

## หนังสือรับรองห้องปฏิบัติการวิเคราะห์เอกชน



ที่ อก ๐๓๑๐(๑)/ ๒ ๖ ๔ ๓

กรมโรงงานอุตสาหกรรม  
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท  
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๓๑ มกราคม ๒๕๖๖

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท ตรวจวัดสิ่งแวดล้อม จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน  
ลงวันที่ ๘ ธันวาคม ๒๕๖๕

สิ่งที่ส่งมาด้วย เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน  
บริษัท ตรวจวัดสิ่งแวดล้อม จำกัด จำนวน ๑ แผ่น

ตามหนังสือที่อ้างถึง บริษัท ตรวจวัดสิ่งแวดล้อม จำกัด ขอต่ออายุหนังสือรับขึ้นทะเบียน  
ห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๓๐๑๑ สถานที่ตั้งเลขที่ ๕/๔๕ หมู่บ้าน บ้านกลางกรุง บิขทาวน์  
ซอยศรีนครินทร์ ๔๖/๑ (ปราโมทย์) แขวงหนองบอน เขตประเวศ กรุงเทพมหานคร ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท ตรวจวัดสิ่งแวดล้อม จำกัด ต่ออายุหนังสือรับขึ้น  
ทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์

นางสาวธนิฏ์นันท์ ทองบาง

ทะเบียนเลขที่ ว-๓๐๑๑-ก-๐๐๐๑

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์

๑) นายอนุวัฒน์ รดรงค์

ทะเบียนเลขที่ ว-๓๐๑๑-จ-๐๐๐๑

๒) นางสาวสุธิดา อีสสระ

ทะเบียนเลขที่ ว-๓๐๑๑-จ-๐๐๐๒

๓) นางสาวเพ็ญฟ้า เสริมใหม่

ทะเบียนเลขที่ ว-๓๐๑๑-จ-๐๐๐๓

๔) นางสาวสุมานันท์ วัดเมือง

ทะเบียนเลขที่ ว-๓๐๑๑-จ-๐๐๐๔

ค. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย ตามสิ่งที่ส่งมาด้วย

หนังสือฉบับนี้จะหมดอายุในวันที่ ๓ มกราคม ๒๕๖๙ หากประสงค์จะต่ออายุหนังสือ  
รับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อ  
กรมโรงงานอุตสาหกรรม ภายใน ๓๐ วัน ก่อนวันสิ้นอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน  
ทั้งนี้ สามารถยื่นคำขอผ่านระบบอิเล็กทรอนิกส์ได้ที่หน้าเว็บไซต์กรมโรงงานอุตสาหกรรม ตาม QR Code  
ท้ายหนังสือฉบับนี้

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

จรูญ คำ

(นายประสม คำทรงษ์)

ผู้อำนวยการกองวิจัยและเฝ้าระวังมลพิษโรงงาน  
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

ยื่นคำขอผ่านระบบอิเล็กทรอนิกส์

กองวิจัยและเฝ้าระวังมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๙๙

ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th



“อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว”



เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ตรวจวัดสิ่งแวดล้อม จำกัด

เลขทะเบียน ๖-๓๐๑

ที่ อก ๐๓๑๐(๑)/ ๒ ๖ ๔ ๓

ลงวันที่ ๓๑ มกราคม ๒๕๖๖

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๔ รายการ

น้ำเสีย จำนวน 4 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Biochemical Oxygen Demand	5-Day BOD Test, Membrane Electrode Method
2	pH	Electrometric Method
3	Total Dissolved Solids	Dried at 180 °C
4	Total Suspended Solids	Dried at 103-105 °C <i>simul</i>

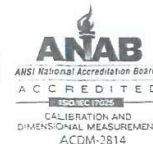
#### เอกสารอ้างอิง

APHA, AWWA, WEF. Standard Methods for the Examination of Water and Wastewater. 23<sup>rd</sup> ed. Washington, DC: APHA, 2017.



## CALIBRATION LABORATORY Co., LTD.

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



## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : BALANCE  
MANUFACTURER : METTLER TOLEDO  
MODEL / TYPE : MS204TS/00  
SERIAL NO. : B935191252[LA-002]  
CLID. NO. : 362200356  
JOB CONTROL NO. : 230321031262

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.  
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),  
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 21 March 2023

DATE OF ISSUED : 10 April 2023

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Sornchai Rattanangam  
Calibration Engineer



Approved By : Mongkol Yotsoontorn  
Authorized Signatory  
10 April 2023

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. Q23031262

F3-011-04/01-12

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@clccalibration



## CALIBRATION LABORATORY Co., LTD.

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## REPORT OF CALIBRATION

### FOR

NOMENCLATURE	:	BALANCE
MANUFACTURER	:	METTLER TOLEDO
MODEL / TYPE	:	MS204TS/00
SERIAL NO.	:	B935191252[LA-002]
LOCATION SITE	:	LABORATORY - BALANCE ROOM
DATE OF CALIBRATION	:	04 April 2023

#### ENVIRONMENT CONDITIONS :

Temperature : 23 °C to 24 °C

Relative Humidity : 49 % to 50 %

#### PROCEDURE USED :

This instrument was calibrated under procedure No. CLC-CPMB-01 based on EURAMET/cg-18/Version 4.0 (11/2015).

