



๐๔ พฤศจิกายน ๒๕๖๔

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท โอกลา เทสต์ติ้ง แอนด์ คอนซัลติ้ง เซอร์วิส จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน  
ลงวันที่ ๑๒ กรกฎาคม ๒๕๖๔

สิ่งที่ส่งมาด้วย เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน  
บริษัท โอกลา เทสต์ติ้ง แอนด์ คอนซัลติ้ง เซอร์วิส จำกัด จำนวน ๑ แผ่น

ตามหนังสือที่อ้างถึง บริษัท โอกลา เทสต์ติ้ง แอนด์ คอนซัลติ้ง เซอร์วิส จำกัด ขอต่ออายุหนังสือ  
รับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๒๑๙ สถานที่ตั้งเลขที่ ๖๓/๑๓ ซอยเพชรเกษม ๗  
แขวงวัดท่าพระ เขตบางกอกใหญ่ กรุงเทพมหานคร ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท โอกลา เทสต์ติ้ง แอนด์ คอนซัลติ้ง เซอร์วิส จำกัด  
ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์

- |                             |               |              |
|-----------------------------|---------------|--------------|
| ๑) นายธวัชชัย จงวุฒิชัย     | ทะเบียนเลขที่ | ว-๒๑๙-ค-๕๑๒๔ |
| ๒) นางสาวปนัดดา พันธุ์กะจับ | ทะเบียนเลขที่ | ว-๒๑๙-ค-๖๖๙๙ |
| ๓) นางสาวจามจุรี คำปุย      | ทะเบียนเลขที่ | ว-๒๑๙-ค-๙๖๖๓ |

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์


- |  |               |              |
|--|---------------|--------------|
| ๑) นางสาวธัญชนก ขำขุน                  | ทะเบียนเลขที่ | ว-๒๑๙-จ-๙๔๑๖ |
| ๒) ว่าที่ร้อยตรีหญิงสาวตรี เวียงจันทร์ | ทะเบียนเลขที่ | ว-๒๑๙-จ-๙๔๑๗ |
| ๓) นางสาวภาณุชนารถ เชี่ยวชาญ           | ทะเบียนเลขที่ | ว-๒๑๙-จ-๙๔๑๘ |
| ๔) นางสาววันวิสา หวังแวกลาง            | ทะเบียนเลขที่ | ว-๒๑๙-จ-๙๔๑๙ |
| ๕) นางสาวธิดารัตน์ กลัดตลาด            | ทะเบียนเลขที่ | ว-๒๑๙-จ-๙๔๒๐ |
| ๖) นางสาวรัตตชา ศรีปราสาท              | ทะเบียนเลขที่ | ว-๒๑๙-จ-๙๔๒๑ |
| ๗) นางสาวแพรวพรรณ กองกะแซง             | ทะเบียนเลขที่ | ว-๒๑๙-จ-๙๔๒๒ |
| ๘) นางสาวจุลฑา สมบุญ                   | ทะเบียนเลขที่ | ว-๒๑๙-จ-๙๔๒๓ |
| ๙) นางสาวนิจินา มะติยาภักดิ์           | ทะเบียนเลขที่ | ว-๒๑๙-จ-๙๔๒๔ |
| ๑๐) นางสาวเบญจพร อินแก้ว               | ทะเบียนเลขที่ | ว-๒๑๙-จ-๙๖๖๔ |
| ๑๑) นายธนทัต เวชกิจ                    | ทะเบียนเลขที่ | ว-๒๑๙-จ-๙๖๖๕ |
| ๑๒) นายปริญญา กล้าน้อย                 | ทะเบียนเลขที่ | ว-๒๑๙-จ-๙๖๖๖ |

ค. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย จำนวน ๙ รายการ และ  
อากาศเสีย จำนวน ๕ รายการ รวมทั้งสิ้น ๑๔ รายการ ตามสิ่งที่ส่งมาด้วย

หนังสือฉบับนี้จะหมดอายุในวันที่ ๑๕ สิงหาคม ๒๕๖๗ หากประสงค์จะต่ออายุหนังสือ  
รับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อ  
กรมโรงงานอุตสาหกรรมภายใน ๓๐ วัน ก่อนวันสิ้นอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน  
ซึ่งคำขอต่ออายุดังกล่าวขอรับได้ที่กรมโรงงานอุตสาหกรรม

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

  
ผู้  
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน  
กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ  
โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๔-๖  
โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๙๙  
ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.gmail.go.th



Certificate No. : HIT-2236-1228

Page : 1 of 2

**CERTIFICATE OF CALIBRATION**

**Equipment :** COD Test Tube Heater

**Meter Model :** HI839800-02      **Serial No. :** 07130034101

**Tube Heater :** 25 Vial Capacity      **Accuracy :**  $\pm 2^{\circ}\text{C}$

**Temperature Range :**  $-10^{\circ}\text{C}$  to  $160^{\circ}\text{C}$       **Temperature of Reaction :**  $150^{\circ}\text{C}$

**Ambient Temperature :**  $(25 \pm 2)^{\circ}\text{C}$       **Relative Humidity :**  $(50 \pm 15)\% \text{ RH}$

**Manufacturer :** Hanna Instruments      **Made in :** Romania

**Condition As-Received :** Used Product      **Reference :** RE220817

**Customer name :** Okla Testing & Consulting Service Co., Ltd.  
67/35-36, 3RD Floor, Phetkasem 7/1 Rd., Wat Tha Pra Sub-district,  
Bangkok Yai District, Bangkok 10600 Thailand

**Received date :** 24 August 2022

**Calibrate date :** 6 September 2022

**Issue date :** 7 September 2022

**Calibrated Location :** Hanna Instruments (Thailand) Ltd.

**Calibration Procedure :** This calibrator was conducted by using in-house: calibration procedure  
CP-04 by using certified reference material

Calibrated by :

  
Calibration Engineer

Approved by :

  
Authorized Signatory  


This certificate was certified only for the instrument we calibrated.

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

\_\_\_\_\_  
\*\* This certificate may not be reproduced other than in full, except with the prior written \*\*  
approval of the head of Hanna Instrument (Thailand).



**CLC**  
Accredited  
ISO/IEC 17025

# CALIBRATION LABORATORY Co., LTD.

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

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



NSC-TISI-TIS 17025  
CALIBRATION 0059  
CLC

## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : CONDUCTIVITY METER  
MANUFACTURER : HANNA INSTRUMENTS  
MODEL / TYPE : HI5521/HI76312  
SERIAL NO. : 04160019101/0614117M  
CLID. NO. : 272201302  
JOB CONTROL NO. : 220426042325

CUSTOMER : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3RD FLOOR, PHETKASEM 7/1 RD., WATTHAPRA,  
BANGKOKYAI, BANGKOK 10600 THAILAND

DATE OF RECEIVED : 26 April 2022

DATE OF ISSUED : 29 April 2022

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

Calibrated By :

Calibration Engineer

Approved By :

Authorized Signatory

29 April 2022



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. Q22042325

F3-011-04/01-12

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NSC-TISI-TIS 17025  
CALIBRATION 0059  
CLC

## REPORT OF CALIBRATION

### FOR

NOMENCLATURE : CONDUCTIVITY METER  
MANUFACTURER : HANNA INSTRUMENTS  
MODEL / TYPE : HI5521/HI76312  
SERIAL NO. : 04160019101/0614117M  
DATE OF CALIBRATION : 28 April 2022

#### ENVIRONMENT CONDITIONS :

Temperature :  $(25 \pm 2.5) ^\circ\text{C}$

Relative Humidity :  $(50 \pm 15) \% \text{ RH}$

#### PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-130**. The calibration was performed by direct measurement with Certified Reference Material (CRM).

