ภาคผนวกที่ 5

เอกสารสอบเทียบความถูกต้องของเครื่องมือ

ภาคผนวกที่ 5.1 เอกสารสอบเทียบเครื่องมือตรวจวัดคุณภาพน้ำทิ้ง

ภาคผนวกที่ 5.1

เอกสารสอบเทียบเครื่องมือตรวจวัดคุณภาพน้ำทิ้ง

AMARC | ASIA MEDICAL AND AGRICULTURAL LABORATORY AND RESEARCH CENTER

NSC-TISI-TIS17025
CALIBRATION 0152

CERTIFICATE OF CALIBRATION

Certificate No. : 25-123587

Sample Code : 25-53958-004

Customer : บริษัท เอ็นไวร์โปร จำกัด
เลขที่ 168/28 ถนนนาคนิวาส แขวงลาดพร้าว เขตลาดพร้าว
กรุงเทพมหานคร 10230

Location of Calibration : บริษัท เอ็นไวร์โปร จำกัด
(Analysis Laboratory 2)

Equipment : pH Meter

Manufacturer : HANNA instruments **Model** : HI 2211

Serial No. : H0064643 **ID No.** : SV-TL.080/2560

Date of Receipt : 02 July 2025 **Date of Calibration** : 02 July 2025

Condition of Calibration

1. **Environment** Ambient temperature : 15.0 to 35.0 °C Relative humidity : 35.0 to 80.0 %RH
   1.1 Start time : 24.5 °C ; End time : 24.5 °C 1.2 Start time : 50.1 %RH ; End time : 44.7 %RH
2. **Calibration method**
   In house method WI-CL-019 : Direct measurement with standard voltage calibrator and direct measurement with certified reference material (CRM).
3. **Reference standard / Certified reference material**

Instrument	ID No.	Certificate No.	Due Date
3.1 Voltage Calibrator	LB-DPC-01	LF25-0350	22 June 2026
3.2 Digital Thermometer	LB-DPC-01	24-096498	11 August 2025
Certified Reference Material	**Lot. No.**	**Ref No.**	**Expire Date**
3.3 Buffer Solution pH 4.007	1079419	PH216.L5	23 February 2027
3.4 Buffer Solution pH 7.000	C03228	S11M004	19 November 2026
3.5 Buffer Solution pH 10.010	1037955	PH220.L5	09 October 2025

4. **This certificate is traceable to the international system of unit (SI Unit).**
   4.1 Instrument No. 3.1 through Measuretronix Limited.
   4.2 Instrument No. 3.2 through Asia Medical and Agricultural Laboratory and Research Center Public Company Limited.
   4.3 Buffer Solution No. 3.3 and No. 3.5 traceable to CPA chem (through primary measurement method-Harned cell using calibrated thermometer, barometer, and nanovoltmeter Accredited laboratory ISO/IEC 17025 and ISO 17034).
   4.4 Buffer Solution No. 3.4 traceable to HACH (Certified Reference Material from DFM and PTB Certificate Nr. CRM-P1118 and Certificate Nr. PTB-PHOB-555/30620/22. According to DIN EN ISO 17034:2017).
5. **This result of calibration was found accurate as shown on date and place of calibration only.**
6. **Condition of calibration item :** Normal

Calibrated by Mr. Chakrin Chiangsorn
Scientist

Approved by (Mr. Somchai Neampunt)
Signed for Director

Issue date 04 July 2025

The uncertainties are for a confidence probability of approximately 95%.
The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

Envipro Co., Ltd.

REPORT OF CALIBRATION

Certificate No. : 25-123587

Sample Code : 25-53958-004

Equipment	:	pH Meter	**Resolution**	:	0.01 pH ; 0.1 mV (± 399.9 mV), 1 mV (beyond ± 400 mV)
Manufacturer	:	HANNA instruments			
Serial No.	:	H0064643	**Model**	:	HI 2211
Range	:	-2.00 pH to 16.00 pH ; -2000 mV to 2000 mV	**ID No.**	:	SV-TL.080/2560

Results of Calibration

Part 1. DC Voltage measurement

pH Meter Serial No. : H0064643

Nominal Value	Applied DC Voltage	Average indicator reading		Uncertainty	Coverage factor
pH	mV	mV	pH	mV	*k*
0	414.113	414	0.00	± 0.59	2.00
4	177.477	177.5	4.00	± 0.093	2.00
7	0.000	0.0	7.00	± 0.093	2.00
10	-177.477	-177.3	10.00	± 0.093	2.00
14	-414.113	-414	14.00	± 0.59	2.00

Part 2. Performance of Electrode system

Electrode Manufacturer : HANNA instruments Model : HI 1131

Electrode Serial No. : 0347487N

Two-Point Calibration at pH4 and pH7 Percent Slope : 98.4

Standard Buffer Solution	Average indicator reading		Error Value	Uncertainty	Coverage factor
pH (@ 25 °C)	pH	mV	pH	pH	*k*
4.007	3.98	164.1	-0.027	± 0.0093	2.00
7.000	7.00	-10.0	0.000	± 0.0098	2.00

Two-Point Calibration at pH7 and pH10 Percent Slope : 96.9

Standard Buffer Solution	Average indicator reading		Error Value	Uncertainty	Coverage factor
pH (@ 25 °C)	pH	mV	pH	pH	*k*
7.000	7.01	-9.9	0.010	± 0.0098	2.00
10.010	10.01	-182.6	0.000	± 0.0098	2.00

The result expanded uncertainty of measurement *U* is stated as the standard uncertainty of measurement multiplied by the coverage factor *k*, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003.

- End of Report -

Envipro Co., Ltd.

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

CLC Accredited ISO/IEC 17025

ilac-MRA

ANAB ANSI National Accreditation Board ACCREDITED ISO/IEC 17025 CALIBRATION AND DIMENSIONAL MEASUREMENT ACDM-2814

CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE	:	STANDARD WEIGHT
MANUFACTURER	:	LS
MODEL / TYPE	:	10 g
SERIAL NO.	:	S10G858-20[SV-TL.113/2563]
CLID. NO.	:	262200930
JOB CONTROL NO.	:	250807091425
CALIBRATION SERVICE	:	☑ IN-LABORATORY ☐ ON-SITE

CUSTOMER : ENVIRPRO CO., LTD.
168/28 NAKNIWAS RD., LADPRAO,
BANGKOK 10230 THAILAND

DATE OF RECEIVED : 07 August 2025 DATE OF ISSUED : 13 August 2025

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

Calibrated By : Nattawadee Baengpech
Calibration Engineer

Approved By : Mongkol Yotsoontorn
Authorized Signatory
13 August 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. Q25091425

@clccalibration

Envirpro Co., Ltd.

CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
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ANAB
ANSI National Accreditation Board
ACCREDITED
ISO/IEC 17025
CALIBRATION AND DIMENSIONAL MEASUREMENT
ACDM-2814

REPORT OF CALIBRATION

FOR

NOMENCLATURE	:	**STANDARD WEIGHT**
MANUFACTURER	:	**LS**
MODEL / TYPE	:	**10 g**
SERIAL NO.	:	**S10G858-20[SV-TL.113/2563]**
DATE OF CALIBRATION	:	**09 August 2025**

ENVIRONMENT CONDITIONS :

Temperature : **(23 ± 2) °C** **Relative Humidity :** **(50 ± 10) %**

PROCEDURE USED :

This instrument was calibrated under procedure No. **CLC-CPMM-01** based on **OIML R 111-1** as calibration guidelines.

The calibration was performed by Weight Set and Electronic Balance which maintained by the Calibration Laboratory Co., Ltd.

REFERENCE STANDARD USED :

Weight Set, Hafner Gewichte GmbH Class F1 S/N. 1751118.

TRACEABILITY :

The measurements are traceable to International System of Units (SI) , through National Institute of Metrology (Thailand).

Certificate No. MM-0209-24, Due Date 25 November 2026.

UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor complies with the table 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)"

Enviro Co., Ltd.

@clccalibration

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 standard weight.

CALIBRATION DATA

Nominal Value	Mark	Conventional mass	Uncertainty ± (mg)	Coverage factor *k*
10 g	-	10 g - 0.01 mg	0.10	2,00

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 015 Page 51 of 68

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

End of Certificate

Envipro Co., Ltd.

