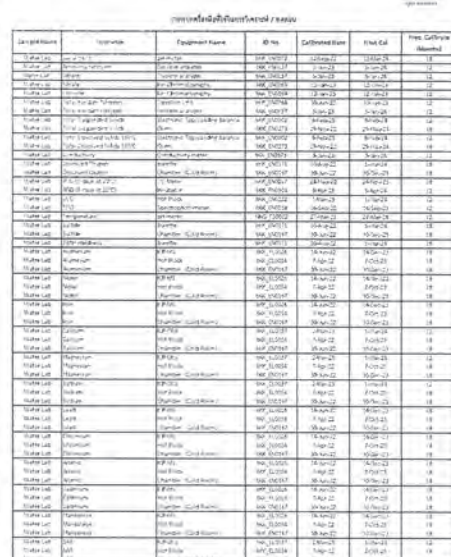
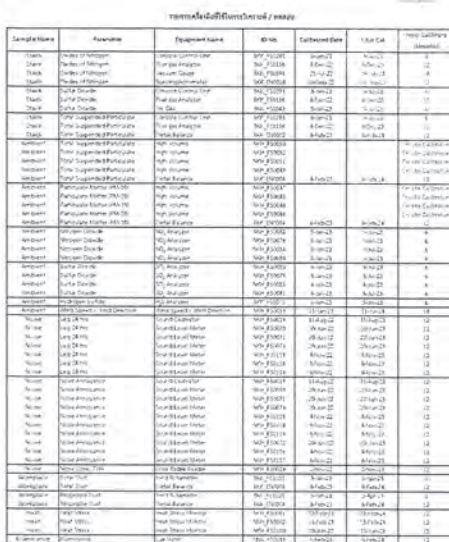


# ภาคผนวก ง

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ใบรับรองการสอบเทียบเครื่องมือ



1. Assessment Date:	8/24/2016	Assessment instrument version:	Robins - Community Pk
2. Referral Date:	7/14/16	Completion:	100%
<b>Client/Control/Minor Data</b>		<b>Reference/Do Not Assess Data</b>	
Collection ID:	050712140-000000	Assessment ID:	00000000
Client/Control ID:	00000000	Referral ID:	00000000
Assessment:	11000000	Completion Factor (%)	100
Model ID:	00000000	Referral Collection ID:	00000000

AH	E	Automatic Dry-Chamber Salinometer					Zinc and Copper Meter				
		10 (ppt)			5		10 (ppm)			5	
		Final	Initial	Total	Final	Initial	Final	Initial	Total	Final	Initial
10	12.40	10.00	7.00	40.00	4.0	30.00	10.00	20.00	10.00	10.00	10.00
20	14.0	10.00	0.00	10.00	4.0	30.00	10.00	20.00	10.00	10.00	10.00
30	1.7	10.00	0.00	10.00	3.0	30.00	10.00	20.00	10.00	10.00	10.00
40	0.1	10.00	0.00	10.00	4.0	30.00	10.00	20.00	10.00	10.00	10.00
50	1.4	10.00	0.00	10.00	4.0	30.00	10.00	20.00	10.00	10.00	10.00

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Yes. I have been a member of the group since 2004 and I am still a member. I have been a member of the group since 2004 and I am still a member.

[illegible]

Calibration Date	3 Jan 13	Ambient Temperature (°C)	38		
Calibration sheet No.	GSD0238-BA-01001	Relative Humidity (%)	82		
Digital Read Out	ENK_#31535	Reference Temperature (°C)	ENK_#31144		
Serial No.	170009	Serial No.	20160000011		
Model	HO-872v	Model	DigimacCO2/H401		
		Load Calibrators	31 Jan 13		
Location	Reference Temperature (°C)	Digital Temperature (°C)	Error (°C)	MTE	Pass / Fail
Stack	0	0	0	-3	Pass
	50	50	0	-3	Pass
	50	50	0	-3	Pass
	100	100	0	-3	Pass
	150	150	0	-3	Pass
	200	200	0	-3	Pass
	250	249	-1	-3	Pass
Probe	300	300	0	-3	Pass
	500	498	-2	-3	Pass
	100	100	0	-3	Pass
	150	150	0	-3	Pass
	140	141	1	-3	Pass
	160	160	0	-3	Pass
	180	180	0	-3	Pass
Filter	140	141	1	-3	Pass
	120	120	0	-3	Pass
	140	141	1	-3	Pass
	120	120	0	-3	Pass
Exit	20	20	0	-3	Pass
	40	40	0	-3	Pass
	20	20	0	-3	Pass
Monitor	20	20	0	-3	Pass
	25	25	0	-3	Pass
	40	40	0	-3	Pass
AUX	20	20	0	-3	Pass
	25	25	0	-3	Pass
	40	40	0	-3	Pass

(left): Maximum diameter (mm) of measurement distillate in a glass container.

**References**

D. S.

Subsequent to the 1990s, the

$$\sum_{k=1}^n k^2 = \frac{n(n+1)(2n+1)}{6}$$

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Collection Date	2-Jan-23	Unit Cell Count	3 x 3 x 20
Repeating Frequency (mm)	1/1	Dimensional (Å)	1/1
Refining Function, R <sub>int</sub>	0.03		

## Reference Stopwatch Data

Stomach 40 cm	Proton	SurfGas Meter (2)	SurfGas Meter (2)
Midgut	None	Wasp	Wasp
Small Int.		Small Int.	Small Int.
Colonization State	4/10/20		
Condition	Good		

Console Control Meter Data

Ductless Heater: 800-421-0000  
 Website: [www.ductless.com](http://www.ductless.com)  
 Email to: [info@ductless.com](mailto:info@ductless.com)

Run No.	Time Actual (m:ss.ms)	Time Reading (m:ss)	Diff (ms)	Diff (ms)
1	0:00:17	0:00	17	0:00:17
2	0:00:12	0:00	12	0:00:12
3	0:00:11	0:00	11	0:00:11
4	0:00:10	0:00	10	0:00:10
5	0:00:10	0:00	10	0:00:10
6	0:00:10	0:00	10	0:00:10
7	0:00:10	0:00	10	0:00:10
8	0:00:10	0:00	10	0:00:10
9	0:00:10	0:00	10	0:00:10
10	0:00:10	0:00	10	0:00:10
Average			10	0:00:10
SD			0	0:00:00

—2 months—

Precast

Appendix

5

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THE KINGdom OF THAILAND  
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 Department of Science and Technology  
 Bara Scientific Co., Ltd.



Bara Scientific Co., Ltd.  
 308 U-Chu-Lang Building, 4th Floor, Rama 9 Road,  
 Bangkok 10300, Thailand  
 Tel: 02-4343000 Fax: 02-4343001  
 www.barscientific.com

## CALIBRATION CERTIFICATE

**Item Name:** VACUUM GAUGE  
**Model:** V221A/C  
**Serial No.:** V004 ID: ENR-00000  
**Range:** -30 in Hg to 0 in Hg  
**Scale Interval:** 1 in Hg

**Submitted by:** ALS Laboratory Group (Thailand) Co., Ltd.  
 104 Phatthanakan Road, Phatthanakan, Bangkok 10250, Thailand  
**Calibration method:** Normal  
**Received date:** 7 June 2022  
**Calibration date:** 21 July 2022  
**Standard:** Reference Pressure Monitor, Serial 1550 Certificate no. 20-040551-01  
 Our Date 3 August 2022  
 The Standard used for the measurement is traceable to SI unit through  
 National Institute of Metrology (Thailand)

**CALIBRATED BY:**  **APPROVED BY:**   
 Mr. Jit Chaitrak  
 Director  
 Mechanical Engineering Standards Laboratory  
 Ref: 2012000070013001  
 Printed Date: 14 Sep 2022

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## CALIBRATION CERTIFICATE

**Calibration range:** 27 in Hg to 0 in Hg  
**Calibration method:** The Vacuum Gauge Under Calibration (UUC) was calibrated by  
 comparison method followed DMS-DIC-R-5-1 Calibration of Pressure  
 Gauge with 0.02%  
**Calibration condition:** Temperature: 22.4 ± 2 °C Relative Humidity: 66 ± 10 %  
 Atmospheric pressure: 1001 ± 10 hPa  
 Locally gravity: 9.79303 m/s<sup>2</sup> (0.00022 m/s<sup>2</sup>)

**Measurement Data:**  
 Gauge location: Vacuum  
 Reference gas: Gauge air  
 Medium: Air  
 Unit: in Hg

UUC Reading	Gauge Pressure	Error	1σ Uncertainty
0	0.00	0.02	0.12
-15	-0.62	-0.10	0.21
-23	-0.69	-0.08	0.23
-26	-0.33	0.34	0.18
-27	-0.27	0.27	0.08
-32	-0.34	0.24	0.17

Note: 1. The reading given after the 2 page is right side.  
 2. Conversion factor: 1 in Hg = 3.38638 kPa  
 The reported expanded uncertainty are based on a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95 %  
**The End of Calibration Certificate**




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 Bangkok 10300, Thailand  
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## Certificate of Calibration



**Certificate No.:** BSCC-UV-30702  
**Equipment:** UV-Vis Spectrophotometer  
**Model:** UV-1600  
**Manufacturer:** Shimadzu  
**Serial No.:** A114540053000  
**ID No.:** BSCC-300018  
**Date of receipt:** 16 September 2022  
**Date of calibration:** 16 September 2022  
**Date of issue:** 23 September 2022

**Customer name:** ALS Laboratory Group (Thailand) Co., Ltd.  
**Address:** 104 Soi Phatthanakan 46, Phatthanakan Road, Phatthanakan, Suan Luang, Bangkok 10250  
**Temperature:** (22 ± 0.3) °C (On site)  
**Humidity:** (58 ± 4.3) %RH (On site)  
**Equipment condition:** Good Operation  
**Calibration Location:** Organic Prep  
**Calibration Procedure:** In-house method: UV-UV-702-01 based on ASTM E275-01  
**Traceability:** Wavelength Accuracy is traceable to certificate No. 05917 and 05818  
 Photometric Accuracy is traceable to certificate No. 05024 and 05037  
 Slit Light is traceable to certificate No. 00086  
 The above certificate is traceable to SI unit through Bara Scientific Ltd.  
 (UKAS accredited calibration laboratory No. 0005)

**Calibrated by:** Mr. Warun Jarungrat  
**Approved by:**   
 Mr. Warun Jarungrat  
 Technical Manager

The above results are valid exclusively for the calibrated item(s) as mention in this report certificate.  
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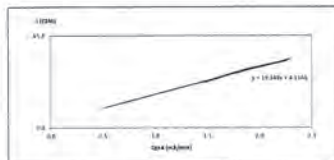




# High Volume Air Sampler Calibration Worksheet

Project Site: Kentucky State Capitol Stationing Pressure (mm Hg): 747  
 Calibration Location: Stoughton, MA Temperature (°C): 20  
 Calibration Date: 8-Jan-22 High Volume ID: 1001-2000  
 Calibrationist Name: C. GREGG AND J. GREGG High Volume Model: 20-2000  
 Calibration ID: 1001-2000 High Volume LPM: 2000  
 Calibration Model: 20-2000 Calibration Slope: 1.0000  
 Calibration LPM: 2000 Calibration Intercept: -0.0011

Test No.	Inlet H <sub>2</sub> O (mm)	Q <sub>in</sub> (m³/min)	Flow (CFM)	Linear Regression
1	0.0	1.4618	32	Slope: 1.0000
2	0.0	1.4674	32	Intercept: -0.0011
3	0.0	1.4618	32	Correlation Coefficient: 0.9999
4	0.0	1.4618	32	
5	0.0	1.4618	32	



Calibrated By: [Signature]  
 (Mr. Joseph Belmont)  
 Field Scientist (S)

Approved By: [Signature]  
 (Mr. Joseph Belmont)  
 Senior Field Scientist Supervisor (S)

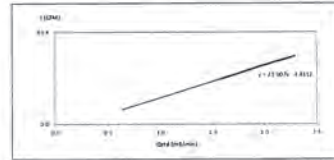
FORM NO. 7-04-01A REVISION NO. 1000-01-01-0001



# High Volume Air Sampler Calibration Worksheet

Project Site: Kentucky State Capitol Stationing Pressure (mm Hg): 747  
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 Calibration Date: 8-Jan-22 High Volume ID: 1001-2000  
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Calibrated By: [Signature]  
 (Mr. Joseph Belmont)  
 Field Scientist (S)

Approved By: [Signature]  
 (Mr. Joseph Belmont)  
 Senior Field Scientist Supervisor (S)

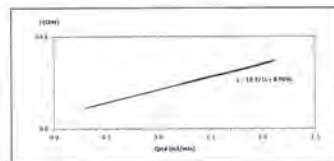
FORM NO. 7-04-01A REVISION NO. 1000-01-01-0001



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Calibrated By: [Signature]  
 (Mr. Joseph Belmont)  
 Field Scientist (S)

Approved By: [Signature]  
 (Mr. Joseph Belmont)  
 Senior Field Scientist Supervisor (S)

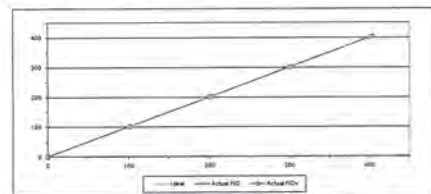
FORM NO. 7-04-01A REVISION NO. 1000-01-01-0001



# MULTIPOINT CALIBRATION REPORT

Calibration Date: 8-Jan-22 Equipment Name: NCH Analyzer  
 Manufacturer: NORSA Model: APRA-370  
 Serial No.: M803003 Equipment ID: NCH\_F80082  
 Calibration Manufacturer: Talystone API Model: 700  
 Serial No.: 847  
 Std. Gas Concentration (PPM): 55.88 Cylinder No.: GN0027222  
 Cylinder Pressure (psi): 1800 Certified By: Alphas Inc.  
 Certified Date: 8-Feb-22 Expired Date: 8-Feb-30