#### REFERENCE STANDARD USED :

Potassium Chloride Solution ( nominal 0.147 mS/cm )

Potassium Chloride Solution ( nominal 1.41 mS/cm )

Potassium Chloride Solution ( nominal 12.8 mS/cm )

#### TRACEABILITY :

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

Certificate No. HC90696057 , HC02139203 , HC04515254. Due Date 31 August 2022 , 30 June 2023 , 30 November 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:2021)"

Certificate No. Q22042325

F3-011-04/01-12

page 2 of 3



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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



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 Conductivity Meter.

## CALIBRATION DATA

### **Conductivity Solution Test @ 25°C**

| Standard Conductivity Solution | DUC Reading                             | Uncertainty of Measurement |
|--------------------------------|---|----------------------------|
| 146.00 $\mu$ S/cm              | 146.0 $\mu$ S/cm [Cell Constant 1.1165] | $\pm 2.10 \mu$ S/cm        |
| 1.412 mS/cm                    | 1.412 mS/cm [Cell Constant 1.1200]      | $\pm 0.021$ mS/cm          |
| 12.85 mS/cm                    | 12.85 mS/cm [Cell Constant 1.1550]      | $\pm 0.19$ mS/cm           |

Note. The Scope of Accredited TISI Certificate No. 19C087/0655 Issue 1 Page 79 of 111

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

**### End of Certificate ###**

Certificate No. Q22042325

F3-011-04/01-12

page 3 of 3



@clccalibration





GIIC Calibration Laboratory

700/20-21 Phaholyothin Rd., Samsennai, Phayathai,  
Bangkok 10400 Thailand

**Tel** : +66 (02) 615 4999

**Fax** : +66 (02) 615 4644

**E-mail** : cal@giic.co.th



NSC-TISI-TIS 17025  
CALIBRATION 0256

CERTIFICATE No. ....CAL00639-22..... PAGE .....1..... OF .....3.....

## Certificate of Calibration

Equipment : DIGITAL THERMO-HYGROMETER  
Manufacturer : DIGICON  
Model / Type : TH-03  
Serial No. : 115092766  
ID No. : -  
Customer : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3rd Floor, Phetkasem 7/1, Watthapra,  
Bangkokyai, Bangkok 10600 Thailand.  
C.S.R. No. : H0000639-22  
Received Date : 04 May 2022  
Calibration Date : 05 May 2022

Calibrated By :

Approved By :

Issue Date :

05 May 2022

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

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CERTIFICATE No. CAL00639-22 PAGE 2 OF 3

## CALIBRATION REPORT

Condition of this calibration result:

1. Environment :                      Temperature        :  $(25 \pm 3) ^\circ C$   
Relative Humidity :  $(50 \pm 15) \% RH$

2. Reference / procedure Used :

- This equipment was calibrated by comparison to precision humidity measuring instrument into humidity chamber for humidity measurement and a platinum resistance thermometer into temperature chamber for temperature measurement according to GILC Calibration Laboratory
- Calibration Procedure No. GILCLAB-CP-H01, GILCLAB-CP-H03.

### 3. Reference Standard Instrument :

| Instrument                      | Model     | Serial No | Certificate No | Due Dated |
|---------------------------------|-----------|-----------|----------------|-----------|
| Platinum Resistance Thermometer | PCR-1     | RB-31604  | 21I703         | 6 Jul 22  |
| Data Logger                     | HC2-S     | 60936993  | 21T9467        | 11 Oct 22 |
| Dual Measurement Multimeter     | GDM 8261A | GEP925925 | CAL00436-22    | 19 Mar 23 |

4. This Certification is traceable to the SI unit through :

- Technology Promotion Association (Thailand-Japan) Calibration Services and Environmental Analysis Department.
- Quality Calibration
- GILC Calibration Laboratory

### 5. Uncertainty :

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

## 6. Disclaimer :

- The laboratory accepted that was we has done in our calibration method. It with no guarantee that it works as you believe that it should and user accept the risks that occur. We accept no liability for any damage or financial losses.



CERTIFICATE No. ...CAL00639-22... PAGE ...3... OF ...3...

## CALIBRATION REPORT

The temperature scale used was based on ITS-90.

All data shown below were as-received values without adjustment.

### Calibration result :

Function : Temperature Measurement.

| Standard Temperature<br>(°C) | <sup>1</sup> U.U.C. Reading<br>(°C) | Error<br>(°C) | Uncertainty of Measurement<br>(± °C) |
|------------------------------|-------------------------------------|---------------|--------------------------------------|
| 9.986                        | 10                                  | 0.014         | 0.88                                 |
| 24.989                       | 25                                  | 0.011         | 0.88                                 |
| 40.028                       | 40                                  | -0.028        | 0.88                                 |

Function : Humidity Measurement. : ( 25.01 °C )

| Standard Humidity<br>(% rh) | <sup>1</sup> U.U.C. Reading<br>(% rh) | Error<br>(% rh) | Uncertainty of Measurement<br>(± % rh) |
|-----------------------------|---------------------------------------|-----------------|--|
| 24.99                       | 23                                    | -1.99           | 1.8                                    |
| 49.94                       | 44                                    | -5.94           | 1.8                                    |
| 85.94                       | 81                                    | -4.94           | 2.9                                    |

<sup>1</sup>U.U.C. = Unit Under Calibration

This result of calibration was found accurate as show on data and place of calibration only.

- END -

## CERTIFICATE OF CALIBRATION

Certificate No. : CL-087-65

Page 1 of 2

**Equipment Name:** Digital Thermometer with -  
Temperature Sensor.

**Manufacturer:** EUTECH

**Model:** ECO SCAN TEMP5

**Serial No:** 816366

**ID No:** -

### Customer

**Name:** OKLA Testing and Consulting Service Co.,Ltd.

**Address:** 67/35-36 Floor 3, Soi Petchkasem 7/1,  
Petchkasem Rd, Watthapra, Bangkokyai, Bangkok  
10600.

**Received date:** 18 May 2022

**Calibration date:** 03 Jun 2022

**Issue date:** 06 Jun 2022

### Reference Used During Calibration

1. Standard Temperature Probe Model: STS-100 A500,  
Serial No.: 667682-09, Due date: 23 Mar 2023

2. Digital Temperature Indicator Model: DTI-1000-A MK  
II, Serial No.: 671407-00591 Due date: 04 June 2022

### Calibration Condition

Temperature:  $(23 \pm 3) ^\circ\text{C}$

Relative Humidity:  $(55 \pm 15) \%$

### Calibration Procedure

The temperature calibration was done by In-House  
calibration method as WI-CL-001 according to  
comparison method with standard digital temperature  
indicator and standard temperature probe. The  
temperature scale use was based on ITS-90.

### Traceability

The measurement results are traceable to the  
international system of units (SI) through National  
Institute of Metrology Thailand (NIMT) Certificate  
number: TT-0034-22, Certificate number: ER-0032-  
21

### Calibrated by

☐ Mr. Sorawit Thachalad

☒ Miss Jitraporn Lertsomphol

Approved Signatory: ....