CALIBRATION LABORATORY CO., LTD.
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Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com

CLC Accredited ISO/IEC 17025

ANAB ACCREDITED ISO/IEC 17025 CALIBRATION AND DIMENSIONAL MEASUREMENT ACDM-2814

CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE	:	STANDARD WEIGHT
MANUFACTURER	:	LS
MODEL / TYPE	:	200 g
SERIAL NO.	:	N/A[SV-TL.111/2562]
CLID. NO.	:	262200933
JOB CONTROL NO.	:	250807091423
CALIBRATION SERVICE	:	☑ IN-LABORATORY ☐ ON-SITE

CUSTOMER : ENVIRPRO CO., LTD.
168/28 NAKNIWAS RD., LADPRAO,
BANGKOK 10230 THAILAND

DATE OF RECEIVED : 07 August 2025 DATE OF ISSUED : 13 August 2025

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

Calibrated By : Nattawadee Baengpech
Calibration Engineer

Approved By : Mongkol Yotsoontorn
Authorized Signatory
13 August 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. Q25091423

F3-011-05/12-23

@clccalibration

Envirpro Co., Ltd.

CALIBRATION LABORATORY CO., LTD.
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CLC Accredited ISO/IEC 17025

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ANAB ACCREDITED ISO/IEC 17025 CALIBRATION AND DIMENSIONAL MEASUREMENT ACDM-2814

REPORT OF CALIBRATION

FOR

NOMENCLATURE	:	**STANDARD WEIGHT**
MANUFACTURER	:	**LS**
MODEL / TYPE	:	**200 g**
SERIAL NO.	:	**N/A[SV-TL.111/2562]**
DATE OF CALIBRATION	:	**09 August 2025**

ENVIRONMENT CONDITIONS :

Temperature : (23 ± 2) °C **Relative Humidity :** (50 ± 10) %

PROCEDURE USED :

This instrument was calibrated under procedure No. **CLC-CPMM-01** based on **OIML R 111-1** as calibration guidelines.

The calibration was performed by Weight Set and Electronic Balance which maintained by the Calibration Laboratory Co., Ltd.

REFERENCE STANDARD USED :

Weight Set, Hafner Gewichte GmbH Class F1 S/N. 1751118.

TRACEABILITY :

The measurements are traceable to International System of Units (SI) , through National Institute of Metrology (Thailand).

Certificate No. MM-0209-24, Due Date 25 November 2026.

UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor complies with the table 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)"

@clccalibration

Enviro Co., Ltd.

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 standard weight.

CALIBRATION DATA

Nominal Value	Mark	Conventional mass	Uncertainty ± (mg)	Coverage factor *k*
200 g	-	200 g - 0.1 mg	0.5	2,00

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 015 Page 51 of 68

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

End of Certificate

Envipro Co., Ltd.

Certificate of Calibration

NSC-TISI-TIS 17025
Calibration 0087

Equipment:	Liquid Bath	Certificate No.:	C13250243
Manufacturer:	Memmert	Issued Date:	04 July 2025
Model:	WNB 22	Job No.:	WO-00076036
Serial No.:	L514.0438	Page:	1 of 4
ID No.:	SV-TL.041/2557		
Forced Circulation:	None		
Condition of the item:	Normal		

Customer: ENVIRPRO CO.,LTD.
168/28 Naknivas Rd.,
Ladprao, Bangkok 10230

Environment Condition:

Temperature:	27 °C	±	0.5 °C
Relative Humidity:	51 %	±	5.7 %
Voltage:	227 VAC	±	1.7 VAC

Calibration Place: ENVIRPRO CO.,LTD. (Analysis Laboratory 1)
168/28 Naknivas Rd.,
Ladprao, Bangkok 10230

Calibration By: Mr. Sittiphong Lekfu

Calibration Date: 30 June 2025

The Method Used: In house method, CAL-WI-17, base on ASTM E715-80

Traceability: This certificate is traceable to the SI Units maintained by National Institute of Metrology (NIMT), Thailand through DKSH Technology Limited.
Certificate No. C10250013

(Mr.Sittiphong Lekfu)
Person in charge

(Mr. Chaiwat Srisanguan)
Authorized signatory

This certificate is issued the units of measurement according to the International System of Units (SI). It provides traceability of measurement to international or national standard or other recognized national standard laboratories.

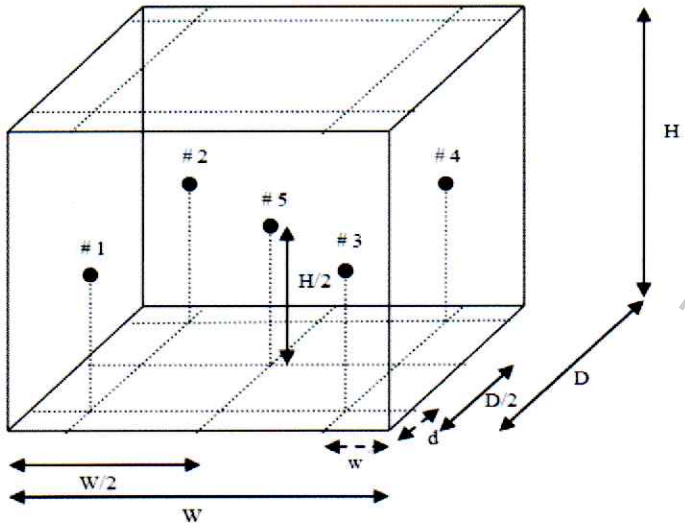
The measurement uncertainty stated is the expanded uncertainty which is obtained from the standard uncertainty multiplied by the coverage factor (k=2) to provide a level of confidence of approximately 95%. It is determined in accordance with Evaluation of measurement data - Guide to the expression of uncertainty in measurement (JCGM 100).

These results may be affected by deviations from specified conditions. The results relate only to the items tested, calibrated or sampled. The report shall not be reproduced except in full without approval of DKSH Technology Limited.

บริษัท ดีเคเอสเอช เทคโนโลยี จำกัด
DKSH Technology Limited
2533 ถนนสุขุมวิท แขวงบางจาก เขตพระโขนง กรุงเทพมหานคร 10260
2533 Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Phone: +66 2639 7000 Email: info.calibration@dksh.com Website: www.dksh.com/scientific-thailand

Delivering Growth – in Asia and Beyond.

Envipro Co., Ltd.



Standard Installation Locations

Midway between the diffuser plate and the water surface

Inside bath:	W =	35	(cm)	D =	32	(cm)	H =	23	(cm) Volume = 26 (Liters)
Standard Locations #1:				w =	5	(cm)	d =	5	(cm)
Standard Locations #2:				w =	5	(cm)	d =	5	(cm)
Standard Locations #3:				w =	5	(cm)	d =	5	(cm)
Standard Locations #4:				w =	5	(cm)	d =	5	(cm)

Standard Locations #5: Center of any probes. (#1 - #4)

Position of Std	#1	#2	#3	#4	#5
Channel of Logger	301	302	303	304	305

Definitions

Indicating Temperature: The average reading of indicating device which forms the integral part of the bath.

Measured Temperature: The average reading of standards at any positions or location.

Measured Uniformity: The maximum difference of measured temperatures between of any probes and the measured temperature at the reference location which are observed at same time or at close observation time as possible to determine the temperature pattern or homogeneity with the bath at steady-state. The reference probe is preferably located in the geometric center of the bath.

Measured Stability: The one-half of greatest maximum difference of measured temperatures at any one probe.

Overall Variation: The difference of maximum and minimum measured temperatures throughout observation time.

Envirpro Co., Ltd.

Calibration Results:

Without adjustment

Measurement Temperature at Spread Locations, Indicating of Unit Under Calibration: 85.0 °C

Locations	Measured Temperature (°C)	Correction of UUC. (°C)	Uncertainty (± °C)
#1	84.68	-0.32	0.22
#2	84.41	-0.59	0.25
#3	84.81	-0.19	0.22
#4	84.93	-0.07	0.23
#5	84.79	-0.21	0.26

Temperature Distribution

Desired (°C)	Setting (°C)	Indicating (°C)	Measured Temperature at Spread Locations (°C)					Uncertainty (± °C)*
			#1	#2	#3	#4	#5	
85.0	85.0	85.0	84.68	84.41	84.81	84.93	84.79	0.26

Bath Characterization

Indicating (°C)	Measured Uniformity (°C)	Measured Stability (± °C)	Overall Variation (°C)
85.0	0.48	0.09	0.66

Note: * Maximum uncertainty of the each position

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DKSH Technology Limited
2533 ถนนสุขุมวิท แขวงบางจาก เขตพระโขนง กรุงเทพมหานคร 10260
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Phone: +66 2639 7000 Email: info.calibration@dksh.com Website: www.dksh.com/scientific-thailand

Without adjustment (Cont.)

