

เอกสารแนบ 6

เอกสารสอบเทียบเครื่องมือที่ใช้ในการวิเคราะห์

Certificate No.: C0-0708009/25

Page 2 of total 4 pages

Reference Method:

- The calibration method used was CP-178 based on an in-house method.
- This certificate can be traceable to the national standards, which is realized the shown measurement units according to the International System of Units (SI Units).

Reference Standard:

Type	pH Value	Lot No.	Due Date	Traceability
pH Standard Solution	4.01	300824	Jan. 22, 2026	NIMT
	7.00	230524	Jan. 14, 2026	
	10.01	030924	Jan. 14, 2026	

Type	Serial No.	Certificate No.	Due Date	Traceability
Documenting Process Calibrator	2630521	10-2412003/24	Dec. 23, 2025	THC
Digital Thermometer with Sensor	1709138 / 4605984-005	10-0906001/25	Jun. 8, 2026	

Remark: This certificate is traceable to the International System of Unit (SI Unit) through:

- NIMT, National Institute of Metrology (Thailand).
- THC, Thai Heart Calibration Co., Ltd.

Measurement Results:

1. Function Simulated pH Meter

Standard Applied	Nominal Value	UUC Reading		Uncertainty
(mV)	(pH)	pH	mV	(± mV)
177.48	4.00	4.01	177.3	0.060
0.00	7.00	7.00	-0.1	0.060
-177.48	10.00	10.01	-177.4	0.060

UUC : Unit Under Calibration

Note : Adjust Curve to simulate pH (4,7,10)

Calibrated by

CERTIFICATE OF CALIBRATION

Certificate No.: C0-0708009/25

Page 1 of total 4 pages

Customer WATER ANALYSIS CENTER CO., LTD.

1/94 Moo 5, T. Kanham,
A. U-thai, Ayutthaya 13210

Equipment pH Meter
Manufacturer METTLER TOLEDO Model SevenCompact S220
Serial No. B327527211 ID No. WWL-0068
Description Range : 0 - 14 pH, Resolution : 0.01 pH

Environmental Conditions Ambient Temperature: (20 ± 2) °C
Relative Humidity: (50 ± 10) %
Atmospheric Pressure: -

Calibration Location Jayhawks Laboratory (CL&GL)

Received Date 7 August 2025

Calibration Date 14 August 2025

Date of Issue 14 August 2025

Condition of Artifacts Used conditions but can be calibrated

Checked by

() (Krisyana P.)
() (Patiphan K.) (✓) (Onnapa P.)
() (Pongsak H.) () (Nitiphong K.)
() (Kanung C.) () (Nonthachai K.)
() (Pramong P.) () (Noppol P.)

This calibration certificate shall not be reproduced other than in full except with the prior written approval of the Thai Heart Calibration Co., Ltd.

Certificate No.: C0-0708009/25

Page 4 of total 4 pages

Reference Method:

- The calibration method used was CP-096 based on an in-house method.
- The temperature scale used was an ITS-90.
- This certificate can be traceable to the national standards, which is realized the shown measurement units according to the International System of Units (SI Units).

Reference Standard Instruments:

Type	Serial No.	Cert. No.	Due Date	Traceability
Thermometer Readout	B7C853	10-2810001/24	Oct. 28, 2025	THC
Platinum Resistance Thermometer	4854	COA30047	Oct. 22, 2025	FLUKE
Liquid Bath	XO111019	10-2605001/25	May 28, 2027	THC

Remark: This certificate is traceable to the International System of Unit (SI Unit) through:

- THC, Thai Heart Calibration Co., Ltd.
- FLUKE, Fluke Corporation, U.S.A.

Measurement Results:

(X) Without Adjustment

Dimension of probe : Diameter 3 mm. Sensor Type : RTD (PT100)

Immersion Depth (mm.)	Standard Reading (°C)	UUC Reading (°C)	Correction (°C)	Uncertainty (± °C)
120	22.00	22.2	-0.20	0.065
120	25.00	25.2	-0.20	0.065
120	28.00	28.3	-0.30	0.065

UUC : Unit Under Calibration

The above reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor $k = 2.00$, providing a level of confidence approximately 95%.

