

ภาคผนวก จ

เอกสารเทียบเครื่องมือที่ใช้ในการตรวจวิเคราะห์

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
2	Analytical Balance	TOTAL SUSPENDED SOLIDS	Mettler Toledo	XSR205DU / C009071872	National Food Institute,Ministry of Industry, Thailand	2502226-001-01	20/3/2025	19/3/2026
3	BOD Incubator	BIOCHEMICAL OXYGEN DEMAND	ARCO	UC4-1320 / 1021	Technology Promotion Association (Thailand-Japan)	24TM1002	7/7/2025	6/7/2026
4	DO Meter	BIOCHEMICAL OXYGEN DEMAND	YSI	5100 / 11B 101863	Technology Promotion Association (Thailand-Japan)	25TW29	17/2/2025	16/2/2026
5	Digestion Units	TOTAL KJELDAHL NITROGEN	Foss Tecator	2520 Auto / 91794469	United Analyst and Engineering Consultant Co., Ltd	แบบบันทึกผลการทวนสอบเดี่ยวอยุ่ UAE.WAS.011/2560	13/11/2025	12/5/2026
6	Incubator	TOTAL COLIFORM BACTERIA	Binder	KB400 / 20220000022479	National food institute ministry of Industry	2503682 004 01	1/7/2025	30/6/2026
7	pH Meter	pH	YSI Environmental	pH 100A / JC03335	Technology Promotion Association (Thailand-Japan)	26CH64	16/1/2026	15/1/2027

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

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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
2	Analytical Balance	TOTAL SUSPENDED SOLIDS	Mettler Toledo	XSR205DU / C009071872	National Food Institute,Ministry of Industry, Thailand	2502226-001-01	20/3/2025	19/3/2026
3	BOD Incubator	BIOCHEMICAL OXYGEN DEMAND	ARCO	UR-1320 / -	Technology Promotion Association (Thailand-Japan)	25TM578	19/3/2025	18/3/2026
4	DO/BOD Meter	BIOCHEMICAL OXYGEN DEMAND	YSI	4010-2W / 20260326	Technology Promotion Association (Thailand-Japan)	25TW213	22/10/2025	21/10/2026
5	Digestion Units	TOTAL KJELDAHL NITROGEN	FOSS Analytical Co.,Ltd (China)	DT2508/2520 / 91905060	FOSS South East Asia	15257	12/2/2026	11/2/2027
6	Incubator	TOTAL COLIFORM BACTERIA	Binder	KB400 / 202200000000391	National Food Institute Ministry of Industry, Thailand	2503287-002-01	5/6/2025	4/6/2026
7	pH Meter	pH	Horiba	LAQUA-PH210 / HA0A0005	technology promotion association (thailand-japan	25CH1433	11/12/2025	10/12/2026

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

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
2	Analytical Balance	TOTAL SUSPENDED SOLIDS	Mettler Toledo	XSR205DU / C009071872	United Analyst and Engineering Consultant. Co., Ltd. (UAE)	260311-2-BL002-26	12/3/2026	11/3/2027
3	DO Meter	BIOCHEMICAL OXYGEN DEMAND	YSI	5100 / 11B 101863	Technology Promotion Association (Thailand-Japan)	26TW50	2/3/2026	1/3/2027
4	Digestion Units	TOTAL KJELDAHL NITROGEN	FOSS Analytical Co.,Ltd (China)	DT2508/2520 / 91905060	FOSS South East Asia	15257	12/2/2026	11/2/2027
5	Incubator	TOTAL COLIFORM BACTERIA	Binder	KB400 / 20220000022479	National food institute ministry of Industry	2503682 004 01	1/7/2025	30/6/2026
6	pH Meter	pH	Horiba	LAQUA-PH210 / HA0A0006	technology promotion association (thailand-japan)	25CH606	27/5/2025	25/5/2026

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

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.	260318-1-BL007-26	3/4/2026	2/4/2027
2	Analytical Balance	TOTAL SUSPENDED SOLIDS	Mettler Toledo	XSR205DU / C009071872	United Analyst and Engineering Consultant. Co., Ltd. (UAE)	260311-2-BL002-26	12/3/2026	11/3/2027
3	DO Meter	BIOCHEMICAL OXYGEN DEMAND	YSI	5100 / 11B 101863	Technology Promotion Association (Thailand-Japan)	26TW50	2/3/2026	1/3/2027
4	Digestion Units	TOTAL KJELDAHL NITROGEN	FOSS Analytical Co.,Ltd (China)	DT2508/2520 / 91905060	FOSS South East Asia	15257	12/2/2026	11/2/2027
5	Incubator	TOTAL COLIFORM BACTERIA	Binder	KB400 / 20220000022479	National food institute ministry of Industry	2503682 004 01	1/7/2025	30/6/2026
6	pH Meter	pH	Horiba	LAQUA-PH210 / HA0A0006	technology promotion association (thailand-japan	26CH475	30/4/2026	30/4/2027

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

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.	260318-1-BL007-26	3/4/2026	2/4/2027
2	Analytical Balance	TOTAL SUSPENDED SOLIDS	Mettler Toledo	XSR205DU / C009071872	United Analyst and Engineering Consultant. Co., Ltd. (UAE)	260311-2-BL002-26	12/3/2026	11/3/2027
3	BOD Incubator	BIOCHEMICAL OXYGEN DEMAND	ARCO	UC4-1320 / 1021	Technology Promotion Association (Thailand-Japan)	25TM1001	7/7/2025	6/7/2026
4	DO/BOD Meter	BIOCHEMICAL OXYGEN DEMAND	YSI	4010-2W / 20260326	Technology Promotion Association (Thailand-Japan)\v	25TW213	22/10/2025	21/10/2026
5	Incubator	TOTAL COLIFORM BACTERIA	Binder	KB400 / 20220000022479	National food institute ministry of Industry	2503682 004 01	1/7/2025	30/6/2026
6	pH Meter	pH	Horiba	LAQUA-PH210 / HAA0A0005	technology promotion association (thailand-japan	25CH1433	11/12/2025	10/12/2026

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

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.	260318-1-BL007-26	3/4/2026	2/4/2027
2	Analytical Balance	TOTAL SUSPENDED SOLIDS	Mettler Toledo	XSR205DU / C009071872	United Analyst and Engineering Consultant. Co., Ltd. (UAE)	260311-2-BL002-26	12/3/2026	11/3/2027
3	DO Meter	BIOCHEMICAL OXYGEN DEMAND	YSI	5100 / 11B 101863	Technology Promotion Association (Thailand-Japan)	26TW50	2/3/2026	1/3/2027
4	pH Meter	pH	Horiba	LAQUA-PH210 / HA0A0005	technology promotion association (thailand-japan	25CH1433	11/12/2025	10/12/2026

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

Calibration Certificate

Certificate No.: 2503682-004-01
Client name: UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.
Address: 3 Soi Udomsuk 41, Sukhumvit Road,
Bangchack, Prakhonong, Bangkok 10260

Page 1 of 3

Equipment: CHAMBER (Incubator)
Manufacturer: BINDER
Model: KB 400
Serial No.: 20220000022479
ID No.: UAE.MIC.028/2566
Order No.: 2503682
Operation No.: 2503682-004
Date of Receipt: 1 July 2025
Date of Calibration: 1 July 2025

Calibrated by Mr.Pheraphat Tuanjit
Scientist
Approved by (Miss Preetyaporn Jaengkarnkit)
Vice President, Department of Laboratory Services
Responsible for the Technical Management Team
Date of Issue: 3 July 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

Calibration Report

Certificate No.: 2503682-004-01
Equipment: CHAMBER (Incubator)
Model: KB 400 **Serial No.:** 20220000022479
Resolution: 0.1 °C **ID No.:** UAE.MIC.028/2566
Manufacturer: BINDER

Date of Calibration: 1 July 2025

Page 2 of 3

Location: Microbiology Laboratory, UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.
Environment Condition: Ambient Temperature (21 ± 1) °C
Relative Humidity (55 ± 10) %
Line Voltage (230 ± 5) Volt

Condition of this results of Calibration:

- This instrument was calibrated by insert 13 standard thermometer into its chamber and calibration according to W-TE-014 Based on TLAS G-20-1/02-08 (E) Guidelines for Calibration and Checks of Temperature Controlled Enclosures.
- The temperature scale used was based on ITS-90.
- All data show below were final values and the initial data may be obtained upon request.

