

ภาคผนวก จ

เอกสารเทียบเครื่องมือที่ใช้ในการตรวจวิเคราะห์

ภาคผนวก จ

เอกสารเทียบเครื่องมือที่ใช้ในการตรวจวิเคราะห์

- จ1 อุปกรณ์เครื่องมือที่ใช้เก็บตัวอย่างน้ำ
- จ2 เอกสารเทียบเครื่องมือที่ใช้ในการตรวจวิเคราะห์

ภาคผนวก จ1

อุปกรณ์เครื่องมือที่ใช้เก็บตัวอย่างน้ำ



ถังโฟม



ขวดเก็บตัวอย่างน้ำ



pH Meter



ถังเก็บตัวอย่างน้ำ



กระบวยเก็บตัวอย่างน้ำ



ถุงมือยาง

อุปกรณ์เครื่องมือที่ใช้เก็บตัวอย่างน้ำ

ภาคผนวก จ2

เอกสารเทียบเครื่องมือที่ใช้ในการตรวจวิเคราะห์

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 24H005157/JEN	Technology Promotion Association (Thailand-Japan)	25CH1230	28 Oct 25	27 Oct 26	-



Certificate of Calibration

Cert.No.: 25CH1230
Page.: 1 of 3

Equipment : pH Meter
Manufacturer : EcoSense
Model : pH 100A
Serial No. : 24H005157JEN
ID No. : UAE.EFM.039/2567(EFM.pH.02/67)
Condition As-Received: Used Item
Received Date : 27 October 2025
Calibration Date : 28 October 2025
Reference : 2510-0739WSC-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 : Warakorn Lemgagtrakul

Approved by : [Signature]
Approved Signatory

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

Issue Date : 29 October 2025

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 through 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	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 (± mV)	Coverage factor k
	pH	mV	mV	pH		
pH Meter S/N.: 24H005157JEN	4.00	177.48	177	4.00	0.58	2.00
	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

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

เอกสารไม่ควบคุม



Cert.No.: 25CH1230
Page.: 3 of 3

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 S/N.: 240821SIA605377	4.007	4.01	153	0.0080	2.00
	6.999	6.99	-18	0.0085	2.00
	6.999	7.00	-19	0.0085	2.00
	10.010	10.00	-189	0.0095	2.00

Function : Temperature Measurement

(*) Without adjustment

This equipment was connected with Temperature Probe;

- Model : -

- Serial No. : 240821SIA605377

Dimension of probe

- Length : - 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	30.002	30.0	-0.002	0.13	2.00
45.0	45.005	45.0	-0.005	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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List of Instrument Certificates for Environmental Quality Analysis

No.	Instrument/Equipment	Parameter	Manufacturer	Model/Serial No.	Calibrator	Certification No.	Date of Calibration	Due date of Calibration*
1	Analytical Balance	FAT OIL AND GREASE	Mettler Toledo	AB204-S/FACT / 1129361010	United Analyst and Engineering Consultant Co., Ltd.	250422 1 BL002 25	23/4/2025	22/4/2026
			Mettler Toledo	AB204-S/FACT / 1129361010	United Analyst and Engineering Consultant Co., Ltd.	260318-1-BL007-26	3/4/2026	2/4/2027
2	Analytical Balance	TOTAL DISSOLVED SOLIDS	Mettler Toledo	XSR205DU / C210685394	National Food Institute,Ministry of Industry, Thailand	25022226-002-01	20/3/2025	19/3/2026
			Mettler Toledo	XSR205DU / C210685394	United Analyst and Engineering Consultant Co.,Ltd (UAE)	260311-2-BL001-26	12/3/2026	11/3/2027
3	Analytical Balance	TOTAL SUSPENDED SOLIDS	Mettler Toledo	XSR205DU / C009071872	National Food Institute,Ministry of Industry, Thailand	25022226-001-01	20/3/2025	19/3/2026
			Mettler Toledo	XSR205DU / C009071872	United Analyst and Engineering Consultant. Co., Ltd. (UAE)	260311-2-BL002-26	12/3/2026	11/3/2027
4	BOD Incubator	BIOCHEMICAL OXYGEN DEMAND	ARCO	UC4-1320 / 13JRC4S013201	Technology Promotion Association (Thailand-Japan)	26TM196	3/2/2026	2/2/2027
5	DO Meter	BIOCHEMICAL OXYGEN DEMAND	YSI	5100 / 11B 101863	Technology Promotion Association (Thailand-Japan)	25TW29	17/2/2025	16/2/2026
			YSI	5100 / 11B 101863	Technology Promotion Association (Thailand-Japan)	26TW50	2/3/2026	1/3/2027
6	Digestion Units	TOTAL KJELDAHL NITROGEN	FOSS Analytical Co.,Ltd (China)	DT2508/2520 / 91905060	FOSS South East Asia	13852	25/2/2025	24/2/2026
7	Digestion Units	TOTAL KJELDAHL NITROGEN	FOSS Analytical Co.,Ltd (China)	DT2508/2520 / 91905060	FOSS South East Asia	15257	12/2/2026	11/2/2027
			Foss Tecator	2520 Auto / 91794469	United Analyst and Engineering Consultant Co., Ltd	แบบบันทึกผลการทวนสอบเตาย่อย UAE.WAS.011/2560	13/11/2025	12/5/2026
8	Hot Air Oven	TOTAL DISSOLVED SOLIDS	Memmert	UF55 / B216.1666	National Food Institute, Ministry of Industry, Thailand	2600149-001-01	7/10/2025	6/10/2026

