** 0.01 pH ; 1 mV  
**Manufacturer:** METTLER TOLEDO  
**Model:** SevenEasy pH  
**Serial No.:** 1230525212  
**Type:** Bench top  
**ID No.:** UAE.WAS.003/2553

**Date of Calibration:** 16 March 2022 Page 3 of 5

### Calibration Results:

1. Calibration of pH Meter ( Manual Temperature Compensation at 25 °C )

Nominal pH	DC Voltage Standard ( mV )	Average Indicator Reading		Uncertainty ( ±mV )	Coverage Factor ( k )
		mV	pH		
0	414.117	414	0.00	0.58	2.00
2	295.811	296	2.00	0.58	2.00
4	177.462	178	4.00	0.58	2.00
6	59.159	59	6.00	0.58	2.00
7	-0.001	0	7.00	0.58	2.00
8	-59.159	-59	8.00	0.58	2.00
10	-177.463	-177	10.00	0.58	2.00
12	-295.812	-296	12.00	0.58	2.00
14	-414.119	-414	14.00	0.58	2.00

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

**Equipment:** pH Electrode  
**Manufacturer:** METTLER TOLEDO  
**Serial No.:** 9453943  
**Type:** Combined Electrode  
**Model:** InLab Solids  
**ID No.:** N/A

Performance of Electrode system ( Three-Point Calibration at pH4, pH7 and pH10 )

Certified Value @25 °C (pH)	Average Indicator Reading		Relative Slope (%)	Uncertainty ( ± pH )	Coverage Factor ( k )
	pH	mV			
4.008	4.01	172	98.1	0.0071	2.00
6.866	6.87	6	-	0.0074	2.00
10.015	10.01	-175	97.4	0.0090	2.00
6.983	6.98	-3	-	0.0092	2.00

F-CS-012 Revision: 00 Date: 14-12-61

## Calibration Report

**Certificate No.:** 2202093-001-01  
**Equipment:** Digital Thermometer with RTD ( pH Meter )  
**Resolution:** 0.1 °C  
**Model:** SevenEasy pH  
**Serial No.:** 1230525212  
**ID No.:** UAE.WAS.003/2553  
**Manufacturer:** METTLER TOLEDO

**Date of Calibration:** 16 March 2022 Page 4 of 5

**Location:** Chemical Calibration Laboratory, National Food Institute.

**Environment Condition:**  
 Ambient Temperature ( 23.0 ± 1.0 ) °C  
 Relative Humidity ( 50 ± 4 ) %

### Condition of this results of Calibration:

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

2. Reference Standard Instrument :

Instrument	Model	Serial No.	Certificate No.	Due Date	Through
HANDHELD THERMOMETER	1523	2118154	PSL-T 0851/84	24-Jun-22	TISTR
Platinum Resistance Thermometer (PRT)	5627A	877332			

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

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

F-CS-012 Revision: 00 Date: 14-12-61

## Calibration Report

**Certificate No.:** 2202093-001-01  
**Equipment:** Digital Thermometer with RTD ( pH Meter )  
**Resolution:** 0.1 °C  
**Model:** SevenEasy pH  
**Serial No.:** 1230525212  
**ID No.:** UAE.WAS.003/2553  
**Manufacturer:** METTLER TOLEDO

**Date of Calibration:** 16 March 2022 Page 5 of 5

**Calibration point:** 15.0, 25.0 and 35.0 °C

### Calibration result:

- The probe was immersed in liquid bath or dry bath to a minimum depth of 120 mm.
- Description of probe, model : N/A S/N : N/A
- Dimension of probe : Diameter 3.5 mm., Length 135 mm.,
- Sheath material : Stainless Steel

UUC* Reading (°C)	Standard Temperature (°C)	Correction Value (°C)	Uncertainty ± (°C)
15.2	15.001	-0.2	0.099
25.2	25.002	-0.2	0.099
35.2	35.002	-0.2	0.099

Note - UUC\* : Unit Under Calibration

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

----- End -----

F-CS-012 Revision: 00 Date: 14-12-61

## Calibration Certificate

**Certificate No.:** 2202097-001-01  
**Client name:** UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.  
**Address:** 3 Soi Udomsuk 41, Sukhumvit Road, Bangchack, Prakhonong, Bangkok 10260

Page 1 of 5

**Equipment:** pH Meter

**Manufacturer:** HANNA INSTRUMENTS

**Model:** HI 2211

**Serial No.:** 08165345


**ID No.:** UAE.WAT.004/2556

**Order No.:** 2202097

**Operation No.:** 2202097-001

**Date of Receipt:** 11 March 2022

**Date of Calibration:** 16 March 2022

**Calibrated by** Mr.Manas Somsak Specialist  
**Approved by**  Manager, D

**Date of Issue:** 21 March 2022 **Responsible for** 

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: 00 Date: 14-12-61

## Calibration Report

Certificate No.: 2202097-001-01

Equipment: pH Meter

Resolution: 0.01 pH ; 0.1/1 mV

Manufacturer: HANNA INSTRUMENTS

Model: HI 2211

Serial No.: 08165345

Type: Bench top

ID No.: UAE.WAT.004/2556

Date of Calibration: 16 March 2022

Page 2 of 5

Location: Chemical Calibration Laboratory, National Food Institute.

Environment Condition: Ambient Temperature: ( 23.0 ± 1.5 ) °C

Relative Humidity: ( 49.5 ± 5 ) %

Condition of Equipment: Good Condition

Condition of this Results of Calibration

1. Calibration Method

In house method : W-CG-002 based on direct measurement by using standard voltage calibrator and certified reference material (CRM)

2. Reference Standards / Certified Reference Material

Instruments	Serial / ID No.	Manufacturer	Certificate No.	Due Date
2.1 DC Voltage Calibrator	2709007	Fluke	SCL-21F-0667	24 June 2022
2.2 Digital Thermometer	2709007	Fluke	CC-640599-01	30 October 2022
2.3 Thermo-Hygro Meter	ana.khl.BTH 005/58	PONPE	QR21-2787	15 November 2022

Certified Reference Material	Lot No.	Manufacturer	Ref N	Expiry Date
2.4 pH buffer 4.008 (Primary pH buffer Solution)	780012	CPAchem	PH216.L5	21 November 2023
2.5 pH buffer 6.865 (Primary pH buffer Solution)	780013	CPAchem	PH217.L5	21 November 2023
2.6 pH buffer 10.01 (Primary pH buffer Solution)	780015	CPAchem	PH220.L5	21 November 2022
2.7 pH buffer 7.00 (Standard pH buffer Solution)	776840	CPAchem	PH107.L5	8 November 2022

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

3.1 Instruments No.2.1 through NSC-TISI-TIS 17025 Laboratory Accreditation of Calibration No.0075

3.2 Instruments No.2.2 through NSC-TISI-TIS 17025 Laboratory Accreditation of Calibration No.0061

3.3 Instruments No.2.3 through NSC-TISI-TIS 17025 Laboratory Accreditation of Calibration No.0292

3.4 Certified Reference Material No. 2.4 to 2.6 traceable to Primary measurement method- Hamed cell using calibrated thermometer, barometer, and nanovoltmeter. The Standard Solution preparation and certified by CPAchem Ltd is accredited to ISO 17034 and ISO/IEC 17025

3.5 Certified Reference Material No. 2.7 traceable to BIM RefN HI-7 LoN 30.04.2020; BIM RefN HI-9 LoN 28.05.2020; BIM RefN HI-8 LoN 30.04.2020; BIM RefN HI-10 LoN 28.05.2020. The Standard Solution preparation and certified by CPAchem Ltd is accredited to ISO 17034 and ISO/IEC 17025