Reference Instrument:

Instrument	Model	Serial No./ID No.	Certificate No.	Due Date	Through
Digital Thermometer with sensor	34972A	MY59003377	2501168-001-01	13 January 2026	NATIONAL FOOD INSTITUTE
RTD		CH101.203 / RTD#101.203			

- This certificate is traceable to International System of Units (SI Units).
- This certificate was certified only for the instrument we calibrated.
- This result of calibration was found accurate as shown on date and place of calibration only.
- Condition of Calibrated item: Good
- UUC Description:
Time of Record: 1 Hour 9 Minute At: 35.0 °C
Fresh air Damper: Open Position: 100%
Close Fan: 100%
Not Available
- Result of Calibration: ☒ Without adjustment ☐ After adjustment

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

Calibration Report

Certificate No.: 2503682-004-01
Equipment: CHAMBER (Incubator)
Model: KB 400 **Serial No.:** 20220000022479
Resolution: 0.1 °C **ID No.:** UAE.MIC.028/2566
Manufacturer: BINDER

Date of Calibration: 1 July 2025

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Calibration point: 35.0 °C

Calibration Condition	Temperature (°C)	Relative Humidity (%)	Line Voltage (Volt)
MIN	20.1	45	225.0
MAX	22.0	65	235.0

Table 1 : Reporting of Temperature

Calibration point (°C)	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Uncertainty ± (°C)
35.0	35.19	35.03	34.83	35.21	34.96	34.94	34.84	34.84	35.06	34.94	35.15	34.79	34.92	0.27

Table 2 : Reporting of Characterization Result

UUC* Setting (°C)	MIN	MAX	Average	Temperature Stability ± (°C)	Temperature Uniformity (°C)	Overall Variation (°C)
34.8	34.8	34.8	34.8	0.040	0.29	0.50

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



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



Certificate of Calibration

Cert. No.: 25TM1002
Page: 1 of 3

Equipment: BOD Incubator
Manufacturer: ARCO
Model: UC4-1320
Serial No.: -
ID No.: UAE.WAO.002/2550
Submitted by: United Analyst and Engineering Consultant Co.,Ltd.
3 Soi Udomsuk 41, Sukhumvit Road,
Bangchack, Prakhonong,
Bangkok 10260
Location: Lab Floor 2
Received Order: 07 July 2025
Calibration Date: 07 July 2025
Ambient Temperature: (26 ± 10) °C
Relative Humidity: (50 ± 30) %
AC Line Voltage: (220 ± 22) V
Calibrated by: Man Pattanasongpaiboon
Approved by: Approved Signatory
() Chakrit Waewwanjua
() Suwit Imjai
(✓) Kunchit Promprat
Issue Date: 17 July 2025

The Uncertainties are for a confidence probability of approximately 95%

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Equipment : BOD Incubator
Condition As-Received : Used Item
Reference : 2507-0146OC-3

Cert. No.: 25TM1002
Page : 2 of 3

Procedure Used :-

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

Condition of this result of calibration

1. Reference standard instrument:-

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

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

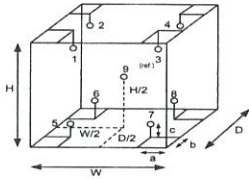
3. This measurement result is traceable to the International System of Unit maintained through :

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

Result of Calibration :- () Without Adjustment

Function of UUC* : Temperature Source

Fresh air setting : Not Available



Probe Installation Details :

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

Environment during calibration		
	Beginning	Finished
Temp. (°C)	28	28
REL Humid. (%)	57	58
AC Supply (Volt)	225	226

Position :	Ref. Std. ID No.:
1	25-20RTD-2/1
2	25-20RTD-2/2
3	25-20RTD-2/3
4	20RTD-2/4
5	20RTD-2/5
6	20RTD-2/6
7	20RTD-2/7
8	20RTD-2/8
9 (ref.)	20RTD-2/9



Equipment : BOD Incubator
Condition As-Received : Used Item
Reference : 2507-0146OC-3
Result of Calibration :- () Without Adjustment
Function of UUC* : Temperature Source
Fresh air setting : Not Available

Cert. No.: 25TM1002
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	19.8	0.48	0.46	1.2	2

Calibration Point (°C)	Measured Temperature (°C)									Uncertainty (± °C)
	1	2	3	4	5	6	7	8	9 (ref.)	
20.0	20.226	20.266	20.121	19.807	19.971	20.055	19.872	19.853	19.925	0.72

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

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.: 26CH64
Page.: 1 of 3

Equipment : pH Meter
Manufacturer : EcoSence
Model : pH100A
Serial No. : JC03335
ID No. : UAE.EFM.062/2562(ENV.pH.02/62)
Condition As-Received: Used Item
Received Date : 14 January 2026
Calibration Date : 15 January 2026
Reference : 2601-0395WSC-1
Submitted by : United Analyst and Engineering Consultant Co.,Ltd.
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 : _____
Approved Signatory

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

Issue Date : 16 January 2026



Cert.No.: 26CH64
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 CPA chem Ltd.,
ANSI-ASQ National Accreditation Board, Accredited No. AR-1835
: The measurement results are traceable to SI through Hach Lenge GmbH Ltd.,
Deutsche Akkreditierungsstelle, Accredited No.D-RM-15184-01-00

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

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

Calibration Results

Function : mV Measurement

Performing standard curve by Document Process Calibrator at pH (4.7)(7.10)

Unit Under Calibration	Nominal Value	Standard Voltage Input	Actual Reading		Uncertainty of Measurement (± mV)	Coverage factor k
			mV	pH		
pH Meter S/N.: JC03335	4.00	177.48	177	4.01	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%

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Cert.No.: 26CH64
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.: 240904SIA605377	4.008	4.01	169	0.0044	2.00
	7.000	7.00	-6	0.0095	2.00
	10.010	10.01	-181	0.0095	2.00

Function : Temperature Measurement

(*) Without adjustment

This equipment was connected with Temperature Probe;

- Model :
- Serial No. : 240904SIA605377
Dimension of probe
- Length : 110 mm.
- Diameter : 12 mm.
- Immersion Depth : 100 mm.

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

Remark : UUC* = Unit Under Calibration

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

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แบบบันทึกผลการทวนสอบเตาย่อย (Heating Block/Digestion Unit)

รายละเอียดเครื่องมือที่ทวนสอบ : หมายเลขประจำเครื่องบริษัท : UAE, WAO.012/2560
เครื่องมือ : Digestion Unit ชื่อ : Foss Tecator
หมายเลขเครื่อง : 0179444 รุ่น : 9510 840
หมายเลขในสอบเทียบ : 1449857-001-01 วันที่สอบเทียบ : 13/11/68
รายละเอียดเครื่องมือที่ใช้ทวนสอบ (Reference Standard) : สภาวะที่ทวนสอบ
เครื่องมือ : 1.339135 Teflon ชื่อ : สภาวะที่ทวนสอบ
หมายเลขประจำเครื่องบริษัท : UAE, WAO.012/2560 รุ่น : DP-51 อุณหภูมิ :
หมายเลขเครื่อง(Probe) : UAE, WAO.0091355 ความชื้นสัมพัทธ์ :
หมายเลขในสอบเทียบ : 1500444-001-01 วันที่สอบเทียบ : 13/11/68 ทวนสอบโดย : 1/1/68

ผลการทวนสอบเตาย่อย Calibration Point 380 °C

เตาย่อยหมักที่	อุณหภูมิที่อ่านได้จากเตาย่อย (°C)				อุณหภูมิที่อ่านได้จาก Reference Standard (°C)			
	Digestor Unit				UAE, WAO.012/2560 ; Thermocouple			
	ครั้งที่ 1	ครั้งที่ 2	ค่าเฉลี่ย	คิดค่าแก้ไข	ครั้งที่ 1	ครั้งที่ 2	ค่าเฉลี่ย	คิดค่าแก้ไข
Calibration Point 380 °C					UAE, WAO.012/2560 ; Thermocouple			Correction 0.0
Setting Point 380 °C								
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	382	381	381	-	381.4	381.7	381.3	381.3
B1	381	381	381	-	381.4	380.9	381.1	381.1
B2	380	381	381	-	380.6	379.8	380.2	380.2
B3	380	381	381	-	380.8	380.1	380.5	380.5
B4	381	381	381	-	380.7	381.4	381.0	381.0
C1	380	380	380	-	380.7	380.6	380.4	380.4
C2	380	381	381	-	380.7	380.3	380.5	380.5
C3	380	380	380	-	380.5	380.9	380.7	380.7
C4	381	380	380	-	380.3	381.3	381.0	381.0