Point	Ideal	Actual NO	Error NO	%Error NO	Actual NOx	Error NOx	%Error NOx
ZERO	0.00	0.10	0.10	0.10	0.10	0.10	0.10
1	100.00	99.00	-1.00	-1.00	101.00	1.00	1.00
2	200.00	198.50	-1.50	-0.75	201.50	1.50	0.75
3	300.00	298.40	-1.60	-0.53	301.60	1.60	0.53
4	400.00	398.20	-1.80	-0.45	401.80	1.80	0.45
AVERAGE (%)			-0.83				0.68



Calibrated By: [Signature]  
 (Mr. Joseph Belmont)  
 Field Environmental Scientist (S)

Approved By: [Signature]  
 (Mr. Joseph Belmont)  
 Assistant General Manager

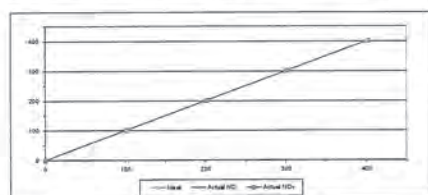
FORM NO. 7-04-01A REVISION NO. 1000-01-01-0001



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 Calibration Manufacturer: Talystone API Model: 700  
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Point	Ideal	Actual NO	Error NO	%Error NO	Actual NOx	Error NOx	%Error NOx
ZERO	0.00	0.10	0.10	0.10	0.10	0.10	0.10
1	100.00	99.00	-1.00	-1.00	101.00	1.00	1.00
2	200.00	198.50	-1.50	-0.75	201.50	1.50	0.75
3	300.00	298.40	-1.60	-0.53	301.60	1.60	0.53
4	400.00	398.20	-1.80	-0.45	401.80	1.80	0.45
AVERAGE (%)			-0.83				0.68



Calibrated By: [Signature]  
 (Mr. Joseph Belmont)  
 Field Environmental Scientist (S)

Approved By: [Signature]  
 (Mr. Joseph Belmont)  
 Assistant General Manager

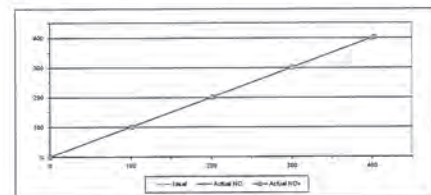
FORM NO. 7-04-01A REVISION NO. 1000-01-01-0001



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Point	Ideal	Actual NO	Error NO	%Error NO	Actual NOx	Error NOx	%Error NOx
ZERO	0.00	0.10	0.10	0.10	0.10	0.10	0.10
1	100.00	99.00	-1.00	-1.00	101.00	1.00	1.00
2	200.00	198.50	-1.50	-0.75	201.50	1.50	0.75
3	300.00	298.40	-1.60	-0.53	301.60	1.60	0.53
4	400.00	398.20	-1.80	-0.45	401.80	1.80	0.45
AVERAGE (%)			-0.83				0.68



Calibrated By: [Signature]  
 (Mr. Joseph Belmont)  
 Field Environmental Scientist (S)

Approved By: [Signature]  
 (Mr. Joseph Belmont)  
 Assistant General Manager

FORM NO. 7-04-01A REVISION NO. 1000-01-01-0001

**(ALS)**

**MULTIPOINT CALIBRATION REPORT**

Calibration Date: 5-Jan-23      Equipment Name: H2S Analyzer  
 Manufacturer: HORIBA      Model: APBA-370  
 Serial No.: R200YMB3      Equipment ID: H2N\_F80083  
 Calibrator Manufacturer: Teledyne API      Model: 700  
 Serial No.: 847  
 Std. Gas Concentration (PPM): 55.68      Cylinder No.: QN0027222  
 Cylinder Pressure (psi): 1800      Certified By: Algea Inc.  
 Certified Date: 8-Feb-22      Expired Date: 2-Feb-23

Point	Ideal	Actual	Error	%Error
ZERO	0.00	0.10	0.10	0.10
1	100.00	99.20	-0.80	-0.80
2	200.00	198.50	-1.50	-0.75
3	300.00	298.50	-1.50	-0.50
4	400.00	398.20	-1.80	-0.45
AVERAGE (%)				-0.53

Calibrated By: *[Signature]*      Approved By: *[Signature]*  
 (Mr. J. Salem)      (Mr. R. J. J. J.)  
 Field Environmental Scientist (2)      Assistant General Manager

ALS Laboratory Group  
 FORM NO. F-04-008    REVISION: 02    ISSUE DATE: 02/04/12

**(ALS)**

**MULTIPOINT CALIBRATION REPORT**

Calibration Date: 4-Jan-23      Equipment Name: SO2 Analyzer  
 Manufacturer: HORIBA      Model: APBA-370  
 Serial No.: R200YMB3      Equipment ID: H2N\_F80083  
 Calibrator Manufacturer: Teledyne API      Model: 700  
 Serial No.: 847  
 Std. Gas Concentration (PPM): 56.3      Cylinder No.: QN0027222  
 Cylinder Pressure (psi): 1800      Certified By: Algea Inc.  
 Certified Date: 8-Feb-22      Expired Date: 2-Feb-23

Point	Ideal	Actual	Error	%Error
ZERO	0.00	0.10	0.10	0.10
1	100.00	99.80	-0.20	-0.20
2	200.00	198.50	-1.50	-0.75
3	300.00	298.50	-1.50	-0.50
4	400.00	397.50	-2.50	-0.63
AVERAGE (%)				-0.60

Calibrated By: *[Signature]*      Approved By: *[Signature]*  
 (Mr. J. Salem)      (Mr. R. J. J. J.)  
 Field Environmental Scientist (2)      Assistant General Manager

ALS Laboratory Group  
 FORM NO. F-04-008    REVISION: 02    ISSUE DATE: 02/04/12

**(ALS)**

**MULTIPOINT CALIBRATION REPORT**

Calibration Date: 4-Jan-23      Equipment Name: SO2 Analyzer  
 Manufacturer: HORIBA      Model: APBA-370  
 Serial No.: R200YMB3      Equipment ID: H2N\_F80083  
 Calibrator Manufacturer: Teledyne API      Model: 700  
 Serial No.: 847  
 Std. Gas Concentration (PPM): 56.3      Cylinder No.: QN0027222  
 Cylinder Pressure (psi): 1800      Certified By: Algea Inc.  
 Certified Date: 8-Feb-22      Expired Date: 2-Feb-23

Point	Ideal	Actual	Error	%Error
ZERO	0.00	0.10	0.10	0.10
1	100.00	99.80	-0.20	-0.20
2	200.00	198.50	-1.50	-0.75
3	300.00	298.50	-1.50	-0.50
4	400.00	397.50	-2.50	-0.63
AVERAGE (%)				-0.60

Calibrated By: *[Signature]*      Approved By: *[Signature]*  
 (Mr. J. Salem)      (Mr. R. J. J. J.)  
 Field Environmental Scientist (2)      Assistant General Manager

ALS Laboratory Group  
 FORM NO. F-04-008    REVISION: 02    ISSUE DATE: 02/04/12

**(ALS)**

**MULTIPOINT CALIBRATION REPORT**

Calibration Date: 4-Jan-23      Equipment Name: SO2 Analyzer  
 Manufacturer: HORIBA      Model: APBA-370  
 Serial No.: R200YMB3      Equipment ID: H2N\_F80083  
 Calibrator Manufacturer: Teledyne API      Model: 700  
 Serial No.: 847  
 Std. Gas Concentration (PPM): 56.3      Cylinder No.: QN0027222  
 Cylinder Pressure (psi): 1800      Certified By: Algea Inc.  
 Certified Date: 8-Feb-22      Expired Date: 2-Feb-23

Point	Ideal	Actual	Error	%Error
ZERO	0.00	0.10	0.10	0.10
1	100.00	99.80	-0.20	-0.20
2	200.00	198.50	-1.50	-0.75
3	300.00	298.50	-1.50	-0.50
4	400.00	397.50	-2.50	-0.63
AVERAGE (%)				-0.60

Calibrated By: *[Signature]*      Approved By: *[Signature]*  
 (Mr. J. Salem)      (Mr. R. J. J. J.)  
 Field Environmental Scientist (2)      Assistant General Manager

ALS Laboratory Group  
 FORM NO. F-04-008    REVISION: 02    ISSUE DATE: 02/04/12

**(ALS)**

**MULTIPOINT CALIBRATION REPORT**

Calibration Date: 4-Jan-23      Equipment Name: SO2 Analyzer  
 Manufacturer: HORIBA      Model: APBA-370  
 Serial No.: R200YMB3      Equipment ID: H2N\_F80083  
 Calibrator Manufacturer: Teledyne API      Model: 700  
 Serial No.: 847  
 Std. Gas Concentration (PPM): 56.3      Cylinder No.: QN0027222  
 Cylinder Pressure (psi): 1800      Certified By: Algea Inc.  
 Certified Date: 8-Feb-22      Expired Date: 2-Feb-23

Point	Ideal	Actual	Error	%Error
ZERO	0.00	0.10	0.10	0.10
1	100.00	99.20	-0.80	-0.80
2	200.00	198.50	-1.50	-0.75
3	300.00	298.50	-1.50	-0.50
4	400.00	397.50	-2.50	-0.63
AVERAGE (%)				-0.60

Calibrated By: *[Signature]*      Approved By: *[Signature]*  
 (Mr. J. Salem)      (Mr. R. J. J. J.)  
 Field Environmental Scientist (2)      Assistant General Manager

ALS Laboratory Group  
 FORM NO. F-04-008    REVISION: 02    ISSUE DATE: 02/04/12

**(ALS)**

**MULTIPOINT CALIBRATION REPORT**

Calibration Date: 5-Jan-23      Equipment Name: H2S Analyzer  
 Manufacturer: HORIBA      Model: APBA-370  
 Serial No.: R200YMB3      Equipment ID: H2N\_F80083  
 Calibrator Manufacturer: Teledyne API      Model: 700  
 Serial No.: 847  
 Std. Gas Concentration (PPM): 154.7      Cylinder No.: C0519231  
 Cylinder Pressure (psi): 1800      Certified By: Algea Inc.  
 Certified Date: 15-Jul-23      Expired Date: 15-Jul-23

Point	Ideal	Actual	Error	%Error
ZERO	0.00	0.10	0.10	0.10
1	100.00	99.80	-0.20	-0.20
2	200.00	198.50	-1.50	-0.75
3	300.00	298.50	-1.50	-0.50
4	400.00	397.50	-2.50	-0.63
AVERAGE (%)				-0.60

Calibrated By: *[Signature]*      Approved By: *[Signature]*  
 (Mr. J. Salem)      (Mr. R. J. J. J.)  
 Field Environmental Scientist (2)      Assistant General Manager

ALS Laboratory Group  
 FORM NO. F-04-008    REVISION: 02    ISSUE DATE: 02/04/12





Cert. No. : ACC21021  
Job No. : VCM510077  
Pages : 2 of 3

Calibration Procedure : CP-AC-03

## Calibration Method :

The equipment was calibrated by based on IEC-60942:2003 Standard.  
The sound pressure level, frequency and total distortion of the sound calibrator was measured using the following equipment:

## Condition of this result of calibration :

## 1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	3341B	MY5220742	11-080-22	24-Feb-23
Digital Multimeter	3341A	MY5220104	11-080-22	24-Feb-23
Digital Multimeter	3341A	MY5220074	11-080-22	24-Feb-23
Digital Multimeter	3341A	MY5220273	11-080-22	24-Feb-23
Programmable Attenuator	3341A	MY5220114	11-080-22	24-Feb-23
Condenser Microphone	3341	2475001	11-080-22	24-Feb-23
Measuring Amplifier	NA-22K2	545-0448	11-080-22	24-Feb-23
Audio Analyzer	AVB-350A	V7440409	11-080-22	24-Feb-23

2. The result of calibration was found accurate as shown in data and plot of calibration for this calibrated item only.

3. This certificate is traceable to the international system of unit maintained as:

1.1 National Institute of Metrology (Thailand).

1.2 Thailand Institute of Scientific and Technological Research (ISTEC).

QH-TS-004-02004

T. B. B.

Cert. No. : ACC21021  
Job No. : VCM510077  
Pages : 3 of 3

## Result of calibration :

## 1. Sound pressure level

Specified sound pressure level (dB)	Measured value (dB)	Deviation value (dB)	Uncertainty (dB)	Tolerance limit (dB)
94	94.06	0.06	0.12	0.00

## 2. Frequency

Specified Frequency (Hz)	Measured value (Hz)	Deviation value (Hz)	Uncertainty (Hz)	Tolerance limit (Hz)
1000	1000.5	0.5	0.1	1.0

## 3. Total distortion

Measured value (%)	Uncertainty (%)	Tolerance limit (%)
1.0	0.05	1.0

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor k = 2  
or the 95% confidence interval (approximately 95%)

End of Calibration Certificate

QH-TS-004-02004

T. B. B.

1. 1-1/2 Commercial, Bangkok, Bangkok (Bangkok) 10110, A/C  
2. 1-1/2 Commercial, Bangkok, Bangkok (Bangkok) 10110, A/C1. 1-1/2 Commercial, Bangkok, Bangkok (Bangkok) 10110, A/C  
2. 1-1/2 Commercial, Bangkok, Bangkok (Bangkok) 10110, A/C

## Calibration Certificate

Equipment : 1-1/2 Commercial, Bangkok, Bangkok (Bangkok) 10110, A/C  
Manufacturer : RIGOL  
Model : 1-1/2 Commercial, Bangkok, Bangkok (Bangkok) 10110, A/C  
Serial No. : 1-1/2 Commercial, Bangkok, Bangkok (Bangkok) 10110, A/C  
ID No. : 1-1/2 Commercial, Bangkok, Bangkok (Bangkok) 10110, A/C

## Condition As Found :

GOOD

Customer : ALA LAORATHY GROUP (THAILAND) LTD.  
88 PHA THONGKAM RD. PHA THONGKAM RD. 10110, A/C  
88 PHA THONGKAM RD. PHA THONGKAM RD. 10110, A/C  
88 PHA THONGKAM RD. PHA THONGKAM RD. 10110, A/C

Location : 1-1/2 Commercial, Bangkok, Bangkok (Bangkok) 10110, A/C  
Ambient Temperature : 1-1/2 Commercial, Bangkok, Bangkok (Bangkok) 10110, A/C  
Pressure : 1-1/2 Commercial, Bangkok, Bangkok (Bangkok) 10110, A/C  
Relative Humidity : 1-1/2 Commercial, Bangkok, Bangkok (Bangkok) 10110, A/C  
Received Date : 1-1/2 Commercial, Bangkok, Bangkok (Bangkok) 10110, A/C  
Calibration Date : 1-1/2 Commercial, Bangkok, Bangkok (Bangkok) 10110, A/C  
Date of Issue : 1-1/2 Commercial, Bangkok, Bangkok (Bangkok) 10110, A/C

Calibrated by : Nithin Pichai

Approved by : T. B. B.