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

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

F-CS-012 Revision: 00 Date: 14-12-61

เอกสารไม่ควบคุม

## Calibration Report

Certificate No.: 2202097-001-01

Equipment: pH Meter

Resolution: 0.01 pH ; 0.1/1 mV

Manufacturer: HANNA INSTRUMENTS

Model: HI 2211

Serial No.: 08165345

Type: Bench top

ID No.: UAE.WAT.004/2556

Date of Calibration: 16 March 2022

Page 3 of 5

Calibration Results:

1. Calibration of pH Meter

( Manual Temperature Compensation at 25 °C )

Nominal pH	DC Voltage Standard ( mV )	Average Indicator Reading		Uncertainty ( ±mV )	Coverage Factor ( # )
		mV	pH		
0	414.117	414	0.00	0.58	2.00
2	295.811	295.7	2.00	0.063	2.00
4	177.462	177.4	4.00	0.063	2.00
6	59.159	59.2	6.00	0.063	2.00
7	-0.001	0.1	7.00	0.063	2.00
8	-59.159	-59.1	8.00	0.063	2.00
10	-177.463	-177.3	10.00	0.063	2.00
12	-295.812	-295.6	12.00	0.063	2.00
14	-414.119	-414	14.00	0.58	2.00

2. Calibration of pH Meter with Electrode

( Manual Temperature Compensation at 25 °C )

Equipment: pH Electrode

Type: Combined Electrode

Manufacturer: METTLER TOLEDO

Model: LE420

Serial No.: 1142602

ID No. N/A

Performance of Electrode system

(Three-Point Calibration at pH4, pH7 and pH10)

Certified Value @25 °C (pH)	Average Indicator Reading		Relative Slope (%)	Uncertainty ( ± pH )	Coverage Factor ( # )
	pH	mV			
4.008	4.01	180.5	99.3	0.0071	2.00
6.866	6.87	12.5	-	0.0074	2.00
10.015	10.01	-171.5	99.1	0.0090	2.00
6.983	6.98	5.2	-	0.0092	2.00

F-CS-012 Revision: 00 Date: 14-12-61

เอกสารไม่ควบคุม

## Calibration Report

Certificate No.: 2202097-001-01

Equipment: Digital Thermometer with RTD (pH Meter)

Resolution: 0.1 °C

Model: HI 2211

Serial No.: 08165345

ID No.: UAE.WAT.004/2556

Manufacturer: HANNA INSTRUMENTS

Date of Calibration: 16 March 2022

Page 4 of 5

Location: Chemical Calibration Laboratory, National Food Institute.

Environment Condition: Ambient Temperature ( 23.0 ± 1.0 ) °C

Relative Humidity ( 50 ± 4 ) %

Condition of this results of Calibration:

1. Calibration Method :

In house method: W-TE-025 by comparison with standard thermometer.

The Calibration is determined by comparing with a known temperature from a standard resistance thermometer.

The temperature scale in use at this laboratory is the International Temperature scale of 1990 ( ITS-90 ).

2. Reference Standard Instrument:

Instrument	Model	Serial No.	Certificate No.	Due Date	Through
HANDHELD THERMOMETER	1523	2118154	PSL-T 0851/64	24-Jun-22	TISTR
Platinum Resistance Thermometer (PRT)	5627A	877332			

Support Equipment :

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

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.

Condition of Calibrated item : Good

Result of Calibration :

☒ Without adjustment

☐ After adjustment

F-CS-012 Revision: 00 Date: 14-12-61

เอกสารไม่ควบคุม

## Calibration Report

Certificate No.: 2202097-001-01

Equipment: Digital Thermometer with RTD (pH Meter)

Resolution: 0.1 °C

Model: HI 2211

Serial No.: 08165345

ID No.: UAE.WAT.004/2556

Manufacturer: HANNA INSTRUMENTS

Date of Calibration: 16 March 2022

Page 5 of 5

Calibration point: 15.0, 25.0 and 35.0 °C

Calibration result:

The probe was immersed in liquid bath or dry bath to a minimum depth of 100 mm.

Description of probe, model : N/A S/N : N/A

Dimension of probe : Diameter 3.5 mm., Length 100 mm.,

Sheath material : Stainless Steel

UUC* Reading (°C)	Standard Temperature (°C)	Correction Value (°C)	Uncertainty ± (°C)
15.0	15.001	0.0	0.099
25.0	25.002	0.0	0.099
35.0	35.002	0.0	0.099

Note : UUC\* : Unit Under Calibration

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

----- End -----

F-CS-012 Revision: 00 Date: 14-12-61

เอกสารไม่ควบคุม



Cert. No.: 22TM90  
Page.: 1 of 3

## Certificate of Calibration

**Equipment :** BOD Incubator  
**Manufacturer :** Arco  
**Model :** UC4-1320  
**Serial No. :** 13URC4S013201  
**ID No. :** UAE.WAO.015/2561  
**Submitted by :** United Analyst and Engineering Consultant Co.,Ltd.  
3 Soi Udomsuk 41, Sukhumvit Road,  
Bangchak, Phrakhanong,  
Bangkok 10260  
**Location :** Lab Floor 2  
**Received Order :** 17 February 2022  
**Calibration Date :** 17 February 2022  
**Ambient Temperature :** ( 26 ± 10 ) °C  
**Relative Humidity :** ( 50 ± 30 ) %  
**Calibrated by :** Kunchit Promprat

**Issue Date :** 22 February 2022

The Uncertainties are for a confidence probability of approximately 95 %

This certificate may not be reproduced other than in full, except with the prior written  
Approval of the head of Corporate Services 3 : Equipment Calibration and Testing Services.

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A 0038099



**Equipment :** BOD Incubator  
**Condition As-Received :** Used Item  
**Reference :** 2202-0446OC-1  
**Procedure Used :-**

**Cert. No.:** 22TM90  
**Page.:** 2 of 3

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

The temperature scale used was based on ITS-90.

### Condition of this result of calibration

1. Reference standard instrument:-

Instrument	Model	Serial No.	Cert. No.	Due Date
1 ) Data Acquisition	34970A	MY44035217	21LM30	23 Dec 2022

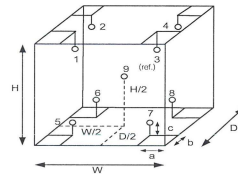
2. This certificate is valid only to the item calibrated on date and place of calibration.

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

**Result of Calibration :-** ( \* ) Without Adjustment

**Function of UUC\* :** Temperature Source

**Fresh air setting :** Not Available



### 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 m<sup>3</sup>

Environment during calibration		
	Beginning	Finished
Temp. ( °C )	28	28
REL.Humid. ( % )	68	75
AC Supply ( Volt )	226	226

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

เอกสารไม่ควบคุม  
a 1096042



**Equipment :** BOD Incubator  
**Condition As-Received :** Used Item  
**Reference :** 2202-0446OC-1  
**Result of Calibration :-** ( \* ) Without Adjustment  
**Function of UUC\* :** Temperature Source  
**Fresh air setting :** Not Available

**Cert. No.:** 22TM90  
**Page.:** 3 of 3

Calibration Point ( °C )	UUC* Setting ( °C )	UUC* Reading ( °C )	Temperature stability ( ± °C )	Temperature uniformity ( °C )	Overall Variation ( °C )	Uncertainty ( ± °C )	Coverage Factor k
20.0	19.5	19.4	0.30	0.58	1.0	0.55	2

