

เอกสารแนบ 6

เอกสารสอบเทียบเครื่องมือที่ใช้ในการวิเคราะห์



JIRANATEE ASSOCIATES CO.,LTD.

Accredited calibration laboratory
ISO/IEC 17025:2017
NSC-TISI-TIS 17025
CALIBRATION 0367



NSC – TISI – TIS 17025
CALIBRATION 0367

Temperature measurement laboratory
Calibration services department.

CERTIFICATE OF CALIBRATION

Certificate No. : CDT-033-69

Page 1 of 2 Pages

MEASUREMENT ITEM : Digital thermometer with sensor
MANUFACTURER : Digicon
MODEL/TYPE : DP-72
SERIAL NUMBER : 425066647
ID NUMBER : -
CONDITION AS-RECEIVED : Used item
CUSTOMER : OKLA Testing and Consulting Service Co., Ltd.
67/35-36 Floor 3, Soi Petchakasem 7/1, Petchakasem Rd,
Watthapra, Bangkokyai, Bangkok 10600

RECEIVED DATE : 19 Jan 2026
MEASUREMENT DATE : 28-29 Jan 2026
ISSUE DATE : 30 Jan 2026

Calibration procedure:

The temperature calibration was done by In-House calibration method as WI-CL-001 according to comparison method with standard digital temperature indicator and standard temperature probe. The temperature scale use was based on ITS-90.

Traceability:

The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT) Certificate number: TT-1013-25, Certificate number: ER-0061-25.

Reference Used During Calibration:

1. Standard Temperature Probe
Model: STS-100 A500, Serial No.: 667682-09,
Due date: 9 Apr 2026
2. Digital Temperature Indicator
Model: DTI-1000-A MK II, Serial No.: 671407-00591 Due date: 22 Apr 2026

Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor $k=2$, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM 'Evaluation of measurement data - Guide to the expression of uncertainty in measurement'

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature : 23.0 ± 3.0 °C
Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

☐
☒
☐



Approved signatory:

Calibration Department Manager



JIRANATEE ASSOCIATES CO.,LTD.

Continuation of Certificate of Calibration Number CDT-033-69

Page 2 of 2 Pages

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 4 °C to 180 °C

Function:

Table 1: This equipment was connected with Thermocouple Type K Model: TP-01 S/N: 1280000607.
Dimension: Diameter 1.50 mm. Length 1000 mm.

<u>Immersion Depth</u> (mm)	<u>Standard Reading</u> (°C)	<u>UUC Reading</u> (°C)	<u>Error</u> (°C)	<u>Uncertainty</u> (°C)
70	4.085	4.0	-0.1	0.26
70	20.058	19.9	-0.1	0.26
70	79.924	79.9	0.0	0.38
70	103.983	104.6	0.6	0.54
70	149.951	150.7	0.7	0.54
70	179.931	180.3	0.3	0.74

UUC*: Unit Under Calibration

End of Certificate of Calibration



Certificate No. : C26020021

Page : 1 of 2

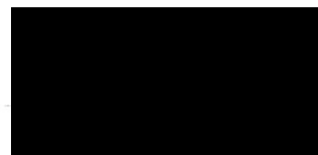
CERTIFICATE OF CALIBRATION

Equipment	: pH/ORP and EC/TDS/Salinity/Resistivity		
Meter Model	: HI5521-02	Serial No.	: 04160019101
Probe Model	: HI7662-W	Serial No.	: 0615024N
Resolution	: 0.1 °C	Temperature Range	: (-20 to 120)°C
Manufacturer	: Hanna Instruments	Made in	: Romania
Condition As-Received	: Used Product	Reference	: RE260170
Ambient Temperature	: (25 ± 2)°C	Relative Humidity	: (50 ± 15)%RH
Customer name	Okla Testing & Consulting Service Co., Ltd. 67/35-36, 3RD Floor, Phetkasem 7/1 Road, Wat Tha Pra, Bangkok Yai, Bangkok 10600 Thailand		
Received date	: 30 January 2026		
Calibrate date	: 4 February 2026		
Issue date	: 6 February 2026		
Calibrated Location	: Hanna Instruments (Thailand) Ltd.		
Calibration Method	: This calibrator was conducted by using in-house: calibration procedure CP-05 by using reference standard instruments.		

Calibrated by



Approved by :



Authorized Signatory

Condition of this calibration result :

1. Reference standard instrument : This certificate is traceable to the international system of units (SI Units)

Instrument	Model	Serial No.	Certificate No.	Traceable
Digital Thermo-Hygrometer	HT-771SD	AI.07155	26H106	Technology Promotion Association (Thailand-Japan)
Temperature Block Calibrator	CTC-155A	723705-01938	T26-0057	Unithai Group Co.,Ltd.

Calibration Result :

Function : Temperature Measurement

This equipment was connected with Temperature Sensor.

Nominal Value (°C)	Standard Setting (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (± °C)
20	20.00	20.0	0.00	0.18
25	25.00	25.0	0.00	0.18
30	30.00	30.0	0.00	0.18

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

**** End of certificate ****



Certificate of Calibration

Certificate No. : MT26-1559

Page : 1 of 2

Customer : OKLA Testing & Consulting Service Co.,Ltd.

Address : 67/35-36 3 Rd Floor, Soi Petchkasem 7/1, Thapra, Bangkok Yai, Bangkok 10600

Description : Refrigerator

Manufacturer : Sanden

Model : SPB0500

Serial No. : SPB0500-231007454

Identification No. : N/A

Calibration Place : Laboratory

Order No. : 0336/26

Received date : Jan 29, 2026

Calibration date : Jan 29, 2026

Environment Condition :

Temperature : (25+/-10) °C

Humidity : (50+/-30) %RH

Calibration Method : Calibration were conducted using In-house calibration procedure *CP-MT-006* According to comparison with LXI Data Acquisition Switch Unit with sensor. The calibration methods based on Euramet Calibration Guide No.20 - guidelines on the Calibration of Temperature and/or Humidity Controlled Enclosures.

Reference Standard Instruments :

<u>Instrument</u>	<u>Model</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>
LXI Data Acquisition Switch Unit with Sensor	34972A	MY57003222	MT25-5590	Jul 23, 2026

The effect that the result relate only to the items calibrated. It was found accurate as shown on date and place of calibration only.

Traceability : This measurement are traceable to the International System of Unit (SI), through National Institute of Metrology Thailand (NIMT)

The reported expanded uncertainty of measurement was based on standard uncertainty multiplied by coverage factor $k = 2$, providing a level of confidence of not less than 95%



Calibrated by : 

Approved by : 

Issue date : Jan 30, 2026

This calibration certificate shall not be reproduced other than in full except with the prior written approval of Inctech Metrological Center Co.,Ltd

Certificate No. : MT26-1559

Page : 2 of 2

Function : Temperature measurement

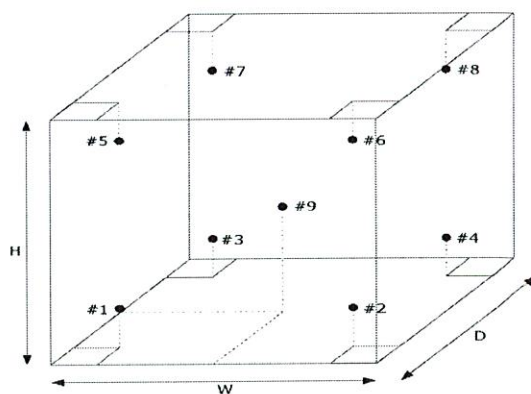
Result : Without adjustment

Calibration point : 4 °C

Resolution : 1 °C

Calibration point (°C)	Temperature of UUC* at each position (°C)									Uncertainty of measurement (+/- °C)
	Ch.1	Ch.2	Ch.3	Ch.4	Ch.5	Ch.6	Ch.7	Ch.8	Ch.9	
4	4.756	5.042	4.964	4.852	4.949	4.889	4.954	4.858	4.816	0.66

Setting temperature (°C)	Indicating Temperature (°C)	Measured stability (+/- °C)	Measured uniformity (°C)	Overall variation (°C)
4.0	4.8 to 4.9	0.21	0.36	0.54


Front view

- #1 Lower Left Front
- #2 Lower Right Front
- #3 Lower Left Rear
- #4 Lower Right Rear
- #5 Upper Left Front
- #6 Upper Right Front
- #7 Upper Left Rear
- #8 Upper Right Rear
- #9 Geometric Center

UUC* = Unit under calibration

Uniformity = Maximum and Minimum difference of measured temperature at any probes and the measured temperature at the reference and same time.

Overall Variation = Difference of temperature value between the maximum and minimum any time.

Stability = One half of the maximum difference of measured temperatures at any one probe.

Certificate No. : C26020019

Page : 1 of 2

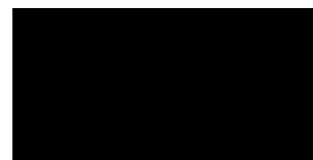
CERTIFICATE OF CALIBRATION

Equipment	: pH/ORP and EC/TDS/Salinity/Resistivity Meter		
Meter Model	: HI5521-02	Serial No.	: 04160019101
Probe Model	: HI1131B	Serial No.	: 11271CON
Resolution (pH)	: 0.01 pH	Resolution (mV)	: 0.1 mV
Manufacturer	: Hanna Instruments	Made in	: Romania
Condition As-Received	: Used Product	Reference	: RE260169
Ambient Temperature	: (25 ± 2)°C	Relative Humidity	: (50 ± 15)%RH
Customer name	Okla Testing & Consulting Service Co., Ltd. 67/35-36, 3RD Floor, Phetkasem 7/1 Road, Wat Tha Pra, Bangkok Yai, Bangkok 10600 Thailand		
Received date	: 30 January 2026		
Calibrate date	: 4 February 2026		
Issue date	: 6 February 2026		
Calibrated Location	: Hanna Instruments (Thailand) Ltd.		
Calibration Method	: This calibrator was conducted by using in-house: calibration procedure CP-01, CP-02 by using standard voltage calibrator and certified reference material (CRM).		

Calibrated by



Approved by :



Authorized Signatory

Condition of this calibration result :

1. Reference standard instrument : This certificate is traceable to the international system of units (SI Units)

Instrument	Model	Serial No.	Certificate No.	Traceable
Thermometer with sensor	HI98509	39643D	25T1021	Technology Promotion Association (Thailand-Japan)
Digital Thermo-Hygrometer	HT-771SD	AI.07155	26H106	
Documenting Process Calibrator	Fluke 753	43160061	25E2838	

2. Reference Standard Materials: This certificate is traceable to the international system of units (SI Units)

Buffer Solution	Manufacture	Certified Value	Lot Number	Exp. date
pH 4.0	CPA chem Ltd.	4.007 ± 0.006@25°C	1086537	26 April 2026
pH 7.0	CPA chem Ltd.	6.988 ± 0.007@25°C	1138616	28 August 2026
pH 10.0	CPA chem Ltd.	10.011 ± 0.008@25°C	1086538	26 April 2026

Calibration Result :

1. Electrical Potential (without electrode) - DC Voltage measurement

Performing standard curve by Simulator at: (-177.5, 0.0, 177.5) mV

Unit Under Calibration	Nominal Value	Standard Voltage Input	Average Reading		Uncertainty (± mV)
	(pH)	(mV)	(mV)	(pH)	
Meter S/N: 04160019101	4.01	177.50	177.5	4.01	0.097
	7.01	0.00	0.0	7.01	0.058
	10.01	-177.50	-177.5	10.01	0.097

2. Performance of electrode system (with electrode)

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

Unit Under Calibration	Standard pH Buffer Solution	Average Reading		Error (pH)	Uncertainty (± pH)
		(pH)	(mV)		
Electrode S/N: 11271CON	4.007	4.00	165.5	-0.007	0.011
	6.988	6.98	-2.8	-0.008	0.010
	10.011	10.01	-166.1	-0.001	0.014

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

** End of certificate **

Certificate No. : C26020020

Page : 1 of 2

CERTIFICATE OF CALIBRATION

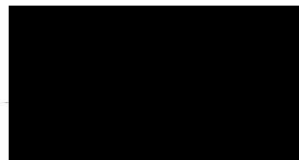
Equipment	: pH/ORP and EC/TDS/Salinity/Resistivity Meter		
Meter Model	: HI5521-02	Serial No.	: 04160019101
Probe Model	: HI76312	Serial No.	: 0614117M
Resolution (EC)	: 0.01 μ S/cm	Resolution (EC)	: 0.001 mS/cm
Manufacturer	: Hanna Instruments	Made in	: Romania
Condition As-Received	: Used Product	Reference	: RE260169
Ambient Temperature	: (25 $\pm$ 2)°C	Relative Humidity	: (50 $\pm$ 15)%RH
Customer name	Okla Testing & Consulting Service Co., Ltd. 67/35-36, 3RD Floor, Phetkasem 7/1 Road, Wat Tha Pra, Bangkok Yai, Bangkok 10600 Thailand		
Received date	: 30 January 2026		
Calibrate date	: 16 February 2026		
Issue date	: 17 February 2026		
Calibrated Location	: Hanna Instruments (Thailand) Ltd.		
Calibration Method	: This calibrator was conducted by using in-house: calibration procedure CP-03 by using certified reference material (CRM).		

