รายงานผลปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม
และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม
โครงการ เพ็งเซิน การ์เด้นส์ เรสซิเด้นท์ (PENG SHEN GARDEN RESIDENCE)
(ระยะก่อสร้าง)
ฉบับเดือนมกราคม-มิถุนายน พ.ศ.2569

ภาคผนวกที่ 9

เอกสารสอบเทียบเครื่องมือที่ใช้ในการวิเคราะห์

WK Electric Co.,Ltd.
68/242 Moo 5, Sawaipracharaj Rd., Tumbol Ladsawai, Amphur Lamlukka, Pathumthani 12150
Tel. +66 2993 4773, +66 2153 7132-3 Fax. +66 2994 5509 E-mail : wk.calibrations@gmail.com www.wk-etc.com

ilac-MRA ANAB ACCREDITED ISO/IEC 17025 CALIBRATION, DIMENSIONAL MEASUREMENT, AND TESTING AC-2487

Certificate of Calibration

Certificate No. : WK2601-145-1 Page 1 of 2

Customer : PINTHONG GROUP MANAGEMENT AND CONSULTANTS CO.,LTD.
27 Rama 2 Road, Thakham, Bangkuntien,
Bangkok 10150 Thailand

Instrument : Calibrator
Manufacturer : Quest Technologies
Model : QC-10
Serial No. : QIG030022
Identity No. : N/A
Range : See to Data
Resolution : See to Data

Ambient Temperature : (23 ± 2)°C
Humidity : (50 ±15) %RH
Received Date : 15-Jan-26
Calibrated Date : 19-Jan-26
Issued Date : 22-Jan-26
Calibrated Location : In Lab

Calibration Method : CP-WK-A02, CP-WK-TF03

Reference Standard Instruments :

Instrument	Serial No.	Certificate No.	Due Date	Traceability to
Sound Level Calibrator	10049416	EEL.BP.59/0168	16-Jan-27	TISTR
Sound Level Meter	0004368	EEL.BP.33/1167	12-Dec-26	TISTR
Universal Counter	3416A08501	TTH-0-139772	4-Apr-27	Techmaster

TISTR : Thailand Institute of Scientific and Technological Research.
Techmaster : Techmaster Asia (Thailand) Co., Ltd.
This result calibrate was found accurate as shown on date place of calibrate only
This certificate is traceability to the International System of Unit (SI)

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

WK QM

Calibrated by : Mr. Thanaphum Daengsan

Approved by : Ms. Budsagorn Patcha
Authorized Signatory

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Calibration Results

Certificate No.: WK2601-145-1 Page 2 of 2

Calibration Results

Function : Sound Level Pressure Measurement @ 1kHz

Nominal Value (dB)	STD Value (dB)	Error (dB)	(±) Uncertainty (dB)
114	113.93	0.07	0.26

Function : Frequency Measurement

Nominal Value (Hz)	STD Value (Hz)	Error (Hz)	(±) Uncertainty (Hz)
1000	1000.057	-0.057	0.58

(X) Without Adjustment ( ) After Adjustment

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**** End of Certificate****

การดูแลบำรุงรักษาเชิงป้องกัน

Preventive Maintenance

Customer Name : บริษัท เทสท์ เทค จำกัด
Product : Distillation Unit
Brand : GERHARDT
Model : VAPODEST 30
Serial number : GER003718

Gerhardt
Analytical Systems

Part 1: สัญญาการให้บริการ (Service Contact)
Part 2: ข้อมูลพื้นฐานของเครื่องมือ (Details of Instrument)
Part 3: ตรวจเช็คสภาพเครื่อง
Part 4: รายละเอียดและรายงานผลการให้บริการ Preventive Maintenance
  4.1 ขั้นตอนการบริการ
  4.2 รายงานผลการให้บริการ
Part 5: ข้อมูลสนับสนุนด้านเทคนิค (General Technical Support)
  5.1 Care and Maintenance
    5.1.1 การบำรุงรักษาทั่วไป (Basic maintenance)
    5.1.2 General error message

1. สัญญาการให้บริการ (Service Contact)

หน่วยงานลูกค้า : บริษัท เทสท์ เทค จำกัด
ที่อยู่ : 30,32 ซอยพระรามที่ 2 ซอย 63 แขวงแสมดำ เขตบางขุนเทียน กรุงเทพฯ 10150
:
อีเมล์ :
บุคคลติดต่อ :
ชื่อ- นามสกุล : คุณ กรกนก ขุนพิทักษ์
ตำแหน่ง :
โทรศัพท์ : 087-3989274
อีเมล์ : lab_center@testtech.co.th

สัญญาการบริการจำนวน 1 ครั้ง ต่อ ปี

ครั้งที่ 1 วันที่ : 16-03-2026
ครั้งที่ 2 วันที่ :
ครั้งที่ 3 วันที่ :

2. ข้อมูลพื้นฐานของเครื่องมือ (Details of Instrument)

2.1 รายละเอียดเครื่องมือ (Instrument Description)

ประเภทเครื่องมือ : Distillation Unit
ผลิตภัณฑ์ : GERHARDT
รุ่น : VAPODEST 30
หมายเลขเครื่อง : GER003718
หมายเลขครุภัณฑ์ : EQL-062

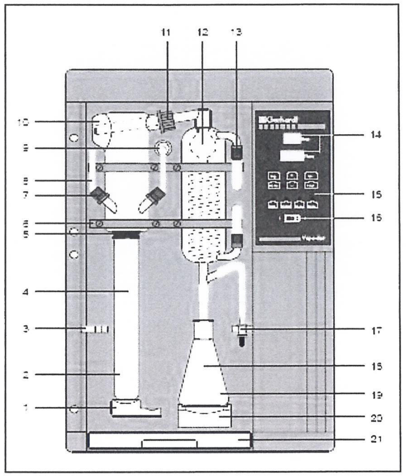
2.2 ผู้ดำเนินการ

ดำเนินการทำ PM โดย
ชื่อ-นามสกุล : ศรายุทธ หิรัญรัตน์
ตำแหน่ง : วิศวกร
แผนก : บริการหลังการขาย
ฝ่าย : บริการหลังการขาย

Part 3: **Operational Qualification (OQ)**

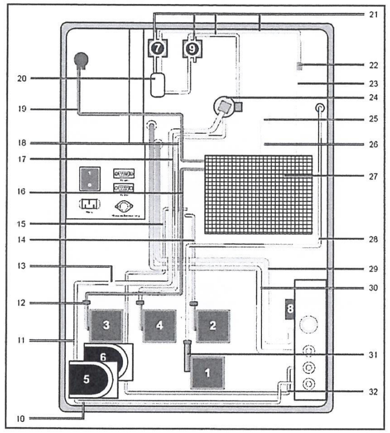
3.1 ตรวจสอบสภาพเครื่อง

FRONT



No	Description	PASS	FAIL	N/A
1.	Quick clamping device with wedge	☑	☐	☐
2.	Kjeldatherm digestion tube	☑	☐	☐
3.	Holder for steam inlet tubing	☑	☐	☐
4.	PTFP-Inlet tubing, steam	☑	☐	☐
5.	Viton-cone	☑	☐	☐
6.	Clamping for glassware	☑	☐	☐
7.	Screw cap GL18 with silicone seal	☑	☐	☐
8.	PTFP-Inlet tubing, NaOH	☑	☐	☐
9.	PP-Distributor with PP-threaded joint	☑	☐	☐
10.	Distribution head, glass	☑	☐	☐
11.	Screw cap GL32 with silicone seal	☑	☐	☐
12.	Distillation condenser	☑	☐	☐
13.	Screw cap GL14 with plastic screw connection	☑	☐	☐
14.	Display	☑	☐	☐
15.	Keyboard, chemical-resistant	☑	☐	☐
16.	Main switch, green	☑	☐	☐
17.	Ventilation valve	☑	☐	☐
18.	Distillate outlet tubing	☑	☐	☐
19.	Erlenmeyer flask	☑	☐	☐
20.	Platfrom	☑	☐	☐
21.	Drip tray	☑	☐	☐

REAR



No	Description	PASS	FAIL	N/A	
1.	Diaphragm pump NaOH	☑	☐	☐	
2.	Diaphragm pump H_3BO_3	☐	☐	☑	*Vap40
3.	Diaphragm pump H_2O for steam generator	☑	☐	☐	
4.	Diaphragm pump H_2O for sample	☑	☐	☐	*Vap30,40
5.	Peristaltic pump for suction sample	☑	☐	☐	*Vap30, 40
6.	Peristaltic pump for suction receiver	☐	☐	☑	Option
7.	Pinch-solenoid valve, steam	☑	☐	☐	
8.	Magnetic valve with pressure control	☑	☐	☐	
9.	Pinch-solenoid valve, shut-off	☑	☐	☐	
10.	Verprene-tubing 4x8 mm.	☑	☐	☐	
11.	Verprene-tubing 4x8 mm.	☑	☐	☐	*Vap30,40
12.	Non-return valve for diaphragm pumps	☑	☐	☐	
13.	Tubing reduction PP 51x10x5 mm.	☑	☐	☐	*Vap30,40
14.	Silicone tubing 4x7 mm.	☐	☐	☑	*Vap40
15.	Silicone tubing 4x7 mm.	☐	☐	☑	Option
16.	Silicone -tubing 4x7 mm.	☑	☐	☐	
17.	Verprene-tubing 8x12 mm.	☑	☐	☐	*Vap30,40
18.	Verprene tubing 4x7 mm.	☑	☐	☐	*Vap30,40
19.	Silicone tubing 4x7 mm.	☑	☐	☐	
20.	Ventilation glass	☑	☐	☐	
21.	Novoprene-tubing 4.8x8 mm.	☑	☐	☐	
22.	Tubing reduction	☑	☐	☐	
23.	Silicone tubing 6x10 mm.	☑	☐	☐	
24.	PP-distributor with PP-thread	☑	☐	☐	
25.	SKT-valve (built in with brass fitting)	☑	☐	☐	
26.	Silicone tubing 8x16x80 mm.	☑	☐	☐	
27.	Steam generator	☑	☐	☐	
28.	PTFE-inlet tubing NaOH	☑	☐	☐	
29.	Silicone tubing 8x16 for cooling water inlet	☑	☐	☐	
30.	Silicone tubing 8x16 for cooling water outlet	☑	☐	☐	
31.	Viton-tubing 6x12*50 mm.	☑	☐	☐	
32.	Silicone tubing 4x7 mm.	☐	☐	☑	Option

Part 4: **รายละเอียดการตรวจสอบ**

4.1 ขั้นตอนการบริการ

ตรวจสอบระบบไฟฟ้า (Electrical Test)	PASS	FAIL	Remark
- ความต้านทานทางไฟฟ้าของเครื่องกับกราวด์	☑	☐	
- กระแสไฟฟ้าที่ใช้งาน	☑	☐	

ตรวจสอบสภาพเครื่อง (Optical Test)	PASS	FAIL	Remark
- Main cable	☑	☐	
- Electric wiring	☑	☐	
- Pumps	☑	☐	
- Distribution Head	☑	☐	
- Condensor	☑	☐	
- Steam generator	☑	☐	
- Tubing	☑	☐	
- Viton cone	☑	☐	

ตรวจสอบ Function การทำงาน (The FunctionTest)	PASS	FAIL	Remark
- ระบบสร้างและควบคุมความดันของ Steam	☑	☐	
- ระบบการเติมน้ำเข้า Sample Tube	☑	☐	
- ระบบการเติม Na OH	☑	☐	
- ระบบการ Suction ทั้ง Sample Tube และ Receiver	☑	☐	

4.2 รายงานผลการให้บริการ

1. TECHNICAL DATA	PASS	FAIL	Remark
Main Supply 220 volt + 10% 50 Hz with ground	☑	☐	
Norminal current	☑	☐	

1.1 COOLING WATER BATH	PASS	FAIL	Remark
Temperature 15-20 °C	☑	☐	
Cooling Water Outlet	☑	☐	
Control Temperature	☑	☐	

1.2 OPTICAL TEST VAP 30	PASS	FAIL	Remark
Screw cap GL14	☑	☐	
Screw cap GL18	☑	☐	
Screw cap GL32	☑	☐	
Distillation Head	☑	☐	
Condensor	☑	☐	
Viton Cone	☑	☐	
Ventilation Valve	☑	☐	
Micro Switch Sample	☑	☐	

2. SYSTEM COOLING WATER INLET	PASS	FAIL	Remark
Cooling Water Inlet	☑	☐	
Cooling Water Outlet	☑	☐	
Flow control valve☐	☑	☐	

3. SYSTEM CONTROL	PASS	FAIL	Remark
Key Board	☑	☐	
Display	☑	☐	
Program□	☑	☐	
Adding H_2O	☑	☐	*Vap30,40
Adding NaOH	☑	☐	
Adding H_3BO_3	☐	☐	*Vap40
Suction Sample	☑	☐	*Vap30,40

4. SYSTEM DISTILLATION	PASS	FAIL	Remark
Boiler	☑	☐	
Level Sensor	☑	☐	
Neoprene-Tubing	☑	☐	
Solenoid Valve Shut-Off	☑	☐	
Solenoid Valve Steam	☑	☐	
Excess Pressure Detector	☑	☐	
Ventilation Valve	☑	☐	
Heater	☑	☐	