Measurement Temperature at Spread Locations, Indicating of Unit Under Calibration: 101.2 °C

Locations	Measured Temperature (°C)	Correction of UUC. (°C)	Uncertainty (± °C)
#1	100.21	-0.99	0.30
#2	99.65	-1.55	0.29
#3	100.02	-1.18	0.29
#4	100.60	-0.60	0.30
#5	100.30	-0.90	0.35

Temperature Distribution

Desired (°C)	Setting (°C)	Indicating (°C)	Measured Temperature at Spread Locations (°C)					Uncertainty (± °C)*
			#1	#2	#3	#4	#5	
100.0	CCC	101.2	100.21	99.65	100.02	100.60	100.30	0.35

Bath Characterization

Indicating (°C)	Measured Uniformity (°C)	Measured Stability (± °C)	Overall Variation (°C)
101.2	0.79	0.11	1.10

Note: * Maximum uncertainty of the each position

The End of Certificate

Enviropro Co., Ltd.

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DKSH Technology Limited
2533 ถนนสุขุมวิท แขวงบางจาก เขตพระโขนง กรุงเทพมหานคร 10260
2533 Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Phone: +66 2639 7000 Email: info.calibration@dksh.com Website: www.dksh.com/scientific-thailand

Certificate No. : 25-123586

Sample Code : 25-53958-003

CERTIFICATE OF CALIBRATION

Customer : บริษัท เอ็นไวร์โปร จำกัด
เลขที่ 168/28 ถนนนาคนิวาส แขวงลาดพร้าว เขตลาดพร้าว
กรุงเทพมหานคร 10230

Location of Calibration : บริษัท เอ็นไวร์โปร จำกัด
(Balance Room)

Equipment : ELECTRONIC BALANCE

Manufacturer : AND

Model : GF-3002A

Serial No. : 12102126

ID No. : SV-TL.109/2562

Date of Receipt : 02 July 2025

Date of Calibration : 02 July 2025

Calibrated by Mr. Nawa Sisuwan
Scientist

Approved by (Mr. Somchai Neampunt)
Signed for Director

Issue date 03 July 2025

The uncertainties are for a confidence probability of approximately 95%.

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

Envipro Co., Ltd.

Certificate No. : 25-123586

Sample Code : 25-53958-003

REPORT OF CALIBRATION

Equipment :	ELECTRONIC BALANCE
Manufacturer :	AND
Model :	GF-3002A
Capacity :	Max 3200 g
Resolution :	0.01 g
Serial No. :	12102126
ID No. :	SV-TL.109/2562

Result of Calibration

1.Test weight and repeatability of reading

Repeatability is a measure of the ability of a balance to supply the same result in repetitive weighings with one and the same load under the same measurement condition. The measurement of the repeatability must include both the balance specifications and the ambient (vibration, fluctuating air current/temperature/humidity,etc.) Operator handling of the balance is also included in the standard deviation.

Unit : g Range : 3200 ☑ Before adjustment ☑ After adjustment

	Nominal value	1500	3000	1500	3000
☐ No adjustment	Standard weight	1500.0000	3000.0020	1500.0000	3000.0020
☑ Adjustment	Average reading of indicator	1499.96	2999.92	1500.00	3000.00
	Standard deviation	0.005	0.005	0.005	0.005

Unit : - Range : - ☐ Before adjustment ☐ After adjustment

	Nominal value	-	-	-	-
☐ No adjustment	Standard weight	-	-	-	-
☐ Adjustment	Average reading of indicator	-	-	-	-
	Standard deviation	-	-	-	-

Envipro Co., Ltd.

Certificate No. : 25-123586

Sample Code : 25-53958-003

REPORT OF CALIBRATION

Result of Calibration

2. Sensitivity or value of a scale division

Change in the output variable of a measuring instrument divided by the associated change in the input variable.

Unit : g

Range : 3200 Range : -

Test Point	Sensitivity, S	Test Point	Sensitivity, S
0	0.00	-	-
1500	1.00	-	-
3000	1.00	-	-

3. Departure of indication from nominal value, Linearity

Unit : g

Nominal Value	Standard Value	Average Reading of Indicator	Correction Value	Expanded Uncertainty	Coverage Factor (k)
Unload	0.000000	0.00	0.00	0.0094	2.01
300	299.999757	300.00	0.00	0.0094	2.01
600	599.999899	600.00	0.00	0.0095	2.01
900	899.999887	900.00	0.00	0.0096	2.01
1200	1199.999858	1200.00	0.00	0.0097	2.01
1500	1500.0000	1500.00	0.00	0.0099	2.01
1800	1799.999757	1800.00	0.00	0.011	2.01
2100	2100.001899	2100.00	0.00	0.011	2.01
2400	2400.001887	2400.00	0.00	0.011	2.01
2700	2700.001858	2700.00	0.00	0.011	2.01
3000	3000.0020	3000.00	0.00	0.012	2.01

The result expanded uncertainty of measurement U is stated as the standard uncertainty of measurement multiplied by the coverage factor k, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003.

Enviro Co., Ltd.

Certificate No. : 25-123586

Sample Code : 25-53958-003

REPORT OF CALIBRATION

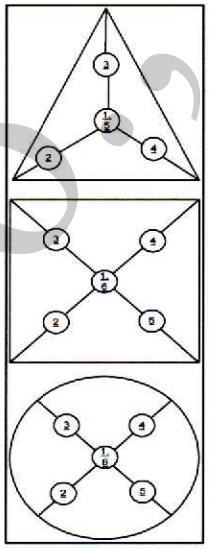
Result of Calibration :

4. Eccentric or off-centre loading

Deviation of the measurement value through off - center (eccentric) loading. The corner load increases with the weight of the load and its removal from the center of the pan support.

☐ Triangular
Weighing pan ☑ Rectangular **Test weight :** 1000
☐ Circle Unit : g

Range	3200	-
Position	Reading of indicator	Reading of indicator
1	1000.00	-
2	999.97	-
3	999.99	-
4	1000.03	-
5	1000.01	-
6	1000.00	-
Maximum difference	0.03	-



Condition of Calibration

1. Calibration Method : WI-CL-004 base on UKAS LAB 14: 2019
2. This result of calibration was found accurate as shown on date and place of calibration only.
3. Condition of Calibration item: Normal
4. This certification is traceable to the International System of Unit maintained at : -

- Through the reference standard laboratory of Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (Instrument number 1 to 3).

5. Reference standard instrument :

Instrument		Class	ID No.	Certificate No.	Due Date
1)	STANDARD WEIGHT 1 mg to 1 kg	F1	LB-WE-49	24-128043	04 October 2025
2)	STANDARD WEIGHT 10 mg	E2	LB-WE-87	25-020573	12 February 2026
3)	STANDARD WEIGHT 2 kg to 5 kg	F1	LB-WE-82	25-001922	05 January 2026

6.

Ambient conditions	Min	Max
Temperature (°C)	22.5	23.7
Relative Humidity (%Rh)	53.0	67.8
Air pressure (hPa)	1006.8	1007.5

- End of Report -

Enviro Co., Ltd.

Certificate of Calibration

NSC-TISI-TIS 17025
Calibration 0087

Equipment:	Electronic Balance	Certificate No.:	C01250623
Model:	HR-202i	Issued Date:	26 February 2025
Serial No. (or ID.):	15204549 (SV-TL.121/2565)	Job No.:	WO-00061940
Manufacturer:	AND	Page:	1 of 5
Condition:	In condition		

Customer: ENVIRPRO CO.,LTD.
168/28 Naknivas Rd., Ladprao,
Bangkok 10230

Environment Condition:

Temperature	25 °C	±	0.4 °C
Humidity	38 %RH	±	2.5 %RH

Calibration Place: ENVIRPRO CO.,LTD. (Balance Room)
168/28 Naknivas Rd., Ladprao,
Bangkok 10230

Calibration By: Mr. Adisai Maknoi

Calibration Date: 24 February 2025

The Method used: In-house method, CAL-WI-47, based on UKAS Lab 14

Traceability: This certificate is traceable to the SI Units maintained by National Institute of Metrology (NIMT), Thailand through DKSH Technology Co., Ltd. Certificate No. C02241786

(Mr. Adisai Maknoi)
Person in charge

(Mr. Pramote Ramrong)
Authorized signatory

This certificate is issued the units of measurement according to the International System of Units (SI). It provides traceability of measurement to international or national standard or other recognized national standard laboratories.

