

ภาคผนวก ง

ใบรับรองการสอบเทียบเครื่องมือ



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รายการเครื่องมือที่ใช้ในการวิเคราะห์ / ทดสอบ

Sample Name	Parameter	Equipment Name	ID No.	Calibrated Date	Next Cal	Freq. Calibrate (Months)
Songkhla Lab	BOO	Incubator	SGK_CL0028	10-Jan-25	10-Jul-26	18
Songkhla Lab	BOO	DO Meter With Sensor	SGK_CL0101	24-Feb-26	24-Feb-27	12
Songkhla Lab	Oil & Grease	Electronic Top-Loading Balance	SGK_CL0045	15-Dec-25	15-Dec-26	12
Songkhla Lab	Oil & Grease	Oven	SGK_CL0024	31-Mar-26	1-Oct-27	18
Songkhla Lab	Oil & Grease	Water Bath	SGK_CL0035	16-Dec-25	16-Dec-26	12
Songkhla Lab	Total Dissolved Solids 180°C	Electronic Top-Loading Balance	SGK_CL0045	15-Dec-25	15-Dec-26	12
Songkhla Lab	Total Dissolved Solids 180°C	Oven	SGK_CL0024	31-Mar-26	1-Oct-27	18
Songkhla Lab	Total Suspended Solids	Electronic Top-Loading Balance	SGK_CL0045	15-Dec-25	15-Dec-26	12
Songkhla Lab	Total Suspended Solids	Oven	SGK_CL0024	31-Mar-26	1-Oct-27	18
Songkhla Lab	pH at 25 °C	pH meter	SGK_CL0030	31-Mar-26	1-Oct-27	18
Songkhla Lab	Sulfide	Cold Room	SGK_CL0065	15-Dec-25	15-Jun-27	18
Songkhla Lab	Total Kjeldahl Nitrogen	KJELDAUTHERM@BLOCK-DESIGN	SGK_CL0092	14-Jan-26	19-Jan-27	12
Songkhla Lab	Fecal Coliform	Autoclave	SGK_ML0001	15-Dec-25	15-Jun-27	18
Songkhla Lab	Fecal Coliform	Incubator	SGK_ML0013	3-Jul-25	3-Jan-27	18
Songkhla Lab	Fecal Coliform	pH Meter	SGK_ML0045	17-Nov-25	17-Nov-26	12
Songkhla Lab	Fecal Coliform	Water Bath	SGK_ML0021	16-Dec-25	16-Jun-27	18
Songkhla Lab	Total Coliform	Autoclave	SGK_ML0001	15-Dec-25	15-Jun-27	18
Songkhla Lab	Total Coliform	Incubator	SGK_ML0013	3-Jul-25	3-Jan-27	18
Songkhla Lab	Total Coliform	pH Meter	SGK_ML0045	17-Nov-25	17-Nov-26	12
Songkhla Lab	Total Coliform	Water Bath	SGK_ML0021	16-Dec-25	16-Jun-27	18

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Southern Calibration Service Co., Ltd.

669/35 Karnjanavanit Rd., Banpru, Hatyai, Songkla 90250 Thailand

Tel : 08 1599 0417 Fax : 0 7480 5133 Email : s.calibration@gmail.com www.scal-lab.com



CALIBRATION CERTIFICATE

Issued Date : 13-Jan-2025

Certificate No. : 25TH0226

CSR No. : A101/05028

Page. : 1 of 3

Customer : ALS Laboratory Group (Thailand) Co., Ltd
114/1 Moo 8, Kamchanawanich Rd., Tambon, Ban Phru,
Amphoe Hat Yai, Songkhla, 90250

Calibration Place : Customer Laboratory

Instrument Name : Incubator

Manufacturer : Memmert

Model : ICP750

Serial No. : F816.0063

ID No. : SGK_CL0028

Resolution : 0.1 °C

Received Date : 10-Jan-2025

Calibrated Date : 10-Jan-2025

Ambient Temperature : (30 ± 10) °C

Relative Humidity : (50 ± 30) %

REVIEW BY Ananta B.
APPROVED BY Kanisha H.
NEXT CAL. DATE 10/1/26

Calibration Method Used :

This instrument was calibrated using the Calibration In - house method : SCAL.WI.012 based on GLA - 20

The Southern Calibration Service Co.,Ltd.calibration control system complies with requirement of ISO/IEC 17025:2017

Traceability of measurement :

This Certificate is traceable to the International and/or national standards which realize the units of measurement according to the International System of Unit (SI) through :

- TISTR : Thailand Institute of Scientific and Technological Research

Calibrated by : Ibrorhim Saleemin

Approved by :

Imron Rattanyulm / Technical Manager



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 Southern Calibration Service Co., Ltd.



Certificate No. : 25TH0226

CSR No. : A101/05028

Page. : 2 of 3

Details of Calibration

1. Reference Standard Equipment Used.

Equipment	Model	Serial No.	Cert. no.	Due Date
Data Acquisition/Switch Unit	34970A	MY58009813	PSL-T0707-1/67	22-May-2025

2. The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the longterm stability of instrument.

3. This certificate is not certified any commercial transaction

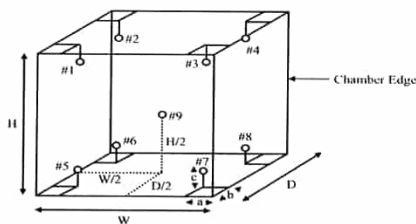
4. Condition of Item : normal condition , no indication for any damage or malfunction

Result of Calibration :

(✓) Without Adjustment

() After Adjustment

1. Sensor Installation Diagram



Sensor Installation Details

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

Dimension of the chamber

W = 104.0 cm
H = 120.0 cm
D = 60.0 cm



Certificate No. : 25TH0226

CSR No. : A101/05028

Page. : 3 of 3

Result of Calibration :

2. Temperature Measurement Accuracy Test

The measurement results of the Incubator and associates are reported in the manner as shown below

Cal point (°C)	Measured Standard Temperature At Spread Locations (°C)									Uncertainty (± °C)
	#1	#2	#3	#4	#5	#6	#7	#8	Ref. 9	
20	20.03	20.23	20.37	20.34	20.32	20.03	20.19	20.31	20.06	0.38

3. Performance Result

The performance of the Incubator are reported as shown below

Cal point (°C)	UUC Setting (°C)	UUC Reading (°C)	Temperature Stability (± °C)	Temperature Uniformity (°C)	Overall Variation (°C)
20	20.0	20.0	0.10	0.31	0.40

- UUC = Unit Under Calibration

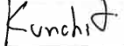
The report uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95%

... End ...



