

## ภาคผนวก 4

เอกสารสอบเทียบเครื่องมือการตรวจวิเคราะห์คุณภาพน้ำ

## Certificate of Calibration

Certificate No. : 67-200346-1

Page : 1 of 2

Submitted by :

Ecotech Water Systems Co., Ltd.  
20 Soi Kheharomklao 74 Yak 6, Rarphathana, Saphansung, Bangkok 10240

Equipment :

Electronic Balance  
Manufacturer : OHAUS Model : PA214  
Serial No. : 8328380168 ID No. : INS013  
Capacity : 210 g Resolution : 0.0001 g

Environment :

On site calibration was carried out at the Laboratory, Ecotech Water Systems Co., Ltd.  
Ambient Temperature : (27.7 to 28.4) °C  
Relative Humidity : (48.1 to 48.9) %  
Air Pressure : 1009.0 mbar

Date of Received :

28 September 2024

Date of Calibration :

28 September 2024

Date of Issue :

30 September 2024

Calibrated by :

Akaradath Thippichai

Calibration Method :

In-house method CAL-M2001 based on UKAS Publication ref : LAB 14  
Edition 7 - November 2022

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

Standard Weights

ID No.	Cert. No.	Due Date	Traceability
E261-E2624	C02232088	08 Nov 2024	National Institute of Metrology (Thailand), (NIMT)

Approved by

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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## Certificate of Calibration

Certificate No. : 67-200346-1

Page : 2 of 2

Result of Calibration : After Adjustment

UUC Condition As-Received : Good

Departure of indication from nominal value

Nominal Value (g)	Correction (g)	Uncertainty ± (g)	Error before Adjustment (g)
0.01	0.0000	0.00012	0.0000
0.1	0.0000	0.00012	0.0000
1	-0.0001	0.00013	0.0000
5	-0.0001	0.00013	0.0000
10	0.0000	0.00013	0.0000
20	-0.0001	0.00014	0.0002
50	0.0001	0.00015	0.0007
100	0.0001	0.00020	0.0014
150	0.0001	0.00038	0.0018
200	0.0002	0.00038	0.0026

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

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor  $k = 2.06$ , providing a level of confidence of approximately 95%

Eccentric error

Load test :	50 g
A	B
B	C
C	D
D	E
E	A

Repeatability

Load test	:	200 g
Stddev.	:	0.00005 g

- 0.00 -



## Certificate of Calibration

Certificate No. : 67-400561-6

Page : 1 of 2

Submitted by : Ecotech Water Co., Ltd.

20 Soi Khueharnklao 74 Yeak 6, Raiphatthana, Saphansung, Bangkok 10240

Equipment : Temperature controlled enclosure (Incubator)

Manufacturer : Biobase

Model : BJPX-B4001I

Range : N/A °C

Resolution : 0.1 °C

Serial No. : KYP4001I2010002

ID No. : N/A

Environment : On site calibration was carried out at the Laboratory, Ecotech Water Co., Ltd.

Ambient Temperature : (25.3 to 25.8) °C

Relative Humidity : (44 to 48) %

Line Voltage : (225.0 to 226.5) V

Date of Received : 28 September 2024

Date of Calibration : 28 September 2024

Date of Issue : 02 October 2024

Calibrated by : Permpon Chamru

Calibration Method : CAL-M4004, TLAS G-20

The temperature scale used was based on ITS-90

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

Standard Digital Thermometer with RTD Probe

ID No. Cert.No.

Due Date

400029 &amp; 400043 67-400245-1

27 Oct 2024

Traceability

National Institute of Metrology Thailand (NIMT)

Approved by

(Permpon Chamru)

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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## Certificate of Calibration

Certificate No. : 67-400561-6

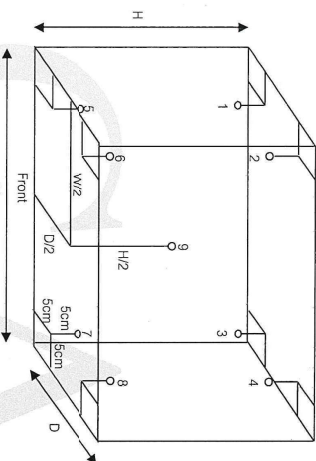
Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Function : Temperature measurement

This instrument was setting air ventilation at position 0 (close)

Inside of Chamber  
W = 0.58 m  
D = 0.55 m  
H = 1.28 m  
Capacity = 0.41 m<sup>3</sup>

Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Temperature (°C) @ Sensor No.									Uncertainty (± °C)
			1	2	3	4	5	6	7	8	9	
20.0	20.0	20.0	20.30	20.21	20.37	20.21	20.16	20.19	20.15	20.05	20.15	1.2
Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Uniformity (°C)									Overall Variation (°C)
20.0	20.0	20.0	0.57									1.36

Remark The uncertainty is not combine uniformity of the air chamber

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

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

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## Certificate of Calibration

Certificate No. : 67-400561-5

Page : 1 of 2

## Submitted by :

Ecotech Water Co., Ltd.  
20 Soi Kheharonkiao 74 Yaek 6, Rairphathana, Saphansung, Bangkok 10240

## Equipment :

Temperature controlled enclosure (Incubator)  
Manufacturer : Biobase  
Range : N/A °C  
Serial No. : KYP40012310015  
Model : BJPX-B4001I  
Resolution : 0.1 °C  
ID No. : N/A

## Environment :

On site calibration was carried out at the Laboratory, Ecotech Water Co., Ltd.  
Ambient Temperature : (25.3 to 25.8) °C  
Relative Humidity : (44 to 48) %  
Line Voltage : (225.0 to 226.5) V

## Date of Received :

28 September 2021

## Date of Calibration :

28 September 2024

## Date of Issue :

02 October 2024

## Calibrated by :

Permpon Charpu

## Calibration Method :

CAL-M4004, TLAS G-20

The temperature scale used was based on ITS-90

## Reference Standard Instruments :

This certification is traceable to the International System of Units  
Standard Digital Thermometer with RTD Probe

## ID No.

Cert. No.

Due Date

Traceability

400029 &amp; 400048 67-400444-1

02 Feb 2025

National Institute of Metrology Thailand (NIMT)

Approved by

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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## Certificate of Calibration

Certificate No. : 67-400561-5

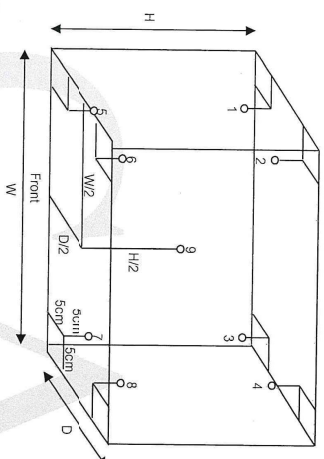
Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Function : Temperature measurement

This instrument was setting air ventilation at position 0 (close)

Inside of Chamber  
W = 0.58 m  
D = 0.55 m  
H = 1.28 m  
Capacity = 0.41 m<sup>3</sup>

Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Temperature (°C) @ Sensor No.									Uncertainty (± °C)
			1	2	3	4	5	6	7	8	9	
20.0	20.0	20.0	19.93	19.95	20.00	20.10	20.04	19.95	20.07	20.07	20.02	0.93
Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Uniformity (°C)									Overall Variation (°C)
20.0	20.0	20.0	0.39									1.15

Remark: The uncertainty is not combine uniformity of the air chamber

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

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

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## Certificate of Calibration

Certificate No. : 67-400561-2

Page : 1 of 2

Submitted by : Ecotech Water Co., Ltd.

20 Soi Khetaromkiao 7/4 Yaek 6, Ratchathana, Saphansung, Bangkok 10240

Equipment : Temperature controlled enclosure (Oven)

Manufacturer : Labtech

Model : LDO-080F

Range : N/A °C

Resolution : 0.1 °C

Serial No. : 081029024

ID No. : INS007

Environment : On site calibration was carried out at the Laboratory, Ecotech Water Co., Ltd.

Ambient Temperature : (26.0 to 27.0) °C

Relative Humidity : (52 to 56) %

Line Voltage : (225.5 to 228.5) V

Date of Received : 28 September 2024

Date of Calibration : 28 September 2024

Date of Issue : 02 October 2024

Calibrated by : Permpon Chaiyap

Calibration Method : CAL-M4004, TLAS G-20

The temperature scale used was based on ITS-90

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

Standard Digital Thermometer with Thermocouple probe

ID No.

Cert. No.