The calibration was performed by Comparison with Weight Set which maintained by the Calibration Laboratory Co., Ltd.

#### REFERENCE STANDARD USED :

Weight Set, Mettler Toledo Class E2 S/N. 158850.

#### TRACEABILITY :

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

Certificate No. MM-0120-21, Due Date 17 December 2023.

#### 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)"

Certificate No. Q23031262

F3-011-04/01-12

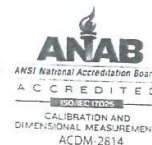
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## CALIBRATION LABORATORY Co., LTD.

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



CONDITION OF CALIBRATION ITEM : GOOD

MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment

### CALIBRATION DATA

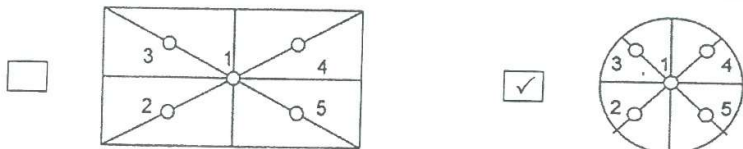
#### 1. Error of indications

Nominal Test Value ( g )	Conventional mass ( g )	Display Value ( g )	Error of Balance ( g )	Uncertainty $\pm$ ( mg )	Coverage factor $k$
Unload	0.0000	0.0000	0.0000	0.03	2,28
0.1000	0.1000	0.1000	0.0000	0.06	2,00
0.5000	0.5000	0.5000	0.0000	0.07	2,00
1.0000	1.0000	1.0000	0.0000	0.07	2,00
2.0000	2.0000	2.0000	0.0000	0.07	2,00
5.0000	5.0000	5.0000	0.0000	0.07	2,00
10.0000	10.0000	10.0000	0.0000	0.07	2,00

#### 2. Repeatability of indications

Nominal Test Value ( g )	Standard Deviation of Reading ( g )
200.0000	0.00004

#### 3. Effect of eccentric application of a load on the indication

						
Nominal Test Value ( g )	Display Value ( g )					Maximum Difference of Center Value ( g )
	Position 1	Position 2	Position 3	Position 4	Position 5	
100.0000	100.0000	100.0001	100.0000	100.0000	100.0000	0.0001

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 008 Page 41 of 54

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

### End of Certificate ###

Certificate No. Q23031262

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## CALIBRATION LABORATORY Co., LTD.

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

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



### CERTIFICATE OF CALIBRATION

#### FOR

NOMENCLATURE : BALANCE  
MANUFACTURER : SHIMADZU  
MODEL / TYPE : AP225WD  
SERIAL NO. : D316300692[LA-001]  
CLID. NO. : 362100172  
JOB CONTROL NO. : 230321031261

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.  
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),  
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 21 March 2023

DATE OF ISSUED : 08 April 2023

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Sornchai Rattanangam  
Calibration Engineer



Approved By : Mongkol Yotsoontorn  
Authorized Signatory  
08 April 2023

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. Q23031261

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## CALIBRATION LABORATORY Co., LTD.

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# REPORT OF CALIBRATION

## FOR

NOMENCLATURE : BALANCE  
MANUFACTURER : SHIMADZU  
MODEL / TYPE : AP225WD  
SERIAL NO. : D316300692[LA-001]  
LOCATION SITE : LABORATORY - BALANCE ROOM  
DATE OF CALIBRATION : 04 April 2023

### ENVIRONMENT CONDITIONS :

Temperature : 23 °C to 24 °C

Relative Humidity : 49 % to 50 %

### PROCEDURE USED :

This instrument was calibrated under procedure No. WI-305-46 according to EURAMET cg-18 Version 4.0 (11/2015).

The calibration was performed by Comparison with Weight Set which maintained by the Calibration Laboratory Co., Ltd.

### REFERENCE STANDARD USED :

Weight Set, Mettler Toledo Class E2 S/N. 158850.

### TRACEABILITY :

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

Certificate No. MM-0120-21, Due Date 17 December 2023.

### 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)"

Certificate No. Q23031261

F3-011-04/01-12

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## CALIBRATION LABORATORY Co., LTD.

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CONDITION OF CALIBRATION ITEM : GOOD

MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment

### CALIBRATION DATA

#### 1. Error of indications

Nominal Test Value ( g )	Conventional mass ( g )	Display Value ( g )	Error of Balance ( g )	Uncertainty $\pm$ ( mg )	Coverage factor <i>k</i>
Unload	0.0000	0.0000	0.0000	0.06	2,00
5.0000	5.0000	5.0000	0.0000	0.11	2,00
10.0000	10.0000	10.0000	0.0000	0.11	2,00
20.0000	20.0000	20.0000	0.0000	0.12	2,00
40.0000	40.0000	40.0000	0.0000	0.14	2,00
60.0000	60.0000	60.0000	0.0000	0.15	2,00
80.0000	80.0000	80.0000	0.0000	0.19	2,00
100.0000	100.0000	100.0000	0.0000	0.17	2,00
120.0000	120.0000	120.0000	0.0000	0.22	2,00
140.0000	140.0000	140.0000	0.0000	0.24	2,00
160.0000	159.9999	160.0000	+0.0001	0.26	2,00
180.0000	180.0000	180.0000	0.0000	0.30	2,00
200.0000	199.9997	199.9997	0.0000	0.26	2,00