Calibration Point ( °C )	Measured Temperature ( °C )								
	Position								
	1	2	3	4	5	6	7	8	9 (ref.)
20.0	20.154	20.013	20.356	19.939	19.834	19.761	19.817	19.824	19.922

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

**Temperature stability :** One-half of the greatest maximum difference of measured temperature at any one sensor.

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

**Overall Variation :** The Difference of the maximum and minimum measured temperatures throughout observation.

**UUC\* :** Unit Under Calibration

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

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

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เอกสารไม่ควบคุม  
a 1096041



**Cert. No.:** 21TM811  
**Page.:** 1 of 3

## Certificate of Calibration

**Equipment :** BOD Incubator  
**Manufacturer :** ARCO  
**Model :** UR-1320  
**Serial No. :** -  
**ID No. :** UAE.WAO.018/2551  
**Submitted by :** United Analyst and Engineering Consultant Co.,Ltd.  
3 Soi Udomsuk 41, Sukhumvit Road,  
Bangchak, Phrakhanong,  
Bangkok 10260  
**Location :** Lab Floor 2  
**Received Order :** 21 April 2021  
**Calibration Date :** 21 April 2021  
**Ambient Temperature :** ( 26 ± 10 ) °C  
**Relative Humidity :** ( 50 ± 30 ) %  
**Calibrated by :** Khit Ruttanaprapachai  
**Approved by :**

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

**Issue Date :** 5 May 2021

The Uncertainties are for a confidence probability of approximately 95 %

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

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A 0027600





Equipment : BOD Incubator  
Condition As-Received : Used Item  
Reference : 2104-0024OC-3  
Procedure Used :-

Cert. No.: 21TM811  
Page.: 2 of 3

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

#### Condition of this result of calibration

##### 1. Reference standard instrument:-

Instrument	Serial No.	Cert. No.	Traceable	Due Date
1 ) Data Acquisition	MY57013711	20LM7	NIST, NIMT	18 May 2021

2. This certification is traceable to the SI unit.

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

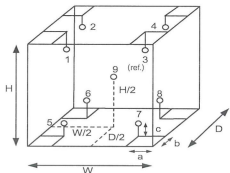
Remark : NIST : National Institute of Standards and Technology, The United State of America.

NIMT : National Institute of Metrology Thailand.

Result of Calibration :- ( \* ) Without Adjustment

Function of UUC\* : Temperature Source

Fresh air setting : Not Available



#### Probe Installation Details : Dimension of Chamber :

a = 10 cm	D = 0.62 m
b = 10 cm	W = 1.2 m
c = 10 cm	H = 1.2 m
	Capacity = 0.89 m <sup>3</sup>

Environment during calibration		
	Beginning	Finished
Temp. ( °C )	27	28
REL.Humid. ( % )	47	51
AC Supply ( Volt )	221	222

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

เอกสารไม่ควบคุม

a 1052721



Equipment : BOD Incubator  
Condition As-Received : Used Item  
Reference : 2104-0024OC-3

Cert. No.: 21TM811  
Page.: 3 of 3

Result of Calibration :- ( \* ) Without Adjustment  
Function of UUC\* : Temperature Source

Calibration Point ( °C )	UUC* Setting ( °C )	UUC* Reading ( °C )	Temperature stability ( ± °C )	Temperature uniformity ( °C )	Overall Variation ( °C )	Uncertainty ( ± °C )	Coverage Factor k
20.0	20.0	20.0	0.15	0.47	0.86	0.31	2

Calibration Point ( °C )	Measured Temperature ( °C )							
	Position							
20.0	1	2	3	4	5	6	7	8
	20.368	20.509	20.115	20.023	19.826	19.955	20.135	20.269
								20.101

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

Temperature stability : One-half of the greatest maximum difference of measured temperature at any one sensor.

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

Overall Variation : The Difference of the maximum and minimum measured temperatures throughout observation.

UUC\* : Unit Under Calibration

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

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

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เอกสารไม่ควบคุม

a 1052720



National Food Institute, Ministry of Industry, Thailand

2009 Soi 36, Arun Amarin Road, Bang Yi Khan Subdistrict, Bang Phlat District, Bangkok 10700, Thailand.  
Tel : +66 (0) 2422 8688 Fax : +66 (0) 2422 8558 Website : www.nfi.or.th E-mail : cal@nfi.or.th



## Calibration Certificate

Certificate No.: 2102573-001-01  
Client name: UNITED ANALYST AND ENGINEERING CONSULTANT CO., LTD.  
Address: 3 Soi Udomsuk 41, Sukhumvit Road, Bangkok, Prakhonong, Bangkok 10260

Page 1 of 4

Equipment: Electronic Balance  
Manufacturer: METTLER TOLEDO  
Model: XSR205DU  
Serial No.: C009071872  
ID No.: UAE.WAO.012/2563  
Order No.: 2102573  
Operation No.: 2102573 -001  
Date of Receipt: 26 April 2021  
Date of Calibration: 26 April 2021



National Food Institute, Ministry of Industry, Thailand

2009 Soi 36, Arun Amarin Road, Bang Yi Khan Subdistrict, Bang Phlat District, Bangkok 10700, Thailand.  
Tel : +66 (0) 2422 8688 Fax : +66 (0) 2422 8558 Website : www.nfi.or.th E-mail : cal@nfi.or.th



## Calibration Report

Certificate No.: 2102573-001-01  
Equipment: Electronic Balance  
Manufacturer: METTLER TOLEDO  
Model: XSR205DU  
Serial No.: C009071872  
Capacity: 81 g / 220 g  
Resolution: 0.00001 g / 0.0001 g  
ID No.: UAE.WAO.012/2563

Page 2 of 4

Date of Calibration: 26 April 2021

Environment Condition: Ambient Temperature: 23.2 ± 0.1 °C Relative Humidity: 48 ± 2 %

Place of Calibration: Balance Room (208), 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 Calibration of Weighing Machines : 2006

2. Reference Standards:

Reference Standard	Model	Serial No.	Calibrated By	Certificate No.	Due Date
Standard Weight Class E2	1-500mg	B308068554	TCS	M21010975	12 January 2022
Standard Weight Class E2	1-500g	B308068128	TCS	M21010985	13 January 2022

Instrument	Model	Serial No.	Calibrated By	Certificate No.	Due Date
Thermo-Hygro Meter	PONPE 490	NFI.BTH 004/18	Quality Reborn	QR21-0300	15 February 2022

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:

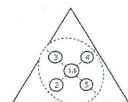
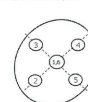
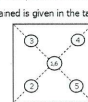
##### 1. Repeatability of Reading:

Nominal Value ( g )	Standard Deviation of Reading ( g )
40	0.0000048
80	0.0000032
100	0.0000000
200	0.0000000

##### 2. Off-Center Error:

A mass of 50 g was placed and moved to various position on pan.

The balance reading obtained is given in the table.