QH-TS-004-02004

Cert. No. : ACC21021  
Job No. : VCM510077  
Pages : 3 of 3

## Summary of Measurement Result :

Parameter	Pass	Fail	Uncertainty (dB)	Maximum-permitted uncertainty of measurement (dB)
1. Absolute sensitivity	✓	-	0.2	N/A
2. Self-generated noise	✓	-	0.2	N/A
3. Acoustic signal levels of frequency weighting	✓	-	0.3	0.0
3.1. 125 Hz	✓	-	0.3	0.0
3.2. 1000 Hz	✓	-	0.3	0.0
3.3. 4000 Hz	✓	-	0.3	0.0
4. Acoustic signal levels of frequency weighting	✓	-	0.3	0.0
4.1. 125 Hz	✓	-	0.3	0.0
4.2. 1000 Hz	✓	-	0.3	0.0
4.3. 4000 Hz	✓	-	0.3	0.0
5. Frequency and time weighting at 1 kHz	✓	-	0.2	0.2
6. Frequency and time weighting at 1 kHz	✓	-	0.2	0.2
7. Level accuracy on the reference level range	✓	-	0.2	0.2
8. Level accuracy on the level range control	✓	-	0.2	0.2
9. Total harmonic distortion	✓	-	0.2	0.2
10. Peak-to-peak distortion	✓	-	0.2	0.2
11. Dynamic range	✓	-	0.2	0.2
12. High level stability	✓	-	0.2	0.2

QH-TS-004-02004

T. B. B.

Cert. No. : ACC21021  
Job No. : VCM510077  
Pages : 4 of 4

## Result of calibration :

## 1. Absolute sensitivity

Reference Acoustic signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.0 (0.5)	93.0	0.0	±0.2

## 2. Self-generated noise

Measured Value (dB)
14.0

3.2. Self-generated noise level (dB) measured at 1 kHz (dB)

Frequency (Hz)	Measured value (dB)
Weighting	14.0
C-weighting	14.0
F-weighting	14.0

## 3. Acoustic signal levels of frequency weighting

Frequency (Hz)	Deviation from various frequency weighting reference curve (dB)
125	0.2
1000	0.0
4000	0.2

QH-TS-004-02004

T. B. B.







Cert. No. : ACL22155  
Job No. : VCMAC0064  
Page : 1 of 3

## 8. Level linearity including the level range control

Range	Measured Value (dB)	Accepted Value (dB)	Deviation (dB)	Acceptance Limit (dB)
Range	94.0	94.0	0.0	±0.3

## 9. Four level response

Time	Time base duration, 1s (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviation Value (dB)	Acceptance Limit (dB)
1st	2	1	-16.0	-16.0	0.0	±0.5
2nd	2	2	-17.0	-17.0	0.0	±0.5
3rd	2	3	-18.0	-18.0	0.0	±0.5
4th	2	4	-19.0	-19.0	0.0	±0.5

## 10. Peak C sound level

Number of cycle (s)	Anticipated Value (dB)	Measured Value (dB)	Deviation Value (dB)	Acceptance Limit (dB)
Continuous	135.0	135.0	0.0	±0.3
One	136.0	136.0	0.0	±0.3

Number of cycle (s)	Anticipated Value (dB)	Measured Value (dB)	Deviation Value (dB)	Acceptance Limit (dB)
Continuous	133.0	132.9	-0.1	±0.3
Positive half cycle	135.4	135.3	-0.1	±0.3
Negative half cycle	135.4	135.3	-0.1	±0.3

QP-1512-04-04-02044

T. Petch

Cert. No. : ACL22155  
Job No. : VCMAC0064  
Page : 1 of 3

## 11. Overload indication

Measured value (dB)	Deviation Value (dB)	Acceptance Limit (dB)
20.0	0.0	±0.5

## 12. High level stability

Frequency (Hz)	SI M Display (dB)	SI M Display (dB)	Deviation Value (dB)	Acceptance Limit (dB)
A-weight	142.0	142.0	0.0	±0.3

This report is issued on a standard uncertainty multiplied by coverage factor k = 2.  
In any value following parentheses is a level of confidence of approximately 95%.

End of Calibration Certificate

QP-1512-04-04-02044

T. Petch

SITHIPORN ASSOCIATES CO.,LTD.  
CALIBRATION LABORATORY131-1311 Suanthong Rd., Bangna, Bangkok 10700 THAILAND  
Tel: 02-645-4800 Fax: 02-645-4809 Email: sithiporn@siha.com http://www.sithiporn.comCert. No. : ACL22155  
Job No. : VCMAC0064  
Page : 1 of 3

## Calibration Certificate

Equipment : SOUND LEVEL METER  
Manufacturer : RION  
Model : SL-45A/Measure (C-A1) / Pre-amplifier (N10-24)  
Serial No. : 0022524 / 191374 / 15304  
ID No. : 1

Condition As Found : GOOD

Customer : AIS LABORATORY GROUP (THAILAND) CO., LTD.  
104 PHATHANAKAN-20 PHATHANAKAN ROAD,  
KHUANG PHATHANAKAN, KHUANG PHATHANAKAN,  
BANGKOK, 10250 THAILAND.Location :  
Ambient Temperature : ( 23.0 ± 3 ) °C  
Pressure : ( 101.3 ± 1 ) kPa  
Relative Humidity : ( 50.0 ± 2 ) %Received Date : 02 NOVEMBER 2022  
Calibration Date : 04 NOVEMBER 2022  
Date of Issue : 08 NOVEMBER 2022

Calibrated by : Nithiporn Petch

Approved by : T. Petch  
( Thumak Petch )This certificate is issued in accordance with the requirements of ISO/IEC 17025 standard, may not be reproduced  
other than in full, except with the prior written approval of the Head of Calibration Laboratory.

QP-1512-04-04-02044

Cert. No. : ACL22155  
Job No. : VCMAC0064  
Page : 1 of 3

## Calibration Procedure : CPAC-01

## Calibration Method :

This equipment was calibrated by using an IEC-61672-3 (2013) Standard for sound level meter (SLM).  
The SLM had been re-calibrated and checked signal level of frequency weighting with Acoustic chamber and Reference  
Standard Instruments.

For every result of each item were made by observation of each instrument display and also with SLM display.

## Condition of this result of calibration :

## 1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33220A	MY40017079	13-0007-22	04-Feb-23
Waveform Generator	33111B	MY4120742	13-0006-22	04-Feb-23
Digital Multimeter	34461A	MY31220104	FEL-00-0402-23	09-Feb-23
Digital Multimeter	34461A	MY31220104	FEL-00-0402-23	09-Feb-23
Digital Multimeter	34461A	MY40014277	13-00-0402-23	09-Feb-23
Programmable Amplifier	MAT 1070	6210114	EF-0009-22	07-Feb-23
Condenser Microphone	4160	2977903	AV-0015-22	24-Feb-23
Measuring Amplifier	NA-42KA1	1456495	AA-0002-22	23-Feb-23

2. This result of calibration was based on the date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of unit maintained at:

3.1 National Institute of Metrology (Thailand).

3.2 Thailand Institute of Scientific and Technological Research (TISTR).

QP-1512-04-04-02044

T. Petch

Cert. No. : ACL22155  
Job No. : VCMAC0064  
Page : 1 of 3

## Summary of Measurement Result :

Parameter	Pass	Fail	Uncertainty (dB)	Maximum permitted uncertainty of measurement (dB)
1. Absolute sensitivity	✓	-	0.2	N/A
2. Self-generated noise	✓	-	0.2	N/A
3. Acoustic signal level of frequency weightings				
125 Hz	✓	-	0.3	0.6
1000 Hz	✓	-	0.3	0.6
2000 Hz	✓	-	0.3	0.6
4. Electrical signal level of frequency weightings				
For 10 Hz to 4 kHz	✓	-	0.3	0.6
For 4 kHz to 10 kHz	✓	-	0.3	0.6
For 10 kHz to 20 kHz	✓	-	0.3	0.6
5. Frequency and time weightings at 1 kHz	✓	-	0.2	0.3
6. Long-term stability	✓	-	0.2	0.3
7. Level linearity on the reference level range	✓	-	0.2	0.3
8. Level linearity including the level range control	✓	-	0.2	0.3
9. Four level response	✓	-	0.2	0.3
10. Peak C sound level	✓	-	0.2	0.3
11. Overload indication	✓	-	0.2	0.3
12. High level stability	✓	-	0.3	0.3

QP-1512-04-04-02044

T. Petch

Cert. No. : ACL22155  
Job No. : VCMAC0064  
Page : 1 of 3

## Result of calibration :

## 1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.0 (93.0)	93.0	0.0	±0.3

## 2. Self-generated noise

## 2.1 Normal test

Measured Value (dB)
142

## 2.2 The margin of the sound level meter was replaced by electrical signal device

Frequency (Hz)	Measured value (dB)
A-weight	10.8
C-weight	16.5
Flat	22.5

## 3. Acoustic signal level of frequency weightings

Mean free-field acoustic response at a level of 94 dB

Frequency (Hz)	Flat	C-weight	A-weight	Acceptance Limit (dB)
125	-0.2	0.3	0.3	±0.5
1000	-0.0	0.0	-0.0	±0.3
8000	0.4	0.3	0.4	±0.3

QP-1512-04-04-02044

T. Petch











Summary of Measurement Results:

Parameter	Pass	Fail	Category (dB)	Maximum-permitted uncertainty of measurement (dB)
1. Absolute sensitivity	✓		0.2	N/A
2. Self-generated noise	✓		0.2	N/A
3. Acoustical signal tests of frequency weightings				
125 Hz	✓		0.2	0.6
1000 Hz	✓		0.2	0.6
8000 Hz	✓		0.2	0.7
4. Electrical signal tests of frequency weightings				
For 10 Hz to 4 kHz	✓		0.2	0.6
For 4 kHz to 10 kHz	✓		0.2	0.7
For 10 kHz to 20 kHz	✓		0.2	1.0
5. Frequency and time weightings at 1 kHz	✓		0.2	0.2
6. Long-term stability	✓		0.1	0.1
7. Level linearity on the reference level range	✓		0.2	0.2
8. Level linearity including the level range control	✓		0.2	0.2
9. Time burst response	✓		0.2	0.2
10. Peak C sound level	✓		0.2	0.25
11. Overload indication	✓		0.2	0.25
12. High level stability	✓		0.1	0.1

QP-1512-04-020904

T. Peth

Result of calibration:

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limits (dB)
93.9 (93.9)	93.9	0.0	±0.2

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
15.8

2.2 The microphone of the sound level meter was replaced by electronic signal input device.

Frequency Weighting	Measured value (dB)
A-weight	9.9
C-weight	16.2
Flat	22.1

3. Acoustical signal tests of frequency weightings

Mean free-field acoustic response at a level of 94 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.2	0.2	0.2	±1.5
1000	0.0	0.0	0.0	±1.0
8000	0.0	0.0	0.0	±0.9

QP-1512-04-020904

T. Peth

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.1	0.0	0.0	±2.0
125	0.0	0.0	0.0	±1.5
250	0.0	0.0	0.0	±1.5
500	0.0	0.0	0.0	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±1.0
4000	0.0	0.0	0.0	±1.0
8000	0.0	0.1	0.1	±0.9

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	0.0	
C-weight	94.0	0.0	±0.2
Flat	94.0	0.0	±0.2

5.2 Time weightings at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	0.0	
Slow	94.0	0.0	±0.1
Imp	94.0	0.0	±0.1

6. Long-term stability

Frequency Weighting	SEM Display at initial (dB)	SEM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	94.0	0.0	±0.1

QP-1512-04-020904

T. Peth

7. Level linearity on the reference level range

Acoustical Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	±1.1
136.0	136.0	0.0	±1.1
135.0	135.0	0.0	±1.1
134.0	134.0	0.0	±1.1
133.0	133.0	0.0	±1.1
132.0	132.0	0.0	±1.1
131.0	131.0	0.0	±1.1
129.0	129.0	0.0	±1.1
128.0	128.0	0.0	±1.1
126.0	126.0	0.0	±1.1
119.0	119.0	0.0	±1.1
114.0	114.0	0.0	±1.1
109.0	109.0	0.0	±1.1
104.0	104.0	0.0	±1.1
99.0	99.0	0.0	±1.1
94.0	94.0	0.0	±1.1
89.0	89.0	0.0	±1.1
84.0	84.0	0.0	±1.1
79.0	79.0	0.0	±1.1
74.0	74.0	0.0	±1.1
69.0	69.0	0.0	±1.1
64.0	64.0	0.0	±1.1
59.0	59.0	0.0	±1.1
54.0	54.0	0.0	±1.1
49.0	49.0	0.0	±1.1
44.0	44.0	0.0	±1.1
39.0	39.0	-0.1	±1.1
34.0	33.9	-0.1	±1.1
29.0	29.0	-0.1	±1.1
24.0	24.0	0.1	±1.1
19.0	19.0	0.1	±1.1
14.0	14.0	0.2	±1.1

QP-1512-04-020904

T. Peth

8. Level linearity including the level range control

Range	Acoustical Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Auto	94.0	94.0	0.0	±1.1

9. Time burst response

Time Weighting	Time burst duration, T <sub>b</sub> (ms)	Cycle	Acoustical Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	105.0	107.9	-2.9	1.5, -3.0
	2	5	117.0	117.0	0.0	1.0, -2.5
	200	100	134.0	134.1	0.1	±1.0
Slow	2	5	105.0	108.0	-3.0	1.5, -3.0
	200	100	127.5	127.6	-0.1	±1.0
	0.25	1	99.0	95.9	3.1	1.5, -3.0
SEL	2	5	108.0	108.0	0.0	1.0, -2.5
	200	100	128.0	128.1	0.1	±1.0

10. Peak C sound level

Number of cycle in test signal	Acoustical Value (dB)	Measured Value, C <sub>peak</sub> (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	131.0	131.0	0.0	
One	130.4	131.3	-1.1	±1.0

Number of cycle in test signal	Acoustical Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	131.0	131.0	0.0	
Positive half cycle	135.4	135.2	-0.2	±2.0
Negative half cycle	135.4	135.2	-0.2	±2.0

QP-1512-04-04020904

T. Peth

11. Overload indication

Measured value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Positive one half cycle	89.0	0.1
Negative one half cycle	89.0	0.1

12. High level stability

Frequency Weighting	SEM Display at initial (dB)	SEM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	137.0	137.0	0.0	±0.5

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor  $k = 2$   
or any value following calibration providing a level of confidence of approximately 95%

End of Calibration Certificate

QP-1512-04-04020904

T. Peth









Cert. No. : 22CH1221  
Page: 2 of 2

Function : Volumetric Measurement	Standard Value	QUC Reading	Range	Uncertainty
1 mL	1.000	0.999	0.998	0.001
5 mL	5.000	4.999	4.998	0.001
10 mL	10.000	9.999	9.998	0.001
20 mL	20.000	19.999	19.998	0.001
50 mL	50.000	49.999	49.998	0.001
100 mL	100.000	99.999	99.998	0.001
200 mL	200.000	199.999	199.998	0.001
500 mL	500.000	499.999	499.998	0.001
1000 mL	1000.000	999.999	999.998	0.001

The 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%.