List of Instrument Certificates for Environmental Quality Analysis

No.	Instrument/Equipment	Parameter	Manufacturer	Model/Serial No.	Calibrator	Certification No.	Date of Calibration	Due date of Calibration*
9	Incubator	FECAL COLIFORM BACTERIA	Memmert	IPP260 / V615.0187	National Food Institute, Ministry of Industry, Thailand	2502229-001-01	19/3/2025	18/3/2026
10	Kjeltec Distillation Unit	TOTAL KJELDAHL NITROGEN	FOSS	KT9 / 91905393	FOSS South East Asia	15256	12/2/2026	11/2/2027
11	Kjeltec System Distilling Unit	TOTAL KJELDAHL NITROGEN	Foss Tecator (Labtec)	KT200 / 91790524	FOSS South East Asia	13319	27/1/2025	26/1/2026
12	Kjeltec Distillation Unit	TOTAL KJELDAHL NITROGEN	FOSS	Kjeltec 8100 / 91889052	FOSS South East Asia	13854	24/2/2025	23/2/2026
13	pH Meter	pH	Horiba	LAQUA-PH210 / HA0A0007	technology promotion association (thailand-japan)	26CH230	26/2/2026	26/2/2027
14	pH Meter	pH	Horiba	LAQUA-PH210 / HA9M0048	technology promotion association (thailand-japan)	25CH586	21/5/2025	19/5/2026
15	pH Meter	pH	Horiba	LAQUA-PH210 / HA0A0005	technology promotion association (thailand-japan)	25CH1433	11/12/2025	10/12/2026
16	pH Meter	pH	Horiba	LAQUA-PH210 / HA0A0006	technology promotion association (thailand-japan)	25CH606	27/5/2025	25/5/2026
17	pH Meter	pH	Horiba	LAQUA-PH210 / HA1M0043	technology promotion association (thailand-japan)	25CH263	28/2/2025	27/2/2026
18	Water Bath	FECAL COLIFORM BACTERIA	Memmert	WNE 14 / L416.0612	National Food Institute Ministry of Industry, Thailand	2501624-002-01	10/2/2025	9/2/2026

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

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 Calibration : 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: Sakkarin Srirahang

Approved by: Suwit Chotnok

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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Certificate No.: 250422-1-BL002-25

Code No.: BL002-25

Page: 3 of 3

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

Calibration Result: (Continued)

Calibration Range: 0 - 200 g

Calibration Adjustment: Internal Calibration

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

Nominal Value (g)	Reference Value (g)	Indication (g)	Correction (g)	Uncertainty ($\pm$ 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 measurement was based on standard uncertainty multiplied by coverage factor k, providing a level of confidence of approximately 95%.

เอกสารไม่ควบคุม

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

Certificate No.: 250422-1-BL002-25

Code No.: BL002-25

Page: 2 of 3

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 Standards:

Reference Standard:	Model	Serial No.	Calibrated By	Certificate No.	Traceability	Due Date
Standard Weight Class E2 (OIML)	1 mg to 1 kg	8749109122	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-3825D	AK.46457	SUCCESS	SG-H-00997/67	Success Gateway	21-Nov-25
Thermo-Hygro-Baro Meter	MHB-3825D	AK.46457	TPA	25PT795	TPA	25-Feb-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 was found accurate as shown on date and place of calibration only.

6. Through the reference standard laboratory of AMARC 25-009359 Calibration 0152

Calibration Result:

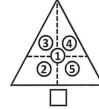
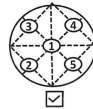
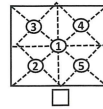
1. Repeatability of Reading:

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 positions 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

เอกสารไม่ควบคุม

Certificate of Calibration

Certificate No.: 260318-1-BL007-26

Code No.: BL007-26

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 : UAE No.3 Floor : 1 Room : 107

Received Date: April 2, 2026

Date of Calibration : April 3, 2026

Calibration Conditions: Temperature start 21.9 °C end 22.1 °C
Humidity start 60.6 % end 60.1 %
Pressure start 756.6 mmHg end 755.1 mmHg

Calibrated by: Thanachat Chatpahal

Approved by: Suwit Chotnok

Signature:

Issued Date: April 7, 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)

เอกสารไม่ควบคุม

Certificate No.: 260318-1-BL007-26
Code No.: BL007-26
Page: 2 of 3

Equipment: Electronic Balance
Model: AB204-S/FACT
Serial No.: 1129361010
Max. Capacity: 220 g
Calibration Date: April 3, 2026
Condition As-Received: In Condition

Manufacturer: Mettler Toledo
Readability: 0.0001 g
ID No.: UAE.WAS.002/2552

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

Reference Standard:

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	3-Mar-27

Instrument	Model	Serial No.	Calibrated By	Certificate No.	Traceability	Due Date
Thermo-Hygro-Baro Meter	MHB-3825D	AK.46457	SUCCESS	SG-H-00992/68	Success Gateway	26-Nov-26
Thermo-Hygro-Baro Meter	MHB-3825D	AK.46457	TPA	Z5P4464	TPA	18-Dec-26

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

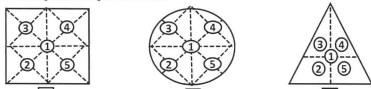
Calibration Result:

1. Repeatability of Reading:

Nominal Value (g)	Standard Deviation of Reading (g)
200*	0.00010

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)
100.0025	100.0022	100.0022	100.0029	100.0030	0.0005

Calibration Certificate

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

Page 1 of 4

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 Mr.Yothin Charoensuk **Approved by** (Mr.Pheraphat Tuanjit)
Scientist 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.

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

เอกสารไม่ควบคุม



Certificate No.: 260318-1-BL007-26
Code No.: BL007-26
Page: 3 of 3

Equipment: Electronic Balance
Model: AB204-S/FACT
Serial No.: 1129361010
Max. Capacity: 220 g
Calibration Date: April 3, 2026

Manufacturer: Mettler Toledo
Readability: 0.0001 g
ID No.: UAE.WAS.002/2552

Calibration Result: (Continued)

Calibration Range: 0 - 200 g

Calibration Adjustment: Internal Calibration

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

Nominal Value (g)	Reference Value (g)	Indication (g)	Correction (g)	Uncertainty (± ms)	Coverage Factor k
Unload	0.0000000	0.0000	0.0000	0.17	2.37
0.01	0.0100005	0.0099	0.0001	0.17	2.32
0.05	0.0500003	0.0499	0.0001	0.17	2.32
0.1	0.1000083	0.0999	0.0001	0.17	2.32
0.5	0.5000121	0.5000	0.0000	0.17	2.32
1.0	1.0000119	1.0000	0.0000	0.17	2.32
10.0	10.000033	10.0003	-0.0003	0.17	2.32
40.0	40.000054	40.0010	-0.0010	0.18	2.23
50.0	50.000037	50.0013	-0.0012	0.18	2.23
80.0	80.000098	80.0020	-0.0019	0.19	2.11
100.0	100.000042	100.0025	-0.0024	0.20	2.10
120.0	120.000068	120.0028	-0.0027	0.22	2.06
150.0	150.000079	150.0035	-0.0035	0.24	2.04
160.0	160.000112	160.0036	-0.0035	0.25	2.03
200.0	200.000146	200.0049	-0.0047	0.28	2.00