1	2	3	4	5	6	(Maximum Difference)
( g )	( g )	( g )	( g )	( g )	( g )	( g )
50.0000	49.99999	50.00001	50.00001	49.99999	50.00000	0.00001

F-CS-012 Revision: 00 Date: 14-12-61

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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F-CS-009 Revision: 00 Date: 14-12-61



## Calibration Report

Certificate No.: 2102573-001-01  
 Equipment: Electronic Balance  
 Model: XSR205DU  
 Serial No.: C09071872  
 Capacity: 81 g / 220 g  
 Manufacturer: METTLER TOLEDO  
 Resolution: 0.00001 g / 0.0001 g  
 ID No.: UAE.WAO.012/2563

Date of Calibration: 26 April 2021

Page 3 of 4

Calibration Results: (Continued)

Calibration Range: 0 - 200 g

Calibration Adjustment: Internal Calibration

3. Departure from Nominal Value: (Range 0 - 81 g ; Resolution 0.00001 g)

Nominal Value ( g )	Standard Value ( g )	Average Reading ( g )	Correction ( g )	Uncertainty ( ± g )	Coverage Factor k
0.01	0.010002	0.01003	-0.00003	0.0000091	2.00
0.05	0.050004	0.05004	-0.00003	0.0000099	2.00
0.1	0.100000	0.10003	-0.00003	0.000011	2.00
0.2	0.200002	0.20004	-0.00004	0.000011	2.00
0.5	0.499999	0.50003	-0.00003	0.000014	2.00
1	1.000005	1.00001	0.00000	0.000014	2.00
2	2.000006	2.00001	-0.00001	0.000017	2.00
3	3.000011	3.00001	0.00000	0.000020	2.00
4	4.000014	4.00002	-0.00001	0.000023	2.00
5	5.000002	5.00002	-0.00002	0.000020	2.00
10	9.999980	10.00002	-0.00004	0.000029	2.00
20	19.999988	20.00004	-0.00005	0.000037	2.00
50	49.999903	49.99997	-0.00006	0.000083	2.00
70	69.999891	69.99995	-0.00006	0.00011	2.00
80	79.999871	79.99994	-0.00007	0.00015	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 %.

F-CS-012 Revision: 00 Date: 14-12-61

## Calibration Report

Certificate No.: 2102573-001-01  
 Equipment: Electronic Balance  
 Model: XSR205DU  
 Serial No.: C09071872  
 Capacity: 81 g / 220 g  
 Manufacturer: METTLER TOLEDO  
 Resolution: 0.00001 g / 0.0001 g  
 ID No.: UAE.WAO.012/2563

Date of Calibration: 26 April 2021

Page 4 of 4

Calibration Results: (Continued)

Calibration Range: 0 - 200 g

Calibration Adjustment: Internal Calibration

3. Departure from Nominal Value: (Range &gt;81 g to 200 g ; Resolution 0.0001 g)

Nominal Value ( g )	Standard Value ( g )	Average Reading ( g )	Correction ( g )	Uncertainty ( ± g )	Coverage Factor k
82	81.99988	82.0000	-0.0001	0.00012	2.00
85	84.99987	85.0000	-0.0001	0.00013	2.00
90	89.99988	90.0000	-0.0001	0.00013	2.00
95	94.99988	95.0000	-0.0001	0.00014	2.00
100	100.00000	100.0000	0.0000	0.00015	2.00
110	109.99998	110.0000	0.0000	0.00016	2.00
120	119.99999	120.0000	0.0000	0.00017	2.00
150	149.99990	150.0000	-0.0001	0.00020	2.00
170	169.99989	170.0000	-0.0001	0.00023	2.00
200	200.00009	200.0001	0.0000	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 %.

F-CS-012 Revision: 00 Date: 14-12-61



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



Cert. No.: 21TM1876  
 Page: 1 of 3

## Certificate of Calibration

Equipment : Hot Air Oven  
 Manufacturer : Memmert  
 Model : UF 55  
 Serial No. : B216.1666  
 ID No. : UAE.WAO.027/2559  
 Submitted by : United Analyst and Engineering Consultant Co.,Ltd.  
 3 Soi Udomsuk 41, Sukhumvit Road,  
 Bangchak, Phrakhanong,  
 Bangkok 10260  
 Location : Lab Floor 2  
 Received Order : 29 October 2021  
 Calibration Date : 29 October 2021  
 Ambient Temperature : ( 26 ± 10 ) °C  
 Relative Humidity : ( 50 ± 30 ) %  
 Calibrated by : Kunchit Promprat

Issue Date : 4 November 2021

The Uncertainties are for a confidence probability of approximately 95 %

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



Equipment : Hot Air Oven  
 Condition As-Received : Used Item  
 Reference : 2110-0701OC-1

Cert. No.: 21TM1876  
 Page: 2 of 3

## Procedure Used :-

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

The temperature scale used was based on ITS-90.

## Condition of this result of calibration

## 1. Reference standard instrument:-

Instrument	Model	Serial No.	Cert. No.	Due Date
1 ) Data Acquisition	34970A	MY44067817	21LM10	20 Jul 2022

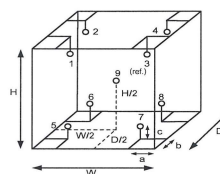
2. This certificate is valid only to the item calibrated on date and place of calibration.

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

Result of Calibration : ( \* ) Without Adjustment

Function of UUC\* : Temperature Source

Fresh air setting : Close



Probe Installation Details : Dimension of Chamber :  
 a = 5.0 cm D = 0.33 m  
 b = 5.0 cm W = 0.40 m  
 c = 5.0 cm H = 0.40 m  
 Capacity = 0.053 m³

Environment during calibration		
	Beginning	Finished
Temp. ( °C )	28	28
REL.Humid. ( % )	56	55
AC Supply ( Volt )	230	230

Ref. Std. ID No.: @ Calibration Point		
Position :	( 140, 180 ) °C	( 104 ) °C
1	21-15TC-01	15RTD2/11
2	21-15TC-02	15RTD2/12
3	21-15TC-03	15RTD2/13
4	21-15TC-04	15RTD2/14
5	21-15TC-05	15RTD2/15
6	21-15TC-06	15RTD2/20
7	21-15TC-07	15RTD2/17
8	21-15TC-08	15RTD2/18
9 (ref.)	21-15TC-09	15RTD2/19

เอกสารไม่ควบคุม

เอกสารไม่ควบคุม



Equipment : Hot Air Oven  
Condition As-Received : Used Item  
Reference : 2110-0701OC-1  
Result of Calibration :- (\*) Without Adjustment  
Function of UUC\* : Temperature Source  
Fresh air setting : Close

Cert. No.: 21TM1876  
Page.: 3 of 3

Calibration Point (°C)	UUC* Setting (°C)	UUC* Reading (°C)	Temperature stability (± °C)	Temperature uniformity (°C)	Overall Variation (°C)	Uncertainty (±°C)	Coverage Factor k
104.0	104.0	104.0	0.11	0.52	0.72	0.42	2
140.0	140.0	140.0	0.25	1.1	1.4	1.1	2
180.0	180.0	180.0	0.18	0.87	1.2	1.1	2

Calibration Point (°C)	Measured Temperature (°C)								
	Position								
	1	2	3	4	5	6	7	8	9 (ref.)
104.0	103.852	103.978	104.382	104.323	103.776	104.015	104.312	104.196	103.907
140.0	140.309	140.730	140.426	140.270	139.531	139.666	140.067	139.895	139.750
180.0	180.598	180.339	180.755	180.619	179.716	179.829	180.204	180.365	179.975

**Average\*** : The average of 30 values in each position.  
**Temperature stability** : One-half of the greatest maximum difference of measured temperature at any one sensor.  
**Temperature uniformity** : The maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.  
**Overall Variation** : The Difference of the maximum and minimum measured temperatures throughout observation.  
**UUC\*** : Unit Under Calibration  
**Note** : The reported uncertainty of measurement was included stability and excluded uniformity .

