

ภาคผนวกที่ 5
เอกสารสอบเทียบเครื่องมือตรวจวัด

Certificate of Calibration

Certificate No. : 65-420108-1

Page : 1 of 2

Submitted by : Pacific Laboratory Co.,Ltd.

14/5358 Moo 14, T. Bang Bua Thong, A. Bang Bua Thong, Nonthaburi 11110 Thailand

Equipment : pH Meter with electrode

pH meter

Manufacturer : Eutech

Model : pH 700

Range : N/A pH

Resolution : 0.01 pH

Serial No. : 2841305

ID No. : LAB-PH-002

Electrode

Model : N/A

Serial No. : 3093341

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

Ambient Temperature : (25.2 to 25.8)°C

Relative Humidity : (50 to 55) %

Date of Received : 17 December 2022

Date of Calibration : 17 December 2022

Date of Issue : 19 December 2022

Calibrated by : Bunjerd Masri

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-00473/64	27 Aug 2023	National Institute of Metrology Thailand (NIMT)

2. Standard Buffer Solution

pH	Cert. No.	Lot No.	Exp. Date	Traceability
4.008	61235182	857394	11 Dec 2024	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
6.986	61267169	857395	11 Dec 2023	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
10.010	61260481	857396	11 Dec 2023	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025

Approved

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 65-400648-1 **Page : 1 of 2**

Submitted by : Pacific Laboratory Co., Ltd
14/5358 Moo 14, T. Bang Bua Thong, A. Bang Bua Thong, Nonthaburi 11110 Thailand

Equipment : Digital Thermometer with Thermistor probe
Temperature Indicator
Manufacturer : Eutech Model : pH 700
Range : N/A °C Resolution : 0.1 °C
Serial No. : 2841305 ID No. : LAB-PH-002
Thermistor probe
Model : N/A Sheath Material : Stainless
Diameter : 3 mm. Length : 115 mm.
Serial No. : PHISTEMB01P 049 ID No. : LAB-PH-002

Environment : On site calibration was carried out at the Laboratory, Pacific Laboratory Co., Ltd
Ambient Temperature : (25.2 to 25.8) °C
Relative Humidity : (50 to 55) %
Line Voltage : (220.0 to 222.0) VAC

Date of Received : 17 December 2022
Date of Calibration : 17 December 2022
Date of Issue : 19 December 2022
Calibrated by : Bunjerd Masri

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-0074-22	20 Jun 2024	National Institute of Metrology Thailand (NIMT)

2. Standard Digital Thermometer

ID No.	Cert. No.	Due Date	Traceability
400033	22E569	22 Feb 2024	National Institute of Metrology Thailand (NIMT)

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Certificate of Calibration

Certificate No. : 66-420070-2

Page : 1 of 2

Submitted by : Pacific Laboratory Co.,Ltd.

14/5358 Moo 14, T. Bang Bua Thong, A. Bang Bua Thong, Nonthaburi 11110 Thailand

Equipment : pH Meter with electrode

pH meter

Manufacturer : Eutech

Model : pH 700

Range : N/A pH

Resolution : 0.01 pH

Serial No. : 2841305

ID No. : LAB-PH-002

Electrode

Model : N/A

Serial No. : 3052953

ID No. : LAB-PH-002

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

Ambient Temperature : (25.0 to 25.6)^o C

Relative Humidity : (45 to 47) %

Date of Received : 31 July 2023

Date of Calibration : 31 July 2023

Date of Issue : 05 August 2023

Calibrated by : Bunjerd Masri

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

<u>ID No.</u>	<u>Cert. No.</u>	<u>Due Date</u>	<u>Traceability</u>
400005	SG-E-00473/64	27 Aug 2023	National Institute of Metrology Thailand (NIMT)

2. Standard Buffer Solution

<u>pH</u>	<u>Cert. No.</u>	<u>Lot No.</u>	<u>Exp. Date</u>	<u>Traceability</u>
4.008	61270213	915161	19 Jul 2025	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
6.985	61275614	898428	28 May 2024	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
9.997	61281073	915163	19 Jul 2024	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025

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Certificate of Calibration

Certificate No. : 66-400424-1

Page : 1 of 2

Submitted by : Pacific Laboratory Co., Ltd
14/5358 Moo 14, T. Bang Bua Thong, A. Bang Bua Thong, Nonthaburi 11110 Thailand

Equipment : Digital Thermometer with Thermistor probe
Temperature Indicator

Manufacturer :	Eutech	Model :	pH 700
Range :	N/A °C	Resolution :	0.1 °C
Serial No. :	2841305	ID No. :	LAB-PH-002
Thermistor probe			
Model :	N/A	Sheath Material :	Stainless
Diameter :	3 mm.	Length :	115 mm.
Serial No. :	PHSTEMB01P 049	ID No. :	LAB-PH-002

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

Ambient Temperature : (25.0 to 25.6) °C
Relative Humidity : (45 to 47) %
Line Voltage : (220.0 to 222.0) VAC

Date of Received : 31 July 2023

Date of Calibration : 31 July 2023

Date of Issue : 05 August 2023

Calibrated by : Bunjerd Masri

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-0074-22	20 Jun 2024	National Institute of Metrology Thailand (NIMT)

2. Standard Digital Thermometer

ID No.	Cert. No.	Due Date	Traceability
400033	22E569	22 Feb 2024	National Institute of Metrology Thailand (NIMT)

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Certificate of Calibration

Certificate No. : 66-420070-1

Page : 1 of 2

Submitted by : Pacific Laboratory Co.,Ltd.