- End of Certificate -

Certificate No.: C0-0708009/25

Page 3 of total 4 pages

Measurement Results (Cont.):

2. Calibration of pH Electrode (Serial No.: 3222623)

pH Standard Solution (pH)	Measured Value		Uncertainty (± pH)
	(pH)	(mV)	
4.01	4.03	152.6	0.013
7.00	7.00	-20.1	0.013
10.01	10.03	-184.7	0.013

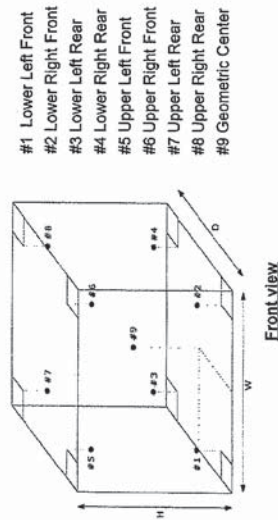
Note : Adjust Curve to Buffer Solution pH (4,7,10)
Temperature stability of micro bath : $25 \pm 0.2^\circ\text{C}$

The above reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor $k = 2.00$, providing a level of confidence approximately 95%.

Function : Temperature measurement
Calibration point : 20 °C
Certificate No. : MT25-5945
Page : 2 of 2
Result : Without adjustment
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	19.910	19.869	20.107	20.080	20.018	19.783	20.200	20.216	19.761	0.32

Setting temperature (°C)	Indicating Temperature (°C)	Measured stability (+/- °C)	Measured uniformity (°C)	Overall variation (°C)
20.0	20.0	0.09	0.60	0.60



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. : MT25-5945
Page : 1 of 2

Customer : Water Analysis Center Co.,Ltd.
Address : 1/94 Moo 5, Rojana Industrial Park, T.Kanham, A.U-Thai, Ayutthaya 13210
Description : Refrigerator
Manufacturer : B.T.Metrolgy Co.,Ltd.
Model : REF 940L
Serial No. : BT-03-09-09
Identification No. : WWL 0043
Calibration Place : Customer Laboratory
Order No. : 2503/25
Received date : Aug 01, 2025
Calibration date : Aug 01, 2025
Environment Condition :
Temperature : (25±1-10) °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 :
Instrument : LXI Data Acquisition Switch Unit with Sensor
Model : 34972A
Serial No. : MY49028922
Certificate No. : MT24-8770
Due Date : Nov 22, 2025

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 :

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



Professional Calibration & Services Co., Ltd.
50/888, 50/889 Moo 2, Rungt-Nokamroyok Rd., Bungyeetho, Thunyabuti,
Pathumthani 12130 Thailand
Tel : (+66)2150-6641 (Autoline)
Email : info@p-cal.com www.p-cal.com



Calibration Report

Certificate Number : PL26147/25

Page 2 of 3

Equipment Standards Used

Description	Serial No.	Traceability to	Certificate No.	Cal. Due Date
Platinum Resistance Thermometer	1036223	ANAB : AC-2590	EL24012/24	17-Jun-25
Zero Oxygen Solution Set	-	NIST	S0090/24	25-Sep-29
Distilled Water	-	BSG	D1500310724	11-Jul-26
Documenting Process Calibrator	9779005	ANAB : AC-2590	EL11797/25	06-Mar-26
Humidity/Barometer/Data Recorder	AL61015	ANAB : AC-2590, NSC : Calibration 0008	EL35266/24, 24P/2620	16-Jul-25

Condition as received : Normal

Definitions :-

- * ANAB - The ANSI National Accreditation Board
- * NIST - National Institute of Standard and Technology
- * BSG - Bangkok Science Center Co., Ltd.
- * NSC - National Standardization Council of Thailand



Professional Calibration & Services Co., Ltd.
50/888, 50/889 Moo 2, Rungt-Nokamroyok Rd., Bungyeetho, Thunyabuti,
Pathumthani 12130 Thailand
Tel : (+66)2150-6641 (Autoline)
Email : info@p-cal.com www.p-cal.com



Certificate of Calibration

Page 1 of 3

Certificate Number : PL26147/25
Control Number : PCAL165992
Customer Control : WWL 0219
Description : DO Meter
Manufacturer : YSI
Model : YSI 4010-1W
Serial Number : 22091049
Customer : Water Analysis Center Co., Ltd
1/94 Moo 5 T.Kanham A.U-Thal Ayutthaya 13210 Thailand



Date of Receipt : 13-May-25
Date of Calibration : 13-May-25
Calibration Location : Physical Laboratory
Environment : Temperature 20 °C ± 2 °C
Relative Humidity 50 % ± 20 %
Calibration Method : Calibration Procedure Number CP-PL83
Calibration Results : See data attached

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor $k = 2$, providing a level of confidence of approximately 95%.

This certificate is issued in accordance with ISO/IEC17025 and the conditions of accreditation granted by the Accreditation Body which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standards laboratory. The results relate only to the item calibrated.

This certificate shall not be reproduced other than in full except without the prior written approval of the Head of Calibration Laboratory of Professional Calibration & Services Co., Ltd.