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

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Calibration Certificate ID  
TH2060-065-052721-ACC-TH

METTLER TOLEDO Service

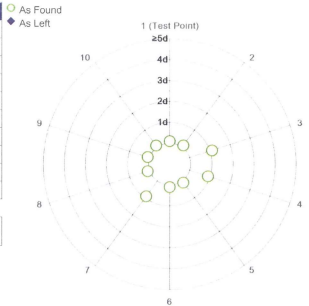
## Measurement Results

### Repeatability

Test Load: 100 g

	As Found	As Left
1	100.0001 g	N/A
2	100.0001 g	N/A
3	100.0002 g	N/A
4	100.0000 g	N/A
5	100.0001 g	N/A
6	100.0001 g	N/A
7	100.0000 g	N/A
8	100.0001 g	N/A
9	100.0001 g	N/A
10	100.0001 g	N/A

Standard Deviation	0.00006 g	N/A
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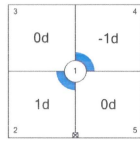
The "1d" in the graph represents the readability of the range/interval in which the test was performed.  
The results of this graph are based upon the absolute values of the differences from the mean value.

### Eccentricity

Test Load: 100 g

Position	As Found	As Left
1	100.0001 g	N/A
2	100.0002 g	N/A
3	100.0001 g	N/A
4	100.0000 g	N/A
5	100.0001 g	N/A

Maximum Deviation	0.0001 g	N/A
-------------------	----------	-----



The "1d" in the graph represents the readability of the range/interval in which the test was performed.

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Calibration Certificate ID  
TH2060-065-052721-ACC-TH

METTLER TOLEDO

Mettler-Toledo (Thailand) Ltd.  
846/4 - 846/5 Lasalle Rd., Bangna Tai Sub-District  
Bangna District, Bangkok 10260  
+66 2723 0382  
MT-TH.ServiceSupport@mt.com



## Accuracy Calibration Certificate

### Customer

Company: United Analyst and Engineering Consultant Co., Ltd.  
Address: 3 Soi Udom Suk 41, Sukhumvit Rd., Bang Chak  
City: Phra Khanong Contact: Suwit Chotnok  
Zip / Postal: 10260  
State / Province: Bangkok  
Order Number: 403781563134

### Weighing Device

Manufacturer: Mettler Toledo Instrument Type: Weighing Instrument  
Model: XSR204 Asset Number: N/A  
Serial No.: C117635043 Terminal Model: N/A  
Building: N/A Terminal Serial No.: N/A  
Floor: 1 Terminal Asset No.: N/A  
Room: Balance

Range	Max. Capacity	Readability (d)
1	220 g	0.0001 g

### Procedure

Calibration Guideline: EURAMET cg-18 v. 4.0 (11/2015)

METTLER TOLEDO Work Instruction: CP/W002/20

This calibration certificate contains measurements for As Found calibration. No As Left calibration was performed because the device was not modified after As Found calibration. Therefore, results for As Left correspond to As Found.

The sensitivity/span of the weighing instrument was adjusted before calibration with a built-in weight.

In accordance with EURAMET cg-18 (11/2015), the test loads were selected to reflect the specific use of the weighing device or to accommodate specific calibration conditions.

	Temperature		Humidity	
As Found	Start: 25.1 °C	End: 24.9 °C	Start: 60.8 %	End: 59.0 %

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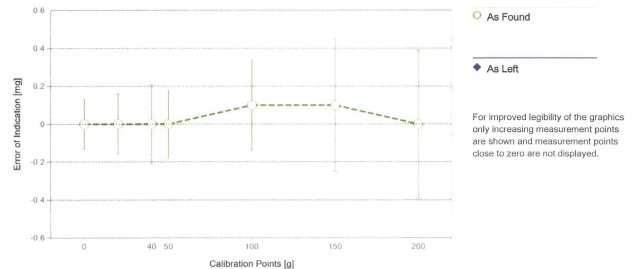
Calibration Certificate ID  
TH2060-065-052721-ACC-TH

METTLER TOLEDO Service

### Error of Indication

As Found

	Reference Value	Indication	Error of Indication	Expanded Uncertainty	k
1	0.0000 g	0.0000 g	0.0000 g	0.13 mg	2
2	0.5000 g	0.5000 g	0.0000 g	0.14 mg	2
3	1.0000 g	1.0000 g	0.0000 g	0.14 mg	2
4	5.0000 g	5.0000 g	0.0000 g	0.15 mg	2
5	10.0000 g	10.0000 g	0.0000 g	0.15 mg	2
6	20.0000 g	20.0000 g	0.0000 g	0.16 mg	2
7	39.9999 g	39.9999 g	0.0000 g	0.21 mg	2
8	50.0000 g	50.0000 g	0.0000 g	0.18 mg	2
9	100.0000 g	100.0001 g	0.0001 g	0.24 mg	2
10	150.0000 g	150.0001 g	0.0001 g	0.35 mg	2
11	200.0000 g	200.0000 g	0.0000 g	0.39 mg	2



The uncertainty stated is the expanded uncertainty at calibration obtained by multiplying the standard combined uncertainty by the coverage factor **k** – which can be larger than 2 according to EURAMET cg-18. The value of the measurand lies within the assigned range of values with a probability of approximately 95%.

The user is responsible for maintaining environmental conditions and the settings of the weighing instrument when it was calibrated.

### Test Equipment

All weights used for metrological testing are traceable to national or international standards. The weights were calibrated and certified by an accredited calibration laboratory.

#### Weight Set 1: OIML E2

Weight Set No.: WS38 Date of Issue: 17-Mar-2020  
Certificate Number: 166237 Calibration Due Date: 09-Sep-2021

#### Thermo Hygrometer

Equipment No.: IN256 Date of Issue: 06-Aug-2020  
Certificate Number: 20H1812 Calibration Due Date: 03-Aug-2021

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Remarks

FACT adjustment functionality activated  
Equipment condition: Good  
Next calibration according to customer's procedure

End of Accredited Section

The information below and any attachments to this calibration certificate are not part of the accredited calibration.

Measurement Uncertainty of the Weighing Instrument in Use

Stated is the expanded uncertainty with  $k=2$  in use. The formula shall be used for the estimation of the uncertainty under consideration of the errors of indication. The value  $R$  represents the net load indication in the unit of measure of the device.

Temperature coefficient for the evaluation of the measurement uncertainty in use:  $1.5 \cdot 10^{-6} / K$   
Temperature range on site for the evaluation of the measurement uncertainty in use:  $4 K$

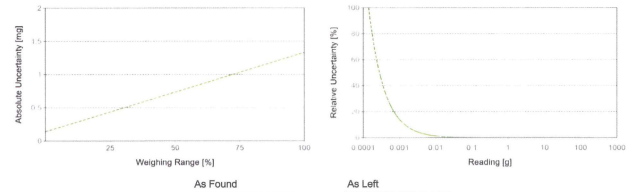
Linearization of Uncertainty Equation

Range			As Found	As Left
d		Max		
1	0.0001 g	220 g	$U_1 = 0.14 \text{ mg} + 0.00541 \text{ mg/g} \cdot R$	N/A

To optimize the stability of the linearization, besides of the zero load only increasing measurement points with a test load of 5% of the measurement range or larger are taken for the calculation of the linear equation.