Certificate of Calibration

Cert. No.: 25LM26
Page.: 1 of 2

Equipment : DO Meter with Sensor
Manufacturer : YSI
Model : 4010-1W
Serial No. : 24200618
ID No. : -
Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd. Songkhla Branch.
114/1 Moo 8 Karmchanawanich Rd.,
T.Ban Phru, A.Hat Yai,
Songkhla 90250 Thailand
Location : TPA Calibration Laboratory
Received Order : 21 February 2025
Calibrated Date : 24 February 2025
Ambient Temperature : (26 ± 10) °C
Relative Humidity : (50 ± 30) %
AC Line Voltage : (220 ± 22) V
Calibrated by : Warakorn Lernagtrakul
Approved by : 
() Chakrit Waewwanjua
() Suwit Imjai
(✓) Kunchit Promprat
Issue Date : 25 February 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.



Equipment : DO Meter with Sensor
Condition As-Received : Used Item
Reference : 2502-0715WC-2
Procedure Used :-

Cert. No.: 25LM26
Page.: 2 of 2

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

Condition of this result of calibration

1. Reference standard instrument:-

Instrument	Serial No.	Cert. No.	Traceable	Due Date
1) Digital Thermometer	2188080	241022	TPA	17 Sep 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 : Temperature measurement.

This instrument was connected with temperature sensor, S/N.: 24F102419

Calibration Point (°C)	Immersion Depth (mm)	Standard Temperature (°C)	UUC* Reading (°C)	Error (°C)	Uncertainty (± °C)	Coverage Factor k
20.0	60	20.003	20.0	-0.003	0.16	2.00

UUC* : Unit Under Calibration

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

-o-o-



Certificate of Testing

Cert.No.: 25TW32
Page.: 1 of 2

Equipment : DO Meter
Manufacturer : YSI
Model : 4010-1W
Serial No. : 24200618
ID No. : -
Received Date : 21 February 2025
Test Date : 24 February 2025
Reference : 2502-0715WC-1
Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.
Songkhla Branch.
114/1 Moo 8 Karmchanawanich Rd., T.Ban Phru,
A.Hat Yai, Songkhla 90250 Thailand
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
(✓) Sathip Meangmai
Issue Date : 25 February 2025

REVIEW BY 
APPROVED BY 
NEXT CAL. DATE 24/2/26



Cert.No.: 25TW32
Page.: 2 of 2

Condition of this result of calibration

1. Reference Standard Instruments :

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

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

2. Standard Material :-

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

Result : Dissolved Oxygen Meter Adjustment With Air 100 %
Dissolved Oxygen Probe No.: 24F102419

Titration Method (Azide Modification Method) (mg/L)	DO Meter Reading (mg/L)	Standard Deviation (mg/L)
8.22	8.28	0.0089

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

-o-o-



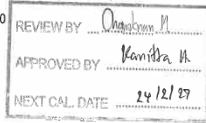
CALIBRATION CERTIFICATE

Issued Date : 27-Feb-2026

Certificate No. : 26CH0116
CSR No. : A240/11995
Page. : 1 of 2

Customer : ALS Laboratory Group (Thailand) Co., Ltd
114/1 Moo 8, Kamchanawanich Rd. Tambon, Ban Phru,
Amphoe Hat Yai, Songkhla, 90250

Calibration Place : SCaL Laboratory
Instrument Name : DO meter
Manufacturer : YSI
Model : 4010-1W
Serial No. : 24200618
ID No. : SGK_CL0101
Receipt Date : 20-Feb-2026
Calibration Date : 24-Feb-2026
Ambient Temperature : (25 ± 3) °C
Relative Humidity : (55 ± 15) %



Calibration Method Used :

This instrument was calibrated using the Calibration In - house method : SCAL.WI.062 based on direct measurement by using certified reference Material (CRM)

The Southern Calibration Service Co.,Ltd calibration control system complies with requirement of ISO/IEC 17025:2017

Traceability of measurement :

This Certificate is traceable to the International and for national standards which realize the units of measurement according to the International System of Unit (SI) through :

- HANNA : Hanna Instruments.

Calibrated by : Alisara Ma

Approved by :
Sakeereen Heemhad / Laboratory Manager



The uncertainties are for a confidence probability of approximately 95%

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Details of Calibration

1. Reference Standard Equipment Used:

Equipment	Model	Serial No.	Cert. no.	Due Date
Zero Oxygen Solution	HI7040L	C02374	S0032/21	12-Apr-2026

- The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the longterm stability of instrument.
- This certificate is not certified any commercial transaction
- Condition of Item : normal condition , no indication for any damage or malfunction

Result of Calibration : (✓) Without Adjustment () After Adjustment

Sample Test Measurement

Serial Probe No. : 24F102419

Standard Buffer Solutions	UUC Reading	Correction	Uncertainty (±)
8.26 mg/L	8.26 mg/L	0.00 mg/L	0.16 mg/L

- UUC = Unit Under 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 ---

SCAL.F0.018/010723



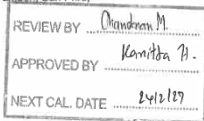
CALIBRATION CERTIFICATE

Issued Date : 27-Feb-2026

Certificate No. : 26TH0817
CSR No. : A240/11995
Page. : 1 of 2

Customer : ALS Laboratory Group (Thailand) Co., Ltd
114/1 Moo 8, Kamchanawanich Rd. Tambon, Ban Phru,
Amphoe Hat Yai, Songkhla, 90250

Calibration Place : SCaL Laboratory
Instrument Name : DO Meter with probe
Manufacturer : YSI
Model : 4010-1W
Serial No. : 24200618
ID No. : SGK_CL0101
Resolution : 0.1 °C
Received Date : 20-Feb-2026
Calibrated Date : 24-Feb-2026
Ambient Temperature : (25 ± 3) °C
Relative Humidity : (55 ± 15) %



Calibration Method Used :

This instrument was calibrated using the Calibration In - house method : SCAL.WI.011 by comparison technique with standard thermometer

The Southern Calibration Service Co.,Ltd calibration control system complies with requirement of ISO/IEC 17025:2017

Traceability of measurement :

This Certificate is traceable to the International and for national standards which realize the units of measurement according to the International System of Unit (SI) through :

- Q Reborn : Quality Reborn Co.,Ltd.