หมายเหตุ : เก็บใบแนบ หน้า 2-5

1/2

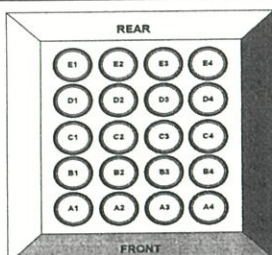
เอกสารไม่ควบคุม

\\uae-netapp\Netapp_LAB\Lab-INSTRUMENT\01-2560\บันทึกผลการทวนสอบ\ผลการทวนสอบเตาย่อย Digestor TKN 005_2555

UAE.FM.6.4.028-1009-SEP-2020

ผลการทวนสอบ (ต่อ)

เตาย่อยหมักที่	อุณหภูมิที่อ่านได้จากเตาย่อย (°C)				อุณหภูมิที่อ่านได้จาก Reference Standard (°C)			
	Digestor Unit				UAE, WAO.012/2560 ; Thermocouple			
	ครั้งที่ 1	ครั้งที่ 2	ค่าเฉลี่ย	คิดค่าแก้ไข	ครั้งที่ 1	ครั้งที่ 2	ค่าเฉลี่ย	คิดค่าแก้ไข
D1	380	381	381	-	380.9	381.3	381.6	381.6
D2	380	381	381	-	381.3	381.7	381.5	381.5
D3	381	381	381	-	381.4	381.5	381.7	381.7
D4	381	380	381	-	380.6	380.9	380.4	380.4
E1	381	381	381	-	381.4	381.9	381.1	381.1
E2	381	381	381	-	380.7	381.1	380.9	380.9
E3	380	381	381	-	380.1	380.9	380.5	380.5
E4	381	380	380	-	380.4	380.5	380.4	380.4
ค่าเฉลี่ย	-	-	-	-	-	-	-	-
ค่าส่วนเบี่ยงเบนมาตรฐาน	-	-	-	-	-	-	-	-
ค่าความผิดพลาด	พิจารณาจากความผิดพลาดแต่ละจุดที่อยู่ในช่วงเกณฑ์การยอมรับ							
เกณฑ์การยอมรับ	380 ± 5 °C							
ผลการทวนสอบ								



ผู้บันทึก :
วันที่ : 13/11/68

ผู้ตรวจสอบ :
วันที่ : 25/11/68

เอกสารไม่ควบคุม

2/2

หมายเหตุ : เก็บใบแนบ หน้า 2-5

\\uae-netapp\Netapp_LAB\Lab-INSTRUMENT\01-2560\บันทึกผลการทวนสอบ\ผลการทวนสอบเตาย่อย Digestor TKN 005_2555



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



Calibration Certificate

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

Date of Issue: 25 March 2025

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.

FCS-009 Revision: 01 Date: 20-04-65

เอกสารไม่ควบคุม

2502226-001-01 : หมายเลขใบรับรองการสอบเทียบแบบเฉพาะกิจ หมายเลข : 2502226-001-01
2502226-001-01 : Anir Armit Road, Bang Pakk Suburban, Bang Pakk District, Bangkok 11000, Thailand
Tel : 06622 24-23 06089 Fax : 06622 24-23 06089



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

Certificate No.: 250422-1-BL002-25

Code No.: BL002-25

Page: 3 of 3

Equipment: Electronic Balance
Model: AB204-S/FACT
Serial No.: 1129361010
Max. Capacity: 220 g
Calibration Date: April 23, 2025

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 (± 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

Calibration Certificate

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

Page 1 of 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.

FCS-009 Revision: 01 Date: 20-04-65

เอกสารไม่ควบคุม

Calibration Report

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

Date of Calibration: 20 March 2025

Page 2 of 4

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 certificate 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:

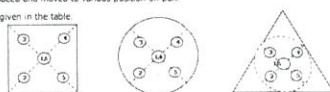
1. Repeatability of Reading:

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

FCS-012 Revision: 01 Date: 20-04-65

เอกสารไม่ควบคุม

Calibration Report

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

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	0.0000000	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

FCS-012 Revision: 01 Date: 20-04-65

เอกสารไม่ควบคุม



Certificate of Calibration

Cert. No.: 25TM578
Page : 1 of 3

Equipment : BOD Incubator
Manufacturer : ARCO
Model : UR-1320
Serial No. : -
ID No. : UAE.WAO.006/2553
Submitted by : United Analyst and Engineering Consultant Co.,Ltd.
3 Soi Udomsuk 41, Sukhumvit Road,
Bangchak, Phrakhanong,
Bangkok 10260
Location : Lab Floor 2
Received Order : 19 March 2025
Calibration Date : 19 March 2025
Ambient Temperature : (26 ± 10) °C
Relative Humidity : (50 ± 30) %
AC Line Voltage : (220 ± 22) V
Calibrated by : Man Pattanapongpalboon
Approved by :
() Chakrit Waewwanjua
() Suwit Imjai
(✓) Kunchit Promprat
Issue Date : 27 March 2025

The Uncertainties are for a confidence probability of approximately 95%

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

เอกสารไม่ควบคุม



Equipment : BOD Incubator
Condition As-Received : Used Item
Reference : 2503-0437OC-2
Procedure Used :-

Cert. No.: 25TM578
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

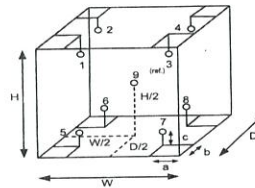
1. Reference standard instrument:-
Instrument Serial No. Cert. No. Traceable Due Date
1) Data Acquisition MY44073381 24LM73 TPA 18 May 2025

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.

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

Result of Calibration :- (*) Without Adjustment
Function of UUC* : Temperature Source
Fresh air setting : Close

Environment during calibration		
	Beginning	Finished
Temp. (°C)	28	28
REL.Humid. (%)	56	55
AC Supply (Volt)	224	224



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	1RTD-2/1
2	1RTD-2/2
3	22-01RTD-03
4	1RTD-2/4
5	1RTD-2/5
6	1RTD-2/6
7	23-01RTD-07
8	1RTD-2/8
9 (ref.)	23-01RTD-09

เอกสารไม่ควบคุม



Equipment : BOD Incubator
Condition As-Received : Used Item
Reference : 2503-0437OC-2
Result of Calibration :- (*) Without Adjustment
Function of UUC* : Temperature Source
Fresh air setting : Close

Cert. No.: 25TM578
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	0.49	0.69	1.1	2

Calibration Point (°C)	Measured Temperature (°C)									Uncertainty (± °C)
	1	2	3	4	5	6	7	8	9 (ref.)	
20.0	20.025	19.753	20.063	19.839	20.103	20.086	20.152	20.211	19.804	0.69

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



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



Calibration Certificate

Certificate No.: 2503287-002-01
Client name: UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.
Address: 3 Soi Udomsuk 41, Sukhumvit Road,
Bangchak, Phrakhanong, Bangkok 10260

Page 1 of 3

Equipment: CHAMBER (Incubator)
Manufacturer: BINDER
Model: KB 400
Serial No.: 20220000000391
ID No.: UAE.MIC.029/2565
Order No.: 2503287
Operation No.: 2503287-002
Date of Receipt: 5 June 2025
Date of Calibration: 5 June 2025

Calibrated by Mr.Pheraphat Tuanjit Scientist
Approved by
(Miss Phaeeyaporn Jaengkarnkit)
Vice President, Department of Laboratory Services
Responsible for the Technical Management Team
Date of Issue: 11 June 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



Calibration Report

Certificate No.: 2503287-002-01
Equipment: CHAMBER (Incubator)
Model: KB 400 Serial No.: 20220000000391
Resolution: 0.1 °C ID No.: UAE MIC 029/2565
Manufacturer: BINDER
Date of Calibration: 5 June 2025 Page 2 of 3
Location: Room 302 Microbiology Laboratory, UNITED ANALYST AND ENGINEERING CONSULTANT CO., LTD.
Environment Condition:
Ambient Temperature (18 ± 1) °C
Relative Humidity (53 ± 6) %
Line Voltage (230 ± 5) Volt

Condition of this results of Calibration:

- This instrument was calibrated by insert 13 standard thermometer into its chamber and calibration according to W-TE-014 Based on TLAS G-20-1/02-08 (E) Guidelines for Calibration and Checks of Temperature Controlled Enclosures.
 - The temperature scale used was based on ITS - 90.
 - All data show below were final values and the initial data may be obtained upon request.