5. PUMP⍰	PASS	FAIL	Remark
Pump H_2O Steam			
- Non-Return Valve	☑	☐	
Pump H_2O Sample			
- Non-Return Valve	☑	☐	
Pump NaOH			
- Non-Return Valve	☑	☐	
Pump H_3BO_3			
- Non-Return Valve	☐	☐	N/A
Pump suction	☑	☐	

6. THE FOLLOWING PROGRAM RUN		PASS	FAIL	Remark
Addition H_2O	0-99 sec.	☑	☐	
Addition NaOH	0-99 sec.	☑	☐	
Addition H_3BO_3	0-99 sec.	☐	☐	N/A
Reaction Time	0-99 min	☑	☐	
Distillation Time	0-99 min	☑	☐	
Steam Capacity	30%-100%	☑	☐	
Suction Time	0-99 sec.	☑	☐	
The Instrument is in perfect technical shape		☑	☐	

Remark : Pump NaoH รั่วซึม

Part 5: **ข้อมูลสนับสนุนด้านเทคนิค (General Technical Support)**

4.1 การบำรุงรักษาทั่วไป (Basic maintenance)

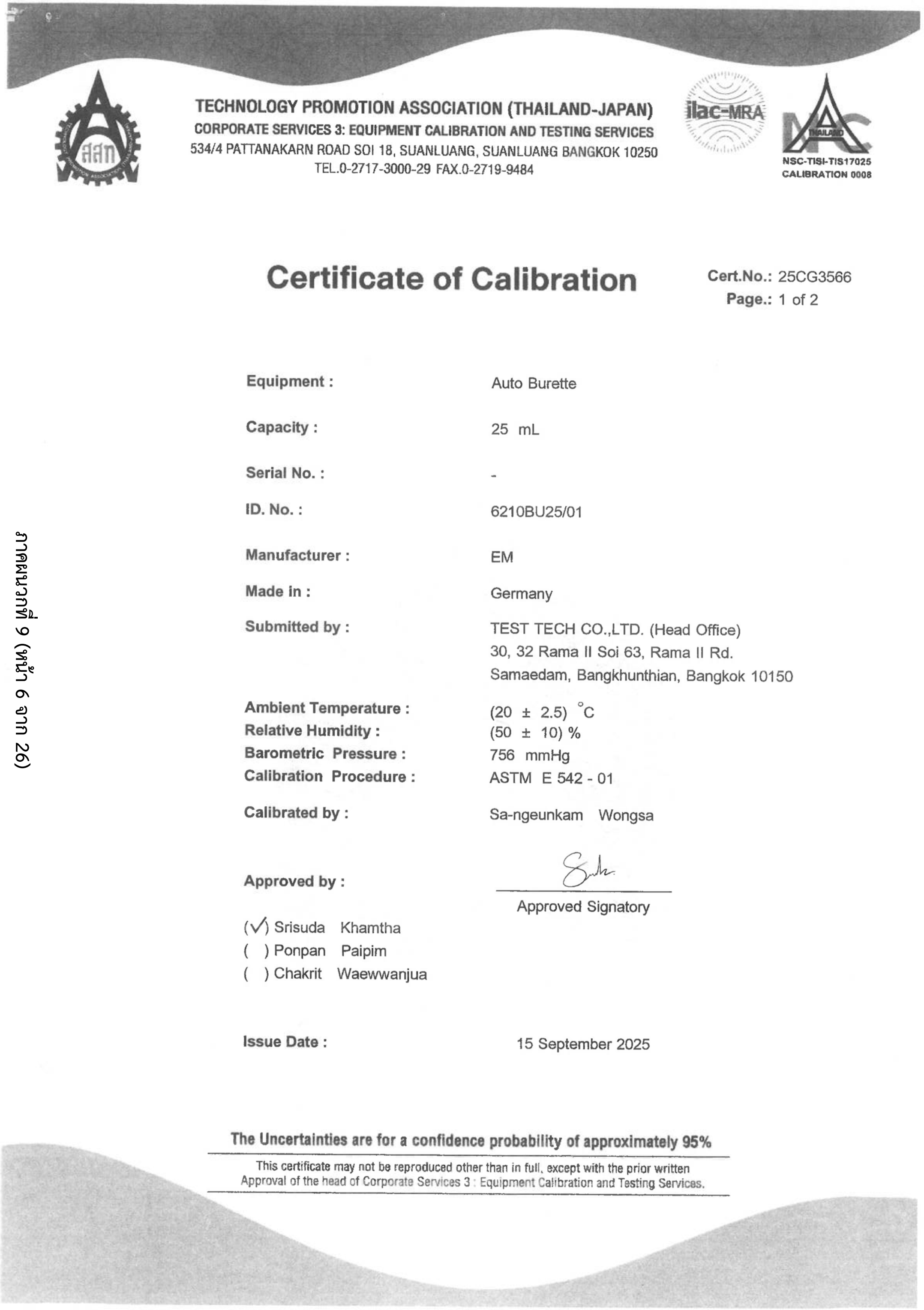
Cleaning

Glass parts and suction pump should be cleaned before long periods of non-usage (i.e. holidays). This way blockages caused by crystalline deposits are avoided.

The following program should be run:

Addition H_3BO_3	0	s
Addition H_2O:	13	s
Addition NaOH:	0	s
Reaction time:	0	s
Distillation time:	7	min.
Steam capacity:	100	%
Suction time:	20	s

Place an empty digestion tube and an Erlenmeyer flask into position, and start the program.
In case of extreme deposits in the glassware you can clean the system by putting about 10 ml of sulphuric acid into the digestion tube.



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

NSC-TISI-TIS17025
CALIBRATION 0008

Certificate of Calibration

Cert.No.: 25CG3566
Page.: 1 of 2

Equipment : Auto Burette

Capacity : 25 mL

Serial No. : -

ID. No. : 6210BU25/01

Manufacturer : EM

Made in : Germany

Submitted by : TEST TECH CO.,LTD. (Head Office)
30, 32 Rama II Soi 63, Rama II Rd.
Samaedam, Bangkhunthian, Bangkok 10150

Ambient Temperature : (20 ± 2.5) °C
Relative Humidity : (50 ± 10) %
Barometric Pressure : 756 mmHg
Calibration Procedure : ASTM E 542 - 01

Calibrated by : Sa-ngeunkam Wongsa

Approved by :

Approved Signatory

(✓) Srisuda Khamtha
( ) Ponpan Paipim
( ) Chakrit Waewwanjua

Issue Date : 15 September 2025

The Uncertainties are for a confidence probability of approximately 95%

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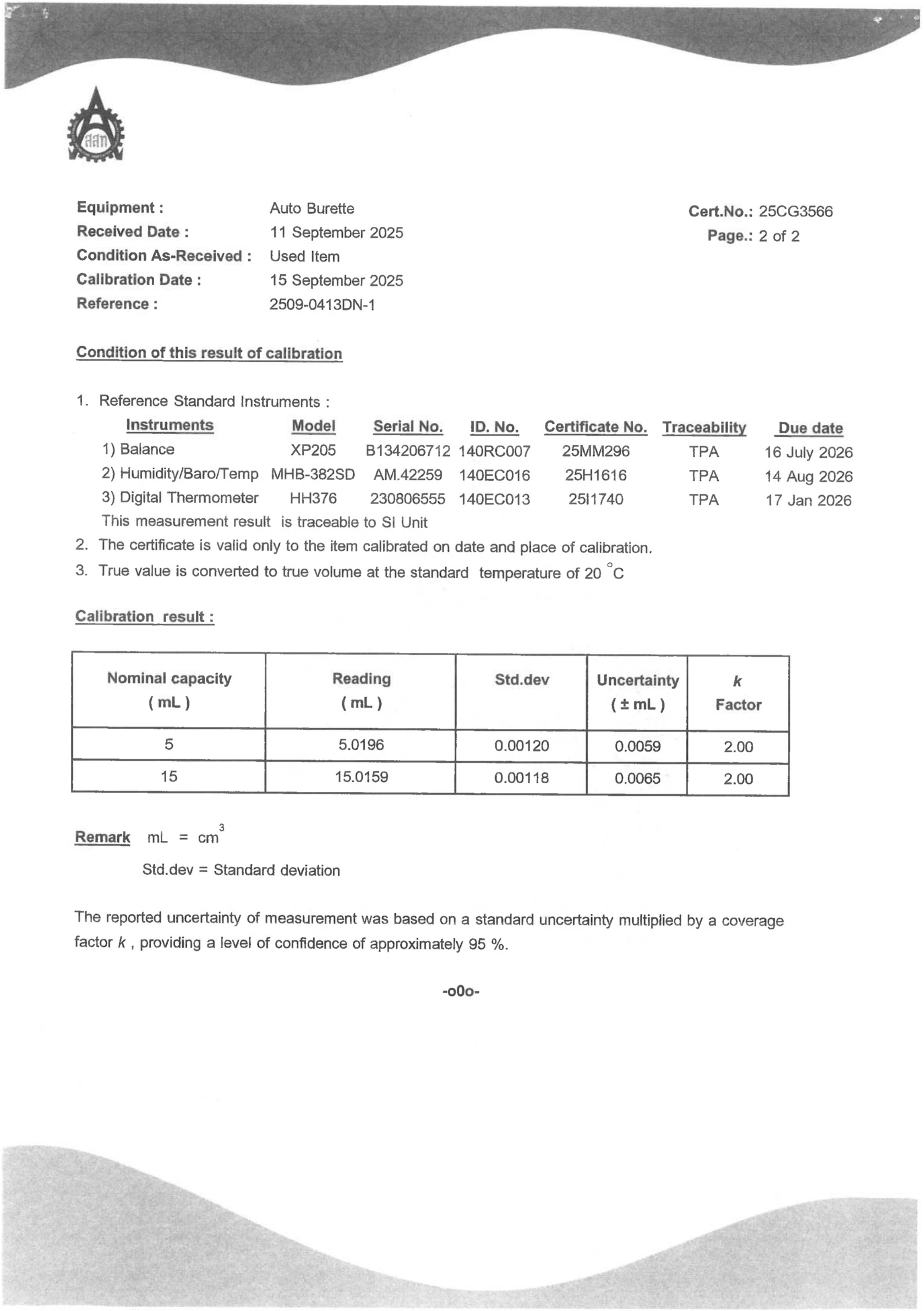

Cert.No.: 25CG3566
Page.: 2 of 2

Equipment : Auto Burette
Received Date : 11 September 2025
Condition As-Received : Used Item
Calibration Date : 15 September 2025
Reference : 2509-0413DN-1

Condition of this result of calibration

1. Reference Standard Instruments :

Instruments	Model	Serial No.	ID. No.	Certificate No.	Traceability	Due date
1) Balance	XP205	B134206712	140RC007	25MM296	TPA	16 July 2026
2) Humidity/Baro/Temp	MHB-382SD	AM.42259	140EC016	25H1616	TPA	14 Aug 2026
3) Digital Thermometer	HH376	230806555	140EC013	25I1740	TPA	17 Jan 2026

This measurement result is traceable to SI Unit

2. The certificate is valid only to the item calibrated on date and place of calibration.
3. True value is converted to true volume at the standard temperature of 20 °C

Calibration result :

Nominal capacity (mL)	Reading (mL)	Std.dev	Uncertainty (± mL)	*k* Factor
5	5.0196	0.00120	0.0059	2.00
15	15.0159	0.00118	0.0065	2.00

Remark mL = cm^3

Std.dev = Standard deviation

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

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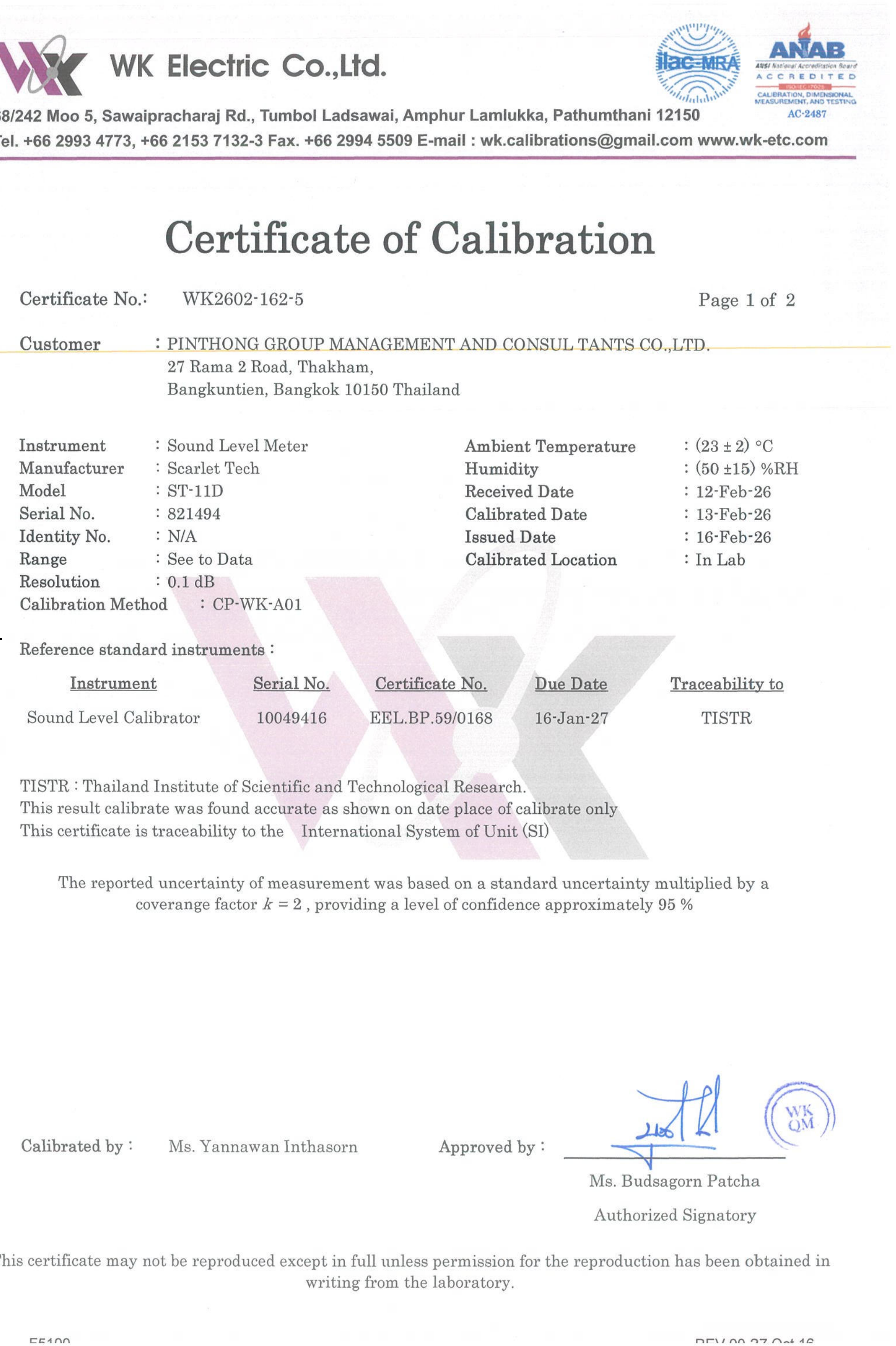

WK Electric Co.,Ltd.