Due Date

Traceability

400046 &amp; 400023 67-400198-1

01 Oct 2024

National Institute of Metrology Thailand (NIMT)

Approved by :

( Permpon Chaiyap )

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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## Certificate of Calibration

Certificate No. : 67-400561-2

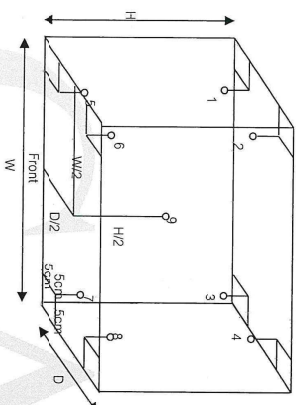
Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Function : Temperature measurement

This instrument was setting air ventilation at position 0 (close)



Inside of Chamber

W = 0.50 m

D = 0.40 m

H = 0.40 m

Capacity = 0.08 m<sup>3</sup>

Test Point	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Temperature (°C) @ Sensor No.									Uncertainty (±°C)
			1	2	3	4	5	6	7	8	9	
104.0	104.0	104.0	104.0	103.1	103.9	103.8	103.0	103.0	103.3	103.7	104.2	1.4
180.0	180.0	180.0	178.9	179.0	178.8	179.3	178.0	177.8	178.4	179.1	180.0	2.9
Test Point	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Uniformity (°C)			Measured Stability (°C)			Overall Variation (°C)			
104.0	104.0	104.0	1.5			1.1			3.1			
180.0	180.0	180.0	3.2			2.3			6.1			

Remark: The uncertainty is not combine uniformity of the air chamber

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

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

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## Certificate of Calibration

Certificate No. : 67-420113-2

Page : 1 of 2

Submitted by : Ecotech Water Co., Ltd.

20 Soi Khoharomkiao 74 yaek 6, Raiphatthana, Saphansung, Bangkok 10240

Equipment : pH Meter with electrode

pH meter

Manufacturer : Eutech

Model : PC 450

Range : N/A pH

Resolution : 0.01 pH

Serial No. : 2535550

ID No. : N/A

Electrode

Model : ECF7252201B

Serial No. : 01X099323 172

Environment : On site calibration was carried out at the Laboratory, Ecotech Water Co., Ltd.

Ambient Temperature : (25.5 to 26.0)°C

Relative Humidity : (50 to 55) %

Date of Received : 28 September 2024

Date of Calibration : 28 September 2024

Date of Issue : 02 October 2024

Calibrated by : Permpon Channu

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

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

1. Multiproduct Calibrator

ID No.	Cert. No.	Due Date	Traceability
400005	SG-E-00307/66	23 Aug 2025	National Institute of Metrology/ Thailand (NIMT)

2. Standard Buffer Solution

pH	Cert. No.	Lot No.	Exp. Date	Traceability
4.008	61293328	1027612	15 Sep 2026	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
6.987	61297593	1027614	15 Sep 2025	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
10.010	61306165	1027613	15 Sep 2025	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025

Approved by :

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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## Certificate of Calibration

Certificate No. : 67-420113-2

Page : 2 of 2

Result of Calibration :

UUC Condition As-Received : Good

Function : Electrical measurement

pH meter

Performing standard curve by Multiproduct Calibrator at pH (4,7,10)

Adjustment Curve at nominal pH	Applied Voltage ( mV )	Nominal Value ( pH )	UUC Reading ( pH )	UUC Reading ( mV )	Correction ( mV )	Uncertainty ( ± mV )
4, 7, 10	177.4800	4	4.00	177.6	-0.1	0.12
	0.0000	7	7.00	0.1	-0.1	0.086
	-177.4800	10	10.00	-177.5	0.0	0.12

Function : pH meter with electrode

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

Adjustment Curve at nominal pH	Standard Buffer ( pH )	UUC Reading ( pH )	Correction ( pH )	Uncertainty ( ± pH )
4, 7, 10	4.008	4.01	0.00	0.0097
	6.987	7.00	-0.01	0.011
	10.010	10.01	0.00	0.014

Remark

UUC : Unit Under Calibration

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

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

- 0/0 -

Approved by :

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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## Certificate of Calibration

Certificate No. : 67-400562-2

Page : 1 of 2

## Submitted by :

Ecootech Water Co., Ltd.

20 Soi Khueharnkiao 74 yae 6, Kaipharthana, Saphansung, Bangkok 10240

## Equipment :

Temperature Indicator with Thermistor Probe

Temperature Indicator

Manufacturer :

Eutech PC 450

Range :

N/A °C

Serial No. : 2535550

Resolution : 0.1 °C

Thermistor probe

Model :

N/A

Diameter : 3.5 mm.

Sheath Material : Stainless

Serial No. : CONSEN91W 141

Length : 100 mm.

On site calibration was carried out at the Laboratory, Ecootech Water Co., Ltd.

## Environment :

Ambient Temperature :

(25.5 to 26.0) °C

Relative Humidity :

(50 to 55) %

Line Voltage :

(225.0 to 225.9) VAC

## Date of Received :

28 September 2024

## Date of Calibration :

28 September 2024

## Date of Issue :

02 October 2024

## Calibrated by :

Permpon Chianpu

## Calibration Method :

This instrument was calibrated by In-house method comparison technique CAL-M4003

by compared with PRT in the liquid bath at the constant controlled temperature.

The temperature scale used was based on ITS-90

## Reference Standard Instruments :

This certification is traceable to the International System of Units

1. Platinum Resistance Thermometer (PRT)

ID No.

Cert. No.

Due Date

Traceability

400002

TT-0095-24 01 Jul 2026

National Institute of Metrology Thailand (NIMT)

2. Standard Digital Thermometer

ID No.

Cert. No.

Due Date

Traceability

400033

24E633 21 Feb 2026

National Institute of Metrology Thailand

Approved by

( Permpon Chianpu )

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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## Certificate of Calibration

Certificate No. : 67-400562-2

Page : 2 of 2

## Result of Calibration :

Without Adjustment

UUC Condition As Received : Good

## Function :

Temperature measurement

Immersion Depth ( mm.)	Standard Reading ( °C )	UUC Reading ( °C )	Correction ( °C )	Uncertainty ( ± °C )
100	20.004	20.1	-0.1	0.19
100	25.003	25.0	0.0	0.19
100	30.002	30.0	0.0	0.19

## Remark

UUC : Unit Under Calibration

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

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor k = 2.

providing a level of confidence of approximately 95%

- 0.0 -



## Certificate of Calibration

Certificate No. : 67-420113-1

Page : 1 of 2

Submitted by :

Ecotech Water Co., Ltd  
20 Soi Kietnaromkiao 74 yaek 6, Raiphatthana, Saphansung, Bangkok 10240

Equipment :

pH Meter with electrode  
pH meter

Manufacturer : Eutech

Model : PC 700

Range : N/A pH

Resolution : 0.01 pH

Serial No. : 2728583

ID No. : N/A

Electrode

Model : ECFCT252201B

Serial No. : 1062322022

Environment :

On site calibration was carried out at the Laboratory, Ecotech Water Co., Ltd.

Ambient Temperature : (25.5 to 26.0) °C

Relative Humidity : (50 to 55) %

Date of Received :

28 September 2024

Date of Calibration :

28 September 2024

Date of Issue :

02 October 2024

Calibrated by :

Permpon Chianpu

**Calibration Method :** In-house method CAL-M4201 direct measurement by using standard voltage calibrator and using certified reference material (CRM)

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

1. Multiproduct Calibrator

ID No.	Cert. No.	Due Date	Traceability
400005	SG-E-00307/66	23 Aug 2025	National Institute of Metrology Thailand (NIMT)

2. Standard Buffer Solution

pH	Cert. No.	Lot No.	Exp. Date	Traceability
4.008	61293328	1027612	15 Sep 2026	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
6.987	61297593	1027614	15 Sep 2025	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
10.010	61306165	1027613	15 Sep 2025	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025

Approved by

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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## Certificate of Calibration

Certificate No. : 67-420113-1

Page : 2 of 2

**Result of Calibration :****UUC Condition As-Received :** Good**Function :** Electrical measurement

pH meter

Performing standard curve by Multiproduct Calibrator at pH (4,7,10)

Adjustment Curve at nominal pH	Applied Voltage ( mV )	Nominal Value ( pH )	UUC Reading ( pH )	UUC Reading ( mV )	Correction ( mV )	Uncertainty ( ± mV )
4, 7, 10	177.4800	4	4.00	175.1	2.4	0.12
	0.0000	7	7.00	0.0	0.0	0.086
	-177.4800	10	10.00	-175.1	-2.4	0.12

**Function :**

pH meter with electrode

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

Adjustment Curve at nominal pH	Standard Buffer ( pH )	UUC Reading ( pH )	Correction ( pH )	Uncertainty ( ± pH )
4, 7, 10	4.008	4.01	0.00	0.0097
	6.987	7.00	-0.01	0.011
	10.010	10.01	0.00	0.014

**Remark**

UUC : Unit Under Calibration

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

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

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Approved by

Supervisor



Certificate of Calibration

Certificate No. : 67-430047-1 Page : 1 of 2

Submitted by : Ecotech Water Co., Ltd.  
20 Soi Khueharonkhiao 74 yaek 6, Raiphathana, Saphansung, Bangkok 10240

Equipment : Digital Conductivity meter with probe

Manufacturer : Eutech Model : PC 700

Serial No. : 2728383 ID No. : N/A

Electrode Model : N/A Serial No. : CONSEN501D 102

Environment : On site calibration was carried out at the Laboratory, Ecotech Water Co., Ltd.