Reference Standard Instrument:

Instrument	Model	Serial No./ID No.	Certificate No.	Due Date	Through
Digital Thermometer with sensor	34972A	MY59003377	2501168 001-01	13 January 2026	NATIONAL FOOD INSTITUTE
RTD	CH101 203 / RTD101 203				

- This certificate is traceable to International System of Units (SI Units).

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

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

- Condition of Calibrated item : Good

UUC Description :

Time of Record	1 Hour	9 Minute	At 35.0 °C
Fresh air Damper	Open	Position	
	X Close	Fan	100%
		Not Available	

- Result of Calibration : ☒ Without adjustment ☐ After adjustment

FCS-012 Revision 01 Date 20-04-65

2008 36, Anuram Road, Bang Yai Khun Subdistrict, Bang Phai District, Bangkok 10700, Thailand
Tel: +6620 2422 0000 Fax: +6620 2422 1000
เอกสารไม่ควบคุม

Certificate No.: 2503287-002-01
Equipment: CHAMBER (Incubator)
Model: KB 400 Serial No.: 20220000000391
Resolution: 0.1 °C ID No.: UAE MIC 029/2565
Manufacturer: BINDER
Date of Calibration: 5 June 2025 Page 3 of 3
Calibration point: 35.0 °C
Calibration result:
Calibration Condition Temperature (°C) Relative Humidity (%) Line Voltage (Volt)
MIN 17.4 48 225.0
MAX 18.5 59 235.0

Table 1 : Reporting of Temperature

Calibration point (°C)	Measured Temperature (°C) @ Sensor No. (Sensor No.13 is REF)													Uncertainty ± (°C)
	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	
35.0	35.08	35.11	35.01	35.13	35.17	35.09	34.98	34.89	35.15	35.05	35.06	34.89	35.06	0.27

Table 2 : Reporting of Characterization Result

UUC* Setting (°C)	UUC* Reading (°C)			Temperature Stability ± (°C)	Temperature Uniformity (°C)	Overall Variation (°C)
	MIN	MAX	Average			
35.0	35.0	35.1	35.0	0.038	0.17	0.34

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 -----

FCS-012 Revision 01 Date 20-04-65

2008 36, Anuram Road, Bang Yai Khun Subdistrict, Bang Phai District, Bangkok 10700, Thailand
Tel: +6620 2422 0000 Fax: +6620 2422 1000
เอกสารไม่ควบคุม



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



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 Lemgagrakul
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%

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

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

- 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
			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

Cert.No.: 25CH1433
Page: 2 of 3

เอกสารไม่ควบคุม



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

Calibration Results

Function : pH Measurement

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

Unit Under Calibration	Standard pH Buffer Solution	Actual pH Reading	Actual mV Reading (mV)	Uncertainty of pH Measurement ($\pm$)	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 ($^{\circ}\text{C}$)	Standard Temperature ($^{\circ}\text{C}$)	UUC* Reading ($^{\circ}\text{C}$)	Error ($^{\circ}\text{C}$)	Uncertainty of measurement ($\pm$ $^{\circ}\text{C}$)	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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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.: 25TW213
Page.: 1 of 2

Equipment : DO Meter
Manufacturer : YSI
Model : 4010-2W
Serial No. : 20260326
ID No. : UAE.WAO.060/2563
Received Date : 17 October 2025
Test Date : 22 October 2025
Reference : 2510-0505DSC-1
Submitted by : United Analyst and Engineering Consultant Co.,Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangkok, Phrakhanong, Bangkok 10260
Laboratory Condition : Temperature (25 $\pm$ 5) $^{\circ}\text{C}$
Humidity (50 $\pm$ 20) %
Test Procedure : In - house method : CP-CH9
by Comparison Technique with Azide Modification Method

Tested by : Walalak Sirthean
Approved by : [Signature]
Approved Signatory

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

Issue Date : 23 October 2025

เอกสารไม่ควบคุม

FOSS

Customer Service Report

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

Date: Feb 12, 2026
Job No.: 14540
Instrument: DT2520
Report No.: 15257
Customer: JAE
Address: Bangkok
Serial: 01505060

Start Finish
Travel To Customer (Hrs)
Labour (Hrs)
Travel From Customer (Hrs)

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

PMA Type	Smartcare	Smartcare Pro	Fosscore
			N/A

Details of Work / Test
- Visual Check - PM
- No leak - ok
- No change - ok
- Change PM 1.1 & Set - ok
- Function Check
- Quick water
- Set Temp / T, aer - ok
- Run - ok
- heater - ok
- Lift up/down - ok
- Clean x2 w/ 100% with hand brush
Instrument Ready for Use
OK
Not OK*

Part No.	Batch	Description	Qty
60079730	27.09.2024	FOSS pH kit, Digestor 25 per, 12 work	1

I confirm this report is accurate and complete
Signed FOSS: [Signature]
Name: [Name]
Tel: [Tel]
Email: [Email]
Signed Customer: [Signature]
Name: [Name]
Tel: [Tel]
Email: [Email]

*Remark:

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Please scan QR code



Cert.No.: 25TW213
Page.: 2 of 2

Condition of this result of calibration

- 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

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.: 22M102385

Titration Method (Azide Modification Method) (mg/L)	DO Meter Reading (mg/L)	Standard Deviation (mg/L)
8.22	8.31	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

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 Udomsuk 41, Sukhumvit Rd., Bang Chak, Phrakhanong, 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:** [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)

เอกสารไม่ควบคุม

Certificate No.: 250422-1-BL002-25

Code No.: BL002-25

Page: 3 of 3

Equipment: Electronic Balance
Manufacturer: Mettler Toledo
Model: AB204-S/FACT
Serial No.: 1129361010
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 (± mg)	Coverage Factor k
Unload	0.000000	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	120.000015	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 confidence probability of approximately 95%.

o—o-End-o—o

เอกสารไม่ควบคุม

Certificate No.: 250422-1-BL002-25

Code No.: BL002-25

Page: 2 of 3

Equipment: Electronic Balance
Manufacturer: Mettler Toledo
Model: AB204-S/FACT
Serial No.: 1129361010
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-00997/167	Success Gateway	21-Nov-25
Thermo-Hygro-Baro Meter	MHB 3825D	AK-46457	TPA	25P795	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 position on pan

The Balance reading obtained is given in the table.



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

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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.: 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: 26 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-CH5 by comparison with temperature standard

Calibrated by: Warakorn Lerngatrakul

Approved by: [Signature]
Approved Signatory

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

Issue Date: 28 May 2025

The Uncertainties are for a confidence probability of approximately 95%

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

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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 Lange 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 Lange GmbH	C03232	02 Dec 2026
pH 10.010	CPA chem	1066609	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 ($\pm$ mV)	Coverage factor k
			mV	pH		
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 ($\pm$)	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	-188.7	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 ($\pm$ °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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เอกสารไม่ควบคุม

เอกสารไม่ควบคุม



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



Calibration Certificate

Certificate No.: 2503682-004-01
Client name: UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.
Address: 3 Soi Udomsuk 41, Sukhumvit Road,
Bangchack, Prakhonong, Bangkok 10260

Page 1 of 3

Equipment: CHAMBER (Incubator)
Manufacturer: BINDER
Model: KB 400
Serial No.: 20220000022479
ID No.: UAE.MIC.028/2566
Order No.: 2503682
Operation No.: 2503682-004
Date of Receipt: 1 July 2025
Date of Calibration: 1 July 2025

Calibrated by Mr.Pheraphat Tuanjit
Scientist
Approved by (Miss Pretyaporn Jaengkarnkit)
Vice President, Department of Laboratory Services
Responsible for the Technical Management Team
Date of Issue: 3 July 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.

FCS-009 Revision: 01 Date: 20-04-65



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



Calibration Report

Certificate No.: 2503682-004-01
Equipment: CHAMBER (Incubator)
Model: KB 400 Serial No.: 20220000022479
Resolution: 0.1 °C ID No.: UAE.MIC.028/2566
Manufacturer: BINDER

Date of Calibration: 1 July 2025

Page 2 of 3

Location: Microbiology Laboratory, UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.
Environment Condition: Ambient Temperature (21 $\pm$ 1) °C
Relative Humidity (55 $\pm$ 10) %
Line Voltage (230 $\pm$ 5) Volt

Condition of this results of Calibration:

1. This instrument was calibrated by insert 13 standard thermometer into its chamber and calibration according to W-TE-014 Based on TLAS G-20-1/02-08 (E). Guidelines for Calibration and Checks of Temperature Controlled Enclosures.
- The temperature scale used was based on ITS - 90.
- All data show below were final values and the initial data may be obtained upon request.