Calibrated by

:



Approved by :



Authorized Signatory

Condition of this calibration result :

1. Reference standard instrument : This certificate is traceable to the international system of units (SI Units)

Instrument	Model	Serial No.	Certificate No.	Traceable
Thermometer with sensor	HI98509	39643D	25T1021	Technology Promotion Association (Thailand-Japan)
Digital Thermo-Hygrometer	HT-771SD	AI.07155	26H106	

2. Reference Standard Materials: This certificate is traceable to the international system of units (SI Units)

Buffer Solution	Manufacture	Certified Value	Lot Number	Exp. date
84 $\mu\text{S/cm}$	CPA chem Ltd.	$84.003 \pm 0.534@25^{\circ}\text{C}$	1086539	26 April 2026
1.413 mS/cm	CPA chem Ltd.	$1.413 \pm 0.0082@25^{\circ}\text{C}$	1086540	26 April 2026

Calibration Result :

Inspection the accuracy of the EC Meter by using the following certified reference material values.

Calibration result after adjustment at : 84 $\mu\text{S/cm}$, 1.413 mS/cm

Standard EC Buffer Solution	Unit Under Calibration Reading		Error	Uncertainty ($\pm$)
	Before Adjustment	After Adjustment		
84.003 $\mu\text{S/cm}$	68.15 $\mu\text{S/cm}$	85.68 $\mu\text{S/cm}$	1.677 $\mu\text{S/cm}$	0.71 $\mu\text{S/cm}$
1.413 mS/cm	1.241 mS/cm	1.426 mS/cm	0.013 mS/cm	0.011 mS/cm

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

**** End of certificate ****



Certificate of Calibration

Certificate No. : MT26-1556

Page : 1 of 2

Customer : OKLA Testing & Consulting Service Co.,Ltd.

Address : 67/35-36 3 Rd Floor, Soi Petchkasem 7/1, Thapra, Bangkok Yai, Bangkok 10600

Description : Incubator

Manufacturer : ศรีอมร

Model : SM61M

Serial No. : 18021147

Identification No. : N/A

Calibration Place : Laboratory

Order No. : 0336/26

Received date : Jan 29, 2026

Calibration date : Jan 29, 2026

Environment Condition :

Temperature : (25+/-10) °C

Humidity : (50+/-30) %RH

Calibration Method : Calibration were conducted using In-house calibration procedure *CP-MT-006* According to comparison with LXI Data Acquisition Switch Unit with sensor. The calibration methods based on Euramet Calibration Guide No.20 - guidelines on the Calibration of Temperature and/or Humidity Controlled Enclosures.

Reference Standard Instruments :

<u>Instrument</u>	<u>Model</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>
LXI Data Acquisition Switch Unit with Sensor	34972A	MY57003222	MT25-5590	Jul 23, 2026

The effect that the result relate only to the items calibrated. It was found accurate as shown on date and place of calibration only.

Traceability : This measurement are traceable to the International System of Unit (SI), through National Institute of Metrology Thailand (NIMT)

The reported expanded uncertainty of measurement was based on standard uncertainty multiplied by coverage factor $k = 2$, providing a level of confidence of not less than 95%



Calibrated by : [Redacted]

Approved by : [Redacted]

Issue date : Jan 30, 2026

This calibration certificate shall not be reproduced other than in full except with the prior written approval of Inctech Metrological Center Co.,Ltd



Certificate No. : MT26-1556

Page : 2 of 2

Function : Temperature measurement

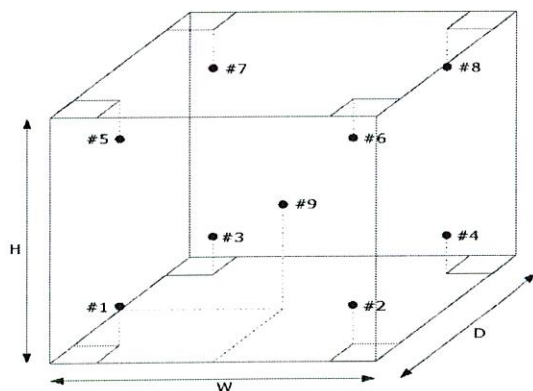
Result : Without adjustment

Calibration point : 20 °C

Resolution : 0.1 °C

Calibration point (°C)	Temperature of UUC* at each position (°C)									Uncertainty of measurement (+/- °C)
	Ch.1	Ch.2	Ch.3	Ch.4	Ch.5	Ch.6	Ch.7	Ch.8	Ch.9	
20	20.295	20.568	20.013	19.730	19.837	19.932	19.780	19.498	19.791	0.45

Setting temperature (°C)	Indicating Temperature (°C)	Measured stability (+/- °C)	Measured uniformity (°C)	Overall variation (°C)
20.0	20.0	0.32	0.90	1.7



- #1 Lower Left Front
- #2 Lower Right Front
- #3 Lower Left Rear
- #4 Lower Right Rear
- #5 Upper Left Front
- #6 Upper Right Front
- #7 Upper Left Rear
- #8 Upper Right Rear
- #9 Geometric Center

Front view

UUC* = Unit under calibration

Uniformity = Maximum and Minimum difference of measured temperature at any probes and the measured temperature at the reference and same time.

Overall Variation = Difference of temperature value between the maximum and minimum any time.

Stability = One half of the maximum difference of measured temperatures at any one probe.



Certificate of Calibration

Certificate No. : MT26-1558

Page : 1 of 2

Customer : OKLA Testing & Consulting Service Co.,Ltd.

Address : 67/35-36 3 Rd Floor, Soi Petchkasem 7/1, Thapra, Bangkok Yai, Bangkok 10600

Description : Hot Air Oven

Manufacturer : Labtech

Model : LDO-060E

Serial No. : DLCCCL0513C

Identification No. : N/A

Calibration Place : Laboratory

Order No. : 0336/26

Received date : Jan 29, 2026

Calibration date : Jan 29, 2026

Environment Condition :

Temperature : (25+/-10) °C

Humidity : (50+/-30) %RH

Calibration Method : Calibration were conducted using In-house calibration procedure *CP-MT-006* According to comparison with LXI Data Acquisition Switch Unit with sensor. The calibration methods based on Euramet Calibration Guide No.20 - guidelines on the Calibration of Temperature and/or Humidity Controlled Enclosures.

Reference Standard Instruments :

<u>Instrument</u>	<u>Model</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>
LXI Data Acquisition Switch Unit with Sensor	34972A	MY57003222	MT25-5590	Jul 23, 2026

The effect that the result relate only to the items calibrated. It was found accurate as shown on date and place of calibration only.

Traceability : This measurement are traceable to the International System of Unit (SI), through National Institute of Metrology Thailand (NIMT)

The reported expanded uncertainty of measurement was based on standard uncertainty multiplied by coverage factor $k = 2$, providing a level of confidence of not less than 95%



Calibrated by : _____

Approved by : _____

Issue date : Jan 30, 2026

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Certificate No. : MT26-1558

Page : 2 of 2

Function : Temperature measurement

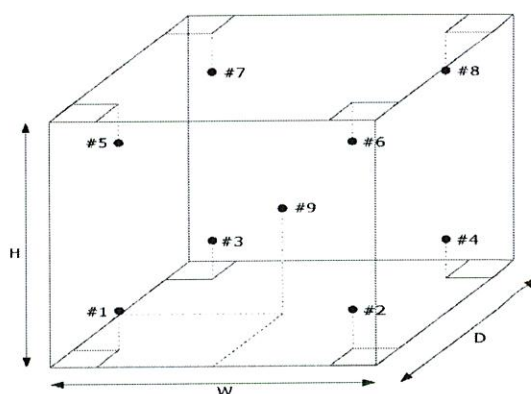
Result : Without adjustment

Calibration point : 140, 160 °C

Resolution : 1 °C

Calibration point (°C)	Temperature of UUC* at each position (°C)									Uncertainty of measurement (+/- °C)
	Ch.1	Ch.2	Ch.3	Ch.4	Ch.5	Ch.6	Ch.7	Ch.8	Ch.9	
140	141.785	141.603	141.640	141.457	141.689	142.147	141.509	141.574	141.364	3.2
160	161.388	161.667	161.517	161.509	161.431	161.453	161.694	161.753	161.512	2.7

Setting temperature (°C)	Indicating Temperature (°C)	Measured stability (+/- °C)	Measured uniformity (°C)	Overall variation (°C)
140	140	2.7	2.2	5.4
160	160	2.2	2.2	4.9



- #1 Lower Left Front
- #2 Lower Right Front
- #3 Lower Left Rear
- #4 Lower Right Rear
- #5 Upper Left Front
- #6 Upper Right Front
- #7 Upper Left Rear
- #8 Upper Right Rear
- #9 Geometric Center

Front view

UUC* = Unit under calibration

Uniformity = Maximum and Minimum difference of measured temperature at any probes and the measured temperature at the reference and same time.

Overall Variation = Difference of temperature value between the maximum and minimum any time.

Stability = One half of the maximum difference of measured temperatures at any one probe.



Certificate of Calibration

Certificate No. : MT26-1557

Page : 1 of 2

Customer : OKLA Testing & Consulting Service Co.,Ltd.

Address : 67/35-36 3 Rd Floor, Soi Petchkasem 7/1, Thapra, Bangkok Yai, Bangkok 10600

Description : Hot Air Oven

Manufacturer : KWF

Model : SOV70B

Serial No. : KWF2021021902

Identification No. : N/A

Calibration Place : Laboratory

Order No. : 0336/26

Received date : Jan 29, 2026

Calibration date : Jan 29, 2026

Environment Condition :

Temperature : (25+/-10) °C

Humidity : (50+/-30) %RH

Calibration Method : Calibration were conducted using In-house calibration procedure *CP-MT-006* According to comparison with LXI Data Acquisition Switch Unit with sensor. The calibration methods based on Euramet Calibration Guide No.20 - guidelines on the Calibration of Temperature and/or Humidity Controlled Enclosures.

Reference Standard Instruments :

<u>Instrument</u>	<u>Model</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>
LXI Data Acquisition Switch Unit with Sensor	34972A	MY57003222	MT25-5590	Jul 23, 2026

The effect that the result relate only to the items calibrated. It was found accurate as shown on date and place of calibration only.