Calibration with Potable Water (2007.1.1)  
WCT - 2007.1.1.1

11/25/27



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
CORPORATE SERVICE & EQUIPMENT CALIBRATION AND TESTING SERVICES  
114 PATTAYAKHANG ROAD, 11, PHU HUNG, BANGKOK 10110, THAILAND  
TEL: 02-017-8000 FAX: 02-017-8001



Cert. No. : 22CH1221  
Page: 1 of 2

## Certificate of Calibration

Equipment :	pH Meter
Manufacturer :	Mettler Toledo
Model :	Seven Compact 5220
Serial No. :	3522948426
ID No. :	BKX_EN0072
Condition As-Received :	Used Item
Received Date :	02 September 2022
Calibration Date :	12 September 2022
Reference :	2208-031200C-1
Submitted by :	ALS Laboratory Group (Thailand) Co., Ltd. (14 Phatthanasak Rd., Phatthanasak Rd., Khuang Phatthanasak, Khwaeng Suan Luang, Bangkok 10250 Thailand)
Ambient Temperature :	(25 ± 2.5) °C
Relative Humidity :	(50 ± 15) %
Calibration Procedure :	1) - Value 10000 - CP-GHS by direct measurement with standard voltage standard and direct measurement with certified reference material (CRM)
Calibrated by :	Wassana Lomgagratul
Approved by :	Wassana Lomgagratul Approval Signature
Issue Date :	15 September 2022

The Uncertainties are for a confidence probability of approximately 95%.

This certificate may be reproduced from this report with the prior written  
approval of the issuing company (see note 1, Equipment Calibration and Testing Services).



Cert. No. : 22CH1222  
Page: 2 of 2

### Condition of this calibration result

- Reference Standard Instrument  
Instrument Serial No. ID No. Cert. No. Due Date  
1) Document Process Calibrator S4000H 1200C16 2207769 24 June 2023  
This calibration is traceable to the International System of Units maintained at:  
- Traceable to National Institute of Metrology (Thailand), NIMT

- Certified Reference Materials The measurement results are traceable to SI through CEA CRM Ltd.,  
ANCO-ABQ National Accredited Board, Accredited No. AB-1805

Buffer Solution	Manufacturer	Lot No.	Exp. Date
pH 4.008	CPI Chem	823520	30 June 2024
pH 6.855	CPI Chem	796122	14 Feb 2023
pH 10.009	CPI Chem	823521	29 June 2023

- This certificate is valid only to the item calibrated on date and place of calibration.

### Calibration Results

#### Function : mV Measurement

Performing standard curve by KCl at pH (4.7-10)

Unit Under Calibration	Nominal Value	Standard Voltage Input	Actual Reading	Uncertainty of Measurement (mV)	Coverage Factor
pH Meter	4.000	177.48	177.4	0.008	2.00
SN: B520948426	7.000	0.00	0.0	0.008	2.00
	10.000	-177.48	-177.5	0.008	2.00

#### Function : pH Measurement

Performing three buffer standard curve by using buffer nominal pH (4.7-10)

Unit Under Calibration	Standard pH Buffer Solution	Actual pH Reading	Actual mV Reading	Uncertainty of Measurement (pH)	Coverage Factor
pH Electrode	4.009	3.999	133.8	0.005	2.00
SN: PCE-681201	6.845	7.017	-13.7	0.004	2.00
	10.008	9.995	-179.5	0.005	2.00

The 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%.

11/25/27

11/25/27



บริษัท ดับเบิล เอส ไดแอกโนสติกส์ จำกัด  
DOUBLE S DIAGNOSTICS CO., LTD.

1. บริษัทฯ มีบริการตรวจวิเคราะห์ตัวอย่างในห้องปฏิบัติการ  
2. บริการตรวจวิเคราะห์ตัวอย่างในห้องปฏิบัติการ

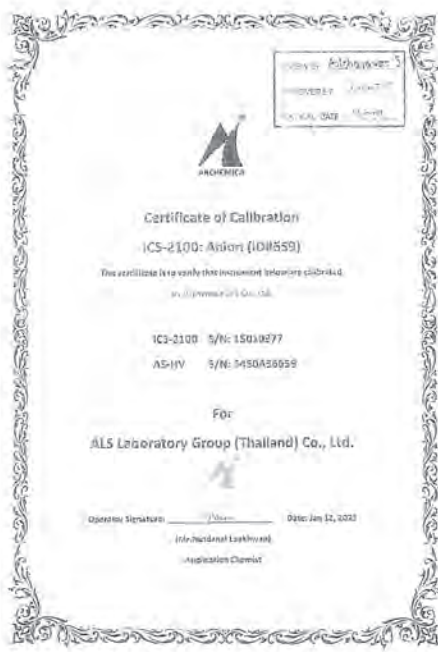
### Maintenance Plan YEAR : 2023

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

### Periodical maintenance check list for Konelab

	RM	LHM	Notes
1. Diluent wash tubing change	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. LSE tubing change	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Syringe check/change	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Dispensing check/change	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5. Waste hiding change when necessary	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
6. Lemo check/change	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
7. Mixer paddle/change (not Konelab 50)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
8. LSI needle check/change	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
9. Pump tubing check/change	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
10. Brassy/iron out part check/change	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
11. Resistive pump check/change/adjustment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
12. Heating check	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
13. Cooling check	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
14. Dispenser mechanic check/adjustment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
15. Dispenser mechanic check/adjustment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
16. Dispenser mechanic check/adjustment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
17. Sample/reagent register check/adjustment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
18. Dispensing tubing tightness check	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
19. Photometer and optics cleaning/check/adjustment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
20. Wavelength PC cleaning if necessary	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
21. Mechanic cleaning/adjustment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
22. Instrument cleaning if necessary	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
23. Complete analyzer testing with water/NaCl/CC/1 sample	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
24. Test parameters/Adjustment/confirm. Save to USB key	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
25. UPS Test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Place : BSC Laboratory  
Date/Time : 05-07-2023  
Service done by : BSC  
Signature of customer : BSC  
Date/Time : 05-07-2023





Certificate No. T221642

Page 2 of 5

### Calibration Report

Equipment : Digestion Unit  
Date of Calibration : 30 June 2022  
Environment :  
Temperature : 23.9 - 26.3 °C  
Line Voltage : 221.4 - 225.1 V  
Relative Humidity : 55 - 65 %RH

#### Condition of this result of calibration :

- This equipment was calibrated by using four standard thermocouples type S (not in chamber, but other not thermocouple type T use for ambient temperature measurement). The reference was done according to NIST 11.
- Reference Standard Document :  
Instrument : Model : Instrument No. : Certificate No. : Due Date :  
TC : Type S : 51-CH119-17-CH19-CH20 : T21004 : 13 October 2022  
DATA LOGGER : 24979A : T21 : 13 October 2022
- This certificate is traceable to :  
National Institute of Metrology (Thailand) through Metrology Center (NIST-TS-TS1125 CALIBRATION (044))
- Condition of calibrated item : good  
Equipment Description :  
Time Constant : Hour 26 Minute 40 Second °C  
Fresh Air Disrupt : ☐ Open ☐ Min ☐ Medium ☐ Max  
☒ Close  
☐ Not Available
- Adjustment :  
☐ without adjustment ☐ after adjustment

Approved By :

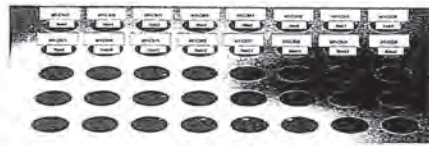
THA11102105-17



Certificate No. T221642

Page 3 of 5

### Calibration Report



FRONT

Cal. Point		Setting	Reading	UTL	Position of Standards at Block											
°C		°C	°C	Reading	Block1	Block2	Block3	Block4	Block5	Block6	Block7	Block8	Block9	Block10	Block11	Block12
100.0		100.0	100.0 ± 0.02	Max °C	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
				Min °C	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
				Average °C	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
				Stability °C	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

Approved By :

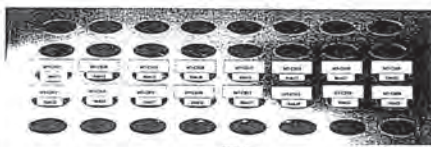
THA1102105-17



Certificate No. T221642

Page 4 of 5

### Calibration Report



FRONT

Cal. Point		Setting	Reading	UTL	Position of Standards at Block											
°C		°C	°C	Reading	Block1	Block2	Block3	Block4	Block5	Block6	Block7	Block8	Block9	Block10	Block11	Block12
100.0		100.0	100.0 ± 0.02	Max °C	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
				Min °C	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
				Average °C	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
				Stability °C	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

Approved By :

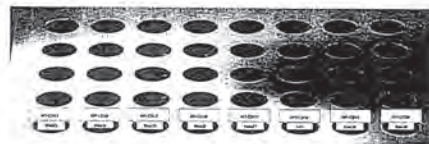
THA1102105-17



Certificate No. T221642

Page 5 of 5

### Calibration Report



FRONT

Cal. Point		Setting	Reading	UTL	Position of Standards at Block											
°C		°C	°C	Reading	Block1	Block2	Block3	Block4	Block5	Block6	Block7	Block8	Block9	Block10	Block11	Block12
100.0		100.0	100.0 ± 0.02	Max °C	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
				Min °C	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
				Average °C	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
				Stability °C	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

The reported uncertainty of temperature measurement was : ± 0.02 °C

The calibration result apply only for the whole calibration year.

The result of end use found accuracy is shown on date and place of use only.

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

Approved By :

THA1102105-17



Certificate No. T222882

Page 1 of 4

### Certificate of Calibration

Equipment : Chamber ( Oven )

Manufacturer : Memmert

Model : UF 450

Serial No. : B7170831

Customer Code : BKK\_E00273

ID No. : T804244

Customer : A.L.S Laboratory Group (Thailand) Co., Ltd.

104 Phatthanasakul Rd., Phatthanasakul Rd., Khwaeng Phatthanasakul

Kiat San Luang, Bangkok 10219

Customer Location : Oven Room

Date of Receipt : 23 November 2022

Calibrated By : Sujjar Nakskred (Site Calibration Manager)

Approved By : / Boonchai Suriyawang (Site Calibration Manager)

Date of Issue : 8 DEC 2022

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

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its conformity to recognized national standards and is the result of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrological Center.

