

ภาคผนวก น.

เอกสารสอบเทียบความถูกต้องของเครื่องมือ

**SMART TECH CALIBRATION & SERVICES CO., LTD.**

14/506 MOO 3, RANGSIT-NAKHON NAYOK ROAD, LAM PHAK KUT,
THANYABURI, PATHUM THANI 12110, THAILAND
Tel. +662-114-3148 Email : stcal.md@gmail.com



Certificate of Calibration

Certificate No. STCR-2302001-5**Work Order No.** STCR-2302001

Page 1 of 3

Customer Name : C.T. ENVIRONMENT AND CHEMICAL CO., LTD.
9/40-41 M.2 T.Bangkrueveng A.Bangkruy Nonthaburi 11130

Equipment Name : pH Meter
Manufacturer : EUTECH INSTRUMENT
Model : PH700
Serial Number : 2055189
Control Number : N/A
Received Date : Feb 2, 2023
Calibration Date : Feb 4, 2023
Recommended Due Date : N/A
Calibration Method : Calibration Procedure No. CPC-04-01

Environmental Conditions

Ambient Temperature : $(25 \pm 10) ^\circ\text{C}$
Ambient Relative Humidity : $(50 \pm 30) \% \text{RH}$
Calibration Place : Calibration performed at Customer's facility

Condition as received : Normal

Calibration Result : See data attached

1. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k = 2$, providing a level of confidence of approximately 95%.
2. The Unit Under Calibration (UUC) has been calibrated by using the working standard which is traceable to SI-Units. The calibration procedure documented is intended to implement the requirements of ISO/IEC 17025 : 2017
3. The working standard is indicated in page 2 of this certificate.
4. This report applies to the item calibrated and shall not be reproduced except in full, without written approval by Calibration Laboratory, Smart Tech Calibration & Services Co.,Ltd.
5. This results of this report only to the items calibrated.

Date of Issue : Feb 7, 2023

Calibrated by : M. Thippatai

Approved by :



(Mr.Chayut Wongleang)
Laboratory Manager

Calibration Report

Smart Tech Calibration & Services Co.,Ltd.

Certificate No.: STCR-2302001-5

Page 2 of 3

Standards Equipment Used

<u>Equipment Name</u>	<u>Ref No.</u>	<u>Certificate No.</u>	<u>Due Date</u>	<u>Traceability to</u>
pH Standard Solution 4.00 pH	PH004.L5	Lot No. 784924	Dec 12, 2023	CPAchem
pH Standard Solution 7.00 pH	PH007.L5	Lot No. 784925	Dec 12, 2023	CPAchem
pH Standard Solution 10.00 pH	PH010.L5	Lot No. 784926	Dec 12, 2023	CPAchem

Traceability

This calibration is traceable to the International System of Unit via :

- CPAchem : CPAchem Ltd. (ANAB Cert No AR-1835)



Calibration Report

Smart Tech Calibration & Services Co.,Ltd.

Certificate No.: STCR-2302001-5

Page 3 of 3

Results of Calibration: [] Without adjustment [☒] With adjustment

Appearance and Function of Use Inspection : GOOD

Result of pH Measurement at 20 °C

STD. Value	UUC Reading		Correction	(±) Uncertainty
	Before Adjustment	After Adjustment		
4.00 pH	4.21 pH	4.01 pH	-0.01 pH	0.010 pH
7.00 pH	7.08 pH	7.00 pH	0.00 pH	0.010 pH
10.00 pH	10.36 pH	10.00 pH	0.00 pH	0.017 pH

STD = Standard

UUC = Unit Under Calibration

- End of Certificate -



**SMART TECH CALIBRATION & SERVICES CO., LTD.**

14/506 MOO 3, RANGSIT-NAKHON NAYOK ROAD, LAM PHAK KUT,
THANYABURI, PATHUM THANI 12110, THAILAND
Tel. +662-114-3148 Email : stcal.md@gmail.com