The measurement uncertainty stated is the expanded uncertainty which is obtained from the standard uncertainty multiplied by the coverage factor (k=2) to provide a level of confidence of approximately 95%. It is determined in accordance with the Guide to Expression of Uncertainty in Measurement (GUM).

These results may be affected by deviations from specified conditions. The results relate only to the items tested, calibrated or sampled. The report shall not be reproduced except in full without approval of DKSH Technology Limited.

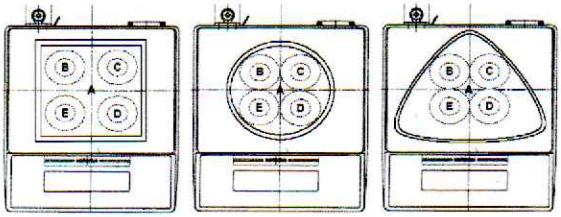
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2533 Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Phone: +66 2639 7000 Email: info.calibration@dksh.com Website: www.dksh.com/scientific-thailand

Envirpro Co., Ltd.

Calibration Results:

Before Adjustment

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



Nominal Test Value 100 (g)

Reference Points (g)				
A	B	C	D	E
-	-0.0001	-0.0003	0.0002	0.0001

Repeatability: Determination of the standard deviation of weighing balance., Readability 0.00001 (g)

Nominal test value (g)	Standard Deviation
5	0.000007
50	0.000008

Error of indication from nominal or conventional mass value., Readability 0.00001 (g)

Nominal Value (g)	Conventional Mass (g)	Displayed Value (g)	Error of indication (g)	Uncertainty (± g)	k
0.001	0.001001	0.00099	-0.00001	0.000013	2.08
0.003	0.003004	0.00297	-0.00003	0.000014	2.06
0.005	0.004999	0.00499	-0.00001	0.000013	2.08
0.01	0.009998	0.00998	-0.00002	0.000013	2.07
0.05	0.050003	0.04999	-0.00001	0.000014	2.06
0.1	0.100000	0.10001	0.00001	0.000015	2.05
0.5	0.500005	0.50001	0.00000	0.000017	2.02
1	1.000014	1.00002	0.00001	0.000020	2.01
10	10.000013	10.00007	0.00006	0.000035	2.00
20	20.000007	20.00011	0.00010	0.000048	2.00
30	30.000020	30.00011	0.00009	0.000080	2.00
40	40.000009	40.00012	0.00011	0.000090	2.00
50	50.000003	50.00010	0.00010	0.000080	2.00

Enviro Co., Ltd.

Before Adjustment (Cont.)

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

Nominal test value (g)	Standard Deviation
100	0.00005
200	0.00008

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

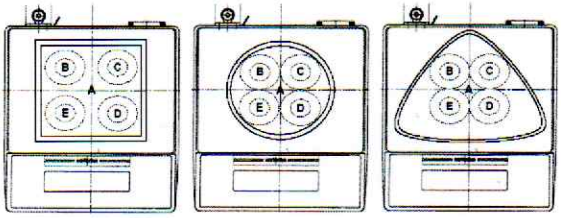
Nominal Value (g)	Conventional Mass (g)	Displayed Value (g)	Error of indication (g)	Uncertainty (± g)	k
60	60.00002	60.0002	0.0002	0.00017	2.04
70	70.00001	70.0002	0.0002	0.00018	2.03
80	80.00002	80.0001	0.0001	0.00020	2.02
85	85.00003	85.0002	0.0002	0.00021	2.01
90	90.00001	90.0002	0.0002	0.00021	2.01
100	99.99996	100.0003	0.0003	0.00019	2.02
110	109.99997	110.0002	0.0002	0.00021	2.01
120	119.99997	120.0002	0.0002	0.00022	2.01
130	129.99998	130.0004	0.0004	0.00025	2.01
140	139.99997	140.0005	0.0005	0.00026	2.01
150	149.99996	150.0007	0.0007	0.00025	2.01
160	159.99998	160.0007	0.0007	0.00027	2.00
170	169.99997	170.0009	0.0009	0.00028	2.00
180	179.99998	180.0010	0.0010	0.00031	2.00
190	189.99998	190.0009	0.0009	0.00032	2.00
200	199.99989	200.0007	0.0008	0.00030	2.00

Enviro Co., Ltd.

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2533 Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Phone: +66 2639 7000 Email: info.calibration@dksh.com Website: www.dksh.com/scientific-thailand

After Adjustment

Eccentric Error: Weight to be1/3 or 1/2 of Maximum capacity, taken from the center of the pan as a zero reference.



Nominal Test Value 100 (g)

Reference Points (g)				
A	B	C	D	E
-	-0.0001	-0.0003	0.0002	0.0001

Repeatability: Determination of the standard deviation of weighing balance., Readability 0.00001 (g)

Nominal test value (g)	Standard Deviation
5	0.000005
50	0.000008

Error of indication from nominal or conventional mass value., Readability 0.00001 (g)

Nominal Value (g)	Conventional Mass (g)	Displayed Value (g)	Error of indication (g)	Uncertainty (± g)	k
0.001	0.001001	0.00100	0.00000	0.000013	2.09
0.003	0.003004	0.00300	0.00000	0.000014	2.06
0.005	0.004999	0.00499	-0.00001	0.000013	2.09
0.01	0.009998	0.01000	0.00000	0.000014	2.08
0.05	0.050003	0.05000	0.00000	0.000014	2.06
0.1	0.100000	0.10000	0.00000	0.000015	2.05
0.5	0.500005	0.50001	0.00000	0.000018	2.02
1	1.000014	1.00000	-0.00001	0.000020	2.01
10	10.000013	10.00002	0.00001	0.000035	2.00
20	20.000007	20.00003	0.00002	0.000048	2.00
30	30.000020	30.00003	0.00001	0.000080	2.00
40	40.000009	40.00006	0.00005	0.000090	2.00
50	50.000003	50.00005	0.00005	0.000080	2.00

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After Adjustment (Cont.)

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

Nominal test value (g)	Standard Deviation
100	0.00004
200	0.00005

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

Nominal Value (g)	Conventional Mass (g)	Displayed Value (g)	Error of indication (g)	Uncertainty (± g)	k
60	60.00002	60.0000	0.0000	0.00014	2.01
70	70.00001	70.0000	0.0000	0.00015	2.00
80	80.00002	80.0000	0.0000	0.00018	2.00
85	85.00003	85.0000	0.0000	0.00020	2.00
90	90.00001	90.0000	0.0000	0.00019	2.00
100	99.99996	100.0000	0.0000	0.00017	2.00
110	109.99997	110.0000	0.0000	0.00019	2.00
120	119.99997	120.0000	0.0000	0.00021	2.00
130	129.99998	130.0000	0.0000	0.00023	2.00
140	139.99997	140.0000	0.0000	0.00024	2.00
150	149.99996	150.0000	0.0000	0.00023	2.00
160	159.99998	160.0000	0.0000	0.00027	2.00
170	169.99997	170.0000	0.0000	0.00027	2.00
180	179.99998	180.0000	0.0000	0.00030	2.00
190	189.99998	190.0000	0.0000	0.00031	2.00
200	199.99989	200.0000	0.0001	0.00029	2.00

The End of Certificate

Enviro Co., Ltd.