4. Effect of Tare test:

Tare Load (g)	Test Load (g)	Indication (g)	Correction (g)
100	20.000028	20.0004	-0.0003
	40.000054	40.0009	-0.0008
	60.000070	60.0013	-0.0012
	80.000098	80.0017	-0.0016
	100.000042	100.0021	-0.0021

Remark: -

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

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

เอกสารไม่ควบคุม

Calibration Report

Certificate No.: 2502226-002-01
Equipment: Electronic Balance
Model: XSR205DU
Serial No.: C210685394
Capacity: 82 g / 220 g

Manufacturer: METTLER TOLEDO
Resolution: 0.00001 g / 0.0001 g
ID No.: UAE.WAO.010/2565

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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	8505567572	TCS	M24041005	19 April 2025
Instrument	Model	Serial No.	Calibrated By	Certificate No.	Due Date
Thermo-Hygro Meter	608-H1	NF1.8TH 017/23	Quality Reborn	QR25-0542	10 February 2026

- This certification is traceable to SI UNIT
- 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.

Calibration Results:

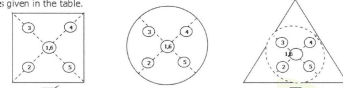
1. Repeatability of Reading:

Nominal Value (g)	Standard Deviation of Reading (g)
40	0.0000042
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	100.0001	0.0000

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

เอกสารไม่ควบคุม



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 3 of 4**

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

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

เอกสารไม่ควบคุม

2008 บาสงนาสุนทร 36 นูนาถนาสุนทร แขวงบางกอกใหญ่ เขตบางกอก กรุงเทพมหานคร 10700
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 8545

nfi.thai

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

เอกสารไม่ควบคุม

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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 8545

nfi.thai

UAE 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



UAE 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



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 Calibration: 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: Thanachat Chatpachol

Approved by: Suwit Chotnok

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)

Certificate No.: 260311-2-BL001-26

Code No.: BL001-26

Page: 2 of 4

Equipment: Electronic Balance
Manufacturer: Mettler Toledo
Model: XSR205DU
Serial No.: C210685394
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 UMAS Lab 14 : 2022

2. Reference Standards:

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-Hydro-Baro Meter	MHB-3825D	AK.46457	SUCCESS	SG-H-00992/68	Success Gateway	26-Nov-26
Thermo-Hydro-Baro Meter	MHB-3825D	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 was found accurate as shown on date and place of calibration only.
6. Through the reference standard laboratory of Mettler-Toledo GmbH C510641605, SAS accreditation number SC5 0032
7. Through the reference standard laboratory of AMARC 25-009359, TSI accreditation number 0152

Calibration 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	2	3
4	5	6
7	8	9
100.0002	100.0002	100.0003
100.0004	100.0003	100.0003
Maximum Difference (g)	0.0001	

เอกสารไม่ควบคุม

เอกสารไม่ควบคุม

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

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

Equipment: Electronic Balance
Model: XSR205DU
Serial No.: C210685394
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) : 0.1 mg
ID No.: UAE.WAO.010/2565

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

3. Error of Indication from nominal or conventional mass value: (Range: 0 to 81 (g) ; Resolution: 0.0001 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

Equipment: Electronic Balance
Model: XSR205DU
Serial No.: C210685394
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) : 0.1 mg
ID No.: UAE.WAO.010/2565

Calibration Result: (Continued)
Calibration Range: > 81 to 200 (g)
Calibration 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 measurement was based on standard uncertainty multiplied by coverage factor k, providing a level of confidence of approximately 95%.

เอกสารไม่ควบคุม

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

เอกสารไม่ควบคุม

Calibration Certificate

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

Page 1 of 4

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 Mr.Yothin Charoensuk
Scientist

Approved by (Mr.Pheraphat Tuanjit)
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.

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

เอกสารไม่ควบคุม

Calibration Report

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

Page 2 of 4

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	M24041005	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:

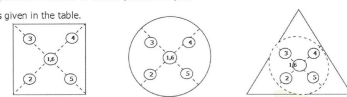
1. Repeatability of Reading:

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

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

เอกสารไม่ควบคุม

Calibration Report

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

Date of Calibration: 20 March 2025 **Page 3 of 4**

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

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

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2008 Soi 35, Arun Amarin Road, Bang Yi Khan Subdistrict, Bang Phlat District, Bangkok 10700, Thailand
Tel: +66(0) 2422 8588 Fax: +66(0) 2422 8545

UAE United Analyst and Engineering Consultant Co., Ltd.
UNITED ANALYST AND ENGINEERING CONSULTANT COMPANY LIMITED
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaiconsultant.com E-mail: uae@uaiconsultant.com

Certificate of Calibration

Certificate No.: 260311-2-BL002-26

Code No.: BL002-26

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.: C009071872

Asset No.: UAE.WAO.012/2563

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

Received Date: March 11, 2026

Date of Calibration: 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: Thanachat Chatpahol

Approved by: Suwit Chotnok

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)

เอกสารไม่ควบคุม

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 **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	110.0001	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 -----

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

2008 ๒๕๔๙ ถนนสุขุมวิท 35 แขวงคลองเตย เขตคลองเตย กรุงเทพมหานคร 10110
2008 Soi 35, Arun Amarin Road, Bang Yi Khan Subdistrict, Bang Phlat District, Bangkok 10700, Thailand
Tel: +66(0) 2422 8588 Fax: +66(0) 2422 8545

UAE United Analyst and Engineering Consultant Co., Ltd.
UNITED ANALYST AND ENGINEERING CONSULTANT COMPANY LIMITED
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaiconsultant.com E-mail: uae@uaiconsultant.com

Certificate No.: 260311-2-BL002-26

Code No.: BL002-26

Page: 2 of 4

Equipment: Electronic Balance

Model: XSR205DU

Serial No.: C009071872

Max. Capacity: 81 g / 220 g

Calibration Date: March 12, 2026

Condition As-Received: In Condition

Manufacturer: Mettler Toledo

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

ID No.: UAE.WAO.012/2563

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 Standards:

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	8749109122	AMARC	25-009359	Mettler-Toledo	21-Jan-27

Instrument	Model	Serial No.	Calibrated By	Certificate No.	Traceability	Due Date
Thermo-Hygro-Baro Meter	MHB-3825D	AK.46457	SUCCESS	SG-H-00992/68	Success Gateway	26-Nov-26
Thermo-Hygro-Baro Meter	MHB-3825D	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 was found accurate as shown 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, TSI accreditation number 0152