Ambient Temperature (25.5 to 26.0) °C  
Relative Humidity (50 to 55) %

Date of Received : 28 September 2024

Date of Calibration : 28 September 2024

Date of Issue : 02 October 2024

Calibrated by : Permpon Chianpu

Calibration Method : In-house method CAL-M4301 direct measurement by conductivity buffer solution

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

Standard Buffer Solution

Material	Lot No.	Exp. Date	Traceability
84 µS/cm	7824	16 June 2025	National Institute of Standards and Technology (NIST), U.S.A., S.R.M.
1413 µS/cm	970986	25 April 2025	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
12.88 mS/cm	970987	25 April 2025	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025

Approved by :

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 67-430047-1 Page : 2 of 2

Result of Calibration :

UUC Condition As-Received : Good

Function : Conductivity measurement

Before Adjustment

Standard	UUC Reading	Correction	Uncertainty (±)	Unit
Conductivity Solution				
84*	94.2	-10.2	1.1	µS/cm
1413	1284	129	9.0	µS/cm
12.88	12.31	0.57	0.082	mS/cm

After Adjustment : at 84, 1413 µS/cm 12.880 mS/cm

Standard	UUC Reading	Correction	Uncertainty (±)	Unit
Conductivity Solution				
84*	84.0	0.0	1.1	µS/cm
1413	1413	0	9.0	µS/cm
12.88	12.88	0.00	0.082	mS/cm

Remark

UUC : Unit Under Calibration

\* This parameter are out of accreditation's scope.

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

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor k = 2 ,

providing a level of confidence of approximately 95%

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NSC-TIS-175 17025  
CALIBRATION 0030

## Certificate of Calibration

Certificate No. : 67-400562-1

Page : 1 of 2

Submitted by :

Ecotech Water Co., Ltd.

20 Soi Khueharonkiao 74 yeck 6, Rongphatthana, Saphansung, Bangkok 10240

Equipment :

Temperature Indicator with Thermistor Probe

Temperature Indicator

Manufacturer : Eutech

Model : PC 700

Range : N/A

Resolution : 0.1 °C

Serial No. : 2728583

ID No. : N/A

Thermistor probe

Model : N/A

Sheath Material : Stainless

Diameter : 3.5 mm.

Length : 100 mm.

Serial No. : CONSEN9501D 102

ID No. : N/A

Environment :

On site calibration was carried out at the Laboratory, Ecotech Water Co., Ltd.

Ambient Temperature :

(25.5 to 26.0) °C

Relative Humidity :

(50 to 55) %

Line Voltage :

(225.0 to 225.9) VAC

Date of Received :

28 September 2024

Date of Calibration :

28 September 2024

Date of Issue :

02 October 2024

Calibrated by :

Perngorn Chantun

Calibration Method :

This instrument was calibrated by In-house method comparison technique CAL-M4003 by compared with PRT in the liquid bath at the constant controlled temperature.

The temperature scale used was based on ITS-90

Reference Standard Instruments :

This certification is traceable to the International System of Units

1. Platinum Resistance Thermometer (PRT)

ID No.

Cert. No.

Due Date

Traceability

400002 TT-0095-24 01 Jul 2026

National Institute of Metrology Thailand (NIMT)

2. Standard Digital Thermometer

ID No.

Cert. No.

Due Date

Traceability

400033

24E633

21 Feb 2026

National Institute of Metrology Thailand (NIMT)

Approved



(Perngorn Chantun)

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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## Certificate of Calibration

Certificate No. : 67-400562-1

Page : 2 of 2

Result of Calibration :

Without Adjustment

UUC Condition As Received : Good

Function :

Temperature measurement

Immersion Depth ( mm.)	Standard Reading ( °C )	UUC Reading ( °C )	Correction ( °C )	Uncertainty ( ± °C )
100	20.006	20.2	-0.2	0.19
100	25.005	25.1	-0.1	0.19
100	30.003	30.0	0.0	0.19

Remark

UUC : Unit Under Calibration

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

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

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## Certificate of Calibration

Certificate No. : 67-400562-3

Page : 1 of 2

Submitted by : Ecotech Water Co., Ltd.

20 Soi Khueharomkiao 74 yaek 6, Rappharthama, Saphansung, Bangkok 10240

Equipment : Temperature Indicator with Thermistor Probe

Temperature Indicator

Manufacturer : Eutech Model : PC 700

Range : N/A °C Resolution : 0.1 °C

Serial No. : 3082600 ID No. : N/A

Thermistor probe

Model : N/A Sheath Material : Stainless

Diameter : 3.5 mm. Length : 100 mm.

Serial No. : CONSEN9501D 028 ID No. : N/A

Environment : On site calibration was carried out at the Laboratory, Ecotech Water Co., Ltd.

Ambient Temperature : (25.5 to 26.0) °C

Relative Humidity : (50 to 55) %

Line Voltage : (225.0 to 225.9) VAC

Date of Received : 28 September 2024

Date of Calibration : 28 September 2024

Date of Issue : 02 October 2024

Calibrated by : Permpon Chanpu

Calibration Method : This instrument was calibrated by In-house method comparison technique CAL-M4003

by compared with PRT in the liquid bath at the constant controlled temperature.

The temperature scale used was based on ITS-90

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

1. Platinum Resistance Thermometer (PRT)

ID No. Cert. No. Due Date Traceability

400002 TT-0095-24 01 Jul 2026 National Institute of Metrology Thailand (NIMT)

2. Standard Digital Thermometer

ID No. Cert. No. Due Date Traceability

400033 24E633 21 Feb 2026 National Institute of Metrology Thailand (NIMT)

Approved by



Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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## Certificate of Calibration

Certificate No. : 67-400562-3

Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Function : Temperature measurement

Immersion Depth ( mm. )	Standard Reading ( °C )	UUC Reading ( °C )	Correction ( °C )	Uncertainty ( ± °C )
100	20.003	20.4	-0.4	0.19
100	25.005	25.3	-0.3	0.19
100	30.002	30.2	-0.2	0.19

Remark

UUC : Unit Under Calibration

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

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

- 0.0 -



## Certificate of Calibration

Certificate No. : 67-420113-3

Page : 1 of 2

Submitted by :

Ecotech Water Co., Ltd  
20 Soi Khoharomkiao 74 yaek 6, Raiphatthana, Saphansung, Bangkok 10240

Equipment :

pH Meter with electrode  
pH meter

Manufacturer : Eutech

Model : PC 700

Range : N/A pH

Resolution : 0.01 pH

Serial No. : 3082600

ID No. : N/A

Electrode

Model : ECF7252201B

Serial No. : 13042322006

Environment :

On site calibration was carried out at the Laboratory, Ecotech Water Co., Ltd.