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Certificate of Calibration

NSC-TISI-TIS 17025
Calibration 0087

Equipment:	Incubator	Certificate No.:	C31251480
Manufacturer:	Accuplus	Issued Date:	03 July 2025
Model:	i250DS	Job No.:	WO-00076036
Serial No.:	I250402-0510-0315	Ventilation Valve:	None
ID No.:	SV-TL.030/2553	Page:	1 of 4
Shelves(pc.):	3		
Condition of the item:	Normal		

Customer: ENVIRPRO CO.,LTD.
168/28 Naknivas Rd., Ladprao,
Bangkok 10230

Environment Condition:

Temperature:	23 °C	±	1.6	°C
Relative Humidity:	55 %	±	5.3	%
Voltage:	227 VAC	±	1.6	VAC

Calibration Place: ENVIRPRO CO.,LTD. (Analysis Laboratory 2)
168/28 Naknivas Rd., Ladprao,
Bangkok 10230

Calibration By: Mr. Apiwit Chaosap

Calibration Date: 30 June 2025

The Method Used: In house method, CAL-WI-16, base on TLAS-G20

Traceability: This certificate is traceable to the SI Units maintained by National Institute of Metrology (NIMT), Thailand through DKSH Technology Limited.
Certificate No. C10250001

(Mr. Apiwit Chaosap)
Person in charge

(Mr. Udon Srichana)
Authorized signatory

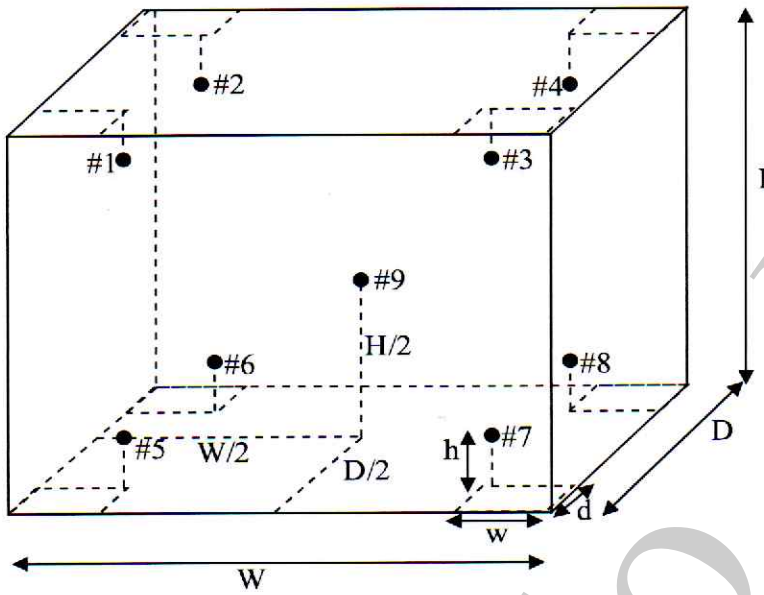
This certificate is issued the units of measurement according to the International System of Units (SI). It provides traceability of measurement to international or national standard or other recognized national standard laboratories.

The measurement uncertainty stated is the expanded uncertainty which is obtained from the standard uncertainty multiplied by the coverage factor (k=2) to provide a level of confidence of approximately 95%. It is determined in accordance with Evaluation of measurement data - Guide to the expression of uncertainty in measurement (JCGM 100).

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Envirpro Co., Ltd.



Standard Installation Locations

Volume (Calibration Zone)= 110 (Liters)

Inside chamber:	W = 50 (cm)	D = 50 (cm)	H = 105 (cm)
Standard Locations (#1, #2, #3, #4):	w = 5 (cm)	d = 5 (cm)	h = 25 (cm)
Standard Locations (#5, #6, #7, #8):	w = 5 (cm)	d = 5 (cm)	h = 11 (cm)

#9: Geometric center of the chamber

Position of Std	#1	#2	#3	#4	#5	#6	#7	#8	#9
Channel of Logger	101	102	103	104	105	106	107	108	109

Definitions

Indicating Temperature: The average reading of indicating device which forms the integral part of the enclosure.

Measured Temperature: The average reading of standards at any positions or location.

Measured Uniformity: The maximum difference of measured temperatures between of any probes and the measured temperature at the reference location which are observed at same time or at close observation time as possible to determine the temperature pattern or homogeneity with the chamber at steady-state. The reference probe is preferably located in the geometric center of the chamber.

Measured Stability: The one-half of greatest maximum difference of measured temperatures at any one probe.

Overall Variation: The difference of maximum and minimum measured temperatures throughout observation time.

Enviro Co.; Ltd.

Calibration Results:

Pre-Calibration

Setting:	Indicating:	#1:	#2:	#3:	#4:	#5:	#6:	#7:	#8:	#9:
4.0	4.0	4.83	4.62	4.96	4.75	4.69	4.91	4.42	4.60	4.81

Without adjustment

Measurement Temperature at Spread Locations, Indicating of Unit Under Calibration: 3.3 °C

Locations	Measured Temperature (°C)	Correction of UUC. (°C)	Uncertainty (± °C)
#1	4.13	0.83	0.49
#2	3.92	0.62	0.63
#3	4.26	0.96	0.49
#4	4.06	0.76	0.57
#5	3.99	0.69	0.44
#6	4.22	0.92	0.41
#7	3.72	0.42	0.44
#8	3.90	0.60	0.44
#9	4.12	0.82	0.52

Temperature Distribution

Desired (°C)	Setting (°C)	Indicating (°C)	Measured Temperature at Spread Locations (°C)									Uncertainty (± °C)*
			#1	#2	#3	#4	#5	#6	#7	#8	#9	
4.0	3.3	3.3	4.13	3.92	4.26	4.06	3.99	4.22	3.72	3.90	4.12	0.63

Chamber Characterization

Indicating (°C)	Measured Uniformity (°C)	Measured Stability (± °C)	Overall Variation (°C)
3.3	0.51	0.48	1.19

Note: * Maximum uncertainty of the each position

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2533 Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
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Without adjustment (Cont.)

Measurement Temperature at Spread Locations, Indicating of Unit Under Calibration: 20.0 °C

Locations	Measured Temperature (°C)	Correction of UUC. (°C)	Uncertainty (± °C)
#1	20.09	0.09	0.55
#2	19.98	-0.02	0.72
#3	20.03	0.03	0.54
#4	19.94	-0.06	0.64
#5	20.08	0.08	0.50
#6	20.13	0.13	0.47
#7	19.79	-0.21	0.51
#8	19.94	-0.06	0.51
#9	20.05	0.05	0.60

Temperature Distribution

Desired (°C)	Setting (°C)	Indicating (°C)	Measured Temperature at Spread Locations (°C)									Uncertainty (± °C)*
			#1	#2	#3	#4	#5	#6	#7	#8	#9	
20.0	20.0	20.0	20.09	19.98	20.03	19.94	20.08	20.13	19.79	19.94	20.05	0.72

Chamber Characterization

Indicating (°C)	Measured Uniformity (°C)	Measured Stability (± °C)	Overall Variation (°C)
20.0	0.36	0.56	1.12

Note: * Maximum uncertainty of the each position

The End of Certificate

Enviro Co., Ltd.

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DKSH

NSC-TISI-TIS 17025
Calibration 0087

Certificate of Calibration

Equipment:	Incubator	Certificate No.:	C31251481
Manufacturer:	Accuplus	Issued Date:	03 July 2025
Model:	i250	Job No.:	WO-00076036
Serial No.:	0408-0215-0016	Ventilation Valve:	None
ID No.:	SV-TL.042/2558	Page:	1 of 3
Shelves(pc.):	4		
Condition of the item:	Normal		

Customer: ENVIRPRO CO.,LTD.
168/28 Naknivas Rd., Ladprao,
Bangkok 10230

Environment Condition:

Temperature:	23 °C	±	1.7	°C
Relative Humidity:	55 %	±	5.3	%
Voltage:	227 VAC	±	1.6	VAC

Calibration Place: ENVIRPRO CO.,LTD. (Analysis Laboratory 2)
168/28 Naknivas Rd., Ladprao,
Bangkok 10230

Calibration By: Mr. Apiwit Chaosap

Calibration Date: 30 June 2025

The Method Used: In house method, CAL-WI-16, base on TLAS-G20

Traceability: This certificate is traceable to the SI Units maintained by National Institute of Metrology (NIMT), Thailand through DKSH Technology Limited.
Certificate No. C10250001

(Mr. Apiwit Chaosap)
Person in charge

(Mr. Udon Srichana)
Authorized signatory

This certificate is issued the units of measurement according to the International System of Units (SI). It provides traceability of measurement to international or national standard or other recognized national standard laboratories.