2. Reference Standard Instrument :

Instrument	Model	Serial No./ID No.	Certificate No.	Due Date	Through
Digital Thermometer with sensor	34972A	MY59003377	2501168-001-01	13 January 2026	NATIONAL FOOD INSTITUTE
	RTD	CHP101 203 / RTD101 203			

3. This certificate is traceable to International System of Units (SI Units).

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

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

6. Condition of Calibrated item : Good

UUC Description :

Time of Record 1 Hour 9 Minute At 35.0 °C

Fresh air Damper - Open Position -

- X Close Fan 100%

- Not Available

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

FCS-012 Revision: 01 Date: 20-04-65

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เอกสารไม่ควบคุม





มูลนิธิส่งเสริมและพัฒนาอาหาร
ศูนย์บริการห้องปฏิบัติการอาหาร
Foundation for Industrial Development & Food Institute
Food Industrial Laboratory Service Center



Calibration Report

Certificate No.: 2503682-004-01

Equipment: CHAMBER (Incubator)

Model: KB 400

Serial No.: 2022000022479

Resolution: 0.1 °C

ID No.: UAE.MTC.028/2566

Manufacturer: BINDER

Date of Calibration: 1 July 2025

Page 3 of 3

Calibration point: 35.0 °C

Calibration result:

Calibration Condition	Temperature (°C)	Relative Humidity (%)	Line Voltage (Volt)
MIN	20.1	45	225.0
MAX	22.0	65	235.0

Table 1 : Reporting of Temperature

Calibration point (°C)	Measured Temperature (°C) @ Sensor No. (Sensor No.13 is REF)													Uncertainty ± (°C)
	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	
35.0	35.19	35.03	34.83	35.21	34.96	34.94	34.84	34.84	35.06	34.94	35.15	34.79	34.92	0.27

Table 2 : Reporting of Characterization Result

UUC* Setting (°C)	UUC* Reading (°C)			Temperature Stability ± (°C)	Temperature Uniformity (°C)	Overall Variation (°C)
	MIN	MAX	Average			
34.8	34.8	34.8	34.8	0.040	0.29	0.50

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

FOSS

Customer Service Report

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

Report No.: 15257

Customer: JAE

Address: Bangkok

Serial: 09505060

Date: Feb 12, 2026

Job No.: 14510

Instrument: DT2520

Start:
Finish:
Travel To Customer (Hrs):
Labour (Hrs): 1.5
Travel From Customer (Hrs):

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

PMA Type	Smartcare		Smartcare Pro		Fosscare	✓
	Smartcare Advance		Fosscare Pro		N/A	

Details of Work / Test	
- Visual Check	- PM
- No leak	- ok
- No damage	- ok
- Change PM h.t. & Set	- ok
- Function Check	- ok
+ Quick mode	- ok
+ Set Temp / Timer	- ok
+ Rev	- ok
- heater	- ok
- Lift up/down	- ok
- Clean x2x holes with Ground head	- ok
Instrument Ready for Use	OK
	Not OK*

Part No.	Batch	Description	Q'ty
60079730	27.09.2024	Fold PM unit, digester 20 per, 12 units	1

I confirm this report is accurate and complete	
Signed FOSS	Signed Customer
Name:	Name: ปิณฑ
Tel:	Tel:
Email:	Email:

*Remark:

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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 FAX: 0-2719-9484

Certificate of Testing

Cert.No.: 26TW50

Page.: 1 of 2

Equipment : DO Meter
Manufacturer : YSI
Model : 5100
Serial No. : 11B 101863
ID No. : UAE.WAO.004/2554
Received Date : 27 February 2026
Test Date : 02 March 2025
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 Sirthean
Approved by :
Approved Signatory
() Chakrit Waewwanjua
() Ponpan Palpin
(✓) Sathip Meangmai
Issue Date : 03 March 2026



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

Condition of this result of calibration

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

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

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

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

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

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

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เอกสารไม่ควบคุม

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 Udomsuk 41, Sukhumvit Rd., Bang Chak, Phrakhanong, 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: Thanachart 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

เอกสารไม่ควบคุม

Certificate No.: 260311-2-BL002-26

Code No.: BL002-26

Page: 3 of 4

Equipment: Electronic Balance **Manufacturer:** Mettler Toledo
Model: XSR205DU **Readability:** 0.1 to 81 g; 0.01 mg > 80 to 200 g; 0.1 mg
Serial No.: C009071872 **ID No.:** UAE WAO 012/2563
Max. Capacity: 81 g / 220 g
Calibration Date: March 12, 2026

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	0.0000	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

Certificate No.: 260311-2-BL002-26

Code No.: BL002-26

Page: 4 of 4

Equipment: Electronic Balance **Manufacturer:** Mettler Toledo
Model: XSR205DU **Readability:** 0.1 to 81 g; 0.01 mg > 80 to 200 g; 0.1 mg
Serial No.: C009071872 **ID No.:** UAE WAO 012/2563
Max. Capacity: 81 g / 220 g
Calibration Date: March 12, 2026

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	20.00028	20.0000	0.0000
	40.00054	40.0002	-0.0001
	60.00070	60.0002	-0.0001
	80.00098	80.0002	-0.0001
	100.00042	100.0003	-0.0002

Remark:

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

เอกสารไม่ควบคุม

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เอกสารไม่ควบคุม

Calibration Certificate

Certificate No.: 2503682-004-01
Client name: UNITED ANALYST AND ENGINEERING CONSULTANT CO., LTD.
Address: 3 Soi Udomsuk 41, Sukhumvit Road,
Bangchack, Prakhonong, Bangkok 10260

Page 1 of 3

Equipment: CHAMBER (Incubator)
Manufacturer: BINDER
Model: KB 400
Serial No.: 20220000022479
ID No.: UAE.MIC.028/2566
Order No.: 2503682
Operation No.: 2503682-004
Date of Receipt: 1 July 2025
Date of Calibration: 1 July 2025

Calibrated by Mr. Pheraphat Tuanjit
Approved by (Miss Preeyaporn Jaengkarnkit)
Vice President, Department of Laboratory Services
Responsible for the Technical Management Team
Date of Issue: 3 July 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

Calibration Report

Certificate No.: 2503682-004-01
Equipment: CHAMBER (Incubator)
Model: KB 400 **Serial No.:** 20220000022479
Resolution: 0.1 °C **ID No.:** UAE.MIC.028/2566
Manufacturer: BINDER
Date of Calibration: 1 July 2025

Page 2 of 3

Location: Microbiology Laboratory, UNITED ANALYST AND ENGINEERING CONSULTANT CO., LTD.
Environment Condition: Ambient Temperature (21 ± 1) °C
Relative Humidity (55 ± 10) %
Line Voltage (230 ± 5) Volt

Condition of this results of Calibration:

- This instrument was calibrated by insert 13 standard thermometer into its chamber and calibration according to W-TE 014 Based on TLAS G-20-1/02-08 (E) Guidelines for Calibration and Checks of Temperature Controlled Enclosures.
- The temperature scale used was based on ITS - 90.
- All data show below were final values and the initial data may be obtained upon request.
- Reference Standard Instrument:

Instrument	Model	Serial No./ID No.	Certificate No.	Due Date	Through
Digital Thermometer with sensor	34972A	MY59003377	2501168-001-01	13 January 2026	NATIONAL FOOD INSTITUTE
RTD		CHP101-203 / RTD#101-203			

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

UUC Description:
Time of Record 1 Hour 9 Minute At 35.0 °C

Fresh air Damper
Open Position
Close Fan 100%
Not Available

- Result of Calibration: ☒ Without adjustment ☐ After adjustment

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

Calibration Report

Certificate No.: 2503682-004-01
Equipment: CHAMBER (Incubator)
Model: KB 400 **Serial No.:** 20220000022479
Resolution: 0.1 °C **ID No.:** UAE.MIC.028/2566
Manufacturer: BINDER
Date of Calibration: 1 July 2025
Calibration point: 35.0 °C

Page 3 of 3

Calibration Condition	Temperature (°C)	Relative Humidity (%)	Line Voltage (Voh)
MIN	20.1	45	225.0
MAX	22.0	65	235.0

Table 1 : Reporting of Temperature

Calibration point (°C)	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Uncertainty ± (°C)
35.0	35.19	35.03	34.83	35.21	34.96	34.94	34.84	34.84	35.06	34.94	35.15	34.79	34.92	0.27

Table 2 : Reporting of Characterization Result

UUC* Setting (°C)	UUC* Reading (°C)	Temperature Stability ± (°C)	Temperature Uniformity (°C)	Overall Variation (°C)
34.8	MIN MAX Average	0.040	0.29	0.50

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 %.