Ambient Temperature : (25.5 to 26.0)° C

Relative Humidity : (50 to 55) %

Date of Received :

28 September 2024

Date of Calibration :

28 September 2024

Date of Issue :

02 October 2024

Calibrated by :

Permpon Chantpu

**Calibration Method :** In-house method CAL-M4201 direct measurement by using standard voltage calibrator and using certified reference material (CRM)

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

1. Multiproduct Calibrator

ID No.	Cert. No.	Due Date	Traceability
400005	SG-E-00307/66	23 Aug 2025	National Institute of Metrology Thailand (NIMT)

2. Standard Buffer Solution

pH	Cert. No.	Lot No.	Exp. Date	Traceability
4.008	61293328	1027612	15 Sep 2026	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
6.987	61297593	1027614	15 Sep 2025	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
10.010	61306165	1027613	15 Sep 2025	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025

Approved by

(Permpon Chantpu)

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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## Certificate of Calibration

Certificate No. : 67-420113-3

Page : 2 of 2

**Result of Calibration :**

UUC Condition As-Received : Good

Function :

Electrical measurement

pH meter

Performing standard curve by Multiproduct Calibrator at pH (4,7,10)

Adjustment Curve at nominal pH	Applied Voltage ( mV )	Nominal Value ( pH )	UUC Reading		Correction ( mV )	Uncertainty ( ± mV )
			( pH )	( mV )		
4, 7, 10	177.4800	4	4.00	177.4	0.1	0.12
	0.0000	7	7.00	0.1	-0.1	0.086
	-177.4800	10	10.00	-177.4	-0.1	0.12

**Function :**

pH meter with electrode

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

Adjustment Curve at nominal pH	Standard Buffer ( pH )	UUC Reading ( pH )	Correction ( pH )	Uncertainty ( ± pH )
4, 7, 10	4.008	4.01	0.00	0.0097
	6.987	7.00	-0.01	0.011
	10.010	10.01	0.00	0.014

**Remark**

UUC : Unit Under Calibration

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

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

- 0.0 -



## Certificate of Calibration

Certificate No. : 67-430047-2

Page : 1 of 2

Submitted by :

Ecotech Water Co., Ltd.

20 Soi Khetharomkiao 74 yaek 6, Raipharthana, Saphansung, Bangkok 10240

Equipment :

Digital Conductivity meter with probe

Manufacturer : Eutech

Model : PC 700

Serial No. : 3082600

ID No. : N/A

Electrode

Model : N/A

Serial No. : CONSEN9501D 028

Environment :

On site calibration was carried out at the Laboratory, Ecotech Water Co., Ltd.

Ambient Temperature (25.5 to 26.0)° C

Relative Humidity (50 to 55) %

Date of Received :

28 September 2024

Date of Calibration :

28 September 2024

Date of Issue :

02 October 2024

Calibrated by :

Permpon Chamnu

Calibration Method :

In-house method CAL-M4301 direct measurement by conductivity buffer solution

Reference Standard Instruments :

This certification is traceable to the International System of Units

Standard Buffer Solution

Material Lot No.

Exp. Date Traceability

84 µS/cm

7824

16 June 2025

National Institute of Standards and Technology (NIST), U.S.A., S.R.M.

1413 µS/cm

970986

25 April 2025

CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025

12.88 mS/cm

970987

25 April 2025

CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025

Approved by :

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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## Certificate of Calibration

Certificate No. : 67-430047-2

Page : 2 of 2

Result of Calibration :

UUC Condition As Received : Good

Function : Conductivity measurement

Before Adjustment

Standard Conductivity Solution	UUC Reading	Correction	Uncertainty (±)	Unit
84*	107.6	-23.6	1.1	µS/cm
1413	1094	319	9.0	µS/cm
12.88	12.98	-0.10	0.082	mS/cm

After Adjustment : at 04, 1413 µS/cm 12.880 mS/cm

Standard Conductivity Solution	UUC Reading	Correction	Uncertainty (±)	Unit
84*	84.0	0.0	1.1	µS/cm
1413	1413	0	9.0	µS/cm
12.88	12.88	0.00	0.082	mS/cm

## Remark

UUC : Unit Under Calibration

\* This parameter are out of accreditation's scope.

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

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

-c00-



## Certificate of Calibration

Certificate No. : 67-400561-1

Page : 1 of 2

Submitted by : Ecotech Water Co., Ltd.

20 Soi Kietcharonkiao 74 Yaek 6, Raiphatthana, Saphansung, Bangkok 10240

Equipment : Temperature controlled enclosure (Refrigerator)

Manufacturer : Every Digital

Model : N/A

Range : N/A °C

Resolution : 0.1 °C

Serial No. : ASS1001

ID No. : INS005

Environment : On site calibration was carried out at the Laboratory, Ecotech Water Co., Ltd.

Ambient Temperature : (25.5 to 26.0) °C

Relative Humidity : (50 to 55) %

Line Voltage : (225.0 to 226.5) V

Date of Received : 28 September 2024

Date of Calibration : 28 September 2024

Date of Issue : 02 October 2024

Calibrated by : Permpon Chappu

Calibration Method : CAL-M4004, TLAS-G-20

The temperature scale used was based on ITS-90

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

Standard Digital Thermometer with RTD Probe

ID No.

Cert. No.

Due Date

Traceability

400046 &amp; 400047 67-400442-2

27 Jan 2025

National Institute of Metrology Thailand (NIMT)

Approved by

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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## Certificate of Calibration

Certificate No. : 67-400561-1

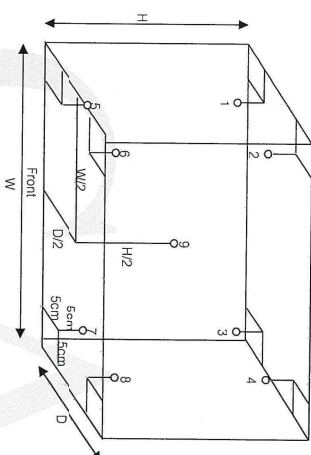
Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Function : Temperature measurement

This instrument was setting air ventilation at position 0 (close)

Inside of Chamber  
W = 1.00 m  
D = 0.50 m  
H = 1.35 m  
Capacity = 0.68 m<sup>3</sup>

Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Temperature (°C) @ Sensor No.									Uncertainty (± °C)
			1	2	3	4	5	6	7	8	9	
4.0	3.0	3.0	4.07	3.83	4.14	3.48	4.04	4.06	3.39	3.73	3.24	0.37
Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Uniformity (°C)									Overall Variation (°C)
4.0	3.0	3.0	0.93									0.95

Remark: The uncertainty is not combine uniformity of the air chamber

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

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

-o0o-



## Certificate of Calibration

Certificate No. : 67-400561-4

Page : 1 of 2

## Submitted by :

Ecootech Water Co., Ltd.  
20 Soi Kheharonkiao 74 Yaek 6, Rapaithathana, Saphansung, Bangkok 10240

## Equipment :

Temperature controlled enclosure (Refrigerator)  
Manufacturer : S-Cool  
Range : N/A °C  
Serial No. : Eco-Hns14  
Model : N/A  
Resolution : 1 °C  
ID No. : N/A

## Environment :

On site calibration was carried out at the Laboratory, Ecootech Water Co., Ltd.  
Ambient Temperature : (25.5 to 26.0) °C  
Relative Humidity : (50 to 55) %  
Line Voltage : (225.0 to 226.5) V

## Date of Received :

28 September 2024

## Date of Calibration :

28 September 2024

## Date of Issue :

02 October 2024

## Calibrated by :

Permpon Chaiyap

## Calibration Method :

CAL-M4004, TLAS G-20

The temperature scale used was based on ITS-90

## Reference Standard Instruments :

This certification is traceable to the International System of Units

Standard Digital Thermometer with RTD Probe  
ID No. Cert. No. Due Date Traceability

400046 &amp; 400042 67-400442-1

26 Jan 2025

National Institute of Metrology Thailand (NIMT)

Approved by

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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## Certificate of Calibration

Certificate No. : 67-400561-4

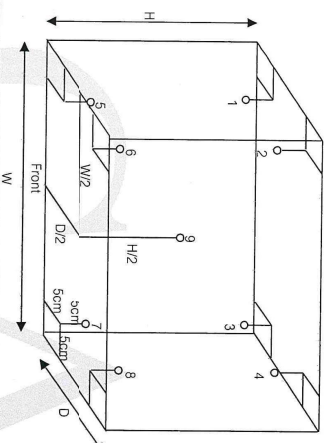
Page : 2 of 2

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Function : Temperature measurement

This instrument was setting air ventilation at position 0 (close)

Inside of Chamber  
W = 1.02 m  
D = 0.44 m  
H = 1.30 m  
Capacity = 0.58 m<sup>3</sup>

Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Temperature (°C) @ Sensor No.									Uncertainty (± °C)
			1	2	3	4	5	6	7	8	9	
4.0	3.0	3.0	5.60	4.97	4.63	4.38	4.94	4.81	4.01	3.89	4.07	1.1
Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Uniformity (°C)									Overall Variation (°C)
4.0	3.0	3.0	1.94									2.33

**Remark** The uncertainty is not combine uniformity of the air chamber

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

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

- o0o -





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E-mail: info@bangkokhighlab.com