Absolute and Relative Measurement Uncertainty in Use for Various Net Indications (Examples)

Net Indication	As Found		As Left	
0.0220 g	0.14 mg	0.64%	N/A	N/A
0.2200 g	0.14 mg	0.064%	N/A	N/A
2.2000 g	0.15 mg	0.0069%	N/A	N/A
22.0000 g	0.26 mg	0.0012%	N/A	N/A
220.0000 g	1.3 mg	0.00060%	N/A	N/A



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เอกสารไม่ควบคุม

FOSS

Customer Service Report

Date:	24/11/21	91 7.80484	
Customer:	UAE	Address: บจก. นว. พริตตี้ 10210	
Instrument:	Digestor 2520Auto	Serial: 91879469	
Hours	Travel To Customer	Labour	Travel From Customer
Start	9.00	10.00	
Finish	10.00	13.00	

Application		Special		Job Type		Standard	
Normal	<input checked="" type="checkbox"/>	Courtesy Visit	<input checked="" type="checkbox"/>	Installation	<input checked="" type="checkbox"/>	Training	<input checked="" type="checkbox"/>
Distributor	<input checked="" type="checkbox"/>	PMA Onboarding	<input checked="" type="checkbox"/>	Quote	<input checked="" type="checkbox"/>	In House	<input checked="" type="checkbox"/>
Internal	<input checked="" type="checkbox"/>	Warranty	<input checked="" type="checkbox"/>	Repair	<input checked="" type="checkbox"/>	PM	<input checked="" type="checkbox"/>
Digital Service	<input checked="" type="checkbox"/>	Sales Support	<input checked="" type="checkbox"/>	Remote	<input checked="" type="checkbox"/>	Other	<input checked="" type="checkbox"/>

PO/Quote Number:		If applicable
------------------	--	---------------

PMA Type	FossCare Pro	Contract No.	If applicable
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Details of Work / Test		Condition / Status
- Check Instrument, cable break		Not OK
- Replace cable kit digester		Pass
- Check Temperature cut-out		Pass
- Clean & Lubricant		Pass
- Check temperature set 180°C		for 180°C
- All function		OK
Instrument Ready for Use		<input checked="" type="checkbox"/> OK <input type="checkbox"/> Not OK Instrument Ready for Use

Part No:	Batch	Description	Qty
10078652	04.08.21	Cable kit digester	1
10015554	19.04.21	Temperature cut-out	1

FOSS

Customer Service Report

Date:	30/11/21	91 7.80484	
Customer:	UAE	Address: บจก. นว. พริตตี้ 10210	
Instrument:	KT200	Serial: 91890529	
Hours	Travel To Customer	Labour	Travel From Customer
Start	9.00	10.00	
Finish	10.00	13.00	

Application		Special		Job Type		Standard	
Normal	<input checked="" type="checkbox"/>	Courtesy Visit	<input checked="" type="checkbox"/>	Installation	<input checked="" type="checkbox"/>	Training	<input checked="" type="checkbox"/>
Distributor	<input checked="" type="checkbox"/>	PMA Onboarding	<input checked="" type="checkbox"/>	Quote	<input checked="" type="checkbox"/>	In House	<input checked="" type="checkbox"/>
Internal	<input checked="" type="checkbox"/>	Warranty	<input checked="" type="checkbox"/>	Repair	<input checked="" type="checkbox"/>	PM	<input checked="" type="checkbox"/>
Digital Service	<input checked="" type="checkbox"/>	Sales Support	<input checked="" type="checkbox"/>	Remote	<input checked="" type="checkbox"/>	Other	<input checked="" type="checkbox"/>

PO/Quote Number:		If applicable
------------------	--	---------------

PMA Type	FossCare Pro	Contract No.	If applicable
----------	--------------	--------------	---------------

Details of Work / Test		Condition / Status
- Check Instrument		OK
- Check PM kit for KT200		Pass
- Safety Valve		Pass
- Rubber grommet		Pass
- Heating element		Pass
- New panel PCB		Pass
- Safety door		Pass
- Clean & Lubricant		Pass
- Check Temperature set 30ml		for 28ml
- Check Valve		Pass
Instrument Ready for Use		<input checked="" type="checkbox"/> OK <input type="checkbox"/> Not OK Instrument Ready for Use

Part No:	Batch	Description	Qty
10009965	11.03.2023	Foss PM kit KT200	1
15750024	29.08.21	Safety Valve	1
15490026	09.11.20	Rubber grommet for Heating	2
1000512	02.08.21	Heating Element	1
1000512	16.11.20	Panel	1
100094223	16.08.20	KT200 new panel PCB	1
100094223	22.04.21	Safety door complete	1





Cert. No.: 21TM1874  
Page.: 1 of 3

## Certificate of Calibration

Equipment : Incubator  
Manufacturer : Memmert  
Model : IPP 260  
Serial No. : V616.0066  
ID No. : UAE.MIC.032/2559  
Submitted by : United Analyst and Engineering Consultant Co.,Ltd.  
3 Soi Udomsuk 41, Sukhumvit Road,  
Bangchak, Phrakhanong,  
Bangkok 10260  
Location : Microbiology Laboratory (302)  
Received Order : 28 October 2021  
Calibration Date : 28 - 29 October 2021  
Ambient Temperature : ( 26 ± 10 ) °C  
Relative Humidity : ( 50 ± 30 ) %  
Calibrated by : Kunchit Promprat

Issue Date : 4 November 2021

The Uncertainties are for a confidence probability of approximately 95 %

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

เอกสารไม่ควบคุม



Equipment : Incubator  
Condition As-Received : Used Item  
Reference : 2110-0698OC-1  
Procedure Used :-

Cert. No.: 21TM1874  
Page.: 2 of 3

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

### Condition of this result of calibration

1. Reference standard instrument:-

Instrument	Model	Serial No.	Cert. No.	Due Date
1 ) Data Acquisition	34970A	MY44067817	21LM10	20 Jul 2022

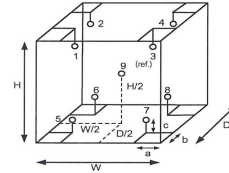
2. This certificate is valid only to the item calibrated on date and place of calibration.

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

Result of Calibration :- ( \* ) Without Adjustment

Function of UUC\* : Temperature Source

Fresh air setting : Not Available



Probe Installation Details :

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

Dimension of Chamber :

D = 0.50 m  
W = 0.64 m  
H = 0.80 m  
Capacity = 0.26 m<sup>3</sup>

Environment during calibration		
	Beginning	Finished
Temp. ( °C )	22	22
REL.Humid. ( % )	59	60
AC Supply ( Volt )	226	226

Position :	Ref. Std. ID No.:
1	15RTD2/11
2	15RTD2/12
3	15RTD2/13
4	15RTD2/14
5	15RTD2/15
6	15RTD2/20
7	15RTD2/17
8	15RTD2/18
9 (ref.)	15RTD2/19

เอกสารไม่ควบคุม



Equipment : Incubator  
Condition As-Received : Used Item  
Reference : 2110-0698OC-1  
Result of Calibration :- ( \* ) Without Adjustment  
Function of UUC\* : Temperature Source  
Fresh air setting : Not Available

Cert. No.: 21TM1874  
Page.: 3 of 3

Calibration Point ( °C )	UUC* Setting ( °C )	UUC* Reading ( °C )	Temperature stability ( ± °C )	Temperature uniformity ( °C )	Overall Variation ( °C )	Uncertainty ( ± °C )	Coverage Factor k
25.0	25.0	24.5	0.053	0.25	0.42	0.30	2
35.0	35.0	35.0	0.029	0.43	0.75	0.30	2

Calibration Point ( °C )	Measured Temperature ( °C )								
	Position								
	1	2	3	4	5	6	7	8	9 (ref.)
25.0	25.007	24.986	24.943	24.894	24.653	24.806	24.672	24.694	24.786
35.0	35.340	35.384	35.336	35.307	34.680	35.120	34.813	34.996	35.088

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

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

Overall Variation : The Difference of the maximum and minimum measured temperatures throughout observation.

