

ภาคผนวกที่ 5
เอกสารสอบเทียบเครื่องมือตรวจวัด

ภาคผนวกที่ 5-1
เอกสารสอบเทียบคุณภาพอากาศในบรรยากาศ

CERTIFICATE OF CALIBRATION

Certificate No. : COF-016-69

Page 1 of 2 Pages

MEASUREMENT ITEM : Top Load Orifice
MANUFACTURER : TISCH
MODEL/TYPE : TE-5025A
SERIAL NUMBER : 710725
ID NUMBER : ~
CONDITION AS-RECEIVED : Used Item
CUSTOMER : Pacific Laboratory Co., Ltd.
14/5358 Moo14, T. Bang Bua Thong, A. Bang Bua Thong,
Nonthaburi 11110, Thailand.

RECEIVED DATE : 23 Apr 2026
MEASUREMENT DATE : 08 May 2026
ISSUE DATE : 08 May 2026

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature	: 23.0 ± 3.0	°C
Relative Humidity	: 55.0 ± 15.0	%RH
Atmospheric Pressure	: 1010 ± 10	hPa

CALIBRATION CONDITION:

Preconditioning : 24 hours at ambient conditions.
Measurement Condition : The average values during measurement are 23.6 °C and 48.5 %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.

Calibration procedure:

The Orifice gas flow device was calibrated against Standard Rotary Displacement Meter (Roots Meter) Model 665/IMC/W2-dp. The WI-CL-004 was used as a calibration guideline.

Traceability:

This certificate provides a traceability of the measurement to recognized the national standards, and to realization of the international system of units (SI) through the NIMT (National Metrology Institute of Thailand) via Certificate number: MW-0005-26.

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'.

Calibrated by:

☐ Mr. Sorawit Thachalad
☒ Miss Jitraporn Lertsomphol



Approved signatory:

Mr. Parinya Booncharoen
Calibration Department Manager

MEASUREMENT RESULTS:

The Orifice gas flow device was calibrated by direct comparison method with the Standard Rotary Displacement Meter (Roots Meter). The Humid air was used as a medium in the system. The standard conditions are 25°C (298.15 K) and 760 mmHg for standard temperature and standard pressure respectively.

Table 1: The results of Q Standard calibration data

Plate	Flow rate m^3/min	Pressure [Pa] mmHg	Temperature [Ta] °C	Temperature [Tm] °C	Δp_{meter} mmHg	$\Delta p_{Orifice}$ inH ₂ O	γ	Standard Flow [Q_s] m^3/min
1	0.704	757.012	23.43	22.38	50.466	1.715	1.311	0.660
2	1.003	757.047	23.41	22.53	64.191	3.348	1.831	0.922
3	1.120	757.035	23.49	22.83	43.710	4.437	2.108	1.059
4	1.170	757.041	23.48	22.89	32.530	4.993	2.236	1.123
5	1.416	757.025	23.47	22.91	29.618	7.447	2.731	1.365

Slope (m): 2.01326
 Intercept (b): -0.02225
 Correlation coefficient (r): 0.99984
 Uncertainty ($k=2$): 0.015 m^3/min

Table 2: The results of Q actual calibration data

Plate	Flow rate m^3/min	Pressure [Pa] mmHg	Temperature [Ta] °C	Temperature [Tm] °C	Δp_{meter} mmHg	$\Delta p_{Orifice}$ inH ₂ O	γ	Standard Flow [Q_a] m^3/min
1	0.704	757.012	23.43	22.38	50.466	1.715	0.820	0.659
2	1.003	757.047	23.41	22.53	64.191	3.348	1.145	0.920
3	1.120	757.035	23.49	22.83	43.710	4.437	1.319	1.058
4	1.170	757.041	23.48	22.89	32.530	4.993	1.399	1.122
5	1.416	757.025	23.47	22.91	29.618	7.447	1.708	1.364

Slope (m): 1.26099
 Intercept (b): -0.01392
 Correlation coefficient (r): 0.99984
 Uncertainty ($k=2$): 0.015 m^3/min

End of Certificate of Calibration

Certificate of Calibration

Certificate No. : 68-200468-1 **Page : 1 of 2**

Submitted by : Pacific Laboratory Co.,Ltd.
14/5358 Moo 14, T.Bang Bua Thong, A.Bang Bua Thong, Nonthaburi 11110 Thailand

Equipment : Electronic Balance
Manufacturer : SHIMADZU **Model :** AP225WD
Serial No. : D316301828 **ID No. :** LAB-BL-003
Capacity : 220000 mg
Resolution : 0.01mg/102000mg, 0.1mg/220000mg

Environment : On site calibration was carried out at the Laboratory, Pacific Laboratory Co.,Ltd.
Ambient Temperature : (27.3 to 27.4) °C
Relative Humidity : (53.6 to 53.7) %
Air Pressure : 1003.0 mbar

Date of Received : 21 July 2025

Date of Calibration : 21 July 2025

Date of Issue : 25 July 2025

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	C02242009	07 Nov 2025	National Institute of Metrology (Thailand), (NIMT)

Approved by : 
(Satja Sangkhum)
Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 68-200468-1

Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Departure of indication from nominal value

Nominal Value (mg)	Correction (mg)	Uncertainty $\pm$ (mg)
1	0.01	0.012
10	0.00	0.012
50	0.01	0.012
100	0.01	0.014
1000	0.00	0.026
2000	0.01	0.034
5000	0.00	0.043
20000	0.00	0.071
50000	0.01	0.11
100000	0.00	0.20
150000	0.0	0.38
200000	0.0	0.38

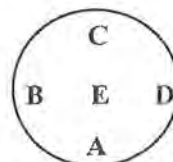
This result of calibration was found accurate as shown on date and place of calibration only.

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 : 50000 mg

A	B	C	D	E	
0.01	0.01	0.02	0.02	0.00	mg



Repeatability

Load test : 200000 mg

Stdev. : 0.053 mg

- o0o -



PERFORMANCE TEST REPORT

General Information

Instrument:	SO ₂ Analyzer	Report No.:	AQMCAL-008/2025
Brand / Model:	Thermo Environmental / 43C	Calibration Date:	August 3, 2025
Serial No.:	43C-65967-3510	Calibration By:	Prasert K.
Principle:	UV Fluorescence		
Measurement Range:	0 - 500 ppb		

Calibration System

Calibration Unit	Certified Gas Cylinder	Gases Concentration
Gas Dilutor: Thermo Environmental / 146C	Gas Grade: EPA Protocol	SO ₂ 45.11 ppm
Serial No.: 00400P	Cylinder No.: LL164665	NO 45.01 ppm
Zero Air Generator: API / 701	Expired Date: 21/10/2025	CO 4511 ppm
Serial No.: 148		

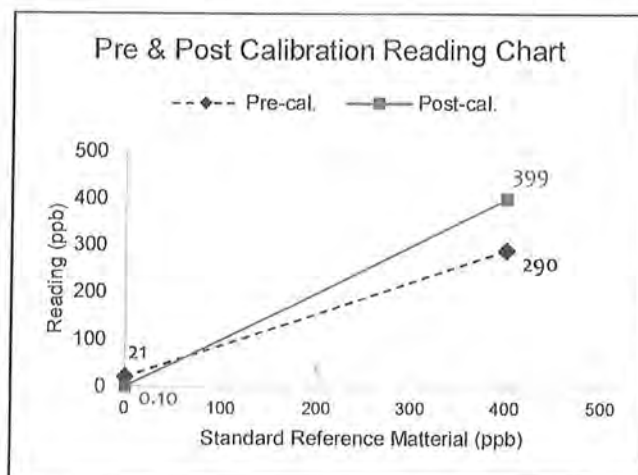
Environmental Condition

Temperature (°C): 32 Relative Humidity (%): 54 Pressure (mmHg): 754

Calibration Result

Task	Gas	Unit	Zero			Span		
			SRM	Reading	Drift	SRM	Reading	Drift
Pre-cal	SO ₂	ppb	0.0	21	21	400	290	-110
Post-cal	SO ₂	ppb	0.0	0.1	0.1	400	399	-1

The calibration of the ambient air analyzer is based on the calibration procedure of US.EPA published in 40 CFR Parts 50, 53 and 58.



Authority Signature

(Sompong Kiatiporn)



ห้างหุ้นส่วนจำกัด บลู คอนซัลแตนท์ **Blue Consultant Limited Partnership**

32/751 ถนนประชาอุทิศ แขวงทุ่งครุ เขตทุ่งครุ กรุงเทพฯ 10140

โทร.0-2873-6045-6 โทรสาร 0-2873-6046

ห้องปฏิบัติการวิเคราะห์เอกซเรย์ไอออนธาตุลงวันที่ 22 สิงหาคม 2566

CALIBRATION REPORT

Equipment: SO₂ Analyzer
Serial No.: 3569

Brand/Model: Teledyne-API/T100
Date of Calibrate: March 4, 2026

Reference Standard

Certification Date: October 29, 2019

Component: SO₂: 55.62 ppm, NO: 57.21 ppm, CO: 4,551 ppm

Cylinder No.: EB0128767

Expiry Date: October 29, 2027

Calibration Check (Before Adjust)						
Serial No.	Zero			Span		
	Reading Value (ppb)	Expected Value (ppb)	Drift (ppb)	Reading Value (ppb)	Expected Value (ppb)	Drift (ppb)
3569	0.2	0	0.2	401.2	400	1.2
Calibration Check (After Adjust)						
Serial No.	Zero			Span		
	Reading Value (ppb)	Expected Value (ppb)	Drift (ppb)	Reading Value (ppb)	Expected Value (ppb)	Drift (ppb)
3569	0	0	0	400	400	0

ในนามห้องปฏิบัติการห้างหุ้นส่วนจำกัด บลู คอนซัลแตนท์

(นางสาวนิตดา อนันต์สุวรรณชัย)

ผู้จัดการห้องปฏิบัติการ

ห้างหุ้นส่วนจำกัด บลู คอนซัลแตนท์ Blue Consultant Limited Partnership

32/751 ถนนประชาอุทิศ แขวงทุ่งครุ เขตทุ่งครุ กรุงเทพฯ 10140

โทร.0-2873-6045-6 โทรสาร 0-2873-6046

ห้องปฏิบัติการวิเคราะห์เอกชนใบอนุญาตลงวันที่ 22 สิงหาคม 2566

CALIBRATION REPORT

Equipment: NOx Analyzer
Serial No.: 2508

Brand/Model: Teledyne-API/200E
Date of Calibrate: March 4, 2026

Reference Standard

Certification Date: October 29, 2019

Component: SO2: 55.62 ppm, NO: 57.21 ppm, CO: 4,551 ppm

Cylinder No.: EB0128767

Expiry Date: October 29, 2027

Calibration Check (Before Adjust)

Serial No.	Zero			Span		
	Reading Value (ppb)	Expected Value (ppb)	Drift (ppb)	Reading Value (ppb)	Expected Value (ppb)	Drift (ppb)
	NO/NO2/NOx	NO/NO2/NOx	NO/NO2/NOx	NO/NO2/NOx	NO/NO2/NOx	NO/NO2/NOx
2508	3.6/1.4/5.0	0/0/0	3.6/1.4/5.0	401.8/3.3/405.1	400/0/400	1.8/3.3/5.1