Inctech Metrological Center Co.,Ltd.
39/1 Soi 82, Sukhapiban 5 Rd., O ngoen,
Saimat, Bangkok 10220, Thailand
Tel. (662) 909-8820 (Auto 10 lines) www.inctechinstrument.com



Calibration Cert. # 388481
ISO/IEC 17025

Certificate of Calibration

Certificate No. : MT25-7680
Page : 1 of 2

Customer
Address : Water Analysis Center Co.,Ltd.
: 1/94 M.5, Rojana Industrial Park, T.Kanham, A.U-Thai, Ayuthaya 13210

Description
Manufacturer : Hot Air Oven
Model : Termaks
Serial No. : TS8136
Identification No. : N/A
Calibration Place : WWL0040
: Customer Laboratory

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.

Order No. : 3748/25
Received date : Nov 11, 2025
Calibration date : Nov 11, 2025
Environment Condition :
Temperature : (25 $\pm$ 10) °C
Humidity : (50 $\pm$ 30) %RH

Reference Standard Instruments :

Instrument	Model	Serial No.	Certificate No.	Due Date
Data Acquisition System with Sensor	DAQ870A	MY58029872	MT25-5654	Aug 15, 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 multiple coverage factor 2, providing a level of confidence of not less than 95%

Calibra

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

Rev.03 / Feb 2024

FM-MT-013



Professional Calibration & Services Co., Ltd.
50888, 50889 Moo 2, Rungtiti-Nokornnoyok Rd., Bungeeetho, Thunyabul,
Pathumthani 12130 Thailand
Tel : (+662)50-4441 (Autoline)
Email : info@p-cal.com www.p-cal.com



Calibration Report

Certificate No.: PL26147/25

Page: 3 of 3

Calibration Results

Dissolved Oxygen Calibration

Description of Meter
- Range : 0 to 50 mg/l
- Resolution : 0.01 mg/l

Description of Electrode
- Manufacturer : YSI
- Model : N/A
- Serial No. : 22A105587
- Type : Electrochemical (Membrane)

Calibration Point	Standard Value	UUC Reading	UUC Error	Uncertainty ($\pm$)
0 mg/l	0.000 mg/l	**	0.08 mg/l	0.027 mg/l
8 mg/l	8.517 mg/l	8.45 mg/l	-0.07 mg/l	0.037 mg/l
9 mg/l	9.036 mg/l	8.96 mg/l	-0.08 mg/l	0.037 mg/l

Notes :

1). Calibration results that carry the double asterisk (**) are not accredited. Calibrations marked as such on this Certificate have been included for completeness.

...End...



Certificate of Calibration

Equipment: Electronic Balance
Manufacturer: Sartorius
Model: BL210S
Serial No.: 15808131
ID No.: WWL 0022
Condition of the Item: Normal

Customer: Water Analysis Center Co., Ltd.
1/94 Moo 5, Rojana Industrial Park, Rojana Road,
Tambol Kanham, Amphur U-Thai, Ayuthaya 13210 Thailand

Environment Condition: Temperature 25 °C ± 0.6 °C
Relative Humidity 55 % ± 0.9 %
Calibration Place: Water Analysis Center Co., Ltd. (น้ำประปา)
1/94 Moo 5, Rojana Industrial Park, Rojana Road,
Tambol Kanham, Amphur U-Thai, Ayuthaya 13210 Thailand

Calibration By: Mr. Anusorn Jilborikhon
Calibration Date: 02 December 2025
The Method Used: In-house method, CAL-WI-47, based on UKAS Lab 14
Traceability: This certificate is traceable to the SI Units maintained by National Institute of Metrology (NIMT), Thailand through DKSH Technology Co., Ltd. Certificate No. C02251333



This certificate is issued only for use in measurement according to the International System of Units (SI). It provides traceability of measurement to International or national standard or other recognized national standard laboratories.
The measurement uncertainty stated is the expanded uncertainty multiplied by the coverage factor (k=2) to provide a level of confidence of approximately 95%. It is determined in accordance with Evaluation of measurement data - Guide to the expression of uncertainty in measurement (GUM 100).
These results may be affected by deviations from specified conditions. The results relate only to the items tested, calibrated or sampled. The report shall not be reproduced except in full without approval of DKSH Technology Limited.

ข้อมูลการสอบเทียบ
DKSH Technology Limited
2533 ถนนสุขุมวิท แขวงคลองเตย เขตคลองเตย กรุงเทพมหานคร 10110
Phone: +66 2038 7000 Email: info.calibration@dksh.com Website: www.dksh.com/calibration-thailand

Delivering Growth - in Asia and Beyond.