Traceability : This measurement are traceable to the International System of Unit (SI), through National Institute of Metrology Thailand (NIMT)

The reported expanded uncertainty of measurement was based on standard uncertainty multiplied by coverage factor $k = 2$, providing a level of confidence of not less than 95%



Calibrated by : [Redacted]

Approved by : [Redacted]

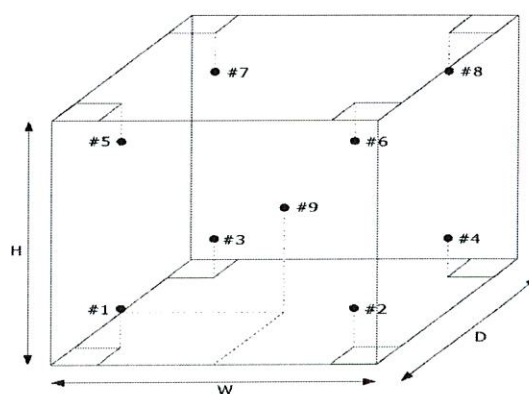
Issue date : Jan 30, 2026

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Certificate No. : MT26-1557
Page : 2 of 2
Function : Temperature measurement
Result : Without adjustment
Calibration point : 80, 104, 180 °C
Resolution : 0.1 °C

Calibration point (°C)	Temperature of UUC* at each position (°C)									Uncertainty of measurement (+/- °C)
	Ch.1	Ch.2	Ch.3	Ch.4	Ch.5	Ch.6	Ch.7	Ch.8	Ch.9	
80	80.277	80.877	79.915	80.312	80.617	80.154	79.991	80.587	80.074	0.51
104	104.268	104.528	104.228	104.120	104.485	104.519	104.304	104.664	104.154	0.71
180	180.400	180.880	180.314	180.356	180.450	180.243	180.266	180.540	180.400	1.3

Setting temperature (°C)	Indicating Temperature (°C)	Measured stability (+/- °C)	Measured uniformity (°C)	Overall variation (°C)
80.0	79.9 to 80.1	0.35	1.1	1.5
104.0	104.0 to 104.2	0.56	0.81	1.5
180.0	180.0 to 180.2	1.1	1.2	2.1



- #1 Lower Left Front
- #2 Lower Right Front
- #3 Lower Left Rear
- #4 Lower Right Rear
- #5 Upper Left Front
- #6 Upper Right Front
- #7 Upper Left Rear
- #8 Upper Right Rear
- #9 Geometric Center

Front view

UUC* = Unit under calibration

Uniformity = Maximum and Minimum difference of measured temperature at any probes and the measured temperature at the reference and same time.

Overall Variation = Difference of temperature value between the maximum and minimum any time.

Stability = One half of the maximum difference of measured temperatures at any one probe.



Certificate of Calibration

Certificate No. : MM26-1194

Page : 1 of 3

Customer : Okla Testing & Consulting Service Co.,Ltd.

Address : 67/35-36 3 rd Floor, Soi Petchkasem 7/1, Thapra, Bangkok Yai, Bangkok 10600

Description : Electronic Balance

Manufacturer : Sartorius

Model : BSA224S-CW

Serial No. : 35790699

Identification No. : N/A

Calibration Place : Balance Room

Order No. : 0336/26

Received date : Jan 29, 2026

Calibration date : Jan 29, 2026

Environment Condition :

Temperature : (25+/-10) °C

Humidity : (50+/-30) %RH

Atm. Pressure : (1010+/-10) hPa

Calibration Method : Calibration were conducted using In-house calibration procedure CP-MM-001
According to comparison with Standard Weight Set E1.

The calibration methods based on UKAS - LAB 14 : 2022

Reference Standard Instruments :

<u>Instrument</u>	<u>Model</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>
Standard Weight Set	NC-001-0.2K-E1-ASS	0022	PL-512	Oct 10, 2026

The effect that the result relate only to the items calibrated. If was found accurate as shown on date and place of calibration only.

Traceability : This measurement are traceable to the International System of Unit (SI), through
National Institute of Metrology Thailand (NIMT)

The reported expanded uncertainty of measurement was based on standard uncertainty multiplied by coverage factor k = 2, providing a level of confidence of not less than 95%



Calibrated by : _____

Approved by : _____

Issue date : Feb 02, 2026

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Certificate No. : MM26-1194

Page : 2 of 3

Calibration Result : Without Adjustment

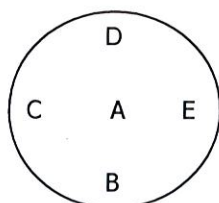
Function : Repeatability

Maximum Capacity : 200 g

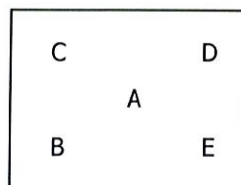
Resolution : 0.0001 g

Nominal Weight Value	Instrument Deviation of Reading
(g)	(g)
200	0.0000

Calibration Result : Without Adjustment

Function : Effect of Off Center Loading


Front
(X)



Front
()

A Mass of 100 Was Placed to various Position on the pan.

The Weight Machine Reading Obtained is Given in The Tabel

Load	Measuring Positions					Maximum Different
	A	B	C	D	E	
(g)	(g)	(g)	(g)	(g)	(g)	(g)
100	99.9996	99.9995	99.9996	99.9996	99.9997	99.9996
						0.0002

Calibration Result : Without Adjustment

Function : Effect of Tare

Nominal Tare Weight	Standard Weight	UUC* Reading	UUC* Deviation
(g)	(g)	(g)	(g)
	Tare	0.0000	0.0000
	At 20 %	20	19.9998
	At 40 %	40	39.9998
	At 60 %	60	59.9997
	At 80 %	80	79.9997
	At 100 %	100	99.9996
100			
			0.0002
			0.0002
			0.0003
			0.0003
			0.0004

UUC* = Unit Under Calibration



Certificate No. : MM26-1194

Page : 3 of 3

Calibration Result : Before Adjustment

Function : Departure of indication from nominal value

Standard Weight Value (g)	UUC* Reading (g)	UUC* Correction (g)	Uncertainty of Measurement (+/- g)
0.00000	0.0000	0.00000	0.000058
0.01000	0.0099	0.00010	0.000058
0.05000	0.0499	0.00007	0.000058
0.10000	0.1001	-0.00014	0.000058
0.20000	0.2001	-0.00014	0.000059
0.50000	0.5000	-0.00003	0.000059
1.00000	1.0000	-0.00003	0.000059
10.00001	10.0000	-0.00003	0.000064
49.99999	49.9998	0.00022	0.000090
99.99998	99.9996	0.00041	0.00014
149.99997	149.9991	0.00083	0.00027
199.99996	199.9991	0.00083	0.00027

UUC* = Unit Under Calibration

Calibration Result : After Adjustment

Standard Weight Value (g)	UUC* Reading (g)	UUC* Correction (g)	Uncertainty of Measurement (+/- g)
0.00000	0.0000	0.00000	0.000058
0.01000	0.0100	-0.00003	0.000058
0.05000	0.0500	0.00000	0.000058
0.10000	0.1000	0.00000	0.000058
0.20000	0.2000	-0.00003	0.000059
0.50000	0.5000	0.00000	0.000059
1.00000	1.0000	-0.00003	0.000059
10.00001	10.0000	-0.00001	0.000064
49.99999	50.0000	-0.00002	0.000090
99.99998	100.0000	0.00002	0.00014
149.99997	150.0000	0.00000	0.00027
199.99996	200.0000	0.00004	0.00027

UUC* = Unit Under Calibration



Inctech Metrological Center Co.Ltd.

39/1 Soi 82, Sukhapiban 5 Rd., O ngoen,

Saimai, Bangkok 10220, Thailand

Tel. (662) 909-8820 (Auto 10 lines) www.imcinstrument.com



Calibration Cert. # 3884.01
ISO/IEC 17025

Certificate of Calibration

Certificate No. : MM26-1195

Page : 1 of 3

Customer : Okla Testing & Consulting Service Co.,Ltd.

Address : 67/35-36 3 rd Floor, Soi Petchkasem 7/1, Thapra, Bangkok Yai, Bangkok 10600

Description : Electronic Balance

Manufacturer : Mettler Toledo

Model : PL6001-S

Serial No. : 1230510473

Identification No. : N/A

Calibration Place : Balance Room

Order No. : 0336/26

Received date : Jan 29, 2026

Calibration date : Jan 29, 2026

Environment Condition :

Temperature : (25+/-10) °C

Humidity : (50+/-30) %RH

Atm. Pressure : (1010+/-10) hPa

Calibration Method : Calibration were conducted using In-house calibration procedure CP-MM-001

According to comparison with Standard Weight Set.

The calibration methods based on UKAS - LAB 14 : 2022

Reference Standard Instruments :

<u>Instrument</u>	<u>Model</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>
Standard Weight Set	50 mg - 2 kg	N/A	MM25-1949	May 22, 2026

The effect that the result relate only to the items calibrated. If was found accurate as shown on date and place of calibration only.

Traceability : This measurement are traceable to the International System of Unit (SI), through National Institute of Metrology Thailand (NIMT)

The reported expanded uncertainty of measurement was based on standard uncertainty multiplied by coverage factor $k = 2$, providing a level of confidence of not less than 95%



Calibrated by : _____

Approved by : _____

Issue date : Feb 02, 2026

This calibration certificate shall not be reproduced other than in full except with the prior written approval of Inctech Metrological Center Co.,Ltd


Certificate No. : MM26-1195

Page : 2 of 3

Calibration Result : Without Adjustment

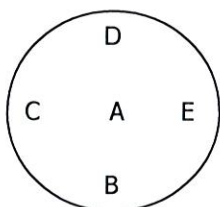
Function : Repeatability

Maximum Capacity : 6000 g

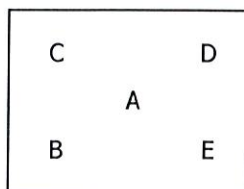
Resolution : 0.1 g

Nominal Weight Value	Instrument Deviation of Reading
(g)	(g)
6000	0.0

Calibration Result : Without Adjustment

Function : Effect of Off Center Loading


Front
(X)



Front
()

A Mass of 2000 Was Placed to various Position on the pan.

The Weight Machine Reading Obtained is Given in The Tabel

Load	Measuring Positions					Maximum Different
	A	B	C	D	E	
(g)	(g)	(g)	(g)	(g)	(g)	(g)
2000	2000.0	2000.0	2000.0	2000.0	2000.0	2000.0
						0.0

Calibration Result : Without Adjustment

Function : Effect of Tare

Nominal Tare Weight	Standard Weight	UUC* Reading	UUC* Deviation
(g)	(g)	(g)	(g)
	Tare	0.0	0.0
3000	At 20 % 600	600.0	0.0
	At 40 % 1200	1200.0	0.0
	At 60 % 1800	1800.0	0.0
	At 80 % 2400	2400.0	0.0
	At 100 % 3000	3000.0	0.0

UUC* = Unit Under Calibration



Certificate No. : MM26-1195

Page : 3 of 3

Calibration Resu : Without Adjustment

Function : Departure of indication from nominal value

Standard Weight Value (g)	UUC* Reading (g)	UUC* Correction (g)	Uncertainty of Measurement (+/- g)
0	0.0	0.0	0.058
600	600.0	0.0	0.058
1200	1200.0	0.0	0.058
1800	1800.0	0.0	0.058
2400	2400.0	0.0	0.058
3000	3000.0	0.0	0.058
3600	3600.0	0.0	0.058
4200	4200.0	0.0	0.058
4800	4800.0	0.0	0.058
5400	5400.0	0.0	0.058
6000	6000.0	0.0	0.058

UUC* = Unit Under Calibration



Inctech Metrological Center Co.Ltd.