Calibration Department Manager





Certificate No. : CL-087-65  
Page 2 of 2

**Result of Calibration:** ☒ Without Adjustment ☐ With Adjustment

**Calibration Range:** 20 – 30 °C

**Function:**

**Table 1:** This equipment was connected with Thermocouple sensor type K.  
Dimension of probe: Diameter 3 mm, Length 116 mm.

| <u>Immersion</u><br><u>Depth</u><br>(mm) | <u>Standard</u><br><u>Reading</u><br>(°C) | <u>UUC</u><br><u>Reading</u><br>(°C) | <u>Error</u><br>(°C) | <u>Uncertainty</u><br>(°C) |
|--|---|--------------------------------------|----------------------|----------------------------|
| 110                                      | 20.055                                    | 20.0                                 | -0.1                 | 0.19                       |
| 110                                      | 22.056                                    | 22.0                                 | -0.1                 | 0.19                       |
| 110                                      | 24.053                                    | 24.0                                 | -0.1                 | 0.19                       |
| 110                                      | 26.053                                    | 26.0                                 | -0.1                 | 0.19                       |
| 110                                      | 28.048                                    | 28.0                                 | 0.0                  | 0.19                       |
| 110                                      | 30.047                                    | 30.0                                 | 0.0                  | 0.19                       |

**UUC\*** : Unit Under Calibration

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

**\* End of Certificate \***





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NSC-TISI-TIS 17025  
CALIBRATION 0059  
CLC

## CERTIFICATE OF CALIBRATION FOR

NOMENCLATURE : DIGITAL THERMOMETER  
MANUFACTURER : HANNA INSTRUMENTS  
MODEL / TYPE : HI5521/HI7662-W  
SERIAL NO. : 04160019101/0615024N  
CLID. NO. : 232202088  
JOB CONTROL NO. : 220426042327

CUSTOMER : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3RD FLOOR, PHETKASEM 7/1 RD., WATTHAPRA,  
BANGKOKYAI, BANGKOK 10600 THAILAND

DATE OF RECEIVED : 26 April 2022

DATE OF ISSUED : 29 April 2022

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

Calibrated By :

Calibration Engineer

Approved By :

Authorized Signatory

29 April 2022



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. Q22042327

F3-011-04/01-12

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## REPORT OF CALIBRATION FOR

**NOMENCLATURE : DIGITAL THERMOMETER**  
**MANUFACTURER : HANNA INSTRUMENTS**  
**MODEL / TYPE : HI5521/HI7662-W**  
**SERIAL NO. : 04160019101/0615024N**  
**DATE OF CALIBRATION : 28 April 2022**

### 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-305-187** based on **ASTM E 644-04** as calibration guidelines.

The calibration was performed by using Calibration Bath, Precision Thermometer and IPRT which maintained by the Calibration Laboratory Co., Ltd.

### REFERENCE STANDARD USED :

1. Calibration Bath, Kambic Model OB-22/2 ULT S/N. 17115653.
2. Precision Thermometer, ASL Model F200-A-8 S/N. 014433/03.
3. IPRT, ASL Model T100-250-1D S/N. L0193A-1-1.

### TRACEABILITY :

1. The measurements are traceable to International System of Units (SI) , through Calibration Laboratory Co., Ltd. Certificate No. Q22007520, Due Date 22 January 2023.

2. The measurements are traceable to International System of Units (SI) , through Thailand Institute of Scientific and Technological Research (TISTR). Certificate No. PSL-T 0717/64, Due Date 14 June 2022.

3. The measurements are traceable to International System of Units (SI) , through National Institute of Metrology (Thailand). Certificate No. TT-0121-21, Due Date 24 November 2022.

### 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:2021)"

Certificate No. **Q22042327**

F3-011-04/01-12

page 2 of 3



@clccalibration



**CLC**  
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ISO/IEC 17025

# CALIBRATION LABORATORY Co., LTD.

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

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



NSC-TISI-TIS 17025  
CALIBRATION 0059  
CLC

**CONDITION OF CALIBRATION ITEM : GOOD**

**MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment**

The DUC Reading were recorded and the means value were reported of five times measurement in the table below.

## CALIBRATION DATA

### **CORRECTION OF TEMPERATURE [ THERMISTOR ]**

| Immersion depth (mm) | Actual Temperature ( °C ) | DUC Reading ( °C ) | Correction ( °C ) | Uncertainty $\pm$ ( °C ) |
|----------------------|---------------------------|--------------------|-------------------|--------------------------|
| 105                  | 24.00                     | 24.1               | - 0.10            | 0.07                     |
|                      | 25.00                     | 25.1               | - 0.10            |                          |
|                      | 27.00                     | 27.1               | - 0.10            |                          |

Note. Probe  $\varnothing$  3.5 mm

Materials : Metal Sheath.

The Scope of Accredited TISI Certificate No. 19C087/0655 Issue 1 Page 28 of 111

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

**### End of Certificate ###**

**Certificate No. Q22042327**

**F3-011-04/01-12**

page 3 of 3



@clccalibration



## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : DO METER  
MANUFACTURER : HANNA INSTRUMENTS  
MODEL / TYPE : HI5421/HI76483  
SERIAL NO. : 04240005101/KC1A11T8H  
CLID. NO. : 272101220  
JOB CONTROL NO. : 220426042326

CUSTOMER : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3RD FLOOR, PHETKASEM 7/1 RD., WATTHAPRA,  
BANGKOKYAI, BANGKOK 10600 THAILAND

DATE OF RECEIVED : 26 April 2022

DATE OF ISSUED : 28 April 2022

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

Calibrated By :

Calibration Engineer

Approved By :

Authorized Signatory

28 April 2022



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. Q22042326

F3-011-04/01-12

page 1 of 3



@clccalibration

## REPORT OF CALIBRATION

### FOR

**NOMENCLATURE** : **DO METER**  
**MANUFACTURER** : **HANNA INSTRUMENTS**  
**MODEL / TYPE** : **HI5421/HI76483**  
**SERIAL NO.** : **04240005101/KC1A11T8H**  
**DATE OF CALIBRATION** : **27 April 2022**

---

#### ENVIRONMENT CONDITIONS :

Temperature :  $(25 \pm 2.5) ^\circ\text{C}$

Relative Humidity :  $(50 \pm 15) \% \text{RH}$

#### PROCEDURE USED :

This instrument was calibrated under procedure No. **CLC-CPCH-06**. The calibration was performed by direct measurement with Certified Reference Material (CRM).

#### REFERENCE STANDARD USED :

Dissolved Oxygen, Sigma-Alorich Product ID QC3077-500ML .

#### TRACEABILITY :

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

Lot LRAD0713.01 , Due Date 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:2021)"

Certificate No. **Q22042326**

**F3-011-04/01-12**

page 2 of 3



@clccalibration



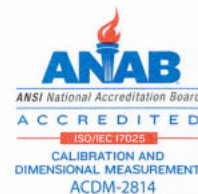


**CLC**  
Accredited  
ISO/IEC 17025

# CALIBRATION LABORATORY Co., LTD.

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

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



**CONDITION OF CALIBRATION ITEM : GOOD**

**MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment**

The table in the following gives the calibration results and associated measurement uncertainties of Do Meter.

## CALIBRATION DATA

| Nominal Value<br>( mg/L ) | DUC Reading<br>( mg/L ) | Correction<br>( mg/L ) | Uncertainty<br>( mg/L ) |
|---------------------------|-------------------------|------------------------|-------------------------|
| 5.91                      | 5.88                    | +0.03                  | ± 0.22                  |

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 008 Page 4 of 54

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

**### End of Certificate ###**

Certificate No. Q22042326

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@clccalibration



MIRACLE INTERNATIONAL TECHNOLOGY CO.,LTD

214 Bangwaek Rd. Bangpai Bangkae Bangkok 10160  
Tel.: 0-2865-4647-8 Fax: 0-2865-4649 <http://www.mit.in.th>



## CALIBRATION CERTIFICATE

Certificate No. : SS2206-022-0001

Date Issued : 10-Jun-22

**Customer** : OKLA TESTING & CONSULTING SERVICE CO.,LTD  
63/13 Soi.Petchkasem 7, Petchkasem Rd., Thapra, Bangkok Yai, Bangkok  
10600

**Equipment** : Electronic Balance

**Manufacturer** : Sartorius

**Model** : BSA224S-CW

**Serial No.** : 35790699

**ID No./Tag No.** : -

**Date Received** : 03-Jun-22

**Date Calibrated** : 03-Jun-22

**Calibrated by** : Mr. Nirot Parnkamnoed

### Calibration Method or Calibration Procedure Used

In-house method : CP-06 base on UKAS LAB 14 Edition 6 October 2019.