Calibrated by : Iborhim Salemin

Approved by :
Sakeereen Heemhad / Laboratory Manager



The uncertainties are for a confidence probability of approximately 95%

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Details of Calibration

1. Reference Standard Equipment Used:

Equipment	Model	Serial No.	Cert. no.	Due Date
Digital Thermometer With Sensor (PRT)	1529	B4C223	QR25-2862	25-Sep-2026

- The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the longterm stability of instrument.
- This certificate is not certified any commercial transaction
- Condition of Item : normal condition , no indication for any damage or malfunction

Result of Calibration : (✓) Without Adjustment () After Adjustment

Sensor Type : RTD Channel : OUT Serial Probe No. : 24F102419
Length : 6.8 cm. Diameter : 0.2 cm. Immersion : 6.8 cm.

Cal Point (°C)	Standard Temperature (°C)	UUC Reading (°C)	Correction (°C)	Uncertainty (± °C)
20	20.007	20.2	-0.193	0.077

- UUC = Unit Under 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...

SCAL.F0.018/010723

CALIBRATION CERTIFICATE

Issued Date : 18-Dec-2025

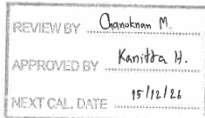
Certificate No. : 25MA2641

CSR No. : A230/11462

Page. : 1 of 3

Customer : ALS Laboratory Group (Thailand) Co., Ltd
114/1 Moo 8, Kamchanawanich Rd. Tambon, Ban Phru,
Amphoe Hat Yai, Songkhla, 90250

Calibration Place : Chemical Laboratory
Instrument Name : Electronic Balance
Manufacturer : Sartorius
Model : MSE224S-100-DU
Serial No. : 34705158
ID No. : SGK_CL0045
Resolution : 0.0001 g
Received Date : 15-Dec-2025
Calibrated Date : 15-Dec-2025
Ambient Temperature : (30 ± 10) °C
Relative Humidity : (50 ± 20) %



Calibration Method Used :

This instrument was calibrated using the Calibration In - house method : SCAL.WI.001 based on UKAS LAB 14 : 2022

The Southern Calibration Service Co., Ltd. calibration control system complies with requirement of ISO/IEC 17025:2017

Traceability of measurement :

This Certificate is traceable to the International and/or national standards which realize the units of measurement

according to the International System of Unit (SI) through :

- SCaL : Southern Calibration Service Co., Ltd.,

Calibrated by : Hadbordee Dettawe

Approved by :

Imron Rattanayum / Technical Manager



The uncertainties are for a confidence probability of approximately 95%

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Certificate No. : 25MA2641

CSR No. : A230/11462

Page. : 3 of 3

Result of Calibration : cont.

4. Departure from nominal value

Nominal Value (g)	Standard Value (g)	UUC Reading (g)	Correction (g)	Uncertainty (±g)	Coverage Factor (k)
0	0.0000	0.0000	0.0000	0.00008	2.0
0.01	0.0100	0.0100	0.0000	0.00008	2.0
0.1	0.1000	0.1000	0.0000	0.00008	2.0
0.5	0.5000	0.5000	0.0000	0.00008	2.0
1	1.0000	1.0000	0.0000	0.00008	2.0
2	2.0000	2.0000	0.0000	0.00008	2.0
5	5.0000	5.0000	0.0000	0.00009	2.0
10	10.0000	10.0000	0.0000	0.00009	2.0
20	19.9999	20.0000	-0.0001	0.00009	2.0
40	39.9999	40.0000	-0.0001	0.00012	2.0
60	60.0001	60.0000	0.0001	0.00013	2.0
80	80.0000	80.0000	0.0000	0.00017	2.0
100	100.0000	100.0000	0.0000	0.00016	2.0
120	119.9999	120.0000	-0.0001	0.00024	2.0
140	139.9999	140.0001	-0.0002	0.00024	2.0
160	160.0001	160.0001	0.0000	0.00026	2.0
180	180.0000	180.0001	-0.0001	0.00030	2.0
200	199.9998	200.0000	-0.0002	0.00029	2.0

- UUC = Unit Under Calibration

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

...End...

CARIBRATION CERTIFICATE

Details of Calibration

1. Reference Standard Equipment Used:

Equipment	Model	Serial No.	Cert. no.	Due Date
Standard Weight Set	2mg to 1kg	11119514/01	25SWS001	2-Jul-2026

2. The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the longterm stability of instrument.

3. This certificate is not certified any commercial transaction

4. Condition of Item : normal condition , no indication for any damage or malfunction

Result of Calibration : [✓] Without Adjustment [] After Adjustment

1. Repeatability

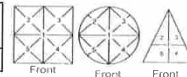
Nominal Value (g)	Standard Deviation (g)
20	0.00000
200	0.00000

2. Off-center loading

A mass approximately 100g was placed on a pan and moved to various position .

The balance reading obtained are given in the table.

Position					Maximum Error from Center (g)
1	2	3	4	5	
100.0000	100.0001	100.0000	100.0001	100.0000	0.0001



3. Effect of tare

Nominal Value (g)	Standard Value (g)	Balance Reading (g)	UUC Error (g)
20	19.9999	20.0000	0.0001
40	39.9999	40.0000	0.0001
60	60.0001	60.0000	-0.0001
80	80.0000	80.0001	0.0001
100	100.0000	100.0000	0.0000

SCAL.FO.018/08/0723

Southern Calibration Service Co., Ltd.

669/35 Kanjanavanit Rd., Banpru, Hatyai, Songkhla 90250 Thailand
Tel: 08 1599 0417 Fax: 0 7480 5133 Email: s.calibration@gmail.com www.scal-lab.com

CARIBRATION CERTIFICATE

Issued Date : 22-Oct-2024

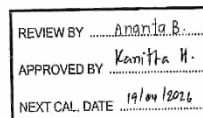
Certificate No. : 24TH4295

CSR No. : A163/08133

Page. : 1 of 3

Customer : ALS Laboratory Group (Thailand) Co., Ltd
114/1 Moo 8, Kamchanawanich Rd. Tambon, Ban Phru,
Amphoe Hat Yai, Songkhla, 90250

Calibration Place : Chemical Laboratory
Instrument Name : Hot Air Oven
Manufacturer : Memmert
Model : UF110
Serial No. : B416.3387
ID No. : SGK_CL0024
Resolution : 0.1 °C
Received Date : 19-Oct-2024
Calibrated Date : 19-Oct-2024
Ambient Temperature : (30 ± 10) °C
Relative Humidity : (50 ± 30) %



Calibration Method Used :

This instrument was calibrated using the Calibration In - house method : SCAL.WI.012 based on GLA - 20

The Southern Calibration Service Co., Ltd. calibration control system complies with requirement of ISO/IEC 17025:2017

Traceability of measurement :

This Certificate is traceable to the International and/or national standards which realize the units of measurement

according to the International System of Unit (SI) through :

- TISTR : Thailand Institute of Scientific and Technological Research

Calibrated by : Ibromih Saleemin

Approved by :

Imron Rattanayum / Technical Manager



The uncertainties are for a confidence probability of approximately 95%

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Certificate No. : 24TH4295
CSR No. : A163/08133
Page. : 2 of 3

Details of Calibration

1. Reference Standard Equipment Used:

Equipment	Model	Serial No.	Cert. no.	Due Date
Data Acquisition/Switch Unit	34970A	MY58008813	PSL-T0707-1/57	22-May-2025

2. The results reported in this certificate refer to the condition of the instrument on the date of calibration

and carry no implication regarding the long-term stability of instrument.