Calibration Check (After Adjust)

Serial No.	Zero			Span		
	Reading Value (ppb)	Expected Value (ppb)	Drift (ppb)	Reading Value (ppb)	Expected Value (ppb)	Drift (ppb)
	NO/NO2/NOx	NO/NO2/NOx	NO/NO2/NOx	NO/NO2/NOx	NO/NO2/NOx	NO/NO2/NOx
2508	0/0/0	0/0/0	0/0/0	400/0/400	400/0/400	0/0/0

ในนามห้องปฏิบัติการห้างหุ้นส่วนจำกัด บลู คอนซัลแตนท์

(นางสาวนิตดา อนันต์สุวรรณชัย)

ผู้จัดการห้องปฏิบัติการ

ห้างหุ้นส่วนจำกัด บลู คอนซัลแตนท์ Blue Consultant Limited Partnership

32/751 ถนนประชาอุทิศ แขวงทุ่งครุ เขตทุ่งครุ กรุงเทพฯ 10140

โทร.0-2873-6045-6 โทรสาร 0-2873-6046

ห้องปฏิบัติการวิเคราะห์เอกซเรย์ใบอนุญาตลงวันที่ 22 สิงหาคม 2566

CALIBRATION REPORT

Equipment: NOx Analyzer
Serial No.: 3140

Brand/Model: Teledyne-API/200E
Date of Calibrate: March 10, 2026

Reference Standard

Certification Date: October 29, 2019

Component: SO2: 55.62 ppm, NO: 57.21 ppm, CO: 4,551 ppm

Cylinder No.: EB0128767

Expiry Date: October 29, 2027

Calibration Check (Before Adjust)

Serial No.	Zero			Span		
	Reading Value (ppb)	Expected Value (ppb)	Drift (ppb)	Reading Value (ppb)	Expected Value (ppb)	Drift (ppb)
	NO/NO2/NOx	NO/NO2/NOx	NO/NO2/NOx	NO/NO2/NOx	NO/NO2/NOx	NO/NO2/NOx
3140	4.0/1.8/5.8	0/0/0	4.0/1.8/5.8	403.5/4.2/407.6	400/0/400	3.5/42/7.6

Calibration Check (After Adjust)

Serial No.	Zero			Span		
	Reading Value (ppb)	Expected Value (ppb)	Drift (ppb)	Reading Value (ppb)	Expected Value (ppb)	Drift (ppb)
	NO/NO2/NOx	NO/NO2/NOx	NO/NO2/NOx	NO/NO2/NOx	NO/NO2/NOx	NO/NO2/NOx
3140	0/0/0	0/0/0	0/0/0	400/0/400	400/0/400	0/0/0

ในนามห้องปฏิบัติการห้างหุ้นส่วนจำกัด บลู คอนซัลแตนท์

(นางสาวนิตดา อนันต์สุวรรณชัย)

ผู้จัดการห้องปฏิบัติการ

ภาคผนวกที่ 5-2
เอกสารสอบเทียบ
ปริมาณสารเจือปนในอากาศที่ระบายออกจากปล่อง

Envi Equipment Service Co., Ltd.

110/254 Moo 3, Tambon Bang Rak Phanthana, Amphur Bang Bua Thong, Nonthaburi 11110
Tel. 098 362 9152, 089 478 7885

E-mail: sales@envi-ees.com

Certificate No.: E25-070076

Page: 1 of 6

CERTIFICATE OF CALIBRATION

Customer : Pacific Laboratory Co., Ltd.
Address : 14/5358 Moo 14, Tambon Bang Bua Thong, Amphoe Bang Bua Thong, Nonthaburi 11110
Description of Equipment : Console meter
Manufacturer : Apex Instrument
Model Number : C-5000
Serial Number : 1846
ID./Control No. : -
Environment Conditions : Temperature $(25 \pm 2) ^\circ\text{C}$
Humidity $(50 \pm 15) \% \text{ RH}$
Cal. Date : 28/07/2025
Issue Date : 28/07/2025

Calibration Method or Calibration Procedure Used

US EPA Method (United State Environmental Protection Agency)

This certificate is traceable to national standard, which realize the units of measurement according to the International System of Units (SI).

Result of Calibration

This certificate may not be reproduced other than in full except with prior Written approval of the Technical Manager, Envi Equipment Service Company Limited.

These reported uncertainties of measurement are expanded by a coverage factor of $k=2$, providing a 95% confidence level

Calibrated by : Mr. Sanya Sangnil

Approved by :

(Mr. Mana Fuekhud)
Technical Manager



METHOD 5 CONSOLE CALIBRATION
USING REFERENCE WET GAS METER W-NK-2.5-B-Z No.547425
5-POINT METRIC UNIT

Meter Console Information			Calibration Conditions			Factors/Conversions		
Console Model Number	C-5000		Date	Time	28/07/2025	10:10 AM	Std Temp	293 K
Console Serial Number	1846		Calibration Reference No.		SER25-070030		Std Press	760 mm Hg
DGM Model Number	G1.6		Barometric Pressure		755.16		K _i	0.386
DGM Serial Number	00000205		Calibration Meter Gamma		1.001		Console Leak Check	PASS

Calibration Data											
Run Time				Metering Console				Calibration Meter			
Elapsed (Q)	DGM Orifice DH (P _m)	Volume Initial (V _m)	Volume Final (V _{mf})	Outlet Temp Initial (t _{mf})	Outlet Temp Final (t _{mf})	Volume Initial (V _{wi})	Volume Final (V _{wf})	Outlet Temp Initial (t _{wf})	Outlet Temp Final (t _{wf})	Volume Initial (V _{wi})	Volume Final (V _{wf})
min	mm H ₂ O	m ³	m ³	°C	°C	m ³	m ³	°C	°C	m ³	m ³
11.95	13.0	13.0860	13.2260	29	29	332.36238	332.50966	29	29	332.36238	332.50966
11.98	13.0	13.2260	13.3660	28	28	332.50966	332.65700	27	29	332.50966	332.65700
8.70	25.0	13.3730	13.5130	27	27	332.66448	332.81138	27	27	332.66448	332.81138
8.70	25.0	13.5130	13.6530	26	26	332.81138	332.95816	26	27	332.81138	332.95816
14.22	40.0	13.6640	13.9440	26	26	332.97170	333.26334	26	26	332.97170	333.26334
14.33	40.0	13.9440	14.2240	26	26	333.26334	333.55430	26	26	333.26334	333.55430
10.60	70.0	14.2370	14.5170	26	26	333.56776	333.85744	26	26	333.56776	333.85744
10.62	70.0	14.5170	14.7970	26	26	333.85744	334.14612	25	26	333.85744	334.14612
9.47	90.0	14.8090	15.0890	26	26	334.15824	334.44632	25	25	334.15824	334.44632
9.47	90.0	15.0890	15.3690	26	26	334.44632	334.73412	25	25	334.44632	334.73412

METHOD 5 CONSOLE CALIBRATION USING REFERENCE WET GAS METER W-NK-2.5-B-Z No.547425 5-POINT METRIC UNIT

Meter Console Information				Calibration Conditions				Factors/Conversions			
Console Model Number	C-5000	1846	G1.6	Date	Time	28/07/2025	10:10 AM	Std Temp	293	K	
Console Serial Number		1846	G1.6	Calibration Reference No.		SER25-070030		Std Press	760	mm Hg	
DGM Model Number		00000205		Barometric Pressure		755.16	mmHg	K ₁	0.386		
DGM Serial Number				Calibration Meter Gamma		1.001		Console Leak Check			
											PASS

Calibration Data Results											
Standardized Data				Dry Gas Meter							
Dry Gas Meter (V _{std}) m ³	Dry Gas Meter (Q _{std}) m ³ /min	Calibration Meter (V _w) m ³	Calibration Meter (Q _w) m ³ /min	Calibration Factor		Flowrate		Std & Corr		Variation	
				Value (Y)	Variation (ΔY)	Value (Q _{std})	Std & Corr (Q _{std})	Value (ΔH _g)	Corr (ΔH _g)	Value (ΔH _g)	Variation (ΔH _g)
0.135	0.011	0.142	0.012	1.052	0.015	0.012	0.012	40.052	40.110	-3.023	
0.136	0.011	0.143	0.012	1.052	0.015	0.012	0.012	40.110	40.860	-2.966	
0.136	0.016	0.143	0.016	1.048	0.011	0.016	0.016	40.860	40.859	-2.216	
0.136	0.016	0.143	0.016	1.047	0.010	0.016	0.016	40.859	44.273	-2.217	
0.274	0.019	0.284	0.020	1.039	0.002	0.020	0.020	44.273	45.213	1.197	
0.274	0.019	0.284	0.020	1.036	-0.001	0.020	0.020	45.213	43.911	2.137	
0.274	0.026	0.282	0.027	1.029	-0.008	0.027	0.027	43.911	44.281	0.835	
0.275	0.026	0.282	0.027	1.025	-0.012	0.027	0.027	44.281	45.555	1.205	
0.276	0.029	0.282	0.030	1.021	-0.016	0.030	0.030	45.555	45.644	2.479	
0.276	0.029	0.281	0.030	1.020	-0.017	0.030	0.030	45.644	43.076	2.568	
				1.037	Y Average					ΔH _g Average	

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is ±0.02.

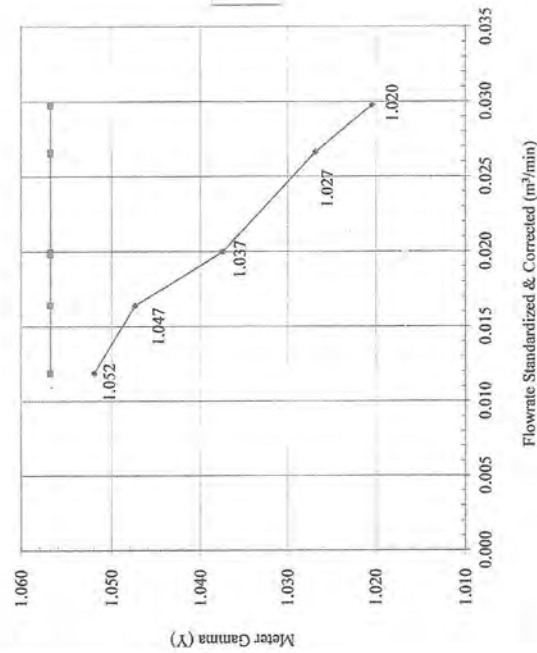
For ΔH_g, orifice pressure differential that equates to 0.75 cfm (0.0212 m³/min) at standard temperature and pressure, acceptable tolerance of individual values from the average is ±0.2 inches (5.1mm) H₂O.