#### 2. Repeatability of indications

Nominal Test Value ( g )	Standard Deviation of Reading ( g )
200.0000	0.00005

#### 3. Effect of eccentric application of a load on the indication

<div style="display: flex; align-items: center; justify-content: space-around;"> <div style="text-align: center;"> </div> <div style="text-align: center;"> <input checked="" type="checkbox"/> </div> <div style="text-align: center;"> </div> </div>						
Nominal Test Value ( g )	Display Value ( g )					Maximum Difference of Center Value ( g )
	Position 1	Position 2	Position 3	Position 4	Position 5	
100.0000	100.0000	100.0000	99.9999	100.0000	100.0001	0.0001

Note. The Scope of Accredited TISI Certificate No. 23-LB0092 Issue 01 Page 116 of 138

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

### End of Certificate ###

Certificate No. Q23031261

F3-011-04/01-12

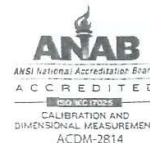
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## CALIBRATION LABORATORY Co., LTD.

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## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : HOT AIR OVEN  
MANUFACTURER : MEMMERT  
MODEL / TYPE : UF110  
SERIAL NO. : B422.0026[LA-0012]  
CLID. NO. : 332202464  
JOB CONTROL NO. : 230321031263

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.  
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),  
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 21 March 2023

DATE OF ISSUED : 08 April 2023

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By :

Wenick Inchaisri  
Calibration Engineer

Approved By :

Mongkol Yotsoontorn  
Authorized Signatory  
08 April 2023



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. Q23031263

F3-011-04/01-12

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@clccalibration



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## REPORT OF CALIBRATION

### FOR

NOMENCLATURE : HOT AIR OVEN  
MANUFACTURER : MEMMERT  
MODEL / TYPE : UF110  
SERIAL NO. : B422.0026[LA-0012]  
LOCATION SITE : LABORATORY-HOT ZONE  
DATE OF CALIBRATION : 04 April 2023

### ENVIRONMENT CONDITIONS :

Temperature : 24 °C to 25 °C

Relative Humidity : 48% to 51 %

### PROCEDURE USED :

This instrument was calibrated under procedure No. CLC-CPTH-07 based on TLAS G-20 as calibration guidelines.

The calibration was performed by using Hydra Data Logger which maintained by the Calibration Laboratory Co., Ltd.

### REFERENCE STANDARD USED :

Hydra Data Logger, Fluke Model 2620 S/N. 5592550.

### TRACEABILITY :

The measurements are traceable to International System of Units (SI) , through Calibration Laboratory Co., Ltd.

Certificate No. Q22066550, Due Date 07 July 2023.

### 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)"

Certificate No. Q23031263

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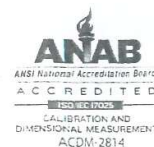


@clccalibration



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



CONDITION OF CALIBRATION ITEM : GOOD

MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment

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

### CALIBRATION DATA

#### 1. HOT AIR OVEN PERFORMANCE

DUC		Measured Uniformity ( °C )	Measured Stability ( °C )	Measured Overall Variation ( °C )
Setting ( °C )	Indicating ( °C )			
104.0	104.0	0.80	0.41	2.05
180.0	180.0	1.67	0.20	3.29

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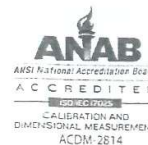


@calibration



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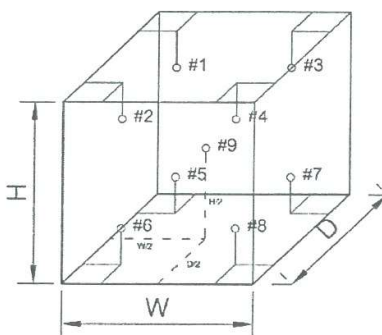
### CALIBRATION DATA

#### 2. TEMPERATURE DISTRIBUTION

DUC		Measured Temperature ( °C )@Probe No.9 is Ref.									Uncertainty ± ( °C )	Coverage factor <i>k</i>
Setting ( °C )	Indicating ( °C )	1	2	3	4	5	6	7	8	9		
104.0	104.0	103.22	103.79	103.49	103.60	103.76	103.70	103.32	104.54	103.90	0.65	2,00
180.0	180.0	178.23	179.61	178.93	179.18	179.39	179.37	178.51	181.15	179.79	0.61	2,00

Technical Note : W = 56 cm, D = 40 cm, H = 48 cm.