39/1 Soi 82, Sukhapiban 5 Rd., O ngoen,

Saimai, Bangkok 10220, Thailand

Tel. (662) 909-8820 (Auto 10 lines) www.imcinstrument.com



Calibration Cert. # 3884.01
ISO/IEC 17025

Certificate of Calibration

Certificate No. : MM26-1196

Page : 1 of 3

Customer : Okla Testing & Consulting Service Co.,Ltd.
Address : 67/35-36 3 rd Floor, Soi Petchkasem 7/1, Thapra, Bangkok Yai, Bangkok 10600

Description : Electronic Balance
Manufacturer : Mettler Toledo
Model : PL3001-S
Serial No. : 1230040028
Identification No. : N/A
Calibration Place : Balance Room

Order No. : 0336/26
Received date : Jan 29, 2026
Calibration date : Jan 29, 2026
Environment Condition :
Temperature : (25+/-10) °C
Humidity : (50+/-30) %RH
Atm. Pressure : (1010+/-10) hPa

Calibration Method : Calibration were conducted using In-house calibration procedure CP-MM-001
According to comparison with Standard Weight Set.
The calibration methods based on UKAS - LAB 14 : 2022

Reference Standard Instruments :

<u>Instrument</u>	<u>Model</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>
Standard Weight Set	50 mg - 2 kg	N/A	MM25-1949	May 22, 2026

The effect that the result relate only to the items calibrated. If was found accurate as shown on date and place of calibration only.

Traceability : This measurement are traceable to the International System of Unit (SI), through
National Institute of Metrology Thailand (NIMT)

The reported expanded uncertainty of measurement was based on standard uncertainty multiplied by coverage factor $k = 2$, providing a level of confidence of not less than 95%



Calibrated by : _____

Approved by : _____

Issue date : Feb 02, 2026

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Certificate No. : MM26-1196

Page : 2 of 3

Calibration Result : Without Adjustment

Function : Repeatability

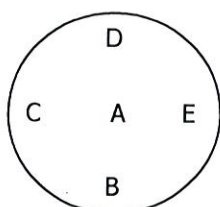
Maximum Capacity : 3100 g

Resolution : 0.1 g

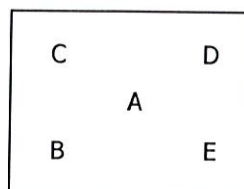
Nominal Weight Value	Instrument Deviation of Reading
(g)	(g)
3000	0.0

Calibration Result : Without Adjustment

Function : Effect of Off Center Loading



Front
(X)



Front
()

A Mass of 1000 Was Placed to various Position on the pan.

The Weight Machine Reading Obtained is Given in The Tabel

Load	Measuring Positions					Maximum Different
	A	B	C	D	E	
(g)	(g)	(g)	(g)	(g)	(g)	(g)
1000	999.9	999.9	999.9	999.9	999.9	0.0

Calibration Result : Without Adjustment

Function : Effect of Tare

Nominal Tare Weight	Standard Weight	UUC* Reading	UUC* Deviation
(g)	(g)	(g)	(g)
	Tare	0.0	0.0
1500	At 20 % 300	299.9	0.1
	At 40 % 600	599.9	0.1
	At 60 % 900	899.9	0.1
	At 80 % 1200	1199.9	0.1
	At 100 % 1500	1499.9	0.1

UUC* = Unit Under Calibration



Certificate No. : MM26-1196

Page : 3 of 3

Calibration Resu : Without Adjustment

Function : Departure of indication from nominal value

Standard Weight Value (g)	UUC* Reading (g)	UUC* Correction (g)	Uncertainty of Measurement (+/- g)
0	0.0	0.0	0.058
300	299.9	0.1	0.058
600	599.9	0.1	0.058
900	899.9	0.1	0.058
1200	1199.9	0.1	0.058
1500	1499.9	0.1	0.058
1800	1799.9	0.1	0.058
2100	2099.8	0.2	0.058
2400	2399.8	0.2	0.058
2700	2699.8	0.2	0.058
3000	2999.7	0.3	0.058

UUC* = Unit Under Calibration

Certificate No. : C26020022

Page : 1 of 2

CERTIFICATE OF CALIBRATION

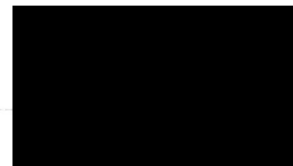
Equipment	: Dissolved Oxygen and BOD Meter		
Meter Model	: HI5421-02	Serial No.	: 04240005101
Probe Model	: HI76483	Serial No.	: KC1N66J5P
Manufacturer	: Hanna Instruments	Made in	: Romania
Condition As-Received	: Used Product	Resolution	: 0.01 ppm (mg/L)
Ambient Temperature	: (25 ± 2)°C	Relative Humidity	: (50 ± 15)% RH
Reference	: RE260168		
Customer name	: Okla Testing & Consulting Service Co., Ltd.		
	67/35-36, 3RD Floor, Phetkasem 7/1 Road, Wat Tha Pra,		
	Bangkok Yai, Bangkok 10600 Thailand		
Received date	: 30 January 2026		
Calibrate date	: 6 February 2026		
Issue date	: 9 February 2026		
Calibrated Location	: Hanna Instruments (Thailand) Ltd.		
Calibration Procedure	: This calibrator was conducted by using in-house: calibration procedure		
	CP-11 by using certified reference material (CRM).		

Calibrated by

:



Approved by :



Authorized Signatory

Condition of this result of calibration :

1. Reference standard instrument : This certificate is traceable to the international system of units (SI Units)

Instrument	Model	Serial No.	Certificate No.	Traceable
Thermometer with sensor	HI98509	39643D	25T1021	Technology Promotion Association (Thailand-Japan)
Digital Thermo-Hygrometer	HT-771SD	AI.07155	26H106	

2. Reference standard materials: This certificate is traceable to the international system of units (SI Units)

Buffer Solution	Manufacture	Certified Value	Lot Number	Exp. date
Zero Oxygen Solution	Hanna Inc.	0.0 ± 0.1@25°C	S0121/25	August 2030

Calibration Result:

Dissolved Oxygen Measurement

Unit Under Calibration	Standard Buffer Solution	UUC Reading	Error	Uncertainty of Measurement (±)
DO Electrode	0.0 mg/L	0.00 mg/L	0.00 mg/L	N/A mg/L
S/N: KC1N66J5P	8.3 mg/L	8.30 mg/L	0.00 mg/L	0.33 mg/L

Remark : at 8.3 mg/L = Air Saturated.

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

**** End of certificate ****

Certificate of Calibration

Certificate No. : 69-300065-1

Page : 1 of 2

Submitted by : Okla Testing & Consulting Service Co.,Ltd.
67/35-36, 3rd Floor, Petchkasem 7/1, Petchkasem Rd.,
Wattapra, Bangkok Yai, Bangkok 10600 Thailand

Equipment : Burette
Manufacturer : ISOLAB Class : A
Capacity : 25 ml Graduation : 0.05 ml
ID No. : EM-MBR10002/17

Environment : Ambient Temperature : (20 ± 3) °C
Relative Humidity : (50 ± 10) %
Air Pressure : 1010.5 mbar.

Date of Received : 22 January 2026

Date of Calibration : 29 January 2026

Date of Issue : 29 January 2026

Calibrated by : Areerat Sombun

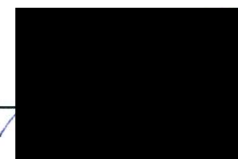
Calibration Method : In-house method CAL-M3001 based on ASTM E 542-22

Reference Standard Instruments : This certification is traceable to the International System of Units

Electronic Balance

ID No.	Cert. No.	Due Date	Traceability
241005	68-200260-4	02 Jun 2026	National Institute of Metrology (Thailand) (NIMT)

Approved by :



Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-300065-1

Page : 2 of 2

Result of Calibration : This result of true Volume is referred to standard temperature at 20 °C

UUC Condition As-Received : Good

Delivery Time : 49.07 sec.

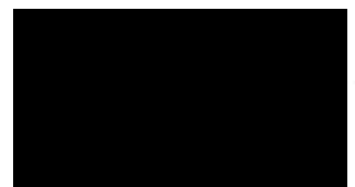
Nominal Volume (ml)	Measuring Volume (ml)
5	4.9984
15	14.9932
25	24.9964

Uncertainty of measurement with in $\pm$ 0.0066 ml

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

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.00$,
providing a level of confidence of approximately 95%

- o0o -



Certificate of Calibration

Page : 1 of 2

Certificate No. : 69-300065-2

Submitted by : Okla Testing & Consulting Service Co.,Ltd.
67/35-36, 3rd Floor, Petchkasem 7/1, Petchkasem Rd.,
Watthapra, Bangkok Yai, Bangkok 10600 Thailand

Equipment : Burette
Manufacturer : Witeg Class : A
Capacity : 100 ml Graduation : 0.2 ml
ID No. : EM-MBR10001/18

Environment : Ambient Temperature : (20 ± 3) °C
Relative Humidity : (50 ± 10) %
Air Pressure : 1015.6 mbar.

Date of Received : 22 January 2026

Date of Calibration : 29 January 2026

Date of Issue : 29 January 2026

Calibrated by : Areerat Sombun

Calibration Method : In-house method CAL-M3001 based on ASTM E 542-22

Reference Standard Instruments : This certification is traceable to the International System of Units

Electronic Balance

ID No.	Cert. No.	Due Date	Traceability
241005	68-200260-4	02 Jun 2026	National Institute of Metrology (Thailand) (NIMT)

Approved by :



Supervisor

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Certificate of Calibration

Certificate No. : 69-300065-2

Page : 2 of 2

Result of Calibration : This result of true Volume is referred to standard temperature at 20 °C

UUC Condition As-Received : Good

Delivery Time : 43.77 sec.

Nominal Volume (ml)	Measuring Volume (ml)
20	19.9961
60	59.9874
100	99.9963

Uncertainty of measurement with in $\pm$ 0.019 ml

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

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.00$,
providing a level of confidence of approximately 95%

- o0o -



Certificate of Calibration

Certificate No. : 69-300065-3

Page : 1 of 2

Submitted by : Okla Testing & Consulting Service Co.,Ltd.
67/35-36, 3rd Floor, Petchkasem 7/1, Petchkasem Rd.,
Watthapra, Bangkok Yai, Bangkok 10600 Thailand

Equipment : Measuring Pipette
Manufacturer : GLASSCO Class : A
Capacity : 1 ml Graduation : 0.01 ml
ID No. : EM-MER01001/19

Environment : Ambient Temperature : (20 ± 3) °C
Relative Humidity : (50 ± 10) %
Air Pressure : 1010.5 mbar.

Date of Received : 22 January 2026

Date of Calibration : 29 January 2026

Date of Issue : 29 January 2026

Calibrated by : Areerat Sombun

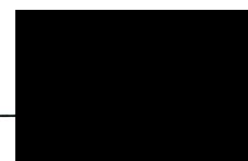
Calibration Method : In-house method CAL-M3001 based on ASTM E 542-22

Reference Standard Instruments : This certification is traceable to the International System of Units

Electronic Balance

ID No.	Cert. No.	Due Date	Traceability
241005	68-200260-4	02 Jun 2026	National Institute of Metrology (Thailand) (NIMT)

Approved by :



Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-300065-3

Page : 2 of 2

Result of Calibration : This result of true Volume is referred to standard temperature at 20 °C

UUC Condition As-Received : Good

Delivery Time : 7.31 sec.

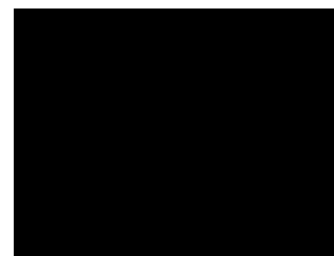
Nominal Volume (ml)	Measuring Volume (ml)
0.1	0.1014
0.5	0.4995
1	0.9908

Uncertainty of measurement with in $\pm$ 0.0026 ml

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

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.00$,
providing a level of confidence of approximately 95%

- o0o -



Certificate of Calibration

Certificate No. : 69-300065-4

Page : 1 of 2

Submitted by : Okla Testing & Consulting Service Co.,Ltd.
67/35-36, 3rd Floor, Petchkasem 7/1, Petchkasem Rd.,
Wattapra, Bangkok Yai, Bangkok 10600 Thailand

Equipment : Measuring Pipette

Manufacturer : GLASSCO

Class : A

Capacity : 5 ml

Graduation : 0.05 ml

ID No. : EM-MER01001/18

Environment : Ambient Temperature : (20 ± 3) °C

Relative Humidity : (50 ± 10) %

Air Pressure : 1010.5 mbar.