THA1102105-17



Certificate No. T222882

Page 2 of 4

### Calibration Report

Equipment : Chamber ( Oven )  
Date of Calibration : 29 November 2022  
Environment :  
Temperature : 29.1-29.6 °C  
Line Voltage : 221.3-223.2 V  
Relative Humidity : 55 - 65 %RH

#### Condition of this result of calibration :

- This equipment was calibrated by using four resistance thermometer detectors and four standard thermometer type T with its chamber, not other low resistance thermometer detectors use for ambient temperature measurement.
- Reference Standard Document :  
Instrument : Model : Instrument No. : Certificate No. : Due Date :  
TC : Type T : 21-CH11-18 : T21004 : 30 December 2022  
DATA LOGGER : 24979A : T145 : 30 December 2022
- This certificate is traceable to :  
National Institute of Metrology (Thailand) through Metrology Center (NIST-TS-TS1125 CALIBRATION (044))
- Condition of calibrated item : good  
Equipment Description :  
Time Constant : Hour 40 Minute 40 Second °C  
Fresh Air Disrupt : ☐ Open ☐ Min ☐ Medium ☒ Max  
☐ Close  
☐ Not Available
- Adjustment :  
☐ without adjustment ☐ after adjustment

Approved By :

THA1102105-17

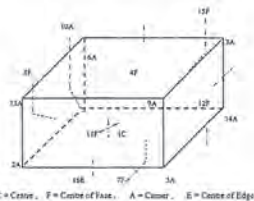




Certificate No. T221644

### Calibration Report

Page 1 of 1



C = Center, F = Center of Face, A = Corner, E = Center of Edge

1C = TN161	11F = TN171
2A = TN162	12F = TN172
3A = TN163	13A = TN173
4F = TN164	14A = TN174
5A = TN165	15F = TN175
6A = TN166	16E = TN176
7F = TN167	
8F = TN168	
9A = TN169	
10A = TN170	

Approved By:

PH-LS111215-09-01

Certificate No. T221644

Page 4 of 4

### Calibration Report

Measurement Results:

Average Standard Reading at each position (°C)										
Calibration Point	TN161	TN162	TN163	TN164	TN165	TN166	TN167	TN168	TN169	TN170
1	2.31	2.82	3.75	2.49	2.95	3.68	3.02	2.56	3.05	2.53
	TN171	TN172	TN173	TN174	TN175	TN176				
	2.97	3.03	2.48	3.04	2.97	3.33				

Chamber (Cold Box)		Temperature Distribution				
Setting (°C)		Reading (°C)			Coverage	
		Min, Max	Average	Uniformity (°C)	Uncertainty (°C)	Factor A
10		12.4, 4.0	3.2	2.99	1.05	1.38

\* The quoted uncertainty exclude "uniformity"  
The calibration result apply only the above calibration date  
The result of test with front, bottom as shown on date and place of test only  
The reported expanded uncertainty is based on a combined uncertainty multiplied by a coverage factor k=1.96 for a distribution, providing a level of confidence of approximately 95 %

Approved By:

PH-LS111215-09-01



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
CORPORATE SERVICES 3 EQUIPMENT CALIBRATION AND TESTING SERVICES  
234/4 PATTANAKARN ROAD NO.13, SUKOLANG, SAMKANG RANGKOE 10239  
TEL: 0-2371-1080 FAX: 0-2371-0944

Cert. No.: T221644

Page: 1 of 2

### Certificate of Testing

Equipment: DO Meter  
Manufacturer: YSI  
Model: 5000-230V  
Serial No.: 091151147  
ID No.: BNAK\_EN0017  
Reviewed Date: 26 May 2022  
Test Date: 24 May 2022  
Reference: Z05-0630505C-6  
Submitted by: ALS Laboratory Group (Thailand) Co., Ltd.  
104 Phatthanasak 40, Phatthanasak Rd.,  
Khaew Phatthanasak, Khwa Suan Luang,  
Bangkok 10250 Thailand  
Laboratory Condition: Temperature: (25 ± 5) °C  
Humidity: (50 ± 20) %  
Test Procedure: 14 - House method - CP-CH9  
by Comparison Technique with Asile Modification Method  
Tested by: Watsorn Lempagatool  
Approved by:   
Approved Signatory  
( ) Maithe Buthas  
( ) Sathip Meangma  
( ) Watsorn Lempagatool  
Issue Date: 31 May 2022

a 0285244



Cert. No.: T221644  
Page: 2 of 2

### Condition of this result of calibration

1. Reference Standard Instruments  
This certification is traceable to the International System of Unit through the reference standards  
laboratory of National Calibration Center, Technology Promotion Association (Thailand-Japan).

Instrument	Serial No.	ID No.	Certificate No.	Due Date
1) Buffer	1308U10	21001789	25 May 2022	
2) Sodium	112514375A	1406C004	21 May 2022	

2. Standard Material  
Material: Manufacturer: Lot No. Assay  
Sodium Thiosulfate pentahydrate Merck AH1763216 100.2%

Result: Dissolved Oxygen Meter Adjustment With Air 100 %  
Dissolved Oxygen Probe No.: 16K100408

Procedure Method (Asile Modification Method)	DO Meter Reading (mg/L)	Standard Deviation (mg/L)
8-12	8-13	0.015

This report was verified only for the instrument we tested it is acceptable to use for study  
the system efficiency. The environmental impact control and present in organization it may concerned  
based to use for advertising and external purpose is prohibited. This report may not be reproduced  
other or full without written approval of the laboratory.

-00-

Mod.

a 1110482



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
CORPORATE SERVICES 3 EQUIPMENT CALIBRATION AND TESTING SERVICES  
234/4 PATTANAKARN ROAD NO.13, SUKOLANG, SAMKANG RANGKOE 10239  
TEL: 0-2371-1080 FAX: 0-2371-0944

Cert. No.: T221644  
Page: 1 of 2

### Certificate of Calibration

Equipment: DO Meter with Sensor  
Manufacturer: YSI  
Model: 5000-230V  
Serial No.: 091151147  
ID No.: BNAK\_EN0017  
Submitted by: ALS Laboratory Group (Thailand) Co., Ltd.  
104 Phatthanasak 40, Phatthanasak Rd.,  
Khaew Phatthanasak, Khwa Suan Luang,  
Bangkok 10250 Thailand  
Location: TPA On Site Calibration Laboratory  
Received Date: 26 May 2022  
Calibrated Date: 30 May 2022  
Ambient Temperature: (25 ± 10) °C  
Relative Humidity: (50 ± 20) %  
AC Line Voltage: 220 ± 22 V  
Calibrated by: Tawatchai Pama  
Approved by:   
Approved Signatory  
( ) Pongthip Tanayakul  
( ) Maithe Buthas  
( ) Sathip Meangma  
Issue Date: 31 May 2022

The Uncertainty are for a confidence probability of approximately 95 %  
The calibration was made by standard 1000 µg/L NaCl solution and aqueous sodium  
chloride of the National Calibration Center, Technology Promotion Association (Thailand-Japan)

A 0039957



Equipment: DO Meter with Sensor  
Condition As-Received: Used Item  
Reference: Z05-0630505C-10  
Cet. No.: T221644  
Page: 2 of 2

Calibration was conducted using in-house calibration procedure CP-0701 according to comparison with  
Industrial Platinum Resistance Thermometer (IPRT) also Temperature Bath  
The temperature scale used was based on ITS-90.

Condition of this result of calibration  
1. Reference standard instrument -  
Instrument: Model: Serial No. Gas. No. Due Date  
1) Digital Thermometer: A09204: 009204: 238: 04 Jan 2023

2. This certificate is valid only to the item calibrated on date and place of calibration.  
3. This certification is traceable to the International System of Unit  
Result of Calibration: (°C) without Adjustment  
Function: Temperature measurement

This instrument was corrected with thermistor sensor, ID No. 16K100408

Calibration Point (°C)	Immersion Depth (mm)	Standard Temperature (°C)	DO Reading (°C)	Uncertainty (°C)	Coverage Factor
20.02	80	20.003	20.01	0.007	0.15

UUC: Unit Under Calibration

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

-00-

Mod.

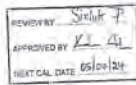
a 1050005

Certificate No. T230682

Page 1 of 4

### Certificate of Calibration

Equipment : Chamber (Incubator)  
Manufacturer : MEMMERT  
Model : ICP 750  
Serial No. : F819.0021  
Customer Code : BKK\_EN0304  
ID No. : T9572A4  
Customer : ALS Laboratory Group (Thailand) Co., Ltd.  
104 Phatthanasak 40, Phatthanasak Rd., Khwaeng Phatthanasak,  
Khet Suan Luang, Bangkok 10250  
Customer Location : Wet Chemistry Lab 2  
Date of Receipt : 30 March 2023  
Calibrated By : Sujjar Naksakred (Site Calibration Manager)  
Approved By : Boonchai Suriyawong (Assistant Calibration Manager)  
Date of Issue : 10 APR 2023



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

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its suitability to assigned national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrological Center.

THA LIA 11134343

Certificate No. T230682

### Calibration Report

Page 2 of 4

Equipment : Chamber (Incubator)  
Date of Calibration : 5 April 2023 (Finished Time: 4:30 PM)  
Environment : Temperature : 22.9-28.6 °C  
Line Voltage : 221.7-225.5 V

Condition of this result of test :  
1. This instrument was calibrated by using 12 standard resistance thermometer used its diameter and test according to IEC 60750 based on ASTM E145-04 (reapproved 2011) and AS2813-1996.  
All data show below were field values and the actual data may be obtained upon request.  
The temperature study used was based on ITS-90.  
2. Reference Standard Instruments:  
Instrument Model Instrument No. Certificate No. Due Date  
RTD RTD-100 100 1222493 28 November 2023  
RTD RTD-100 100 1222493 28 November 2023  
DATA LOGGER 34970A T193 1222493 28 November 2023  
3. This certificate is traceable to:  
National Institute of Metrology (Thailand) through Metrological Center (NSC-TIS-TIS 17025 CALIBRATION 0244).  
4. Condition of calibrated item : good  
UNC Description:  
Time Constant 3 Hour 33 Minute 20 °C  
Fresh Air Damper Open Min Medium Max  
Door Close  
Not Available  
5. Result of test:  
( ) without adjustment ( ) after adjustment

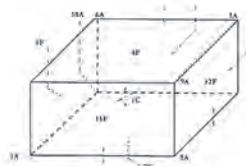
Approved By: [Signature]

THA LIA 11134343

Certificate No. T230682

### Calibration Report

Page 3 of 4



C = Center, F = Center of Face, A = Corner, E = Corner of Edge

1C = 37CH1	1F = 36CH1
2A = 37CH2	2F = 36CH2
3A = 37CH3	3F = 36CH3
4F = 37CH4	4F = 37CH4
5A = 37CH5	5F = 36CH5
6A = 37CH6	6F = 36CH6
7F = 37CH7	7F = 37CH7
8F = 37CH8	8F = 37CH8
9A = 37CH9	9F = 36CH9
10A = 37CH10	10F = 36CH10

Approved By: [Signature]

THA LIA 11134343

Certificate No. T230682

### Calibration Report

Page 4 of 4

Measurement Results

Calibration Point	Average Standard Reading at each position (°C)									
	1CCH	1FCH	2CCH	2FCH	3CCH	3FCH	4CCH	4FCH	5CCH	5FCH
100	28.34	28.37	28.38	28.35	28.32	28.34	28.36	28.38	28.35	28.32
	28.35	28.34								

Setting (°C)	Reading (°C)			Average (°C)	Stability (°C)	Uniformity (°C)	Uncertainty (°C)	Coefficient
	Min	Max	Average					
100	19.9	28.1	23.0	19.9	0.1	0.1	0.1	0.0

\* The quoted uncertainty includes "uniformity".  
The calibration results apply only to the above referenced item.  
The result of test was found accuracy as shown in data and given in test only.  
The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k which for a confidence probability of approximately 95%.

Approved By: [Signature]

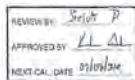
THA LIA 11134343

Certificate No. T230552

Page 1 of 5

### Certificate of Calibration

Equipment : HOT BLOCK  
Manufacturer : Environmental Express  
Model : B3080-240  
Serial No. : 2017COW116  
Customer Code : BKK\_EN0232  
ID No. : T6769A4  
Customer : ALS Laboratory Group (Thailand) Co., Ltd.  
104 Phatthanasak 40, Phatthanasak Rd., Khwaeng Phatthanasak,  
Khet Suan Luang, Bangkok 10250  
Customer Location : Wet Chemistry Lab2  
Date of Receipt : 21 February 2023  
Calibrated By : Watchararak Putararat (Technician)  
Approved By : Boonchai Suriyawong (Site Calibration Manager)  
Date of Issue : 28 MAR 2023



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

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its suitability to assigned national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrological Center.

THA LIA 11134343

Certificate No. T230552

### Calibration Report

Page 2 of 5

Equipment : HOT BLOCK  
Date of Calibration : 1 March 2023  
Environment : Temperature : 22.9-24.4 °C  
Line Voltage : 222.7-227.8 V  
Relative Humidity : 55-65 %RH

Condition of this result of calibration :  
1. This equipment was calibrated by using 20 standard thermocouples type T into hot chamber, the other was standard thermocouples type T for for applying temperature measurements. The calibration was done in accordance to IEC 60750. All data show below were field values and the actual data may be obtained upon request.  
The temperature study used was based on ITS-90.  
2. Reference Standard Instruments:  
Instrument Model Instrument No. Certificate No. Due Date  
TC T177E T177E T177E 3 October 2023  
TC T177E T177E T177E 3 October 2023  
DATA LOGGER 34970A T155 1222493 28 November 2023  
3. This certificate is traceable to:  
National Institute of Metrology (Thailand) through Metrological Center (NSC-TIS-TIS 17025 CALIBRATION 0244).  
4. Condition of calibrated item : good  
UNC Description:  
Time Constant 5 Hour 33 Minute 20 °C  
Fresh Air Damper Open Min Medium Max  
Door Close  
Not Available  
5. Adjustment:  
( ) without adjustment ( ) after adjustment

Approved By: [Signature]

THA LIA 11134343





## Protocol Details

## Purpose

This section lists the revisions for all test units used in this report. For complete traceability and to always change details, refer to the Revision History document.

Test Revision	Test
ICPMS-22-01	20-Minute Stability (No Gas Mode)
ICPMS-22-02	Autosampler Check
ICPMS-22-03	Blankness
ICPMS-22-04	Background (No Gas Mode)
ICPMS-22-05	Background (No Gas Mode)
ICPMS-22-06	Background (No Gas Mode)
ICPMS-22-07	Integrated Sample Introduction System (ISIS) Check

Date: June 14, 2022 10:22:18 AM  
System ID: JPT0201812

Page 7 / 20

## Integrated Sample Introduction System (ISIS) Check

## Purpose

This test demonstrates that the ISIS module is correctly installed and connected. It does not test module performance.

Step/Item	Criteria	Observed Result	Expected Result	Status
As recommended, does the pump run?		Yes	Yes	Pass
As recommended, do the valves leak and spray?		Yes	Yes	Pass

Step/Item Status: Pass Run: 1

Overall Integrated Sample Introduction System (ISIS) Check Test Status: Pass

Date: June 14, 2022 10:22:18 AM  
System ID: JPT0201812

Page 8 / 20

## Mass 7 Sensitivity No Gas

Agilent Recommended:

Status: Pass

Mass 89 Sensitivity No Gas

Agilent Recommended:

Status: Pass

Mass 205 Sensitivity No Gas

Agilent Recommended:

Status: Pass

Mass 39 Sensitivity No Gas

Agilent Recommended:

Status: Pass

Oxide Ratio 150/140

Agilent Recommended:

Status: Pass

Dwell Charge Species Ratio 75/140

Agilent Recommended:

Status: Pass

Step/Item Status: Pass Run: 1

Overall Autotune Test Status: Pass

Date: June 14, 2022 10:22:18 AM  
System ID: JPT0201812

Page 11 / 20

## Autosampler Check

## Purpose

This test demonstrates that the autosampler module is correctly installed and connected. It does not test module performance.