3. This certificate is not certified any commercial transaction

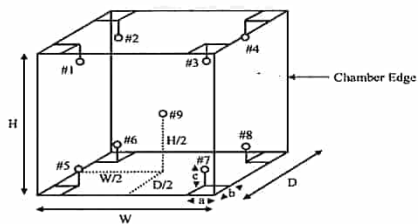
4. Condition of item : normal condition , no indication for any damage or malfunction

Result of Calibration :

(☒) Without Adjustment

(☐) After Adjustment

1. Sensor Installation Diagram



Sensor Installation Details

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

Dimension of the chamber

W = 55.0 cm
H = 48.0 cm
D = 49.0 cm



Certificate No. : 24TH4295
CSR No. : A163/08133
Page. : 3 of 3

Result of Calibration :

2. Temperature Measurement Accuracy Test

The measurement results of the Hot Air Oven and associated are reported in the manner as shown below

Cal point (°C)	Measured Standard Temperature At Spread Locations (°C)									Uncertainty (±°C)
	#1	#2	#3	#4	#5	#6	#7	#8	Ref. 9	
40	40.35	40.40	40.51	40.43	40.05	40.24	40.09	40.14	39.75	0.38
70	70.27	70.30	70.45	70.24	70.24	70.43	70.29	70.30	69.95	0.35
103	102.94	102.90	103.55	102.96	103.22	103.14	103.10	103.01	102.88	0.35
104	104.15	103.99	104.27	104.08	104.09	104.23	104.26	104.15	103.90	0.35
105	105.04	104.90	105.05	104.87	104.91	104.80	104.82	104.98	104.70	0.35
180	179.19	178.93	179.82	179.10	179.27	179.68	179.12	179.73	179.12	0.41

3. Performance Result

The performance of the Hot Air Oven are reported as shown below

Cal point (°C)	UUC Setting (°C)	UUC Reading (°C)	Temperature Stability (±°C)	Temperature Uniformity (°C)	Overall Variation (°C)
40	40.0	40.0	0.20	0.84	0.84
70	70.0	70.0	0.10	0.59	0.59
103	103.0	103.0	0.20	0.73	0.74
104	104.0	104.0	0.20	0.47	0.56
105	105.0	105.0	0.20	0.44	0.46
180	180.0	180.0	0.50	0.85	1.11

- UUC = Unit Under 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 ...



Southern Calibration Service Co., Ltd.

669/35 Kanjanavanit Rd., Banpru, Hatyai, Songkhla 90250 Thailand
Tel: 08 1599 0417 Fax: 0 7480 5133 Email: s.calibration@gmail.com www.sscal.co.th



CALIBRATION CERTIFICATE

Issued Date : 3-Apr-2026

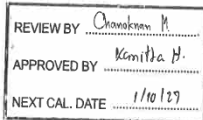
Certificate No. : 26TH1563

CSR No. : A247/12304

Page. : 1 of 3

Customer : ALS Laboratory Group (Thailand) Co., Ltd
114/1 Moo 8, Kamchanawanich Rd. Tambon, Ban Phru,
Amphoe Hat Yai, Songkhla, 90250

Calibration Place : Customer Laboratory
Instrument Name : Hot Air Oven
Manufacturer : Memmert
Model : UF110
Serial No. : B416.3387
ID No. : SGK_CL0024
Resolution : 0.1 °C
Received Date : 31-Mar-2026
Calibrated Date : 31-Mar-2026
Ambient Temperature : (30 ± 10) °C
Relative Humidity : (50 ± 30) %



Calibration Method Used :

This instrument was calibrated using the Calibration In - house method : SCAL.WI.012 based on GLA - 20

The Southern Calibration Service Co., Ltd. calibration control system complies with requirement of ISO/IEC 17025:2017

Traceability of measurement :

This Certificate is traceable to the International and /or national standards which realize the units of measurement according to

the International System of Unit (SI) through :

- Q Reborn : Quality Reborn Co., Ltd.

Calibrated by : Ibrorhim Saleemin

Approved by :

Alsara Ma / Supervisor Manager



Certificate No. : 26TH1563

CSR No. : A247/12304

Page. : 2 of 3

Details of Calibration

1. Reference Standard Equipment Used:

Equipment	Model	Serial No.	Cert. no.	Due Date
Data Acquisition Switch Unit with Sensor	DAQ970A	MY58036254	QR25-2036	1-Jul-2026

2. The results reported in this certificate refer to the condition of the instrument on the date of calibration

and carry no implication regarding the long-term stability of instrument.

3. This certificate is not certified any commercial transaction

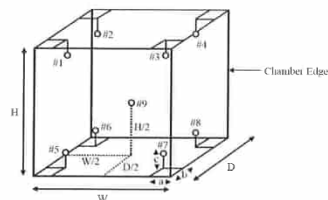
4. Condition of item : normal condition , no indication for any damage or malfunction

Result of Calibration :

(☒) Without Adjustment

(☐) After Adjustment

1. Sensor Installation Diagram



Sensor Installation Details

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

Dimension of the chamber

W = 40.0 cm
H = 40.0 cm
D = 33.0 cm



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 Southern Calibration Service Co., Ltd.