Date of Received : 22 January 2026

Date of Calibration : 29 January 2026

Date of Issue : 29 January 2026

Calibrated by : Areerat Sombun

Calibration Method : In-house method CAL-M3001 based on ASTM E 542-22

Reference Standard Instruments : This certification is traceable to the International System of Units

Electronic Balance

ID No.	Cert. No.	Due Date	Traceability
241005	68-200260-4	02 Jun 2026	National Institute of Metrology (Thailand) (NIMT)

Approved by :

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-300065-4

Page : 2 of 2

Result of Calibration : This result of true Volume is referred to standard temperature at 20 °C

UUC Condition As-Received : Good

Delivery Time : 9.39 sec.

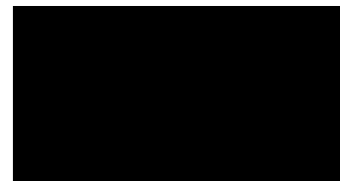
Nominal Volume (ml)	Measuring Volume (ml)
0.5	0.5001
2.5	2.4840
5	4.9842

Uncertainty of measurement with in $\pm$ 0.0027 ml

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

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.00$,
providing a level of confidence of approximately 95%

- o0o -



Certificate of Calibration

Page : 1 of 2

Certificate No. : 69-300065-5

Submitted by : Okla Testing & Consulting Service Co.,Ltd.
67/35-36, 3rd Floor, Petchkasem 7/1, Petchkasem Rd.,
Wattapra, Bangkok Yai, Bangkok 10600 Thailand

Equipment : Measuring Pipette
Manufacturer : GLASSCO Class : A
Capacity : 10 ml Graduation : 0.1 ml
ID No. : EM-MER01001/17

Environment : Ambient Temperature : (20 ± 3) °C
Relative Humidity : (50 ± 10) %
Air Pressure : 1010.5 mbar.

Date of Received : 22 January 2026

Date of Calibration : 29 January 2026

Date of Issue : 29 January 2026

Calibrated by : Areerat Sombun

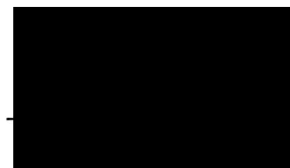
Calibration Method : In-house method CAL-M3001 based on ASTM E 542-22

Reference Standard Instruments : This certification is traceable to the International System of Units

Electronic Balance

ID No.	Cert. No.	Due Date	Traceability
241005	68-200260-4	02 Jun 2026	National Institute of Metrology (Thailand) (NIMT)

Approved by :



Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-300065-5

Page : 2 of 2

Result of Calibration : This result of true Volume is referred to standard temperature at 20 °C

UUC Condition As-Received : Good

Delivery Time : 10.81 sec.

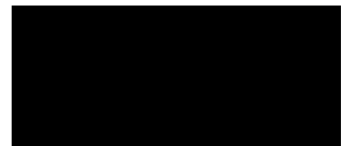
Nominal Volume (ml)	Measuring Volume (ml)
1	1.0008
5	4.9757
10	9.9777

Uncertainty of measurement with in $\pm$ 0.0039 ml

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

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.00$,
providing a level of confidence of approximately 95%

- o0o -



Certificate of Calibration

Certificate No. : 69-300065-6

Page : 1 of 2

Submitted by : Okla Testing & Consulting Service Co.,Ltd.
67/35-36, 3rd Floor, Petchkasem 7/1, Petchkasem Rd.,
Watthapra, Bangkok Yai, Bangkok 10600 Thailand

Equipment : Volumetric Pipette
Manufacturer : GLASSCO Class : A
Capacity : 5 ml
ID No. : EM-Mbro1051/17

Environment : Ambient Temperature : (20 ± 3) °C
Relative Humidity : (50 ± 10) %
Air Pressure : 1010.7 mbar.

Date of Received : 22 January 2026

Date of Calibration : 29 January 2026

Date of Issue : 29 January 2026

Calibrated by : Areerat Sombun

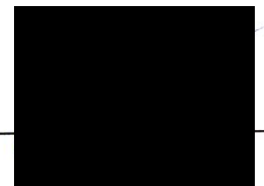
Calibration Method : In-house method CAL-M3001 based on ASTM E 542-22

Reference Standard Instruments : This certification is traceable to the International System of Units

Electronic Balance

ID No.	Cert. No.	Due Date	Traceability
241005	68-200260-4	02 Jun 2026	National Institute of Metrology (Thailand) (NIMT)

Approved by :



Supervisor

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 Calibratech Co.,Ltd.



Certificate of Calibration

Certificate No. : 69-300065-6

Page : 2 of 2

Result of Calibration : This result of true Volume is referred to standard temperature at 20 °C

UUC Condition As-Received : Good

Delivery Time : 12.56 sec.

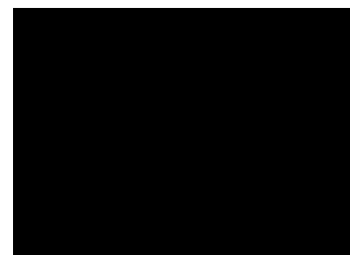
Nominal Volume (ml)	Measuring Volume (ml)
5	4.9820

Uncertainty of measurement with in $\pm$ 0.0026 ml

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

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.00$,
providing a level of confidence of approximately 95%

- o0o -



Certificate of Calibration

Page : 1 of 2

Certificate No. : 69-300065-7

Submitted by : Okla Testing & Consulting Service Co.,Ltd.
67/35-36, 3rd Floor, Petchkasem 7/1, Petchkasem Rd.,
Watthapra, Bangkok Yai, Bangkok 10600 Thailand

Equipment : Volumetric Pipette
Manufacturer : GLASSCO Class : A
Capacity : 10 ml
ID No. : EM-Mbro1001/17

Environment : Ambient Temperature : (20 ± 3) °C
Relative Humidity : (50 ± 10) %
Air Pressure : 1010.7 mbar.

Date of Received : 22 January 2026

Date of Calibration : 29 January 2026

Date of Issue : 29 January 2026

Calibrated by : Areerat Sombun

Calibration Method : In-house method CAL-M3001 based on ASTM E 542-22

Reference Standard Instruments : This certification is traceable to the International System of Units

Electronic Balance

ID No.	Cert. No.	Due Date	Traceability
241005	68-200260-4	02 Jun 2026	National Institute of Metrology (Thailand) (NIMT)

Approved by :



Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Page : 2 of 2

Certificate No. : 69-300065-7

Result of Calibration : This result of true Volume is referred to standard temperature at 20 °C

UUC Condition As-Received : Good

Delivery Time : 12.56 sec.

Nominal Volume (ml)	Measuring Volume (ml)
10	10.0044

Uncertainty of measurement with in $\pm$ 0.0038 ml

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

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.00$,
providing a level of confidence of approximately 95%

- oOo -



Certificate of Calibration

Certificate No. : 69-300065-8

Page : 1 of 2

Submitted by : Okla Testing & Consulting Service Co.,Ltd.
67/35-36, 3rd Floor, Petchkasem 7/1, Petchkasem Rd.,
Wattapra, Bangkok Yai, Bangkok 10600 Thailand

Equipment : Volumetric Pipette
Manufacturer : GLASSCO Class : A
Capacity : 20 ml
ID No. : EM-VPP20201/17

Environment : Ambient Temperature : (20 ± 3) °C
Relative Humidity : (50 ± 10) %
Air Pressure : 1010.7 mbar.

Date of Received : 22 January 2026

Date of Calibration : 29 January 2026

Date of Issue : 29 January 2026

Calibrated by : Areerat Sombun

Calibration Method : In-house method CAL-M3001 based on ASTM E 542-22

Reference Standard Instruments : This certification is traceable to the International System of Units

Electronic Balance

ID No.	Cert. No.	Due Date	Traceability
241005	68-200260-4	02 Jun 2026	National Institute of Metrology (Thailand) (NIMT)

Approved by :



Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-300065-8

Page : 2 of 2

Result of Calibration : This result of true Volume is referred to standard temperature at 20 °C

UUC Condition As-Received : Good

Delivery Time : 15.10 sec.

Nominal Volume (ml)	Measuring Volume (ml)
20	19.9816

Uncertainty of measurement with in $\pm$ 0.0064 ml

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

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.00$,
providing a level of confidence of approximately 95%

- o0o -



Certificate of Calibration

Certificate No. : 69-300065-9

Page : 1 of 2

Submitted by : Okla Testing & Consulting Service Co.,Ltd.
67/35-36, 3rd Floor, Petchkasem 7/1, Petchkasem Rd.,
Watthapra, Bangkok Yai, Bangkok 10600 Thailand

Equipment : Volumetric Pipette
Manufacturer : BOROSIL Class : A
Capacity : 25 ml
ID No. : EM-VPP02501/17

Environment : Ambient Temperature : (20 ± 3) °C
Relative Humidity : (50 ± 10) %
Air Pressure : 1010.7 mbar.

Date of Received : 22 January 2026

Date of Calibration : 29 January 2026

Date of Issue : 29 January 2026

Calibrated by : Areerat Sombun

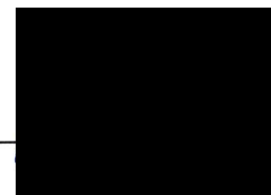
Calibration Method : In-house method CAL-M3001 based on ASTM E 542-22

Reference Standard Instruments : This certification is traceable to the International System of Units

Electronic Balance

ID No.	Cert. No.	Due Date	Traceability
241005	68-200260-4	02 Jun 2026	National Institute of Metrology (Thailand) (NIMT)

Approved by :



Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-300065-9

Page : 2 of 2

Result of Calibration : This result of true Volume is referred to standard temperature at 20 °C

UUC Condition As-Received : Good

Delivery Time : 37.49 sec.

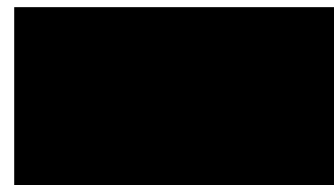
Nominal Volume (ml)	Measuring Volume (ml)
25	24.9902

Uncertainty of measurement with in $\pm$ 0.0066 ml

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

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.00$,
providing a level of confidence of approximately 95%

- oOo -



Certificate of Calibration

Certificate No. : 69-300065-13

Page : 1 of 2

Submitted by : Okla Testing & Consulting Service Co.,Ltd.
67/35-36, 3rd Floor, Petchkasem 7/1, Petchkasem Rd.,
Watthapra, Bangkok Yai, Bangkok 10600 Thailand

Equipment : Cylinder
Manufacturer : FAVORIT Class : A
Capacity : 50 ml Graduation : 1 ml
ID No. : CY50/01

Environment : Ambient Temperature : (20 ± 3) °C
Relative Humidity : (50 ± 10) %
Air Pressure : 1011.1 mbar.

Date of Received : 22 January 2026

Date of Calibration : 29 January 2026

Date of Issue : 29 January 2026

Calibrated by : Areerat Sombun

Calibration Method : In-house method CAL-M3001 based on ASTM E 542-22

Reference Standard Instrument : This certification is traceable to the International System of Units

Electronic Balance

ID No.	Cert. No.	Due Date	Traceability
241002	68-200620-1	02 Jun 2026	National Institute of Metrology (Thailand) (NIMT)

Approved by :

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-300065-13

Page : 2 of 2

Result of Calibration : This result of true Volume is referred to standard temperature at 20 °C

UUC Condition As-Received : Good

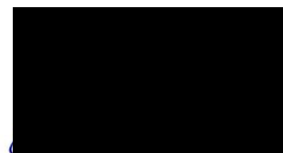
Nominal Volume (ml)	Measuring Volume (ml)
50	50.38

Uncertainty of measurement with in $\pm$ 0.054 ml

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

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.00$,
providing a level of confidence of approximately 95%

- o0o -



Certificate of Calibration

Certificate No. : 69-300065-14

Page : 1 of 2

Submitted by : Okla Testing & Consulting Service Co.,Ltd.
67/35-36, 3rd Floor, Petchkasem 7/1, Petchkasem Rd.,
Wattapra, Bangkok Yai, Bangkok 10600 Thailand

Equipment : Cylinder
Manufacturer : DURAN Class : A
Capacity : 100 ml Graduation : 1 ml
ID No. : CY100/01

Environment : Ambient Temperature : (20 ± 3) °C
Relative Humidity : (50 ± 10) %
Air Pressure : 1011.1 mbar.