Calibration 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	2	3	4	5	Maximum Difference (g)
(g)	(g)	(g)	(g)	(g)	
100.0000	100.0000	100.0000	100.0000	100.0000	0.0000

เอกสารไม่ควบคุม

Certificate No.: 260311-2-BL002-26

Code No.: BL002-26

Page: 3 of 4

Certificate No.: 260311-2-BL002-26

Code No.: BL002-26

Page: 4 of 4

Equipment: Electronic Balance
Model: XSR205DU
Serial No.: C09071872
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

Calibration Result: (Continued)
Calibration Range: 0 to 80 (g)
Calibration 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	0.0000	0.0000	0.015	2.25
0.001	0.0010020	0.0010	0.00000	0.015	2.23
0.005	0.0050025	0.0050	-0.00002	0.015	2.23
0.01	0.0100005	0.0100	-0.00002	0.015	2.23
0.05	0.0500003	0.0500	-0.00001	0.015	2.21
0.10	0.1000083	0.1000	-0.00001	0.015	2.20
0.50	0.5000121	0.5000	-0.00002	0.016	2.15
1	1.0000119	1.0000	0.00000	0.016	2.12
2	2.0000125	2.0000	-0.00001	0.017	2.09
5	5.0000146	5.0000	-0.00002	0.020	2.05
10	10.0000330	10.0001	-0.00002	0.023	2.00
20	20.000028	20.0001	-0.00005	0.033	2.00
30	30.000061	30.0001	-0.00004	0.051	2.00
40	40.000054	40.0001	-0.00004	0.063	2.00
50	50.000037	50.0001	-0.00005	0.064	2.00
60	60.000070	60.0001	-0.00004	0.081	2.00
80	80.000098	80.0001	-0.00001	0.11	2.00

Equipment: Electronic Balance
Model: XSR205DU
Serial No.: C09071872
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

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

3. 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

4. Effect of Tare test:

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

Remarks:

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

o--o-End-o--o

เอกสารไม่ควบคุม

เอกสารไม่ควบคุม



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250
TEL.0-2717-3000-29 FAX 0-2719-9484



Certificate of Calibration

Cert. No.: 26TM196
Page : 1 of 3

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 : 02 February 2026
Calibration Date : 03 February 2026
Ambient Temperature : (26 ± 10) °C
Relative Humidity : (50 ± 30) %
AC Line Voltage : (220 ± 22) V
Calibrated by : Krisda Malee

Approved by :
() Chakrit Waewwanjua
() Suwit Imjai
(✓) Kunchit Promprat

Issue Date : 17 February 2026

The Uncertainties are for a confidence probability of approximately 95%

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

เอกสารไม่ควบคุม



Equipment : BOD Incubator
Condition As-Received : Used Item
Reference : 2602-0003QC-1
Procedure Used :-

Cert. No.: 26TM196
Page : 2 of 3

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

Condition of this result of calibration

1. Reference standard instrument:-

Instrument	Serial No.	Cert. No.	Traceable	Due Date
1) Data Acquisition	MY57013711	25LM117	TPA	17 Jul 2026

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

3. This measurement result is traceable to the International System of Unit maintained through :

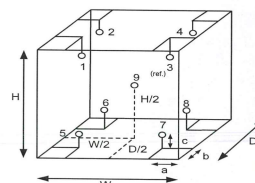
Remark : TPA : Technology Promotion Association (Thailand - Japan)

Result of Calibration :- (*) Without Adjustment

Function of UUC* : Temperature Source

Fresh air setting : Not Available

Environment during calibration		
	Beginning	Finished
Temp. (°C)	26	25
REL.Humid. (%)	48	49
AC Supply (Volt)	221	220



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

Position :	Ref. Std. ID No.:
1	22-18RTD-2/1
2	18RTD-2/2
3	18RTD-2/3
4	18RTD-2/4
5	18RTD-2/5
6	25-18RTD-2/6
7	25-18RTD-2/7
8	21-18RTD-2/10
9 (ref.)	18RTD-2/9

เอกสารไม่ควบคุม



Equipment : BOD Incubator
Condition As-Received : Used Item
Reference : 2602-0003OC-1
Result of Calibration :- (*) Without Adjustment
Function of UUC* : Temperature Source
Fresh air setting : Not Available

Cert. No.: 26TM196
Page : 3 of 3

Calibration Point (°C)	UUC* Setting (°C)	UUC* Reading (°C)	Temperature stability (± °C)	Temperature uniformity (°C)	Overall Variation (°C)	Coverage Factor k
20.0	20.0	19.9	0.65	0.40	1.4	2

Calibration Point (°C)	Measured Temperature (°C)									Uncertainty (± °C)
	1	2	3	4	5	6	7	8	9 (ref.)	
20.0	20.079	19.917	20.065	19.973	19.943	19.959	19.852	19.860	20.006	0.84

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 FAX. 0-2719-9484

Certificate of Testing

Cert.No.: 25TW29
Page.: 1 of 2

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 : Walalak Sirithean
Approved by : [Signature]
Approved Signatory
() Chakrit Waewwanjua
() Ponpan Paipim
(✓) Saithip Meangmai
Issue Date : 18 February 2025

เอกสารไม่ควบคุม



Cert.No.: 25TW29
Page.: 2 of 2

Condition of this result of calibration

1. Reference Standard Instruments :

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

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

2. Standard Material :-

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

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

Titration Method (Azide Modification Method)	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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เอกสารไม่ควบคุม

www.tpa.or.th/eng, 1.800.000.0000 หรือ 01-2717-3000 (ในวันจันทร์-วันศุกร์ เวลา 09.00-18.00 น.) หรือ 01-2719-9484 (ในวันเสาร์-วันอาทิตย์ เวลา 09.00-18.00 น.)