SCAL-FO-018/010723

Result of Calibration:

2. Temperature Measurement Accuracy Test

The measurement results of the Hot Air Oven and associates are reported in the manner as shown below

Cal point (°C)	Measured Standard Temperature At Spread Locations (°C)									Uncertainty (±°C)
	#1	#2	#3	#4	#5	#6	#7	#8	Ref. 9	
40	40.52	40.44	40.53	40.53	40.53	40.46	40.59	40.54	40.44	0.38
70	70.81	70.87	71.28	70.87	70.18	70.96	70.24	70.47	70.09	0.44
103	103.36	103.37	103.49	103.42	102.74	103.02	103.47	102.92	102.96	0.39
104	104.06	104.09	104.50	104.14	103.50	104.15	104.47	103.84	103.84	0.42
105	105.20	105.22	105.54	105.41	105.36	105.22	105.31	105.01	105.09	0.38
180	180.78	180.86	180.98	180.98	179.46	179.33	179.32	179.41	179.42	0.55

3. Temperature Performance Result

The performance of the Hot Air Oven are reported as shown below

UUC Setting (°C)	UUC Reading (°C)	Temperature Stability (±°C)	Temperature Uniformity (°C)	Overall Variation (°C)
40.0	40.0	0.10	0.33	0.33
70.0	70.0	0.05	1.17	1.17
103.0	103.0	0.10	0.72	0.94
104.0	104.0	0.15	0.95	1.27
105.0	105.0	0.10	0.63	0.77
180.0	180.0	0.25	1.73	1.85

UUC = Unit Under 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 ...

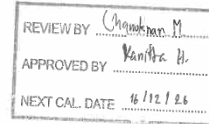
CALIBRATION CERTIFICATE

Issued Date : 19-Dec-2025

Certificate No. : 25TH5535

CSR No. : A230/11460

Page. : 1 of 3

Customer : ALS Laboratory Group (Thailand) Co., Ltd
114/1 Moo 8, Kamchanawanich Rd. Tambon, Ban Phru,
Amphoe Hat Yai, Songkhla, 90250Calibration Place : Chemical Laboratory
Instrument Name : Liquid Bath
Manufacturer : Memmert
Model : WNE29
Serial No. : L616.0538
ID No. : SGK_CL0035
Resolution : 0.1 °C
Received Date : 16-Dec-2025
Calibrated Date : 16-Dec-2025
Ambient Temperature : (30 ± 10) °C
Relative Humidity : (50 ± 30) %

Calibration Method Used :

This instrument was calibrated using the Calibration In - house method : SCAL.WI.014 based on ASTM E 715 : 1980 (reapproved 2001)

The Southern Calibration Service Co.,Ltd. calibration control system complies with requirement of ISO/IEC 17025:2017

Traceability of measurement :

This Certificate is traceable to the International and /or national standards which realize the units of measurement according to the International System of Unit (SI) through :

- Q Reborn : Quality Reborn Co.,Ltd.

Calibrated by : Ibrorhim Saleemin

Approved by :

Imron Rattanayum / Technical Manager

SCAL-F0186/010771



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 Southern Calibration Service Co., Ltd.

Result of Calibration:

2. Temperature Measurement Accuracy Test

The measurement results of the Liquid Bath and associates are reported in the manner as shown below

Cal point (°C)	Measured Standard Temperature At Spread Locations (°C)					Uncertainty (±°C)
	#1	#2	#3	#4	Ref.5	
63	62.92	62.94	63.06	63.05	63.02	0.14

3. Performance Result

The performance of the Liquid Bath are reported as shown below

Cal point (°C)	UUC Setting (°C)	UUC Reading (°C)	Temperature Stability (±°C)	Temperature Uniformity (°C)	Overall Variation (°C)
63	63.5	63.5	0.05	0.17	0.20

- UUC = Unit Under 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 ...

Details of Calibration

1. Reference Standard Equipment Used:

Equipment	Model	Serial No.	Cert. no.	Due Date
Data Acquisition/Switch Unit	DAQ970A	MY58036254	QR25-2036	1-Jul-2026

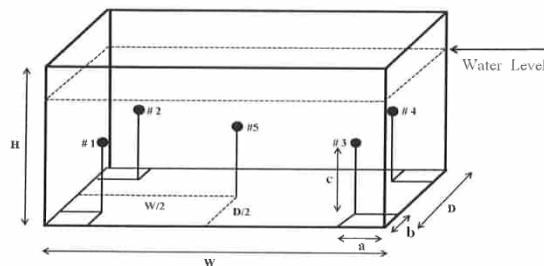
2. The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the longterm stability of instrument.

3. This certificate is not certified any commercial transaction

4. Condition of Item : normal condition , no indication for any damage or malfunction

Result of Calibration : (✓) Without Adjustment () After Adjustment

1. Sensor Installation Diagram



Sensor Installation Details

a = 5 cm
b = 5 cm
c = 5 cm

Dimension of the chamber

W = 45 cm
H = 30 cm
D = 35 cm



CARIBRATION CERTIFICATE

Issued Date : 22-Oct-2024

Certificate No. : 24CH0526

CSR No. : A163/08133

Page : 1 of 2

Customer : ALS Laboratory Group (Thailand) Co., Ltd
114/1 Moo 8, Karnchanawanich Rd. Tambon, Ban Phru,
Amphoe Hat Yai, Songkhla, 90250

Calibration Place : Chemical Laboratory
Instrument Name : pH meter
Manufacturer : Mettler Toledo
Model : S220
Serial No. : B625631849
ID No. : SGK_CL0030
Electrode No. : 2281592
Received Date : 19-Oct-2024
Calibrated Date : 19-Oct-2024
Ambient Temperature : (25 ± 3) °C
Relative Humidity : (55 ± 15) %

REVIEW BY : Ananta B.
APPROVED BY : Kanika H.
NEXT CAL. DATE : 19/10/26

Calibration Method Used :

This instrument was calibrated using the Calibration In - house method : SCAL.WI.008 based on direct measurement by using certified reference Material (CRM)

The Southern Calibration Service Co., Ltd. calibration control system complies with requirement of ISO/IEC 17025:2017

Traceability of measurement :

This Certificate is traceable to the International and/or national standards which realize the units of measurement

according to the International System of Unit (SI) through :

- CPAchem : CPAchem Ltd
- WK : WK Electric Co., Ltd.
- SCAL : Southern Calibration Service Co., Ltd.,

Calibrated by : Aisara Ma

Approved by :

Imron Rattanasylum / Technical Manager



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 Southern Calibration Service Co., Ltd.