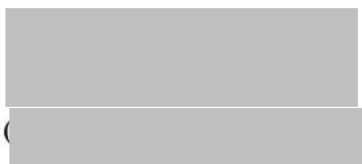
This certificate is traceable to national standards, which realize the units of measurement according to the International System of Units (SI).

### Result of Calibration

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

This certificate may not be reproduced other than in full except with the prior written approval of the Miracle International Technology Company Limited.

Approved by:





**Certificate No. :** SS2206-022-0001

**Environment :** Ambient Temperature : Start record 25.5 °C , Stop record 25.6 °C  
Relative Humidity : Start record 54.5 %RH , Stop record 54.6 %RH  
Atmospheric Pressure : Start record 1001.2 mbar , Stop record 1001.3 mbar

**Max. Capacity :** 220 g Resolution : 0.0001 g

**Departure from nominal value**

| Nominal Value<br>(g) | Correction Value (g)<br>Before Adjusted | Correction Value<br>After Adjusted | Uncertainty<br>± (g) |
|----------------------|---|------------------------------------|----------------------|
| 0 *                  | 0.0000                                  | -                                  | 0.000082             |
| 20                   | - 0.0001                                | -                                  | 0.00025              |
| 40                   | - 0.0001                                | -                                  | 0.00026              |
| 60                   | - 0.0001                                | -                                  | 0.00028              |
| 80                   | - 0.0002                                | -                                  | 0.00028              |
| 100                  | - 0.0001                                | -                                  | 0.00028              |
| 120                  | - 0.0002                                | -                                  | 0.00046              |
| 140                  | - 0.0002                                | -                                  | 0.00046              |
| 160                  | - 0.0002                                | -                                  | 0.00046              |
| 180                  | - 0.0003                                | -                                  | 0.00046              |
| 220                  | - 0.0002                                | -                                  | 0.00059              |

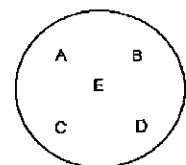
Marked \* are not included in the NSC-ONSC accreditation schedule for our laboratory.

**Repeatability of reading**

Load (g) : 220  
Standard deviation (g) : 0.00000  
Maximum difference (g) : 0.0000  
between successive reading

**Off-centre loading**

Load (g) : 100  
Position A (g) : 100.0000  
Position B (g) : 100.0000  
Position C (g) : 100.0000  
Position D (g) : 100.0000  
Position E (g) : 100.0000  
Maximum (g) : 0.0000  
difference



Front View

Condition As-Received : Used Item

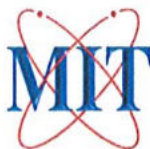
The measurement results and statements of conformity with specification only relate to the item calibrated.

**Measurement Standards Used & Traceability :**

The International System of Units (SI) through

SPC Certificate No. C02220774 for Weight Set E2 600g Serial No. MIT-STD-280, Due 08-Apr-23

**End of Certificate**



MIRACLE INTERNATIONAL TECHNOLOGY CO.,LTD

214 Bangwaek Rd. Bangpai Bangkoe Bangkok 10160  
Tel.: 0-2865-4647-8 Fax: 0-2865-4649 <http://www.mit.in.th>



## CALIBRATION CERTIFICATE

Certificate No. : SS2206-022-0002

Date Issued : 10-Jun-22

**Customer** : OKLA TESTING & CONSULTING SERVICE CO.,LTD  
63/13 Soi.Petchkasem 7, Petchkasem Rd., Thapra, Bangkok Yai, Bangkok  
10600

**Equipment** : Electronic Balance

**Manufacturer** : Mettler Toledo

**Model** : PL3001-S

**Serial No.** : 1230040028

**ID No./Tag No.** : -

**Date Received** : 03-Jun-22

**Date Calibrated** : 03-Jun-22

**Calibrated by** : [Redacted]

### Calibration Method or Calibration Procedure Used

In-house method : CP-06 base on UKAS LAB 14 Edition 6 October 2019.

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

### Result of Calibration

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

This certificate may not be reproduced other than in full except with the prior written approval of the Miracle International Technology Company Limited.

Approved by: [Redacted]





**Certificate No. :** SS2206-022-0002

**Environment :** Ambient Temperature : Start record 25.4 °C , Stop record 25.5 °C  
Relative Humidity : Start record 54.5 %RH , Stop record 54.6 %RH  
Atmospheric Pressure : Start record 1001.2 mbar , Stop record 1001.3 mbar

**Max. Capacity :** 3100 g

**Resolution :** 0.1 g

**Departure from nominal value**

| Nominal Value<br>(g) | Before Adjusted<br>Correction (g) | After Adjusted<br>Correction (g) | Uncertainty<br>± g |
|----------------------|-----------------------------------|----------------------------------|--------------------|
| 0 *                  | 0.0                               | -                                | 0.082              |
| 300                  | 0.0                               | -                                | 0.082              |
| 600                  | 0.0                               | -                                | 0.082              |
| 900                  | 0.0                               | -                                | 0.082              |
| 1200                 | 0.0                               | -                                | 0.082              |
| 1500                 | 0.0                               | -                                | 0.082              |
| 1800                 | 0.0                               | -                                | 0.082              |
| 2100                 | 0.0                               | -                                | 0.082              |
| 2400                 | 0.0                               | -                                | 0.082              |
| 3000                 | 0.0                               | -                                | 0.083              |
| 3100                 | 0.0                               | -                                | 0.083              |

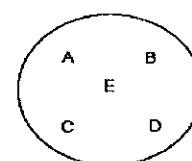
Marked \* are not included in the NSC-ONSC accreditation schedule for our laboratory.

**Repeatability of reading**

Load (g) : 3100  
Standard deviation (g) : 0.00  
Maximum difference (g) : 0.0  
between successive reading

**Off-centre loading**

Load (g) : 1000  
Position A (g) : 1000.0  
Position B (g) : 1000.0  
Position C (g) : 1000.0  
Position D (g) : 1000.0  
Position E (g) : 1000.0  
Maximum (g) : 0.0  
difference



Front View

Condition As-Received : Used Item

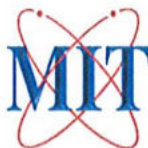
The measurement results and statements of conformity with specification only relate to the item calibrated.

**Measurement Standards Used & Traceability :**

The International System of Units (SI) through

Calibratech Certificate No. 64-210359-1 for Weight Standard 6 kg (F1) Serial No. MIT-STD-61, Due 05-Aug-22

**End of Certificate**



MIRACLE INTERNATIONAL TECHNOLOGY CO.,LTD

214 Bangwaek Rd. Bangpai Bangkae Bangkok 10160  
Tel.: 0-2865-4647-8 Fax: 0-2865-4649 <http://www.mit.in.th>



## CALIBRATION CERTIFICATE

Certificate No. : SS2206-022-0003

Date Issued : 10-Jun-22

**Customer** : OKLA TESTING & CONSULTING SERVICE CO.,LTD  
63/13 Soi.Petchkasem 7, Petchkasem Rd., Thapra, Bangkok Yai, Bangkok  
10600

**Equipment** : Electronic Balance

**Manufacturer** : Mettler Toledo

**Model** : PL6001-S

**Serial No.** : 1230510473

**ID No./Tag No.** : -

**Date Received** : 03-Jun-22

**Date Calibrated** : 03-Jun-22

**Calibrated by** : 

### Calibration Method or Calibration Procedure Used

In-house method : CP-06 base on UKAS LAB 14 Edition 6 October 2019.