Meter Console Information				Calibration Conditions				Factors/Conversions			
Console Model Number	C-5000	1846	G1.6	Date	Time	28/07/2025	10:10 AM	Std Temp	293	K	
Console Serial Number		1846	G1.6	Calibration Reference No.		SER25-070030		Std Press	760	mm Hg	
DGM Model Number		00000205		Barometric Pressure		755.16	mmHg	K ₁	0.386		
DGM Serial Number				Calibration Meter Gamma		1.001		Console Leak Check			
											PASS

Calibration Date: 28-7-2025 Calibration Reference No: SER25-070030

Meter Gamma vs Flowrate



Console Serial: 1846

Console Model: C-5000



Sampling System Equipment Information		Calibration Conditions		
Console Model Number	C-5000	Date	28/07/2025	00:15 PM
Console Serial Number	1846	Calibration Reference No.	SER25-070030	
DGM Model Number	GL6	Reference Thermometer	DIGICON	
DGM Serial Number	00000205	Serial Number	183169105	
Meter Box Model Number	JENCO 765 KF			
Meter Box Serial Number	JC 10905			

Results											
Console Thermocouple Simulator											
Channel and test point	Meter Box Channel Temperature Reading (°C)										
	-18.0	25.0	38.0	93.0	149.0	260.0	371.0	482.0	593.0	816.0	1038.0
Stack	-19.0	24.0	37.0	91.0	147.0	257.0	370.0	481.0	592.0	816.0	1038.0
Anx	-19.0	24.0	37.0	91.0	147.0						
Probe	-19.0	24.0	37.0	91.0	147.0						
Filter	-19.0	24.0	37.0	91.0	147.0						
Dryer	-19.0	24.0	37.0								

	Tolerance Range		Meter Exit	3.0 °C ± 2.0 °C
	Stack Probe Filter	Absolute ± 1.50% ± 3.0 °C ± 3.0 °C		



Calibration Date:	28-7-2025	Calibration Reference No:	SER25-070030
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The graph plots Flowrate Standardized & Corrected (m³/min) on the y-axis against DGM Orifice ΔH (mm H₂O) on the x-axis. The y-axis ranges from 0.000 to 0.040 with increments of 0.005. The x-axis ranges from 0.000 to 100.000 with increments of 20.000. A smooth curve is drawn through five data points, showing a non-linear relationship where flowrate increases with head difference.

DGM Orifice ΔH (mm H ₂ O)	Flowrate Standardized & Corrected (m³/min)
18.0	0.012
28.0	0.016
42.0	0.020
78.0	0.027
98.0	0.030

1846 Console Serial-

Console Model: C-5000



Certificate No: G 250284

Date of issue: 30-Oct-25

Instrument description : Flue Gas Analyzer
Instrument model : Testo 350
Instrument serial no. : 65106639/0925
Control unit serial no. : 65311112/0925
ID no. or control no. : -
Manufacturer : Testo SE & Co. KGaA
Probe description : -
Probe model : -
Probe serial no. : -
Customer name : Pacific Laboratory Co., Ltd.
Customer address : No. 14/5358, Village No. 14, Bang Bua Thong, Bang Bua Thong, Nonthaburi 11110

Total pages of certificate : 2 Pages
Receiving no. : L-253884
Receiving date. : 29-Oct-25
Parameter of calibration : Gas Calibration(Oxygen 2.506, 9.984, 21.01 %vol, Carbon Monoxide 80.45, 300.9, 1001 ppm, Nitrogen Dioxide 30.68, 81.8, 202.3 ppm, Nitric Oxide 30.0, 151.8, 322 ppm, Sulphur Dioxide 50.4, 100.7, 605.9 ppm, Carbon dioxide 4.98, 12, 39.9 %Vol)

Condition of UUC. : New

Ambient condition : All of the Measurement were carried out the stabilized laboratory

Temperature : 23 ± 5 °C

Humidity : 55 ± 15 %RH

Calibration place : 17/121 Soi Ngamwongwan 47 Yaek 48, Toongsonghong, Laksi, Bangkok 10210

Calibration procedure no : This instrument was calibrated by comparison with Standard gas mixture according to calibration Work Instruction no. WI-CL-28-C

The calibration certificate expanded uncertainty of measurement is stated as the standard uncertainty of measurement Multiplied by coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

This certificate is applied only to item under test Environmental condition.

This Calibration Certificate may not be reproduced other than in full except with the permission of the issuing laboratory. Calibration certificates without signature and seal not valid and The results relate only to the items tested/calibrated.

This calibration certificate documents are traceability to national standards, which realize measurement according to the International System of Units (SI).

Date of calibration : 29-Oct-25



Mr. Kwanchai Khamdoun

Calibration Technician



Mrs. Nongluck Wongsettee

Technical Manager

Certificate No.: G 250284

Standard References (Table 1)

Standard	Certificate No.	Vendor	Due date
Oxygen (O ₂) 2.506 % Vol	1287/25	Linde	08-May-29
Oxygen (O ₂) 9.984 % Vol	CG-0113-24	Nimt	01-Aug-29
Oxygen (O ₂) 21.01 % Vol	CG-0112-24	Nimt	01-Aug-29
Carbon monoxide (CO) 80.45 ppm	CG-0132-24	Nimt	10-Sep-29
Carbon monoxide (CO) 300.9 ppm	1422/25	Linde	21-May-29
Carbon monoxide (CO) 1001 ppm	CG-0085-24	Nimt	22-May-29
Nitrogen Dioxide (NO ₂) 30.68 ppm	2832/24	Linde	08-Sep-26
Nitrogen Dioxide (NO ₂) 81.8 ppm	2330/24	Linde	01-Aug-26
Nitrogen Dioxide (NO ₂) 202.3 ppm	2558/25	Linde	02-Sep-27
Nitric Oxide (NO) 30.0 ppm	CG-0065-24	Nimt	06-May-26
Nitric Oxide (NO) 151.8 ppm	0404/25	Linde	09-Feb-27
Nitric Oxide (NO) 322 ppm	1234/25	Linde	04-May-27
Sulphur Dioxide (SO ₂) 50.4 ppm	1306/25	Linde	12-May-27
Sulphur Dioxide (SO ₂) 100.7 ppm	2662/24	Linde	25-Aug-26
Sulphur Dioxide (SO ₂) 605.9 ppm	1229/25	Linde	04-May-27
Carbon dioxide (CO ₂) 4.98 %Vol	0862/25	Linde	19-Mar-29
Carbon dioxide (CO ₂) 12 %Vol	WO430267-1	CALGAZ	18-Dec-28
Carbon dioxide (CO ₂) 39.9 %Vol	3508/24	Linde	07-Nov-28

Measured room conditions

Temperature : 22.5 °C Humidity : 65.3 %RH Pressure : 1010.4 mbar

Calibration conditions

Gas Temperature : 23 °C Flow rate : 1,300 ml/min Gas pressure : 1015.6 mbar

Calibration Results (Without adjustment) (Table 2)

Parameter of Standard	Standard Values	Mean of UUC	Error	Uncertainty (±)
O ₂ (%Vol)	2.506	2.54	0.034	0.15
O ₂ (%Vol)	9.984	10.09	0.106	0.20
O ₂ (%Vol)	21.01	21.12	0.11	0.30
CO (ppm)	80.45	81	0.55	3.0
CO (ppm)	300.9	303	2.1	6.0
CO (ppm)	1001	1005	4	12
NO ₂ (ppm)	30.68	28.8	-1.88	8.0
NO ₂ (ppm)	81.8	79.7	-2.1	8.0
NO ₂ (ppm)	202.3	199.4	-2.9	12
NO (ppm)	30.0	31	1.0	8.0
NO (ppm)	151.8	153	1.2	8.0
NO (ppm)	322	324	2	12
SO ₂ (ppm)	50.4	50	-0.4	6.0
SO ₂ (ppm)	100.7	100	-0.7	6.0
SO ₂ (ppm)	605.9	603	-2.9	13
*CO ₂ (%Vol)	4.98	5.08	0.10	0.11
*CO ₂ (%Vol)	12	12.19	0.19	0.25
*CO ₂ (%Vol)	39.9	40.27	0.37	0.40

Remark : 1 cmol/mol = 1 %vol. 1 µmol/mol = 1 ppm.

* Calibrations marked Not TISI Accredited "in this Certificate have been included for completeness."

End of Report

Certificate of Calibration

Certificate No. : 68-200468-1

Page : 1 of 2

Submitted by : Pacific Laboratory Co.,Ltd.

14/5358 Moo 14, T.Bang Bua Thong, A.Bang Bua Thong, Nonthaburi 11110 Thailand

Equipment : Electronic Balance

Manufacturer : SHIMADZU

Model : AP225WD

Serial No. : D316301828

ID No. : LAB-BL-003

Capacity : 220000 mg

Resolution : 0.01mg/102000mg, 0.1mg/220000mg

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

Ambient Temperature : (27.3 to 27.4) °C

Relative Humidity : (53.6 to 53.7) %

Air Pressure : 1003.0 mbar

Date of Received : 21 July 2025

Date of Calibration : 21 July 2025

Date of Issue : 25 July 2025

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	C02242009	07 Nov 2025	National Institute of Metrology (Thailand), (NIMT)

Approved by :

(Satja Sangkhun)

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. : 68-200468-1

Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Departure of indication from nominal value

Nominal Value (mg)	Correction (mg)	Uncertainty $\pm$ (mg)
1	0.01	0.012
10	0.00	0.012
50	0.01	0.012
100	0.01	0.014
1000	0.00	0.026
2000	0.01	0.034
5000	0.00	0.043
20000	0.00	0.071
50000	0.01	0.11
100000	0.00	0.20
150000	0.0	0.38
200000	0.0	0.38

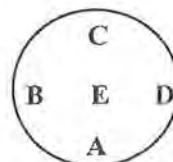
This result of calibration was found accurate as shown on date and place of calibration only.

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 : 50000 mg

A	B	C	D	E	
0.01	0.01	0.02	0.02	0.00	mg



Repeatability

Load test : 200000 mg

Stdev. : 0.053 mg

- o0o -



ภาคผนวกที่ 5-3
เอกสารสอบเทียบปริมาณความเข้มข้นละอองและสารเคมี
ในบรรยากาศการทำงาน

Personal Pump Calibration Report

Calibrate No. : CP095/2569

Calibrate Date : April 21, 2026

Equipment Type	:	Personal Pump
Calibration Type	:	DCL-M Air Flow Meter
Volume for Calibration	:	1.0 l/min
Environment Conditions	:	29.0 Deg C.
Environment Pressure	:	758.0 mmHg.
Customer Name	:	บริษัท โรงงานเหล็กกรุงเทพฯ จำกัด

[illegible]

Calibration By

 Sakuna S.
(Miss Sakuna Supparot)
Technician



CLC
Accredited
ISO/IEC 17025

CALIBRATION LABORATORY CO., LTD.

2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE : AIR FLOW METER
MANUFACTURER : BIOS INTERNATIONAL
MODEL / TYPE : DCL-M
SERIAL NO. : 104699
CLID. NO. : 212402514
JOB CONTROL NO. : 251204142600
CALIBRATION SERVICE : ☒ IN-LABORATORY ☐ ON-SITE

CUSTOMER : PACIFIC LABORATORY CO., LTD.
14/5358 MOO 14 TAMBOL BANG BUA THONG
AMPHOE BANG BUA THONG NONTABURI 11110

DATE OF RECEIVED : 04 December 2025

DATE OF ISSUED : 09 December 2025

The report of calibration shall not be reproduced except in full without approval of the Calibration Laboratory Co., Ltd.

Calibrated By :

Supphakit Sakuntaharn
Calibration Engineer

Approved By :

Mongkol Yotsoontorn
Authorized Signatory
09 December 2025



This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

Certificate No. Q25142600

F3-011-05/12-23

page 1 of 3



meter calibration



CALIBRATION LABORATORY Co., LTD.