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

### End of Certificate ###

Certificate No. Q23031263

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calibration





## CALIBRATION LABORATORY Co., LTD.

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## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : INCUBATOR  
MANUFACTURER : ACCUPLUS  
MODEL / TYPE : SMART i250  
SERIAL NO. : 2059-0718-0010[LA-002]  
CLID. NO. : 332100155  
JOB CONTROL NO. : 230321031264

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.  
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),  
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 21 March 2023

DATE OF ISSUED : 08 April 2023

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By :

Wenick Inchaistri  
Calibration Engineer

Approved By :

Mongkol Yotsoontorn  
Authorized Signatory

08 April 2023



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. Q23031264

F3-011-04/01-12

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## CALIBRATION LABORATORY Co., LTD.

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## REPORT OF CALIBRATION

### FOR

NOMENCLATURE : INCUBATOR  
MANUFACTURER : ACCUPLUS  
MODEL / TYPE : SMART i250  
SERIAL NO. : 2059-0718-0010[LA-002]  
LOCATION SITE : LABORATORY  
DATE OF CALIBRATION : 04 April 2023

#### ENVIRONMENT CONDITIONS :

Temperature : 24 °C to 25 °C

Relative Humidity : 48% to 51 %

#### PROCEDURE USED :

This instrument was calibrated under procedure No. WI-305-165 according to TLAS G-20-1/02-08 as calibration guidelines.  
The calibration was performed by using Hydra Data Logger which maintained by the Calibration Laboratory Co., Ltd.

#### REFERENCE STANDARD USED :

Hydra Data Logger, Fluke Model 2620 S/N. 5592550.

#### TRACEABILITY :

The measurements are traceable to International System of Units (SI) , through Calibration Laboratory Co., Ltd.  
Certificate No. Q22066550, Due Date 07 July 2023.

#### 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)"

Certificate No. Q23031264

F3-011-04/01-12

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CLC  
Accredited  
ISO/IEC 17025

## CALIBRATION LABORATORY Co., LTD.

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NSC-TISI-TIS 17025  
CALIBRATION 0059  
CLC

CONDITION OF CALIBRATION ITEM : GOOD

MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment

The table in the following gives the calibration results and associated measurement uncertainties of the measuring incubator.

### CALIBRATION DATA

#### 1. INCUBATOR PERFORMANCE

DUC		Measured Uniformity	Measured Stability	Measured Overall
Setting ( °C )	Indicating ( °C )	( °C )	( °C )	Variation ( °C )
20.0	20.0	0.47	0.53	1.18

Certificate No. Q23031264

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## CALIBRATION LABORATORY CO., LTD.

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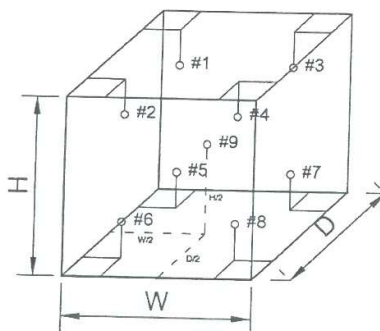
### CALIBRATION DATA

#### 2. TEMPERATURE DISTRIBUTION

DUC		Measured Temperature ( °C )@Probe No.9 is Ref.									Uncertainty ± ( °C )	Coverage factor <i>k</i>
Setting ( °C )	Indicating ( °C )	1	2	3	4	5	6	7	8	9		
20.0	20.0	20.53	20.62	20.75	20.52	20.54	20.60	20.52	20.42	20.45	0.75	2,00

Technical Note : W = 50 cm, D = 48 cm, H = 110 cm.

The Scope of Accredited TISI Certificate No. 23-LB0092 Issue 01 Page 129 of 138



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

### End of Certificate ###

Certificate No. Q23031264

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## CALIBRATION LABORATORY Co., LTD.

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## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : REFRIGERATOR  
MANUFACTURER : MEDICOOL  
MODEL / TYPE : BB-117  
SERIAL NO. : BB117-190725001[LA-003]  
CLID. NO. : 332100156  
JOB CONTROL NO. : 230321031265

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.  
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),  
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 21 March 2023

DATE OF ISSUED : 08 April 2023

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By :

Wenick Inchaisri

Calibration Engineer

Approved By :

Mongkol Yotsoontorn

Authorized Signatory

08 April 2023



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. Q23031265

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## CALIBRATION LABORATORY Co., LTD.

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## REPORT OF CALIBRATION

### FOR

NOMENCLATURE : REFRIGERATOR  
MANUFACTURER : MEDICOOL  
MODEL / TYPE : BB-117  
SERIAL NO. : BB117-190725001[LA-003]  
LOCATION SITE : LABORATORY  
DATE OF CALIBRATION : 04 April 2023

#### ENVIRONMENT CONDITIONS :

Temperature : 24 °C to 25 °C

Relative Humidity : 48% to 51 %

#### PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-165** according to **TLAS G-20-1/02-08** as calibration guidelines.  
The calibration was performed by using Hydra Data Logger which maintained by the Calibration Laboratory Co., Ltd.

#### REFERENCE STANDARD USED :

Hydra Data Logger, Fluke Model 2620 S/N. 5592550.

#### TRACEABILITY :

The measurements are traceable to International System of Units (SI) , through Calibration Laboratory Co., Ltd.  
Certificate No. Q22066550, Due Date 07 July 2023.