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

### Result of Calibration

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

This certificate may not be reproduced other than in full except with the prior written approval of the Miracle International Technology Company Limited.

Approved by: 







**Certificate No. :** SS2206-022-0003

**Environment :** Ambient Temperature : Start record 25.4 °C , Stop record 25.5 °C  
Relative Humidity : Start record 54.5 %RH , Stop record 54.6 %RH  
Atmospheric Pressure : Start record 1001.2 mbar , Stop record 1001.3 mbar

**Max. Capacity :** 6000 g

**Resolution :** 0.1 g

**Departure from nominal value**

| Nominal Value<br>(g) | Before Adjusted<br>Correction (g) | After Adjusted<br>Correction (g) | Uncertainty<br>± g |
|----------------------|-----------------------------------|----------------------------------|--------------------|
| 0 *                  | 0.0                               | -                                | 0.082              |
| 600                  | 0.0                               | -                                | 0.082              |
| 1200                 | 0.0                               | -                                | 0.082              |
| 1800                 | 0.0                               | -                                | 0.082              |
| 2400                 | 0.0                               | -                                | 0.082              |
| 3000                 | 0.0                               | -                                | 0.083              |
| 3600                 | 0.0                               | -                                | 0.083              |
| 4200                 | 0.0                               | -                                | 0.083              |
| 4800                 | 0.0                               | -                                | 0.083              |
| 5400                 | 0.0                               | -                                | 0.083              |
| 6000                 | 0.0                               | -                                | 0.083              |

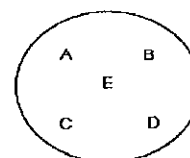
Marked \* are not included in the NSC-ONSC accreditation schedule for our laboratory.

**Repeatability of reading**

Load (g) : 6000  
Standard deviation (g) : 0.00  
Maximum difference (g) : 0.0  
between successive reading

**Off-centre loading**

Load (g) : 2000  
Position A (g) : 2000.0  
Position B (g) : 2000.0  
Position C (g) : 2000.0  
Position D (g) : 2000.0  
Position E (g) : 2000.0  
Maximum (g) : 0.0  
difference



Front View

Condition As-Received : Used Item

The measurement results and statements of conformity with specification only relate to the item calibrated.

**Measurement Standards Used & Traceability :**

The International System of Units (SI) through

Calibratech Certificate No. 64-210359-1 for Weight Standard 6 kg (F1) Serial No. MIT-STD-61, Due 05-Aug-22

Calibratech Certificate No. 65-210114-1 for Weight Standard 5 kg (F1) \*\* Serial No. MIT-STD-138, Due 15-Mar-23

**End of Certificate**



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ISO/IEC 17025

# CALIBRATION LABORATORY Co., LTD.

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

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



NSC-TISI-TIS 17025  
CALIBRATION 0059  
CLC

## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : REFRIGERATOR [FREEZER]  
MANUFACTURER : SHIMAX  
MODEL / TYPE : MAC3D  
SERIAL NO. : N/A[011/190118]  
CLID. NO. : 332200066  
JOB CONTROL NO. : 220112003165

CUSTOMER : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3RD FLOOR, PHETKASEM 7/1 RD., WATTHAPRA,  
BANGKOKYAI, BANGKOK 10600 THAILAND

DATE OF RECEIVED : 12 January 2022

DATE OF ISSUED : 21 January 2022

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

Calibrated By :

Calibration Engineer

Approved By :

Authorized Signatory

21 January 2022



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. Q22003165

F3-011-04/01-12

page 1 of 4



@clccalibration

## REPORT OF CALIBRATION

### FOR

**NOMENCLATURE** : REFRIGERATOR [FREEZER]  
**MANUFACTURER** : SHIMAX  
**MODEL / TYPE** : MAC3D  
**SERIAL NO.** : N/A[011/190118]  
**LOCATION SITE** : OKLA 67  
**DATE OF CALIBRATION** : 17 January 2022

---

#### ENVIRONMENT CONDITIONS :

Temperature : 28 °C to 30 °C

Relative Humidity : 52% to 55 %

#### PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-165** 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. Q21068655, Due Date 27 July 2022.

#### 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:2013)"

Certificate No. Q22003165

F3-011-04/01-12

page 2 of 4







**CLC**  
Accredited  
ISO/IEC 17025

# CALIBRATION LABORATORY Co., LTD.

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

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



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 refrigerator [freezer].

### CALIBRATION DATA

#### 1. REFRIGERATOR [FREEZER] PERFORMANCE

| DUC            |                   | Measured Uniformity | Measured Stability | Measured Overall |
|----------------|-------------------|---------------------|--------------------|------------------|
| Setting ( °C ) | Indicating ( °C ) | ( °C )              | ( °C )             | Variation ( °C ) |
| 2.0            | 2.0               | 0.76                | 0.35               | 1.62             |
| 4.0            | 4.0               | 0.76                | 0.21               | 1.34             |
| 6.0            | 6.0               | 0.71                | 0.08               | 1.14             |

Certificate No. Q22003165

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@clccalibration

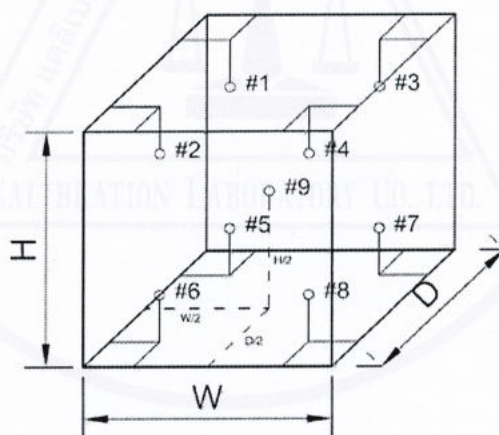
## CALIBRATION DATA

### 2. TEMPERATURE DISTRIBUTION

| DUC            |                   | Measured Temperature ( °C )@Probe No.9 is Ref. |      |      |      |      |      |      |      |      | Uncertainty<br>± ( °C ) | Coverage<br>factor k |
|----------------|-------------------|--|------|------|------|------|------|------|------|------|-------------------------|----------------------|
| Setting ( °C ) | Indicating ( °C ) | 1  | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    |                         |                      |
| 2.0            | 2.0               | 2.06   | 2.02 | 0.91 | 1.10 | 1.45 | 1.46 | 0.97 | 0.85 | 1.38 | 0.61                    | 2,00                 |
| 4.0            | 4.0               | 3.88   | 3.87 | 2.85 | 2.99 | 3.29 | 3.38 | 2.82 | 2.76 | 3.19 | 0.51                    | 2,00                 |
| 6.0            | 6.0               | 5.88   | 5.87 | 4.96 | 5.06 | 5.32 | 5.41 | 4.86 | 4.84 | 5.21 | 0.46                    | 2,00                 |

Technical Note : W = 50 cm, D = 38 cm, H = 125 cm.