Date of Received : 22 January 2026

Date of Calibration : 29 January 2026

Date of Issue : 29 January 2026

Calibrated by : Areerat Sombun

Calibration Method : In-house method CAL-M3001 based on ASTM E 542-22

Reference Standard Instrument : This certification is traceable to the International System of Units

Electronic Balance

ID No.	Cert. No.	Due Date	Traceability
241002	68-200620-1	02 Jun 2026	National Institute of Metrology (Thailand) (NIMT)

Approved by :

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-300065-14

Page : 2 of 2

Result of Calibration : This result of true Volume is referred to standard temperature at 20 °C

UUC Condition As-Received : Good

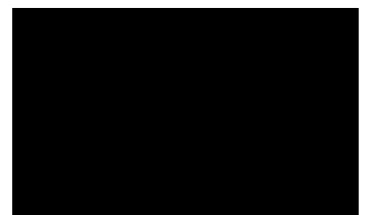
Nominal Volume (ml)	Measuring Volume (ml)
50	50.26
100	100.08

Uncertainty of measurement with in $\pm$ 0.063 ml

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

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.00$,
providing a level of confidence of approximately 95%

- o0o -



Certificate of Calibration

Certificate No. : 69-300065-15

Page : 1 of 2

Submitted by : Okla Testing & Consulting Service Co.,Ltd.
67/35-36, 3rd Floor, Petchkasem 7/1, Petchkasem Rd.,
Wattapra, Bangkok Yai, Bangkok 10600 Thailand

Equipment : Cylinder
Manufacturer : BOROSIL Class : A
Capacity : 500 ml Graduation : 5 ml
ID No. : 0334-58

Environment : Ambient Temperature : (20 ± 3) °C
Relative Humidity : (50 ± 10) %
Air Pressure : 1011.1 mbar.

Date of Received : 22 January 2026

Date of Calibration : 29 January 2026

Date of Issue : 29 January 2026

Calibrated by : Areerat Sombun

Calibration Method : In-house method CAL-M3001 based on ASTM E 542-22

Reference Standard Instrument : This certification is traceable to the International System of Units

Electronic Balance

ID No.	Cert. No.	Due Date	Traceability
241002	68-200620-1	02 Jun 2026	National Institute of Metrology (Thailand) (NIMT)

Approved by :

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-300065-15

Page : 2 of 2

Result of Calibration : This result of true Volume is referred to standard temperature at 20 °C

UUC Condition As-Received : Good

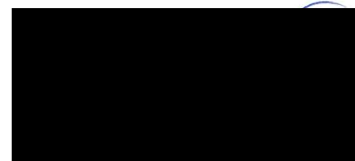
Nominal Volume (ml)	Measuring Volume (ml)
500	499.05

Uncertainty of measurement with in $\pm$ 0.12 ml

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

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.00$,
providing a level of confidence of approximately 95%

- o0o -



Certificate of Calibration

Certificate No. : 69-300065-10

Page : 1 of 2

Submitted by : Okla Testing & Consulting Service Co.,Ltd.
67/35-36, 3rd Floor, Petchkasem 7/1, Petchkasem Rd.,
Wattapra, Bangkok Yai, Bangkok 10600 Thailand

Equipment : Volumetric Flask
Manufacturer : SCI Class : A
Capacity : 100 ml
ID No. : EM-VPP02501/17

Environment : Ambient Temperature : (20 ± 3) °C
Relative Humidity : (50 ± 10) %
Air Pressure : 1011.1 mbar.

Date of Received : 22 January 2026

Date of Calibration : 29 January 2026

Date of Issue : 29 January 2026

Calibrated by : Areerat Sombun

Calibration Method : In-house method CAL-M3001 based on ASTM E 542-22

Reference Standard Instruments : This certification is traceable to the International System of Units

Electronic Balance

ID No.	Cert. No.	Due Date	Traceability
241005	68-200260-4	02 Jun 2026	National Institute of Metrology (Thailand) (NIMT)

Approved by :



Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-300065-10

Page : 2 of 2

Result of Calibration : This result of true Volume is referred to standard temperature at 20 °C

UUC Condition As-Received : Good

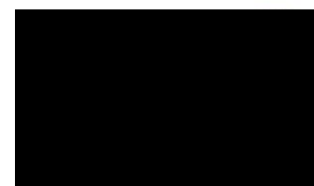
Nominal Volume (ml)	Measuring Volume (ml)
100	99.991

Uncertainty of measurement with in $\pm$ 0.018 ml

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

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.00$,
providing a level of confidence of approximately 95%

- o0o -



Certificate of Calibration

Certificate No. : 69-300065-11

Page : 1 of 2

Submitted by : Okla Testing & Consulting Service Co.,Ltd.
67/35-36, 3rd Floor, Petchkasem 7/1, Petchkasem Rd.,
Wattthapra, Bangkok Yai, Bangkok 10600 Thailand

Equipment : Volumetric Flask
Manufacturer : Borosil Class : A
Capacity : 500 ml
ID No. : EM-VPP02501/18

Environment : Ambient Temperature : (20 ± 3) °C
Relative Humidity : (50 ± 10) %
Air Pressure : 1010.9 mbar.

Date of Received : 22 January 2026

Date of Calibration : 29 January 2026

Date of Issue : 29 January 2026

Calibrated by : Arcerat Sombun

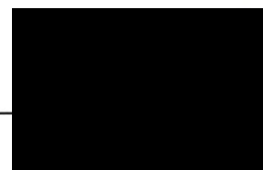
Calibration Method : In-house method CAL-M3001 based on ASTM E 542-22

Reference Standard Instruments : This certification is traceable to the International System of Units

Electronic Balance

ID No.	Cert. No.	Due Date	Traceability
241002	68-200620-1	02 Jun 2026	National Institute of Metrology (Thailand) (NIMT)

Approved by :



Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-300065-11

Page : 2 of 2

Result of Calibration : This result of true Volume is referred to standard temperature at 20 °C

UUC Condition As-Received : Good

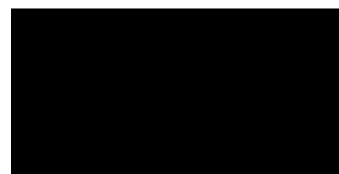
Nominal Volume (ml)	Measuring Volume (ml)
500	499.99

Uncertainty of measurement with in $\pm$ 0.075 ml

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

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.00$,
providing a level of confidence of approximately 95%

- o0o -



Certificate of Calibration

Certificate No. : 69-300065-12

Page : 1 of 2

Submitted by : Okla Testing & Consulting Service Co.,Ltd.
67/35-36, 3rd Floor, Petchkasem 7/1, Petchkasem Rd.,
Watthapra, Bangkok Yai, Bangkok 10600 Thailand

Equipment : Volumetric Flask
Manufacturer : Borosil Class : A
Capacity : 1000 ml
ID No. : EM-VPP02501/20

Environment : Ambient Temperature : (20 ± 3) °C
Relative Humidity : (50 ± 10) %
Air Pressure : 1011.0 mbar.

Date of Received : 22 January 2026

Date of Calibration : 29 January 2026

Date of Issue : 29 January 2026

Calibrated by : Areerat Sombun

Calibration Method : In-house method CAL-M3001 based on ASTM E 542-22

Reference Standard Instruments : This certification is traceable to the International System of Units

Electronic Balance

ID No.	Cert. No.	Due Date	Traceability
241002	68-200620-1	02 Jun 2026	National Institute of Metrology (Thailand) (NIMT)

Approved by :

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-300065-12

Page : 2 of 2

Result of Calibration : This result of true Volume is referred to standard temperature at 20 °C

UUC Condition As-Received : Good

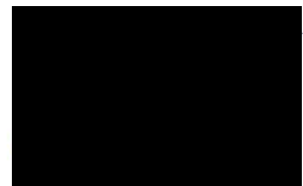
Nominal Volume (ml)	Measuring Volume (ml)
1000	1000.00

Uncertainty of measurement with in $\pm$ 0.14 ml

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

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.00$,
providing a level of confidence of approximately 95%

- o0o -



Certificate of Calibration

Certificate No. : 69-200144-1

Page : 1 of 2

Submitted by : HVE Co.,Ltd.

603 Soi Jarunsanitwong 46, Jarunsanitwong Road, Bangyeekun, Bangplad, Bangkok 10700

Equipment : Electronic Balance

Manufacturer : SHIMADZU

Model : ATX224R

Serial No. : D326005191

Capacity : 220 g

Resolution : 0.0001 g

Environment : On site calibration was carried out at the Laboratory, HVE Co.,Ltd.

Ambient Temperature : (28.9 to 29.6) °C

Relative Humidity : (52.7 to 54.9) %

Air Pressure : 1007.0 mbar

Date of Received : 20 April 2026

Date of Calibration : 20 April 2026

Date of Issue : 21 April 2026

Calibrated by : Akaradath Thippichai

Calibration Method : In-house method CAL-M2001 based on UKAS Publication ref : LAB 14

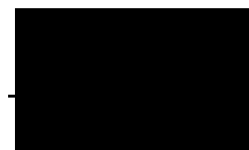
Edition 7 - November 2022

Reference Standard Instruments : This certification is traceable to the International System of Units

Standard Weights

ID No.	Cert. No.	Due Date	Traceability
E261-E2624	C02251973	07 Nov 2026	National Institute of Metrology (Thailand), (NIMT)

Approved by :



Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-200144-1

Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Departure of indication from nominal value

Nominal Value (g)	Correction (g)	Uncertainty $\pm$ (g)
0.01	0.0000	0.00012
0.1	0.0000	0.00012
0.5	0.0000	0.00013
1	-0.0001	0.00013
10	-0.0001	0.00013
20	-0.0002	0.00014
50	-0.0002	0.00015
100	-0.0002	0.00020
150	-0.0003	0.00038
200	-0.0002	0.00038

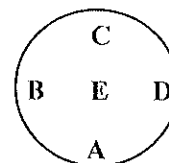
This result of calibration was found accurate as shown on date and place of calibration only.

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.06$, providing a level of confidence of approximately 95%

Eccentric error

Load test : 50 g

A	B	C	D	E	
-0.0001	0.0000	0.0002	0.0001	0.0000	g



Repeatability

Load test : 200 g

Sidev. : 0.00005 g

- oOo -



Certificate of Calibration

Certificate No. : 69-400207-5

Page : 1 of 2

Submitted by : HVE Co., Ltd.

603 Soi Jarunsanitwong 46, Jarunsanitwong Road, Bangyeekun, Bangplad, Bangkok 10701

Equipment : Temperature controlled enclosure (Oven)

Manufacturer : Memmert

Model : UNB 500

Range : N/A °C

Resolution : 0.5 °C

Serial No. : C507.1007

ID No. : 012

Environment : On site calibration was carried out at the Laboratory, HVE Co., Ltd.

Ambient Temperature : (27.9 to 31.3) °C

Relative Humidity : (42 to 68) %

Line Voltage : (229.0 to 230.0) V

Date of Received : 20 April 2026

Date of Calibration : 20 April 2026

Date of Issue : 23 April 2026

Calibrated by : Aphisorn Worawasukullaya

Calibration Method : CAL-M4004, TLAS G-20

The temperature scale used was based on ITS-90

Reference Standard Instruments : This certification is traceable to the International System of Units

Standard Digital Thermometer with Thermocouple probe

ID No.

Cert. No.