#### 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)"

Certificate No. Q23031265

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## CALIBRATION LABORATORY Co., LTD.

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CONDITION OF CALIBRATION ITEM : GOOD

MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment

The table in the following gives the calibration results and associated measurement uncertainties of the measuring refrigerator.

### CALIBRATION DATA

#### 1. REFRIGERATOR PERFORMANCE

DUC		Measured Uniformity ( °C )	Measured Stability ( °C )	Measured Overall Variation ( °C )
Setting ( °C )	Indicating ( °C )			
4.0	4.0	0.67	0.91	2.28

Certificate No. Q23031265

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## CALIBRATION LABORATORY Co., LTD.

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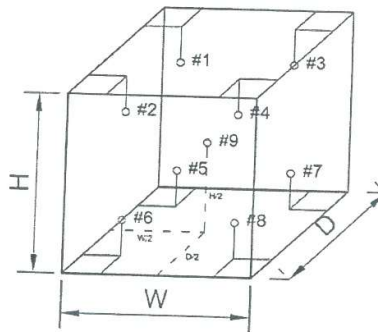
### CALIBRATION DATA

#### 2. TEMPERATURE DISTRIBUTION

DUC		Measured Temperature ( °C )@Probe No.9 is Ref.									Uncertainty ± ( °C )	Coverage factor <i>k</i>
Setting ( °C )	Indicating ( °C )	1	2	3	4	5	6	7	8	9		
4.0	4.0	3.37	3.91	3.35	3.51	3.51	3.26	3.17	3.19	3.32	1.14	2,00

Technical Note : W = 50 cm, D = 50 cm, H = 120 cm.

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

### End of Certificate ###

Certificate No. Q23031265

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## CALIBRATION LABORATORY Co., LTD.

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## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : REFRIGERATOR  
MANUFACTURER : S-COOL  
MODEL / TYPE : SS-HA-112  
SERIAL NO. : 21091450[LA-0013]  
CLID. NO. : 332300656  
JOB CONTROL NO. : 230321031267

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.  
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),  
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 21 March 2023

DATE OF ISSUED : 08 April 2023

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Wenick Inchaisri  
Calibration Engineer

Approved By : Mongkol Yotsoontorn  
Authorized Signatory  
08 April 2023



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. Q23031267

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## CALIBRATION LABORATORY CO., LTD.

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## REPORT OF CALIBRATION

### FOR

NOMENCLATURE : REFRIGERATOR  
MANUFACTURER : S-COOL  
MODEL / TYPE : SS-HA-112  
SERIAL NO. : 21091450[LA-0013]  
LOCATION SITE : 1<sup>st</sup> FLOOR  
DATE OF CALIBRATION : 04 April 2023

#### ENVIRONMENT CONDITIONS :

Temperature : 30 °C to 31 °C

Relative Humidity : 50% to 53 %

#### PROCEDURE USED :

This instrument was calibrated under procedure No. WI-305-165 according to TLAS G-20-1/02-08 as calibration guidelines.

The calibration was performed by using Hydra Data Logger which maintained by the Calibration Laboratory Co., Ltd.

#### REFERENCE STANDARD USED :

Hydra Data Logger, Fluke Model 2620 S/N. 5592550.

#### TRACEABILITY :

The measurements are traceable to International System of Units (SI) , through Calibration Laboratory Co., Ltd.

Certificate No. Q22066550, Due Date 07 July 2023.

#### 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)"

Certificate No. Q23031267

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## 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



CONDITION OF CALIBRATION ITEM : GOOD

MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment

The table in the following gives the calibration results and associated measurement uncertainties of the measuring refrigerator.

### CALIBRATION DATA

#### 1. REFRIGERATOR PERFORMANCE

DUC		Measured Uniformity	Measured Stability	Measured Overall
Setting ( °C )	Indicating ( °C )	( °C )	( °C )	Variation ( °C )
4.0	4.0	1.31	3.16	6.65

Certificate No. Q23031267

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## CALIBRATION LABORATORY Co., LTD.

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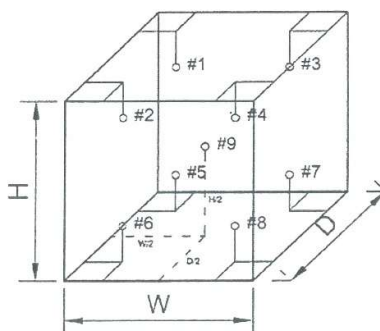
### CALIBRATION DATA

#### 2. TEMPERATURE DISTRIBUTION

DUC		Measured Temperature ( °C )@Probe No.9 is Ref.									Uncertainty ± ( °C )	Coverage factor k
Setting ( °C )	Indicating ( °C )	1	2	3	4	5	6	7	8	9		
4.0	4.0	8.60	8.55	7.86	8.07	9.05	9.01	8.96	8.65	8.75	3.69	2,00

Technical Note : W = 100 cm, D = 40 cm, H = 123 cm.

The Scope of Accredited TISI Certificate No. 23-LB0092 Issue 01 Page 129 of 138



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

### End of Certificate ###

Certificate No. Q23031267

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## CALIBRATION LABORATORY Co., LTD.