The Scope of Accredited TISI Certificate No. 19C087/0655 Issue 1 Page 105 of 111



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

### End of Certificate ###

Certificate No. Q22003165

F3-011-04/01-12

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@clccalibration



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Tel.: 0-2865-4647-8 Fax: 0-2865-4649 <http://www.mit.in.th>



## CALIBRATION CERTIFICATE

Certificate No. : SS2206-022-0006

Date Issued : 10-Jun-22

**Customer** : OKLA TESTING & CONSULTING SERVICE CO.,LTD  
63/13 Soi.Petchkasem 7, Petchkasem Rd., Thapra, Bangkok Yai,  
Bangkok 10600

**Equipment** : Freezer

**Manufacturer** : S-Cool

**Model** : SM61M 9.5 Q

**Serial No.** : OKLA-LAB-011/190118

**ID No./Tag No.** : -

**Date Received** : 03-Jun-22

**Date Calibrated** : 03-Jun-22

**Calibrated by** : [REDACTED]

### Calibration Method or Calibration Procedure Used

Standard method : CP-05 TLAS G-20.

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

### Result of Calibration

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

This certificate may not be reproduced other than in full except with the prior written approval of the Miracle International Technology Company Limited.

Approved by:

[REDACTED]

[REDACTED]



Page 1 of 2



Certificate No. : SS2206-022-0006

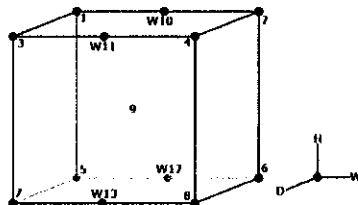
Environment : Ambient Temperature : Start record 25.5 °C, Stop record 25.6 °C  
Relative Humidity : Start record 54.6 %RH, Stop record 54.7 %RH

| Calibration Temperature (°C) | Setting Temperature (°C) | Indicating Temperature (°C) | Measured Stability <sup>1</sup> (°C) | Measured Uniformity <sup>2</sup> (°C) | Overall Variation <sup>3</sup> (°C) |
|------------------------------|--------------------------|-----------------------------|--------------------------------------|---------------------------------------|-------------------------------------|
| 2                            | 2.0                      | 2.2                         | 0.12                                 | 1.38                                  | 2.37                                |
| 4                            | 4.0                      | 4.0                         | 0.14                                 | 0.90                                  | 1.82                                |
| 6                            | 6.0                      | 6.0                         | 0.05                                 | 1.08                                  | 1.74                                |

Without adjustment

| Calibration Temperature (°C) | Standard Reading (°C), Probe No. 9 is Reference Probe |         |         |         |       |       |       |       |       |  | Uncertainty <sup>4</sup> ±°C |
|------------------------------|---|---------|---------|---------|-------|-------|-------|-------|-------|--|------------------------------|
| 2                            | No. 1   | No. 2   | No. 3   | No. 4   | No. 5 | No. 6 | No. 7 | No. 8 | No. 9 |  |                              |
|                              | 2.58  | 0.88    | 2.44    | 1.14    | 1.67  | 1.61  | 2.19  | 1.20  | 1.70  |  |                              |
|                              | No. W10   | No. W11 | No. W12 | No. W13 |       |       |       |       |       |  | 0.38                         |
| 4                            | No. 1   | No. 2   | No. 3   | No. 4   | No. 5 | No. 6 | No. 7 | No. 8 | No. 9 |  |                              |
|                              | 4.36  | 2.72    | 4.19    | 2.98    | 3.42  | 3.29  | 3.94  | 2.97  | 3.50  |  |                              |
|                              | No. W10   | No. W11 | No. W12 | No. W13 |       |       |       |       |       |  | 0.31                         |
| 6                            | No. 1   | No. 2   | No. 3   | No. 4   | No. 5 | No. 6 | No. 7 | No. 8 | No. 9 |  |                              |
|                              | 6.11  | 4.69    | 6.08    | 4.91    | 5.23  | 5.07  | 5.78  | 4.88  | 5.24  |  |                              |
|                              | No. W10   | No. W11 | No. W12 | No. W13 |       |       |       |       |       |  | 0.30                         |
|                              | 5.79  | 6.28    | 5.46    | 4.62    |       |       |       |       |       |  |                              |

Setting Air Fresh No. -



Condition As-Received : Used Item

The measurement results and statements of conformity with specification only relate to the item calibrated.

#### Measurement Standards Used & Traceability :

The International System of Units (SI) through

MIT Certificate No. AD2202-080-0001 for Digital Thermometer with Probe (Agilent) Module 1 (245) Serial No. US37005130, Due 04-Aug-22

Notes : 1. The temperature stability is the one-half of greatest maximum difference of measured temperatures at any one probe.

2. The temperature uniformity is the maximum difference of measured temperatures between of any probes and the measured temperature at the reference location which are observed at same time.

3. Overall variation is the difference of maximum and minimum measured temperatures throughout observation time.

4. The uncertainty of measurement is included temperature stability.

5. The temperature uniformity, stability, overall variation and indicating temperature is applicable to all air or gas filled temperature controlled enclosures at atmospheric pressure.

End of Certificate



MIRACLE INTERNATIONAL TECHNOLOGY CO.,LTD

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Tel.: 0-2865-4647-8 Fax: 0-2865-4649 <http://www.mit.in.th>



## CALIBRATION CERTIFICATE

Certificate No. : SS2206-022-0004

Date Issued : 10-Jun-22

**Customer** : OKLA TESTING & CONSULTING SERVICE CO.,LTD  
63/13 Soi.Petchkasem 7, Petchkasem Rd., Thapra, Bangkok Yai,  
Bangkok 10600

**Equipment** : Hot Air Oven

**Manufacturer** : KWF

**Model** : S0V70B

**Serial No.** : KWF2021021902

**ID No./Tag No.** : -

**Date Received** : 03-Jun-22

**Date Calibrated** : 03-Jun-22

**Calibrated by** :

### Calibration Method or Calibration Procedure Used

Standard method : CP-05 TLAS G-20.

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

### Result of Calibration

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

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Approved by:



Page 1 of 2

Certificate No. : SS2206-022-0004

Environment : Ambient Temperature : Start record 25.5 °C, Stop record 25.7 °C  
Relative Humidity : Start record 54.6 %RH, Stop record 54.7 %RH

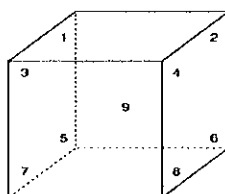
| Calibration Temperature (°C) | Setting Temperature (°C) | Indicating Temperature (°C) | Measured Stability <sup>1</sup> (°C) | Measured Uniformity <sup>2</sup> (°C) | Overall Variation <sup>3</sup> (°C) |
|------------------------------|--------------------------|-----------------------------|--------------------------------------|---------------------------------------|-------------------------------------|
| 104                          | 104.0                    | 104.0                       | 0.21                                 | 0.62                                  | 0.82                                |
| 140                          | 140.0                    | 140.0                       | 0.23                                 | 0.82                                  | 0.94                                |
| 160                          | 160.0                    | 160.0                       | 0.21                                 | 1.39                                  | 1.68                                |
| 180                          | 180.0                    | 180.0                       | 0.34                                 | 1.30                                  | 1.81                                |

Without adjustment

| Calibration Temperature (°C) | STD No. 1 (°C) | STD No. 2 (°C) | STD No. 3 (°C) | STD No. 4 (°C) | STD No. 5 (°C) | STD No. 6 (°C) | STD No. 7 (°C) | STD No. 8 (°C) | STD No. 9 (°C) | Uncertainty <sup>4</sup> ±°C |
|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------------------|
| 104                          | 104.56         | 104.42         | 104.30         | 104.43         | 104.54         | 104.68         | 104.34         | 104.68         | 104.81         | 0.95                         |
| 140                          | 140.25         | 140.43         | 140.58         | 140.51         | 140.55         | 140.65         | 140.32         | 140.68         | 140.04         | 1.0                          |
| 160                          | 160.16         | 160.62         | 160.39         | 160.55         | 159.32         | 160.51         | 159.73         | 160.44         | 159.45         | 1.1                          |
| 180                          | 180.50         | 180.66         | 180.50         | 180.45         | 179.48         | 180.40         | 179.69         | 180.13         | 179.59         | 1.1                          |

Note : Probe No. 9 is Reference Probe

Setting Air Fresh No. -



Condition As-Received : Used Item

The measurement results and statements of conformity with specification only relate to the item calibrated.