บันทึกผลการสอบเทียบ (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	Standard Deviation	Do meter Reading	Error%	Correction%	Total Error	Judgement	(Total Error < Judgement)		
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)				
8.22	0.0055	8.22	0.0000	0.0000	0.0	0.02	pass		
ผู้ตรวจ : Ben Auphavan					ผู้รับ : [Signature]				
วันที่ : 28/02/2025					วันที่ : 28/02/2025				
Remarks :									

เอกสารไม่ควบคุม



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.
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 : Walalak Sirithean
Approved by :
Approved Signatory
() Chakrit Waewwanjua
() Ponpan Paipim
(✓) Saithip Meangmai
Issue Date : 03 March 2026

เอกสารไม่ควบคุม



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)	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
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เอกสารไม่ควบคุม

FOSS

Customer Service Report

Date: 25 February 2026
Job No.: 11733
Instrument: DT2520 Lift

Travel To Customer (Hrs)	Labour (Hrs)	Travel From Customer (Hrs)
07:00 09:00	15:00 16:00	17:00 18:00

Application	Special	Standard
Distributor	Courtesy Visit	Installation
Digital Service	PMA Onboarding	Quote
Internal	Warranty	Repair
Investigate	Sales Support	Remote
		Health Check Visit

PMA Type	Smartcare	Smartcare Pro	Fosscore
	Smartcare Advance	Fosscore Pro	N/A

Details of Work / Test			
# PM DT2520 12m0			
- cleaning DT2520 holes			
- check connection cable			
- resistance black 247.2			
- test operation			
temperature		25.0 - 100.0 25.0 - 400.0	40 min
DT	meter		
100	100	± 5.0	
400	400	± 2.0	
- AM pus			
Instrument Ready for Use	OK	☒	Not OK*

Part No.	Batch	Description	Qty
60079730	26.09.2024	Foss PM test Digestor 20 pus 12m0	1

Signed FOSS	Signed Customer
Name	Name
Email	Customer Contact:

*Remark: เอกสารไม่ควบคุม
Please scan QR code

FOSS

Customer Service Report

Date: Feb 12, 2026
Job No.: 14590
Instrument: DT2520

Travel To Customer (Hrs)	Labour (Hrs)	Travel From Customer (Hrs)
-	13:30 15:00	1.5

Application	Special	Standard
Distributor	Courtesy Visit	Installation
Digital Service	PMA Approval Check	Quote
Internal	Warranty	Repair
Training	Sales Support	Investigate
		Others

PMA Type	Smartcare		Smartcare Pro		Fosscore	✗
	Smartcare Advance	✗	Fosscore Pro	✗	N/A	✗

Details of Work / Test		
- PM		
- Visual Check		
+ No leak	-ok	
+ No damage	-ok	
- Change PM bit x 1 Set	-ok	
- Function Check		
+ Quick mode		
+ Set Temp / timer	-ok	
+ Run	-ok	
- heating	-ok	
- Lift up/down	-ok	
- Clean x20 holes with dried hand		
Instrument Ready for Use	OK	Not OK*

Part No.	Batch	Description	Qty
60079730	27.09.2024	Fold PM bit, Digestor 20 pus 12m0	1

Signed FOSS	Signed Customer
Name	Name
Tel:	Tel:
Email:	Email:

*Remark: เอกสารไม่ควบคุม
Please scan QR code

แบบบันทึกผลการทวนสอบเตาย่อย (Heating Block/Digestion Unit)

รายละเอียดเครื่องมือที่ทวนสอบ

หมายเลขประจำเครื่องบริษัท: UAE-พ.ร.อ.บ.13560

เครื่องมือ : Digestion Units

ยี่ห้อ : E.Oss. Tecator

หมายเลขเครื่อง : 91744069

รุ่น : 9500 8010

หมายเลขใบสอบเทียบ : 400957-001-01

วันที่สอบเทียบ : 13/11/67

รายละเอียดเครื่องมือที่ใช้ทวนสอบ (Reference Standard) สภาวะที่ทวนสอบ

เครื่องมือ: Digital Thermometer, Thermocouple

ยี่ห้อ : -

สภาวะที่ทวนสอบ

หมายเลขเครื่อง : T-57905 Type K

รุ่น : DP-57

อุณหภูมิ : -

หมายเลขประจำเครื่องบริษัท: UAE-พ.ร.อ.บ.13560

หมายเลขเครื่อง(Probe): UAE-พ.ร.อ.บ.00513553

หมายเลขใบสอบเทียบ : 450048-001-01

วันที่สอบเทียบ : 13/11/67

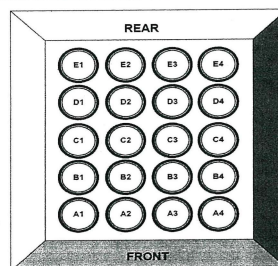
ทวนสอบโดย : ผู้ใช้

ผลการทวนสอบเตาย่อย Calibration Point 380 °C

เตาย่อยหลุมที่	อุณหภูมิที่อ่านได้จากเตาย่อย (°C)				อุณหภูมิที่อ่านได้จาก Reference Standard (°C)			
	Digestor Unit				UAE-พ.ร.อ.บ.13560 ; Thermometer			
	ครั้งที่ 1	ครั้งที่ 2	ค่าเฉลี่ย	คิดค่าแก้แล้ว	ครั้งที่ 1	ครั้งที่ 2	ค่าเฉลี่ย	คิดค่าแก้แล้ว
Calibration Point 380 °C								
Setting Point 380 °C								Correction 0.0
A1	380	380	380	-	379.6	379.3	379.5	379.5
A2	381	381	381	-	380.7	380.3	380.5	380.5
A3	381	380	380	-	380.0	380.6	380.4	380.4
A4	381	381	381	-	381.4	381.7	381.3	381.3
B1	381	381	381	-	381.1	380.9	381.1	381.1
B2	380	381	381	-	380.6	380.8	380.7	380.7
B3	380	381	381	-	380.8	380.1	380.0	380.0
B4	381	381	381	-	380.7	381.9	381.0	381.0
C1	380	380	380	-	380.1	380.6	380.4	380.4
C2	380	381	381	-	379.7	379.3	379.5	379.5
C3	380	380	380	-	380.5	380.9	380.7	380.7
C4	381	381	381	-	380.1	381.3	381.0	381.0

ผลการทวนสอบ (ต่อ)