## CERTIFICATE OF CALIBRATION

Certificate No : S2024/091  
Page : 1/5  
Order No : 122/2024

Customer : Ecotech Water Systems Co.,Ltd  
Address : 20 Kheha Rom Klao 74 Yeak 6, Ratphattana, Saphansung, Bangkok 10240  
Instrument : UV/VIS spectrophotometer  
Manufacture : Rayleigh  
Model : VIS-723G  
Serial Number : 00080889  
Environment : Temperature (25.2 - 25.2) °C  
Received Date : Humidity (52 - 51) %RH  
Received Date : May 23, 2024  
Calibration Date : May 23, 2024  
Issued Date : May 24, 2024  
Calibrate Status : No Adjustment  
Calibration Area : Customer area  
Roomname : Lab  
Calibrated By : (M. Pacharapool Kwanrang)  
Approved By : (M. Vanchai Meesiri)  
Manager

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E-mail: info@bangkokhighlab.com



Certificate No : S2024/091  
Page : 2/5

### 1. Photometric Accuracy

CRMs: Neutral Density Glass Filters  
Traceability: Traceable to NIST, U.S.A. through Neutral density filters NIST SRM 930e & 1930, Double Aperture method through Sigma certificate report no.113594

Spectral slit width : 2.00 nm

#### 1.1 Reading scale at 420.0 nm

Filter STDs (Abs) Certificate	Average Measured Value (A)	Correction (A)	Uncertainty ± (A)
0.0000	0.000	0.0000	0.0028
0.5604	0.557	0.0034	0.0044
1.0723	1.068	0.0043	0.0038
2.1753	2.170	0.0053	0.0064

#### 1.2 Reading scale at 440.0 nm

Filter STDs (Abs) Certificate	Average Measured Value (A)	Correction (A)	Uncertainty ± (A)
0.0000	0.000	0.0000	0.0028
0.5503	0.547	0.0033	0.0040
1.0467	1.042	0.0047	0.0040
2.1117	2.107	0.0047	0.0064

#### 1.3 Reading scale at 465.0 nm

Filter STDs (Abs) Certificate	Average Measured Value (A)	Correction (A)	Uncertainty ± (A)
0.0000	0.000	0.0000	0.0028
0.4996	0.495	0.0036	0.0034
0.9649	0.962	0.0029	0.0040
1.9646	1.960	0.0046	0.0060

#### 1.4 Reading scale at 546.1 nm

Filter STDs (Abs) Certificate	Average Measured Value (A)	Correction (A)	Uncertainty ± (A)
0.0000	0.000	0.0000	0.0028
0.5136	0.515	-0.0014	0.0028
0.9765	0.975	0.0015	0.0028
1.9848	1.985	-0.0002	0.0064



**Bangkok High Lab Co., Ltd.**  
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E-mail: [info@bangkokhighlab.com](mailto:info@bangkokhighlab.com)



NIST-1817-1725  
CALIBRATION 0366

Certificate No : S2024/091  
Page : 3/5

1.5 Reading scale at 590.0 nm

Filter STDs (Abs)	Average Measured Value (A)	Correction (A)	Uncertainty ± (A)
Certificate	0.0000	0.0000	0.0028
0.0000	0.000	0.0034	0.0029
0.5424	0.539	0.0030	0.0029
1.0130	1.010	0.0018	0.0061
2.0238	2.022		

1.6 Reading scale at 635.0 nm

Filter STDs (Abs)	Average Measured Value (A)	Correction (A)	Uncertainty ± (A)
Certificate	0.000	0.0000	0.0026
0.5265	0.523	0.0035	0.0030
0.9667	0.962	0.0047	0.0031
1.9145	1.909	0.0055	0.0062

## 2. Photometric Accuracy

CRMs: Potassium Dichromate in Perchloric acid

CRMs Serial Number: 132023

Blank Serial Number: 128038

Traceability: Traceable to NIST, U.S.A. through crystalline potassium dichromate NIST SRM 935a through Starna certificate report no.120920

Spectral slit width : 2.00 nm

Wavelength (nm)	Certificate (Abs)	Average Measured Value (A)	Correction (A)	Uncertainty ± (A)
235	0.0000	#N/A	#N/A	#N/A
	0.7351	#N/A	#N/A	#N/A
257	0.0000	#N/A	#N/A	#N/A
	0.8564	#N/A	#N/A	#N/A
313	0.0000	#N/A	#N/A	#N/A
	0.2855	#N/A	#N/A	#N/A
350	0.0000	#N/A	#N/A	#N/A
	0.6363	#N/A	#N/A	#N/A



**Bangkok High Lab Co., Ltd.**  
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E-mail: [info@bangkokhighlab.com](mailto:info@bangkokhighlab.com)



NIST-1817-1725  
CALIBRATION 0366

Certificate No : S2024/091  
Page : 4/5

## 3. Wavelength Accuracy

Spectral slit width : 2.00 nm

### 3.1 CRMs: Holmium Glass Filter

CRMs Serial Number: 10763

Traceability Traceable to NIST Holmium oxide filter NIST SRM 2034, through Starna certificate report no. 113607

Filter STDs (nm)	Average Measured Value (nm)	Correction (nm)	Uncertainty ± (nm)
Certificate	241.74	#N/A	#N/A
241.74	#N/A	#N/A	#N/A
279.44	#N/A	#N/A	#N/A
287.98	#N/A	#N/A	#N/A
334.10	333.6	0.50	0.12
361.00	360.2	0.80	0.12
418.61	418.0	0.61	0.12
453.63	452.8	0.83	0.12
460.05	459.2	0.85	0.12
536.66	535.8	0.86	0.12
637.98	637.2	0.78	0.12

### 3.2 CRMs: Didymium Glass Filter

CRMs Serial Number: 10764

Traceability Traceable to NIST Didymium filter NIST SRM 2034, through Starna certificate report no. 113608

Filter STDs (nm)	Average Measured Value (nm)	Correction (nm)	Uncertainty ± (nm)
Certificate	585.29	584.8	0.49
585.29	584.8	0.49	0.12
684.49	684.0	0.49	0.12
740.18	739.6	0.58	0.12
748.48	748.8	-0.32	0.12
807.03	806.6	0.43	0.12
879.27	878.6	0.67	0.12



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NIST-191-191 17025  
CALIBRATION 0385

Certificate No : S2024/091  
Page : 5/5

#### 4. \*Stray Light

CRMs: Potassium Chloride aqueous solution  
CRMs Serial Number: 14912  
Traceability Traceable to NIST, U.S.A. potassium chloride NIST SRM2032, through Stama certificate report no.113597

Spectral slit width : 2.00 nm

Wavelength (nm)	Certificate	Average Measured
201.13	>2A	#N/A
201.13	<1%T	#N/A

#### 5. \*Spectral Resolution

CRMs: Toluene in Hexane  
CRMs Serial Number: 14812  
Traceability Traceable to toluene in hexane NIST SRM2034, through Stama certificate report no. 113598

Spectral slit width (nm)	Abs Ratio
0.5	#N/A
1.0	#N/A
1.5	#N/A
2.0	#N/A
3.0	#N/A

Note : \* "Not TISI Accredited" in this certificate have been included for completeness

#### Remark:

1. Calibrate Method
  - 1.1 Photometric and Wavelength accuracy: In-house method W-SER-001 based on ASTM E925-02 and ASTM E275-01
  - 1.2 Stray light: Measuring the CRMs in both absorbance and transmittance unit at wavelength 201.23 nm. Base on European Pharmacopoeia V.6.19.3.1984
  - 1.3 Spectral resolution: Measuring the CRMs. The maximum absorbance values were read at closest to 268.7nm and the minimum absorbance values were read at closest 267.0 nm. Refer to European Pharmacopoeia V.6.19.3.1984
2. N/A = not available.
3. Uncertainty of Measurement: The reported uncertainty of measurement was based on standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level of confidence of approximately 95%.
4. This result of calibration was found accurate as shown on date and place of calibration only.
5. This report will certify of calibrated equipment only.

- End of Report -



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



## Certificate of Calibration

Certificate No.: WK2411-404-43

Page 1 of 2

Customer : Ecotech Water Co., Ltd.  
20 Soi Kheharomkiao 74 Yaek 6, Ratchathana,  
Saphansung, Bangkok 10240

Instrument	: Block Digestor	Ambient Temperature	: (25 ± 2) °C
Manufacturer	: BIOBASE	Humidity	: (50 ± 15) %RH
Model	: BKD-88	Received Date	: 11-Nov-24
Serial No.	: XZL8B-202108-116	Calibrated Date	: 15-Nov-24
Identity No.	: N/A	Issued Date	: 15-Nov-24
Range	: 380 °C	Calibrated Location	: In Lab
Resolution	: 1 °C		
Calibration Method	: CP-WK-T02		

#### Reference standard instruments :

Instrument	Serial No.	Certificate No.	Due Date	Traceability to
Data Acquisition / Switch Unit	US97029031	WK2311-302-224	26-Nov-24	WK Electric Co., Ltd.