68/242 Moo 5, Sawaipracharaj Rd., Tumbol Ladsawai, Amphur Lamlukka, Pathumthani 12150
Tel. +66 2993 4773, +66 2153 7132-3 Fax. +66 2994 5509 E-mail : wk.calibrations@gmail.com www.wk-etc.com

ilac-MRA ANAB ACCREDITED CALIBRATION, DIMENSIONAL MEASUREMENT, AND TESTING AC-2487

Certificate of Calibration

Certificate No.: WK2602-162-5 Page 1 of 2

Customer : PINTHONG GROUP MANAGEMENT AND CONSUL TANTS CO.,LTD.
27 Rama 2 Road, Thakham,
Bangkuntien, Bangkok 10150 Thailand

Instrument	: Sound Level Meter	**Ambient Temperature**	: (23 ± 2) °C
Manufacturer	: Scarlet Tech	**Humidity**	: (50 ±15) %RH
Model	: ST-11D	**Received Date**	: 12-Feb-26
Serial No.	: 821494	**Calibrated Date**	: 13-Feb-26
Identity No.	: N/A	**Issued Date**	: 16-Feb-26
Range	: See to Data	**Calibrated Location**	: In Lab
Resolution	: 0.1 dB		
Calibration Method	: CP-WK-A01		

Reference standard instruments :

Instrument	Serial No.	Certificate No.	Due Date	Traceability to
Sound Level Calibrator	10049416	EEL.BP.59/0168	16-Jan-27	TISTR

TISTR : Thailand Institute of Scientific and Technological Research.
This result calibrate was found accurate as shown on date place of calibrate only
This certificate is traceability to the International System of Unit (SI)

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

Calibrated by : Ms. Yannawan Inthasorn

Approved by : Ms. Budsagorn Patcha
Authorized Signatory

WK QM

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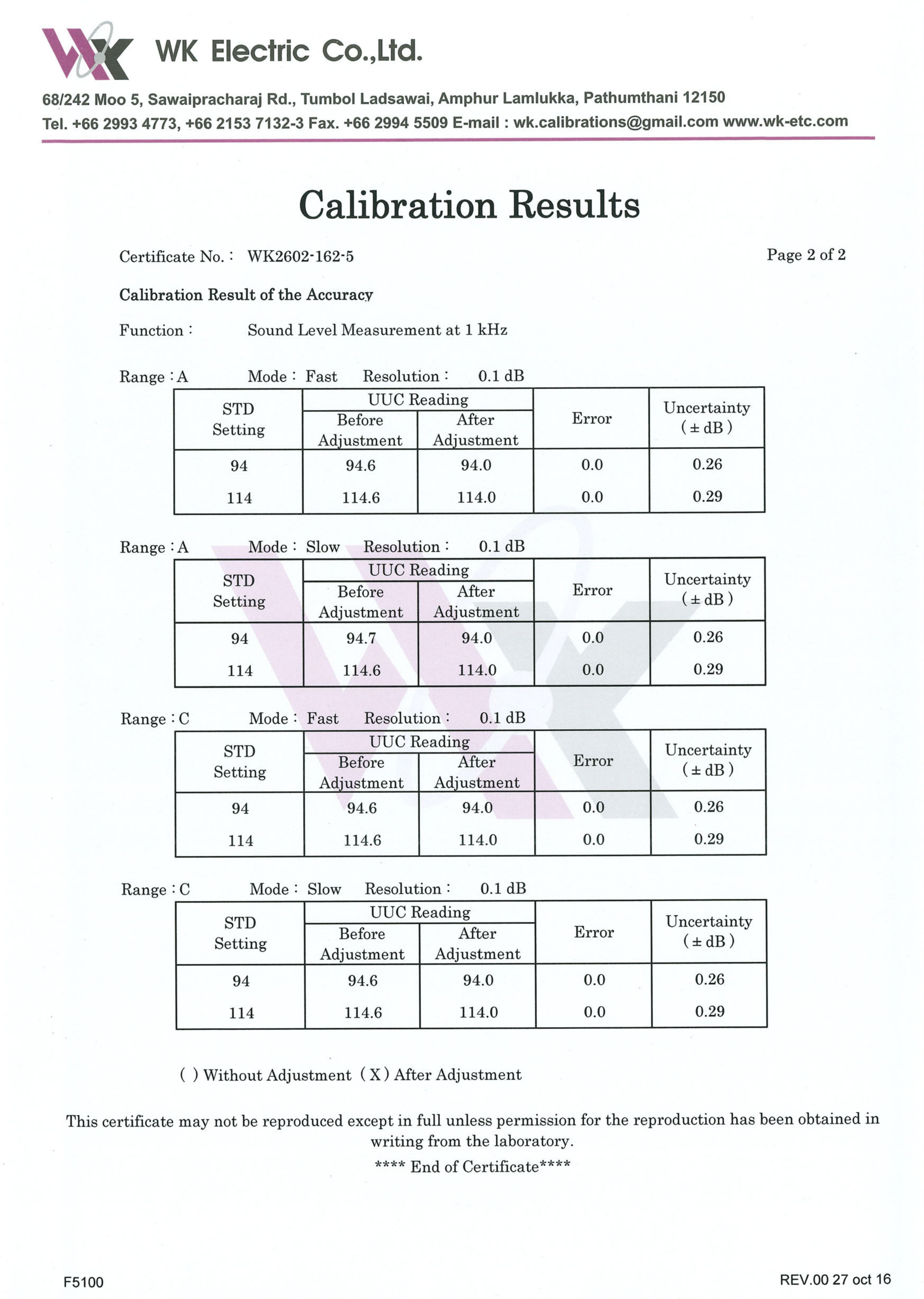
F5100 REV.00 27 Oct 16



WK Electric Co.,Ltd.

68/242 Moo 5, Sawaipracharaj Rd., Tumbol Ladsawai, Amphur Lamlukka, Pathumthani 12150
Tel. +66 2993 4773, +66 2153 7132-3 Fax. +66 2994 5509 E-mail : wk.calibrations@gmail.com www.wk-etc.com

Calibration Results

Certificate No. : WK2602-162-5 Page 2 of 2

Calibration Result of the Accuracy

Function : Sound Level Measurement at 1 kHz

Range : A Mode : Fast Resolution : 0.1 dB

STD Setting	UUC Reading		Error	Uncertainty (± dB)
	Before Adjustment	After Adjustment		
94	94.6	94.0	0.0	0.26
114	114.6	114.0	0.0	0.29

Range : A Mode : Slow Resolution : 0.1 dB

STD Setting	UUC Reading		Error	Uncertainty (± dB)
	Before Adjustment	After Adjustment		
94	94.7	94.0	0.0	0.26
114	114.6	114.0	0.0	0.29

Range : C Mode : Fast Resolution : 0.1 dB

STD Setting	UUC Reading		Error	Uncertainty (± dB)
	Before Adjustment	After Adjustment		
94	94.6	94.0	0.0	0.26
114	114.6	114.0	0.0	0.29

Range : C Mode : Slow Resolution : 0.1 dB

STD Setting	UUC Reading		Error	Uncertainty (± dB)
	Before Adjustment	After Adjustment		
94	94.6	94.0	0.0	0.26
114	114.6	114.0	0.0	0.29

( ) Without Adjustment (X) After Adjustment

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**** End of Certificate****

F5100 REV.00 27 oct 16

WK Electric Co.,Ltd.
68/242 Moo 5, Sawaipracharaj Rd., Tumbol Ladsawai, Amphur Lamlukka, Pathumthani 12150
Tel. +66 2993 4773, +66 2153 7132-3 Fax. +66 2994 5509 E-mail : wk.calibrations@gmail.com www.wk-etc.com

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ANAB ANSI National Accreditation Board
ACCREDITED
CALIBRATION, DIMENSIONAL MEASUREMENT, AND TESTING
AC-2487

Certificate of Calibration

Certificate No.: WK2602-162-6

Page 1 of 2

Customer : PINTHONG GROUP MANAGEMENT AND CONSUL TANTS CO.,LTD.
27 Rama 2 Road, Thakham,
Bangkuntien, Bangkok 10150 Thailand

Instrument : Sound Level Meter
Manufacturer : Scarlet Tech
Model : ST-11D
Serial No. : 821495
Identity No. : N/A
Range : See to Data
Resolution : 0.1 dB
Calibration Method : CP-WK-A01

Ambient Temperature : (23 ± 2) °C
Humidity : (50 ±15) %RH
Received Date : 12-Feb-26
Calibrated Date : 13-Feb-26
Issued Date : 16-Feb-26
Calibrated Location : In Lab

Reference standard instruments :

Instrument	Serial No.	Certificate No.	Due Date	Traceability to
Sound Level Calibrator	10049416	EEL.BP.59/0168	16-Jan-27	TISTR

TISTR : Thailand Institute of Scientific and Technological Research.
This result calibrate was found accurate as shown on date place of calibrate only
This certificate is traceability to the International System of Unit (SI)

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

Calibrated by : Ms. Yannawan Inthasorn

Approved by :
WK QM
Ms. Budsagorn Patcha
Authorized Signatory

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WK Electric Co.,Ltd.
68/242 Moo 5, Sawaipracharaj Rd., Tumbol Ladsawai, Amphur Lamlukka, Pathumthani 12150
Tel. +66 2993 4773, +66 2153 7132-3 Fax. +66 2994 5509 E-mail : wk.calibrations@gmail.com www.wk-etc.com

Calibration Results

Certificate No. : WK2602-162-6

Page 2 of 2

Calibration Result of the Accuracy

Function : Sound Level Measurement at 1 kHz

Range : A Mode : Fast Resolution : 0.1 dB

STD Setting	UUC Reading		Error	Uncertainty (± dB)
	Before Adjustment	After Adjustment		
94	93.7	94.0	0.0	0.26
114	113.7	114.0	0.0	0.29

Range : A Mode : Slow Resolution : 0.1 dB

STD Setting	UUC Reading		Error	Uncertainty (± dB)
	Before Adjustment	After Adjustment		
94	93.7	94.0	0.0	0.26
114	113.7	114.0	0.0	0.29

Range : C Mode : Fast Resolution : 0.1 dB

STD Setting	UUC Reading		Error	Uncertainty (± dB)
	Before Adjustment	After Adjustment		
94	93.7	94.0	0.0	0.26
114	113.7	114.0	0.0	0.29

Range : C Mode : Slow Resolution : 0.1 dB

STD Setting	UUC Reading		Error	Uncertainty (± dB)
	Before Adjustment	After Adjustment		
94	93.7	94.0	0.0	0.26
114	113.6	114.0	0.0	0.29

( ) Without Adjustment (X) After Adjustment

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**** End of Certificate****

Mettler-Toledo (Thailand) Ltd.
846/4 - 846/5 Lasalle Rd., Bangna Tai Sub-District
Bangna District, Bangkok 10260
+662 723 0382
MT-TH.ServiceSupport@mt.com

NSC-TISI-TIS 17025
CALIBRATION 0062

Accuracy Calibration Certificate

Customer

Company:	Pinthong Group Management and Consultant Co., Ltd.		
Address:	27 Rama 2 Road, Tha Kham		
City:	Bang Khun Thian	**Contact:**	Julaluk Damrongsukit
Zip / Postal:	10150		
State / Province:	Bangkok		
Order Number:	0 3 3 3 8 3 6 6 3 6		

Weighing Device

Manufacturer:	Mettler Toledo	**Terminal Model:**	N/A
Model:	MS205DU	**Terminal Serial No.:**	N/A
Serial No.:	C311824102	**Terminal Asset No.:**	N/A
Instrument Type:	Weighing Instrument	**Building:**	N/A
Asset Number:	PMC-LAB-EB-01/04/09	**Floor:**	3
		Room:	Laboratory

Range	Max. Capacity	Readability (d)
1	82 g	0.00001 g
2	220 g	0.0001 g

Procedure

Calibration Method Based On:	EURAMET cg-18 v. 4.0 (11/2015)
METTLER TOLEDO Work Instruction:	CP/W002/20

This calibration certificate contains measurements for As Found and As Left calibrations.