เตาย่อยหลุมที่	อุณหภูมิที่อ่านได้จากเตาย่อย (°C)				อุณหภูมิที่อ่านได้จาก Reference Standard (°C)			
	Digestor Unit				UAE-พ.ร.อ.บ.13560 ; Thermometer			
	ครั้งที่ 1	ครั้งที่ 2	ค่าเฉลี่ย	คิดค่าแก้แล้ว	ครั้งที่ 1	ครั้งที่ 2	ค่าเฉลี่ย	คิดค่าแก้แล้ว
Calibration Point 380 °C								
Setting Point 380 °C								Correction 0.0
D1	380	381	381	-	380.8	381.3	381.6	381.6
D2	380	381	381	-	381.3	381.7	381.5	381.5
D3	381	381	381	-	381.9	381.5	381.7	381.7
D4	381	380	381	-	380.6	380.1	380.4	380.4
E1	381	381	381	-	381.4	380.8	381.1	381.1
E2	381	381	381	-	380.7	381.1	380.9	380.9
E3	380	381	381	-	380.1	380.9	380.0	380.0
E4	381	380	380	-	380.1	380.9	380.4	380.4
ค่าเฉลี่ย	-	-	-	-	-	-	-	-
ค่าส่วนเบี่ยงเบนมาตรฐาน	-	-	-	-	-	-	-	-
ค่าความผิดพลาด	พิจารณาค่าความผิดพลาดแต่ละจุดให้อยู่ในช่วงเกณฑ์การยอมรับ							
เกณฑ์การยอมรับ	380 ± 5 °C							
ผลการทวนสอบ								



ผู้บันทึก:

วันที่: 13/11/67

ผู้ตรวจสอบ:

วันที่: 25/11/67

หมายเหตุ : เก็บใบเพิ่ม

1/2

เอกสารไม่ควบคุม

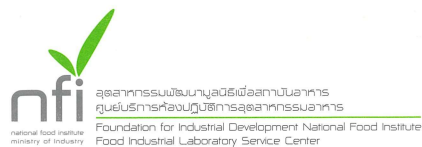
หมายเหตุ : เก็บใบเพิ่ม

2/2

เอกสารไม่ควบคุม

\\uae-netapp\Netapp_LAB\Lab-8\INSTRUMENT (11-2)แบบบันทึกผลการทวนสอบ ส่วนกลางฉบับบันทึกผลการทวนสอบ Digestor TKN (005_2555)

\\uae-netapp\Netapp_LAB\Lab-8\INSTRUMENT (11-2)แบบบันทึกผลการทวนสอบ ส่วนกลางฉบับบันทึกผลการทวนสอบ Digestor TKN (005_2555)



Calibration Certificate

Certificate No.: 2600149-001-01

Page : 1 of 2

Equipment: CHAMBER (Hot Air Oven)
 Manufacturer: MEMMERT
 Model: UF55
 Serial No.: B216.1666
 ID No.: UAE-WAO.027/2559
 Order No.: 2600149
 Operation No.: 2600149-001
 Date of Receipt: 7 October 2025
 Date of Calibration: 7 October 2025

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

Metrological traceability:

- 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.
- Reference Standard Instrument:

Instrument	Model/Type	Serial No./ID No.	Certificate No.	Due Date	Through
Digital Thermometer with sensor	34972A RTD	MY57003188 CHP101-109/RTD/101-109	2503175-002-01	2 June 2026	NATIONAL FOOD INSTITUTE

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

Calibrated by Mr.Yothin Charoensuk

Scientist

Approved by

(Mr.Pheraphat Tuanjit)

Manager, Division of Calibration Laboratory

Responsible for the Technical Management Team

Date of Issue: 14 October 2025

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

เอกสารไม่ควบคุม

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Calibration Certificate

Certificate No.: 2600149-001-01

Page : 2 of 2

Condition Calibration:

Equipment: CHAMBER (Hot Air Oven)
 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: LABORATORY,
 UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.
 Environment Conditions: Ambient Temperature (29.2 ± 1) °C
 Relative Humidity (56.4 ± 1) %
 Line Voltage (223 ± 3) V.

Calibration Results:

Table 1 : Reporting of Temperature

Calibration Point (°C)	Std.#1	Std.#2	Std.#3	Std.#4	Std.#5	Std.#6	Std.#7	Std.#8	Std.#9	Measurement Uncertainty (±°C)
104.0	103.96	103.63	103.96	103.96	104.20	103.80	103.78	104.18	104.00	0.53
140.0	139.93	139.42	139.93	139.93	140.28	139.73	139.69	140.14	140.04	0.73
180.0	179.68	179.12	179.71	179.74	180.40	179.61	179.44	179.98	180.01	0.90

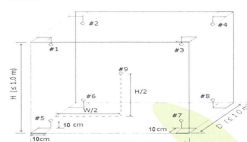
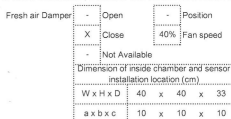
Table 2 : Reporting of Characterization Results

UUC* Setting (°C)	Max	UUC* Reading (°C)	Min	Average	Stability ± (°C)	Uniformity (°C)	Overall Variation (°C)
104.0	104.0	104.0	104.0	104.0	0.27	0.37	1.0
140.0	140.0	140.0	140.0	140.0	0.14	0.62	1.1
180.0	180.0	180.0	180.0	180.0	0.10	0.89	1.4

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 throughout observation time.

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



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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Customer Service Report

Date:	Jan 27, 2025	Report No.:	13319
Job No.:	11675	Customer:	UAE
Instrument:	KT200	Address:	Bangkok
		Serial:	91790524
Travel To Customer (Hrs)	09:00 - 10:00	Labour (Hrs)	10:00 - 13:00
Start	09:00	1	3
Finish	10:00		
Travel From Customer (Hrs)			

Application	Special	Standard
Distributor	Courtesy Visit	Installation
Digital Service	PMA Onboarding	Quote
Internal	Warranty	Repair
Investigate	Sales Support	Remote

PMA Type	Smartcare	Smartcare Pro	Fosscore
	Smartcare Advance	Fosscore Pro	N/A

Details of Work / Test				
- PM -				
+ Visual Check				
- No leak				
- have damage on heater & main switch				
- ok				
+ without heater - 10- main switch				
- ok				
+ 100% PM kit # 1 set				
- ok				
+ Function Check				
- Power on/off				
- Alkali				
- Steam				
- Condenser				
fak water pump				
- ok				
Instrument Ready for Use	OK	X	Not OK*	X

Part No.	Batch	Description	Qty
10069965	11-06-2024	PM kit KT200 better Analyser/2100	1
10003512	29-03-2024	Heating element 8 team	1
15630111	19-10-2022	Unit for R545 km2 + 2 fan	1

Signed FOSS	Signed Customer
Name	Name

Email:	Customer Contact:
	เอกสารไมควบคุม

*Remark:

FOSS

Customer Service Report

Date:	24 February 2025	Report No.:	13854
Job No.:	11735	Customer:	UAE
Instrument:	KT200	Address:	Bangkok
		Serial:	91887052
Travel To Customer (Hrs)	07:00 - 09:00	Labour (Hrs)	09:00 - 12:00
Start	07:00	2hrs	0hrs
Finish	09:00		
Travel From Customer (Hrs)			

Application	Special	Standard
Distributor	Courtesy Visit	Installation
Digital Service	PMA Onboarding	Quote
Internal	Warranty	Repair
Investigate	Sales Support	Remote

PMA Type	Smartcare	Smartcare Pro	Fosscore
	Smartcare Advance	Fosscore Pro	N/A

Details of Work / Test				
+ PM kit 1200 12 mo				
- test before PM				
- cleaning kit 1200, 36 mo replace				
- flushing Alkali pump				
- test operation				
- Distillation 80 - 80 ml				
- Distillation 6 min 150 - 120 ml				
- Alkali 50 - 80 ml				
- All pass				

Part No.	Batch	Description	Qty
60031210	08-01-2024	PM kit KT200, 1200 36 mo	1

Signed FOSS	Signed Customer
Name	Name

Email:	Customer Contact:
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*Remark:

Please scan QR code



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250
TEL.0-2717-3000-29 FAX.0-2719-9484



Certificate of Calibration

Cert.No.: 26CH230
Page.: 1 of 3

Equipment : pH Meter
Manufacturer : Horiba
Model : LAQUA-PH210
Serial No. : HAOA0007
ID No. : UAE.EFM.002/2563(EFM.pH.02/63)
Condition As-Received: Used Item
Received Date : 24 February 2026
Calibration Date : 26 February 2026
Reference : 2602-0796WSC-1
Submitted by : United Analyst and Engineering Consultant Co.,Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangkok, 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 : Walalak Sirithean
Approved by :
() Chakrit Waewwanjua
() Ponpan Paipim
(✓) Saithip Meangmai
Issue Date : 27 February 2026



Cert.No.: 26CH230
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	25E2743	25 Aug 2026
2) Ref. Standard Thermometer	4982054	110RC044	25I708	03 July 2026

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

2. Certified Reference Materials

The measurement results are traceable to SI through 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 4.008	CPA chem	1187328	18 Jan 2028
pH 7.000	Hach Lenge GmbH	C03319	17 Oct 2027
pH 10.010	CPA chem	1187332	18 Jan 2027

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	(±mV)	k
pH Meter	4.00	177.48	177.4	0.058	2.00
S/N.: HAOA0007	7.00	0.00	0.0	0.058	2.00
	7.00	0.00	0.0	0.058	2.00
	10.00	-177.48	-177.5	0.058	2.00

The Uncertainties are for a confidence probability of approximately 95%

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Cert.No.: 26CH230
Page.: 3 of 3

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 S/N.: Q9BF0099	4.008	4.00	163.6	0.0079	2.00
	7.000	6.99	-11.9	0.0095	2.00
	7.000	7.00	-11.1	0.0095	2.00
	10.010	10.01	-183.6	0.0092	2.00

Function : Temperature Measurement

(*) Without adjustment

This equipment was connected with Temperature Probe;

- Model : 9652-10D
- Serial No. : Q9BF0099

Dimension of probe

- Length : 103 mm.
- Diameter : 16 mm.
- Immersion Depth : 90 mm.

Calibration Point (°C)	Standard Temperature (°C)	UUC* Reading (°C)	Error (°C)	Uncertainty of measurement (± °C)	Coverage factor k
15.0	15.001	15.0	-0.001	0.13	2.00
30.0	30.001	30.0	-0.001	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 %.

-o0o-



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
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TEL 0-2717-3000-23 FAX 0-2719-9484



Certificate of Calibration

Cert.No.: 25CH586
Page.: 1 of 3

Equipment : pH Meter
Manufacturer : Horiba
Model : LAQUA-PH210
Serial No. : HA9M0048
ID No. : UAE.EFM.003/2563(EFM,pH.03/63)
Condition As-Received: Used Item
Received Date : 20 May 2025
Calibration Date : 21 May 2025
Reference : 2505-0602WSC-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 : Walalak Sirinthean

Approved by : [Signature]
Approved Signatory

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

Issue Date : 23 May 2025

The Uncertainties are for a confidence probability of approximately 95%

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Cert.No.: 25CH586
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 measurement result is traceable to SI through 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 7.000	Hach Lenge GmbH	C03232	02 Dec 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 S/N.: HA9M0048	4.00	177.48	177.4	4.01	0.058	2.00
	7.00	0.00	0.0	7.00	0.058	2.00
	7.00	0.00	0.0	7.00	0.058	2.00
	10.00	-177.48	-177.5	10.01	0.058	2.00



Cert.No.: 25CH586
Page.: 3 of 3

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 S/N.: Q9AD0211	4.007	4.01	169.9	0.0071	2.00
	7.000	7.00	-3.5	0.0096	2.00
	7.000	7.00	-3.0	0.0092	2.00
	10.010	10.01	-175.3	0.0096	2.00

Function : Temperature Measurement

(*) Without adjustment

This equipment was connected with Temperature Probe;

- Model : 9652-10D
- Serial No. : Q9AD0211

Dimension of probe

- Length : 103 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	29.999	30.0	0.001	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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เอกสารไม่ควบคุม



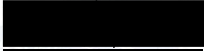
Certificate of Calibration

Cert.No.: 25CH1433
Page.: 1 of 3

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 : Warakorn Lernagatrakul

Approved by : 
Approved Signatory

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

Issue Date : 12 December 2025

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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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 through 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 S/N.: HA0A0005	4.00	177.48	177.4	4.01	0.058	2.00
	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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Cert.No.: 25CH1433
Page.: 3 of 3

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 S/N.: -	4.007	4.01	175.4	0.0085	2.05
	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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Certificate of Calibration

Cert.No.: 25CH606
Page.: 1 of 3

Equipment : pH Meter
Manufacturer : Horiba
Model : LAQUA-PH210
Serial No. : HA0A0006
ID No. : UAE.EFM.006/2563(EFM.pH.06/03)
Condition As-Received: Used Item
Received Date : 28 May 2025
Calibration Date : 27 May 2025
Reference : 2505-0796WSC-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-CH6 by comparison with temperature standard