TPA : Technology Promotion Association (Thailand-Japan)  
This result calibrate was found accurate as shown on date place of calibrate only  
This certificate is traceability to the International System of Unit (SI)

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

Calibrated by : Ms Usa Phuangphiphat

Approved by :

M. [Redacted Signature]  
Authorized Signatory

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**WK Electric Co.,Ltd.**

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

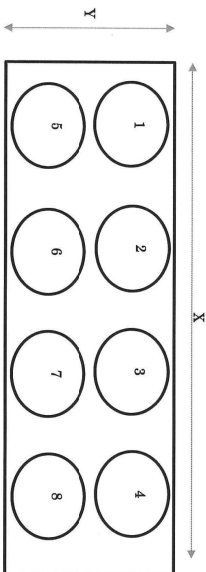
## Calibration Results

Certificate No. : WK2411-404-43

Page 2 of 2

### Calibration Result of the Accuracy

Range : 380 °C  
Resolution : 1 °C



UUC Setting	UUC Reading	Measured Temperature (°C) @ Thermocouple No. (Thermocouple No. 8 is REF)								Uncertainty ( ± °C)
		1	2	3	4	5	6	7	8	
380	380	359.85	359.98	358.44	359.62	360.25	360.03	360.28	362.71	1.5
Calibration Point	UUC Setting	UUC Reading	Standard Reading		Temperature Stability ( ± )		Temperature Uniformity		Overall Variation	
380	380	380.15	0.50		4.55		4.58			

**Temperature uniformity** : The maximum difference of measured temperatures at any sensors and measured temperature at the reference location which are observed at the same time or at close observation time as possible to determine the temperature pattern or homogeneity within the chamber at steady-state conditions.

**Temperature stability** : The one - half of greatest maximum difference of measured temperature at any one sensor, for at least half an hour after reaching steady state or after one achieved complete cycle of control whichever comes first.

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

**Record time** : Start time record after t.Average\* : The average of 30 values.

**Uncertainty** : The report uncertainty of measurement were excluded uniformity and stability.

\* UUC = Unit Under Calibrated

Note: " " " mean not accreditation

\*\*\*\* End of Certificate\*\*\*\*

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F5100

REV.00 27 Oct 16



**WK Electric Co.,Ltd.**

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

## Certificate of Calibration

Certificate No. : WK2411-404-43

Page 1 of 2

Customer : Ecotech Water Co., Ltd.

20 Soi Kheharomklao 74 Yaek 6, Ratphathana,  
Saphansung, Bangkok 10240

<b>Instrument</b>	: Block Digestor	<b>Ambient Temperature</b>	: (25 ± 2) °C
<b>Manufacturer</b>	: BIOBASE	<b>Humidity</b>	: (50 ± 15) %RH
<b>Model</b>	: BKD-88	<b>Received Date</b>	: 11-Nov-24
<b>Serial No.</b>	: XZLSB-202108-116	<b>Calibrated Date</b>	: 15-Nov-24
<b>Identity No.</b>	: N/A	<b>Issued Date</b>	: 15-Nov-24
<b>Range</b>	: 380 °C	<b>Calibrated Location</b>	: In Lab
<b>Resolution</b>	: 1 °C		
<b>Calibration Method</b>	: CP-WK-702		

Reference standard instruments :

Instrument	Serial No.	Certificate No.	Due Date	Traceability to
Data Acquisition / Switch	US37029031	WK2311-302-224	28-Nov-24	WK Electric Co., Ltd
Unit				

TPA : Technology Promotion Association (Thailand-Japan)

This result calibrate was found accurate as shown on date place of calibrate only

This certificate is traceability to the International System of Unit (SI)

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

Calibrated by : Ms Usa Phuangphiphat

Approved by :

Authorized Signatory

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F5100

REV.00 27 Oct 16



WK Electric Co.,Ltd.

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

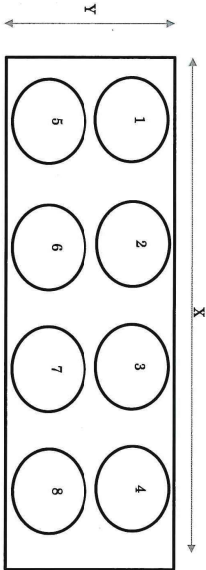
Calibration Results

Certificate No. : WK2411-404-43

Page 2 of 2

Calibration Result of the Accuracy

Range : 380 °C  
Resolution : 1 °C



Drawing Position

X = 4  
Y = 2

Unit : °C

UUC Setting	UUC Reading	Measured Temperature (°C) @ Thermocouple No. (Thermocouple No. 8 is REF.)								Uncertainty (± °C)
380	380	359.85	359.98	358.44	359.62	360.25	360.03	360.28	362.71	1.5

Calibration Point	UUC Setting	Standard Reading	Temperature Stability (±)	Temperature Uniformity	Overall Variation
380	380	360.15	0.50	4.55	4.58

**Temperature uniformity** : The maximum difference of measured temperatures at any sensors and measured temperature at the reference location which are observed at the same time or at close observation time as possible to determine the temperature pattern or homogeneity within the chamber at steady-state conditions.

**Temperature stability** : The one - half of greatest maximum difference of measured temperature at any one sensor, for at least half an hour after reaching steady state or after one achieved complete cycle of control whichever comes first.

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

**Record time** : Start time record after 1(Average) : The average of 30 values.

**Uncertainty** : The report uncertainty of measurement were excluded uniformity and stability.

\* UUC = Unit Under Calibrated

Note: " ± " mean not accreditation

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\*\*\*\* End of Certificate \*\*\*\*



Calibratech Co.,Ltd.

7/106-7 Moo 2, Sukhprachasarn 3 Rd., Bangpoo, Pakkret, Nonthaburi 11120  
Tel.(02) 964-6211 Fax.(02) 964-5155, e-mail : calibratech\_cal@yahoo.com, calibratech\_cal@hotmail.com



NSC-TIS-TIS17025  
CALIBRATION 0030

Certificate of Calibration

Certificate No. : 67-400561-3

Page : 1 of 2

Submitted by :

Ecotech Water Co., Ltd.  
20 Soi Khichanomklao 74 Yaek 6, Kaiphatthana, Saphansung, Bangkok 10240

Equipment :

Autoclave  
Manufacturer : Labtech  
Range : N/A °C  
Serial No. : 090414007  
Model : LAC-5060S  
Resolution 0.1 °C  
ID No. : INS008

Environment :

On site calibration was carried out at the Laboratory, Ecotech Water Co., Ltd.  
Ambient Temperature : (25.5 to 26.0) °C  
Relative Humidity : (50 to 55) %  
Line Voltage : (225.0 to 226.5) V

Date of Received :

28 September 2024

Date of Calibration :

28 September 2024

Date of Issue :

02 October 2024

Calibrated by :

Permpoon Charnu

Calibration Method :

This instrument was calibrated by In-house method CAL-M4007 based on BS 2646 Part 1 : 2021

The temperature scale used was based on ITS-90

Reference Standard Instruments :

This certification is traceable to the International System of Units

Standard Temperature Data Logger with RTD pt 100

ID No. Cert. No.

Due Date

Traceability

400039 67-400356-1

28 Dec 2024

National Institute of Metrology Thailand (NIMT)

400040 67-400356-2

28 Dec 2024

National Institute of Metrology Thailand (NIMT)

400041 67-400356-3

28 Dec 2024

National Institute of Metrology Thailand (NIMT)

Approved by

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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CAL

Calibratech Co.,Ltd.

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

Certificate of Calibration

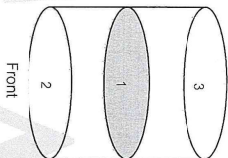
Certificate No. 67-400561-3

Result of Calibration : Without Adjustment

UUC Condition As-Received : Good

Function : Temperature measurement

Page : 2 of 2



Test Point (°C)	Setting Temperature (°C)	Indicating Temperature (°C)	Measured Temperature (°C) @ Sensor No.			Uncertainty (± °C)	Measured Uniformity (°C)	Measured Stability (°C)	Sterilizing Time (minute)	Pressure Gauge Reading (kgf/cm <sup>2</sup> )
121.0	121.0	121.0	1	2	3	0.71	0.1	0.2	15	1.2
			121.4	121.4	121.4					

Remark

1. UUC : Unit Under Calibration
2. Pressure Gauge reading are out of accreditation's scope.

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

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

- o0o -



Hanna Instruments (Thailand) Ltd.