Certificate No. : 24CH0526

CSR No. : A163/08133

Page : 2 of 2



Details of Calibration

1. Reference Standard Equipment Used:

Equipment	Model	Serial No.	Cert. no.	Due Date
Standard Solution	4.000	61310674	1042701	26-Oct-2025
Standard Solution	7.000	61314184	1042700	26-Oct-2025
Standard Solution	10.01	61313804	1042702	26-Oct-2025
Temperature/Electrical Calibrator	MC2-TE	14967	WK2106-299-223	31-May-2025
Digital Thermometer With Sensor	DP-77	1.360896	24SDTH005	7-Aug-2025

2. The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the longterm stability of instrument.

3. This certificate is not certified any commercial transaction

4. Condition of item : normal condition , no indication for any damage or malfunction

Result of Calibration :

1. Electrical Measurement

Applied Voltage (mV)	pH meter Reading (mV)	pH	Correction (mV)	Uncertainty (± mV)
177.48	177.5	4.00	-0.02	0.17
0.00	0.0	7.00	0.00	0.13
-177.48	-177.5	10.00	0.02	0.17

2. Before Sample Test Measurement

Standard Buffer Solutions (pH)	pH meter Reading (pH)	(mV)	Correction (pH)	Uncertainty (± pH)
4.007	3.99	178.1	0.017	0.0062
6.976	7.02	1.7	-0.044	0.019
10.009	9.96	-169.6	0.049	0.038

3. After Sample Test Measurement

Standard Buffer Solutions (pH)	pH meter Reading (pH)	(mV)	Correction (pH)	Uncertainty (± pH)
4.007	3.99	177.7	0.017	0.0092
6.976	7.01	3.7	-0.034	0.019
10.009	10.00	-169.0	0.009	0.038

4. Temperature Measurement

Cal Point (°C)	Standard Temperature (°C)	UUC Reading (°C)	Correction (°C)	Uncertainty (± °C)
25	25.021	25.0	0.02	0.060

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 ...



CALIBRATION CERTIFICATE

Issued Date : 3-Apr-2026

Certificate No. : 26CH0181

CSR No. : A247/12304

Page : 1 of 2

Customer : ALS Laboratory Group (Thailand) Co., Ltd
114/1 Moo 8, Karnchanawanich Rd. Tambon, Ban Phru,
Amphoe Hat Yai, Songkhla, 90250

Calibration Place : Customer Laboratory
Instrument Name : pH meter
Manufacturer : Mettler Toledo
Model : S220
Serial No. : B62531849
ID No. : SGK_CL0030
Electrode No. : 30014096
Received Date : 31-Mar-2026
Calibrated Date : 31-Mar-2026
Ambient Temperature : (25 ± 3) °C
Relative Humidity : (55 ± 15) %

REVIEW BY : Ananta B.
APPROVED BY : Kanika H.
NEXT CAL. DATE : 1/10/27

Calibration Method Used :

This instrument was calibrated using the Calibration In - house method : SCAL.WI.062 based on direct measurement with certified reference material (CRM)

The Southern Calibration Service Co., Ltd. calibration control system complies with requirement of ISO/IEC 17025:2017

Traceability of measurement :

This Certificate is traceable to the International and/or national standards which realize the units of measurement

according to the International System of Unit (SI) through :

- CPAchem : CPAchem Ltd
- WK : WK Electric Co., Ltd.

Calibrated by : Aisara Ma

Approved by :

Aisara Ma / Supervisor Manager



The uncertainties are for a confidence probability of approximately 95%

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Certificate No. : 26CH0181

CSR No. : A247/12304

Page : 2 of 2

Details of Calibration

1. Reference Standard Equipment Used:

Equipment	Model	Serial No.	Cert. no.	Due Date
Standard Solution	4.000	61333215	1176852	24-Dec-2026
Standard Solution	6.999	C03337	S11M004	24-Dec-2026
Standard Solution	10.01	61325050	1176853	24-Dec-2026
Temperature/Electrical Calibrator	MC2-MF	23642	WK2502-402-32	5-Feb-2027

2. The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the longterm stability of instrument.

3. This certificate is not certified any commercial transaction

4. Condition of item : normal condition , no indication for any damage or malfunction

Result of Calibration :

1. Electrical Measurement

Applied Voltage (mV)	pH meter Reading (mV)	pH	Correction (mV)	Uncertainty (± mV)	Coverage factor k
177.48	177.5	4.00	-0.02	0.17	2.00
0.00	0.1	7.00	-0.10	0.13	2.00
-177.48	-177.4	10.00	-0.08	0.17	2.00

2. Before Sample Test Measurement

Standard Buffer Solutions (pH)	pH meter Reading (pH)	(mV)	Correction (pH)	Uncertainty (± pH)	Coverage factor k
4.008	4.01	159.8	-0.002	0.0092	2.00
6.999	7.07	-14.0	-0.071	0.020	2.00
10.011	10.11	-187.4	-0.099	0.042	2.00

3. After Sample Test Measurement (Performing buffer standard curve by using buffer nominal pH4, 7, 10)

Standard Buffer Solutions (pH)	pH meter Reading (pH)	(mV)	Correction (pH)	Uncertainty (± pH)	Coverage factor k
4.008	4.00	169.8	0.008	0.0092	2.00
6.999	7.00	-4.2	-0.001	0.019	2.00
10.011	10.01	-177.6	0.001	0.042	2.00

4. Temperature Measurement

Cal Point (°C)	Standard Temperature (°C)	UUC Reading (°C)	Correction (°C)	Uncertainty (± °C)
25	25.024	25.1	-0.076	0.06

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

... End ...



Southern Calibration Service Co., Ltd.

669/35 Kanjanavanit Rd., Banpru, Hatyai, Songkhla 90250 Thailand
Tel: 08 1599 0417 Fax: 0 7480 5133 Email: s.calibration@gmail.com www.scal.co.th



CALIBRATION CERTIFICATE

Issued Date : 18-Dec-2025

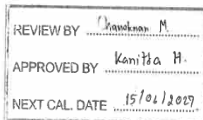
Certificate No. : 25TH5497

CSR No. : A230/11460

Page : 1 of 3

Customer : ALS Laboratory Group (Thailand) Co., Ltd.
114/1 Moo 8, Karnchanawanich Rd. Tambon, Ban Phru,
Amphoe Hat Yai, Songkhla, 90250

Calibration Place : Chemical Laboratory
Instrument Name : Cold Room
Manufacturer : N/A
Model : N/A
Serial No. : N/A
ID No. : SGK_CL0065
Resolution : 0.1 °C
Received Date : 15-Dec-2025
Calibrated Date : 15-Dec-2025
Ambient Temperature : (30 ± 10) °C
Relative Humidity : (50 ± 30) %



Calibration Method Used :

This instrument was calibrated using the Calibration In - house method : SCAL.WI.012 based on GLA - 20
The Southern Calibration Service Co.,Ltd calibration control system complies with requirement of ISO/IEC 17025:2017

Traceability of measurement :

This Certificate is traceable to the International and /or national standards which realize the units of measurement according to the International System of Unit (SI) through :
- Q Reborn : Quality Reborn Co.,Ltd.