2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



REPORT OF CALIBRATION

FOR

NOMENCLATURE : AIR FLOW METER
MANUFACTURER : BIOS INTERNATIONAL
MODEL / TYPE : DCL-M
SERIAL NO. : 104699
DATE OF CALIBRATION : 08 December 2025

ENVIRONMENT CONDITIONS :

Temperature : $(23 \pm 2) ^\circ\text{C}$

Relative Humidity : $(55 \pm 10) \% \text{ RH}$

PROCEDURE USED :

This instrument was calibrated under procedure No. **CLC-CPPF-03**. The calibration was performed by comparison with Gas Flow Meter which refers to the standard condition of 101.325 kPa and $0 ^\circ\text{C}$.

REFERENCE STANDARD USED :

1. Gas Flow Meter, Alicat Scientific Model M-500SCCM-D-DB15 S/N. 261329.
2. Gas Flow Meter, Alicat Scientific Model M-5SLPM-D-DB15 S/N. 261330.

TRACEABILITY :

1. The measurements are traceable to International System of Units (SI), through Chell Instrument Ltd.
Certificate No. N039746, Due Date 02 April 2026.
2. The measurements are traceable to International System of Units (SI), through Chell Instrument Ltd.
Certificate No. N039747, Due Date 02 April 2026.

UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2$ which for a normal distribution corresponds to a coverage probability of approximately 95 %.
It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2022)"





CLC
Accredited
ISO/IEC 17025

CALIBRATION LABORATORY Co., LTD.

2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230

Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : (X) without adjustment () adjustment

The table in the following gives the calibration results and associated measurement uncertainties of the measuring air flow meter.

CALIBRATION DATA

AIR FLOW METER RESULT

Test point (L/min)	STD Applied (L/min)	DUC Reading (L/min)	Correction (L/min)	Uncertainty ± (L/min)
0.010	0.0109	0.0107	+0.0002	0.0006
1.500	1.501	1.487	+0.014	0.014
3.000	3.000	2.988	+0.012	0.014

Technical Note. Media of Gas : Air

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 017 Page 52 of 73

This report is valid for the above stated instrument/s only.

End of Certificate

Certificate No. Q25142600

F3-011-05/12-23

page 3 of 3



mclcalibration

Certificate of Calibration

Certificate No. : 68-200468-1

Page : 1 of 2

Submitted by : Pacific Laboratory Co.,Ltd.

14/5358 Moo 14, T.Bang Bua Thong, A.Bang Bua Thong, Nonthaburi 11110 Thailand

Equipment : Electronic Balance

Manufacturer : SHIMADZU

Model : AP225WD

Serial No. : D316301828

ID No. : LAB-BL-003

Capacity : 220000 mg

Resolution : 0.01mg/102000mg, 0.1mg/220000mg

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

Ambient Temperature : (27.3 to 27.4) °C

Relative Humidity : (53.6 to 53.7) %

Air Pressure : 1003.0 mbar

Date of Received : 21 July 2025

Date of Calibration : 21 July 2025

Date of Issue : 25 July 2025

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	C02242009	07 Nov 2025	National Institute of Metrology (Thailand), (NIMT)

Approved by :

(Satja Sangkhun)

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. : 68-200468-1

Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Departure of indication from nominal value

Nominal Value (mg)	Correction (mg)	Uncertainty $\pm$ (mg)
1	0.01	0.012
10	0.00	0.012
50	0.01	0.012
100	0.01	0.014
1000	0.00	0.026
2000	0.01	0.034
5000	0.00	0.043
20000	0.00	0.071
50000	0.01	0.11
100000	0.00	0.20
150000	0.0	0.38
200000	0.0	0.38

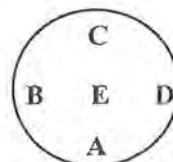
This result of calibration was found accurate as shown on date and place of calibration only.

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 : 50000 mg

A	B	C	D	E	
0.01	0.01	0.02	0.02	0.00	mg



Repeatability

Load test : 200000 mg

Stdev. : 0.053 mg

- o0o -





Metrohm

Compliance Service

Calibration Certificate (CC) for
925 Eco IC

Instrument details

Type:	19250020
Serial No.:	252043/ME (1925002005484)
Manufacturer:	Metrohm AG Ionenstrasse CH-9100 Herisau Switzerland
Firmware:	5.850.0114
Customer instrument ID:	N/A
System Designation Number:	CAL250643/ME

Customer details

Name of company:	Pacific laboratory co.,ltd
Address:	14/5358 Moo 14 Bang Bua Thong,Bang Bua Thong District, Nonthaburi 11110,Thailand
Department:	Laboratory
Responsible person:	วิภาดาพิบูล
Calibration place:	Laboratory, Pacific laboratory co.,ltd.

Date and time of calibration:	22/08/2025 - 11:16
-------------------------------	--------------------



Calibration Certificate (CC)

Introduction

The instrument stated above has been inspected in accordance with the corresponding test instructions of Metrohm Ltd. Servicing instructions are compiled and checked for correctness with account taken of the technical apparatus and ambient conditions available to the service engineer at the servicing location. This Calibration Certificate (CC) declares the results regarding calibration and operational status obtained when carrying out the test instructions referred to below.

Calibration status

We certify that the instrument stated above meets or exceeds the electrical specifications at the points tested. Test equipment is calibrated and traceable back to national and/or international standards (ISO 17025, NIST).

Operational status

We certify that the instrument stated above executes the instrument's specific functions tested except where detailed overleaf.

Declaration

Document

Test instructions used: C.1 Test instructions for 925 Eco IC, Version 1.1

Reference standards

Type / Model	Manufacturer	Serial No. / Batch No.	Certificate No.	Due date / Expiry date
Multimeter	Fluke	56010242	E110240498	09/12/2025
High pressure gauge	Metrohm	349648018913	CAL0252-2400136	15/12/2025

Protocol

	Yes	No
Instrument had to be repaired beforehand	☐	☒
If yes, see Calibration Certificate (CC) No.:		
Instrument had to be readjusted beforehand	☐	☒
If yes, see Calibration Certificate (CC) No.:		



Conclusion of test results

Instrument satisfies the specified technical requirements

Yes ☒ No ☐

Recommended date for next maintenance:

Comments

Metrohm representative

Metrohm representative confirms correct execution of instrument calibration

Yes ☒ No ☐

Date	Name	Signature
22/08/2025	Mr. Athakorn Punya	<i>Athakorn P.</i>

Customer representative

Customer representative accepts results of instrument calibration

Yes ☒ No ☐

Date	Name	Signature
22/08/2025	สุภาวดี	<i>สุภาวดี</i>

Test results

No.	Title	Comments	Pass		
			Yes	No	N/A
100	Visual test		☒	☐	☐
101	Safety test		☒	☐	☐
102	LED		☒	☐	☐
103	Fan		☒	☐	☐
104	Communication		☒	☐	☐
105	Column plug interface		☒	☐	☐

No.	Title	Comments	Pass		
			Yes	No	N/A
106	IC pump				
106.1	Installation		☒	☐	☐
106.2	Pump head detection		☒	☐	☐
106.3	Deaerate		☒	☐	☐
106.4	Pump dynamics		☒	☐	☐

No.	Title	Comments	Yes	No	Pass
106.5 Pulsation					
	Standard pump head Macro pump head	Maximum [MPa] 13.47			
		Minimum [MPa] 13.02	☒	☐	☐
		Difference [%] <5.0			
		N/A	☐	☐	☒
106.6 Pressure transducer					
		Nominal value [MPa] 13.12			
		Measured value [MPa] 13.00	☒	☐	☐
		Tolerance [%] ± 10.0			
106.7 Flow rate					
	Standard pump head Macro pump head	Nominal value [mL] 4.0			
		Measured value [mL] 4.1	☒	☐	☐
		Tolerance [mL] ± 0.2			
		20.0	☐	☐	☒
106.8 Shut off at minimum pressure					
			☒	☐	☐
106.9 Shut off at maximum pressure					
			☒	☐	☐
106.10 Leak test					
		Maximum [MPa] 17.08			
		Minimum [MPa] 16.52	☒	☐	☐
		Difference [MPa] <1.0			

No.	Title	Comments	Pass		
			Yes	No	N/A
107	Injector				
	107.1 Switching operation		☒	☐	☐

CC.925 Document history

Date	Version	Author	Description/Changes
14.12.2016	1.0	pr	Creation of document 8.925.3002EN
31.03.2021	1.1	pr	Test no. 103 Fan depends on the installed power supply version according C.3 notice of modification CRM-28908.

End of CC Document

ภาคผนวกที่ 5-4
เอกสารสอบเทียบระดับความดังเสียง
(Sound Level Meter)



Professional Calibration & Services Co., Ltd.

50/888, 50/889 Moo 2, Rungsit-Nakornnayok Rd., Bungyeetho, Thunyaburi,
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 : EL40431/25
Control Number : PCAL153035
Customer Control : -
Description : Sound Calibrator
Manufacturer : SOUNDTEK
Model : ST-120
Serial Number : 211203764
Customer : Pacific Laboratory Co., Ltd.
14/5358 Moo 14, Tambol Bang Bua Thong, Amphoe Bang Bua Thong,
Nonthaburi 11110
Date of Receipt : 16-Jul-25
Date of Calibration : 16-Jul-25
Calibration Location : Electrical Laboratory
Environment : Temperature $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$
Relative Humidity $50\% \pm 20\%$
Calibration Method : Calibration Procedure Number CP-EL35
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.

Calibrated By

Ms. Janjira Intapat

Authorized Signature

(Mr. Jumnong Junphong)

23-Jul-25

Issued Date



Professional Calibration & Services Co., Ltd.

50/888, 50/889 Moo 2, Rungsi-Nakornnayok Rd., Bungyeetho, Thunyaburi,
Pathumthani 12130 Thailand
Tel : (+66)2150-6641 (Autoline)
Email : info@p-cal.com www.p-cal.com



Calibration Report

Certificate Number : EL40431/25

Page 2 of 3

Equipment Standards Used

Description	Serial No.	Traceability to	Certificate No.	Cal. Due Date
Sound Level Meter	030606101	ANAB : AC-2590	EL11791/25	11-Mar-26
Sound Calibrator	125626778	NSC : Calibration 0037	EEL.BP. 99/0168	23-Jan-26

Condition as received : Normal

Definitions :-

- * ANAB - The ANSI National Accreditation Board
- * NSC - National Standardization Council of Thailand



Professional Calibration & Services Co., Ltd.

50/888, 50/889 Moo 2, Rungsit-Nakornnayok Rd., Bungyeetho, Thunyaburi,
Pathumthani 12130 Thailand
Tel : (+66)2150-6641 (Autoline)
Email : info@p-cal.com www.p-cal.com



Calibration Report

Certificate No.: EL40431/25

Page : 3 of 3

Calibration Results

Sound Pressure Level Accuracy

Nominal Value	Measured Value	UUC Error	Uncertainty ($\pm$)
94 dB	94.01 dB	-0.01 dB	0.18 dB
114 dB	114.08 dB	-0.08 dB	0.17 dB

...End...



PN-Tech Instruments Co., Ltd.