CAL-FM-C01-15: 30 Jun 2025

-oOo-

Rev 03 / Feb 2024

1.6/6



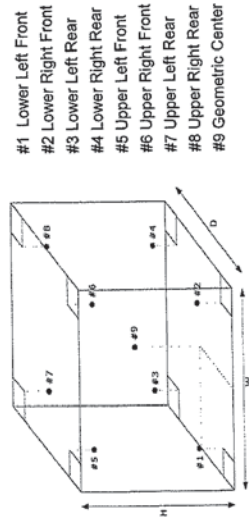
Inctech Metrological Center Co.,Ltd.
39/1 Soi 82, Sukhapiban 5 Rd., O ngoen,
Saimai, Bangkok 10220, Thailand
Tel. (662) 909-8820 (Auto 10 lines) www.imcinstrument.com



Function : Temperature measurement
Calibration point : 103, 104, 180 °C
Certificate No. : MT25-7680
Page : 2 of 2
Result : Without adjustment
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	
103	103.394	103.086	103.282	103.370	103.021	103.002	103.430	103.048	103.320	0.56
104	103.700	104.052	104.318	103.740	104.025	103.937	104.211	104.039	104.315	0.44
180	180.264	180.029	180.271	180.338	180.115	180.110	180.101	180.186	180.055	0.44

Setting temperature (°C)	Indicating Temperature (°C)	Measured stability (+/- °C)	Measured uniformity (°C)	Overall variation (°C)
103.0	103.0	0.45	0.65	0.89
104.0	104.0	0.30	0.82	0.90
181.0	180.0	0.32	0.64	0.78



#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.

FM-MT-013



CRYSTAL CALIBRATION SALES AND SERVICE CO., LTD.
45/48 Soi Salathamasop31, Salathamasop Rd.,
Salathamasop, Thawewatthana, Bangkok 10170 Thailand
Tel : 0-2408-8474-5 Fax : 0-2408-8477 Email : info@crystalcal.com www.crystalcal.com

CERTIFICATE OF TEST

Issue Date : 17 October 2025 Report No. : 25-1325-001
Work Order No. : 25/1325

Customer Name : Water Analysis Center Co., Ltd
1/94 Moo 5, T. Kantham, A.U.-Thai,
Ayutthaya 13210

Date of Received : 16 October 2025
Date of test : 16 October 2025

Instrument Details : Description : Biological Safety Cabinet
Manufacturer : MICROTCH
Model : V6-T
Serial No. : 0972
ID No. : VWL 0084
Class / Type : Class II / A2
Location : ห้องปฏิบัติการทดสอบ

Test Method : This equipment was performance test by procedure is according to calibration procedure no. CWI-BSC-01 compliance EN 12469 : 2000 Biotechnology performance criteria for microbiological safety cabinet and AS 1807.23 : 2000 Determination of intensity of radiation from germicidal ultraviolet lamp and NSF/ANSI 49 Biosafety Cabinet : Desing, Construction, Performance, and filed certificate

Environment Conditions :
Temperature : Area Monitoring between 15°C to 40°C
Humidity : Area Monitoring between 30%RH to 85%RH
Line Voltage : Area Monitoring 220 VAC ± 10%

Traceability of Measurement :

This certificate of calibration documents the traceability to national standard, which realize the unit of measurement according to the International system of

Calibrated by :

This certificate may not be

Crystal Calibration Sales and Service Co., Ltd.
45/48 Salathamasop 31, Salathamasop Rd, Salathamasop, Thawewatthana, Bangkok 10170
Phone : 0-2408-8474 Fax : 0-2408-8477 http://www.crystalcal.com Email : info@crystalcal.com

PAGE 1/6



Certificate No.: C01253561
Page: 2 of 2

Calibration Results:

Without Adjustment

Eccentric Error: Weight to be 1/3 or 1/2 of Maximum capacity, taken from the center of the pan as a zero reference.

Nominal Test Value	Reference Points (g)				
	A	B	C	D	E
100	-	0.0001	0.0001	0.0000	0.0000

Repeatability: Determination of the standard deviation of weighing balance., Readability 0.0001 (g)

Nominal test value (g)	Standard Deviation
20	0.00004
200	0.00005

Error of Indication from nominal or conventional mass value., Readability 0.0001 (g)

Nominal Value (g)	Conventional Mass (g)	Displayed Value (g)	Error of Indication (g)	Uncertainty (± g)	k
1	1.00001	1.00000	0.00000	0.00010	2.03
2	2.00001	2.00000	0.00000	0.00010	2.03
5	5.00002	5.00000	0.00000	0.00010	2.03
10	10.00001	10.00000	0.00000	0.00011	2.02
20	20.00001	20.00000	0.00000	0.00011	2.02
50	50.00001	50.00000	0.00000	0.00012	2.01
70	70.00002	70.00000	0.00000	0.00015	2.00
100	99.99991	100.00001	0.00002	0.00017	2.00
120	119.99992	120.00002	0.00003	0.00021	2.00
150	149.99992	150.00004	0.00005	0.00023	2.00
200	200.00002	200.00008	0.00008	0.00029	2.00

The End of Certificate

DKSH Technology Limited
2533 Sukhumvit Road, Bangkok, 10260
Phone: +66 2659 7600 Email: info@crystalcal.com Website: www.dksh.com/certificate-thailand
Delivering Growth - in Asia and Beyond.