Calibrated by : Ibrorhim Saleemin

Approved by :

Imron Rattanaylum / Technical Manager



The uncertainties are for a confidence probability of approximately 95%

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Certificate No. : 25TH5497

CSR No. : A230/11460

Page : 2 of 3

Details of Calibration

1. Reference Standard Equipment Used:

Equipment	Model	Serial No.	Cert. no.	Due Date
Data Acquisition Switch Unit with Sensor	DAQ970A	MY58036254	QR25-2036	1-Jul-2026

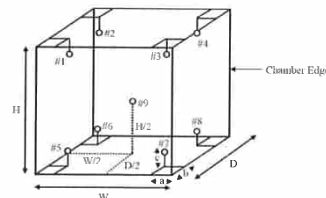
2. The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the longterm stability of instrument.

3. This certificate is not certified any commercial transaction

4. Condition of item : normal condition , no indication for any damage or malfunction

Result of Calibration : [✓] Without Adjustment [] After Adjustment

1. Sensor Installation Diagram



Sensor Installation Details

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

Dimension of the chamber

W = 40.0 cm
H = 40.0 cm
D = 33.0 cm

SCAL-F018/010723



Certificate No. : 25TH5497

CSR No. : A230/11460

Page : 3 of 3

Result of Calibration :

2. Temperature Measurement Accuracy Test

The measurement results of the Cold Room and associates are reported in the manner as shown below

Cal point (°C)	Measured Standard Temperature At Spread Locations (°C)									Uncertainty (±°C)
	#1	#2	#3	#4	#5	#6	#7	#8	Ref. 9	
4	3.95	4.10	4.10	4.02	4.10	3.95	3.90	3.99	3.95	0.38

3. Temperature Performance Result

The performance of the Cold Room are reported as shown below

UUC Setting (°C)	UUC Reading (°C)	Temperature Stability (±°C)	Temperature Uniformity (°C)	Overall Variation (°C)
4.0	4.0	0.05	0.86	0.86

UUC = Unit Under 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 ...

SCAL-F018/010723



Southern Calibration Service Co., Ltd.

669/35 Kanjanavanit Rd., Banpru, Hatyai, Songkhla 90250 Thailand
Tel: 08 1599 0417 Fax: 0 7480 5133 Email: s.calibration@gmail.com www.scal-lab.com

CALIBRATION CERTIFICATE

Issued Date : 17-Jan-2026

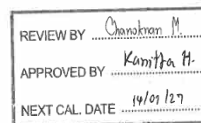
Certificate No. : 26TH0164

CSR No. : A224/11200

Page : 1 of 3

Customer : ALS Laboratory Group (Thailand) Co., Ltd.
114/1 Moo 8, Karnchanawanich Rd. Tambon, Ban Phru,
Amphoe Hat Yai, Songkhla, 90250

Calibration Place : Customer Laboratory
Instrument Name : Digester Block
Manufacturer : Gerhardt
Model : KT-L205BS
Serial No. : 5770230038
ID No. : SGK_CL0092
Receipt Date : 14-Jan-2026
Calibration Date : 14-Jan-2026
Ambient Temperature : (30 ± 10) °C
Relative Humidity : (50 ± 30) %



Calibration Method Used :

This instrument was calibrated using the Calibration In - house method : SC.WI.12.016 based on G-20

The Southern Calibration Service Co.,Ltd calibration control system complies with requirement of ISO/IEC 17025:2017

Traceability of measurement :

This Certificate is traceable to the International and /or national standards which realize the units of measurement according to the International System of Unit (SI) through :

- SCAL : Southern Calibration Service Co., Ltd.,

Calibrated by : Ibrorhim Saleemin

Approved by :

Imron Rattanaylum / Technical Manager



The uncertainties are for a confidence probability of approximately 95%

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Certificate No. : 26TH0164
CSR No. : A224/11200
Page. : 2 of 3

Details of Calibration

1. Reference Standard Equipment Used:

Equipment	Model	Serial No.	Cert. no.	Due Date
Data Acquisition Switch Unit with Sensor	DAQ970A	MY58036254	QR25-2036	1-Jul-2026

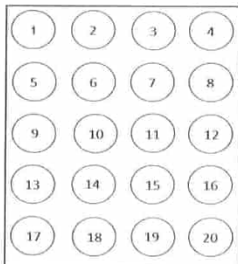
2. The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the longterm stability of instrument.

3. This certificate is not certified any commercial transaction

4. Condition of Item : normal condition , no indication for any damage or malfunction

Result of Calibration :

Sensor Installation Diagram



1.Measurement for Left Heating Block

Position	UUC Reading (°C)	Standard Temperature (°C)	Correction (°C)	Uncertainty (± °C)
No.1	380	380.21	0.21	0.32
No.2	380	379.52	-0.48	0.32
No.3	380	379.78	-0.22	0.32
No.4	380	379.31	-0.69	0.32
No.5	380	380.47	0.47	0.32

SCAL.FO.01/8/6/010723



Certificate No. : 26TH0164
CSR No. : A224/11200
Page. : 3 of 3

Result of Calibration :

Position	UUC Reading (°C)	Standard Temperature (°C)	Correction (°C)	Uncertainty (± °C)
No.6	380	380.42	0.42	0.32
No.7	380	380.56	0.56	0.32
No.8	380	379.42	-0.58	0.32
No.9	380	380.06	0.06	0.32
No.10	380	379.92	-0.08	0.32
No.11	380	379.21	-0.79	0.32
No.12	380	380.12	0.12	0.32
No.13	380	380.93	0.93	0.32
No.14	380	379.86	-0.14	0.32
No.15	380	379.63	-0.37	0.32
No.16	380	379.41	-0.59	0.32
No.17	380	379.87	-0.13	0.32
No.18	380	379.81	-0.19	0.32
No.19	380	379.63	-0.37	0.32
No.20	380	379.14	-0.86	0.32

Remark : Calibration Points : 380 °C

UUC Setting : 380 °C

- UUC = Unit Under 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...

SCAL.FO.01/8/6/010723



Southern Calibration Service Co., Ltd.