41/067-68 Soi Ranchadapisek 24, Ranchadapisek Rd., Sansen-nok, Huaykwang, Bangkok 10310 Tel: 0-2541-4199 Fax: 0-2541-4198



Certificate No. : HIT-2446-1899

Page : 1 of 2

CERTIFICATE OF CALIBRATION

Equipment : Dissolved Oxygen and BOD Meter

Meter Model : HI98193 Serial No. : 07470053101

Probe Model : HI764073 Serial No. : KC1N53G5T

Manufacturer : Hanna Instruments Made in : Romania

Condition As-Received : Used Product Reference : RE242195

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

Customer name : Ecotech Water Systems Co., Ltd.

20 Soi Khatharomkiao 74 Yaek 6, Ranphathana,

Saphansung, Bangkok 10240

Received date : 11 November 2024

Calibrate date : 14 November 2024

Issue date : 15 November 2024

Calibrated Location : Hanna Instruments (Thailand) Ltd.

Calibration Procedure : This calibrator was conducted by using in-house calibration procedure

CP-11 by using certified reference material (CRM).

Calibrated by : ☒ Mr. Pichit Peithong

Approved by :

☐ Mr. Channarong Sornak

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)

**Condition of this calibration result**

1. Reference Standard Instruments : This certification is traceable to the international unit of thru Technology Promotion Association (Thailand-Japan).

Instruments	Model	Serial No.	Certificate No.
Thermometer with sensor	HI98509	39643D	24T1281
Digital Thermo-Hygrometer	HT-771SD	AI.07155	24H41

2. Reference Standard Materials : DO calibration standard traceable to Hanna Instrument Ltd.

Buffer Solution	Manufacture	Certified Value	Lot Number	Exp. date
Zero Oxygen Solution	Hanna	0.0 ± 0.1 @25°C	S0095/23	September 2028

**Calibration Result**

Inspection the accuracy of the Dissolved Oxygen (DO) Meter by using the following certificate reference material value.


Unit Under Calibration	CRM Standard	Actual value	Error value	Uncertainty of Measurement (±)
DO Electrode	DO	0.00 mg/L	0.00 mg/L	N/A
S/N KC1N3G5T	8.3 mg/L	8.26 mg/L	-0.04 mg/L	0.33 mg/L

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

\*\* End of certificate \*\*

**CERTIFICATE OF CALIBRATION**

**Equipment :** COD Test Tube Heater  
**Meter Model :** HI839150-02  
**Serial No. :** 101450029111  
**Tube Heater :** 25 Vial Capacity  
**Resolution :** 0.1 °C  
**Temperature Range :** (20 to 160) °C  
**Temperature of Reaction :** 150 °C  
**Manufacturer :** Hanna Instruments  
**Made in :** Romania  
**Condition As-Received :** New Product  
**Reference :** RE242195  
**Ambient Temperature :** (25 ± 2) °C  
**Relative Humidity :** (50 ± 15) % RH  
**Customer name :** Ecotech Water Systems Co., Ltd.  
20 Soi Khahornkiao 74 Yae 6, Ratchathana,  
Saphansung, Bangkok 10240  
**Received date :** 11 November 2024  
**Calibrate date :** 19 November 2024  
**Issue date :** 20 November 2024  
**Calibrated Location :** Hanna Instruments (Thailand) Ltd.  
**Calibration Procedure :** This calibrator was conducted by using in-house calibration procedure CP-04 by using certified reference standard instruments.

**Calibrated by :** ☒ Mr. Pichit Peithong **Approved by :**   
☐ Mr. Channarong Sonak



Certificate No. : HT-2447-1923

Page : 2 of 2

Condition of this calibration result:

Reference Standard Instruments : This certification is traceable to the international unit of unit maintained through:

Instruments	Model	Serial No.	Certificate No.	Traceable
Data Acquisition Switch Unit	34970A	MY44065265	WK2407-141-1	WK Electric Co., Ltd.
Digital Thermo-Hygrometer	HT-771SD	AI07155	24H41	Technology Promotion Association (Thailand-Japan).

Calibration Result:

Measurement Temperature Source Accuracy for COD Reactor.

Capacity (Vial)	Nominal Value (°C)	Average Value (°C)	Uncertainty of Measurement (±°C)
25 Vial	150.0	149.3	0.47

Unit: °C

(1A)	(2A)	(3A)	(4A)	(5A)
148.857	149.223	149.076	149.256	149.078
(1B)	(2B)	(3B)	(4B)	(5B)
148.934	149.714	150.210	150.231	149.181
(1C)	(2C)	(3C)	(4C)	(5C)
149.281	149.807	150.206	149.128	149.014
(1D)	(2D)	(3D)	(4D)	(5D)
149.039	149.425	148.788	149.381	148.605
(1E)	(2E)	(3E)	(4E)	(5E)
149.390	149.200	149.560	148.930	149.008

Figure: Shows the location of the temperature source.

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

\*\* End of certificate \*\*



Calibratech Co.,Ltd.

7/106-7 Moo 2, Sukhprachasarn 3 Rd., Bangpoo, Pakkret, Nonthaburi 11120  
Tel:(02) 964-6211 Fax:(02) 964-5155, e-mail : calibratech\_cal@yahoo.com, calibratech\_cal@hotmail.com

Certificate of Calibration

Certificate No. : 67-410114-3

Page : 1 of 2

Submitted by :

Ecolech Water Co., Ltd.  
20 Soi Kheharonklao 74 yaek 6, Rairaphathana, Saphansung, Bangkok 10240

Equipment :

Digital Thermo-Hygrometer

Manufacturer : N/A

Range Temperature : N/A °C

Range Humidity : N/A %R.H.

Serial No. : N/A

Model : HTC-2

Resolution : 0.1 °C

Resolution : 1 %R.H.

ID No. : 66-410106-3

Environment :

Ambient Temperature : (23 ± 2) °C

Relative Humidity : (50 ± 15) %

Date of Received : 28 September 2024

Date of Calibration : 30 September 2024 to 02 October 2024

Date of Issue : 02 October 2024

Calibrated by : Chortip Samchusri

**Calibration Method** : This instrument was calibrated by In-house method comparison technique CAL-M4013 by compared with standard probe sensor humidity/temperature into humidity/temperature chamber.

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

Digital Indicator with Standard Probe Temp&Hum

ID No. Cert. No. Due Date Traceability

400034 & 400035 SG-H-00611/67 04 Jan 2025 Success Gateway Co., Ltd., Accredited by TISI Calibration No.0268

Approved by :

(Permpoon Champu)

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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## Certificate of Calibration

Certificate No. : 67-410114-3

Page : 2 of 2

UUC Condition As Received : Good

Result of Calibration : Without Adjustment

Function : Temperature measurement ( Mode : In )

Reference Humidity @ 50 %R.H.

Standard Temperature ( <sup>o</sup> C)	UUC Reading ( <sup>o</sup> C)	Correction ( <sup>o</sup> C)	Uncertainty ( $\pm$ <sup>o</sup> C)
19.97	20.7	-0.7	0.46
25.03	25.6	-0.6	0.46
30.02	30.3	-0.3	0.46

Result of Calibration : Without Adjustment

Function : Humidity measurement

Reference Temperature @ 25 <sup>o</sup>C

Standard Humidity (%R.H.)	UUC Reading (%R.H.)	Correction (%R.H.)	Uncertainty ( $\pm$ %R.H.)
39.98	40	0	2.2
50.00	47	3	2.2
60.01	53	7	2.3

Remark

UUC : Unit Under Calibration

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

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

-o0o-

## Certificate of Calibration

Certificate No. : 67-410114-2

Page : 1 of 2

Submitted by : Ecotech Water Co., Ltd.

20 Soi Kheharomkiao 74 yaek 6, Raiphatthana, Saphansung, Bangkok 10240

Equipment : Digital Thermo-Hygrometer

Manufacturer : Digicon

Model : TH-03A

Range Temperature : -10 <sup>o</sup>C to 50 <sup>o</sup>C Resolution : 0.1 <sup>o</sup>C

Range Humidity : 20 %R.H. to 99 %R.H. Resolution : 1 %R.H.

Serial No. : 365051554

ID No. : N/A

Environment : Ambient Temperature : (23  $\pm$  2) <sup>o</sup>CRelative Humidity : (50  $\pm$  15) %

Date of Received : 28 September 2024

Date of Calibration : 30 September 2024 to 02 October 2024

Date of Issue : 02 October 2024

Calibrated by : Chorrip Samchusri

Calibration Method : This instrument was calibrated by In-house method comparison technique CAL-M4013

by compared with standard probe sensor humidity/temperature into humidity/temperature chamber.