Calibrated by : Warakorn Lernagatrakul

Approved by : 
Approved Signatory

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

Issue Date : 28 May 2025

The Uncertainties are for a confidence probability of approximately 95%

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Cert.No.: 25CH606
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 measurement result is traceable to SI through 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.,
Deutsche Akkreditierungsstelle, Accredited No.D-RM-15184-01-00

Buffer Solution	Manufacturer	Lot No.	Exp. date
pH 4.007	CPA chem	1066665	18 Jan 2027
pH 7.000	Hach Lenge GmbH	C03232	02 Dec 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	Coverage factor
	pH	mV	mV	pH	(±mV)	k
pH Meter S/N.: HA0A0006	4.00	177.48	177.5	4.01	0.058	2.00
	7.00	0.00	0.0	7.00	0.058	2.00
	7.00	0.00	0.0	7.00	0.058	2.00
	10.00	-177.48	-177.4	10.01	0.058	2.00



Cert.No.: 25CH606
Page.: 3 of 3

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 S/N.: Q92M0159	4.007	4.01	181.7	0.0071	2.00
	7.000	7.00	6.4	0.0085	2.00
	7.000	7.00	6.5	0.0092	2.00
	10.010	10.00	-168.7	0.0095	2.00

Function : Temperature Measurement

(*) Without adjustment

This equipment was connected with Temperature Probe;

- Model :	9652-10D
- Serial No. :	Q92M0159
Dimension of probe	
- Length :	103 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	45.003	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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TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
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TEL.0-2717-3000-29 FAX.0-2719-9484



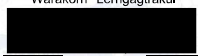
Certificate of Calibration

Cert.No.: 25CH263
Page.: 1 of 3

Equipment : pH Meter
Manufacturer : Horiba
Model : LAQUA-PH210
Serial No. : HA1M0043
ID No. : UAE,EFM,013/2565(EFM,pH,03/65)
Condition As-Received: Used Item
Received Date : 25 February 2025
Calibration Date : 26 to 28 February 2025
Reference : 2502-0783WSC-3
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 : Warakorn Lemgatrakul

Approved by : 
Approved Signatory

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

Issue Date : 28 February 2025

The Uncertainties are for a confidence probability of approximately 95%

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Cert.No.: 25CH263
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 Through 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	Coverage factor
	pH	mV	mV	pH	(±mV)	k
pH Meter S/N.: HA1M0043	4.00	177.48	177.4	4.01	0.058	2.00
	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	-177.6	10.01	0.058	2.00

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Cert.No.: 25CH263
Page.: 3 of 3

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 S/N.: 992H0385	4.007	4.01	147.9	0.0085	2.05
	6.999	7.00	-24.3	0.0092	2.00
	6.999	7.01	-24.4	0.0085	2.00
	10.010	10.01	-197.8	0.0092	2.00

Function : Temperature Measurement

(°) Without adjustment

This equipment was connected with Temperature Probe;

- Model : 9652

- Serial No. : 992H0385

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	15.003	15.0	-0.003	0.13	2.00
30.0	30.004	30.0	-0.004	0.13	2.00
45.0	45.002	45.0	-0.002	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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ศูนย์บริการห้องปฏิบัติการอุตสาหกรรมอาหาร
Foundation for Industrial Development National Food Institute
Food Industrial Laboratory Service Center



Calibration Certificate

Certificate No.: 2501624-002-01
Client name: UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.
Address: 3 Soi Udumsuk 41, Sukhumvit Road,
Bangchack, Prakhonong, Bangkok 10260

Page 1 of 3

Equipment: Water Bath
Manufacturer: MEMMERT
Model: WNE14
Serial No.: L416.0612
ID No.: UAE.MIC.003/2560
Order No.: 2501624
Operation No.: 2501624-002
Date of Receipt: 10 February 2025
Date of Calibration: 10 February 2025

Calibrated by Mr.Worapob Sooktong
Scientist
WB
Date of Issue: 19 February 2025
Approved by (Mr.Pheraphat Tuanjit)
Manager, Division of Calibration Laboratory
Responsible for the Technical Management Team

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

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

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



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Food Industrial Laboratory Service Center



Calibration Report



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



Calibration Report

Certificate No.: 2501624-002-01
Equipment: Water Bath
Model: WNE14
Resolution: 0.1 °C
Manufacturer: MEMMERT
Date of Calibration: 10 February 2025
Serial No.: L416.0612
ID No.: UAE.MIC.003/2560

Calibration point: 44.5 °C

Calibration result:

Calibration Condition	Temperature (°C)	Relative Humidity (%)	Line Voltage (Volt)
Min	23.0	52	223.0
Max	25.0	65	225.0

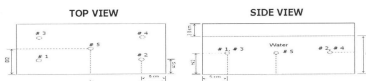


Table 1 : Reporting of Temperature

Calibration Point (°C)	Measured Temperature (°C) @ Sensor No. (Sensor No.5 is REF)					Uncertainty ± (°C)
	# 1	# 2	# 3	# 4	# 5	
44.5	44.45	44.52	44.47	44.48	44.45	0.20

Table 2 : Reporting of Characterization Result

UUC* Setting (°C)	UUC* Reading (°C)			Stability ± (°C)	Uniformity (°C)	Overall Variation (°C)
	MIN	MAX	Average			
44.5	44.4	44.5	44.5	0.081	0.077	0.23

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 throughout 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 -----

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

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Food Industrial Laboratory Service Center



Certificate No.: 2501624-002-01
Equipment: Water Bath
Model: WNE14
Resolution: 0.1 °C
Manufacturer: MEMMERT
Date of Calibration: 10 February 2025
Serial No.: L416.0612
ID No.: UAE.MIC.003/2560

Location: 302 Microbiology Laboratory, UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.

Environment Condition:
Ambient Temperature (24 ± 1) °C
Relative Humidity (59 ± 7) %
Line Voltage (224 ± 1) Volt

Condition of this results of Calibration:

- This instrument was calibrated by insert 5 standard thermometer into its liquid bath and calibration according to W-TE-011 based on ASTM E715-80 (2022): Standard Specification for Gravity-Convection and Forced-Circulation Water Baths.
- The temperature scale used is 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	MY59002902	TE 670478-01	4-May-25	NATIONAL FOOD INSTITUTE
	RTD	RTD#306-310 / CH#306-310			

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 44.5 °C
7. Result of Calibration : ☒ Without adjustment
☐ After adjustment

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

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