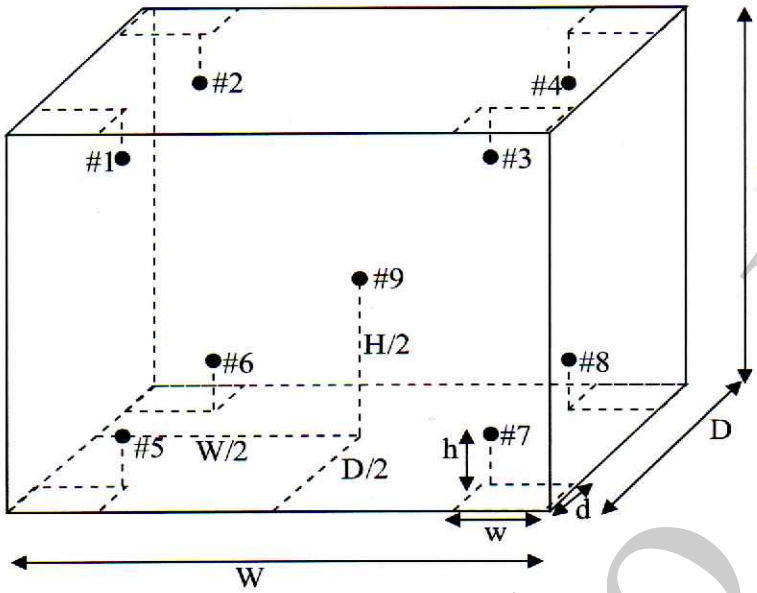
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Envirpro Co., Ltd.



Standard Installation Locations

Volume (Calibration Zone)= 164 (Liters)

Inside chamber:	W = 50 (cm)	D = 48 (cm)	H = 149 (cm)
Standard Locations (#1, #2, #3, #4):	w = 5 (cm)	d = 5 (cm)	h = 26 (cm)
Standard Locations (#5, #6, #7, #8):	w = 5 (cm)	d = 5 (cm)	h = 15 (cm)

#9: Geometric center of the chamber

Position of Std	#1	#2	#3	#4	#5	#6	#7	#8	#9
Channel of Logger	201	202	203	204	205	206	207	208	209

Definitions

Indicating Temperature: The average reading of indicating device which forms the integral part of the enclosure.

Measured Temperature: The average reading of standards at any positions or location.

Measured Uniformity: The maximum difference of measured temperatures between of any probes and the measured temperature at the reference location which are observed at same time or at close observation time as possible to determine the temperature pattern or homogeneity with the chamber at steady-state. The reference probe is preferably located in the geometric center of the chamber.

Measured Stability: The one-half of greatest maximum difference of measured temperatures at any one probe.

Overall Variation: The difference of maximum and minimum measured temperatures throughout observation time.

Enviro Co.; Ltd.

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Phone: +66 2639 7000 Email: info.calibration@dksh.com Website: www.dksh.com/scientific-thailand

Calibration Results:

Without adjustment

Measurement Temperature at Spread Locations, Indicating of Unit Under Calibration: 20.0 °C

Locations	Measured Temperature (°C)	Correction of UUC. (°C)	Uncertainty (± °C)
#1	20.29	0.29	0.46
#2	20.18	0.18	0.47
#3	19.98	-0.02	0.77
#4	20.22	0.22	0.57
#5	20.12	0.12	0.55
#6	20.13	0.13	0.54
#7	20.07	0.07	0.67
#8	19.92	-0.08	0.62
#9	20.07	0.07	0.59

Temperature Distribution

Desired (°C)	Setting (°C)	Indicating (°C)	Measured Temperature at Spread Locations (°C)									Uncertainty (± °C)*
			#1	#2	#3	#4	#5	#6	#7	#8	#9	
20.0	20.0	20.0	20.29	20.18	19.98	20.22	20.12	20.13	20.07	19.92	20.07	0.77

Chamber Characterization

Indicating (°C)	Measured Uniformity (°C)	Measured Stability (± °C)	Overall Variation (°C)
20.0	0.48	0.64	1.37

Note: * Maximum uncertainty of the each position

The End of Certificate

Enviro Co., Ltd.

บริษัท ดีเคเอสเอช เทคโนโลยี จำกัด
DKSH Technology Limited
2533 ถนนสุขุมวิท แขวงบางจาก เขตพระโขนง กรุงเทพมหานคร 10260
2533 Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Phone: +66 2639 7000 Email: info.calibration@dksh.com Website: www.dksh.com/scientific-thailand

NSC-TISI-TIS 17025
Calibration 0087

Certificate of Calibration

Equipment:	Oven	Certificate No.:	C31251483
Manufacturer:	Memmrt	Issued Date:	03 July 2025
Model:	UM 400	Job No.:	WO-00076036
Serial No.:	b402.1449	Ventilation Valve:	Closed
ID No.:	SV-TL.004/2546	Page:	1 of 3
Shelves(pc.):	1		
Condition of the item:	Normal		

Customer: ENVIRPRO CO.,LTD.
168/28 Naknivas Rd.,
Ladprao, Bangkok 10230

Environment Condition:

Temperature:	27 °C	±	1.5	°C
Relative Humidity:	51 %	±	5.7	%
Voltage:	227 VAC	±	1.7	VAC

Calibration Place: ENVIRPRO CO.,LTD. (Analysis Laboratory 1)
168/28 Naknivas Rd.,
Ladprao, Bangkok 10230

Calibration By: Mr. Sittiphong Lekfu

Calibration Date: 30 June 2025

The Method Used: In house method, CAL-WI-16, base on TLAS-G20

Traceability: This certificate is traceable to the SI Units maintained by National Institute of Metrology (NIMT), Thailand through DKSH Technology Limited.
Certificate No. C10250013

(Mr.Sittiphong Lekfu)
Person in charge

(Mr. Chaiwat Srisanguan)
Authorized signatory

This certificate is issued the units of measurement according to the International System of Units (SI). It provides traceability of measurement to international or national standard or other recognized national standard laboratories.

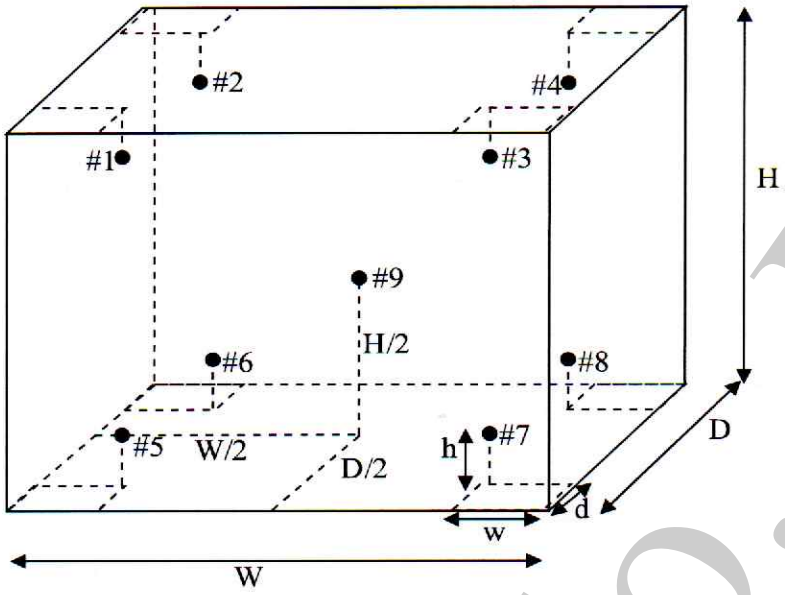
The measurement uncertainty stated is the expanded uncertainty which is obtained from the standard uncertainty multiplied by the coverage factor (k=2) to provide a level of confidence of approximately 95%. It is determined in accordance with Evaluation of measurement data - Guide to the expression of uncertainty in measurement (JCGM 100).

These results may be affected by deviations from specified conditions. The results relate only to the items tested, calibrated or sampled. The report shall not be reproduced except in full without approval of DKSH Technology Limited.

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Delivering Growth – in Asia and Beyond.

Envirpro Co., Ltd.



Standard Installation Locations

Volume (Calibration Zone)= 21 (Liters)

Inside chamber:	W = 40 (cm)	D = 33 (cm)	H = 40 (cm)
Standard Locations (#1, #2, #3, #4):	w = 5 (cm)	d = 5 (cm)	h = 5 (cm)
Standard Locations (#5, #6, #7, #8):	w = 5 (cm)	d = 5 (cm)	h = 5 (cm)

#9: Geometric center of the chamber

Position of Std	#1	#2	#3	#4	#5	#6	#7	#8	#9
Channel of Logger	101	102	103	104	105	106	107	108	109

Definitions

Indicating Temperature: The average reading of indicating device which forms the integral part of the enclosure.

Measured Temperature: The average reading of standards at any positions or location.

Measured Uniformity: The maximum difference of measured temperatures between of any probes and the measured temperature at the reference location which are observed at same time or at close observation time as possible to determine the temperature pattern or homogeneity with the chamber at steady-state. The reference probe is preferably located in the geometric center of the chamber.