Step/Item	Criteria	Observed Result	Expected Result	Status
After the self test, is probe in the home position?		Yes	Yes	Pass
As recommended, is the probe positioned at val 2?		Yes	Yes	Pass

Step/Item Status: Pass Run: 1

Overall Autosampler Check Test Status: Pass

Date: June 14, 2022 10:22:18 AM  
System ID: JPT0201812

Page 9 / 20

## Autotune

## Purpose

This test uses interactive checklist standards to run a software executed autotune in all modes. The final report provides values for peak width, mass accuracy, sensitivity, oxide species, and dwell-charge species ratio.

Step/Item	Criteria	Observed Result	Expected Result	Status
Mass 7		0.725	AMU	
Agilent Recommended:		0.65		
Status:		Pass		
Mass 89		0.732	AMU	
Agilent Recommended:		0.65		
Status:		Pass		
Mass 205		0.745	AMU	
Agilent Recommended:		0.65		
Status:		Pass		
Mass 39		7.00	AMU	
Agilent Recommended:		6.9		
Status:		Pass		
Mass 75		89.00	AMU	
Agilent Recommended:		89.8		
Status:		Pass		
Mass 205		205.00	AMU	
Agilent Recommended:		204.9		
Status:		Pass		

Date: June 14, 2022 10:22:18 AM  
System ID: JPT0201812

Page 12 / 20

## Background (No Gas Mode)

## Purpose

This test examines the background of the ICP-MS in no gas mode by measuring level during a blank run.

Setpoint					
Conditions					
Mass:	7	AMU			
	89	AMU			
	205	AMU			
Measurements and Results					
Species AMU:	7	89	205		
Measured Value:	4.800	7.100	18.400	104	
Agilent Recommended:	10	10	55		
Status:	Pass	Pass	Pass		

Step/Item Status: Pass Run: 1

Overall Background (No Gas Mode) Test Status: Pass

Date: June 14, 2022 10:22:18 AM  
System ID: JPT0201812

Page 12 / 20

## Background (Gas Mode)

**Purpose:**  
This test examines the background of the CDP-MS in the reserve gas mode by monitoring peak during a blank run.

Setup:	Gas Mode	Heads
Conditions		
Mass	73	AMU
Integration Time	1.0	sec
Cycles	25	

Measurements and Results	
Mass (AMU)	73
Measured Value	2.1050
Agilent Recommendation	< 0.002
Status	Pass

Setup Status: Pass Run: 1

Overall Background (Gas Mode) Test Status

Pass

Date: June 14, 2022 10:22:18 AM  
System ID: JPC201912

Page 14/20

## 20-Minute Stability (No Gas Mode)

**Purpose:**  
This test monitors the stability of data present in the check-out scan over a 20-minute period to verify that the signal is stable. The sum of the absolute of peak area is calculated internally by the software and compared to the limit.

Setup:	
Conditions	
Mass	34.0398
Masses	1, 3, 15, 19, 74.0, 205
Integration Time	9.99 sec
Peak Pattern	3 101010000
Repeats	25
Sample Position	00

Measurements and Results	
Summed Area	16.2
Summed Area	0.8
Agilent Recommendation	< 3.45
Status	Pass

Setup Status: Pass Run: 1

Overall 20-Minute Stability (No Gas Mode) Test Status

Pass

Date: June 14, 2022 10:22:18 AM  
System ID: JPC201912

Page 14/21

## Declaration of Change Control

This document is under change control. Revision history is maintained and printed in each document. Access to the master documents is limited to system owners. Documents receive periodic review and cannot be assigned an emergency status. The qualification performed according to this document refers only to the hardware/software configuration in place at the time of the qualification. Agilent Technologies assumes no responsibility for configuration change management procedures in place in order to maintain the validation process. Any changes to the analysis or computer hardware or software must be clearly identified. A change management system provides a means for determining the degree of requalification required according to the extent of the changes made. All aspects of the changes must be thoroughly recorded and documented, together with details of completed tests and their results. Equip. Hardware/software configuration management is the customer's responsibility.

Date: June 14, 2022 10:22:18 AM  
System ID: JPC201912

Page 15/20

## Attachments

Training requirements note: The training engineer issues an ACE technique-specific training certificate to the Equipment Qualification Report (EQR). Obtaining ACE technique-specific certification includes on-site training for Data Integrity, General Compliance Issues (GCI), GUP, ALQDA, and instrument hardware and software components, and the ACE technique itself. The certificate encompasses all prerequisite training as documented in the Agilent Learning Management System-related Success Factors.

Location	Category	Document Name	Page
EQR	General	Certificate of System Qualification	17
EQR	General	Operator's training certificate and qualifications	18
EQR	General	Certificate of Qualification for ACE	19
EQR	General	Certificate of Qualification for ACE	20
EQR	General	Zone reports	21
EQR	General	Test Report	24
EQR	General	Test Report	28

Date: June 14, 2022 10:22:18 AM  
System ID: JPC201912

Page 15/21

General

Equipment Name: Certificate of System Qualification

### Agilent Compliance Engine Self Qualification

Date: September 14, 2021 1:15:15 PM  
Operator: JPC201912  
File Name: ACE-011

Agilent self-qualification reports for each specific technique measured are sent to the user account. This process will be done on a periodic basis for the entire company and are provided by the self-qualification program during the process. There is no time limit on the number of reports generated and all reports are sent to the user account. The user account is used to generate and print the self-qualification reports.

Technique Name	Test Completed	Result
Agilent Instrument	7	Complete
Operator Qualification	10	Complete
Standard	4	Complete
Operator Qualification	1	Complete
Self-qualification (ACE)	17	Complete
Self-qualification	20	Complete
Self-qualification (Compliance)	0	Complete
Self-qualification	3	Complete
Operator Qualification	1	Complete
Operator Qualification	17	Complete
Operator Qualification (ACE)	9	Complete
Operator	16	Complete
Operator Qualification (Self-qualification)	0	Complete
Operator Qualification	4	Complete
Operator Qualification	16	Complete
Operator	4	Complete
Operator Qualification	18	Complete

Overall Qualification Status: Complete

Date: June 14, 2022 10:22:18 AM  
System ID: JPC201912

Page 17/20

General

Equipment Name: Operator's training certificate and qualifications

### Certificate of Completion

Location: Station

File Name: ACE-011

Completion Date: November 11, 2021

Location of Completion: Learning in Agilent

Agilent Compliance Engine Self Qualification

Agilent self-qualification reports for each specific technique measured are sent to the user account. This process will be done on a periodic basis for the entire company and are provided by the self-qualification program during the process. There is no time limit on the number of reports generated and all reports are sent to the user account. The user account is used to generate and print the self-qualification reports.

Date: June 14, 2022 10:22:18 AM  
System ID: JPC201912

Page 18/21



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Agilent OneLab Compliance Services

Document Name:

Test Report

Batch Summary Report

Batch ID	18	18
Batch Name	18	18
Batch Date	18	18

Date:

June 14, 2022 10:22:16 AM

System ID:

JP2201012

Page 25 / 25

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Agilent OneLab Compliance Services

Document Name:

Test Report

Batch Summary Report

Batch ID	18	18
Batch Name	18	18
Batch Date	18	18

Date:

June 14, 2022 10:22:16 AM

System ID:

JP2201012

Page 26 / 25

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Agilent OneLab Compliance Services

Document Name:

Test Report

Batch Summary Report

Batch ID	18	18
Batch Name	18	18
Batch Date	18	18

Date:

June 14, 2022 10:22:16 AM

System ID:

JP2201012

Page 27 / 25

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Date:

June 14, 2022 10:22:16 AM

System ID:

JP2201012

Page 28 / 25

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Agilent OneLab Compliance Services

Batch Summary Report

Batch ID	18	18
Batch Name	18	18
Batch Date	18	18

Date:

June 14, 2022 10:22:16 AM

System ID:

JP2201012

Page 29 / 25

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Batch Summary Report

Batch ID	18	18
Batch Name	18	18
Batch Date	18	18

Date:

June 14, 2022 10:22:16 AM

System ID:

JP2201012

Page 30 / 25





#### Measurements (Methods):

[illegible]

Annotated Bibliography

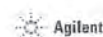
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## Customer Information

- **Administrative** information is necessary for developing a business plan and is requested by the employer
- A **business information** profile is available in the information system pertaining to previous business information. Customer is responsible for inputting accurate and complete data into the information system
- **Any** person who is not a member of the business is not permitted to use the information system. The business owner or employee who is responsible for the input of the system
- If a customer requires the use of data or statistical information, parts of the system is provided, but there must be trained staff and the change is to input which may only a qualified staff
- For customers who are not customers, the information system is provided to the business and the information system

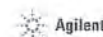
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Journal of Internal Medicine 255: 281–289



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- **Complete the Customer Verification** section that documents the necessary information available before the objective is implemented and:
  - Only select those pages that relate to the system or module being reviewed.
  - Assign the priority for the review as either urgent or normal.
  - Check the relevant checkboxes in the checklist regarding a "X" or tick mark "✓".
  - Check "Service not applicable" check boxes to indicate a service not applicable (if appropriate).
  - Choose the appropriate Makeover or services. (Service options are highlighted in the actual document review in the report of the tasks done.)
- **Complete the Service Review** section together with the customer.
  - Complete the feedback page and indicate the level of satisfaction with page.
  - Select a report page number to attach to the service review document (if appropriate).
  - The Service Confirmation section.
- **Ask the customer to sign the Service Verification** section including the customer's and your signatures.

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#### Instrument Maintenance

### System information

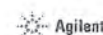
☐ Check this box if an individual configuration report is attached instead of consulting the table

Instrument System Name and ID	3920A	MY1860003
Instrument System Site and Location	ALS	656

List System Component Product Numbers	List the Serial Numbers of each Component
Q1604	M416041005
Q1604A	M016040174
Q1604B	S0160402157
Q1604C	S416040115

ICF-QES Configuration Table	Circle the type or write in the type if other
Individual type	<u>Individual</u> / (Proxies / Composite / Other)
Agency or Institute	<u>Specialty</u> / (Specialty / Capabilities / Service / Policy / Other)
Other	<u>Other</u> / (Qualifying / Other)
Topic type	<u>Zero Point / Semi-Demographic / Fully Demographic / Qual</u>
Agency Question	<u>Qualifying</u> / (Agency / Demographic / Other)
Agency Material	<u>Qualifying</u> / (Other)

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Equipment : Hot Air Oven  
Condition As Received : Used Item  
Reference : 2211-0220C-1  
Result of Calibration : \* : After Adjustment  
Function of UUC : Temperature Source  
Fresh air setting : Not Available

Cert. No.: 22/14/571  
Page: 3 of 3

Calibration Point (°C)	UUC Setting (°C)	UUC Reading (°C)	Temperature stability (°C)	Temperature uniformity (°C)	Overall Variation (°C)	Coverage Factor
160	160	160	3.72	1.5	2.9	2

Calibration Point (°C)

Position	1	2	3	4	5	6	7	8	9 (Ref.)
160	179.520	182.585	179.655	179.482	179.627	179.938	179.924	180.150	183.069

Average\* The average of 30 values in each position  
Temperature stability : One half of the greater maximum differential of measured temperature at any one lesser temperature uniformity : The maximum difference of measured temperatures at any stations and the measured temperature of the reference location which are observed at the same time or at an equal observation time is stable to determine the temperature pattern or homogeneity within the chamber under steady-state conditions  
Overall Variation : The Difference of the maximum and minimum measured temperatures throughout observation  
UUC : Unit Under Calibration  
Note : The reported uncertainty of measurement was evaluated stability and excluded uniformity  
The reported uncertainty of measurement was based on a standard uncertainty evaluated as a coverage factor A, providing a level of confidence of approximately 95 %

450

1/28055



Equipment : Water Bath  
Condition As Received : Used Item  
Reference : 2204-02510C-1  
Result of Calibration : \* : After Adjustment  
Function of UUC : Temperature Source

Cert. No.: 22/14/571  
Page: 2 of 3

Procedure Used : Calibration was conducted using in-house calibration procedure CP-071M, complying to Annex measurement method with Data Acquisition and Control with Industrial Processors (DIPIC) system  
Note : The reported uncertainty of measurement was evaluated stability and excluded uniformity  
The reported uncertainty of measurement was based on a standard uncertainty evaluated as a coverage factor A, providing a level of confidence of approximately 95 %

Calibration Point (°C)

Position	1	2	3	4	5	6	7	8	9 (Ref.)
25	24.999	25.001	25.000	25.000	25.000	25.000	25.000	25.000	25.000

Result of Calibration : \* : After Adjustment  
Function of UUC : Temperature Source  
Note : The reported uncertainty of measurement was evaluated stability and excluded uniformity  
The reported uncertainty of measurement was based on a standard uncertainty evaluated as a coverage factor A, providing a level of confidence of approximately 95 %

Calibration Point (°C)	UUC Setting (°C)	UUC Reading (°C)	Temperature stability (°C)	Temperature uniformity (°C)	Overall Variation (°C)	Coverage Factor
25	25	25	0.001	0.001	0.001	2

Calibration Point (°C)

Position	1	2	3	4	5	6	7	8	9 (Ref.)
25	24.999	25.001	25.000	25.000	25.000	25.000	25.000	25.000	25.000

Result of Calibration : \* : After Adjustment  
Function of UUC : Temperature Source  
Note : The reported uncertainty of measurement was evaluated stability and excluded uniformity  
The reported uncertainty of measurement was based on a standard uncertainty evaluated as a coverage factor A, providing a level of confidence of approximately 95 %

450

1/28055



Equipment : Water Bath  
Condition As Received : Used Item  
Reference : 2204-02510C-1  
Result of Calibration : \* : After Adjustment  
Function of UUC : Temperature Source