The sensitivity/span of the weighing instrument was adjusted before As Found and As Left calibrations with a built-in weight.

In accordance with EURAMET cg-18 (11/2015), the test loads were selected to reflect the specific use of the weighing device or to accommodate specific calibration conditions.

	Temperature		Humidity	
As Found	Start: 26.6 °C	End: 26.4 °C	Start: 41.8 %	End: 38.3 %
As Left	Start: 25.9 °C	End: 25.7 °C	Start: 36.9 %	End: 36.8 %

As Found Calibration Date:	13-May-2026	**Calibrator:**	Phark Phark Chancharoen
As Left Calibration Date:	13-May-2026		
Issue Date:			

Approved Signatory:

Technical Manager / Head of Calibration Center

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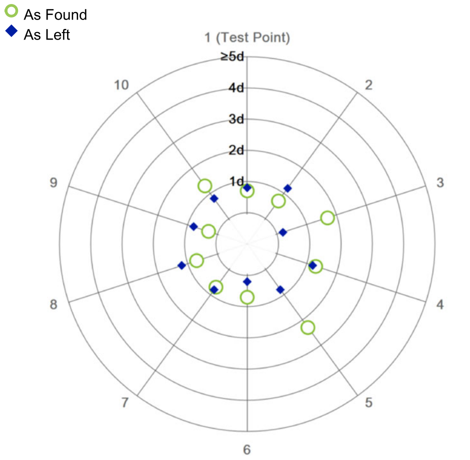
Measurement Results

Repeatability

Test Load: 70 g

	As Found	As Left
1	69.99983 g	69.99999 g
2	69.99983 g	69.99997 g
3	69.99984 g	69.99998 g
4	69.99981 g	69.99997 g
5	69.99980 g	69.99999 g
6	69.99983 g	69.99998 g
7	69.99983 g	69.99999 g
8	69.99983 g	69.99997 g
9	69.99982 g	69.99999 g
10	69.99981 g	69.99999 g

Standard Deviation	0.000013 g	0.000009 g



The "d" in the graph represents the readability of the range/interval in which the test was performed.

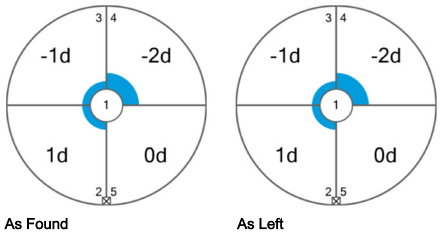
The results of this graph are based upon the absolute values of the differences from the mean value.

Eccentricity

Test Load: 100 g

Position	As Found	As Left
1	99.9998 g	99.9999 g
2	99.9999 g	100.0000 g
3	99.9997 g	99.9998 g
4	99.9996 g	99.9997 g
5	99.9998 g	99.9999 g

Maximum Deviation	0.0002 g	0.0002 g



The "d" in the graph represents the readability of the range/interval in which the test was performed.

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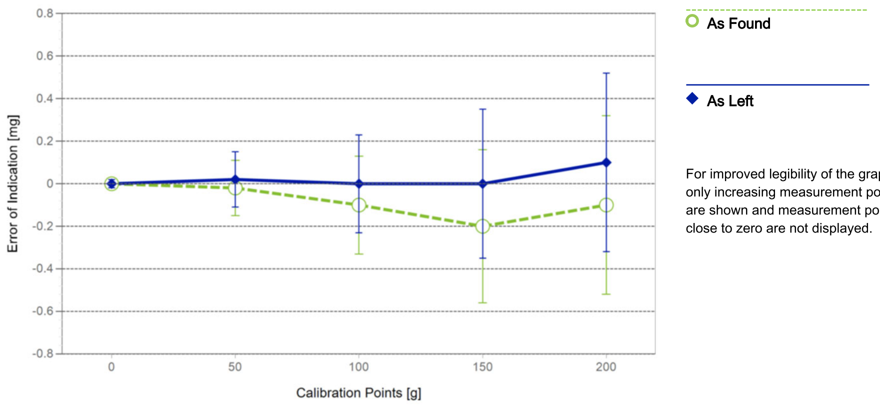
Error of Indication

As Found

	Reference Value	Indication	Error of Indication	Expanded Uncertainty	k
1	0.00000 g	0.00000 g	0.00000 g	0.026 mg	2
2	0.05000 g	0.04999 g	-0.00001 g	0.028 mg	2
3	0.10000 g	0.10000 g	0.00000 g	0.030 mg	2
4	0.49999 g	0.49999 g	0.00000 g	0.034 mg	2
5	1.00000 g	1.00003 g	0.00003 g	0.038 mg	2
6	4.99999 g	5.00002 g	0.00003 g	0.052 mg	2
7	10.00003 g	10.00004 g	0.00001 g	0.065 mg	2
8	49.99999 g	49.99997 g	-0.00002 g	0.13 mg	2
9	99.9999 g	99.9998 g	-0.0001 g	0.23 mg	2
10	149.9999 g	149.9997 g	-0.0002 g	0.36 mg	2
11	199.9999 g	199.9998 g	-0.0001 g	0.42 mg	2

As Left

	Reference Value	Indication	Error of Indication	Expanded Uncertainty	k
1	0.00000 g	0.00000 g	0.00000 g	0.019 mg	2
2	0.05000 g	0.05000 g	0.00000 g	0.023 mg	2
3	0.10000 g	0.10000 g	0.00000 g	0.025 mg	2
4	0.49999 g	0.49999 g	0.00000 g	0.030 mg	2
5	1.00000 g	0.99999 g	-0.00001 g	0.033 mg	2
6	4.99999 g	4.99999 g	0.00000 g	0.049 mg	2
7	10.00003 g	10.00004 g	0.00001 g	0.063 mg	2
8	49.99999 g	50.00001 g	0.00002 g	0.13 mg	2
9	99.9999 g	99.9999 g	0.0000 g	0.23 mg	2
10	149.9999 g	149.9999 g	0.0000 g	0.35 mg	2
11	199.9999 g	200.0000 g	0.0001 g	0.42 mg	2



For improved legibility of the graphics only increasing measurement points are shown and measurement points close to zero are not displayed.

The expanded measurement uncertainty is reported as the standard measurement uncertainty multiplied by the coverage factor k such that the coverage probability corresponds to approximately 95 %.

The user is responsible for maintaining environmental conditions and the settings of the weighing instrument when it was calibrated. The results of this calibration certificate relate only to the calibrated item.

Test Equipment

All weights used for metrological testing are traceable to national or international standards. The weights were calibrated and certified by an accredited calibration laboratory.

Weight Set 1: OIML E2

Weight Set No.:	WS38	Date of Issue:	11-Sep-2025
Certificate Number:	L68/02498.1 - L68/02498.23	Calibration Due Date:	26-Dec-2026

Thermo Hygrometer

Equipment No.:	IN363	Date of Issue:	20-Apr-2026
Certificate Number:	SG-H-00483/69	Calibration Due Date:	16-Apr-2027

Remarks

FACT adjustment functionality activated

Value of the built-in weight adjusted

Equipment condition: Good

Next calibration according to customer's procedure

Calibration data not decide by calibration laboratory

End of Accredited Section

The information below and any attachments to this calibration certificate are not part of the accredited calibration.

Measurement Uncertainty of the Weighing Instrument in Use

Stated is the expanded uncertainty with k=2 in use. The formula shall be used for the estimation of the uncertainty under consideration of the errors of indication. The value R represents the net load indication in the unit of measure of the device.

Temperature coefficient for the evaluation of the measurement uncertainty in use: $2.0 \cdot 10^{-6}$ / K

Temperature range on site for the evaluation of the measurement uncertainty in use: 3 K

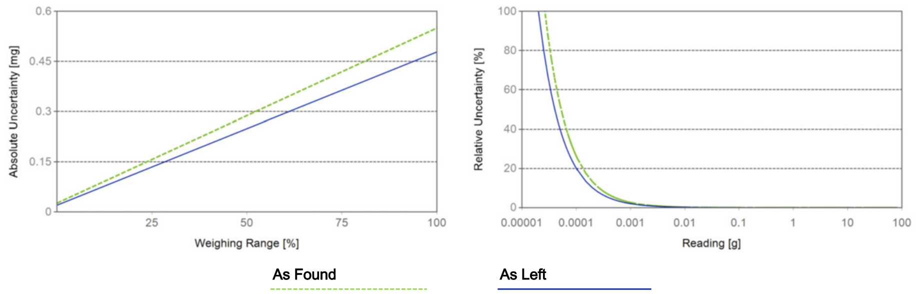
Linearization of Uncertainty Equation

	Range		As Found	As Left
	d	Max		
1	0.00001 g	82 g	U_1 = 0.026 mg + 0.00639 mg/g · R	U_1 = 0.020 mg + 0.00559 mg/g · R
2	0.0001 g	220 g	U_2 = 0.06 mg + 0.00642 mg/g · R	U_2 = 0.06 mg + 0.00556 mg/g · R

To optimize the stability of the linearization, besides of the zero load only increasing measurement points with a test load of 5% of the measurement range or larger are taken for the calculation of the linear equation.

Absolute and Relative Measurement Uncertainty in Use for Various Net Indications (Examples)

Net Indication	As Found		As Left	
0.00220 g	0.026 mg	1.2%	0.020 mg	0.91%
0.02200 g	0.026 mg	0.12%	0.020 mg	0.091%
0.22000 g	0.027 mg	0.012%	0.021 mg	0.0096%
2.20000 g	0.040 mg	0.0018%	0.032 mg	0.0015%
220.0000 g	1.5 mg	0.00067%	1.3 mg	0.00058%



The weighing range shown in the absolute uncertainty graph refers to the first interval/range of the device.

Are you looking for some clarifications on the terms and graphs in your ACC calibration certificate? Do you know how to leverage its full value?

More information at:
www.mt.com/ACC-Cert-Info

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GWP™ Certificate

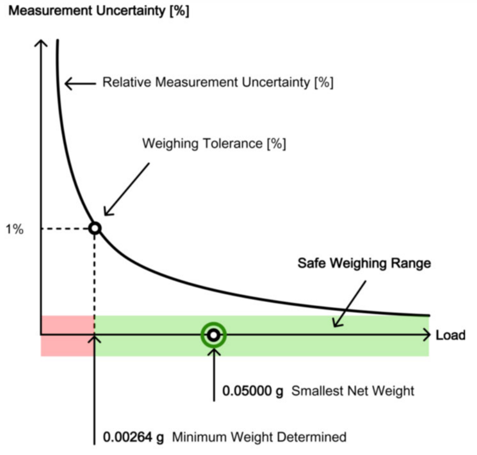
Process Requirements	
Weighing Tolerance	1%
Smallest Net Weight	0.05000 g
Safety Factor	As found = 1; As left = 2

Results As Found		
Minimum Weight Determined	0.00264 g	✓ The instrument meets the process requirements.
Measurement Uncertainty at the Smallest Net Weight	0.053%	

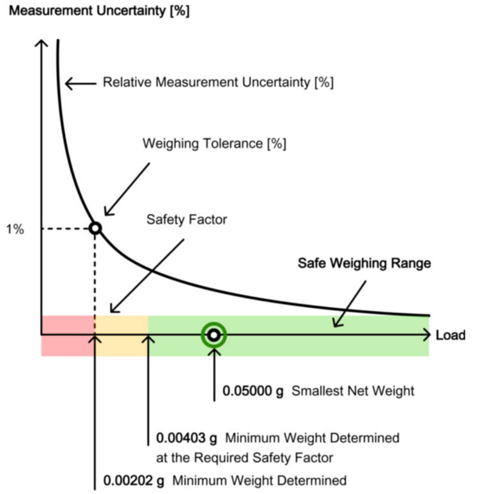
Results As Left		
Minimum Weight Determined at the Safety Factor	0.00403 g	✓ The instrument meets the process requirements.
Minimum Weight Determined	0.00202 g	
Measurement Uncertainty at the Smallest Net Weight	0.041%	

Safe Weighing Range

Results As Found


Measurement Uncertainty [%]
Relative Measurement Uncertainty [%]
Weighing Tolerance [%]
1%
Safe Weighing Range
Load
0.05000 g Smallest Net Weight
0.00264 g Minimum Weight Determined

Results As Left


Measurement Uncertainty [%]
Relative Measurement Uncertainty [%]
Weighing Tolerance [%]
Safety Factor
1%
Safe Weighing Range
Load
0.05000 g Smallest Net Weight
0.00403 g Minimum Weight Determined at the Required Safety Factor
0.00202 g Minimum Weight Determined

Are you looking for some clarifications on the terms and Safe Weighing Range graph?