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

FOSS Customer Service Report

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

Report No.: 15257

Customer: JAE

Address: Bangkok

Serial: 01905060

Date: Feb 12, 2026
Job No.: 14510
Instrument: DT2520

Travel To Customer (Hrs)	Labour (Hrs)	Travel From Customer (Hrs)
13.30	1.5	
15.00		

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

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 PMA kit & set	-ok	
	- Function Check		
	+ Quick mode		
	+ Set Temp / Time	-ok	
	+ Run	-ok	
	- heating	-ok	
	- Lift up/down	-ok	
	- Clean x20 holes with Glycol hand		
Instrument Ready for Use	OK	☒	Not OK*

Part No.	Batch	Description	Qty
60079730	27.09.2025	FOSS PMA kit, Digestor 20 per, 12 unit	1

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

*Remark:

Please scan QR code



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
(✓) Salthip Meangmai
Issue Date : 03 March 2026



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

Condition of this result of calibration

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

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

2. Standard Material :-

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

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

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

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

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เอกสารไม่ควบคุม



United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel. 0 2763 2828 Fax 0 2763 2600 www.uaeconsultant.com E-mail: uae@uaeconsultant.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 Udomsuk 41, Sukhumvit Rd., Bang Chak, Phrakhanong, 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)



United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel. 0 2763 2828 Fax 0 2763 2600 www.uaeconsultant.com E-mail: uae@uaeconsultant.com



Certificate No.: 260311-2-BL002-26
Code No.: BL002-26
Page: 2 of 4

Equipment: Electronic Balance Manufacturer: Mettler Toledo
Model: XSR205DU Readability: 0 to 81 kg (0.01 mg to 80 to 200 kg) 0.1 mg
Serial No.: C009071872 ID No.: UAE WAO 012/2563

Max. Capacity: 81 kg / 220 lb

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 JAE 01 CAL 009 in house Method based on JN43 Jan 14, 2022

2. Reference Standards

Reference Standard:	Model	Serial No.	Calibrated By	Certificate No.	Traceability	Due Date
Standard Weight Class 1 (20M)	CS10641605	METTLER TO-LOG GmbH	AMARC	25 CG1605	Mettler Toledo, FRG	3 Mar 27
Standard Weight Class 1 (20M)	8749109122	AMARC	AMARC	25 CG1605	Mettler Toledo	27 Jan 27

Instrument	Model	Serial No.	Calibrated By	Certificate No.	Traceability	Due Date
Thermo-Hydro Basic Meter	MHB 3825D	AX 6457	SUCCESS	SC 14 00992/68	Surin Golewicz	26 Nov 26
Thermo-Hydro Basic Meter	MHB 3825D	AX 6457	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, TIS accreditation number 0152

Calibration Results

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

เอกสารไม่ควบคุม

Certificate No.: 260311-2-BL002-26
Code No.: BL002-26
Page: 3 of 4

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

Manufacturer: Mettler Toledo
Readability: 0.10 mg (0.01 mg > 80 to 200 g) 0.1 mg
ID No.: UAE-WAS-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: 0.0001 g)

Nominal Value (g)	Reference Value (g)	Indication (g)	Correction (g)	Uncertainty ($\pm$ mg)	Coverage Factor k
Unload	0.0000000	0.0000	0.0000	0.015	2.25
0.001	0.0010020	0.0010	0.0000	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	20.000026	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

เอกสารไม่ควบคุม

Certificate No.: 260311-2-BL002-26
Code No.: BL002-26
Page: 4 of 4

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

Manufacturer: Mettler Toledo
Readability: 0.10 mg (0.01 mg > 80 to 200 g) 0.1 mg
ID No.: UAE-WAS-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: 0.0001 g)

Nominal Value (g)	Reference Value (g)	Indication (g)	Correction (g)	Uncertainty ($\pm$ 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

Remark:

The report uncertainty of measurement was based on standard uncertainty multiplied by coverage factor.

Uncertainty of approximately 95%

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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 Chatpahol

Approved by: Suwit Chotnok

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 Conspire

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-008 (In-house Method based on NIST 19-1022)

2. Reference Standards:

Reference Standard:	Model	Serial No.	Calibrated By	Certificate No.	Traceability	Due Date
Standard Weight Class (2-10M)	1 mg to 1 kg	C310641605	MITTLER TO, 100 GmbH	C310641605	NIST-19-1022	3 May 27

Instrument	Model	Serial No.	Calibrated By	Certificate No.	Traceability	Due Date
Thermo-Hygro Baro Meter	MHB 38250	AN-66457	SUKC155	SG-M-00992/68	NIST-19-1022	26 Nov-26
Thermo-Hygro Baro Meter	MHB 38250	AN-66457	TNA	250404	TNA	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 C310641605, SAS accreditation number: SCS 9032

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

เอกสารไม่ควบคุม

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

Equipment: Electronic Balance
Model: AB204 S/FAC1
Serial No.: 1129361010
Max. Capacity: 220 g
Calibration Date: April 3, 2026

Manufacturer: Mettler Toledo
Readability: 0.0001 g
ID No.: UAE.EFM.006/2563

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 (± mg)	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

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

 **การไม่ควบคุม**



Certificate of Calibration

Cert.No.: 26CH475
Page.: 1 of 3

Equipment: pH Meter
Manufacturer: Horiba
Model: LAQUA-PH210
Serial No.: HA0A0006
ID No.: UAE.EFM.006/2563(EFM.pH.06/63)
Condition As-Received: Used Item
Received Date: 29 April 2026
Calibration Date: 30 April 2026
Reference: 2604-0724WSC-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 Lernagatrakul

Approved by:  Approved Signatory

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

Issue Date: 06 May 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.



Cert.No.: 26CH475
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 Jul 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 S/N.: HA0A0006	4.00	177.48	177.4	0.058	2.00
	7.00	0.00	0.0	0.058	2.00
	7.00	0.00	0.0	0.058	2.00
	10.00	-177.48	-177.4	0.058	2.00

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.: -	4.008	4.00	179.9	0.0085	2.05
	7.000	6.99	5.3	0.0095	2.00
	7.000	7.00	1.3	0.0092	2.00
	10.010	10.01	-168.7	0.0085	2.00

Function: Temperature Measurement

(*) Without adjustment

This equipment was connected with Temperature Probe;

- Model: -
- Serial No.: -
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	30.002	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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Calibration Certificate

Certificate No.: 2503682-004-01
Client name: UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.
Address: 3 Soi Udomsuk 41, Sukhumvit Road,
Bangchack, Prakhonong, Bangkok 10260

Page 1 of 3

Equipment: CHAMBER (Incubator)
Manufacturer: BINDER
Model: KB 400
Serial No.: 20220000022479
ID No.: UAE.MIC.028/2566
Order No.: 2503682
Operation No.: 2503682-004
Date of Receipt: 1 July 2025
Date of Calibration: 1 July 2025

Calibrated by Mr.Pheraphat Tuanjit Scientist
Approved by (Miss Pretyaporn Jaengkarnkit)
Vice President, Department of Laboratory Services
Responsible for the Technical Management Team
Date of Issue: 3 July 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-012 Revision: 01 Date: 20-04-65

Calibration Report

Certificate No.: 2503682-004-01
Equipment: CHAMBER (Incubator)
Model: KB 400 Serial No.: 20220000022479
Resolution: 0.1 °C ID No.: UAE.MIC.028/2566
Manufacturer: BINDER
Date of Calibration: 1 July 2025

Page 2 of 3

Location: Microbiology Laboratory, UNITED ANALYST AND ENGINEERING CONSULTANT CO.,LTD.
Environment Condition: Ambient Temperature (21 ± 1) °C
Relative Humidity (55 ± 10) %
Line Voltage (230 ± 5) Volt

Condition of this results of Calibration:

- This instrument was calibrated by insert 13 standard thermometer into its chamber and calibration according to W-TE-014 Based on TLAS G-20-1/02-06 (E). Guidelines for Calibration and Checks of Temperature Controlled Enclosures.
 - The temperature scale used was based on ITS - 90.
 - All data show below were final values and the initial data may be obtained upon request.
- Reference Standard Instrument:

Instrument	Model	Serial No./ID No.	Certificate No.	Due Date	Through
Digital Thermometer with sensor	34972A	MY59003377	2501168-001-01	13 January 2026	NATIONAL FOOD INSTITUTE
	RTD	CHP101-203 / RTD#101-203			

- This certificate is traceable to International System of Units (SI Units).
- This certificate was certified only for the instrument we calibrated.
- This result of calibration was found accurate as shown on date and place of calibration only.
- Condition of Calibrated item: Good
UUC Description:
Time of Record: 1 Hour 9 Minute At 35.0 °C
Fresh air Damper: Open Position
Close Fan 100%
Not Available
Result of Calibration: X Without adjustment After adjustment

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

Calibration Report

Certificate No.: 2503682-004-01
Equipment: CHAMBER (Incubator)
Model: KB 400 Serial No.: 20220000022479
Resolution: 0.1 °C ID No.: UAE.MIC.028/2566
Manufacturer: BINDER
Date of Calibration: 1 July 2025

Page 3 of 3

Calibration point: 35.0 °C

Calibration Condition	Temperature (°C)	Relative Humidity (%)	Line Voltage (Volt)
MIN	20.1	45	225.0
MAX	22.0	65	235.0

Table1 : Reporting of Temperature

Calibration point (°C)	Measured Temperature (°C) @ Sensor No. (Sensor No.13 is REF)													Uncertainty ± (°C)
35.0	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	
	35.19	35.03	34.83	35.21	34.96	34.94	34.84	34.84	35.06	34.94	35.15	34.79	34.92	0.27

Table 2 : Reporting of Characterization Result

UUC* Setting (°C)	UUC* Reading (°C)			Temperature Stability ± (°C)	Temperature Uniformity (°C)	Overall Variation (°C)
	MIN	MAX	Average			
34.8	34.8	34.8	34.8	0.040	0.29	0.50

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



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.: 25TM1001
Page : 1 of 3

Equipment : BOD Incubator
Manufacturer : ARCO
Model : UC4-1320
Serial No. : -
ID No. : UAE.WAO.018/2559
Submitted by : United Analyst and Engineering Consultant Co.,Ltd.
3 Soi Udomsuk 41, Sukhumvit Road,
Bangchak, Prakhonong,
Bangkok 10260
Location : Lab Floor 2
Received Order : 07 July 2025
Calibration Date : 07 July 2025
Ambient Temperature : (28 ± 10) °C
Relative Humidity : (50 ± 30) %
AC Line Voltage : (220 ± 22) V
Calibrated by : Man Pattanapongpaiboon
Approved by :
() Chakrit Waewwanjua
() Suwit Imjai
(✓) Kunchit Promprat
Issue Date : 17 July 2025

The Uncertainties are for a confidence probability of approximately 95%

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

Cert. No.: 25TM1001
Page : 2 of 3

Procedure Used :-

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

Condition of this result of calibration

1. Reference standard instrument-

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

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

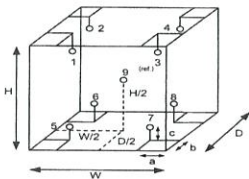
3. This measurement result is traceable to the International System of Unit maintained through :

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

Result of Calibration :- (°) Without Adjustment

Function of UUC* : Temperature Source

Fresh air setting : Not Available



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

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

Position :	Ref. Std. ID No.:
1	25-20RTD-2/1
2	25-20RTD-2/2
3	25-20RTD-2/3
4	20RTD-2/4
5	20RTD-2/5
6	20RTD-2/6
7	20RTD-2/7
8	20RTD-2/8
9 (ref.)	20RTD-2/9

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

Cert. No.: 25TM1001
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	0.18	0.60	0.83	2

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

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

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

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

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

UUC* : Unit Under Calibration

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

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

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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.: 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, 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 : Warakorn Lemaqatrakul

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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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 (4,7,10)

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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Cert.No.: 25TW213
Page.: 2 of 2

Condition of this result of calibration

1. Reference Standard Instruments :

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

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

2. Standard Material :-

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

Result : Dissolved Oxygen Meter Adjustment With Air 100 %
Dissolved Oxygen Probe No.: 22M102385

Titration Method (Azide Modification Method) (mg/L)	DO Meter Reading (mg/L)	Standard Deviation (mg/L)
8.22	8.31	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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TEL. 0-2717-3000 FAX. 0-2719-9484

Certificate of Testing

Cert.No.: 25TW213
Page.: 1 of 2

Equipment : DO Meter
Manufacturer : YSI
Model : 4010-2W
Serial No. : 20260326
ID No. : UAE.WAO.060/2563
Received Date : 17 October 2025
Test Date : 22 October 2025
Reference : 2510-0505DSC-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 :
() Chakrit Waewwanjua
() Ponpan Palpim
(✓) Saithip Meangmai
Issue Date : 23 October 2025

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United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel: 0-2763 2826 Fax: 0-2763 2800 www.uaecconsultant.com E-mail: uaec@uaecconsultant.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 Udomsuk 41, Sukhumvit Rd., Bang Chak, Phrakhanong, 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 The Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the United Analyst and Engineering Consultant Co., Ltd. (UAE)

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Certificate No. 260311-2-BL002-26
Code No.: BL002-26
Page: 2 of 4

Equipment: Electronic Balance
Model: XS205DU
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 to 80 to 220 (kg) / 0.1 mg
ID No.: UAE-WAG 012/2563

Condition of Equipment:

Condition of This Result of Calibration:

1. Calibration Method: This instrument was calibrated by method UNE-EN CAL 106 - In-house Method based on UNE-EN CAL 106: 2012

Reference Standards:

Reference Standard:	Model	Serial No.	Calibrated By	Certificate No.	Traceability	Due Date
Standard Weight Class 12 (DML)	1 mg to 1 kg	C510641605	METTLER TOLEDO GmbH	25-009359	Mettler Toledo, GmbH	3 Mar 27
Standard Weight Class 12 (DML)	1 mg to 1 kg	874910922	AMARC		Mettler Toledo	21 Jan 27

Instrument	Model	Serial No.	Calibrated By	Certificate No.	Traceability	Due Date
Thermo Hygro Basic Meter	15-H3 38250	Ax 46457	SUCCESS	16-14-00992745	Succes, Germany	26 Nov 26
Thermo Hygro Basic Meter	15-H3 38250	Ax 46457	TAF	230445	TAF	18 Dec 26

- This certification is traceable to SI unit.
- This certification was verified only for the instrument, not 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
- Through the reference standard laboratory of AMARC 25-009359, TAF 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

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Certificate No. 260311-2-BL002-26
Code No.: BL002-26
Page: 3 of 4

Equipment: Electronic Balance
Model: XS205DU
Serial No.: C009071872
Max. Capacity: 81 g / 220 g
Calibration Date: March 12, 2026

Manufacturer: Mettler Toledo
Readability: 0 to 81 (g) / 0.01 mg to 80 to 220 (kg) / 0.1 mg
ID No.: UAE-WAG 012/2563

Calibration Result:

(Continued)

Calibration Range: 0 to 80 (kg)

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	0.0000	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

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Certificate No. 260311-2-BL002-26
Code No.: BL002-26
Page: 4 of 4

Equipment: Electronic Balance
Model: XS205DU
Serial No.: C009071872
Max. Capacity: 81 g / 220 g
Calibration Date: March 12, 2026

Manufacturer: Mettler Toledo
Readability: 0 to 81 (g) / 0.01 mg to 80 to 220 (kg) / 0.1 mg
ID No.: UAE-WAG 012/2563

Calibration Result:

(Continued)

Calibration Range: 0 to 80 (kg)

Calibration Adjustment: Internal Calibration

3. Error of indication from nominal or conventional mass value: (Range: 0 to 80 (kg) / 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

Remark:

The report uncertainty of measurement was based on standard uncertainty, multiplied by coverage factor k (coverage factor of confidence of approximately 95%)

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

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, Phrakhanong, 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 Chatpahol

Approved by: Suwit Chotnok

Signature: [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 Calibration

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

1. Calibration Method: This instrument was calibrated by method UAF-CP-04-036 in-house Method used in UAE Lab (4, 7, 10).
2. Reference Standards: Standard Weight Class E2 (OIML)

Instrument	Model	Serial No.	Calibrated By	Certificate No.	Traceability	Due Date
Thermo Hygro Baro Meter	MHB 3825D	AN 66457	SUKKISS	SC-H-00992/168	Thermo Calibrator	26 Nov 26
Thermo Hygro Baro Meter	MHB 3825D	AN 66457	THA	CS-14428	Thermo Calibrator	28 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 CS10641605, SAS accreditation number SC5 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

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 (± mg)	Coverage Factor k
Unload	0.000000	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, probability of confidence of approximately 95%.