Cert. No.: 22/14/571  
Page: 3 of 3

## Certificate of Calibration

Equipment : Water Bath  
Manufacturer : Umetec  
Model : KWC 15  
Serial No. : 112 009  
ID No. : BNA, M, 0015  
Submitted by : IS & Laboratory Group (Technical) Co-1  
The Department of Industrial Engineering (IS & Laboratory Group) (Technical) Co-1  
Bangalore, Karnataka  
Location : Bangalore, Karnataka  
Received Date : 23 April 2022  
Calibration Date : 23 April 2022  
Ambient Temperature : (20 ± 1) °C  
Relative Humidity : (50 ± 10) %  
Calibrated by : [Signature]  
Approved by : [Signature]  
Note Date : 29 April 2022

The measurement is for a confidence probability of approximately 95 %

1/28055



Equipment : Water Bath  
Condition As Received : Used Item  
Reference : 2204-02510C-1  
Result of Calibration : \* : After Adjustment  
Function of UUC : Temperature Source

Cert. No.: 22/14/571  
Page: 2 of 3

Procedure Used : Calibration was conducted using in-house calibration procedure CP-071M, complying to Annex measurement method with Data Acquisition and Control with Industrial Processors (DIPIC) system  
Note : The reported uncertainty of measurement was evaluated stability and excluded uniformity  
The reported uncertainty of measurement was based on a standard uncertainty evaluated as a coverage factor A, providing a level of confidence of approximately 95 %

Calibration Point (°C)

Position	1	2	3	4	5	6	7	8	9 (Ref.)
25	24.999	25.001	25.000	25.000	25.000	25.000	25.000	25.000	25.000

Result of Calibration : \* : After Adjustment  
Function of UUC : Temperature Source  
Note : The reported uncertainty of measurement was evaluated stability and excluded uniformity  
The reported uncertainty of measurement was based on a standard uncertainty evaluated as a coverage factor A, providing a level of confidence of approximately 95 %

Calibration Point (°C)	UUC Setting (°C)	UUC Reading (°C)	Temperature stability (°C)	Temperature uniformity (°C)	Overall Variation (°C)	Coverage Factor
25	25	25	0.001	0.001	0.001	2

Calibration Point (°C)

Position	1	2	3	4	5	6	7	8	9 (Ref.)
25	24.999	25.001	25.000	25.000	25.000	25.000	25.000	25.000	25.000

Result of Calibration : \* : After Adjustment  
Function of UUC : Temperature Source  
Note : The reported uncertainty of measurement was evaluated stability and excluded uniformity  
The reported uncertainty of measurement was based on a standard uncertainty evaluated as a coverage factor A, providing a level of confidence of approximately 95 %

450

1/28055

## ภาคผนวก จ

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สำเนาหนังสือใบอนุญาตขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน



๑๕๖) สารประกอบอินทรีย์ (Organic Compounds)	วิธีวิเคราะห์: 1) ๒๐๑๕-๑๒๐๕
๑๕๗) สารประกอบอินทรีย์ (Organic Compounds)	วิธีวิเคราะห์: ๑) ๒๐๑๕-๑๒๐๕
๑๕๘) สารประกอบอินทรีย์ (Organic Compounds)	วิธีวิเคราะห์: ๑) ๒๐๑๕-๑๒๐๕
๑๕๙) สารประกอบอินทรีย์ (Organic Compounds)	วิธีวิเคราะห์: ๑) ๒๐๑๕-๑๒๐๕
๑๖๐) สารประกอบอินทรีย์ (Organic Compounds)	วิธีวิเคราะห์: ๑) ๒๐๑๕-๑๒๐๕
๑๖๑) สารประกอบอินทรีย์ (Organic Compounds)	วิธีวิเคราะห์: ๑) ๒๐๑๕-๑๒๐๕
๑๖๒) สารประกอบอินทรีย์ (Organic Compounds)	วิธีวิเคราะห์: ๑) ๒๐๑๕-๑๒๐๕
๑๖๓) สารประกอบอินทรีย์ (Organic Compounds)	วิธีวิเคราะห์: ๑) ๒๐๑๕-๑๒๐๕
๑๖๔) สารประกอบอินทรีย์ (Organic Compounds)	วิธีวิเคราะห์: ๑) ๒๐๑๕-๑๒๐๕
๑๖๕) สารประกอบอินทรีย์ (Organic Compounds)	วิธีวิเคราะห์: ๑) ๒๐๑๕-๑๒๐๕
๑๖๖) สารประกอบอินทรีย์ (Organic Compounds)	วิธีวิเคราะห์: ๑) ๒๐๑๕-๑๒๐๕
๑๖๗) สารประกอบอินทรีย์ (Organic Compounds)	วิธีวิเคราะห์: ๑) ๒๐๑๕-๑๒๐๕
๑๖๘) สารประกอบอินทรีย์ (Organic Compounds)	วิธีวิเคราะห์: ๑) ๒๐๑๕-๑๒๐๕
๑๖๙) สารประกอบอินทรีย์ (Organic Compounds)	วิธีวิเคราะห์: ๑) ๒๐๑๕-๑๒๐๕
๑๗๐) สารประกอบอินทรีย์ (Organic Compounds)	วิธีวิเคราะห์: ๑) ๒๐๑๕-๑๒๐๕

229  
นายวิชาญ อึ้งกมลสิน  
ผู้อำนวยการศูนย์วิจัยและพัฒนา  
การตรวจสอบและวิเคราะห์  
สิ่งปนเปื้อนในอาหารและยา

ผลการตรวจวิเคราะห์สิ่งปนเปื้อนในอาหารและยา  
วันที่ ๑๖/๐๖/๒๕๖๓  
ที่ ๑๐๖๖๓/๒๕๖๓

ลำดับที่	สารเคมี	วิธีวิเคราะห์
1	Aldrin	High-Performance Liquid Chromatographic Method <sup>11</sup>
2	Aldrin Sulfone	High-Performance Liquid Chromatographic Method <sup>11</sup>
3	Aldrin Sulfonate	High-Performance Liquid Chromatographic Method <sup>11</sup>
4	Alin	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
5	Asenit	1) Digestion, Inductively Coupled Plasma Method <sup>11</sup> 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11</sup>
6	Barium	1) Digestion, Inductively Coupled Plasma Method <sup>11</sup> 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11</sup>
7	β-BHC	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
8	β-BHC	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
9	δ-BHC	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
10	γ-BHC	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
11	Biochemical Oxygen Demand	1) 5-Day BOD Test, Azide Modification Method <sup>11</sup> 2) 5-Day BOD Test, Membrane Electrode Method <sup>11</sup>
12	Cetaryl	High-Performance Liquid Chromatographic Method <sup>11</sup>
13	Cetane	High-Performance Liquid Chromatographic Method <sup>11</sup>
14	Cadmium	1) Digestion, Inductively Coupled Plasma Method <sup>11</sup> 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11</sup>
15	Chemical Oxygen Demand	1) Closed Reflux, Colorimetric Method <sup>11</sup> 2) Closed Reflux, Titrimetric Method <sup>11</sup>
16	Chlorane	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
17	Chromium	1) Digestion, Inductively Coupled Plasma Method <sup>11</sup> 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11</sup>
18	Color	ADU Weighted-Gravimetric Spectrophotometric Method

219  
นายวิชาญ อึ้งกมลสิน  
ผู้อำนวยการศูนย์วิจัยและพัฒนา  
การตรวจสอบและวิเคราะห์  
สิ่งปนเปื้อนในอาหารและยา

19 Copper

ลำดับที่	สารเคมี	วิธีวิเคราะห์
19	Copper	1) Digestion, Inductively Coupled Plasma Method <sup>11</sup> 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11</sup>
20	Cyfluthrin	Distillation, Colorimetric Method <sup>11</sup>
21	2,4'-DDE	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
22	4,4'-DDE	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
23	2,4'-DDE	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
24	4,4'-DDE	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
25	2,4'-DDT	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
26	4,4'-DDT	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
27	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
28	Endosulfan Sulfate	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
29	Endosulfan I	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
30	Endosulfan II	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
31	Endrin	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
32	Enzin Aldehyde	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
33	Formaldehyde	Distillation, Colorimetric Method <sup>11</sup>
34	Free Chlorine	1) DPD Ferrous Titrimetric Method <sup>11</sup> 2) Iodometric Method <sup>11</sup>
35	Heptachlor epoxide	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
36	Insoluble Chromium	Filtration, Colorimetric Method <sup>11</sup>
37	3-Hydroxycarbonyl	High-Performance Liquid Chromatographic Method <sup>11</sup>
38	Lead	1) Digestion, Inductively Coupled Plasma Method <sup>11</sup> 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11</sup>
39	Mephenthrate	1) Digestion, Inductively Coupled Plasma Method <sup>11</sup> 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11</sup>
40	Mephenthrate	1) Digestion, Inductively Coupled Plasma Method <sup>11</sup> 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11</sup>
41	Mercury	1) Digestion, Cold Vapor Atomic Absorption Spectrometric Method <sup>11</sup> 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11</sup>
42	Methoxychlor	High-Performance Liquid Chromatographic Method <sup>11</sup>
43	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>

229  
นายวิชาญ อึ้งกมลสิน  
ผู้อำนวยการศูนย์วิจัยและพัฒนา  
การตรวจสอบและวิเคราะห์  
สิ่งปนเปื้อนในอาหารและยา

44 Methylene...

ลำดับที่	สารเคมี	วิธีวิเคราะห์
44	Methomyl	High-Performance Liquid Chromatographic Method <sup>11</sup>
45	Nicotine	1) Digestion, Inductively Coupled Plasma Method <sup>11</sup> 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11</sup>
46	Oil & Grease	1) Liquid-Liquid, Partition-Gravimetric Method <sup>11</sup> 2) Solvent Extraction Method <sup>11</sup>
47	Omethyl	High-Performance Liquid Chromatographic Method <sup>11</sup>
48	Propoxur	High-Performance Liquid Chromatographic Method <sup>11</sup>
49	pH	Electrometric Method <sup>11</sup>
50	Phenol	1) Distillation, Chloroform Extraction Method <sup>11</sup> 2) Distillation, Direct Photometric Method <sup>11</sup>
51	Selenium	1) Digestion, Inductively Coupled Plasma Method <sup>11</sup> 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11</sup>
52	Sulfide	Iodometric Method <sup>11</sup>
53	Temperature	Laboratory and Field Methods <sup>11</sup>
54	Total Dissolved Solids	Dried at 100 °C <sup>11</sup>
55	Total Kjeldahl Nitrogen	Semi-Micro Kjeldahl Method <sup>11</sup>
56	Total, Dissolved Solids	Dried at 105-105 °C <sup>11</sup>
57	Tropone	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>11</sup>
58	Trivalent Chromium	1) Digestion, Inductively Coupled Plasma Method <sup>11</sup> 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11</sup>

ลำดับที่	สารเคมี	วิธีวิเคราะห์
1	Acetophenone	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
2	Acetone	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>

219  
นายวิชาญ อึ้งกมลสิน  
ผู้อำนวยการศูนย์วิจัยและพัฒนา  
การตรวจสอบและวิเคราะห์  
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1 Alami

ลำดับที่	สารเคมี	วิธีวิเคราะห์
3	Aldin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
4	Anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
5	Antimony	1) Digestion, Inductively Coupled Plasma Method <sup>11</sup> 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11</sup>
6	Arsenic	1) Digestion, Inductively Coupled Plasma Method <sup>11</sup> 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11</sup>
7	Atrazine	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
8	Barium	1) Digestion, Inductively Coupled Plasma Method <sup>11</sup> 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>11</sup>
9	Benzofluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
10	Benzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
11	Benzobenzofluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
12	Benzofluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
13	Benzofluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
14	Benzofluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
15	Benzofluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
16	Benzofluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
17	Benzofluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>

219  
นายวิชาญ อึ้งกมลสิน  
ผู้อำนวยการศูนย์วิจัยและพัฒนา  
การตรวจสอบและวิเคราะห์  
สิ่งปนเปื้อนในอาหารและยา

18 Benzofluoranthene...

ลำดับที่	สารเคมี	วิธีวิเคราะห์
18	Benzofluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
19	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
20	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
21	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
22	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
23	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
24	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
25	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
26	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
27	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
28	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
29	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
30	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
31	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
32	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>
33	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>11</sup>

219  
นายวิชาญ อึ้งกมลสิน  
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การตรวจสอบและวิเคราะห์  
สิ่งปนเปื้อนในอาหารและยา

24 Chromium (II)...

ลำดับที่	สารเคมี	วิธีการตรวจ
34	Chromium (6)	1) Digestion, Inductively Coupled Plasma Method, Colorimetric Method, Calculation <sup>10</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method, Colorimetric Method, Calculation <sup>10</sup>
35	Chromium (VI)	Colorimetric Method <sup>10</sup>
36	Chrysene	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
37	Cyanide	Distillation, Colorimetric Method <sup>10</sup>
38	2,4-D	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
39	DDT	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
40	DDE	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
41	DDT	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
42	Dibenz(a,h)anthracene	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
43	Di-n-butyl Phthalate	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
44	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
45	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
46	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
47	1,3-Dichlorobenzene	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
48	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
49	1,2-Dichloroethane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
50	1,1-Dichloroethylene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>

วิธีตรวจ  
กรมการแพทย์ กระทรวงสาธารณสุข  
ศูนย์ปฏิบัติการพิษวิทยา  
กรมการแพทย์ กระทรวงสาธารณสุข

51 cis-1,2-Dichloroethylene

ลำดับที่	สารเคมี	วิธีการตรวจ
51	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
52	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
53	2,6-Dichlorophenol	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
54	1,3-Dichloropropane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
55	1,3-Dichloropropane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
56	1,3-Dichloropropane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
57	Dieldrin	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
58	Diethyl Phthalate	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
59	2,4-Dimethylphenol	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
60	2,4-Dinitrochlorobenzene	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
61	2,4-Dinitrochlorobenzene	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
62	2,4-Dinitrochlorobenzene	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
63	Di-n-Octyl Phthalate	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
64	Endosulfan	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
65	Endrin	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
66	Ethylbenzene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
67	Fluorene	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>

วิธีตรวจ  
กรมการแพทย์ กระทรวงสาธารณสุข  
ศูนย์ปฏิบัติการพิษวิทยา  
กรมการแพทย์ กระทรวงสาธารณสุข