14/5358 Moo 14, T. Bang Bua Thong, A. Bang Bua Thong, Nonthaburi 11110 Thailand

Equipment : pH Meter with electrode

pH meter

Manufacturer : Eutech

Model : pH 700

Range : N/A pH

Resolution : 0.01 pH

Serial No. : 2841305

ID No. : LAB-PH-002

Electrode

Model : N/A

Serial No. : 3093341

ID No. : LAB-PH-002

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

Ambient Temperature : (25.0 to 25.6) °C

Relative Humidity : (45 to 47) %

Date of Received : 31 July 2023

Date of Calibration : 31 July 2023

Date of Issue : 05 August 2023

Calibrated by : Bunjerd Masri

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

<u>ID No.</u>	<u>Cert. No.</u>	<u>Due Date</u>	<u>Traceability</u>
400005	SG-E-00473/64	27 Aug 2023	National Institute of Metrology Thailand (NIMT)

2. Standard Buffer Solution

<u>pH</u>	<u>Cert. No.</u>	<u>Lot No.</u>	<u>Exp. Date</u>	<u>Traceability</u>
4.008	61270213	915161	19 Jul 2025	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
6.985	61275614	898428	28 May 2024	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
9.997	61281073	915163	19 Jul 2024	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025

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235 Petchkasem 63/2 Road, Laksong, Bangkae, Bangkok 10160

Tel (662) 421-5402, (662) 444-0152-3, Fax (662) 809-4584

www.qcalibration.comNSC-TISI-TIS17025
CALIBRATION 0049

CERTIFICATE No : 22M8888

REFERENCE No : 66223-2

PAGE : 1 OF 2

Certificate of Calibration

EQUIPMENT : DIGITAL BALANCE

MANUFACTURER : SHIMADZU

MODEL : AF225WD

SERIAL No : D316301828

ID No : LAB-BL-003

CONDITION AS RECEIVED : USED ITEM

SUBMITTED BY : PACIFIC LABORATORY CO., LTD.
14/5358 MOO. 14 TAMBOL BANGBUA THONG
AMPHOE BANG NUA THONG, NONTHABURI
11110

CALIBRATED BY : ATSAWIN Y.

CALIBRATION DATE : 01-Aug-22

APPROVED BY : 

ISSUED DATE : 02-Aug-22

RECEIVED DATE : 01-Aug-22

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Certificate of Calibration

Certificate No. : 66-200247-2

Page : 1 of 2

Submitted by : Pacific Laboratory Co., Ltd.

14/5358 Moo 14, T.Bang Bua Thong, A.Bang Bua Thong, Nonthaburi 11110 Thailand

Equipment : Electronic Balance

Manufacturer : SHIMADZU

Model : AP225WD

Serial No. : D316301828

ID No. : LAB-BL-003

Capacity : 220 g

Resolution : 0.00001g/102g, 0.0001g/220g

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

Ambient Temperature : (25.1 to 25.4) °C

Relative Humidity : (62.3 to 64.8) %

Air Pressure : 1007.0 mbar

Date of Received : 31 July 2023

Date of Calibration : 31 July 2023

Date of Issue : 02 August 2023

Calibrated by : Akaradath Thippichai

Calibration Method : In-house method CAL-M2001 based on UKAS Publication ref : LAB 14
Edition 5, July 2015

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

Standard Weights

<u>ID No.</u>	<u>Cert. No.</u>	<u>Due Date</u>	<u>Traceability</u>
E261-E2624	C02222345	10 Nov 2023	National Institute of Metrology (Thailand), (NIMT)

Approved by :

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NSC-TISI-TIS17025
CALIBRATION 6049

CERTIFICATE No : 22T8890

REFERENCE No : 66223-4

PAGE : 1 OF 2

Certificate of Calibration

EQUIPMENT : INCUBATOR

MANUFACTURER : AQUA LYTIC

MODEL : TC135S

SERIAL No : 0614/000033

ID No : LAB-IB-001

CONDITION AS RECEIVED : USED ITEM

SUBMITTED BY : PACIFIC LABORATORY CO., LTD.
14/5358 MOO. 14 TAMBOL BANGBUA THONG
AMPHOE BANG NUA THONG, NONTHABURI 11110

CALIBRATED BY : CHAICHARN CH.