100/64 Moo.5 T.Ladsewai R.Lamlukka Pathumthani 12150
Tel. 092-824-2461, 061-993-6478 www.pntech-i.com
Email : info.pntechinstruments@gmail.com, info@pntech-i.com



CERTIFICATE OF CALIBRATION

Certificate Number : PNT09-25-150-2

Page : 1 of 3

Customer : Pacific Laboratory Co.,Ltd.
: 14/5358 Moo 14 Tambol Bang Bua Thong
: Amphoe Bang Thong, Nonthaburi 11110

Description of Equipment : Sound Level Meter
Manufacturer : ACO
Model Number : Type 6236
Serial Number : 222172
ID Number : N/A
Calibration Location : In-Lab
Ambient Temperature : 23.2 °C (± 3.0 °C)
Ambient Humidity : 55.3 %RH (± 20.0 %RH)
Received Date : 02-Sep-25
Calibration Date : 05-Sep-25
Procedure : CP-43-EL

This certifies that the above instrument was calibrated in compliance with the calibration systems requirement of ISO/IEC 17025 : 2017 in accordance with referenced procedures. Standards used to perform this calibration are certified by or traceable to National Institute of Metrology (Thailand) and/or other recognized national measurement institutes which realizes the units of measurement according to the International System of Units (SI Unit).

A binary decision rule, utilizing simple acceptance criteria is used for the determination of compliance statements. Result are reported without factoring in the effects of measurement uncertainty.

Issued Date : 08-Sep-25

Calibration by : Mr.Paitoon Chungklueng

Approved by :

Quality Assurance : Mr.Natthaphol Boonmee

Mr.Paitoon Chungklueng
Authorized Signatory



PN-Tech Instruments Co., Ltd.

100/64 Moo.6 T.Ladsawai R.Lamlukka Pathumthanl 12150
Tel. 092-824-2461, 061-993-6478 www.pntech-l.com
Email : info.pntinstruments@gmail.com, info@pntech-l.com



CALIBRATION REPORT

Certificate Number : PNT09-25-150-2

Page : 2 of 3

Standard Equipment Used

<u>Equip. No.</u>	<u>Equipment Name</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>
PNS-043	Sound Level Calibrator	N949786	EL64654/24	23-Dec-25

Traceability

This certificate is traceable to the International System of Unit (SI Unit) maintained at ;

- Professional Calibration & Services Co., Ltd.



PN-Tech Instruments Co., Ltd.

100/64 Moo.6 T.Ladsawai A.Lamlukka Pathumthani 12150
Tel. 092-824-2461, 061-993-6478 www.pntech-i.com
Email : info.pntinstruments@gmail.com, info@pntech-i.com



CALIBRATION REPORT

Certificate Number : PNT09-25-150-2

Page : 3 of 3

Results of Calibration : (/) Without Adjustment () With Adjustment

Function : Sound Level Measurement : (Test Mode Slow)

UUC Range : 40 to 130 dB

Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.2	-0.07	0.28
	114.30	114.1	-0.20	0.28
LC	94.27	94.2	-0.07	0.28
	114.30	114.1	-0.20	0.28

Function : Sound Level Measurement : (Test Mode Fast)

UUC Range : 40 to 130 dB

Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.2	-0.07	0.28
	114.30	114.1	-0.20	0.28
LC	94.27	94.2	-0.07	0.28
	114.30	114.1	-0.20	0.28

**** End of Certificate****



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CERTIFICATE OF CALIBRATION

Certificate Number : PNT01-26-026-1

Customer : Pacific Laboratory Co.,Ltd.
: 14/5358 Moo 14 Tambol Bang Bua Thong
: Amphoe Bang Thong, Nonthaburi 11110

Description of Equipment : Sound Level Meter

Manufacturer : ACO

Model Number : 6236

Serial Number : 222134

ID Number : N/A

Calibration Location : In-Lab

Ambient Temperature : 23.2 °C (± 3.0 °C)

Ambient Humidity : 53.6 %RH (± 20.0 %RH)

Received Date : 26-Jan-26

Calibration Date : 30-Jan-26

Procedure : CP-43-EL

Page : 1 of 3

This certifies that the above instrument was calibrated in compliance with the calibration systems requirement of ISO/IEC 17025 : 2017 in accordance with referenced procedures. Standards used to perform this calibration are certified by or traceable to National Institute of Metrology (Thailand) and/or other recognized national measurement institutes which realizes the units of measurement according to the International System of Units (SI Unit). A binary decision rule, utilizing simple acceptance criteria is used for the determination of compliance statements. Result are reported without factoring in the effects of measurement uncertainty.

Issued Date : 02-Feb-26

Calibration by : Mr.Parinya Chungklueng

Quality Assurance : Mr.Natthaphol Boonmee

Approved by :

Mr.Paitoon Chungklueng
Authorized Signatory



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CALIBRATION REPORT

Certificate Number : PNT01-26-026-1

Page : 2 of 3

Standard Equipment Used

<u>Equip. No.</u>	<u>Equipment Name</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>
PNS-043	Sound Level Calibrator	N949786	EL64654/24	23-Dec-26

Traceability

This certificate is traceable to the International System of Unit (SI Unit) maintained at ;

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CALIBRATION REPORT

Certificate Number : PNT01-26-026-1

Page : 3 of 3

Results of Calibration : (/) Without Adjustment () With Adjustment

Function : Sound Level Measurement : (Test Mode Slow)

UUC Range : 40 to 130 dB

Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.3	0.03	0.28
	114.30	114.1	-0.20	0.28
LC	94.27	94.3	0.03	0.28
	114.30	114.1	-0.20	0.28

Function : Sound Level Measurement : (Test Mode Fast)

UUC Range : 40 to 130 dB

Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.3	0.03	0.28
	114.30	114.1	-0.20	0.28
LC	94.27	94.3	0.03	0.28
	114.30	114.1	-0.20	0.28

**** End of Certificate****



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CERTIFICATE OF CALIBRATION

Certificate Number : PNT01-26-020-5

Customer : Pacific Laboratory Co.,Ltd.
: 14/5358 Moo 14 Tambol Bang Bua Thong
: Amphoe Bang Thong, Nonthaburi 11110

Description of Equipment : Sound Level Meter

Manufacturer : ACO

Model Number : 6236

Serial Number : 222166

ID Number : N/A

Calibration Location : In-Lab

Ambient Temperature : 23.6 °C (± 3.0 °C)

Ambient Humidity : 53.4 %RH (± 20.0 %RH)

Received Date : 23-Jan-26

Calibration Date : 24-Jan-26

Procedure : CP-43-EL

Page : 1 of 3

This certifies that the above instrument was calibrated in compliance with the calibration systems requirement of ISO/IEC 17025 : 2017 in accordance with referenced procedures. Standards used to perform this calibration are certified by or traceable to National Institute of Metrology (Thailand) and/or other recognized national measurement institutes which realizes the units of measurement according to the International System of Units (SI Unit). A binary decision rule, utilizing simple acceptance criteria is used for the determination of compliance statements. Result are reported without factoring in the effects of measurement uncertainty.

Issued Date : 26-Jan-26

Calibration by : Mr.Parinya Chungklueng

Quality Assurance : Mr.Natthaphol Boonmee

Approved by :

Mr.Paitoon Chungklueng
Authorized Signatory



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CALIBRATION REPORT

Certificate Number : PNT01-26-020-5

Page : 2 of 3

Standard Equipment Used

<u>Equip. No.</u>	<u>Equipment Name</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>
PNS-043	Sound Level Calibrator	N949786	EL64654/24	23-Dec-26

Traceability

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CALIBRATION REPORT

Certificate Number : PNT01-26-020-5

Page : 3 of 3

Results of Calibration : (/) Without Adjustment () With Adjustment

Function : Sound Level Measurement : (Test Mode Slow)
UUC Range : 40 to 130 dB
Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.4	0.13	0.28
	114.30	114.0	-0.30	0.28
LC	94.27	94.4	0.13	0.28
	114.30	114.0	-0.30	0.28

Function : Sound Level Measurement : (Test Mode Fast)
UUC Range : 40 to 130 dB
Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.4	0.13	0.28
	114.30	114.0	-0.30	0.28
LC	94.27	94.4	0.13	0.28
	114.30	114.0	-0.30	0.28

**** End of Certificate****



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CERTIFICATE OF CALIBRATION

Certificate Number : PNT11-25-227-3

Page : 1 of 3

Customer : Pacific Laboratory Co.,Ltd.
: 14/5358 Moo 14 Tambol Bang Bua Thong
: Amphoe Bang Thong, Nonthaburi 11110

Description of Equipment : Sound Level Meter
Manufacturer : ACO
Model Number : Type 6236
Serial Number : 222018
ID Number : N/A
Calibration Location : In-Lab
Ambient Temperature : 23.6 °C (± 3.0 °C)
Ambient Humidity : 54.3 %RH (± 20.0 %RH)
Received Date : 19-Nov-25
Calibration Date : 24-Nov-25
Procedure : CP-43-EL

This certifies that the above instrument was calibrated in compliance with the calibration systems requirement of ISO/IEC 17025 : 2017 in accordance with referenced procedures. Standards used to perform this calibration are certified by or traceable to National Institute of Metrology (Thailand) and/or other recognized national measurement institutes which realizes the units of measurement according to the International System of Units (SI Unit).

A binary decision rule, utilizing simple acceptance criteria is used for the determination of compliance statements. Result are reported without factoring in the effects of measurement uncertainty.

Issued Date : 26-Nov-25

Calibration by : Mr.Paitoon Chungklueng

Approved by :

Quality Assurance : Mr.Natthaphol Boonmee

Mr.Paitoon Chungklueng
Authorized Signatory



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CALIBRATION REPORT

Certificate Number : PNT11-25-227-3

Page : 2 of 3

Standard Equipment Used

<u>Equip. No.</u>	<u>Equipment Name</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>
PNS-043	Sound Level Calibrator	N949786	EL64654/24	23-Dec-25

Traceability

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CALIBRATION REPORT

Certificate Number : PNT11-25-227-3

Page : 3 of 3

Results of Calibration : (/) Without Adjustment () With Adjustment

Function : Sound Level Measurement : (Test Mode Slow)
UUC Range : 40 to 130 dB
Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.4	0.13	0.28
	114.30	114.1	-0.20	0.28
LC	94.27	94.4	0.13	0.28
	114.30	114.0	-0.30	0.28

Function : Sound Level Measurement : (Test Mode Fast)
UUC Range : 40 to 130 dB
Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.4	0.13	0.28
	114.30	114.2	-0.10	0.28
LC	94.27	94.4	0.13	0.28
	114.30	114.1	-0.20	0.28

**** End of Certificate****



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CERTIFICATE OF CALIBRATION

Certificate Number : PNT01-26-020-6

Customer : Pacific Laboratory Co.,Ltd.
: 14/5358 Moo 14 Tambol Bang Bua Thong
: Amphoe Bang Thong, Nonthaburi 11110

Description of Equipment : Sound Level Meter
Manufacturer : ACO
Model Number : 6236
Serial Number : 222171
ID Number : N/A
Calibration Location : In-Lab
Ambient Temperature : 23.6 °C (± 3.0 °C)
Ambient Humidity : 53.4 %RH (± 20.0 %RH)
Received Date : 23-Jan-26
Calibration Date : 24-Jan-26
Procedure : CP-43-EL

Page : 1 of 3

This certifies that the above instrument was calibrated in compliance with the calibration systems requirement of ISO/IEC 17025 : 2017 in accordance with referenced procedures. Standards used to perform this calibration are certified by or traceable to National Institute of Metrology (Thailand) and/or other recognized national measurement institutes which realizes the units of measurement according to the International System of Units (SI Unit).
A binary decision rule, utilizing simple acceptance criteria is used for the determination of compliance statements.
Result are reported without factoring in the effects of measurement uncertainty.