เอกสารไม่ควบคุม

o-o-End-o-o-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.: 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: 25 December 2025
Reference: 1112-0243WSC-2
Submitted by: United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangkok, Phrahanong, 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 Lemgagrakul
Approved by: [Signature]
Approved Signatory

(✓) Chakrit Waewwanjua
() Ponpan Paipim
() Saithip Meangmai
Issue Date: 12 December 2025

Cert.No.: 25CH1433
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 Lange 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 Lange 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

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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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 ($\pm$)	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 ($^{\circ}\text{C}$)	Standard Temperature ($^{\circ}\text{C}$)	UUC* Reading ($^{\circ}\text{C}$)	Error ($^{\circ}\text{C}$)	Uncertainty of measurement ($\pm$ $^{\circ}\text{C}$)	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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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.: 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, Bangkok, Phrakhanong, Bangkok 10260
Laboratory Condition : Temperature (25 ± 5) $^{\circ}\text{C}$
Humidity (50 ± 20) %
In - house method : CP-CH9
by Comparison Technique with Azide Modification Method
Test Procedure :
Tested by : Walalak Sirirthean
Approved by : [Signature]
() Chakrit Waewwanjua
() Ponpan Paipim
(✓) Sathip Meangmai

Issue Date : 03 March 2026

เอกสารไม่ควบคุม



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

Condition of this result of calibration

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

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

2. Standard Material :-

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

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

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

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

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UAE United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangkok, Phrakhanong, Bangkok 10260
Tel: 02-2763-2826 Fax: 02-2763-2806 www.uaeconsultant.com E-mail: uae@uaeconsultant.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 Udomsuk 41, Sukhumvit Rd., Bangkok, Phrakhanong, 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 $^{\circ}\text{C}$ to 24.1 $^{\circ}\text{C}$
Humidity 50.0 % to 59.0 %
Pressure 755.5 mmHg to 755.6 mmHg

Calibrated by: Thanachat Chatpahol
Approved by: Suwit Chotnok

Signature: [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, without the prior written approval of the United Analyst and Engineering Consultant Co., Ltd. (UAE)

เอกสารไม่ควบคุม

Equipment: Electronic Balance
Model: XS205DU
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) 0.1 mg
ID No.: UAE WAG 012/2563

Condition of This Result of Calibration:

1. Calibration Method: This instrument was calibrated by method UAF 01 CAL 506. In-house Method based on UAF 01 CAL 506, 2702

2. Reference Standards:
Reference Standard: Model Serial No. Calibrated By Certificate No. Traceability Due Date
Standard Weight Class 1 (DMA) 1 mg to 1 kg CS-0641655 METTLER TOLEDO GmbH 25 099359 Mettler Toledo 21 Jan 27
Standard Weight Class 1 (DMA) 1 mg to 1 kg 8749109120 AMARC Mettler Toledo 21 Jan 27

Instrument Model Serial No. Calibrated By Certificate No. Traceability Due Date
Thermo-Hydro Sars Meter MHB 38253 AX 44457 SUCCESS 26 Nov 26
Thermo-Hydro Sars Meter MHB 38253 AX 44457 TPA 25 Nov 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 CS-0641655, SAS accreditation number SCS 0032
- Through the reference standard laboratory of AMARC 25-099359, TPA accreditation number 0152

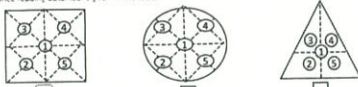
Calibration Result:

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

เอกสารไม่ควบคุม

Equipment: Electronic Balance
Model: XS205DU
Serial No.: C009071872
Max. Capacity: 81 g / 220 g
Calibration Date: March 12, 2026

Manufacturer: Mettler Toledo
Readability: 0 to 81 (g) 0.01 mg > 80 to 200 (g) 0.1 mg
ID No.: UAE WAG 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

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

Equipment: Electronic Balance
Model: XS205DU
Serial No.: C009071872
Max. Capacity: 81 g / 220 g
Calibration Date: March 12, 2026

Manufacturer: Mettler Toledo
Readability: 0 to 81 (g) 0.01 mg > 80 to 200 (g) 0.1 mg
ID No.: UAE WAG 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: 0.0001 g)

Nominal Value (g)	Reference Value (g)	Indication (g)	Correction (g)	Uncertainty (± mg)	Coverage Factor k
Unload	0.0000000	0.0000	0.0000	0.015	2.25
0.001	0.0010020	0.0010	0.0000	0.015	2.23
0.005	0.0050025	0.0050	-0.0002	0.015	2.23
0.01	0.0100005	0.0100	-0.0002	0.015	2.23
0.05	0.0500003	0.0500	-0.0001	0.015	2.21
0.10	0.1000083	0.1000	-0.0001	0.015	2.20
0.50	0.5000121	0.5000	-0.0002	0.016	2.15
1	1.0000119	1.0000	0.0000	0.016	2.12
2	2.0000125	2.0000	-0.0001	0.017	2.09
5	5.0000146	5.0000	-0.0002	0.020	2.05
10	10.0000330	10.0001	-0.0002	0.023	2.00
20	20.000028	20.0001	-0.0005	0.033	2.00
30	30.000061	30.0001	-0.0004	0.051	2.00
40	40.000054	40.0001	-0.0004	0.063	2.00
50	50.0000317	50.0001	-0.0005	0.064	2.00
60	60.000070	60.0001	-0.0004	0.081	2.00
80	80.000098	80.0001	-0.0001	0.11	2.00

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, Phra 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: Thanachart Chatpahol

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



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



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

Condition of Equipment:

Condition of This Result of Calibration:

1. Calibration Method: This instrument was calibrated by method UAF-07 CAL-005. In-house Method based on UAFS Lab. (4-1752)

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	CS10641605	METTLER TOLEDO GmbH	CS10641605	Mettler (Europe)	3 Mar 27

Instrument	Model	Serial No.	Calibrated By	Certificate No.	Traceability	Due Date
Thermo Hygro Baro Meter	MHB 38250	AX 46457	SUKKISS	SO-H-00992148	Thermo Scientific	26 Nov 26
Thermo Hygro Baro Meter	MHB 38250	AX 46457	TRA	CS14454	TRA	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 CS10641605, SAS accreditation number SC5 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	2	3	4	5	Maximum Difference (g)
(g)	(g)	(g)	(g)	(g)	
100.0025	100.0022	100.0022	100.0029	100.0030	0.0005



เอกสารไม่ควบคุม



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



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 ($\pm$ mg)	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%

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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 JC04984	Technology Promotion Association (Thailand-Japan)	25CH1280	10 Nov 25	9 Nov 26	-



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

ilac-MRA



Certificate of Calibration

Cert.No.: 25CH1280
Page.: 1 of 3

Equipment : pH Meter
Manufacturer : EcoSense
Model : pH100A
Serial No. : JC04984
ID No. : UAE EFM.044/2567(EFM pH 07/67)
Condition As-Received: Used Item
Received Date : 06 November 2025
Calibration Date : 10 November 2025
Reference : 2511-0152WSC-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 : Walalak Sirithean
Approved by : [Signature]
() Chakrit Waewwanjua
() Ponpan Paipim
(✓) Salthip Meangmai
Issue Date : 11 November 2025

The Uncertainties are for a confidence probability of approximately 95%

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

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Cert.No.: 25CH1280
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 4.007	CPA chem	1135353	16 Aug 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
			mV	pH		
pH Meter S/N : JC04984	4.00	177.48	177	4.01	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

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Cert.No.: 25CH1280
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	4.02	172	0.0071	2.00
	6.999	7.00	-1	0.0095	2.00
	6.999	7.00	-1	0.0085	2.00
	10.010	10.01	-172	0.0092	2.00

Function : Temperature Measurement

(*) Without adjustment

This equipment was connected with Temperature Probe:

- Model :
- Serial No. : 240821SIA605377
Dimension of probe
- Length : 12 mm.
- Diameter : 110 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	14.9	-0.102	0.13	2.00
30.0	30.001	29.8	-0.201	0.13	2.00
45.0	45.002	44.8	-0.202	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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