CALIBRATION DATE : 01-Aug-22

APPROVED BY : 

ISSUED DATE : 02-Aug-22

RECEIVED DATE : 01-Aug-22

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F-G010 REV : 02

Certificate of Calibration

Certificate No. : 66-400422-5

Page : 1 of 2

Submitted by : Pacific Laboratory Co.,Ltd

14/5358 Moo 14, T. Bang Bua Thong, A. Bang Bua Thong, Nonthaburi 11110 Thailand

Equipment : Air Chamber (Incubator)

Manufacturer : Aqua Lytic

Model : TC 135S

Range : N/A °C

Resolution : 0.1 °C

Serial No. : 0614/000033

ID No. : LAB-IB-001

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

Ambient Temperature : (23.5 to 24.2) °C

Relative Humidity : (40 to 45) %

Line Voltage : (220.0 to 222.0) V

Date of Received : 31 July 2023

Date of Calibration : 31 July 2023

Date of Issue : 05 August 2023

Calibrated by : Permpon Chanpu

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 & 400048	66-400067-1	04 Aug 2023	National Institute of Metrology Thailand (NIMT)

Appro

Supervisor

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CERTIFICATE No : 22T8896
REFERENCE No : 66224-2

PAGE : 1 OF 2

Certificate of Calibration

EQUIPMENT : WATER BATH

MANUFACTURER : MEMMERT

MODEL : WNB22

SERIAL No : L514.0184

ID No : LAB-WB-001

CONDITION AS RECEIVED : USED ITEM

SUBMITTED BY : PACIFIC LABORATORY CO., LTD.
14/5358 MOO. 14 TAMBOL BANGBUA THONG
AMPHOE BANG NUA THONG, NONTHABURI 11110

CALIBRATED BY : CHAICHARN CH.

CALIBRATION DATE : 01-Aug-22

APPROVED BY : 

ISSUED DATE : 02-Aug-22

RECEIVED DATE : 01-Aug-22

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QUALITY CALIBRATION CO., LTD.

Certificate of Calibration

Certificate No. : 66-400422-4

Page : 1 of 2

Submitted by : Pacific Laboratory Co.,Ltd

14/5358 Moo 14, T. Bang Bua Thong, A. Bang Bua Thong, Nonthaburi 11110 Thailand

Equipment : Water Bath

Manufacturer : Memmert

Model : WNB 22

Range : N/A °C

Resolution : 0.1 °C

Serial No. : L514.0184

ID No. : LAB-WB-001

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

Ambient Temperature : (30.0 to 32.0) °C

Relative Humidity : (50 to 55) %

Line Voltage : (220.0 to 222.0)V

Date of Received : 31 July 2023

Date of Calibration : 31 July 2023

Date of Issue : 05 August 2023

Calibrated by : Permpon Chanpu

Calibration Method : This instrument was calibrated by In-house method CAL-M4006 based on ASTM E715-80
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 & 400031

66-400225-1

28 Oct 2023

National Institute of Metrology Thailand (NIMT)

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CERTIFICATE No : 22T8889

REFERENCE No : 66223-3

PAGE : 1 OF 2

Certificate of Calibration

EQUIPMENT : HOT AIR OVEN

MANUFACTURER : MEMMERT

MODEL : UN55

SERIAL No : B214.1879


ID No : LAB-OV-001

CONDITION AS RECEIVED : USED ITEM

SUBMITTED BY : PACIFIC LABORATORY CO., LTD.
14/5358 MOO. 14 TAMBOL BANGBUA THONG
AMPHOE BANG NUA THONG, NONTABURI 11110

CALIBRATED BY : CHAICHARN CH.

CALIBRATION DATE : 01-Aug-22

APPROVED BY : 

ISSUED DATE : 02-Aug-22

RECEIVED DATE : 01-Aug-22

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F-G010 REV : 02

Certificate of Calibration

Certificate No. : 66-400422-3

Page : 1 of 2

Submitted by : Pacific Laboratory Co.,Ltd

14/5358 Moo 14, T. Bang Bua Thong, A. Bang Bua Thong, Nonthaburi 11110 Thailand

Equipment : Air Chamber (Oven)

Manufacturer : Memmert

Model : UN 55

Range : N/A °C

Resolution : 0.1 °C

Serial No. : B214.1879

ID No. : LAB-OV-001

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

Ambient Temperature : (30.0 to 32.0) °C

Relative Humidity : (50 to 55) %

Line Voltage : (220.0 to 222.0) V

Date of Received : 31 July 2023

Date of Calibration : 31 July 2023

Date of Issue : 05 August 2023

Calibrated by : Permpoon Chanpu

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
400029 & 400030	66-400227-1	24 Oct 2023	National Institute of Metrology Thailand (NIMT)

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