Measured Stability: The one-half of greatest maximum difference of measured temperatures at any one probe.

Overall Variation: The difference of maximum and minimum measured temperatures throughout observation time.

Enviro Co.; Ltd.

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2533 Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Phone: +66 2639 7000 Email: info.calibration@dksh.com Website: www.dksh.com/scientific-thailand

Calibration Results:

Without adjustment

Measurement Temperature at Spread Locations, Indicating of Unit Under Calibration: 140 °C

Locations	Measured Temperature (°C)	Correction of UUC. (°C)	Uncertainty (± °C)
#1	139.08	-0.92	3.0
#2	140.09	0.09	3.1
#3	140.04	0.04	3.2
#4	138.69	-1.31	3.0
#5	138.98	-1.02	4.9
#6	139.99	-0.01	4.6
#7	139.83	-0.17	4.7
#8	139.72	-0.28	4.7
#9	141.08	1.08	4.5

Temperature Distribution

Desired (°C)	Setting (°C)	Indicating (°C)	Measured Temperature at Spread Locations (°C)									Uncertainty (± °C)*
			#1	#2	#3	#4	#5	#6	#7	#8	#9	
140.0	140.0	140.0	139.08	140.09	140.04	138.69	138.98	139.99	139.83	139.72	141.08	4.9

Chamber Characterization

Indicating (°C)	Measured Uniformity (°C)	Measured Stability (± °C)	Overall Variation (°C)
140.0	4.42	4.02	9.68

Note: * Maximum uncertainty of the each position

The End of Certificate

Enviro Co., Ltd.

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DKSH

NSC-TISI-TIS 17025
Calibration 0087

Certificate of Calibration

Equipment:	Hot Air Oven	Certificate No.:	C31250504
Model:	UFE 400	Issued Date:	27 February 2025
Serial No.(or ID):	G410.0133 (SV-TL.021/2553)	Job No.:	WO-00061939
Manufacturer:	Memmert	Page:	1 of 4
Condition:	In Condition	Ventilation Valve:	Closed
Shelves(pc.):	2		

Customer: ENVIRPRO CO.,LTD.
168/28 Naknivas Rd., Ladprao,
Bangkok 10230

Environment Condition:

Temperature:	28 °C	±	2.1	°C
Humidity:	52 %RH	±	3.1	%RH
Voltage:	227 VAC	±	7.5	VAC

Calibration Place: ENVIRPRO CO.,LTD. (Analysis Laboratory 1)
168/28 Naknivas Rd., Ladprao,
Bangkok 10230

Calibration By: Mr. Phakapol Donmin

Calibration Date: 24 February 2025

The Method used: In house method, CAL-WI-16, base on TLAS-G20

Traceability: This certificate is traceable to the SI Units maintained by National Institute of Metrology (NIMT), Thailand through DKSH Technology Limited.
Certificate No. C10240016

(Mr. Phakapol Donmin)
Person in charge

(Mr. Chaiwat Srisanguan)
Authorized signatory

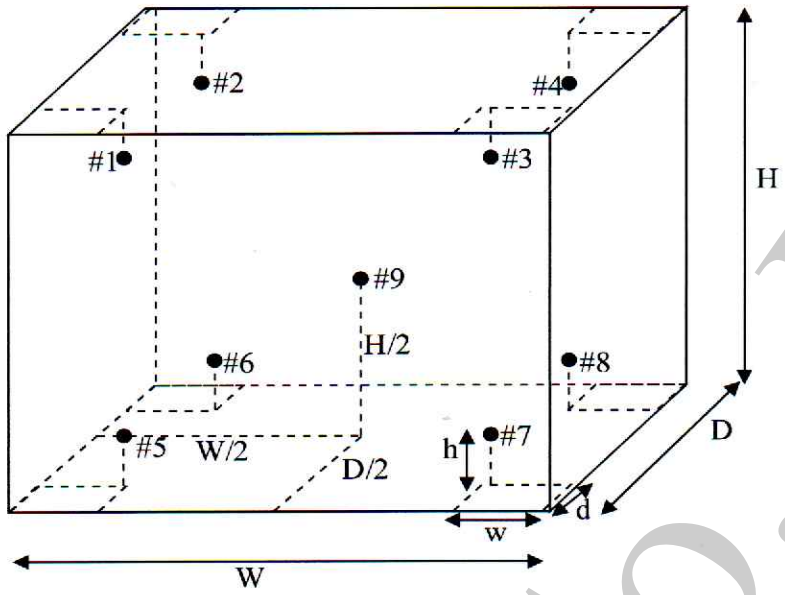
This certificate is issued the units of measurement according to the International System of Units (SI). It provides traceability of measurement to international or national standard or other recognized national standard laboratories.

The measurement uncertainty stated is the expanded uncertainty which is obtained from the standard uncertainty multiplied by the coverage factor (k=2) to provide a level of confidence of approximately 95%. It is determined in accordance with the Guide to Expression of Uncertainty in Measurement (GUM).

These results may be affected by deviations from specified conditions. The results relate only to the items tested, calibrated or sampled. The report shall not be reproduced except in full without approval of DKSH Technology Limited.

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Enviro Co., Ltd.



Standard Installation Locations

Volume (Calibration Zone)= 21 (Liters)

Inside chamber:	W = 40 (cm)	D = 33 (cm)	H = 40 (cm)
Standard Locations (#1, #2, #3, #4):	w = 5 (cm)	d = 5 (cm)	h = 5 (cm)
Standard Locations (#5, #6, #7, #8):	w = 5 (cm)	d = 5 (cm)	h = 5 (cm)

#9: Geometric center of the chamber

Position of Std	#1	#2	#3	#4	#5	#6	#7	#8	#9
Channel of Logger	201	202	203	204	205	206	207	208	209

Definitions

Indicating Temperature: The average reading of indicating device which forms the integral part of the enclosure.

Measured Temperature: The average reading of standards at any positions or location.

Measured Uniformity: The maximum difference of measured temperatures between of any probes and the measured temperature at the reference location which are observed at same time or at close observation time as possible to determine the temperature pattern or homogeneity with the chamber at steady-state. The reference probe is preferably located in the geometric center of the chamber.

Measured Stability: The one-half of greatest maximum difference of measured temperatures at any one probe.

Overall Variation: The difference of maximum and minimum measured temperatures throughout observation time.

Enviro Co.; Ltd.

Calibration Results:

Without adjustment

Measurement Temperature at Spread Locations, Indicating of Unit Under Calibration: 103.5 °C

Locations	Measured Temperature (°C)	Correction of UUC. (°C)	Uncertainty (± °C)
#1	104.45	0.95	0.39
#2	104.18	0.68	0.39
#3	103.95	0.45	0.39
#4	104.34	0.84	0.39
#5	103.91	0.41	0.39
#6	103.90	0.40	0.39
#7	104.50	1.00	0.39
#8	104.26	0.76	0.39
#9	104.04	0.54	0.39

Temperature Distribution

Desired (°C)	Setting (°C)	Indicating (°C)	Measured Temperature at Spread Locations (°C)									Uncertainty (± °C)*
			#1	#2	#3	#4	#5	#6	#7	#8	#9	
104.0	103.5	103.5	104.45	104.18	103.95	104.34	103.91	103.90	104.50	104.26	104.04	0.39

Chamber Characterization

Indicating (°C)	Measured Uniformity (°C)	Measured Stability (± °C)	Overall Variation (°C)
103.5	0.52	0.09	0.73

Note: * Maximum uncertainty of the each position

Enviro Co., Ltd.

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2533 Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
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Without adjustment (Cont.)

Measurement Temperature at Spread Locations, Indicating of Unit Under Calibration: 180.0 °C

Locations	Measured Temperature (°C)	Correction of UUC. (°C)	Uncertainty (± °C)
#1	180.80	0.80	0.42
#2	180.09	0.09	0.42
#3	179.82	-0.18	0.42
#4	180.40	0.40	0.42
#5	179.67	-0.33	0.42
#6	179.66	-0.34	0.42
#7	180.64	0.64	0.42
#8	180.42	0.42	0.42
#9	179.81	-0.19	0.42

Temperature Distribution

Desired (°C)	Setting (°C)	Indicating (°C)	Measured Temperature at Spread Locations (°C)									Uncertainty (± °C)*
			#1	#2	#3	#4	#5	#6	#7	#8	#9	
180.0	180.0	180.0	180.80	180.09	179.82	180.40	179.67	179.66	180.64	180.42	179.81	0.42

Chamber Characterization

Indicating (°C)	Measured Uniformity (°C)	Measured Stability (± °C)	Overall Variation (°C)
180.0	1.04	0.12	1.28

Note: * Maximum uncertainty of the each position

The End of Certificate

Enviropro Co., Ltd.