68 Fluorene

ลำดับที่	สารเคมี	วิธีการตรวจ
68	Fluorene	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
69	Heptachlor	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
70	Heptachlor epoxide	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
71	Heptachlorobenzene	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
72	Heptachloro-1,3-bisoxane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
73	n-Hexane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
74	α-HCH	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
75	β-HCH	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
76	γ-HCH	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
77	Heptachlorocyclopentadiene	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
78	Heptachlorocyclopentadiene	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
79	Indenol 1,2,3-epoxide	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
80	Isophorene	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
81	Lead	1) Digestion, Inductively Coupled Plasma Method <sup>10</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>10</sup>
82	Manganese	1) Digestion, Inductively Coupled Plasma Method <sup>10</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>10</sup>
83	Mercury	1) Cold Vapor Atomic Absorption Spectrometric Method <sup>10</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>10</sup>

วิธีตรวจ  
กรมการแพทย์ กระทรวงสาธารณสุข  
ศูนย์ปฏิบัติการพิษวิทยา  
กรมการแพทย์ กระทรวงสาธารณสุข

84 Methanol

ลำดับที่	สารเคมี	วิธีการตรวจ
84	Methanol	1) Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup> 2) Equilibrium Headspace, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
85	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
86	Methyl Bromide	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
87	Methylene Chloride	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
88	2-Methylphenol	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
89	2-Methylnaphthalene	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
90	Methyl tert-Butyl Ether	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
91	Naphthalene	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
92	Nickel	1) Digestion, Inductively Coupled Plasma Method <sup>10</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>10</sup>
93	Nitrobenzene	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
94	Nitrobenzophenone	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
95	Nitrobenzophenone	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
96	Polychlorinated Biphenyls	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
97	PCB 101	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
98	PCB 122	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
99	PCB 123	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
100	PCB 124	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
101	PCB 126	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
102	PCB 128	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
103	PCB 129	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>

วิธีตรวจ  
กรมการแพทย์ กระทรวงสาธารณสุข  
ศูนย์ปฏิบัติการพิษวิทยา  
กรมการแพทย์ กระทรวงสาธารณสุข

97 Polychlorinated Biphenyls

ลำดับที่	สารเคมี	วิธีการตรวจ
97	Pentachlorophenol	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
98	PH	Electrometric Method <sup>10</sup>
99	Phenanthrene	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
100	Phenol	1) Distillation, Direct Photometric Method <sup>10</sup> 2) Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
101	Pyrene	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
102	Selenium	1) Digestion, Inductively Coupled Plasma Method <sup>10</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>10</sup>
103	Silver	1) Digestion, Inductively Coupled Plasma Method <sup>10</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>10</sup>
104	Styrene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
105	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
106	Tetrafluorobenzene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
107	Toxaphene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
108	Toxaphene	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
109	TPI Cu, Cu	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
110	TPI Cu, Cu	Solvent Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
111	TPI Cu, Cu	Solvent Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
112	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
113	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>

วิธีตรวจ  
กรมการแพทย์ กระทรวงสาธารณสุข  
ศูนย์ปฏิบัติการพิษวิทยา  
กรมการแพทย์ กระทรวงสาธารณสุข

114 1,1,2-Trichloroethane

ลำดับที่	สารเคมี	วิธีการตรวจ
114	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
115	Trichloroethylene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
116	2,4,5-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
117	2,4,6-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
118	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
119	Vanadium	1) Digestion, Inductively Coupled Plasma Method <sup>10</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>10</sup>
120	Vinyl Acetate	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
121	Vinyl Chloride	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
122	m-Xylene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
123	o-Xylene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
124	p-Xylene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
125	Xylene (Total)	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>10</sup>
126	Zinc	1) Digestion, Inductively Coupled Plasma Method <sup>10</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>10</sup>

หมายเหตุ: วิธีการตรวจ: 1.1,2,3-Trichloroethane

ลำดับที่	สารเคมี	วิธีการตรวจ
1	Artisan	Isokinetic Digestion, Inductively Coupled Plasma Method <sup>10</sup>
2	Artisan	Isokinetic Digestion, Inductively Coupled Plasma Method <sup>10</sup>

วิธีตรวจ  
กรมการแพทย์ กระทรวงสาธารณสุข  
ศูนย์ปฏิบัติการพิษวิทยา  
กรมการแพทย์ กระทรวงสาธารณสุข

3 Carbon Monoxide

ลำดับที่	สารเคมี	วิธีการตรวจ
3	Carbon Monoxide	1) Sampling Bag Non-Dispersive Infrared Method <sup>21</sup> 2) Non-Dispersive Infrared Method <sup>22</sup> 3) Instrumental Analyzer Method <sup>23</sup>
4	Chlorine	1) Absorption Sampling, Gas Chromatographic Method <sup>24</sup> 2) Isokinetic Sampling, Gas Chromatographic Method <sup>25</sup>
5	Copper	Isokinetic, Digestion, Inductively Coupled Plasma Method <sup>26</sup>
6	Dioxins	Isokinetic Sampling, Analysis by ISO/IEC 17025 Accredited (Laboratory or Analysts by Department of Industrial Vials Registered Laboratory Clostridium/Furans Analysis Approved) <sup>27</sup>
7	Hydrogen Chloride	1) Absorption Sampling, Gas Chromatographic Method <sup>28</sup> 2) Isokinetic Sampling, Gas Chromatographic Method <sup>29</sup>
8	Hydrogen Sulfide	Absorption Sampling, Isokinetic Method <sup>30</sup>
9	Lead	Isokinetic, Digestion, Inductively Coupled Plasma Method <sup>31</sup>
10	Mercury	1) Isokinetic Sampling, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>32</sup> 2) Isokinetic, Digestion, Inductively Coupled Plasma Method <sup>33</sup>
11	Opacity	Rijgermann's Method <sup>34</sup>
12	Onions of Nitrogen	1) Absorption Sampling, Phenoldisulfonic Acid Method <sup>35</sup> 2) Chem/Luminescence Method <sup>36</sup> 3) Instrumental Analyzer Method <sup>37</sup>
13	Sulfur Dioxide	1) Absorption Sampling, Barium Thionyl Thermatic Method <sup>38</sup> 2) UV Fluorescence Method <sup>39</sup> 3) Instrumental Analyzer Method <sup>40</sup>
14	Sulfuric Acid	Isokinetic Sampling, Barium Thionyl Thermatic Method <sup>41</sup>
15	Total Suspended Particulate	Isokinetic Sampling, Gravimetric Method <sup>42</sup>
16	Xylene	Absorption Sampling, Gas Chromatographic Method <sup>43</sup>

วิธีตรวจ  
(กรมโรงงานอุตสาหกรรม)  
(กรมควบคุมมลพิษ)

ลำดับที่	สารเคมี	วิธีการตรวจ
1	Aldrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>44,45</sup> 2) Soxhlet Extraction, Gas Chromatographic Method <sup>46,47</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic Method <sup>48,49</sup>
2	Arsimony	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>50,51</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>52,53</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>54,55</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>56,57</sup>
3	Arsenic	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>58,59</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>60,61</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>62,63</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>64,65</sup>
4	Barium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>66,67</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>68,69</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>70,71</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>72,73</sup>
5	Beryllium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>74,75</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>76,77</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>78,79</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>80,81</sup>

วิธีตรวจ  
(กรมโรงงานอุตสาหกรรม)  
(กรมควบคุมมลพิษ)

ลำดับที่	สารเคมี	วิธีการตรวจ
6	Cadmium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>82,83</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>84,85</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>86,87</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>88,89</sup>
7	Chloroform	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>90,91</sup> 2) Soxhlet Extraction, Gas Chromatographic Method <sup>92,93</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic Method <sup>94,95</sup>
8	Chromium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>96,97</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>98,99</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>100,101</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>102,103</sup>
9	Chromium VI	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method, Waste Extraction, Colorimetric Method, Calculation Method <sup>104,105</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method, Waste Extraction, Colorimetric Method, Calculation Method <sup>106,107</sup> 3) Digestion, Inductively Coupled Plasma Method, Alkaline Digestion, Colorimetric Method, Calculation Method <sup>108,109</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method, Alkaline Digestion, Colorimetric Method, Calculation Method <sup>110,111</sup>
10	Chromium III	1) Waste Extraction, Colorimetric Method <sup>112,113</sup> 2) Alkaline Digestion, Colorimetric Method <sup>114,115</sup>

วิธีตรวจ  
(กรมโรงงานอุตสาหกรรม)  
(กรมควบคุมมลพิษ)

ลำดับที่	สารเคมี	วิธีการตรวจ
11	Cobalt	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>116,117</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>118,119</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>120,121</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>122,123</sup>
12	Copper	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>124,125</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>126,127</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>128,129</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>130,131</sup>
13	DAI	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>132,133</sup> 2) Soxhlet Extraction, Gas Chromatographic Method <sup>134,135</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic Method <sup>136,137</sup>
14	DOD	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>138,139</sup> 2) Soxhlet Extraction, Gas Chromatographic Method <sup>140,141</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic Method <sup>142,143</sup>
15	DDC	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>144,145</sup> 2) Soxhlet Extraction, Gas Chromatographic Method <sup>146,147</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic Method <sup>148,149</sup>
16	DDT	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>150,151</sup> 2) Soxhlet Extraction, Gas Chromatographic Method <sup>152,153</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic Method <sup>154,155</sup>

วิธีตรวจ  
(กรมโรงงานอุตสาหกรรม)  
(กรมควบคุมมลพิษ)

ลำดับที่	สารเคมี	วิธีการตรวจ
17	Dieldrin	2) Soxhlet Extraction, Gas Chromatographic Method <sup>156,157</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic Method <sup>158,159</sup> 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>160,161</sup> 2) Soxhlet Extraction, Gas Chromatographic Method <sup>162,163</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic Method <sup>164,165</sup>
18	Endrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>166,167</sup> 2) Soxhlet Extraction, Gas Chromatographic Method <sup>168,169</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic Method <sup>170,171</sup>
19	Heptachlor	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>172,173</sup> 2) Soxhlet Extraction, Gas Chromatographic Method <sup>174,175</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic Method <sup>176,177</sup>
20	LEAD	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>178,179</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>180,181</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>182,183</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>184,185</sup>
21	Endrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>186,187</sup> 2) Soxhlet Extraction, Gas Chromatographic Method <sup>188,189</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic Method <sup>190,191</sup>
22	Mercury	1) Waste Extraction, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>192,193</sup>

วิธีตรวจ  
(กรมโรงงานอุตสาหกรรม)  
(กรมควบคุมมลพิษ)


ลำดับที่	สารเคมี	วิธีการตรวจ
23	Methoxychlor	2) Waste Extraction, Thermal Decomposition Amalgamation and Atomic Absorption Spectrometric Method <sup>194,195</sup> 3) Waste Extraction, Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method <sup>196,197</sup> 4) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>198,199</sup> 5) Thermal Decomposition Amalgamation and Atomic Absorption Spectrometric Method <sup>200,201</sup> 6) Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method <sup>202,203</sup>
24	Mirex	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>204,205</sup> 2) Soxhlet Extraction, Gas Chromatographic Method <sup>206,207</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic Method <sup>208,209</sup>
25	Molybdenum	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>210,211</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>212,213</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>214,215</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>216,217</sup>
26	Nickel	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>218,219</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>220,221</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>222,223</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>224,225</sup>


วิธีตรวจ  
(กรมโรงงานอุตสาหกรรม)  
(กรมควบคุมมลพิษ)

28 Peritrichlophenol


Figure 125.100

3. *9. Benzalanthracene.*  
(นาฬิกาทราย) (นาฬิกาทราย) (นาฬิกาทราย)  
[The text is partially obscured and appears to be a list of items.]

  
 (សម្តេចនាយករដ្ឋមន្ត្រី)  
 រាជធានីភ្នំពេញ


 a) Digestion...  
 (Mentoring and Mentoring)  
 Ministry of Education, Culture and Sport of the Republic of Serbia

26 Carbon tetrachloride

Mass Spectrometric Method<sup>(14,20)</sup>  
  
 (အမာလိကျွန်း မှီတည်စုကိုး)  
*Phenanthrene-1-carboxylic acid*

71 Hexachlorobenzene

Signature  
(Name of the person)  
Date: / /

  
 (นายวิชาญจน์ นิลธำรงกิจ)  
 ผู้อำนวยการศูนย์วิจัยและพัฒนาการเพาะเลี้ยงสัตว์น้ำจืด

30/04/2019  
[Signature]  
[Signature]  
[Signature]

ទំព័រ 115 2,4,6-Trichlorophenol  
 (សារធាតុបំបាត់បំបាត់)  
 (សារធាតុបំបាត់បំបាត់)

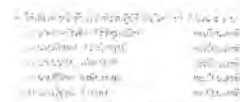
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(ហេតុការណ៍ ២៨ ឧសភា ២០២២)  
 (ផ្ទះលេខ ១២៣ ផ្លូវលេខ ១២៣ ភូមិ ១២៣ សង្កាត់ ១២៣ ខណ្ឌ ១២៣ រាជធានី ភ្នំពេញ)  
 ចុះហត្ថលេខា និង ត្រា

អំពីការប្រើប្រាស់ប្រព័ន្ធគ្រប់គ្រងធនធាន (HRM) ក្នុងក្រុមហ៊ុន



Submitted: 2009-07-20

1. 2015年12月31日，甲公司“应付账款”科目贷方余额为100万元，其中明细科目贷方余额为120万元，借方余额为20万元；“预付账款”科目借方余额为30万元，其中明细科目借方余额为40万元，贷方余额为10万元。不考虑其他因素，甲公司12月31日资产负债表中“应付账款”项目的金额为（ ）万元。

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 အိပ်ရာနှင့် အိပ်ရာနှင့်

```

>all(cores) <- TRUE
>get_mig <- MIGRATE::migrate(cores, n=100, f=1)
>WT <- get_mig$wt
>ASPT <- get_mig$aspt
>get_mig$wt <- get_mig$aspt <- NULL

```

[illegible]

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ติดต่อเรา