More information at:
www.mt.com/GWP-Cert-Info

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Minimum Weight

As Found Minimum Weight Table: Minimum weights for different weighing tolerances and safety factors

Weighing Tolerance	Safety Factor				
	1	2	3	5	10
0.1%	0.02651 g	0.05335 g	0.08054 g	0.13600 g	0.28128 g
0.2%	0.01321 g	0.02651 g	0.03988 g	0.06690 g	0.13600 g
0.5%	0.00528 g	0.01056 g	0.01586 g	0.02651 g	0.05335 g
1%	0.00264 g	0.00528 g	0.00792 g	0.01321 g	0.02651 g
2%	0.00132 g	0.00264 g	0.00396 g	0.00660 g	0.01321 g
5%	0.00053 g	0.00106 g	0.00159 g	0.00264 g	0.00528 g

Result: ✓ Pass

The instrument meets the process requirements.

As Left Minimum Weight Table: Minimum weights for different weighing tolerances and safety factors

Weighing Tolerance	Safety Factor				
	1	2	3	5	10
0.1%	0.02023 g	0.04068 g	0.06137 g	0.10345 g	0.21302 g
0.2%	0.01009 g	0.02023 g	0.03043 g	0.05099 g	0.10345 g
0.5%	0.00403 g	0.00807 g	0.01211 g	0.02023 g	0.04068 g
1%	0.00202 g	0.00403 g	0.00605 g	0.01009 g	0.02023 g
2%	0.00101 g	0.00202 g	0.00302 g	0.00504 g	0.01009 g
5%	0.00041 g	0.00081 g	0.00121 g	0.00202 g	0.00403 g

Result: ✓ Pass

The instrument meets the process requirements.

The minimum weight values are calculated from the measurement uncertainty in use equation for various weighing tolerances and safety factors. At the minimum weight, the relative uncertainty in use equals the weighing tolerance divided by the safety factor. If "N/A" is shown in the minimum weight table, no appropriate value could be calculated.

The information and the pass-fail assessment presented in this certificate apply to the fine range.

METTLER TOLEDO is not responsible for the definition of the process requirements. The user is responsible for maintaining environmental conditions and the settings of the weighing instrument when it was calibrated.

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CAL
Calibratech Co.,Ltd.
7/106-7 Moo 2, Sukhaprachasan 3 Rd., Bangpood, Pakkred, Nonthaburi 11120
Tel.(02) 964-6211 Fax.(02) 964-5155, e-mail : calibratech.cal@yahoo.com, calibratech.cal@hotmail.com

ilac-MRA
NSC-TISI-TIS17025
CALIBRATION 0030

Certificate of Calibration

Certificate No. : 68-400679-1

Page : 1 of 2

Submitted by : Pinthong Group Management and Consultants Co., Ltd.
27 Pinthong Group Building, Rama 2 Road, Tha Kham,
Bang Khun Thian, Bangkok 10150

Equipment : Temperature controlled enclosure (Oven)
Manufacturer : Binder
Model : ED 56
Range N/A °C
Resolution : 1 °C
Serial No. : 20240000005576
ID No. : N/A

Environment : On site calibration was carried out at the Laboratory,
Pinthong Group Management and Consultants Co., Ltd.
Ambient Temperature : (26.1 to 26.5) °C
Relative Humidity : (38 to 41) %
Line Voltage : (228.0 to 230.0) V

Date of Received : 10 December 2025
Date of Calibration : 10 December 2025
Date of Issue : 11 December 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 & 400030	68-400567-1	27 Apr 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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CAL

Calibratech Co.,Ltd.

7/106-7 Moo 2, Sukhaprachasan 3 Rd., Bangpood, Pakkred, Nonthaburi 11120
Tel.(02) 964-6211 Fax.(02) 964-5155, e-mail : calibratech_cal@yahoo.com, calibratech_cal@hotmail.com

Certificate of Calibration

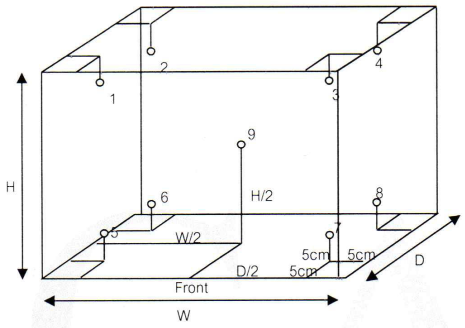
Certificate No. : 68-400679-1 **Page : 2 of 2**

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 = 0.36 m
D = 0.38 m
H = 0.42 m
Capacity = 0.06 m^3

Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Temperature (°C) @ Sensor No.									Uncertainty
			1	2	3	4	5	6	7	8	9	(±°C)
103	103	103	104.9	104.7	104.9	105.0	103.7	103.7	103.3	103.1	103.7	0.96
104	104	104	105.9	105.7	105.8	106.0	104.5	104.6	104.1	104.0	104.6	0.97
105	105	105	107.0	106.8	106.9	107.0	105.6	105.9	105.2	105.2	105.7	0.98
180	181	181	180.6	180.4	180.5	181.0	180.3	180.9	179.8	179.6	179.9	1.1

Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Uniformity (°C)	Measured Stability (°C)	Overall Variation (°C)
103	103	103	1.5	0.2	2.1
104	104	104	1.6	0.2	2.3
105	105	105	1.4	0.3	2.1
180	181	181	1.3	0.3	1.8

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 -

CAL

Calibratech Co.,Ltd.

7/106-7 Moo 2, Sukhaprachasan 3 Rd., Bangpood, Pakkred, Nonthaburi 11120
Tel.(02) 964-6211 Fax.(02) 964-5155, e-mail : calibratech_cal@yahoo.com, calibratech_cal@hotmail.com

NSC-TISI-TIS17025
CALIBRATION 0030

Certificate of Calibration

Certificate No. : 68-400442-2 **Page : 1 of 2**

Submitted by : Pinthong Group Management and Consultants Co., Ltd.
81/109 Pinthong Group Building, Moo 1, Rama 2 Road, Thakham,
Bangkhunthian, Bangkok 10150

Equipment : Temperature controlled enclosure (Refrigerator)
Manufacturer : Sanden Intercool
Model : YPR-068S
Range : N/A °C
Resolution : 1 °C
Serial No. : YPR068201S-1207-00076
ID No. : N/A

Environment : On site calibration was carried out at the Laboratory,
Pinthong Group Management and Consultants Co., Ltd.
Ambient Temperature : (25.7 to 27.4) °C
Relative Humidity : (43 to 49) %
Line Voltage : (231.0 to 231.5) V

Date of Received : 01 August 2025
Date of Calibration : 01 August 2025
Date of Issue : 04 August 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
400046 & 400042	68-400410-1	25 Jan 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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7/106-7 Moo 2, Sukhaprachasan 3 Rd., Bangpood, Pakkred, Nonthaburi 11120
Tel.(02) 964-6211 Fax.(02) 964-5155, e-mail : calibratech_cal@yahoo.com, calibratech_cal@hotmail.com

Certificate of Calibration

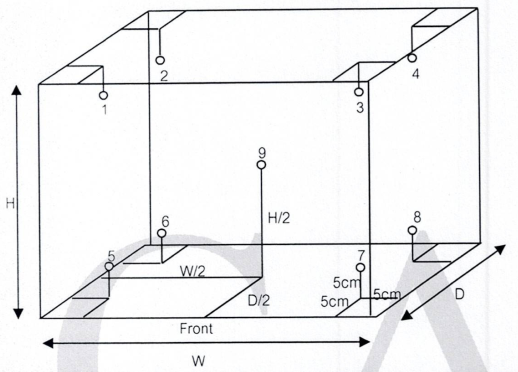
Certificate No. : 68-400442-2 Page : 2 of 2

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 = 0.58 m
D = 0.56 m
H = 1.45 m
Capacity = 0.47 m^3

Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Temperature (°C) @ Sensor No.									Uncertainty
			1	2	3	4	5	6	7	8	9	(±°C)
4	2	2	5.20	5.11	5.09	5.03	4.19	4.94	4.32	4.68	4.04	0.72

Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Uniformity (°C)	Measured Stability (°C)	Overall Variation (°C)
4	2	2	1.23	0.08	1.28

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 -

CAL
Calibratech Co.,Ltd.
7/106-7 Moo 2, Sukhaprachasan 3 Rd., Bangpood, Pakkred, Nonthaburi 11120
Tel.(02) 964-6211 Fax.(02) 964-5155, e-mail : calibratech_cal@yahoo.com, calibratech_cal@hotmail.com

NSC-TISI-TIS17025
CALIBRATION 0030

Certificate of Calibration

Certificate No. : 68-200477-1 Page : 1 of 2

Submitted by : Pinthong Group Management and Consultant
27 Rama 2 Road, Tha Kham, Bang Khun Thian, Bangkok 10150

Equipment : Electronic Balance
Manufacturer : Sartorius Model : CPA225D
Serial No. : 23208183
Capacity : 220 g Resolution : 0.00001g/100g, 0.0001g/220g

Environment : On site calibration was carried out at the Laboratory,
Pinthong Group Management and Consultant
Ambient Temperature : (23.8 to 24.0) °C
Relative Humidity : (49.5 to 50.2) %
Air Pressure : 1005.0 mbar

Date of Received : 01 August 2025
Date of Calibration : 01 August 2025
Date of Issue : 02 August 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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Tel.(02) 964-6211 Fax.(02) 964-5155, e-mail : calibratech_cal@yahoo.com, calibratech_cal@hotmail.com

Certificate of Calibration

Certificate No. : 68-200477-1 **Page : 2 of 2**

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Departure of indication from nominal value

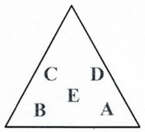
Nominal Value (g)	Correction (g)	Uncertainty ± (g)
0.05	0.00001	0.000014
0.1	0.00000	0.000016
0.5	0.00000	0.000022
1	0.00000	0.000026
5	-0.00001	0.000043
10	0.00000	0.000053
20	0.00002	0.000071
50	0.00020	0.00011
100	0.00025	0.00020
200	0.0004	0.00038

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

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

Eccentric error Load test : 50 g

A	B	C	D	E	
0.00003	0.00005	0.00007	0.00006	0.00000	g



Repeatability Load test : 200 g
Stdev. : 0.000048 g

- o0o -

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Certificate of Calibration

Certificate No. : 69-400258-1 **Page : 1 of 2**

Submitted by : Pinthong Group Management and Consultants Co., Ltd.
27 Rama 2 Road, Tha Kham, Bang Khun Thian, Bangkok 10150

Equipment : Temperature controlled enclosure (Incubator)
Manufacturer : M-LAB Model : BIC-140
Range : N/A °C Resolution : 0.1 °C
Serial No. : 1021 ID No. : N/A

Environment : On site calibration was carried out at the Laboratory,
Pinthong Group Management and Consultants Co., Ltd.
Ambient Temperature : (24.2 to 26.6) °C
Relative Humidity : (41 to 45) %
Line Voltage : (231.0 to 231.5) V

Date of Received : 11 May 2026
Date of Calibration : 11 May 2026
Date of Issue : 11 May 2026
Calibrated by : Aphisorn Worawasukullaya
Calibration Method : CAL-M4004, TLAS G-20
The temperature scale used was based on ITS-90

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

Standard Digital Thermometer with RTD Probe

ID No.	Cert. No.	Due Date	Traceability
400046 & 400047	69-400018-2	24 Jul 2026	National Institute of Metrology Thailand (NIMT)

Approved by :
(Permpon Chanpu)
Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

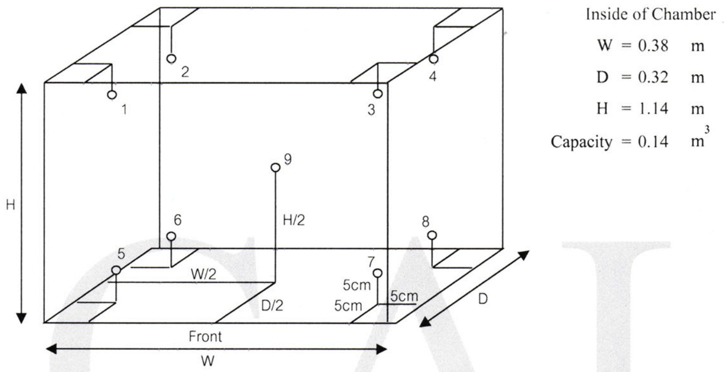
Certificate No. : 69-400258-1 **Page : 2 of 2**

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 = 0.38 m

D = 0.32 m

H = 1.14 m

Capacity = 0.14 m^3

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	20.0	20.0	19.99	19.70	20.07	19.86	20.43	20.33	20.31	20.24	20.52	0.35

Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Uniformity (°C)	Measured Stability (°C)	Overall Variation (°C)
20.0	20.0	20.0	0.85	0.02	0.86

Remark The uncertainty is not combine uniformity of the air chamber

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

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 -

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Certificate of Calibration

Certificate No. : **68-400442-1** **Page : 1 of 2**

Submitted by : Pinthong Group Management and Consultants Co., Ltd.
81/109 Pinthong Group Building, Moo 1, Rama 2 Road, Thakham,
Bangkhunthian, Bangkok 10150

Equipment : Temperature controlled enclosure (Oven)

Manufacturer : Memmert

Model : UNB 100

Range : N/A °C

Resolution : 0.5 °C

Serial No. : C112.0664

ID No. : N/A

Environment : On site calibration was carried out at the Laboratory, Pinthong Group Management and Consultants Co., Ltd.