Due Date

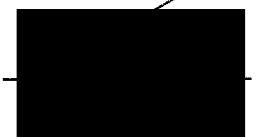
Traceability

400046 & 400023 69-400119-1

26 Sep 2026

National Institute of Metrology Thailand (NIMT)

Approved by :



Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-400207-5

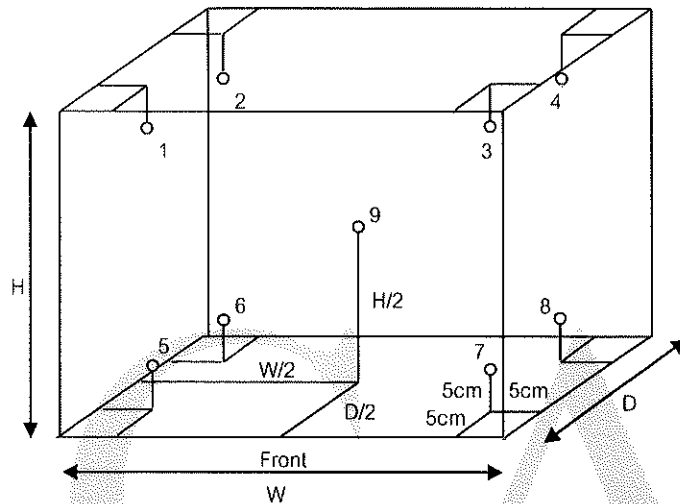
Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Function : Temperature measurement

This instrument was setting air ventilation at position 0 (close)



Inside of Chamber

W = 0.56 m

D = 0.40 m

H = 0.48 m

Capacity = 0.11 m³

Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Temperature (°C) @ Sensor No.									Uncertainty (± °C)
			1	2	3	4	5	6	7	8	9	
104.0	105.5	105.5	105.1	104.9	105.7	105.1	99.0	98.0	98.0	99.1	103.9	1.6
180.0	182.5	182.5	180.8	180.3	180.8	180.8	173.9	174.2	175.4	174.3	179.2	1.6

Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Uniformity (°C)	Measured Stability (°C)	Overall Variation (°C)
104.0	105.5	105.5	6.1	0.2	8.1
180.0	182.5	182.5	5.5	0.4	7.4

Remark The uncertainty is not combine uniformity of the air chamber

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

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

- o0o -



Certificate of Calibration

Certificate No. : 69-420034-3

Page : 1 of 2

Submitted by : HVE Co., Ltd.

603 Soi Jarunsanitwong 46 Jarunsanitwong Road, Bangyeekun, Bangplad, Bangkok 10700

Equipment : pH Meter with electrode

pH meter

Manufacturer : Hanna

Model : HI 3220

Range : N/A pH

Resolution : 0.01 pH

Serial No. : A0024904

ID No. : 083

Electrode

Model : HI 1131

Serial No. : 07702N

ID No. : 083

Environment : On site calibration was carried out at the Laboratory, HVE Co., Ltd.

Ambient Temperature : (23.5 to 26.5)°C

Relative Humidity : (35 to 45) %

Date of Received : 21 April 2026

Date of Calibration : 21 April 2026

Date of Issue : 22 April 2026

Calibrated by : Pernipon Chanpu

Calibration Method : In-house method CAL-M4201 direct measurement by using standard voltage calibrator and using certified reference material (CRM)

Reference Standard Instruments : This certification is traceable to the International System of Units

1. Multiproduct Calibrator

ID No.	Cert. No.	Due Date	Traceability
400005	SG-E-00231/68	20 Aug 2027	National Institute of Metrology Thailand (NIMT)

2. Standard Buffer Solution

pH	Cert. No.	Lot No.	Exp. Date	Traceability
4.007	61314276	1081108	28 Feb 2027	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
6.965	61318175	1081110	28 Feb 2026	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
10.010	61325043	1081109	28 Feb 2026	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025

Approved by :

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-420034-3

Page : 2 of 2

Result of Calibration :

UUC Condition As-Received : Good

Function : Electrical measurement

pH meter

Performing standard curve by Multiproduct Calibrator at pH (4,7,10)

Adjustment Curve at nominal pH	Applied Voltage (mV)	Nominal Value (pH)	UUC Reading		Correction (mV)	Uncertainty (± mV)
			(pH)	(mV)		
4, 7, 10	177.4800	4	4.00	177.3	0.2	0.12
	0.0000	7	7.00	0.0	0.0	0.086
	-177.4800	10	10.00	-177.3	-0.2	0.12

Function : pH meter with electrode

Performing a three - buffer standard curve using buffer nominal pH (4,7,10)

Adjustment Curve at nominal pH	Standard Buffer (pH)	UUC Reading (pH)	Correction (pH)	Uncertainty (± pH)
4, 7, 10	4.008	4.01	0.00	0.0097
	6.963	7.00	-0.04	0.010
	10.011	10.01	0.00	0.014

Remark

UUC : Unit Under Calibration

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

This reported uncertainty of measurment was based on a standard uncertainty multiplied by a coverage factor $k = 2$,
providing a level of confidence of approximately 95%

- o()o -



Certificate of Calibration

Certificate No. : 69-400207-9

Page : 1 of 2

Submitted by : HVE Co., Ltd.

603 Soi Jarunsanitwong 46, Jarunsanitwong Road, Bangyeekun, Bangplad, Bangkok 10700

Equipment : Temperature controlled enclosure (Incubator)

Manufacturer : Lovibond

Model : TC 445 S

Range : N/A °C

Resolution : 0.1 °C

Serial No. : 0515/001080

ID No. : 112

Environment : On site calibration was carried out at the Laboratory, HVE Co., Ltd.

Ambient Temperature : (31.4 to 32.9) °C

Relative Humidity : (39 to 44) %

Line Voltage : (229.0 to 230.0) V

Date of Received : 21 April 2026

Date of Calibration : 21 April 2026

Date of Issue : 23 April 2026

Calibrated by : Aphisorn Worawasukullaya

Calibration Method : CAL-M4004, TLAS G-20

The temperature scale used was based on ITS-90

Reference Standard Instruments : This certification is traceable to the International System of Units
Standard Digital Thermometer with RTD Probe

ID No.

Cert. No.

Due Date

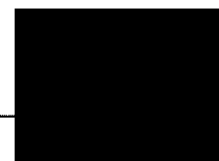
Traceability

400046 & 400047 69-400018-2

24 Jul 2026

National Institute of Metrology Thailand (NIMT)

Approved by :



Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-400207-9

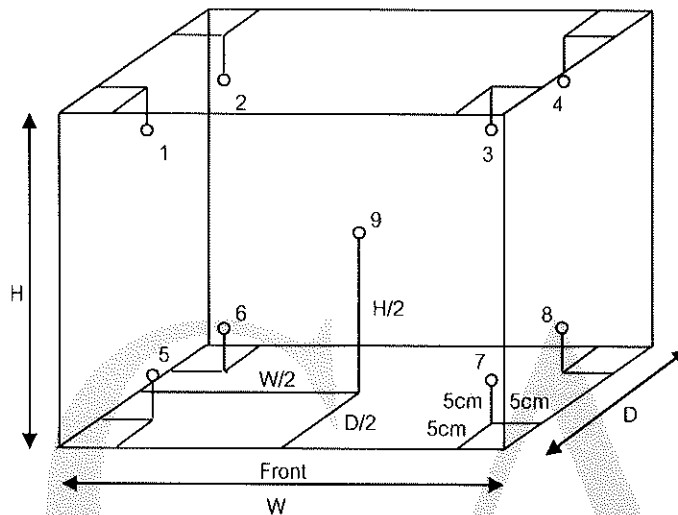
Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Function : Temperature measurement

This instrument was setting air ventilation at position 0 (close)



Inside of Chamber

W = 0.65 m

D = 0.60 m

H = 1.50 m

Capacity = 0.59 m³

Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Temperature (°C) @ Sensor No.									Uncertainty (± °C)
			1	2	3	4	5	6	7	8	9	
20.0	20.7	20.7	20.21	20.00	20.02	19.95	19.97	20.18	20.02	20.18	19.88	0.38

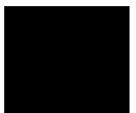
Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Uniformity (°C)	Measured Stability (°C)	Overall Variation (°C)
20.0	20.7	20.7	0.42	0.14	0.58

Remark The uncertainty is not combine uniformity of the air chamber

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

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

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Certificate of Calibration

Certificate No. : 69-400207-8

Page : 1 of 2

Submitted by : HVE Co., Ltd.

603 Soi Jarunsanitwong 46, Jarunsanitwong Road, Bangyeekun, Bangplad, Bangkok 10700

Equipment : Temperature controlled enclosure (Incubator)

Manufacturer : Lovibond

Model : ET636-6

Range : N/A °C

Resolution : 0.1 °C

Serial No. : 6686 0707

ID No. : 011

Environment : On site calibration was carried out at the Laboratory, HVE Co., Ltd.

Ambient Temperature : (31.4 to 32.9) °C

Relative Humidity : (39 to 44) %

Line Voltage : (229.0 to 230.0) V

Date of Received : 21 April 2026

Date of Calibration : 21 April 2026

Date of Issue : 23 April 2026

Calibrated by : Aphisorn Worawasukullaya

Calibration Method : CAL-M4004, TLAS G-20

The temperature scale used was based on ITS-90

Reference Standard Instruments : This certification is traceable to the International System of Units

Standard Digital Thermometer with RTD Probe

ID No.

Cert. No.

Due Date

Traceability

400046 & 400047

69-400018-2

24 Jul 2026

National Institute of Metrology Thailand (NIMT)

Approved by :



Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-400207-8

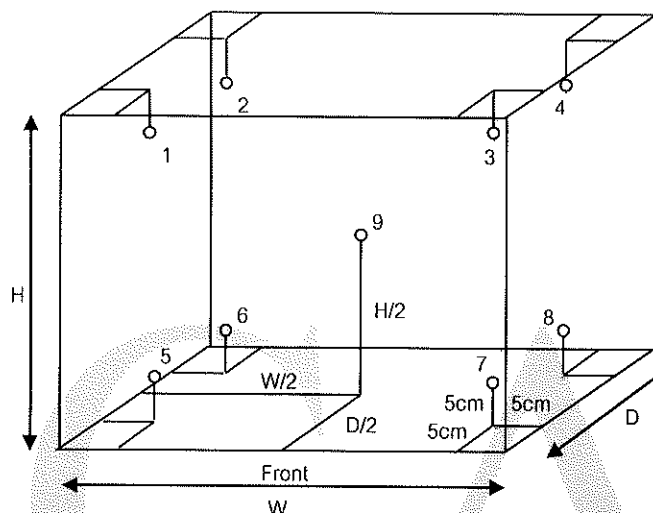
Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Function : Temperature measurement

This instrument was setting air ventilation at position 0 (close)



Inside of Chamber

W = 0.53 m

D = 0.43 m

H = 1.40 m

Capacity = 0.32 m³

Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Temperature (°C) @ Sensor No.									Uncertainty (± °C)
			1	2	3	4	5	6	7	8	9	
20.0	21.5	21.5	20.37	20.29	20.37	20.35	20.15	20.16	19.99	19.83	20.03	0.63

Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Uniformity (°C)	Measured Stability (°C)	Overall Variation (°C)
20.0	21.5	21.5	0.40	0.32	0.99

Remark The uncertainty is not combine uniformity of the air chamber

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

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

- o0o -



Certificate of Calibration

Certificate No. : 69-400213-1

Page : 1 of 2

Submitted by : HVE Co., Ltd.
603 Soi Jarunsanitwong 46 Jarunsanitwong Road,
Bangyeekun, Bangplad, Bangkok 10700

Equipment : Temperature Indicator with Thermistor Probe
Temperature Indicator

Manufacturer :	Hanna	Model :	HI 2211
Range :	N/A °C	Resolution :	0.1 °C
Serial No. :	08270179101	ID No. :	147
Thermistor probe			
Model :	HI7662	Sheath Material :	Stainless
Diameter :	3 mm.	Length :	110 mm.
Serial No. :	10161BEN	ID No. :	147

Environment : On site calibration was carried out at the Laboratory, HVE Co., Ltd.