CAL-FIM-C01-16: 30 Jun 2025



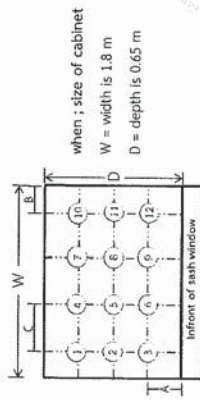
REPORT OF TEST

Issue Date : 17 October 2025

Report No. : 25-1325-001
Work Order No. : 25/1325

1. Downflow velocity test (continued)

Turn the MSC on. With the anemometer inside the MSC, make air velocity measurement in the horizontal plane 50mm to 100mm above the top edge of the front aperture. Make measurement over a period at least 1min in each position for at least eight positions, namely four along a line 1/4 of the depth of working space forward of the rear wall and four along a line same distance behind the front window. Ensure that the measurement are spaced along these lines at 1/8 and 3/8 of the width of working space from both the left-hand and right-hand sides (Refer to EN 12469:2000, G.3.2 page 36)



Air velocity measurement (m/s)											
No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9	No. 10	No. 11	No. 12
0.33	0.33	0.34	0.37	0.33	0.33	0.34	0.35	0.34	0.36	0.36	0.33

A = distance from front 162.5 mm B = distance from wall 225 mm C = distance of measurement 450 mm

Acceptance criteria follow up to EN 12469 : 2000 (Table H.1)

Mean		Minimum		Maximum		± 20% of Mean	
Downflow velocity (m/s)	0.34	Downflow velocity (m/s)	0.33	Downflow velocity (m/s)	0.37	Downflow velocity (m/s)	0.27 to 0.41

*Mean downflow velocity to achieve product protion in method EN12469 specific range 0.25 m/s to 0.50 m/s

Measurement of test result inspection of EN 12469 :

2. Inflow velocity test

Laboratory used alternative method measured by thermo anemometer is opening sash window screen 3 inches (76mm) and installation thermo anemometer from the top window 1.5 inches (38mm) and moved thermo anemometer coverage area in horizontal measured inflow velocity point to point distance 4 inches (100mm), inflow velocity in report is correct value by correction factor for 8" window (estimate and / or refer to factory factor)

Position of measured inflow velocity (m/s)																	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.23	1.14	1.15	1.21	1.11	1.15	1.15	1.19	1.16	1.19	1.15	1.17	1.18	1.14	1.21	1.14	1.29	1.33

Mean Inflow velocity (m/s)	EN 12469 Recommendation Specification (m/s)	Judgment refer to EN 12649
0.44	≥ 0.40	Pass

*Mean inflow velocity to achieve product protion in method EN12469 ≥ 0.40 m/s refer to table H.1



REPORT OF TEST

Issue Date : 17 October 2025

Report No. : 25-1325-001
Work Order No. : 25/1325

Details of Reference

1. Reference Standards Instrument

No	Instrument	Model	Serial No./Ins No.	Certificate No.	Due Date
1.1	Thermo anemometer	440	83787941	TTH-0-146567	01 October 2026
1.2	Aerosol Photometer	2i	24056	ST325/1025	01 October 2026
1.3	Lux meter	UT3835	C222495023	MTE250301-1	16 June 2026
1.4	UVC LIGHT METER	UV-370SD	Q977653	CO20250020EA	13 March 2026
1.5	Sound level meter	815	30833548/203	MTE250356-1	15 July 2026

2. Certificate traceable

: This certificate traceable to The International System of Unit refer to

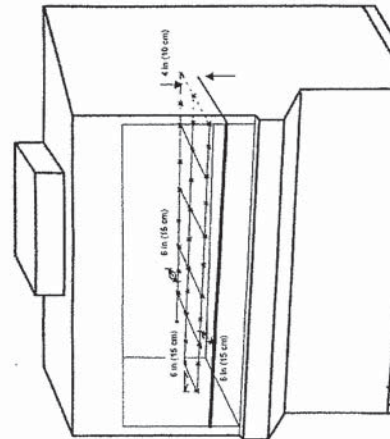
- 1.1 Techmaster asia (Thailand) Co., Ltd., ANAB AC-1736.08
- 1.2 Particle Measuring Technique Co., Ltd.
- 1.3 Ming Deng Metrology Services (Thailand) Co., Ltd., ANAB ACT-2515
- 1.4 Electrical and Electronics Institute.
- 1.5 Ming Deng Metrology Services (Thailand) Co., Ltd., ANAB ACT-2515

3. Condition of item

: Normal

Part 1 Velocity test performance

1. Downflow velocity test



Downflow velocity diagrams of measurement

REPORT OF TEST

Issue Date : 17 October 2025

Part 3 Airflow smoke pattern test performance

The airflow smoke pattern is verification for check cabinet on working area air velocity in cabinet shall be not escape from cabinet to the room.