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DKSH Technology Limited
2533 ถนนสุขุมวิท แขวงบางจาก เขตพระโขนง กรุงเทพมหานคร 10260
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TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG, BANGKOK 10250
TEL. 0-2717-3000-24 FAX. 0-2719-9484

NSC-TISI-TIS17025
CALIBRATION 0008

Certificate of Calibration

Certificate No. : 25T385

Equipment : Digital Thermometer With Sensor
Manufacturer: -
Model : 307P
Serial No.: 900449
ID No.: SV-TL.029/2553
Condition As-Received: Used Item
Received Date: 03 March 2025
Calibration Date: 11 March 2025 to 14 March 2025
Reference: 2503-0019DN
Ambient Temperature: (25 ± 3) °C
Relative Humidity: (50 ± 20) %

This certificate may not be reproduced other than in full, except with the prior written approval of the head of Corporate Services 3: Equipment Calibration and Testing Services.

Submitted by: ENVIRPRO CO., LTD.
168/28 Nakniwas Rd., Ladprao, Bangkok 10230

Procedure used: Calibration were conducted using in-house calibration procedure CP-T01 according to comparison with Industrial Platinum Resistance Thermometer (IPRT) into liquid bath temperature controller.
The temperature scale used was based on ITS-90.

Condition of this result of calibration

1.Reference standards instruments :

Instrument	Model	Serial No.	Certificate No.	Due Date
1) Black Stack Thermometer	1560	8C454	24I598	06 Jun 2025
2) PRT Scanner Module	2562	A01303	24I598	06 Jun 2025
3) Industrial Platinum Resistance Thermometer	5627	739434	24I598	06 Jun 2025
4) Industrial PRT Probe	5627A	979442	24I598	06 Jun 2025

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

3.This Certification is traceable to the International System of Unit maintained through:-

-Technology Promotion Association (Thailand-Japan), NSC-ONSC Accredited No. Calibration 0008

Calibrated by : Theerapong Ameen
Issue Date : 18 March 2025

Approved Signatory : _____

[ ] Phalinee Prabpaipal
[ ] Chatchawan Khunpiluek
[✓] Wanlop Larpkern

Envipro Co., Ltd.

Result of Calibration:- Before Adjustment

Function: Temperature measurement for Channel T1

This equipment was connected with Thermocouple Type K ID No. 900449/T1

Dimension of probe : Diameter 3 mm., Length 50 mm. Sheath material : Stainless Steel

Immersion Depth (mm.)	Standard Temperature (°C)	UUC* Reading (°C)	Error (°C)	Uncertainty of Measurement (±°C)
150	3.9990	4.6	0.6010	0.41
150	19.9968	20.3	0.3032	0.42
150	104.0037	105.7	1.6963	0.51
150	180.0077	181.3	1.2923	0.74

Result of Calibration:- After Adjustment

Immersion Depth (mm.)	Standard Temperature (°C)	UUC* Reading (°C)	Error (°C)	Uncertainty of Measurement (±°C)
150	4.0036	3.8	-0.2036	0.41
150	20.0008	19.5	-0.5008	0.42
150	104.0053	104.9	0.8947	0.51
150	140.0041	141.3	1.2959	0.62
150	180.0043	180.6	0.5957	0.74

UUC* : Unit Under Calibration

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

-o0o-

Enviro Co., Ltd.

THAI HEART CALIBRATION CO., LTD.
112/1 Moo 5, Phraek Sa, Muang, Samut Prakan 10280
Tel. 0-2394-2162, 0-2757-8435, 0-2757-8496 Fax.: 0-2757-8507

ACCREDITED ISO/IEC 17025 CALIBRATION LABORATORY AC-2695

CERTIFICATE OF CALIBRATION

Certificate No.: C1-3007003/25 **Page** 1 **of total** 3 **pages**

Customer ENVIRPRO CO., LTD.
168/28 Nakniwas Rd., Ladprao, Bangkok 10230

Equipment	Spectrophotometer		
Manufacturer	HACH	**Model**	DR 6000
Serial No.	1893325	**ID No.**	SV-TL.110/2562
Description	-		

Environmental Conditions	Ambient Temperature:	28.5 °C
	Relative Humidity:	50 %
	Atmospheric Pressure:	-
Calibration Location	Analysis Laboratory 1	
Received Date	30 July 2025	
Calibration Date	30 July 2025	
Date of Issue	31 July 2025	
Condition of Artifacts	Used conditions but can be calibrated	

Checked by

Act as Technical Manager

( ) (Krisyosl K.) ( ) (Sakda Y.)
( ) (Patiphan K.) (/) (Onnapa P.)
( ) (Pongsak H.) ( ) (Nitiphong K.)
( ) (Kanung C.) ( ) (Nonthachai K.)
( ) (Pramong P.) ( ) (Noppol P.)

Approved by

Managing Director

(Dr. Ekachai Puttitwong)

Enviro Co., Ltd.

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

Certificate No.: C1-3007003/25 **Page** 2 **of total** 3 **pages**

Reference Method:

- The calibration method used was CP-004 based on an in-house method.
- This certificate can be traceable to the national standards, which is realized the shown measurement units according to the International System of Units (SI Units).

Reference Standard Instruments:

Type	Serial No.	Certificate No.	Due Date	Traceability
Holmium Glass Filter	34645	120895	Mar. 28, 2026	Starna
Didymium Glass Filter	11978	120896	Mar. 28, 2026	
Neutral Density Filter	11562	122869	Jun. 13, 2026	
60 mg/l Potassium Dichromate	31473	120894	Mar. 28, 2026	

Remark: This certificate is traceable to the International System of Unit (SI Unit) through:
- Starna Scientific Ltd.

Measurement Results:

Function : Scan

Spectral Bandwidth : 2 nm, Scan Speed : -, Data Interval : 0.1 nm

1. Wavelength accuracy

Standard Wavelength (nm)	UUC Reading (nm)	Correction (nm)	Uncertainty (± nm)
361.00	360.2	0.80	0.14
418.61	418.4	0.21	0.13
536.66	536.0	0.66	0.14
684.49	684.3	0.19	0.14
748.48	748.3	0.18	0.14

Envipro Co., Ltd.

Calibrated by Onnapa

THC Calibration Services
THAI HEART CALIBRATION CO., LTD.
112/1 Moo 5, Phraek Sa, Muang, Samut Prakan 10280
Tel. 0-2394-2162, 0-2757-8435, 0-2757-8496 Fax.: 0-2757-8507

ilac-MRA ANAB ACCREDITED ISO/IEC 17025 CALIBRATION LABORATORY AC-2695

Measurement Results (Cont.):

2. Photometric Accuracy

UV Region

Wavelength (nm)	Standard Value (A)	UUC Reading (A)	Correction (A)	Uncertainty (± A)
235	0.7449	0.742	0.0029	0.0059
257	0.8628	0.857	0.0058	0.0059
313	0.2927	0.292	0.0007	0.0060
350	0.6406	0.636	0.0046	0.0060

Visible Region

Wavelength (nm)	Standard Value (A)	UUC Reading (A)	Correction (A)	Uncertainty (± A)
440	1.0333	1.033	0.0003	0.0039
	0.7297	0.730	-0.0003	0.0039
	0.5409	0.541	-0.0001	0.0039
465	0.9633	0.963	0.0003	0.0039
	0.6736	0.674	-0.0004	0.0039
	0.4916	0.491	0.0006	0.0039
546.1	0.9947	0.992	0.0027	0.0039
	0.6839	0.682	0.0019	0.0039
	0.5068	0.505	0.0018	0.0039
590	1.0348	1.032	0.0028	0.0039
	0.7140	0.712	0.0020	0.0039
	0.5358	0.534	0.0018	0.0039
635	0.9873	0.984	0.0033	0.0039
	0.6820	0.680	0.0020	0.0039
	0.5206	0.519	0.0016	0.0039

UUC : Unit Under Calibration.

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

- End of Certificate -

Calibrated by Onnapa

Enviro Co., Ltd.