Ambient Temperature :	(27.7 to 28.8)	°C
Relative Humidity :	(42 to 53)	%
Line Voltage :	(231.0 to 231.5)	V

Date of Received : 01 August 2025

Date of Calibration : 01 August 2025

Date of Issue : 04 August 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
400046 & 400023	68-400148-1	02 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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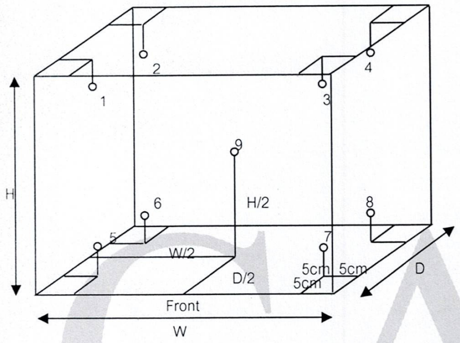
Certificate of Calibration

Certificate No. : 68-400442-1

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 = 0.32 m
D = 0.17 m
H = 0.24 m
Capacity = 0.01 m^3

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	107.5	107.5	105.2	105.2	105.0	104.9	103.5	103.6	103.9	104.4	104.5	0.79

Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Uniformity (°C)	Measured Stability (°C)	Overall Variation (°C)
104.0	107.5	107.5	1.2	0.2	2.0

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 -

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Certificate of Calibration

Certificate No. : **68-420068-2**

Page : 1 of 2

Submitted by : Pinthong Group Management and Consultant
27 Pinthong Group Building, Rama 2 Road, Tha Kham, Bang Khun Thian, Bangkok 10150

Equipment : pH Meter (Pocket)
pH meter
Manufacturer : Eutech
Model : PCTestr 35
Range : 0.0 to 14.0 pH pH
Resolution : 0.1 pH
Serial No. : 3083903
ID No. : PMC650627

Environment : Ambient Temperature : (25 ± 2) °C
Relative Humidity : (50 ± 15) %

Date of Received : 01 August 2025
Date of Calibration : 06 August 2025
Date of Issue : 06 August 2025
Calibrated by : Permpon Chanpu

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

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

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. : 68-420068-2 **Page : 2 of 2**

Result of Calibration :

UUC Condition As-Received : Good

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	4.0	0.0	0.058
	6.965	7.0	0.0	0.059
	10.010	10.0	0.0	0.059

Remark

1 UUC : Unit Under Calibration

2 pH meter does not have voltage mode because the plug can not BNC socket

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 -

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Certificate of Calibration

Certificate No. : **68-420068-1** **Page : 1 of 2**

Submitted by : Pinthong Group Management and Consultant
27 Pinthong Group Building, Rama 2 Road, Tha Kham, Bang Khun Thian, Bangkok 10150

Equipment : pH Meter with electrode
pH meter
Manufacturer : Mettler Toledo Model : SevenCompact S220
Range : N/A pH Resolution : 0.01 pH
Serial No. : C130221482 ID No. : PMC67010301
Electrode
Model : InLab Expert Pro-ISM Serial No. : 3474619

Environment : On site calibration was carried out at the Laboratory,
Pinthong Group Management and Consultant
Ambient Temperature : (24.5 to 25.3) °C
Relative Humidity : (45 to 50) %

Date of Received : 01 August 2025
Date of Calibration : 01 August 2025
Date of Issue : 06 August 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. : 68-420068-1

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 (pH)	UUC Reading (mV)	Correction (mV)	Uncertainty (± mV)
4, 7, 10	177.4800	4	4.00	177.6	-0.1	0.12
	0.0000	7	7.00	0.1	-0.1	0.086
	-177.4800	10	10.00	-177.3	-0.2	0.12

Function : pH meter with electrode

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

Adjustment Curve at nominal pH	Standard Buffer (pH)	UUC Reading (pH)	Correction (pH)	Uncertainty (± pH)
4, 7, 10	4.007	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 -

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Certificate of Calibration

Certificate No. : 68-400441-2

Page : 1 of 2

Submitted by : Pinthong Group Management and Consultant
27 Pinthong Group Building, Rama 2 Road, Tha Kham, Bang Khun Thian, Bangkok 10150

Equipment : Temperature Indicator with Thermistor Probe

Temperature Indicator

Manufacturer :	Mettler Toledo	Model :	SevenCompact S220
Range :	N/A °C	Resolution :	0.1 °C
Serial No. :	C130221482	ID No. :	PMC67010301

Thermistor probe

Model :	InLab Expert Pro-ISM	Sheath Material :	Plastic
Diameter :	12 mm.	Length :	120 mm.
Serial No. :	3474619	ID No. :	PMC67010301

Environment : On site calibration was carried out at the Laboratory,
Pinthong Group Management and Consultant

Ambient Temperature : (24.5 to 25.3) °C
Relative Humidity : (45 to 50) %
Line Voltage : (220.0 to 230.0) VAC

Date of Received : 01 August 2025
Date of Calibration : 01 August 2025
Date of Issue : 06 August 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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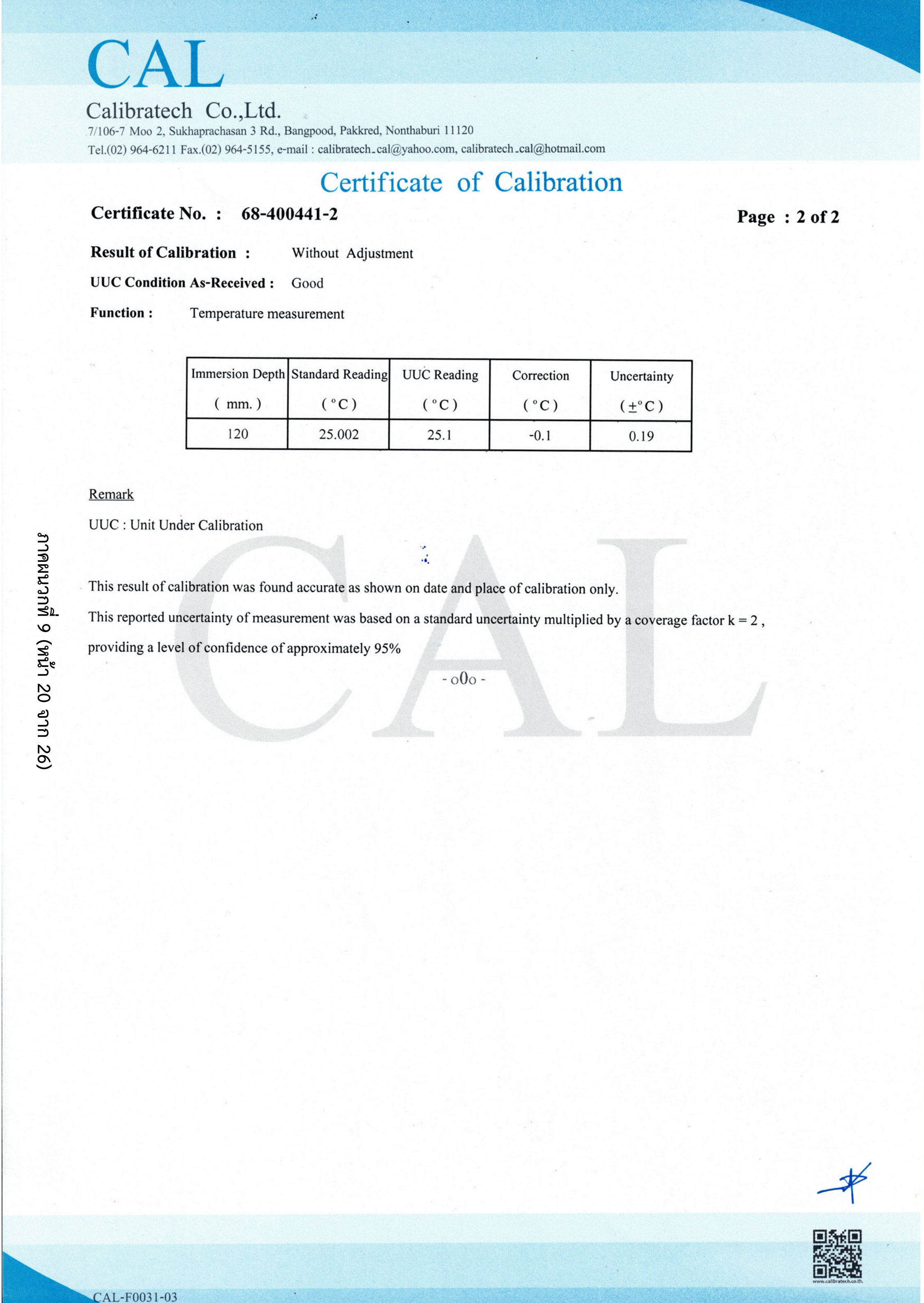

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Certificate of Calibration

Certificate No. : 68-400441-2 **Page : 2 of 2**

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Function : Temperature measurement

Immersion Depth (mm.)	Standard Reading (°C)	UUC Reading (°C)	Correction (°C)	Uncertainty (±°C)
120	25.002	25.1	-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%

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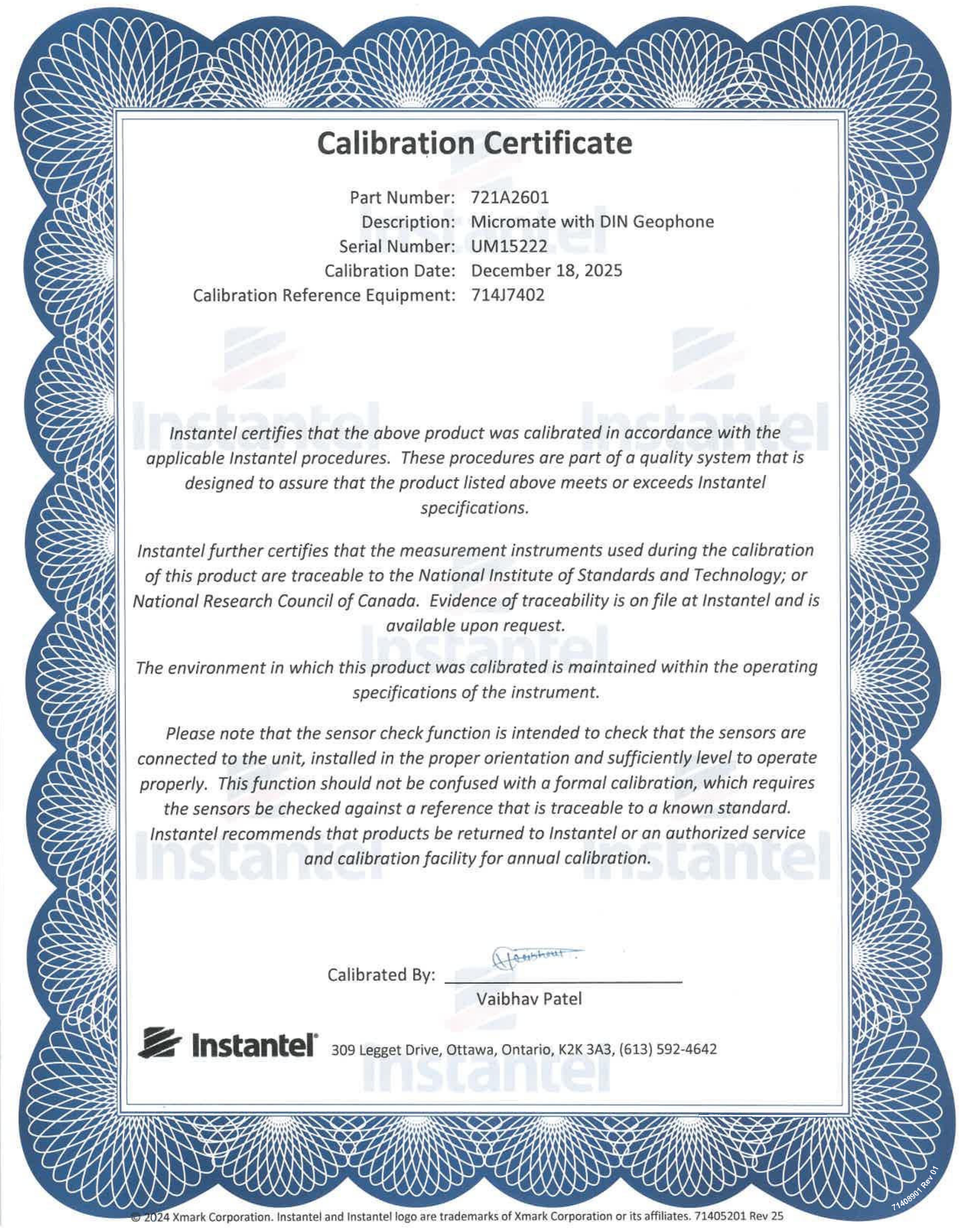
CAL-F0031-03



Calibration Certificate

Part Number: 721A2601
Description: Micromate with DIN Geophone
Serial Number: UM15222
Calibration Date: December 18, 2025
Calibration Reference Equipment: 714J7402

Instantel certifies that the above product was calibrated in accordance with the applicable Instantel procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds Instantel specifications.

Instantel further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology; or National Research Council of Canada. Evidence of traceability is on file at Instantel and is available upon request.

The environment in which this product was calibrated is maintained within the operating specifications of the instrument.

Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. Instantel recommends that products be returned to Instantel or an authorized service and calibration facility for annual calibration.

Calibrated By: ______________
Vaibhav Patel

Instantel® 309 Legget Drive, Ottawa, Ontario, K2K 3A3, (613) 592-4642

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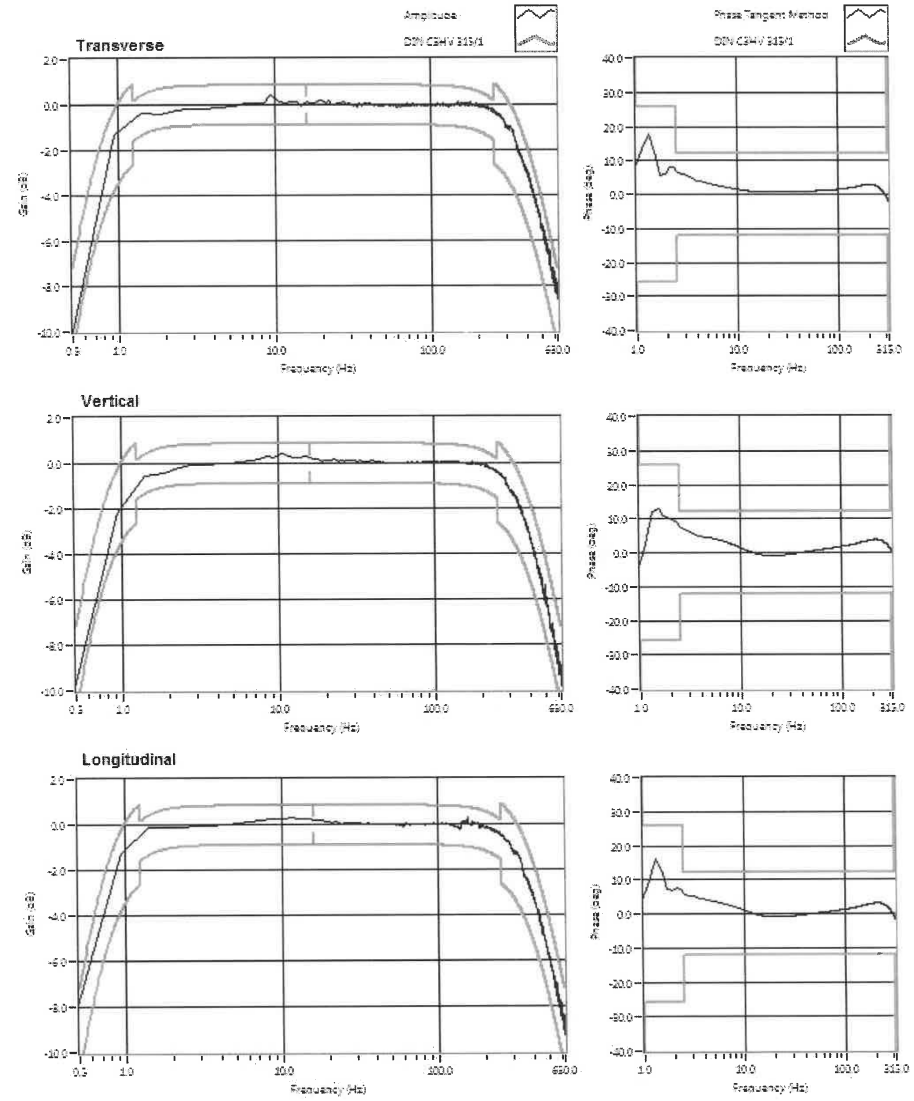
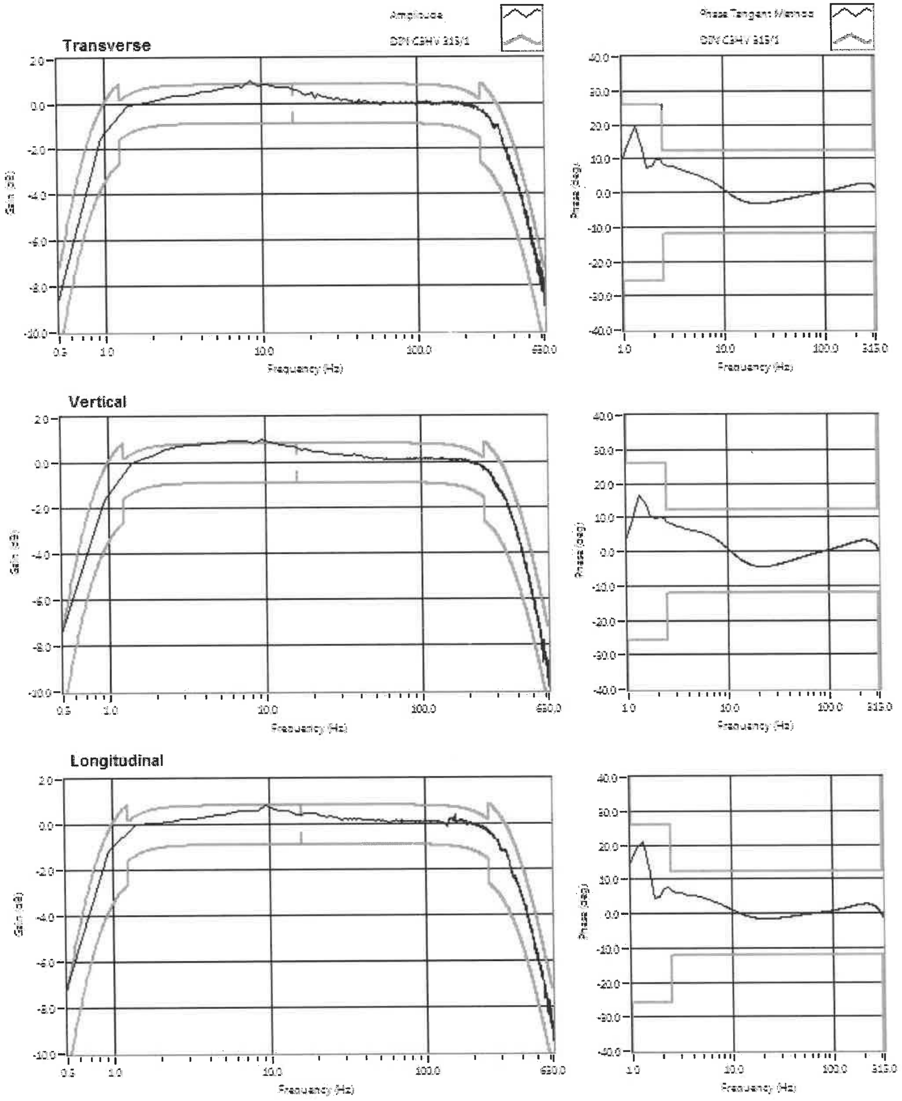
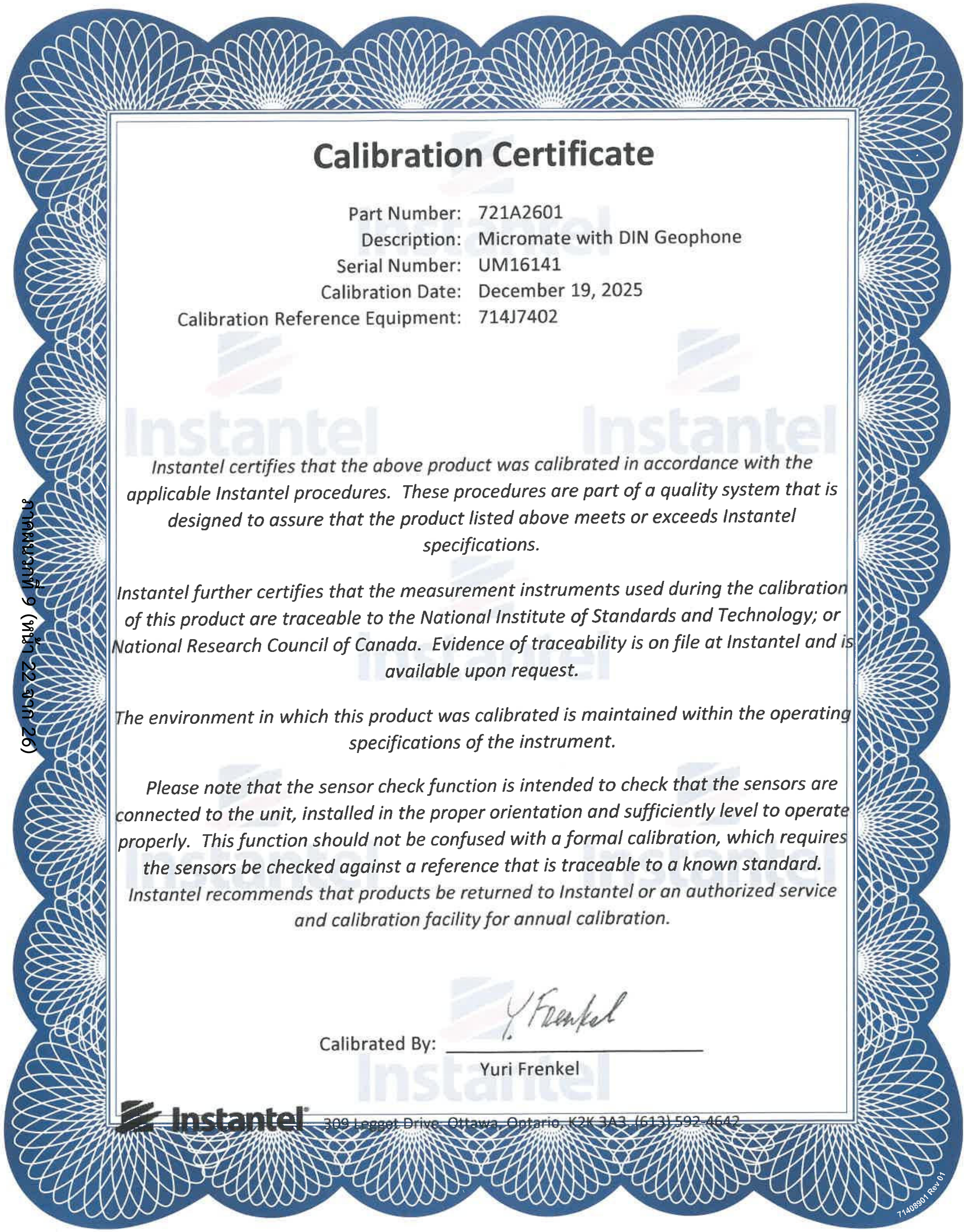
71408901 Rev 01

Frequency Response of UM15222



Frequency Response of UM15222 (As Found)





Calibration Certificate

Part Number: 721A2601
Description: Micromate with DIN Geophone
Serial Number: UM16141
Calibration Date: December 19, 2025
Calibration Reference Equipment: 714J7402

Instantel certifies that the above product was calibrated in accordance with the applicable Instantel procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds Instantel specifications.

Instantel further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology; or National Research Council of Canada. Evidence of traceability is on file at Instantel and is available upon request.

The environment in which this product was calibrated is maintained within the operating specifications of the instrument.

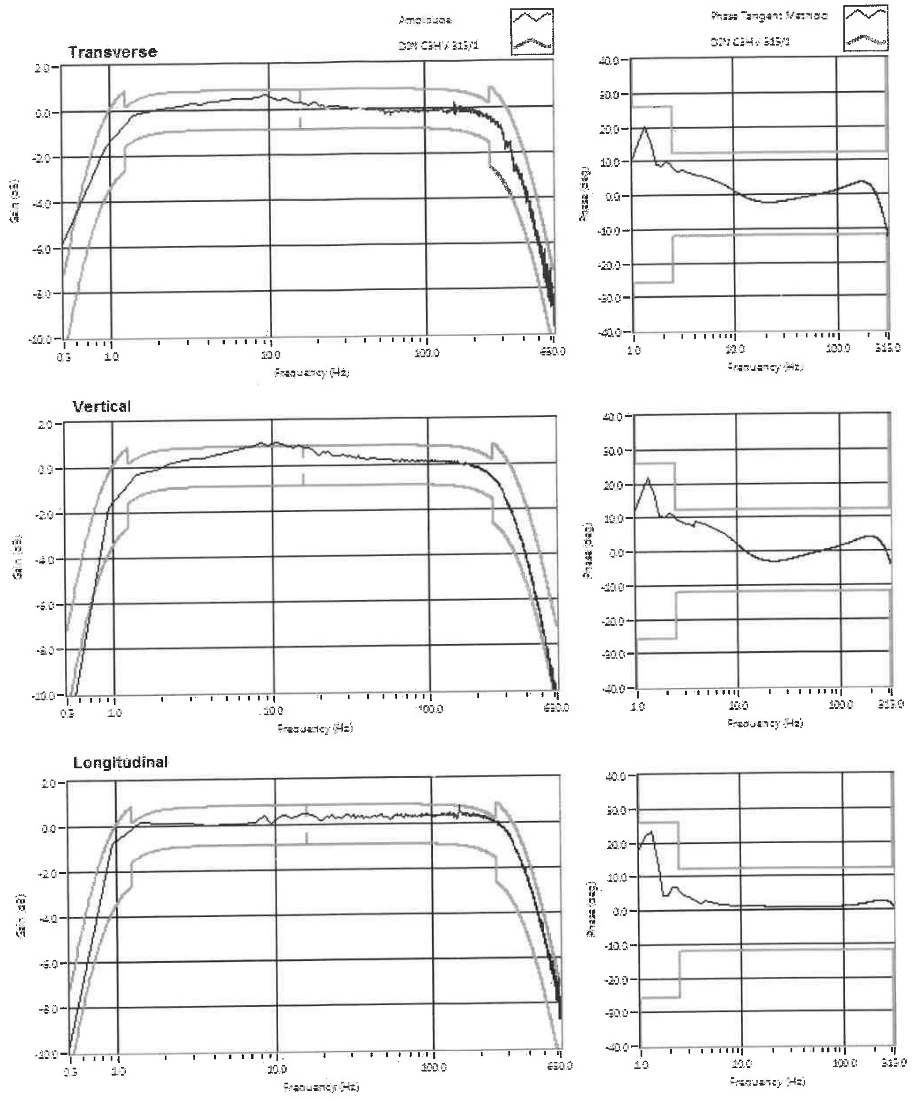
Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. Instantel recommends that products be returned to Instantel or an authorized service and calibration facility for annual calibration.