1. Downflow pattern test	Pass
2. View screen retention test	Pass
3. Work opening edge retention test	Pass
4. Sash / Window seal	Pass

Part 4 Site Installation test

- | | |
|--|--------|
| 1. Airflow visual alarms shall be to indicate when 20% loss exhaust volume within 15 s | : Pass |
| 2. Sash alarms raise the window above 1 inch (2.5cm) from working position | : N/A |
| 3. Exhaust system alarms for cabinet has the function properly | : Pass |
| 4. Electrical leakage and ground circuit resistance test (it not circuit leakage) | : Pass |

* site installation refer to NSF/ANSI 49-2008 section F.7 and F.8

Part 5 Cabinet integrity test (For BSC Class II type A1)

The Bio safety cabinet refer test leakage of internal pressure 250 pa from manometer or difference pressure gauge or using soap solution 250pa in tepid distilled water it not bubble in joint and gaskets. However using difference pressure gauge increasing pressure into cabinet estimate 500pa hold the time 30 min the pressure has to decreasing not least 10%

The part 5 cabinet integrity test laboratory will be c/eck when cabinet new installation, repair, change or remove

HEPA filter and relocate to new location

- | | | |
|--------------------------------------|---|-----|
| 1. soap test check and visul bubbles | : | N/A |
| 2. pressure in cabinet not least 10% | : | N/A |

Part 6 sound level test

Measured by the sound meter is placed 1 m from the front of the cabinet. With the cabinet running, 2,3 readings will be taken for different duration's (10 and 30 sec).

Mean of measured Background sound level (dBA)**	Mean of measured sound level (dBA)	Accepting criteria	Judgment Refer EN 12469
47.9	61.7	Less than 65 dBA	Pass

* Acceptance criteria less than 65 dBA refer to EN 12469 A.3 or not exceed 70 dBA refer to NSF/ANSI 49 F.11.4

²² Background sound level is measured when turn off the cabinet

REPORT OF TEST

Issue Date : 17 October 2025
Report No. : 25-1325-001
Work Order No. : 25/1325

Part 2 HEPA Filter Leak test performance

HEPA Filter leak test by the aerosol challenge at a suitable location on the upstream side of HEPA Filter, sea and construction joints to be tested Ensure that the challenge aerosol concentration. Measure the average upstream aerosol concentration than scan the downstream side of the HEPA Filter by passing the aerosol detection probe slightly overlapping over the entire surface of the HEPA Filter (Refer to EN 12469 D.4)

Detail of the PAO test performance

PAO Concentration on upstream side of HEPA is 24 $\mu\text{g/L}$

Downstream measured by aerosol photometer calculate ratio of concentration

Main HEPA Filter (%)	Exhaust HEPA Filter (%)	Pre HEPA Filter (%)
0.004	0.005	N/A

* Acceptance criteria The leak should be not more than 0.01% of the specific before the filter refer to EN 12469 D.3 (a).

Main HEPA Filter diagrams

Leak position

[illegible]

M : Media leak position	H : Maximum leak position	X : Gasket leak position
-------------------------	---------------------------	--------------------------

Exhaust HEPA Filter diagrams

Leak position

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

M : Media leak position	H : Maximum leak position	X : Gasket leak position
-------------------------	---------------------------	--------------------------

M : Media leak position H : Maximum leak position X : Gasket leak position

Exhaust HEPA Result of test	Pass
-----------------------------	------

Certificate of Calibration

LIQUID BATH



Page 1 of 3

Certificate No.: MC 2514415

Customer : Water Analysis Center Co., Ltd.

1/94 Moo 5, T.Kanham, A.U-Thai, Ayuthaya 13210.

Reference Job No. : 25-2871 Received Date : 12 December 2025
Description : Water Bath Resolution : 0.1 °C
Manufacturer : ESSTEEL Model : EWB-122D
Serial No. : 20180508122 ID. No. : WWL 0214
Marking : Additionally for the purpose of identification by this laboratory a label marked with this certificate number (MC 2514415) has been attached to the case.

Method : In-House calibration procedure MWI-T-029 this method is base on ASTM E 715-2007 "Liquid Bath".