Issued Date : 26-Jan-26

Calibration by : Mr.Parinya Chungklueng

Quality Assurance : Mr.Natthaphol Boonmee

Approved by :

Mr.Paitoon Chungklueng
Authorized Signatory



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CALIBRATION REPORT

Certificate Number : PNT01-26-020-6

Page : 2 of 3

Standard Equipment Used

<u>Equip. No.</u>	<u>Equipment Name</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>
PNS-043	Sound Level Calibrator	N949786	EL64654/24	23-Dec-26

Traceability

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CALIBRATION REPORT

Certificate Number : PNT01-26-020-6

Page : 3 of 3

Results of Calibration : (/) Without Adjustment () With Adjustment

Function : Sound Level Measurement : (Test Mode Slow)

UUC Range : 40 to 130 dB

Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.9	0.63	0.28
	114.30	114.6	0.30	0.28
LC	94.27	94.9	0.63	0.28
	114.30	114.6	0.30	0.28

Function : Sound Level Measurement : (Test Mode Fast)

UUC Range : 40 to 130 dB

Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.8	0.53	0.28
	114.30	114.6	0.30	0.28
LC	94.27	94.8	0.53	0.28
	114.30	114.6	0.30	0.28

**** End of Certificate****



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CERTIFICATE OF CALIBRATION

Certificate Number : PNT09-25-150-1

Page : 1 of 3

Customer : Pacific Laboratory Co.,Ltd.
: 14/5358 Moo 14 Tambol Bang Bua Thong
: Amphoe Bang Thong, Nonthaburi 11110

Description of Equipment : Sound Level Meter
Manufacturer : ACO
Model Number : Type 6236
Serial Number : 222043
ID Number : N/A
Calibration Location : In-Lab
Ambient Temperature : 23.2 °C (± 3.0 °C)
Ambient Humidity : 55.3 %RH (± 20.0 %RH)
Received Date : 02-Sep-25
Calibration Date : 05-Sep-25
Procedure : CP-43-EL

This certifies that the above instrument was calibrated in compliance with the calibration systems requirement of ISO/IEC 17025 : 2017 in accordance with referenced procedures. Standards used to perform this calibration are certified by or traceable to National Institute of Metrology (Thailand) and/or other recognized national measurement institutes which realizes the units of measurement according to the International System of Units (SI Unit).

A binary decision rule, utilizing simple acceptance criteria is used for the determination of compliance statements. Result are reported without factoring in the effects of measurement uncertainty.

Issued Date : 08-Sep-25

Calibration by : Mr.Paitoon Chungklueng

Approved by :

Quality Assurance : Mr.Natthaphol Boonmee

Mr.Paitoon Chungklueng
Authorized Signatory



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CALIBRATION REPORT

Certificate Number : PNT09-25-150-1

Page : 2 of 3

Standard Equipment Used

<u>Equip. No.</u>	<u>Equipment Name</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>
PNS-043	Sound Level Calibrator	N949786	EL64654/24	23-Dec-25

Traceability

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CALIBRATION REPORT

Certificate Number : PNT09-25-150-1

Page : 3 of 3

Results of Calibration : (/) Without Adjustment () With Adjustment

Function : Sound Level Measurement : (Test Mode Slow)

UUC Range : 40 to 130 dB

Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.4	0.13	0.28
	114.30	114.4	0.10	0.28
LC	94.27	94.5	0.23	0.28
	114.30	114.4	0.10	0.28

Function : Sound Level Measurement : (Test Mode Fast)

UUC Range : 40 to 130 dB

Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.4	0.13	0.28
	114.30	114.4	0.10	0.28
LC	94.27	94.4	0.13	0.28
	114.30	114.4	0.10	0.28

**** End of Certificate****



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CERTIFICATE OF CALIBRATION

Certificate Number : PNT12-25-264-3

Page : 1 of 3

Customer : Pacific Laboratory Co.,Ltd.
: 14/5358 Moo 14 Tambol Bang Bua Thong
: Amphoe Bang Thong, Nonthaburi 11110

Description of Equipment : Sound Level Meter
Manufacturer : ACO
Model Number : 6236
Serial Number : 222044
ID Number : N/A
Calibration Location : In-Lab
Ambient Temperature : 22.8 °C (± 3.0 °C)
Ambient Humidity : 53.2 %RH (± 20.0 %RH)
Received Date : 22-Dec-25
Calibration Date : 29-Dec-25
Procedure : CP-43-EL

This certifies that the above instrument was calibrated in compliance with the calibration systems requirement of ISO/IEC 17025 : 2017 in accordance with referenced procedures. Standards used to perform this calibration are certified by or traceable to National Institute of Metrology (Thailand) and/or other recognized national measurement institutes which realizes the units of measurement according to the International System of Units (SI Unit).

A binary decision rule, utilizing simple acceptance criteria is used for the determination of compliance statements. Result are reported without factoring in the effects of measurement uncertainty.

Issued Date : 05-Jan-26

Calibration by : Mr.Paitoon Chungklueng

Approved by :

Quality Assurance : Mr.Natthaphol Boonmee

Mr.Paitoon Chungklueng
Authorized Signatory



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CALIBRATION REPORT

Certificate Number : PNT12-25-264-3

Page : 2 of 3

Standard Equipment Used

<u>Equip. No.</u>	<u>Equipment Name</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>
PNS-043	Sound Level Calibrator	N949786	EL64654/24	23-Dec-26

Traceability

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CALIBRATION REPORT

Certificate Number : PNT12-25-264-3

Page : 3 of 3

Results of Calibration : (/) Without Adjustment () With Adjustment

Function : Sound Level Measurement : (Test Mode Slow)

UUC Range : 40 to 130 dB

Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.6	0.33	0.28
	114.30	114.1	-0.20	0.28
LC	94.27	94.5	0.23	0.28
	114.30	114.1	-0.20	0.28

Function : Sound Level Measurement : (Test Mode Fast)

UUC Range : 40 to 130 dB

Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.6	0.33	0.28
	114.30	114.1	-0.20	0.28
LC	94.27	94.6	0.33	0.28
	114.30	114.1	-0.20	0.28

**** End of Certificate****



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CERTIFICATE OF CALIBRATION

Certificate Number : PNT01-26-020-2

Customer : Pacific Laboratory Co.,Ltd.
: 14/5358 Moo 14 Tambol Bang Bua Thong
: Amphoe Bang Thong, Nonthaburi 11110

Description of Equipment : Sound Level Meter

Manufacturer : ACO

Model Number : 6236

Serial Number : 222135

ID Number : N/A

Calibration Location : In-Lab

Ambient Temperature : 23.6 °C (± 3.0 °C)

Ambient Humidity : 53.4 %RH (± 20.0 %RH)

Received Date : 23-Jan-26

Calibration Date : 24-Jan-26

Procedure : CP-43-EL

Page : 1 of 3

This certifies that the above instrument was calibrated in compliance with the calibration systems requirement of ISO/IEC 17025 : 2017 in accordance with referenced procedures. Standards used to perform this calibration are certified by or traceable to National Institute of Metrology (Thailand) and/or other recognized national measurement institutes which realizes the units of measurement according to the International System of Units (SI Unit). A binary decision rule, utilizing simple acceptance criteria is used for the determination of compliance statements. Result are reported without factoring in the effects of measurement uncertainty.

Issued Date : 26-Jan-26

Calibration by : Mr.Parinya Chungklueng

Quality Assurance : Mr.Natthaphol Boonmee

Approved by :

Mr.Paitoon Chungklueng
Authorized Signatory



PN-Tech Instruments Co., Ltd.

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CALIBRATION REPORT

Certificate Number : PNT01-26-020-2

Page : 2 of 3

Standard Equipment Used

<u>Equip. No.</u>	<u>Equipment Name</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>
PNS-043	Sound Level Calibrator	N949786	EL64654/24	23-Dec-26

Traceability

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CALIBRATION REPORT

Certificate Number : PNT01-26-020-2

Page : 3 of 3

Results of Calibration : (/) Without Adjustment () With Adjustment

Function : Sound Level Measurement : (Test Mode Slow)

UUC Range : 40 to 130 dB

Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.3	0.03	0.28
	114.30	114.2	-0.10	0.28
LC	94.27	94.3	0.03	0.28
	114.30	114.2	-0.10	0.28

Function : Sound Level Measurement : (Test Mode Fast)

UUC Range : 40 to 130 dB

Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.3	0.03	0.28
	114.30	114.2	-0.10	0.28
LC	94.27	94.3	0.03	0.28
	114.30	114.2	-0.10	0.28

**** End of Certificate****



PN-Tech Instruments Co., Ltd.

100/64 Moo.6 T.Ladssawai R.Lamlukka Pathumthani 12150
Tel. 092-824-2461, 061-993-6478 www.pntech-i.com
Email : info.pntinstruments@gmail.com, info@pntech-i.com



CERTIFICATE OF CALIBRATION

Certificate Number : PNT11-25-227-2

Page : 1 of 3

Customer : Pacific Laboratory Co.,Ltd.
: 14/5358 Moo 14 Tambol Bang Bua Thong
: Amphoe Bang Thong, Nonthaburi 11110

Description of Equipment : Sound Level Meter
Manufacturer : ACO
Model Number : Type 6236
Serial Number : 222017
ID Number : N/A
Calibration Location : In-Lab
Ambient Temperature : 23.6 °C (± 3.0 °C)
Ambient Humidity : 54.3 %RH (± 20.0 %RH)
Received Date : 19-Nov-25
Calibration Date : 24-Nov-25
Procedure : CP-43-EL

This certifies that the above instrument was calibrated in compliance with the calibration systems requirement of ISO/IEC 17025 : 2017 in accordance with referenced procedures. Standards used to perform this calibration are certified by or traceable to National Institute of Metrology (Thailand) and/or other recognized national measurement institutes which realizes the units of measurement according to the International System of Units (SI Unit).
A binary decision rule, utilizing simple acceptance criteria is used for the determination of compliance statements.
Result are reported without factoring in the effects of measurement uncertainty.

Issued Date : 26-Nov-25

Calibration by : Mr.Paitoon Chungklueng

Approved by :

Quality Assurance : Mr.Natthaphol Boonmee

Mr.Paitoon Chungklueng
Authorized Signatory



PN-Tech Instruments Co., Ltd.

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CALIBRATION REPORT

Certificate Number : PNT11-25-227-2

Page : 2 of 3

Standard Equipment Used

<u>Equip. No.</u>	<u>Equipment Name</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>
PNS-043	Sound Level Calibrator	N949786	EL64654/24	23-Dec-25

Traceability

This certificate is traceable to the International System of Unit (SI Unit) maintained at ;

- Professional Calibration & Services Co., Ltd.