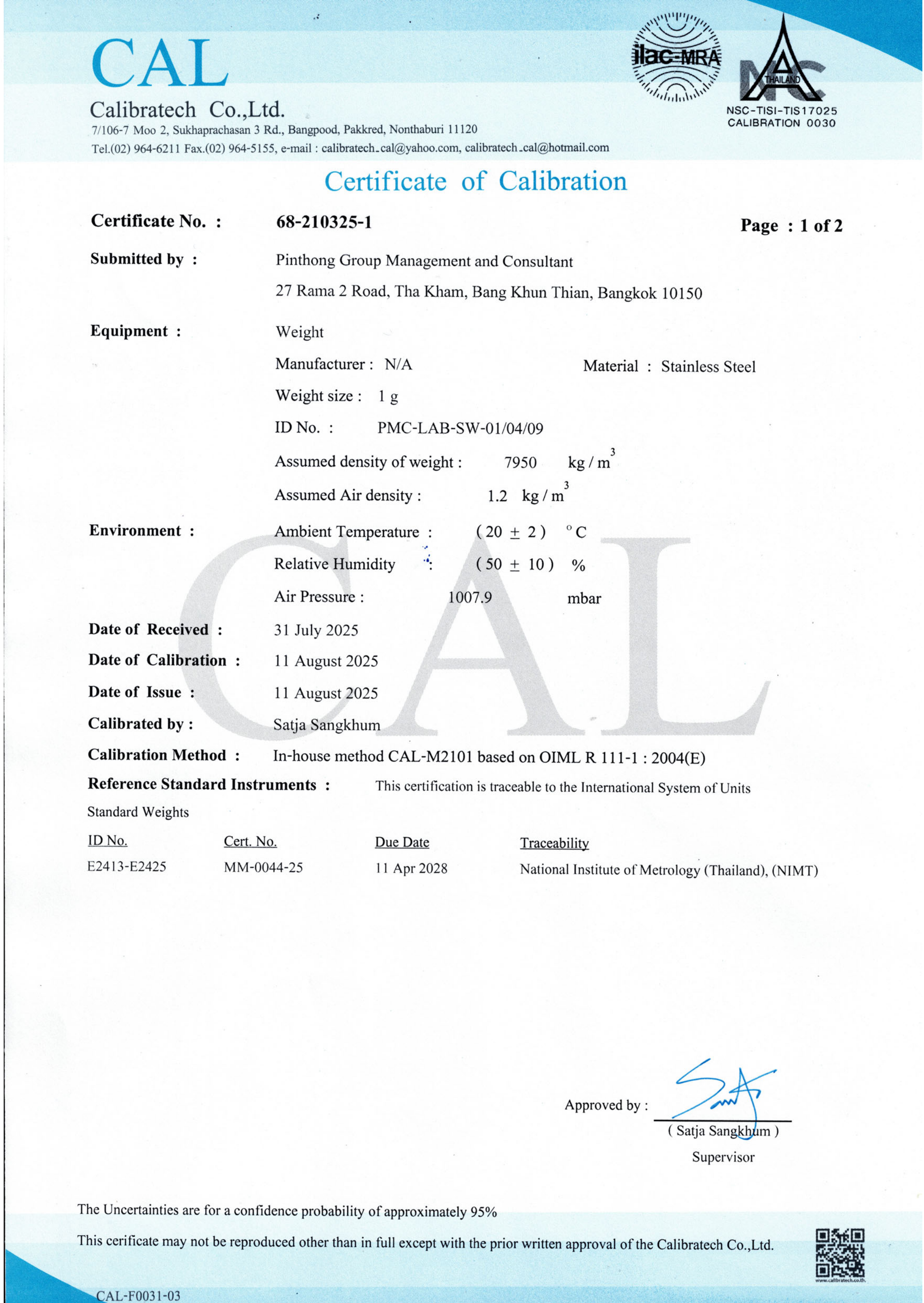
Calibrated By: Y. Frenkel
Yuri Frenkel

Instantel 309 Legget Drive, Ottawa, Ontario, K2K 3A3, (613) 592-4642

71408901 Rev 01

Frequency Response of UM16141 (As Found)





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CALIBRATION 0030

Certificate of Calibration

Certificate No. : **68-210325-1** **Page : 1 of 2**

Submitted by : Pinthong Group Management and Consultant
27 Rama 2 Road, Tha Kham, Bang Khun Thian, Bangkok 10150

Equipment : Weight
Manufacturer : N/A Material : Stainless Steel
Weight size : 1 g
ID No. : PMC-LAB-SW-01/04/09
Assumed density of weight : 7950 kg / m^3
Assumed Air density : 1.2 kg / m^3

Environment : Ambient Temperature : (20 ± 2) °C
Relative Humidity : (50 ± 10) %
Air Pressure : 1007.9 mbar

Date of Received : 31 July 2025
Date of Calibration : 11 August 2025
Date of Issue : 11 August 2025
Calibrated by : Satja Sangkhum
Calibration Method : In-house method CAL-M2101 based on OIML R 111-1 : 2004(E)
Reference Standard Instruments : This certification is traceable to the International System of Units

Standard Weights

ID No.	Cert. No.	Due Date	Traceability
E2413-E2425	MM-0044-25	11 Apr 2028	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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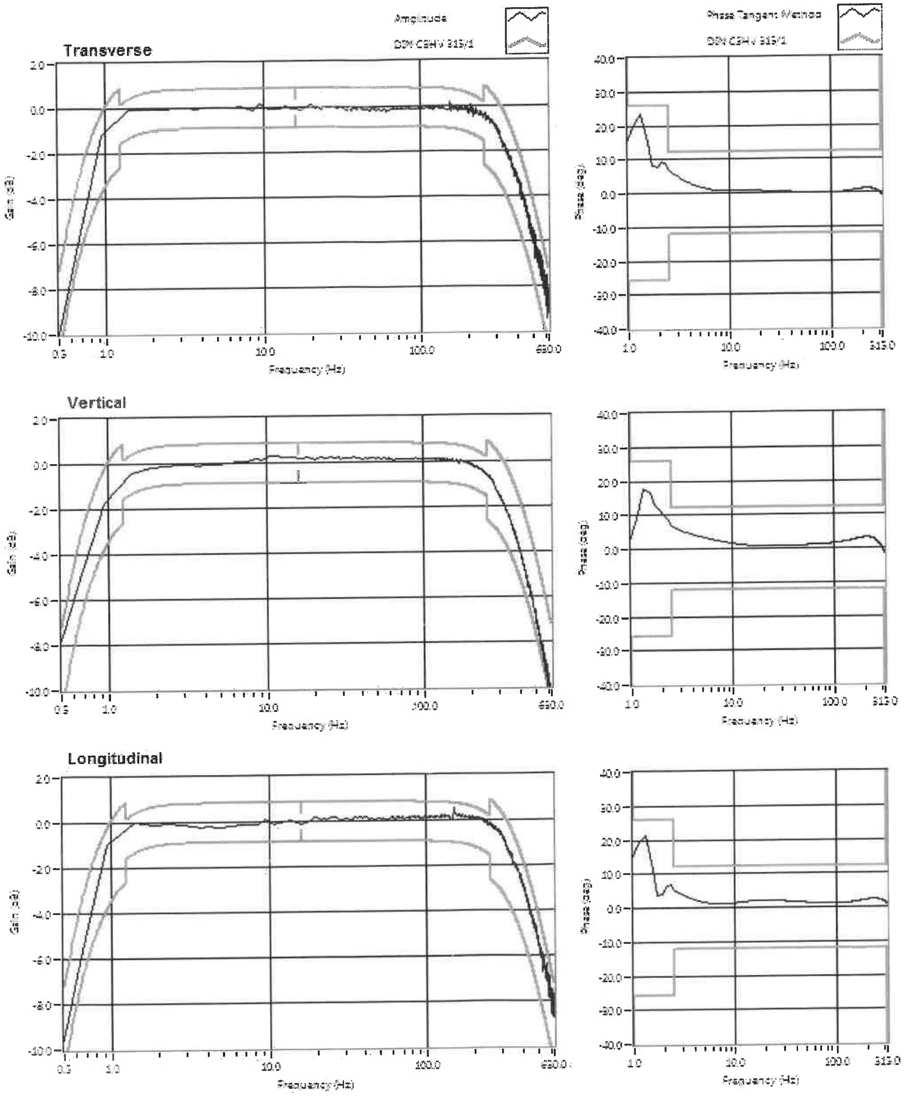
CAL-F0031-03

Frequency Response of UM16141



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Certificate of Calibration

Certificate No. : 68-210325-1 **Page : 2 of 2**

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

No.	Nominal Value	Id.Mark	Conventional mass Value	Measuring Uncertainty
1	1 g	none	1 g +0.023 mg	± 0.023 mg

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 mutiplied by a coverage factor k = 2, providing a level of confidence of approximately 95%

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CAL
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CALIBRATION 0030

Certificate of Calibration

Certificate No. : 68-210325-2 **Page : 1 of 2**

Submitted by : Pinthong Group Management and Consultant
27 Rama 2 Road, Tha Kham, Bang Khun Thian, Bangkok 10150

Equipment : Weight
Manufacturer : N/A Material : Stainless Steel
Weight size : 100 g
ID No. : PMC-LAB-SW-02/04/09
Assumed density of weight : 7950 kg / m^3
Assumed Air density : 1.2 kg / m^3

Environment : Ambient Temperature : (20 ± 2) °C
Relative Humidity : (50 ± 10) %
Air Pressure : 1007.9 mbar

Date of Received : 31 July 2025

Date of Calibration : 11 August 2025

Date of Issue : 11 August 2025

Calibrated by : Satja Sangkhum

Calibration Method : In-house method CAL-M2101 based on OIML R 111-1 : 2004(E)

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

Standard Weights

ID No.	Cert. No.	Due Date	Traceability
E2413-E2425	MM-0044-25	11 Apr 2028	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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CAL
Calibratech Co.,Ltd.
7/106-7 Moo 2, Sukhaprachasan 3 Rd., Bangpood, Pakkred, Nonthaburi 11120
Tel.(02) 964-6211 Fax.(02) 964-5155, e-mail : calibratech_cal@yahoo.com, calibratech_cal@hotmail.com

Certificate of Calibration

Certificate No. : 68-210325-2 **Page : 2 of 2**

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

No.	Nominal Value	Id.Mark	Conventional mass Value		Measuring Uncertainty
1	100 g	none	100 g	+0.11 mg	± 0.11 mg

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 mutiplied by a coverage factor k = 2, providing a level of confidence of approximately 95%

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CAL

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Calibratech Co.,Ltd.
7/106-7 Moo 2, Sukhaprachasan 3 Rd., Bangpood, Pakkred, Nonthaburi 11120
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NSC-TISI-TIS17025
CALIBRATION 0030

Certificate of Calibration

Certificate No. : 68-210325-3 **Page : 1 of 2**

Submitted by : Pinthong Group Management and Consultant
27 Rama 2 Road, Tha Kham, Bang Khun Thian, Bangkok 10150

Equipment : Weight
Manufacturer : N/A Material : Stainless Steel
Weight size : 200 g
ID No. : PMC-LAB-SW-03/04/09
Assumed density of weight : 7950 kg / m^3
Assumed Air density : 1.2 kg / m^3

Environment : Ambient Temperature : (20 ± 2) °C
Relative Humidity : (50 ± 10) %
Air Pressure : 1007.9 mbar

Date of Received : 31 July 2025
Date of Calibration : 11 August 2025
Date of Issue : 11 August 2025
Calibrated by : Satja Sangkhum
Calibration Method : In-house method CAL-M2101 based on OIML R 111-1 : 2004(E)
Reference Standard Instruments : This certification is traceable to the International System of Units

Standard Weights

ID No.	Cert. No.	Due Date	Traceability
E2420	C02250960	06 Jun 2028	National Institute of Metrology (Thailand), (NIMT)

Approved by :
(Satja Sangkhum)
Supervisor

CAL

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : **68-210325-3** **Page : 2 of 2**

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

No.	Nominal Value	Id.Mark	Conventional mass Value	Measuring Uncertainty
1	200 g	none	200 g +0.16 mg	± 0.17 mg

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 mutiplied by a coverage factor k = 2, providing a level of confidence of approximately 95%

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