#### Measurement Standards Used & Traceability :

The International System of Units (SI) through

MIT Certificate No. AD2202-084-0002 for Data Acquisition Module 2 TC type T Serial No. US37003770, Due 08-Aug-22

Notes : 1. The temperature stability is the one-half of greatest maximum difference of measured temperatures at any one probe.

2. The temperature uniformity is the maximum difference of measured temperatures between of any probes and the measured temperature at the reference location which are observed at same time.

3. Overall variation is the difference of maximum and minimum measured temperatures throughout observation time.

4. The uncertainty of measurement is included temperature stability.

5. The temperature uniformity, stability, overall variation and indicating temperature is applicable to all air or gas filled temperature controlled enclosures at atmospheric pressure.

End of Certificate





MIRACLE INTERNATIONAL TECHNOLOGY CO.,LTD

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Tel.: 0-2865-4647-8 Fax: 0-2865-4649 <http://www.mit.in.th>



## CALIBRATION CERTIFICATE

Certificate No. : SS2206-022-0005

Date Issued : 10-Jun-22

**Customer** : OKLA TESTING & CONSULTING SERVICE CO.,LTD  
63/13 Soi.Petchkasem 7, Petchkasem Rd., Thapra, Bangkok Yai,  
Bangkok 10600

**Equipment** : Hot Air Oven

**Manufacturer** : Labtech

**Model** : LDO-060E

**Serial No.** : DLCCCL0513C

**ID No./Tag No.** : -

**Date Received** : 03-Jun-22

**Date Calibrated** : 03-Jun-22

**Calibrated by** : 

### Calibration Method or Calibration Procedure Used


Standard method : CP-05 TLAS G-20.

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

### Result of Calibration

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

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Approved by: 



**Certificate No. :** SS2206-022-0005

**Environment :** Ambient Temperature : Start record 25.5 °C, Stop record 25.7 °C  
Relative Humidity : Start record 54.6 %RH, Stop record 54.7 %RH

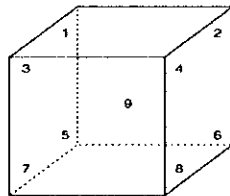
| Calibration Temperature<br>(°C) | Setting Temperature<br>(°C) | Indicating Temperature<br>(°C) | Measured Stability <sup>1</sup><br>(°C) | Measured Uniformity <sup>2</sup><br>(°C) | Overall Variation <sup>3</sup><br>(°C) |
|---------------------------------|-----------------------------|--------------------------------|---|--|--|
| 104                             | 104                         | 104                            | 0.52                                    | 1.46                                     | 2.19                                   |
| 140                             | 140                         | 140                            | 0.98                                    | 1.54                                     | 2.40                                   |
| 160                             | 160                         | 160                            | 0.98                                    | 1.46                                     | 2.38                                   |
| 180                             | 180                         | 180                            | 1.45                                    | 2.48                                     | 3.32                                   |

Without adjustment

| Calibration Temperature<br>(°C) | STD No. 1<br>(°C) | STD No. 2<br>(°C) | STD No. 3<br>(°C) | STD No. 4<br>(°C) | STD No. 5<br>(°C) | STD No. 6<br>(°C) | STD No. 7<br>(°C) | STD No. 8<br>(°C) | STD No. 9<br>(°C) | Uncertainty <sup>4</sup><br>±°C |
|---------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|---------------------------------|
| 104                             | 104.77            | 104.49            | 104.15            | 103.88            | 104.11            | 104.29            | 103.44            | 103.33            | 103.56            | 1.2                             |
| 140                             | 140.90            | 140.59            | 140.83            | 140.69            | 141.17            | 141.13            | 140.69            | 140.79            | 140.75            | 1.6                             |
| 160                             | 160.95            | 160.54            | 160.79            | 160.78            | 161.19            | 161.15            | 160.92            | 161.15            | 160.74            | 1.7                             |
| 180                             | 181.55            | 181.08            | 181.34            | 181.30            | 181.83            | 182.02            | 181.42            | 181.61            | 181.36            | 2.1                             |

Note : Probe No. 9 is Reference Probe

Setting Air Fresh No. -



Condition As-Received : Used Item

The measurement results and statements of conformity with specification only relate to the item calibrated.

**Measurement Standards Used & Traceability :**

The International System of Units (SI) through

MIT Certificate No. AD2202-084-0002 for Data Acquisition Module 2 TC type T Serial No. US37003770, Due 08-Aug-22

Notes : 1. The temperature stability is the one-half of greatest maximum difference of measured temperatures at any one probe.

2. The temperature uniformity is the maximum difference of measured temperatures between of any probes and the measured temperature at the reference location which are observed at same time.

3. Overall variation is the difference of maximum and minimum measured temperatures throughout observation time.

4. The uncertainty of measurement is included temperature stability.

5. The temperature uniformity, stability, overall variation and indicating temperature is applicable to all air or gas filled temperature controlled enclosures at atmospheric pressure.

**End of Certificate**



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## CALIBRATION CERTIFICATE

Certificate No. : SS2206-022-0008

Date Issued : 10-Jun-22

**Customer** : OKLA TESTING & CONSULTING SERVICE CO.,LTD  
63/13 Soi.Petchkasem 7, Petchkasem Rd., Thapra, Bangkok Yai,  
Bangkok 10600

**Equipment** : Incubator

**Manufacturer** : S-Cool

**Model** : SM 61 M

**Serial No.** : 18021147

**ID No./Tag No.** : -

**Date Received** : 03-Jun-22

**Date Calibrated** : 03-Jun-22

**Calibrated by** :

### Calibration Method or Calibration Procedure Used

Standard method : CP-05 TLAS G-20.

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

### Result of Calibration

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

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Approved by:



Page 1 of 2



**Certificate No. :** SS2206-022-0008

**Environment :** Ambient Temperature : Start record 25.5 °C, Stop record 25.6 °C  
Relative Humidity : Start record 54.5 %RH, Stop record 54.6 %RH

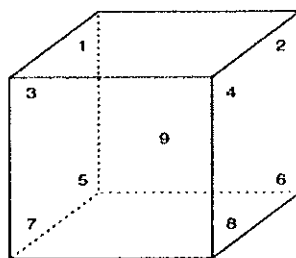
| Calibration Temperature (°C) | Setting Temperature (°C) | Indicating Temperature (°C) | Measured Stability <sup>1</sup> (°C) | Measured Uniformity <sup>2</sup> (°C) | Overall Variation <sup>3</sup> (°C) |
|------------------------------|--------------------------|-----------------------------|--------------------------------------|---------------------------------------|-------------------------------------|
| 20                           | 20.0                     | 20.0                        | 0.08                                 | 0.76                                  | 1.11                                |

Without adjustment

| Calibration Temperature (°C) | STD No. 1 (°C) | STD No. 2 (°C) | STD No. 3 (°C) | STD No. 4 (°C) | STD No. 5 (°C) | STD No. 6 (°C) | STD No. 7 (°C) | STD No. 8 (°C) | STD No. 9 (°C) | Uncertainty <sup>4</sup> ±°C |
|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------------------|
| 20                           | 19.47          | 19.38          | 19.65          | 19.80          | 19.39          | 20.25          | 19.26          | 19.95          | 20.00          | 0.25                         |

Note : Probe No. 9 is Reference Probe

Setting Air Fresh No. -



Condition As-Received : Used Item

The measurement results and statements of conformity with specification only relate to the item calibrated.