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CALIBRATION REPORT

Certificate Number : PNT11-25-227-2

Page : 3 of 3

Results of Calibration : (/) Without Adjustment () With Adjustment

Function : Sound Level Measurement : (Test Mode Slow)
UUC Range : 40 to 130 dB
Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.4	0.13	0.28
	114.30	114.4	0.10	0.28
LC	94.27	94.5	0.23	0.28
	114.30	114.4	0.10	0.28

Function : Sound Level Measurement : (Test Mode Fast)
UUC Range : 40 to 130 dB
Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.4	0.13	0.28
	114.30	114.4	0.10	0.28
LC	94.27	94.4	0.13	0.28
	114.30	114.4	0.10	0.28

**** End of Certificate****



PN-Tech Instruments Co., Ltd.

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Tel. 092-824-2461, 061-993-6478 www.pntech-i.com

Email : info.pntinstruments@gmail.com, info@pntech-i.com



CERTIFICATE OF CALIBRATION

Certificate Number : PNT12-25-248-1

Customer : Pacific Laboratory Co.,Ltd.
: 14/5358 Moo 14 Tambol Bang Bua Thong
: Amphoe Bang Thong, Nonthaburi 11110

Description of Equipment : Sound Level Meter

Manufacturer : ACO

Model Number : 6236

Serial Number : 222015

ID Number : N/A

Calibration Location : In-Lab

Ambient Temperature : 23.2 °C (± 3.0 °C)

Ambient Humidity : 53.8 %RH (± 20.0 %RH)

Received Date : 04-Dec-25

Calibration Date : 09-Dec-25

Procedure : CP-43-EL

Page : 1 of 3

This certifies that the above instrument was calibrated in compliance with the calibration systems requirement of ISO/IEC 17025 : 2017 in accordance with referenced procedures. Standards used to perform this calibration are certified by or traceable to National Institute of Metrology (Thailand) and/or other recognized national measurement institutes which realizes the units of measurement according to the International System of Units (SI Unit). A binary decision rule, utilizing simple acceptance criteria is used for the determination of compliance statements. Result are reported without factoring in the effects of measurement uncertainty.

Issued Date : 11-Dec-25

Calibration by : Mr.Paitoon Chungklueng

Quality Assurance : Mr.Natthaphol Boonmee

Approved by :

Mr.Paitoon Chungklueng
Authorized Signatory



PN-Tech Instruments Co., Ltd.

100/64 Moo.6 T.Ladsawai R.Lamlukka Pathumthani 12150
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Email : info.pntinstruments@gmail.com, info@pntech-i.com



CALIBRATION REPORT

Certificate Number : PNT12-25-248-1

Page : 2 of 3

Standard Equipment Used

<u>Equip. No.</u>	<u>Equipment Name</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>
PNS-043	Sound Level Calibrator	N949786	EL64654/24	23-Dec-25

Traceability

This certificate is traceable to the International System of Unit (SI Unit) maintained at ;

- Professional Calibration & Services Co., Ltd.



PN-Tech Instruments Co., Ltd.

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Email : info.pntinstruments@gmail.com, info@pntech-i.com



CALIBRATION REPORT

Certificate Number : PNT12-25-248-1

Page : 3 of 3

Results of Calibration : (/) Without Adjustment () With Adjustment

Function : Sound Level Measurement : (Test Mode Slow)

UUC Range : 40 to 130 dB

Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.3	0.03	0.28
	114.30	114.0	-0.30	0.28
LC	94.27	94.2	-0.07	0.28
	114.30	113.9	-0.40	0.28

Function : Sound Level Measurement : (Test Mode Fast)

UUC Range : 40 to 130 dB

Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.3	0.03	0.28
	114.30	114.0	-0.30	0.28
LC	94.27	94.2	-0.07	0.28
	114.30	113.9	-0.40	0.28

**** End of Certificate****



PN-Tech Instruments Co., Ltd.

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Tel. 092-824-2461. 061-993-6478 www.pntech-i.com
Email : info.pntinstruments@gmail.com, info@pntech-i.com



CERTIFICATE OF CALIBRATION

Certificate Number : PNT11-25-227-5

Page : 1 of 3

Customer : Pacific Laboratory Co.,Ltd.
: 14/5358 Moo 14 Tambol Bang Bua Thong
: Amphoe Bang Thong, Nonthaburi 11110

Description of Equipment : Sound Level Meter
Manufacturer : ACO
Model Number : Type 6236
Serial Number : 222020
ID Number : N/A
Calibration Location : In-Lab
Ambient Temperature : 23.6 °C (± 3.0 °C)
Ambient Humidity : 54.3 %RH (± 20.0 %RH)
Received Date : 19-Nov-25
Calibration Date : 24-Nov-25
Procedure : CP-43-EL

This certifies that the above instrument was calibrated in compliance with the calibration systems requirement of ISO/IEC 17025 : 2017 in accordance with referenced procedures. Standards used to perform this calibration are certified by or traceable to National Institute of Metrology (Thailand) and/or other recognized national measurement institutes which realizes the units of measurement according to the International System of Units (SI Unit).
A binary decision rule, utilizing simple acceptance criteria is used for the determination of compliance statements.
Result are reported without factoring in the effects of measurement uncertainty.

Issued Date : 26-Nov-25

Calibration by : Mr.Paitoon Chungklueng

Approved by :

Quality Assurance : Mr.Natthaphol Boonmee

Mr.Paitoon Chungklueng
Authorized Signatory



PN-Tech Instruments Co., Ltd.

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CALIBRATION REPORT

Certificate Number : PNT11-25-227-5

Page : 2 of 3

Standard Equipment Used

<u>Equip. No.</u>	<u>Equipment Name</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>
PNS-043	Sound Level Calibrator	N949786	EL64654/24	23-Dec-25

Traceability

This certificate is traceable to the International System of Unit (SI Unit) maintained at ;

- Professional Calibration & Services Co., Ltd.



PN-Tech Instruments Co., Ltd.

100/64 Moo.6 T.Ladsawai R.Lamlukka Pathumthani 12150
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Email : info.pntinstruments@gmail.com, info@pntech-i.com



CALIBRATION REPORT

Certificate Number : PNT11-25-227-5

Page : 3 of 3

Results of Calibration : (/) Without Adjustment () With Adjustment

Function : Sound Level Measurement : (Test Mode Slow)
UUC Range : 40 to 130 dB
Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.4	0.13	0.28
	114.30	114.2	-0.10	0.28
LC	94.27	94.4	0.13	0.28
	114.30	114.2	-0.10	0.28

Function : Sound Level Measurement : (Test Mode Fast)
UUC Range : 40 to 130 dB
Resolution : 0.1 dB

Function	Standard Value (dB)	UUC Reading (dB)	UUC Error (dB)	Uncertainty (±) (dB)
LA	94.27	94.4	0.13	0.28
	114.30	114.1	-0.20	0.28
LC	94.27	94.4	0.13	0.28
	114.30	114.1	-0.20	0.28

**** End of Certificate****

ภาคผนวกที่ 5-5
เอกสารสอบเทียบสภาพความร้อน (Heat Stress)



THAI METEOROLOGICAL DEPARTMENT

4353 Sukhumvit, Bangna, Bangkok 10260 Tel. 081-454-2804, 0-2399-0469

Calibration Certificate

Issued by : Calibration & Test Section : Meteorological Instruments Bureau

Date of Issue 8 January, 2026

Certification No. 010/26

Page : 1 of 2

Object : WBGT Monitor

Manufacturer : JANTYTECH

Type : JT2011-E2A

Serial No. : 3162501033 ID No. : HM008-022025 No.40

Customer : Pacific Laboratory Co.,Ltd.
14/5358 Moo 14, T. Bang Bua,
A.Bang Bua Thong, Nonthaburi 11110.

Calibration Condition : Temperature 25.1 °C Barometric Pressure 1014.9 hPa

STANDARD THERMOMETER : Theodor Friedrich : Dry No.8390/94 Wet No. 8389/94
: testo, testo 645 Serial No. 02848057 : Thermoschneider No.6169 , No.6178
: TT-3 Serial 43BE04

Japan Meteorological Agency

Calibrated by :

Mr. Watcharapol Subwat
Mechanical Engineer

Signed :

Mr. Pisood Promsut





THAI METEOROLOGICAL DEPARTMENT

4353 Sukhumvit, Bangna, Bangkok 10260 Tel. 081-454-2804,0-2399-0469

The Result of Calibration

Certification No. 010/26

8 January, 2026

Page : 2 of 2

Standard Temp. °C	Temperature Sensor Reading					
	Dry Bulb (Ta) °C	Correction °C	Globe (Tg) °C	Correction °C	Wet Bulb (Tnw) °C	Correction °C
50.24	50.2	0.04	50.3	-0.06	50.3	-0.06
40.32	40.3	0.02	40.3	0.02	40.4	-0.08
30.16	30.1	0.06	30.2	-0.04	30.1	0.06

Calibrated by :

Watchapol

Mr. Watchapol Subwat

Mechanical Engineer



ภาคผนวกที่ 5-6
เอกสารสอบเทียบคุณภาพน้ำทิ้ง

Certificate of Calibration

Certificate No. : 68-420062-1

Page : 1 of 2

Submitted by : Pacific Laboratory Co., Ltd.

14/5358 Moo 14, T. Bang Bua Thong, A. Bang Bua Thong, Nonthaburi 11110 Thailand

Equipment : pH Meter with electrode

pH meter

Manufacturer : Eutech

Model : pH 700

Range : N/A pH

Resolution : 0.01 pH

Serial No. : 2841305

ID No. : LAB-PH-002

Electrode

Model : N/A

Serial No. : 3172493

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

Ambient Temperature : (23.5 to 25.0) °C

Relative Humidity : (50 to 55) %

Date of Received : 21 July 2025

Date of Calibration : 21 July 2025

Date of Issue : 24 July 2025

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-00307/66	23 Aug 2025	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 :



(Permpon Chanpu)

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 68-420062-1

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 (4,7,10)

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	177.5	0.0	0.12
	0.0000	7	7.00	0.1	-0.1	0.086
	-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 (4,7,10)

Adjustment Curve at nominal pH	Standard Buffer (pH)	UUC Reading (pH)	Correction (pH)	Uncertainty (± pH)
4, 7, 10	4.007	4.01	0.00	0.0097
	6.965	7.00	-0.03	0.011
	10.010	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%

- 000 -



Certificate of Calibration

Certificate No. : 68-420062-2

Page : 1 of 2

Submitted by : Pacific Laboratory Co., Ltd.
14/5358 Moo 14, T. Bang Bua Thong, A. Bang Bua Thong, Nonthaburi 11110 Thailand

Equipment : pH Meter with electrode
pH meter

Manufacturer : Eutech Model : pH 700
Range : N/A pH Resolution : 0.01 pH
Serial No. : 2841305 ID No. : LAB-PH-002
Electrode
Model : N/A Serial No. : 3052953

Environment : On site calibration was carried out at the Laboratory, Pacific Laboratory Co., Ltd.
Ambient Temperature : (23.5 to 25.0)° C
Relative Humidity : (50 to 55) %

Date of Received : 21 July 2025

Date of Calibration : 21 July 2025

Date of Issue : 24 July 2025

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-00307/66	23 Aug 2025	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 :