Certificate of Calibration

Certificate No. STCR-2302001-7**Work Order No. STCR-2302001**

Page 1 of 3

Customer Name : C.T. ENVIRONMENT AND CHEMICAL CO., LTD.
9/40-41 M.2 T.Bangkrueveng A.Bangkruey Nonthaburi 11130

Equipment Name : Electronic Balance
Manufacturer : ZEPPER
Model : BGB224
Serial Number : 22208688
Control Number : N/A
Received Date : Feb 2, 2023
Calibration Date : Feb 4, 2023
Recommended Due Date : N/A
Calibration Method : Calibration Procedure No. CPM-04-03

Environmental Conditions

Ambient Temperature : $(25 \pm 10) ^\circ\text{C}$ **Atmospheric Pressure** : (950 to 1050) hPa
Ambient Relative Humidity : $(50 \pm 30) \% \text{RH}$
Calibration Place : Calibration performed at Customer's facility

Condition as received : Normal

Calibration Result : See data attached

1. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k = 2$, providing a level of confidence of approximately 95%.
2. The Unit Under Calibration (UUC) has been calibrated by using the working standard which is traceable to SI-Units. The calibration procedure documented is intended to implement the requirements of ISO/IEC 17025 : 2017
3. The working standard is indicated in page 2 of this certificate.
4. This report applies to the item calibrated and shall not be reproduced except in full, without written approval by Calibration Laboratory, Smart Tech Calibration & Services Co.,Ltd.
5. This results of this report only to the items calibrated.

Date of Issue : Feb 7, 2023

Calibrated by : M. Thippatai

Approved by :

(Mr. Chayut Wongleang)
Laboratory Manager

Calibration Report

Smart Tech Calibration & Services Co.,Ltd.

Certificate No.: STCR-2302001-7

Page 2 of 3

Standards Equipment Used

<u>Equipment Name</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>	<u>Traceability to</u>
Standard Weight Set	ID.STC-STD042	B0-0601002/23	Jan 9, 2024	ANAB : AC-2695

Traceability

This calibration is traceable to the International System of Unit via :

- ANAB : The ANSI National Accreditation Bord.



Calibration Report

Smart Tech Calibration & Services Co.,Ltd.

Certificate No.: STCR-2302001-7

Page 3 of 3

Range capacity : 0 to 220 g

Resolution: 0.0001 g

Appearance and Function of Use Inspection : GOOD

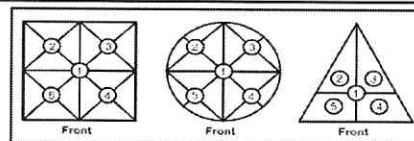
1. Repeatability. (n = 10, n = Number of Measurement)

Load (g)	Standard deviation of reading. (g)	Maximum difference between successive reading. (g)
100	0.0000	0.0000
200	0.0000	0.0000

2. Effect of off center loading.

A mass of 100 g was placed to various positions on the pan.

The weighing machine reading error obtained is given in table.



Position 1	Position 2	Position 3	Position 4	Position 5	Maximum difference
100.0000	100.0000	100.0000	99.9999	100.0000	0.0001

3. Linearity

Nominal value (g)	UUC Reading (g)	Correction (g)	Uncertainty of Measurement (± g)
No Load	0.0000	0.0000	0.00018
20.0	20.0000	0.0000	0.00023
40.0	40.0000	0.0000	0.00040
60.0	60.0000	0.0000	0.00040
80.0	80.0000	0.0000	0.00040
100.0	100.0000	0.0000	0.00040
120.0	120.0000	0.0000	0.00053
140.0	140.0000	0.0000	0.00053
160.0	160.0000	0.0000	0.00053
180.0	180.0000	0.0000	0.00053
200.0	200.0000	0.0000	0.00053

4. Hysteresis

Load (g)	Hysteresis (g)
100	0.0000

UUC = Unit Under Calibration

- End of Certificate -