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### CERTIFICATE OF CALIBRATION

#### FOR

NOMENCLATURE : REFRIGERATOR  
MANUFACTURER : S-COOL  
MODEL / TYPE : SS-HA-112 V2  
SERIAL NO. : 22111408[LA-0014]  
CLID. NO. : 332300655  
JOB CONTROL NO. : 230321031266

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.  
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),  
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 21 March 2023

DATE OF ISSUED : 08 April 2023

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Wenick Inchaisri  
Calibration Engineer

Approved By : Mongkol Yotsoontorn  
Authorized Signatory  
08 April 2023



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. Q23031266

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## CALIBRATION LABORATORY Co., LTD.

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## REPORT OF CALIBRATION

### FOR

NOMENCLATURE : REFRIGERATOR  
MANUFACTURER : S-COOL  
MODEL / TYPE : SS-HA-112 V2  
SERIAL NO. : 22111408[LA-0014]  
LOCATION SITE : LABORATORY  
DATE OF CALIBRATION : 04 April 2023

#### ENVIRONMENT CONDITIONS :

Temperature : 24 °C to 25 °C

Relative Humidity : 48% to 51 %

#### PROCEDURE USED :

This instrument was calibrated under procedure No. WI-305-165 according to TLAS G-20-1/02-08 as calibration guidelines.  
The calibration was performed by using Hydra Data Logger which maintained by the Calibration Laboratory Co., Ltd.

#### REFERENCE STANDARD USED :

Hydra Data Logger, Fluke Model 2620 S/N. 5592550.

#### TRACEABILITY :

The measurements are traceable to International System of Units (SI) , through Calibration Laboratory Co., Ltd.  
Certificate No. Q22066550, Due Date 07 July 2023.

#### 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)"

Certificate No. Q23031266

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## 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



CONDITION OF CALIBRATION ITEM : GOOD

MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment

The table in the following gives the calibration results and associated measurement uncertainties of the measuring refrigerator.

### CALIBRATION DATA

#### 1. REFRIGERATOR PERFORMANCE

DUC		Measured Uniformity	Measured Stability	Measured Overall
Setting ( °C )	Indicating ( °C )	( °C )	( °C )	Variation ( °C )
4.0	4.0	1.56	2.70	5.65

Certificate No. Q23031266

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## CALIBRATION LABORATORY CO., LTD.

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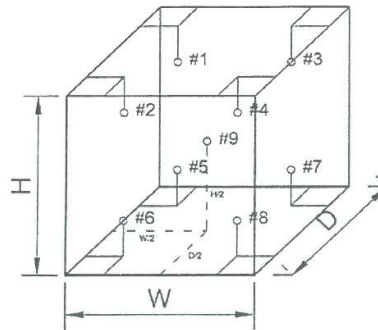
### CALIBRATION DATA

#### 2. TEMPERATURE DISTRIBUTION

DUC		Measured Temperature (°C)@Probe No.9 is Ref.									Uncertainty ± (°C)	Coverage factor k
Setting (°C)	Indicating (°C)	1	2	3	4	5	6	7	8	9		
4.0	4.0	7.98	8.13	7.53	7.39	7.46	7.66	7.01	7.05	7.63	3.17	2,00

Technical Note : W = 100 cm, D = 40 cm, H = 123 cm.

The Scope of Accredited TISI Certificate No. 23-LB0092 Issue 01 Page 129 of 138



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

### End of Certificate ###

Certificate No. Q23031266

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## CALIBRATION LABORATORY Co., LTD.

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### CERTIFICATE OF CALIBRATION

#### FOR

NOMENCLATURE : DIGITAL THERMOHYGRO METER  
MANUFACTURER : DIGICON  
MODEL / TYPE : TH-02A  
SERIAL NO. : 1919E0284991[DTH-01]  
CLID. NO. : 232100200  
JOB CONTROL NO. : 230309026565

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.  
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),  
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 09 March 2023

DATE OF ISSUED : 13 March 2023

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Oranut Kamchatphai  
Calibration Engineer

Approved By : Mongkol Yotsoontorn  
Authorized Signatory  
13 March 2023



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. Q23026565

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@calibration



## 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



## REPORT OF CALIBRATION

### FOR

NOMENCLATURE	:	DIGITAL THERMOHYGRO METER
MANUFACTURER	:	DIGICON
MODEL / TYPE	:	TH-02A
SERIAL NO.	:	1919E0284991[DTH-01]
DATE OF CALIBRATION	:	11 March 2023

#### ENVIRONMENT CONDITIONS :

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

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

#### PROCEDURE USED :

This instrument was calibrated under procedure No. WI-305-74. The calibration was performed by using Chilled Mirror Hygrometer and Temperature & Humidity Chamber which maintained by the Calibration Laboratory Co., Ltd.

#### REFERENCE STANDARD USED :

Chilled Mirror Hygrometer, Edgetech Model Dew Master S/N. 36151.

Temperature & Humidity Chamber, PGC Model 9141-5114 S/N.0802282.

#### TRACEABILITY :

The measurements are traceable to International System of Units (SI) , through Thunder Scientific Corporation.  
Certificate No. 21028, Due Date 09 December 2023.

#### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2,00$  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)"

Certificate No. Q23026565

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## 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



CONDITION OF CALIBRATION ITEM : GOOD

MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment

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

### CALIBRATION DATA

#### 1. CORRECTION OF TEMPERATURE

Test point ( ° C )	Actual Temperature ( ° C )	DUC Reading ( ° C )	Correction ( ° C )	Uncertainty ± ( ° C )
20.0	20.00	19.6	+0.40	0.40
25.0	25.01	24.5	+0.51	
30.0	29.98	29.5	+0.48	

#### 2. CORRECTION OF HUMIDITY

STD Temperature ( ° C )	STD Reading ( %RH )	DUC Reading ( %RH )	Correction ( %RH )	Uncertainty ± ( %RH )
25	40.0	34	+6.0	1.3
25	60.0	52	+8.0	1.5

Note. The Scope of Accredited TISI Certificate No. 23-LB0092 Issue 01 Page 48 of 138

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

### End of Certificate ###

Certificate No. Q23026565

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## CALIBRATION LABORATORY Co., LTD.

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



### CERTIFICATE OF CALIBRATION

#### FOR

NOMENCLATURE : DIGITAL THERMOHYGRO METER  
MANUFACTURER : DIGICON  
MODEL / TYPE : TH-02A  
SERIAL NO. : 1919E0284980[DTH-02]  
CLID. NO. : 232100201  
JOB CONTROL NO. : 230309026566

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.  
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),  
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 09 March 2023

DATE OF ISSUED : 13 March 2023

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Oranut Kamchatphai  
Calibration Engineer

Approved By : Mongkol Yotsoontorn  
Authorized Signatory  
13 March 2023



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. Q23026566

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## CALIBRATION LABORATORY Co., LTD.

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



## REPORT OF CALIBRATION

### FOR

NOMENCLATURE	:	DIGITAL THERMOHYGRO METER
MANUFACTURER	:	DIGICON
MODEL / TYPE	:	TH-02A
SERIAL NO.	:	1919E0284980[DTH-02]
DATE OF CALIBRATION	:	11 March 2023

#### ENVIRONMENT CONDITIONS :

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

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

#### PROCEDURE USED :

This instrument was calibrated under procedure No. WI-305-74. The calibration was performed by using Chilled Mirror Hygrometer and Temperature & Humidity Chamber which maintained by the Calibration Laboratory Co., Ltd.

#### REFERENCE STANDARD USED :

Chilled Mirror Hygrometer, Edgetech Model Dew Master S/N. 36151.  
Temperature & Humidity Chamber, PGC Model 9141-5114 S/N.0802282.

#### TRACEABILITY :

The measurements are traceable to International System of Units (SI) , through Thunder Scientific Corporation.  
Certificate No. 21028, Due Date 09 December 2023.

#### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2,00$  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)"

Certificate No. Q23026566

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## 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



CONDITION OF CALIBRATION ITEM : GOOD

MEASUREMENT RESULTS : (X) without adjustment ( ) adjustment

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

### CALIBRATION DATA

#### 1. CORRECTION OF TEMPERATURE

Test point ( ° C )	Actual Temperature ( ° C )	DUC Reading ( ° C )	Correction ( ° C )	Uncertainty ± ( ° C )
20.0	20.00	19.6	+0.40	0.40
25.0	25.01	24.6	+0.41	
30.0	29.98	29.6	+0.38	

#### 2. CORRECTION OF HUMIDITY

STD Temperature ( ° C )	STD Reading ( %RH )	DUC Reading ( %RH )	Correction ( %RH )	Uncertainty ± ( %RH )
25	40.0	35	+5.0	1.3
25	60.0	54	+6.0	1.5

Note. The Scope of Accredited TISI Certificate No. 23-LB0092 Issue 01 Page 48 of 138

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

### End of Certificate ###

Certificate No. Q23026566

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@calibration



## CALIBRATION LABORATORY Co., LTD.

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## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : WATER BATH  
MANUFACTURER : M-LAB  
MODEL / TYPE : WBN 15  
SERIAL NO. : 0335[LA-007]  
CLID. NO. : 332300657  
JOB CONTROL NO. : 230321031269

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.  
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),  
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 21 March 2023

DATE OF ISSUED : 08 April 2023

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By :

Wenick Inchaisri  
Calibration Engineer

Approved By :

Mongkol Yotsoontorn  
Authorized Signatory  
08 April 2023



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. Q23031269

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## CALIBRATION LABORATORY CO., LTD.

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### REPORT OF CALIBRATION

#### FOR

NOMENCLATURE : WATER BATH  
MANUFACTURER : M-LAB  
MODEL / TYPE : WBN 15  
SERIAL NO. : 0335[LA-007]  
LOCATION SITE : LABORATORY-HOT ZONE  
DATE OF CALIBRATION : 04 April 2023

#### ENVIRONMENT CONDITIONS :

Temperature : 24 °C to 25 °C

Relative Humidity : 48% to 51%

#### PROCEDURE USED :

This instrument was calibrated under procedure No. WI-305-135 based on ASTM E 715-80:2016 as calibration guidelines.