Location of Calibration : Water Analysis Center Co., Ltd.; Laboratory.

Environmental Conditions : Ambient Temperature : (25.2 to 25.6) °C

Relative Humidity : (49.0 to 52.0) %

Date of Calibration : 12 December 2025 Date of Issue : 16 December 2025

Checked by :

The uncertainties are for a confidence probability of approximately 95%

This certificate is issued in accordance with the conditions of accreditation granted by the National Standardization Council of Thailand-Office of the National Standardization Council that has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of Master Calibration Co., Ltd.

[MCF-Q-077; Rev.6; Date : 22/04/2021]



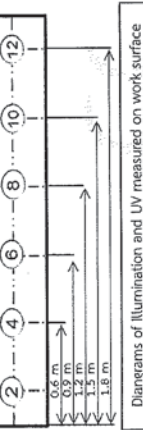
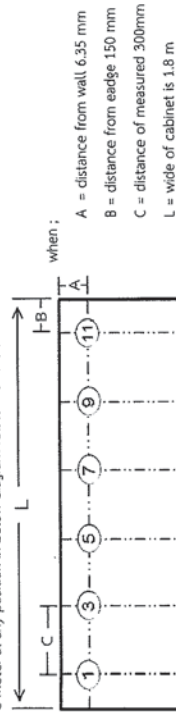
CRYSTAL CALIBRATION SALES AND SERVICE CO., LTD.
45/48 Soi Salathamasop31, Salathamasop Rd.,
Salathamasop, Thawesathana, Bangkok 10170 Thailand
Tel : 0-2408-8474-5 Fax : 0-2408-8477 Email : info@crystalcal.com www.crystalcal.com

REPORT OF TEST

Issue Date : 17 October 2025 Report No. : 25-1325-001
Work Order No. : 25/1325

Part 7 Illumination and UV test performance

Illumination and Ultraviolet radiation (UV) measured at the work surface and cover using area grid installation lux meter and UVC meter at any position in below diagram relate with the size of cabinet



Illumination measured report at any position (Lux)											
1	2	3	4	5	6	7	8	9	10	11	12
555	643	925	1142	1140	1370	1139	1411	885	1103	553	676

Mean of Illumination at work surface (Lux)	Acceptance of Illumination (Lux)	Judgment Refer EN 12496
962	> 750	Pass

* Acceptance criteria average not less than 750 lux refer to EN 12469 A.2

Ultraviolet radiation measured report at any position (μW/cm ²)											
1	2	3	4	5	6	7	8	9	10	11	12
56	28	179	67	303	121	368	163	279	134	110	54

Mean of Illumination at work surface (μW/cm ²)	Acceptance of Illumination (μW/cm ²)	Judgment Refer to DMSC
155	> 40	Pass

* Acceptance criteria average not less than 40 μW/cm² refer to DMSC ISBN 978-616-11-2130-3 page 29

- DMSC is Department of Medical Sciences Ministry of Public Health

- Mean of Illumination at work surface in report show data after correction value

--END--

Certificate No.: MC 2514415

Page 3 of 3

2. Result of calibration :

Temperature Measurement Accuracy Test

Indicating Temperature (°C)	Measured Temperature (°C) at Spread Locations					Uncertainty of measurement (±°C)
	#1	#2	#3	#4	Ref. #5	
45.0	44.38	44.53	44.62	44.56	44.50	0.80

Chamber Characterization Result

Desired Temperature (°C)	Controller Temperature (°C)	Indicating Temperature (°C)	Temperature Stability (±°C)	Temperature Uniformity (°C)	Overall Variation (°C)
44.5	45.0	45.0	0.66	0.79	1.45

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.0$, providing a level of confidence of approximately 95 %.

This certificate will certify of the calibrated equipment only.

End of Certificate

Checked by

[MCF-Q-077 ; Rev.6 ; Date : 22/04/2021]

Certificate No.: MC 2514415

Page 2 of 3

Reference Standard Instrument :

Description	Certificate No.	Serial No.	Due date	Traceable thru
Data Acquisition/Switch Unit	MC 2503071	MY59002240	17 Mar 2026	MCAL
With RTD ID. No.10/1 to 10/5				

Traceability :

The measurement standard traceable to the international system of units (SI) through certificate as mentioned above

1. Calibration Procedure:

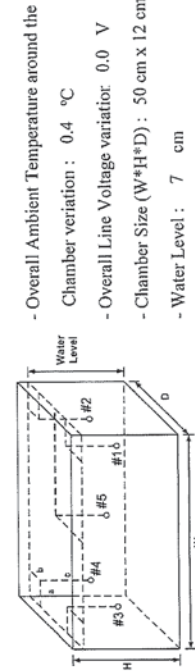
This Instrument was calibration according to ASTM E715 - 2007 by comparison with calibrated sensor under no load condition. The sensor were placed on five points and located one sensor in each of the eight corners of the chamber and was away from the each wall of 5 cm to 10 cm. And placed the five sensor within 2.5 cm of the geometric center of the chamber.