UUC\* : Unit Under Calibration

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

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

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เอกสารไม่ควบคุม



Cert. No.: 22TM563  
Page.: 1 of 3

## Certificate of Calibration

Equipment : Incubator  
Manufacturer : Memmert  
Model : IPP 260  
Serial No. : V615.0187  
ID No. : UAE.MIC.003/2559  
Submitted by : United Analyst and Engineering Consultant Co.,Ltd.  
3 Soi Udomsuk 41, Sukhumvit Road,  
Bangchak, Phrakhanong,  
Bangkok 10260  
Location : Microbiology Laboratory  
Received Order : 7 April 2022  
Calibration Date : 7 April 2022  
Ambient Temperature : ( 26 ± 10 ) °C  
Relative Humidity : ( 50 ± 30 ) %  
Calibrated by : Prawit Sodavitchit

The Uncertainties are for a confidence probability of approximately 95 %

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

เอกสารไม่ควบคุม

A 0040248



Equipment : Incubator  
Condition As-Received : Used Item  
Reference : 2204-0016OC-1

Cert. No.: 22TM563  
Page.: 2 of 3

#### Procedure Used :-

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

#### Condition of this result of calibration

1. Reference standard instrument:-

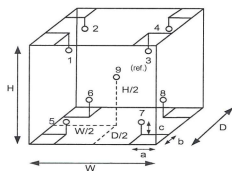
Instrument	Model	Serial No.	Cert. No.	Due Date
1 ) Data Acquisition	34970A	MY44067817	21LM10	20 Jul 2022

2. This certificate is valid only to the item calibrated on date and place of calibration.  
3. This certification is traceable to the International System of Unit.

**Result of Calibration :-** ( \* ) Without Adjustment

**Function of UUC\* :** Temperature Source

**Fresh air setting :** Close



#### Probe Installation Details :

Dimension of Chamber :	Value	Unit
a =	5.0	cm
b =	5.0	cm
c =	5.0	cm
D =	0.50	m
W =	0.64	m
H =	0.80	m
Capacity =	0.26	m <sup>3</sup>

Environment during calibration		
	Beginning	Finished
Temp. ( °C )	26	26
REL.Humid. ( % )	60	62
AC Supply ( Volt )	220	220

Position :	Ref. Std. ID No.:
1	15RTD2/11
2	15RTD2/12
3	15RTD2/13
4	15RTD2/14
5	15RTD2/15
6	15RTD2/16
7	15RTD2/17
8	15RTD2/18
9 (ref.)	15RTD2/19

เอกสารไม่ควบคุม  
a 1104310



Equipment : Incubator  
Condition As-Received : Used Item  
Reference : 2204-0016OC-1  
**Result of Calibration :-** ( \* ) Without Adjustment  
**Function of UUC\* :** Temperature Source  
**Fresh air setting :** Close

Cert. No.: 22TM563  
Page.: 3 of 3

Calibration Point ( °C )	UUC* Setting ( °C )	UUC* Reading ( °C )	Temperature stability ( ± °C )	Temperature uniformity ( °C )	Overall Variation ( °C )	Uncertainty ( ± °C )	Coverage Factor k
35.0	35.0	35.0	0.12	0.53	0.79	0.30	2

Measured Temperature ( °C )								
Calibration Point ( °C )	Position							
	1	2	3	4	5	6	7	8
35.0	35.170	35.167	34.938	34.844	34.816	34.854	34.584	34.730

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

**Temperature stability :** One-half of the greatest maximum difference of measured temperature at any one sensor.

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

**Overall Variation :** The Difference of the maximum and minimum measured temperatures throughout observation.

**UUC\* :** Unit Under Calibration

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

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

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เอกสารไม่ควบคุม  
a 1104309



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES  
53/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250  
TEL. 0-2717-3000-27 FAX. 0-2719-9484



## Certificate of Calibration

Cert. No.: 22TM671  
Page.: 1 of 3

**Equipment :** Incubator  
**Manufacturer :** Memmert  
**Model :** IN 75  
**Serial No. :** D317.0307  
**ID No. :** UAE.MIC.023/2561  
**Submitted by :** United Analyst and Engineering Consultant Co.,Ltd.  
3 Soi Udomsuk 41, Sukhumvit Road,  
Bangchak, Phrakhanong,  
Bangkok 10260  
**Location :** Microbiology Laboratory (302)  
**Received Order :** 3 May 2022  
**Calibration Date :** 3 May 2022  
**Ambient Temperature :** ( 26 ± 10 ) °C  
**Relative Humidity :** ( 50 ± 30 ) %  
**Calibrated by :** Preecha Hlahib

**Issue Date :** 10 May 2022

The Uncertainties are for a confidence probability of approximately 95%

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Equipment : Incubator  
Condition As-Received : Used Item  
Reference : 2205-0003OC-2

Cert. No.: 22TM671  
Page.: 2 of 3

#### Procedure Used :-

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

#### Condition of this result of calibration

1. Reference standard instrument:-

Instrument	Model	Serial No.	Cert. No.	Due Date
1 ) Data Acquisition	34970A	MY44067817	21LM10	20 Jul 2022

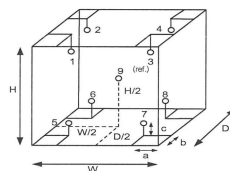
2. This certificate is valid only to the item calibrated on date and place of calibration.  
3. This certification is traceable to the International System of Unit.

**Result of Calibration :-** ( \* ) Without Adjustment

**Function of UUC\* :** Temperature Source

**Fresh air setting :** Close

Environment during calibration		
	Beginning	Finished
Temp. ( °C )	24	23
REL.Humid. ( % )	55	59
AC Supply ( Volt )	220	221



#### Probe Installation Details :

Dimension of Chamber :	Value	Unit
a =	5.0	cm
b =	5.0	cm
c =	5.0	cm
D =	0.32	m
W =	0.42	m
H =	0.56	m
Capacity =	0.075	m <sup>3</sup>

Position :	Ref. Std. ID No.:
1	19-15RTD-01
2	19-15RTD-02
3	19-15RTD-03
4	19-15RTD-04
5	19-15RTD-05
6	21-15RTD-06
7	19-15RTD-07
8	19-15RTD-08
9 (ref.)	19-15RTD-09

เอกสารไม่ควบคุม



Equipment : Incubator  
Condition As-Received : Used Item  
Reference : 2205-0003OC-2  
Result of Calibration :- ( \* ) Without Adjustment  
Function of UUC\* : Temperature Source  
Fresh air setting : Close

Cert. No.: 22TM671  
Page.: 3 of 3

Calibration Point ( °C )	UUC* Setting ( °C )	UUC* Reading ( °C )	Temperature stability ( ± °C )	Temperature uniformity ( °C )	Overall Variation ( °C )	Uncertainty ( ± °C )	Coverage Factor k
36.0	36.0	36.0	0.058	0.29	0.49	0.30	2

Calibration Point ( °C )	Measured Temperature ( °C )								
	Position								
	1	2	3	4	5	6	7	8	9 (ref.)
36.0	36.031	36.035	36.008	36.063	35.621	35.716	35.618	35.778	35.798

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

Temperature stability : One-half of the greatest maximum difference of measured temperature at any one sensor.

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

Overall Variation : The Difference of the maximum and minimum measured temperatures throughout observation.