**Measurement Standards Used & Traceability :**

The International System of Units (SI) through

MIT Certificate No. AD2111-076-0001 for Digital Thermometer with Probe (Agilent) Module 1 (08) NTC & Pt1000 Serial No. MY44000197, Due 05-Jun-22

Notes : 1. The temperature stability is the one-half of greatest maximum difference of measured temperatures at any one probe.

2. The temperature uniformity is the maximum difference of measured temperatures between of any probes and the measured temperature at the reference location which are observed at same time.

3. Overall variation is the difference of maximum and minimum measured temperatures throughout observation time.

4. The uncertainty of measurement is included temperature stability.

5. The temperature uniformity, stability, overall variation and indicating temperature is applicable to all air or gas filled temperature controlled enclosures at atmospheric pressure.

**End of Certificate**

## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : pH METER  
MANUFACTURER : HANNA INSTRUMENTS  
MODEL / TYPE : HI5521/HI1131  
SERIAL NO. : 04160019101/061334CN  
CLID. NO. : 272101219  
JOB CONTROL NO. : 220426042324

CUSTOMER : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3RD FLOOR, PHETKASEM 7/1 RD., WATTHAPRA,  
BANGKOKYAI, BANGKOK 10600 THAILAND

DATE OF RECEIVED : 26 April 2022

DATE OF ISSUED : 29 April 2022

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

Calibrated By :

Calibration Engineer

Approved By :

Authorized Signatory

29 April 2022



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. Q22042324

F3-011-04/01-12

page 1 of 3



@clccalibration

## REPORT OF CALIBRATION

### FOR

**NOMENCLATURE** : **pH METER**  
**MANUFACTURER** : **HANNA INSTRUMENTS**  
**MODEL / TYPE** : **HI5521/HI1131**  
**SERIAL NO.** : **04160019101/061334CN**  
**DATE OF CALIBRATION** : **27 April 2022**

---

#### ENVIRONMENT CONDITIONS :

**Temperature :**  $(25 \pm 2.5) ^\circ\text{C}$

**Relative Humidity :**  $(50 \pm 15) \% \text{ RH}$

#### PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-128**. The calibration was performed by direct measurement with Certified Reference Material (CRM).

#### REFERENCE STANDARD USED :

1. pH Standard Solution, NIMT TRM CODE TRM-S-2003, TRM CODE TRM-S-2007.
2. pH Standard Solution, Control Company Catalog Number 06-664-260,11754256, Lot Number CC728484.

#### TRACEABILITY :

1. The measurements are traceable to International System of Units (SI) , through National Institute of Metrology (Thailand).  
Lot Number. 160221 , 180121. Due Date 14 June 2022.
2. The measurements are traceable to International System of Units (SI) , through Control Company.  
Certificate No. 4281-12405788 , Due Date 30 June 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:2021)"

**Certificate No. Q22042324**

**F3-011-04/01-12**

page 2 of 3







**CLC**  
Accredited  
ISO/IEC 17025

# CALIBRATION LABORATORY Co., LTD.

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

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



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 pH meter.

## CALIBRATION DATA

### **pH METER RESULT @ 25 °C**

| Standard pH<br>Buffer Solution<br>(pH) | pH Meter<br>Reading<br>(pH) | pH Meter<br>Reading<br>(mV) | Correction<br>(pH) | Uncertainty of<br>pH Measurement<br>( $\pm$ pH) | k Factor |
|--|-----------------------------|-----------------------------|--------------------|---|----------|
| 4.000                                  | 4.01                        | 121.0                       | -0.010             | 0.023   | 2,87     |
| 6.996                                  | 7.01                        | -47.4                       | -0.014             | 0.015   | 2,06     |
| 10.007                                 | 10.04                       | -203.7                      | -0.033             | 0.100   | 2,25     |

Note. The Scope of Accredited TISI Certificate No. 19C087/0655 Issue 1 Page 79 of 111

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

**### End of Certificate ###**

Certificate No. Q22042324

F3-011-04/01-12

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@clccalibration



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Tel.: 0-2865-4647-8 Fax: 0-2865-4649 <http://www.mit.in.th>



## CALIBRATION CERTIFICATE

Certificate No. : SS2206-022-0007

Date Issued : 10-Jun-22

**Customer** : OKLA TESTING & CONSULTING SERVICE CO.,LTD  
63/13 Soi.Petchkasem 7, Petchkasem Rd., Thapra, Bangkok Yai,  
Bangkok 10600

**Equipment** : Water Bath

**Manufacturer** : Labtech

**Model** : LWB-222A

**Serial No.** : BCCLJ23001C

**ID No./Tag No.** : -

**Date Received** : 03-Jun-22

**Date Calibrated** : 03-Jun-22

**Calibrated by**



### Calibration Method or Calibration Procedure Used

In-house method : CP-14 base on ASTM E 715-80 (Reapproved 2011).

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

### Result of Calibration

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

This certificate may not be reproduced other than in full except with the prior written approval of the Miracle International Technology Company Limited.

Approved by:



**Certificate No. :** SS2206-022-0007

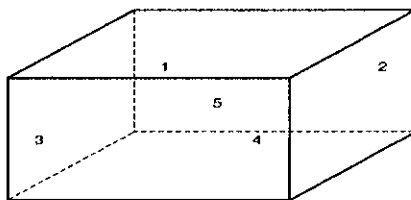
**Environment :** Ambient Temperature : Start record 25.4 °C, Stop record 25.5 °C  
Relative Humidity : Start record 54.5 %RH, Stop record 54.5 %RH

| Calibration<br>Temperature<br>(°C) | Setting<br>Temperature<br>(°C) | Indicating<br>Temperature<br>(°C) | Measured<br>Stability <sup>1</sup><br>(°C) | Measured<br>Uniformity <sup>2</sup><br>(°C) | Overall<br>Variation <sup>3</sup><br>(°C) |
|------------------------------------|--------------------------------|-----------------------------------|--|---|---|
| 60                                 | 60                             | 60                                | 0.24                                       | 1.02  | 1.03                                      |

Without adjustment

| Calibration<br>Temperature<br>(°C) | STD No. 1<br>(°C) | STD No. 2<br>(°C) | STD No. 3<br>(°C) | STD No. 4<br>(°C) | STD No. 5<br>(°C) | Uncertainty <sup>4</sup><br>±°C |
|------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|---------------------------------|
| 60                                 | 61.20             | 61.18             | 61.11             | 61.20             | 61.59             | 0.40                            |

**Note :** Probe No. 5 is Reference Probe



Condition As-Received : Used Item

The measurement results and statements of conformity with specification only relate to the item calibrated.

**Measurement Standards Used & Traceability :**

The International System of Units (SI) through

MIT Certificate No. AD2111-076-0001 for Digital Thermometer with Probe (Agilent) Module 1 (08) NTC & Pt1000  
Serial No. MY44000197, Due 05-Jun-22

- Notes :
1. The temperature stability is the one-half of greatest maximum difference of measured temperatures at any one probe.
  2. The temperature uniformity is the maximum difference of measured temperatures between of any probes and the measured temperature at the reference location which are observed at same time.
  3. Overall variation is the difference of maximum and minimum measured temperatures throughout observation time.
  4. The uncertainty of measurement is included temperature stability.

**End of Certificate**