Temperature Uniformity - the maximum difference of measured temperatures at any sensors and the

measured temperature at the reference location which are observed at the same time or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady state conditions. The reference sensor should preferably be located at the geometric center of the chamber.

Temperature Stability - one-half of the greatest maximum difference of measured temperatures at any one sensor.

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



Checked by

[MCF-Q-077 ; Rev.6 ; Date : 22/04/2021]

Certificate No.: MC 2514417

Page 2 of 3

Reference Standard Instrument :

Description	Certificate No.	Serial No.	Due date	Traceable thru
Data Acquisition/Switch Unit With RTD ID. No.29/1 to 29/9	MC 2504974	US37033620	6 May 2026	MCAL

Traceability :

The measurement standard traceable to the international system of units (SI) through certificate as mentioned above

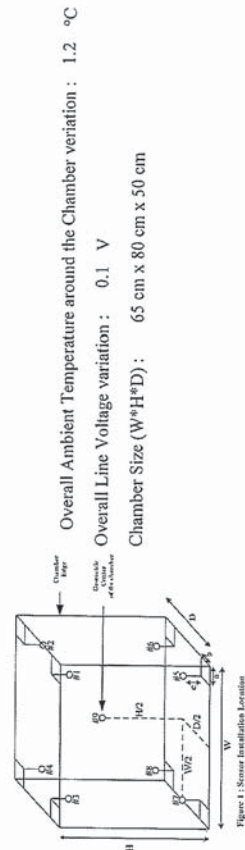
1. Calibration Procedure:

This Instrument was calibration according to TLAS G-20 by comparison with calibrated thermocouple type T under no load condition. The Thermocouples were placed on nine points and located one thermocouple in each of the eight corners of the chamber and was away from the each wall of 5 cm to 10 cm. And placed the ninth thermocouple within 2.5 cm of the geometric center of the chamber.

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

Temperature Stability - one-half of the greatest maximum difference of measured temperatures at any one sensor.

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



Overall Ambient Temperature around the Chamber variation : 1.2 °C
Overall Line Voltage variation : 0.1 V
Chamber Size (W*H*D) : 65 cm x 80 cm x 50 cm

Check

Certificate of Calibration

**TEMPERATURE
CONTROLLER ENCLOSURES**



Page 1 of 3



Certificate No.: MC 2514417

Customer : Water Analysis Center Co., Ltd.
1/94 Moo 5, T. Kantham, A.U.-Thai, Ayutthaya 13210.

Reference Job No. : 25-2871
Description : Incubator
Manufacturer : Memmert
Serial No. : D619 0170
Marking : ID. No. : WWL 0192
Received Date : 12 December 2025
Resolution : 0.1 °C
Model : IN 260
ID. No. : WWL 0192

Method : Additionally for the purpose of identification by this laboratory a label marked with this certificate number (MC 2514417) has been attached to the case.

Method : In-house calibration procedure MWI-T-033 this method Base on TLAS G-20-1/02-08 "Temperature Controlled Enclosures".

Location of Calibration : Water Analysis Center Co., Ltd. ; Laboratory.

Environmental Conditions : Ambient Temperature : (24.4 to 24.5) °C

Relative Humidity : (62.0 to 64.0) %

Date of Calibration : 12 December 2025 Date of Issue : 16 December 2025

Checked by :

The uncertainties are for a confidence probability of approximately 95%

This certificate is issued in accordance with the conditions of accreditation granted by the National Standardization Council of Thailand-Office of the National Standardization Council that has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of Master Calibration Co., Ltd.

Certificate No.: MC 2514417

Page 3 of 3

2. Result of calibration :

Temperature Measurement Accuracy Test

Indicating Temperature (°C)	Measured Temperature (°C) at Spread Locations									Uncertainty (±°C)	* Uncertainty does not include stability. (±°C)
	#1	#2	#3	#4	#5	#6	#7	#8	Ref. #9		
35.0	34.99	35.00	35.02	34.91	34.88	35.00	35.03	34.91	35.04	0.28	0.27

(*) : Non Accredited

Chamber Characterization Result

Desired Temperature (°C)	Controller Temperature (°C)	Indicating Temperature (°C)	Temperature Stability (±°C)	Temperature Uniformity (°C)	Overall Variation (°C)
35.0	35.0	35.0	0.06	0.21	0.29

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.0$, providing a level of confidence of approximately 95 %.

This certificate will certify of the calibrated equipment only.

End of Certificate

Checked