UUC\* : Unit Under Calibration

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

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

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เอกสารไม่ควบคุม



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



Cert. No.: 22TM334  
Page.: 1 of 3

## Certificate of Calibration

Equipment : Water Bath  
Manufacturer : Memmert  
Model : WNE 14  
Serial No. : L416.0612  
ID No. : UAE.MIC.003/2560  
Submitted by : United Analyst and Engineering Consultant Co.,Ltd.  
3 Soi Udomsuk 41, Sukhumvit Road,  
Bangchak, Phrakhanong,  
Bangkok 10260  
Microbiology Laboratory  
Location :  
Received Order : 17 February 2022  
Calibration Date : 17 February 2022  
Ambient Temperature : ( 26 ± 10 ) °C  
Relative Humidity : ( 50 ± 30 ) %  
Calibrated by : Suwit Imjai

The Uncertainties are for a confidence probability of approximately 95 %

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

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A 0038095



Equipment : Water Bath  
Condition As-Received : Used Item  
Reference : 2202-0444OC-4

Cert. No.: 22TM334  
Page.: 2 of 3

### Procedure Used :-

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

The temperature scale used was based on ITS-90.

### Condition of this result of calibration

1. Reference standard instrument:-

Instrument	Model	Serial No.	Cert. No.	Due Date
1 ) Data Acquisition	34970A	MY44067817	21LM10	20 Jul 2022

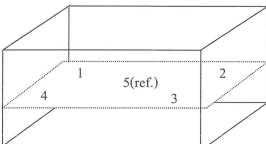
2. This certificate is valid only to the item calibrated on date and place of calibration.

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

Result of Calibration :- ( \* ) Without Adjustment

Function of UUC\* : Temperature Source

	Environmental		AC Voltage Supply
	( °C )	( %R.H. )	( Volt )
Beginning of Calibration	21	65	229
Finished of Calibration	22	57	230



Front

Position :	Ref. Std. ID No.:
1	70RC143
2	70RC144
3	70RC145
4	70RC146
5 (ref.)	70RC147

เอกสารไม่ควบคุม

a 1096055



Equipment : Water Bath  
Condition As-Received : Used Item  
Reference : 2202-0444OC-4  
Result of Calibration :- ( \* ) Without Adjustment  
Function of UUC\* : Temperature Source

Cert. No.: 22TM334  
Page.: 3 of 3

Calibration point ( °C )	UUC* Setting ( °C )	UUC* Reading ( °C )	Average* Standard Reading ( °C )				
			Position				
			1	2	3	4	5 (ref.)
44.5	44.5	44.5	44.572	44.514	44.507	44.530	44.565

Calibration point ( °C )	Uniformity ( °C )	Stability ( ± °C )	Uncertainty ( ± °C )	Coverage Factor k
44.5	0.10	0.042	0.15	2

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

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

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

UUC\* : Unit Under Calibration

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

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

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เอกสารไม่ควบคุม

a 1096054





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



Cert. No.: 22TM565  
Page.: 1 of 3

## Certificate of Calibration

**Equipment :** Water Bath  
**Manufacturer :** Memmert  
**Model :** WNE 14  
**Serial No. :** L414.1407  
**ID No. :** UAE.MIC.006/2558  
**Submitted by :** United Analyst and Engineering Consultant Co.,Ltd.  
3 Soi Udomsuk 41, Sukhumvit Road,  
Bangchak, Phrakhanong,  
Bangkok 10260  
**Location :** Microbiology Laboratory  
**Received Order :** 7 April 2022  
**Calibration Date :** 7 April 2022  
**Ambient Temperature :** ( 26 ± 10 ) °C  
**Relative Humidity :** ( 50 ± 30 ) %  
**Calibrated by :** Prawit Sodavitchit

The Uncertainties are for a confidence probability of approximately 95%

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**Equipment :** Water Bath  
**Condition As-Received :** Used Item  
**Reference :** 2204-0016OC-4  
**Procedure Used :-**

**Cert. No.:** 22TM565  
**Page.:** 2 of 3

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

The temperature scale used was based on ITS-90.

### Condition of this result of calibration

1. Reference standard instrument:-

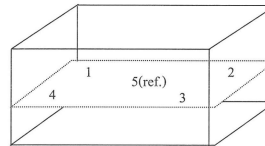
Instrument	Model	Serial No.	Cert. No.	Due Date
1 ) Data Acquisition	34970A	MY44067817	21LM10	20 Jul 2022

2. This certificate is valid only to the item calibrated on date and place of calibration.  
3. This certification is traceable to the International System of Unit.

**Result of Calibration :-** ( \* ) Without Adjustment

**Function of UUC\* :** Temperature Source

	Environmental		AC Voltage Supply
	( °C )	( %R.H. )	( Volt )
Beginning of Calibration	26	62	220
Finished of Calibration	26	65	220



Front

Position :	Ref. Std. ID No.:
1	70RC143
2	70RC144
3	70RC145
4	70RC146
5(ref.)	70RC147

เอกสารไม่ควบคุม



National Food Institute, Ministry of Industry, Thailand

2008 Soi 36, Arun Amarin Road, Bang Yi Khan Subdistrict, Bang Phlat District, Bangkok 10700, Thailand  
Tel : +66 (0) 2422 8688 Fax : +66 (0) 2422 8558 Website : www.nfi.or.th E-mail : cal@nfi.or.th



## Calibration Certificate

**Equipment :** Water Bath  
**Condition As-Received :** Used Item  
**Reference :** 2204-0016OC-4  
**Result of Calibration :-** ( \* ) Without Adjustment  
**Function of UUC\* :** Temperature Source

**Cert. No.:** 22TM565  
**Page.:** 3 of 3

Calibration point ( °C )	UUC* Setting ( °C )	UUC* Reading ( °C )	Average* Standard Reading ( °C )				
			Position				
			1	2	3	4	5 (ref.)
44.5	44.5	44.5	44.424	44.409	44.478	44.470	44.581

Calibration point ( °C )	Uniformity ( °C )	Stability ( ± °C )	Uncertainty ( ± °C )	Coverage Factor k
44.5	0.22	0.039	0.15	2

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

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

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

**UUC\* :** Unit Under Calibration

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

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

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เอกสารไม่ควบคุม

**Certificate No.:** 2200705-001-01  
**Client name:** UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.  
**Address:** 3 Soi Udomsuk 41, Sukhumvit Road,  
Bangchack, Phrakhanong, Bangkok 10260

Page 1 of 3

**Equipment:** Electronic Balance  
**Manufacturer:** METTLER TOLEDO  
**Model:** MS603S/01  
**Serial No.:** B007010311  
**ID No.:** UAE.MIC.008/2553  
**Order No.:** 2200705  
**Operation No.:** 2200705-001  
**Date of Receipt:** 24 November 2021  
**Date of Calibration:** 24 November 2021

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: 00 Date: 14-12-61

เอกสารไม่ควบคุม



## เอกสารไม่คว



Equipment : Autoclave  
Condition As-Received : Used Item  
Reference : 2205-0764OC-2

Cert. No.: 22TM681  
Page.: 3 of 3

Result of Calibration :- ( \* ) Without Adjustment

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

UUC* Setting ( °C )	UUC* Reading ( °C )	Position	Average* Standard Reading ( °C )	Stability ( ± °C )	Pressure Reading ( MPa )	Uncertainty ( ± °C )	Coverage Factor <i>k</i>
115.0	115.0	1	115.553	0.4	0.08	0.82	2
		2	115.582				
		3	115.325				

Operating parameter Set : Temperature = 121 °C  
Sterilization period = 30 minute

UUC* Setting ( °C )	UUC* Reading ( °C )	Position	Average* Standard Reading ( °C )	Stability ( ± °C )	Pressure Reading ( MPa )	Uncertainty ( ± °C )	Coverage Factor <i>k</i>
121.0	121.0	1	121.484	0.21	1.1	0.75	2
		2	121.581				
		3	121.311				

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

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

UUC\* : Unit Under Calibration

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

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

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เอกสารไม่