(Permpon Chanpu)

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 68-420062-2

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 (4,7,10)

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	177.5	0.0	0.12
	0.0000	7	7.00	0.1	-0.1	0.086
	-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 (4,7,10)

Adjustment Curve at nominal pH	Standard Buffer (pH)	UUC Reading (pH)	Correction (pH)	Uncertainty (± pH)
4, 7, 10	4.007	4.01	0.00	0.0097
	6.965	7.00	-0.03	0.011
	10.010	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%

- o0o -




Certificate of Calibration

Certificate No. : 68-400421-1

Page : 1 of 2

Submitted by : Pacific Laboratory Co., Ltd.
14/5358 Moo 14, T. Bang Bua Thong, A. Bang Bua Thong, Nonthaburi 11110 Thailand

Equipment : Temperature Indicator with Thermistor Probe

Temperature Indicator

Manufacturer :	Eutech	Model :	pH 700
Range :	N/A °C	Resolution :	0.1 °C
Serial No. :	2841305	ID No. :	LAB-PH-002

Thermistor probe

Model :	N/A	Sheath Material :	Stainless
Diameter :	3 mm.	Length :	115 mm.
Serial No. :	PHSTEMB01P 049	ID No. :	LAB-PH-002

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

Ambient Temperature :	(23.5 to 25.0) °C
Relative Humidity :	(50 to 55) %
Line Voltage :	(220.0 to 221.0) VAC

Date of Received : 21 July 2025

Date of Calibration : 21 July 2025

Date of Issue : 24 July 2025

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	24E633	21 Feb 2026	National Institute of Metrology Thailand (NIMT)

Approved by :



(Permpon Chanpu)

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 68-400421-1

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)
115	25.002	24.9	0.1	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%

- o0o -

[Signature]



Certificate of Calibration

Certificate No. : 68-200468-1

Page : 1 of 2

Submitted by : Pacific Laboratory Co.,Ltd.

14/5358 Moo 14, T.Bang Bua Thong, A.Bang Bua Thong, Nonthaburi 11110 Thailand

Equipment : Electronic Balance

Manufacturer : SHIMADZU

Model : AP225WD

Serial No. : D316301828

ID No. : LAB-BL-003

Capacity : 220000 mg

Resolution : 0.01mg/102000mg, 0.1mg/220000mg

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

Ambient Temperature : (27.3 to 27.4) °C

Relative Humidity : (53.6 to 53.7) %

Air Pressure : 1003.0 mbar

Date of Received : 21 July 2025

Date of Calibration : 21 July 2025

Date of Issue : 25 July 2025

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

<u>ID No.</u>	<u>Cert. No.</u>	<u>Due Date</u>	<u>Traceability</u>
E261-E2624	C02242009	07 Nov 2025	National Institute of Metrology (Thailand), (NIMT)

Approved by :

(Satja Sangkhun)

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 68-200468-1

Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Departure of indication from nominal value

Nominal Value (mg)	Correction (mg)	Uncertainty $\pm$ (mg)
1	0.01	0.012
10	0.00	0.012
50	0.01	0.012
100	0.01	0.014
1000	0.00	0.026
2000	0.01	0.034
5000	0.00	0.043
20000	0.00	0.071
50000	0.01	0.11
100000	0.00	0.20
150000	0.0	0.38
200000	0.0	0.38

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 : 50000 mg

A	B	C	D	E	
0.01	0.01	0.02	0.02	0.00	mg



Repeatability

Load test : 200000 mg

Stdev. : 0.053 mg

- o0o -



Certificate of Calibration

Page : 1 of 2

Certificate No. : 68-400420-3

Submitted by : Pacific Laboratory Co., Ltd.
14/5358 Moo 14, T. Bang Bua Thong, A. Bang Bua Thong, Nonthaburi 11110 Thailand

Equipment : Temperature controlled enclosure (Incubator)
Manufacturer : Aqua Lytic Model : TC 135S
Range : N/A °C Resolution : 0.1 °C
Serial No. : 0614/000033 ID No. : LAB-IB-001

Environment : On site calibration was carried out at the Laboratory, Pacific Laboratory Co., Ltd.
Ambient Temperature : (23.0 to 24.5) °C
Relative Humidity : (40 to 45) %
Line Voltage : (220.0 to 222.0) V

Date of Received : 21 July 2025

Date of Calibration : 21 July 2025

Date of Issue : 24 July 2025

Calibrated by : Permpon Chanpu

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
400029 & 400048	68-400063-1	01 Aug 2025	National Institute of Metrology Thailand (NIMT)

Approved by :



(Permpon Chanpu)

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 68-400420-3

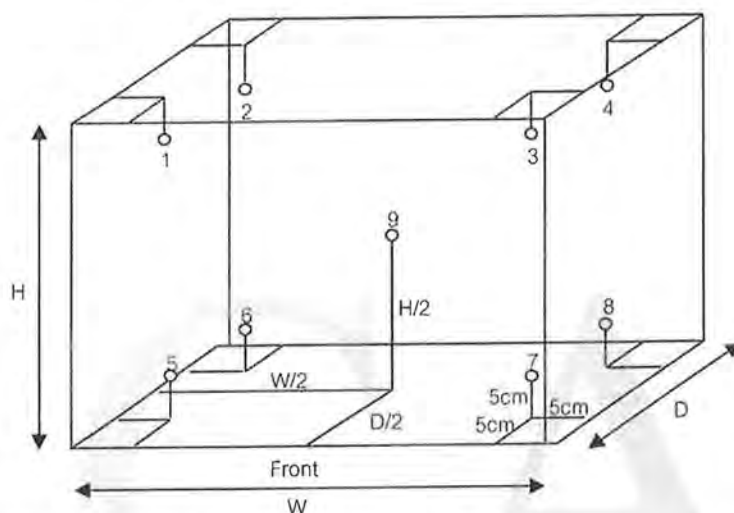
Page : 2 of 2

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 = 0.51 m

D = 0.04 m

H = 0.70 m

Capacity = 0.02 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	20.5	20.5	20.10	19.94	19.99	19.96	19.92	19.90	20.02	19.99	19.87	0.69

Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Uniformity (°C)	Measured Stability (°C)	Overall Variation (°C)
20.0	20.5	20.5	0.43	0.36	0.78

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

Page : 1 of 2

Certificate No. : 68-400420-1

Submitted by : Pacific Laboratory Co., Ltd.

14/5358 Moo 14, T. Bang Bua Thong, A. Bang Bua Thong, Nonthaburi 11110 Thailand

Equipment : Temperature controlled enclosure (Oven)

Manufacturer : Memmert

Model : UN 55

Range : N/A °C

Resolution : 0.1 °C

Serial No. : B214.1879

ID No. : LAB-OV-001

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

Ambient Temperature : (31.0 to 31.8) °C

Relative Humidity : (50 to 55) %

Line Voltage : (220.0 to 222.0) V

Date of Received : 21 July 2025

Date of Calibration : 21 July 2025

Date of Issue : 24 July 2025

Calibrated by : Permpon Chanpu

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
400029 & 400032	68-400217-1	28 Oct 2025	National Institute of Metrology Thailand (NIMT)

Approved by :



(Permpon Chanpu)

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 68-400420-1

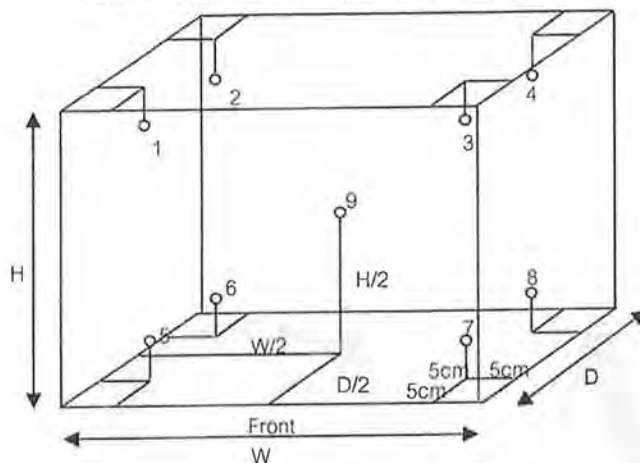
Page : 2 of 2

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 = 0.40 m

D = 0.33 m

H = 0.40 m

Capacity = 0.05 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	107.0	107.0	105.1	105.1	104.9	104.9	102.9	104.4	103.5	104.4	104.5	0.87
180.0	184.0	184.0	181.2	180.9	180.7	180.9	177.2	177.1	178.5	179.8	180.3	1.4

Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Uniformity (°C)	Measured Stability (°C)	Overall Variation (°C)
104.0	107.0	107.0	1.8	0.3	2.6
180.0	184.0	184.0	3.6	0.6	4.6

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. : 68-400420-2

Page : 1 of 2

Submitted by : Pacific Laboratory Co., Ltd.
14/5358 Moo 14, T. Bang Bua Thong, A. Bang Bua Thong, Nonthaburi 11110 Thailand

Equipment : Water Bath
 Manufacturer : Memmert Model : WNB 22
 Range : N/A °C Resolution : 0.1 °C
 Serial No. : L514.0184 ID No. : LAB-WB-001

Environment : On site calibration was carried out at the Laboratory, Pacific Laboratory Co., Ltd.
 Ambient Temperature : (31.0 to 31.8) °C
 Relative Humidity : (50 to 55) %
 Line Voltage : (220.0 to 222.0) V

Date of Received : 21 July 2025

Date of Calibration : 21 July 2025

Date of Issue : 24 July 2025

Calibrated by : Permpon Chanpu

Calibration Method : This instrument was calibrated by In-house method CAL-M4006 based on ASTM E715-80
 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
400029 & 400031	68-400214-1	25 Oct 2025	National Institute of Metrology Thailand (NIMT)

Approved by :



(Permpon Chanpu)

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

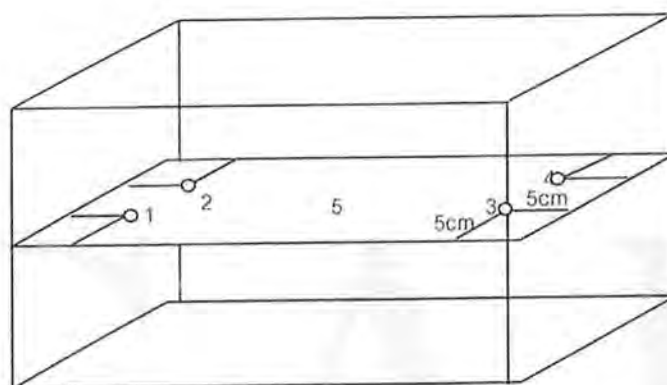
Certificate No. : 68-400420-2

Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Function : Temperature measurement



Front

Test Point (° C)	Setting Temperature (° C)	Indicating Temperature (° C)	Measured Temperature (° C) @ Sensor No.					Uncertainty (± " C)	Measured Uniformity (° C)	Measured Stability (° C)
			1	2	3	4	5			
65.0	65.0	65.0	64.62	64.64	64.64	64.63	64.63	0.18	0.05	0.03
95.0	95.0	95.0	94.60	94.61	94.63	94.68	94.58	0.18	0.17	0.05

Remark The uncertainty is not combine uniformity of the water bath

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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