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

Digital Indicator with Standard Probe Temp&amp;Hum

ID No. Cert. No. Due Date Traceability

400034 &amp; 400035 SG-H-00611/67 04 Jan 2025 Success Gateway Co., Ltd., Accredited by TISI Calibration No.0268

Approved by :

(Tempon Chaiyap)

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

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## Certificate of Calibration

Certificate No. : 67-410114-2

Page : 2 of 2

UUC Condition As-Received : Good

Result of Calibration : Without Adjustment

Function : Temperature measurement ( Mode : In )

Reference Humidity @ 50 %R.H.

Standard Temperature ( °C )	UUC Reading ( °C )	Correction ( °C )	Uncertainty ( ± °C )
20.00	20.1	-0.1	0.46
25.02	25.1	-0.1	0.46
29.98	29.7	0.3	0.46

Result of Calibration : Without Adjustment

Function : Humidity measurement

Reference Temperature @ 25 °C

Standard Humidity ( %R.H. )	UUC Reading ( %R.H. )	Correction ( %R.H. )	Uncertainty ( ± %R.H. )
40.01	37	3	4.1
50.03	47	3	4.1
59.97	57	3	4.1

Remark

UUC : Unit Under Calibration

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

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

- o0o -

## Certificate of Calibration

Certificate No. : 67-410114-1

Page : 1 of 2

Submitted by : Ecotech Water Co., Ltd.

20 Soi Khetaromklao 74 yaek 6, Raphatthana, Saphansung, Bangkok 10240

Equipment : Digital Thermo-Hygrometer

Manufacturer : Digicon Model : TH-03A

Range Temperature : -10 °C to 50 °C Resolution : 0.1 °C

Range Humidity : 20 %R.H. to 99 %R.H. Resolution : 1 %R.H.

Serial No. : 365052106 ID No. : N/A

Environment : Ambient Temperature : (23 ± 2) °C

Relative Humidity : (50 ± 15) %

Date of Received : 28 September 2024

Date of Calibration : 30 September 2024 to 02 October 2024

Date of Issue : 02 October 2024

Calibrated by : Chotirip Samchusri

**Calibration Method** : This instrument was calibrated by In-house method comparison technique CAL-M4013 by compared with standard probe sensor humidity/temperature into humidity/temperature chamber.

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

Digital Indicator with Standard Probe Temp&Hum

ID No. Cert. No. Due Date Traceability

400034 & 400035 SG-H-00611/67 04 Jan 2025 Success Gateway Co., Ltd., Accredited by TISI Calibration No.0268

Approved by :

Supervisor



NSG-TIS-17517025  
CALIBRATION 0030



The Uncertainties are for a confidence probability of approximately 95%

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## Certificate of Calibration

Certificate No. : 67-410114-1

Page : 2 of 2

UUC Condition As-Received : Good

Result of Calibration : Temperature measurement ( Mode : In )

Function : Temperature measurement

Reference Humidity @ 50 %R.H.

Standard Temperature ( °C )	UUC Reading ( °C )	Correction ( °C )	Uncertainty ( ± °C )
19.98	20.3	-0.3	0.46
25.00	25.3	-0.3	0.46
30.01	29.9	0.1	0.46

### Result of Calibration : Without Adjustment

Function : Humidity measurement

Reference Temperature @ 25 °C

Standard Humidity ( %R.H. )	UUC Reading ( %R.H. )	Correction ( %R.H. )	Uncertainty ( ± %R.H. )
40.05	38	2	3.1
50.02	48	2	3.1
60.02	58	2	3.2

Remark

UUC : Unit Under Calibration

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

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

- o/lo -



## ภาคผนวก 5

ใบรับรอง/หนังสืออนุญาตขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน



ที่อก ๐๓๓๐๑/ ๑๕๔๒๖

กรมโรงงานอุตสาหกรรม  
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท  
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๒๔ ตุลาคม ๒๕๖๕

เรื่อง ต่ออายุหนังสือขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท อีโคเทค วอเตอร์ซิสเต็มส์ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงเอกสาร และข้อมูลรายละเอียดของห้องปฏิบัติการวิเคราะห์เอกชน

ลงวันที่ ๔ กันยายน ๒๕๖๔

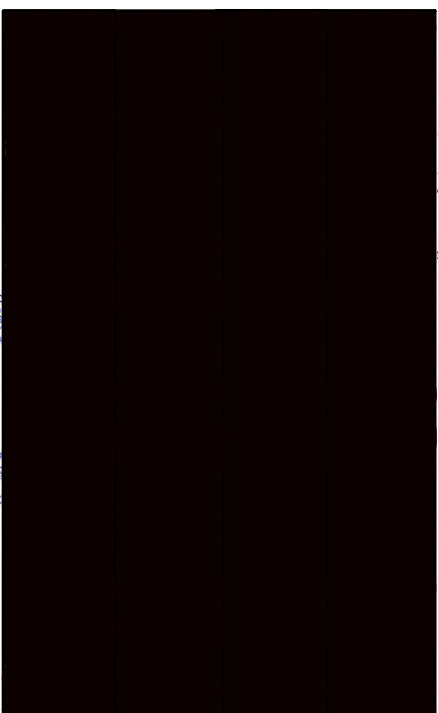
สิ่งที่ส่งมาด้วย เอกสารแบบทึบหนังสือรับรองอายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท อีโคเทค วอเตอร์ซิสเต็มส์ จำกัด จำนวน ๑ แผ่น

ตามหนังสือที่อ้างถึง บริษัท อีโคเทค วอเตอร์ซิสเต็มส์ จำกัด ขอต่ออายุหนังสือขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๒๕๕ สถานที่ตั้งเลขที่ ๒๐ ซอยเคหะร่มเกล้า ๙๔ แขวงแขวงราษฎร์พัฒนา เขตสะพานสูง กรุงเทพมหานคร ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท อีโคเทค วอเตอร์ซิสเต็มส์ จำกัด ต่ออายุหนังสือขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์



หนังสือฉบับนี้...

- ๒ -

หนังสือฉบับนี้จะหมดอายุในวันที่ ๑๑ ตุลาคม ๒๕๖๕ หากประสงค์จะต่ออายุหนังสือ  
รับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อ  
กรมโรงงานอุตสาหกรรม ภายใน ๓๐ วัน ก่อนวันสิ้นอายุของหนังสือขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน  
ทั้งนี้ สามารถยื่นคำขอผ่านระบบอิเล็กทรอนิกส์ได้ทั้งนี้รับใช้ทั้งโรงงานอุตสาหกรรม ตาม QR Code  
ท้ายหนังสือฉบับนี้

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ



ผู้อำนวยการกองวิจัยและพัฒนาสิ่งแวดล้อมพิษและทะเบียนห้องปฏิบัติการ  
ผู้เกี่ยวข้องทางทะเบียนอิเล็กทรอนิกส์ในระบบสารสนเทศ



ยื่นคำขอผ่านระบบอิเล็กทรอนิกส์

กองวิจัยและพัฒนาสิ่งแวดล้อมพิษและทะเบียนห้องปฏิบัติการ  
กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบและทะเบียนห้องปฏิบัติการ  
โทร. ๐ ๒๕๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๔  
โทรสาร ๐ ๒๕๓๐ ๖๓๑๒ ต่อ ๒๑๔๙  
ไปรษณีย์อิเล็กทรอนิกส์ ravalab@dw.mae.go.th



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



เอกสารแนบท้ายหนังสือรับข้ออยู่ขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกสาร  
บริษัท อีทีเค วอเตอร์ซีเอสเอ็ม จำกัด เลขทะเบียน ๖๒๙๕  
ที่อก ๐๓๐๘(๑)/ ๑๕๙๒๖ ลงวันที่ ๒๔ ตุลาคม ๒๕๖๕

ขอขำยสารเคมีที่ระดับทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๘ รายการ  
แนบส่ง จำนวน 8 รายการ

ลำดับที่	สารเคมี	วิธีวิเคราะห์
1	Biochemical Oxygen Demand	5-Day BOD Test, Azide Modification Method
2	Chemical Oxygen Demand	Closed Reflux, Titrimetric Method
3	Oil & Grease	Liquid-Liquid, Partition-Gravimetric Method
4	pH	Electrometric Method
5	Sulfide	Iodometric Method
6	Total Dissolved Solids	Dried at 180 °C
7	Total Kjeldahl Nitrogen	Semi-Micro-K
8	Total Suspended Solids	Dried at 103-105 °C

เอกสารอ้างอิง

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