The calibration was performed by using Hydra Data Logger which maintained by the Calibration Laboratory Co., Ltd.

#### REFERENCE STANDARD USED :

Hydra Data Logger, Fluke Model 2620 S/N. 5592550.

#### TRACEABILITY :

The measurements are traceable to International System of Units (SI) , through Calibration Laboratory Co., Ltd.

Certificate No. Q23022733, Due Date 01 September 2023.

#### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2,00$  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)"

Certificate No. Q23031269

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## 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



CONDITION OF CALIBRATION ITEM : GOOD

MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment

The table in the following gives the calibration results and associated measurement uncertainties of the measuring water bath.

### CALIBRATION DATA

#### 1. WATER BATH PERFORMANCE

Test Point ( °C )	DUC Reading ( °C )	Uniformity ( °C )	Stability ( °C )
85.0	85.0	0.35	0.18

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## CALIBRATION LABORATORY Co., LTD.

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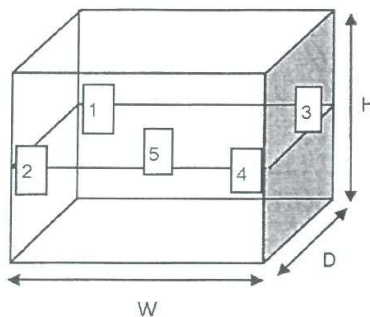
### CALIBRATION DATA

#### 2. TEMPERATURE DISTRIBUTION

Test Point ( ° C )	DUC Reading ( ° C )	STD Reading ( ° C )					Uncertainty ± ( ° C )
		Probe No. 1	Probe No. 2	Probe No. 3	Probe No. 4	Probe No. 5	
85.0	85.0	84.69	84.88	84.68	84.81	84.75	0.48

Technical Note : W = 35 cm, D = 30 cm, H = 15 cm.

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

### End of Certificate ###

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## 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



### CERTIFICATE OF CALIBRATION

#### FOR

NOMENCLATURE : WATER BATH  
MANUFACTURER : MEMMERT  
MODEL / TYPE : WNB14  
SERIAL NO. : L418.0758[LA-004]  
CLID. NO. : 332100157  
JOB CONTROL NO. : 230321031268

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.  
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),  
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 21 March 2023

DATE OF ISSUED : 08 April 2023

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By :

Wenick Inchaisri  
Calibration Engineer

Approved By :

Mongkol Yotsoontorn  
Authorized Signatory  
08 April 2023



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. Q23031268

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## CALIBRATION LABORATORY Co., LTD.

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## REPORT OF CALIBRATION

### FOR

NOMENCLATURE : WATER BATH  
MANUFACTURER : MEMMERT  
MODEL / TYPE : WNB14  
SERIAL NO. : L418.0758[LA-004]  
LOCATION SITE : LABORATORY-HOT ZONE  
DATE OF CALIBRATION : 04 April 2023

#### ENVIRONMENT CONDITIONS :

Temperature : 24 °C to 25 °C

Relative Humidity : 48% to 51%

#### PROCEDURE USED :

This instrument was calibrated under procedure No. WI-305-135 based on ASTM E 715-80:2016 as calibration guidelines.

The calibration was performed by using Hydra Data Logger which maintained by the Calibration Laboratory Co., Ltd.

#### REFERENCE STANDARD USED :

Hydra Data Logger, Fluke Model 2620 S/N. 5592550.

#### TRACEABILITY :

The measurements are traceable to International System of Units (SI) , through Calibration Laboratory Co., Ltd.

Certificate No. Q23022733, Due Date 01 September 2023.

#### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2,00$  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)"

Certificate No. Q23031268

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## CALIBRATION LABORATORY CO., LTD.

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CONDITION OF CALIBRATION ITEM : GOOD

MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment

The table in the following gives the calibration results and associated measurement uncertainties of the measuring water bath.

### CALIBRATION DATA

#### 1. WATER BATH PERFORMANCE

Test Point ( °C )	DUC Reading ( °C )	Uniformity ( °C )	Stability ( °C )
95.0	95.0	0.33	0.16

Certificate No. Q23031268

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## 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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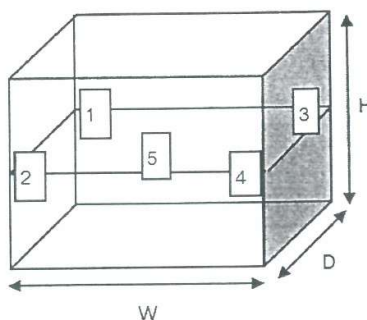
### CALIBRATION DATA

#### 2. TEMPERATURE DISTRIBUTION

Test Point ( ° C )	DUC Reading ( ° C )	STD Reading ( ° C )					Uncertainty ± ( ° C )
		Probe No. 1	Probe No. 2	Probe No. 3	Probe No. 4	Probe No. 5	
95.0	95.0	96.43	96.14	96.24	96.21	96.33	0.44

Technical Note : W = 35 cm, D = 29 cm, H = 14 cm.

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

### End of Certificate ###

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