Ambient Temperature : (23.5 to 26.5) °C

Relative Humidity : (35 to 45) %

Line Voltage : (229.0 to 230.0) VAC

Date of Received : 21 April 2026

Date of Calibration : 21 April 2026

Date of Issue : 22 April 2026

Calibrated by : Permpon Chanpu

Calibration Method : This instrument was calibrated by In-house method comparison technique CAL-M4003 by compared with PRT in the liquid bath at the constant controlled temperature.

The temperature scale used was based on ITS-90

Reference Standard Instruments : This certification is traceable to the International System of Units

1. Platinum Resistance Thermometer (PRT)

ID No.	Cert. No.	Due Date	Traceability
400016	TT-1019-25	13 May 2027	National Institute of Metrology Thailand (NIMT)

2. Standard Digital Thermometer

ID No.	Cert. No.	Due Date	Traceability
400033	26E645	24 Feb 2028	National Institute of Metrology Thailand (NIMT)

Approved by :



Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-400213-1

Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Function : Temperature measurement

Immersion Depth	Standard Reading	UUC Reading	Correction	Uncertainty
(mm.)	(°C)	(°C)	(°C)	(±°C)
110	25.002	25.0	0.0	0.19

Remark

UUC : Unit Under Calibration

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

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

- o()o -



Certificate of Calibration

Certificate No. : 69-400213-2

Page : 1 of 2

Submitted by : HVE Co., Ltd.
603 Soi Jarunsanitwong 46 Jarunsanitwong Road,
Bangyeekun, Bangplad, Bangkok 10700

Equipment : Temperature Indicator with Thermistor Probe
Temperature Indicator

Manufacturer :	Hanna	Model :	HI 2211
Range :	N/A °C	Resolution :	0.1 °C
Serial No. :	N/A	ID No. :	041
Thermistor probe			
Model :	N/A	Sheath Material :	Stainless
Diameter :	3 mm.	Length :	110 mm.
Serial No. :	N/A	ID No. :	041

Environment : On site calibration was carried out at the Laboratory, HVE Co., Ltd.

Ambient Temperature : (23.5 to 26.5) °C

Relative Humidity : (35 to 45) %

Line Voltage : (229.0 to 230.0) VAC

Date of Received : 21 April 2026

Date of Calibration : 21 April 2026

Date of Issue : 22 April 2026

Calibrated by : Permpon Chanpu

Calibration Method : This instrument was calibrated by In-house method comparison technique CAL-M4003 by compared with PRT in the liquid bath at the constant controlled temperature.

The temperature scale used was based on ITS-90

Reference Standard Instruments : This certification is traceable to the International System of Units

1. Platinum Resistance Thermometer (PRT)

ID No.	Cert. No.	Due Date	Traceability
400016	TT-1019-25	13 May 2027	National Institute of Metrology Thailand (NIMT)

2. Standard Digital Thermometer

ID No.	Cert. No.	Due Date	Traceability
400033	26E645	24 Feb 2028	National Institute of Metrology Thailand (NIMT)

Approved by :



Supervisor

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Certificate of Calibration

Certificate No. : 69-400213-2

Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Function : Temperature measurement

Immersion Depth (mm.)	Standard Reading (°C)	UUC Reading (°C)	Correction (°C)	Uncertainty (±°C)
110	25.003	24.8	0.2	0.19

Remark

UUC : Unit Under Calibration

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

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

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Certificate of Calibration

Certificate No. : 69-420034-1

Page : 1 of 2

Submitted by : HVE Co., Ltd.

603 Soi Jarunsanitwong 46 Jarunsanitwong Road, Bangyeekun, Bangplad, Bangkok 10700

Equipment : pH Meter with electrode

pH meter

Manufacturer : Hanna

Model : HI2211

Range : N/A

pH

Resolution : 0.01 pH

Serial No. : 08270179101

ID No. : 147

Electrode

Model : HI 1131

Serial No. : 084809EN

ID No. : 147

Environment : On site calibration was carried out at the Laboratory, HVE Co., Ltd.

Ambient Temperature : (23.5 to 26.5)^o C

Relative Humidity : (35 to 45) %

Date of Received : 21 April 2026

Date of Calibration : 21 April 2026

Date of Issue : 22 April 2026

Calibrated by : Permpon Chanpu

Calibration Method : In-house method CAL-M4201 direct measurement by using standard voltage calibrator and using certified reference material (CRM)

Reference Standard Instruments : This certification is traceable to the International System of Units

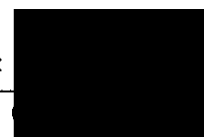
1. Multiproduct Calibrator

ID No.	Cert. No.	Due Date	Traceability
400005	SG-E-00231/68	20 Aug 2027	National Institute of Metrology Thailand (NIMT)

2. Certified Reference Material (CRM)

pH	Cert. No.	Lot No.	Exp. Date	Traceability
4.008	61340084	1209524	02 Apr 2028	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
6.963	61345799	1209526	02 Apr 2027	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
10.011	61340312	1209525	02 Apr 2027	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025

Approved by :



Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-420034-1

Page : 2 of 2

Result of Calibration :

UUC Condition As-Received : Good

Function : Electrical measurement

pH meter

Performing standard curve by Multiproduct Calibrator at pH (4,7) and (7,10)

Adjustment Curve at nominal pH	Applied Voltage (mV)	Nominal Value (pH)	UUC Reading		Correction (mV)	Uncertainty (± mV)
			(pH)	(mV)		
4, 7	177.4800	4	4.00	177.4	0.1	0.12
	0.0000	7	7.00	0.0	0.0	0.090
7,10	0.0000	7	7.00	0.0	0.0	0.090
	-177.4800	10	10.00	-177.4	-0.1	0.12

Function : pH meter with electrode

Performing a three - buffer standard curve using buffer nominal pH (4,7) and (7,10)

Adjustment Curve at nominal pH	Standard Buffer (pH)	UUC Reading (pH)	Correction (pH)	Uncertainty (± pH)
4, 7	4.008	4.01	0.00	0.0091
	6.963	7.01	-0.05	0.010
7, 10	6.963	7.01	-0.05	0.010
	10.011	10.01	0.00	0.014

Remark

UUC : Unit Under Calibration

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

This reported uncertainty of measurment was based on a standard uncertainty multiplied by a coverage factor $k = 2$,
providing a level of confidence of approximately 95%

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Certificate of Calibration

Certificate No. : 69-420034-2

Page : 1 of 2

Submitted by : HVE Co., Ltd.

603 Soi Jarunsanitwong 46 Jarunsanitwong Road, Bangyeekun, Bangplad, Bangkok 10700

Equipment : pH Meter with electrode

pH meter

Manufacturer : Hanna

Model : HI 2211

Range : N/A

pH

Resolution : 0.01 pH

Serial No. : N/A

ID No. : 041

Electrode

Model : HI 1131

Serial No. : 1025265N

ID No. : 041

Environment : On site calibration was carried out at the Laboratory, HVE Co., Ltd.

Ambient Temperature : (23.5 to 26.5)^o C

Relative Humidity : (35 to 45) %

Date of Received : 21 April 2026

Date of Calibration : 21 April 2026

Date of Issue : 22 April 2026

Calibrated by : Permpon Chanpu

Calibration Method : In-house method CAL-M4201 direct measurement by using standard voltage calibrator and using certified reference material (CRM)

Reference Standard Instruments : This certification is traceable to the International System of Units

1. Multiproduct Calibrator

<u>ID No.</u>	<u>Cert. No.</u>	<u>Due Date</u>	<u>Traceability</u>
400005	SG-E-00231/68	20 Aug 2027	National Institute of Metrology Thailand (NIMT)

2. Certified Reference Material (CRM)

<u>pH</u>	<u>Cert. No.</u>	<u>Lot No.</u>	<u>Exp. Date</u>	<u>Traceability</u>
4.008	61340084	1209524	02 Apr 2028	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
6.963	61345799	1209526	02 Apr 2027	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
10.011	61340312	1209525	02 Apr 2027	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025

Approved by :

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 69-420034-2

Page : 2 of 2

Result of Calibration :

UUC Condition As-Received : Good

Function : Electrical measurement

pH meter

Performing standard curve by Multiproduct Calibrator at pH (4,7) and (7,10)

Adjustment Curve at nominal pH	Applied Voltage (mV)	Nominal Value (pH)	UUC Reading		Correction (mV)	Uncertainty (± mV)
			(pH)	(mV)		
4, 7	177.4800	4	4.00	177.3	0.2	0.12
	0.0000	7	7.00	0.0	0.0	0.090
7,10	0.0000	7	7.00	0.0	0.0	0.090
	-177.4800	10	10.00	-177.4	-0.1	0.12

Function : pH meter with electrode

Performing a three - buffer standard curve using buffer nominal pH (4,7) and (7,10)

Adjustment Curve at nominal pH	Standard Buffer (pH)	UUC Reading (pH)	Correction (pH)	Uncertainty (± pH)
4, 7	4.008	4.01	0.00	0.0091
	6.963	7.01	-0.05	0.010
7, 10	6.963	7.01	-0.05	0.010
	10.011	10.01	0.00	0.014

Remark

UUC : Unit Under Calibration

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

This reported uncertainty of measurment was based on a standard uncertainty multiplied by a coverage factor $k = 2$,
providing a level of confidence of approximately 95%

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Certificate No. : C26040029

Page : 1 of 2

CERTIFICATE OF CALIBRATION

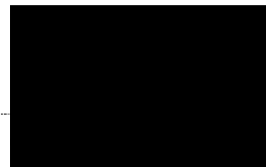
Equipment	: COD Test Tube Heater		
Meter Model	: HI839800-02	Serial No.	: H0175591
Tube Heater Capacity	: 22 Vial Capacity	Resolution	: 0.1 °C
Temperature Range	: (-10 to 160)°C	Temperature of Reaction	: 150°C
Manufacturer	: Hanna Instruments	Made in	: Romania
Condition As-Received	: Used Product	Reference	: RE260620
Customer name	: HVE Co., Ltd.		
	603 Soi Charansanitwong 46, Charansanitwong Road,		
	Bangyikhan, Bang Phlat, Bangkok 10700		
Received date	: 1 April 2026		
Calibrate date	: 1 April 2026		
Issue date	: 3 April 2026		
Ambient Temperature	: (25 ± 2)°C		
Relative Humidity	: (50 ± 15)% RH		
Calibrated Location	: Hanna Instruments (Thailand) Ltd.		

Calibrated by

:



Approved by :



Authorized Signatory

S/B 10/4/26

Condition of this calibration result :

Reference standard instrument : This Certification is traceable to the SI Unit maintained through:

Instrument	Model	Serial No.	Certificate No.	Traceable
Digital Thermo-Hygrometer	HT-771SD	AI.07155	26H106	Technology Promotion Association (Thailand-Japan).
Data Acquisition Switch Unit	34970A	MY44065265	WK2507-171-1	WK Electric Co., Ltd.

Calibration Result :

Measurement Temperature Source Accuracy for COD Reactor.

Capacity	Nominal Value	Average Value	Error	Uncertainty ($\pm$)
22 Vials	150.0 °C	149.8 °C	-0.2 °C	0.54 °C

Unit : °C

(1A)	(2A)	(3A)	(4A)	(5A)
149.3	149.5	149.2	149.7	149.7
(1B)	(2B)	(3B)	(4B)	(5B)
149.4	150.2	150.1	150.2	150.0
(1C)	(2C)	(3C)	(4C)	(5C)
149.5	150.3	150.4	150.2	149.5
(1D)	(2D)	(3D)	(4D)	(5D)
149.7	N/A	N/A	N/A	149.8
(1E)	(2E)	(3E)	(4E)	(5E)
149.3	149.9	149.9	149.5	149.5

Figure: Shows the location of the temperature source.

Remark : N/A = not available. (Vial at 2D, 3D and 4D not ready to calibration)

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

** End of certificate **