669/35 Kanjanavanit Rd., Banpru, Hatyai, Songkhla 90250 Thailand
Tel : 08 1599 0417 Fax : 0 7480 5133 Email : s.calibration@gmail.com www.sca.co.th



CALIBRATION CERTIFICATE

Issued Date : 18-Dec-2025

Certificate No. : 25TH5452

CSR No. : A230/11461

Page. : 1 of 3

Customer : ALS Laboratory Group (Thailand) Co., Ltd
114/1 Moo 8, Kamchanawanich Rd. Tambon, Ban Phru,
Amphoe Hat Yai, Songkhla, 90250

Calibration Place : Microbiological Laboratory

Instrument Name : Autoclave

Manufacturer : TOMY

Model : SX-700

Serial No. : 52134079

ID No. : SGK_ML0001

Resolution : 1 °C

Received Date : 15-Dec-2025

Calibrated Date : 15-Dec-2025

Ambient Temperature : (30 ± 10) °C

Relative Humidity : (50 ± 30) %



Calibration Method Used :

This instrument was calibrated using the Calibration In - house method : SCAL.WI.013 based on BS 2646 : 1993 (part 5)

The Southern Calibration Service Co.,Ltd calibration control system complies with requirement of ISO/IEC 17025:2017

Traceability of measurement :

This Certificate is traceable to the International and /or national standards which realize the units of measurement

according to the International System of Unit (SI) through :

- ScaL : Southern Calibration Service Co., Ltd.,

Calibrated by : Ibrorhim Saleemin

Approved by :

Imron Rattanaylum / Technical Manager



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 Southern Calibration Service Co., Ltd.



Certificate No. : 25TH5452
CSR No. : A230/11461
Page. : 2 of 3

Details of Calibration

1. Reference Standard Equipment Used:

Equipment	Model	Serial No.	Cert. no.	Due Date
Data logger With Sensor	GL240	C90432223	25SDAT005	16-Apr-2026

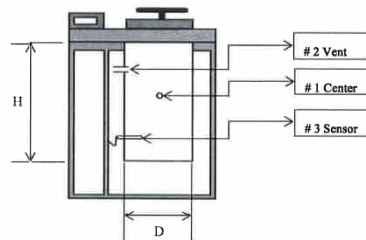
2. The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the longterm stability of instrument.

3. This certificate is not certified any commercial transaction

4. Condition of Item : normal condition , no indication for any damage or malfunction

Result of Calibration : (✓) Without Adjustment () After Adjustment

1. Sensor Installation Diagram



Chamber Diameter (D) : 30 cm

Chamber Height (H) : 70 cm

SCAL.FO.01/8/6/010723

Result of Calibration:

2. Temperature Measurement Accuracy Test

The measurement results of the Autoclave and associates are reported in the manner as shown below

Cal point (°C)	Measured Standard Temperature At Spread Locations (°C)			Pressure Reading	Uncertainty (±°C)
	Center #1	Vent #2	Sensor #3		
121	121.9	121.8	121.9	0.11 MPa	0.76

3. Performance Result

The performance of the Autoclave are reported as shown below

Cal point (°C)	UUC Setting (°C)	UUC Reading (°C)	Temperature Stability (±°C)	Temperature Uniformity (°C)	Overall Variation (°C)
121	121	121	0.50	0.69	0.83

- Operating Time = 1800.06 sec

- UUC = Unit Under 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 ...

CALIBRATION CERTIFICATE

Issued Date : 6-Jul-2025

Certificate No. : 25TH3013

CSR No. : A202/10083

Page. : 1 of 3

Customer : ALS Laboratory Group (Thailand) Co., Ltd
114/1 Moo 8, Kamchanawanich Rd. Tambon, Ban Phru,
Amphoe Hat Yai, Songkhla, 90250

Calibration Place : Customer Laboratory

Instrument Name : Incubator

Manufacturer : Memmert

Model : ICP750

Serial No. : F816.0061

ID No. : SGK_ML0013

Resolution : 0.1 °C

Received Date : 3-Jul-2025

Calibrated Date : 3-Jul-2025

Ambient Temperature : (30 ± 10) °C

Relative Humidity : (50 ± 30) %



Calibration Method Used :

This instrument was calibrated using the Calibration In - house method : SCAL.WI.012 based on GLA - 20

The Southern Calibration Service Co., Ltd. calibration control system complies with requirement of ISO/IEC 17025:2017

Traceability of measurement :

This Certificate is traceable to the International and for national standards which realize the units of measurement according to the International System of Unit (SI) through :

- TISTR : Thailand Institute of Scientific and Technological Research

Calibrated by : Ibrorhim Saleemin

Approved by :

Imron Raitanaylum / Technical Manager



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 Southern Calibration Service Co., Ltd.

Details of Calibration

1. Reference Standard Equipment Used:

Equipment	Model	Serial No.	Cert. no.	Due Date
Data Acquisition/Switch Unit	34970A	MY58009813	PSL-T0707-2/67	22-Nov-2025

2. The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the longterm stability of instrument.

3. This certificate is not certified any commercial transaction

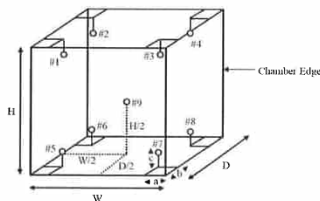
4. Condition of item : normal condition , no indication for any damage or malfunction

Result of Calibration:

[✓] Without Adjustment

[] After Adjustment

1. Sensor Installation Diagram



Sensor Installation Details

Dimension of the chamber

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

W = 104.0 cm
H = 120.0 cm
D = 60.0 cm

Result of Calibration:

2. Temperature Measurement Accuracy Test

The measurement results of the Incubator and associates are reported in the manner as shown below

Cal point (°C)	Measured Standard Temperature At Spread Locations (°C)									Uncertainty (±°C)
	#1	#2	#3	#4	#5	#6	#7	#8	Ref. 9	
35	34.97	35.05	35.09	35.04	35.02	34.91	34.99	35.01	34.98	0.38

3. Temperature Performance Result

The performance of the Incubator are reported as shown below

UUC Setting (°C)	UUC Reading (°C)	Temperature Stability (±°C)	Temperature Uniformity (°C)	Overall Variation (°C)
35.0	35.0	0.10	0.24	0.31

- UUC = Unit Under 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 ...



Result of Calibration..

2. Temperature Measurement Accuracy Test

The measurement results of the Liquid Bath and associates are reported in the manner as shown below

Cal point (°C)	Measured Standard Temperature At Spread Locations (°C)					Uncertainty (± °C)
	#1	#2	#3	#4	Ref.5	
44.5	44.48	44.45	44.49	44.47	44.48	0.14

3. Performance Result

The performance of the Liquid Bath are reported as shown below

Cal point (°C)	UUC Setting (°C)	UUC Reading (°C)	Temperature Stability (± °C)	Temperature Uniformity (°C)	Overall Variation (°C)
44.5	44.5	44.5	0.10	0.25	0.36

- UUC = Unit Under 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 ...