

เอกสารสอบเทียบอุปกรณ์เครื่องมือห้องปฏิบัติการ
บริษัท เซ้าเทิร์นไทยคอนสตรัค จำกัด



PREMIER SYSTEM ENGINEERING CO., LTD.

123 Moo 8 Kanjanavanit Rd., Banpru, Hatyai, Songkhla 90250

E-mail : pse-cal@sriranggroup.com ,Fax. : (074)222912 Tel. : 084-2148162, 084-2148165, 074-222900-9

CALIBRATION CERTIFICATE

CERTIFICATE No. : T26-1279

CSR No. : 260511

Page : 1 of 3

Customer : Southern Thai Consulting Co., Ltd.
59/45 Moo5 Srisoontorn, Talang, Phuket
83110

Equipment : COD Reactor

Manufacturer : Lovibond

Model : RD125

Serial No. : 0423/00542

ID. No. : -

Resolution : 1 °C

Instrument Condition : Good Condition

Location of Calibration : Customer Laboratory

Ambient Temperature : (30 ± 15) °C

Relative Humidity : (60 ± 20) %

Date of Received : 7-May-2026

Date of Calibration : 7-May-2026

Date of Issued : 11-May-2026

APPROVED

Calibrated By : Mr. Athiwat Supacheewa
(Temperature Supervisor)

() MR. ATTAPOL JUNTASURAT / Calibration Engineer

This certificate may not be reproduced other than in full except with the prior written approval of PREMIER SYSTEM ENGINEERING CO., LTD.
The uncertainties are for a confidence probability of approximately 95 % .





CERTIFICATE No. : T26-1279

CSR No. : 260511

Page : 2 of 3

Equipment : COD Reactor
Manufacturer : Lovibond
Model : RD125
Serial No. : 0423/00542
ID. No. : -
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

REFERENCE STANDARD INSTRUMENT :

Instrument Type	Model	Serial No.	Cert. No.	Due Date	Traceability
Digital Thermometer with Sensor	34970 A	MY 44042662	DAT003/0825	31-07-2026	PSE

CALIBRATION METHOD :

This instrument was calibrated under procedure No. PSE.CA.WI.11.160 based on ASTM E145 : 94 (re-approved 2021) as calibration guidelines.

TRACEABILITY :

This Calibration Certificate is traceable to national standards which realize the unit of measurement according to the International System of Unit (SI) through :

PSE : Premier System Engineering Co., Ltd. ,(NSC-TISI-TIS 17025 CALIBRATION 0024)

CALIBRATION RESULTS :

Sensor Installation Diagram



The uncertainties are for a confidence probability of approximately 95 % .
The above results are valid exclusively for calibration sample as mentioned in the report.
This result of calibration was found accurate as shown on date and place of calibration only.



CERTIFICATE NO. : T26-1279

CSR No. : 260511

Page : 3 of 3

Equipment : COD Reactor
Manufacture : Lovibond
Model : RD125
Serial No. : 0423/00542
ID. No. : -
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

CALIBRATION RESULTS : (Cont.)

(/) Without Adjustment

() After Adjustment

Temperature Measurement Accuracy Test

The measurement results of the COD Reactor and associates are reported in the manner as shown below

Cal Point (°C)	Measured Standard Temperature (°C) at Spread Locations									Uncertainty (± °C)
	#1	#2	#3	#4	#5	#6	#7	#8	#9	
150	150.753	150.439	149.034	151.036	151.064	151.362	151.430	151.046	148.679	0.21
	#10	#11	#12	#13	#14	#15	#16	#17	#18	
	150.421	150.212	151.745	151.545	151.445	150.057	150.774	150.723	151.535	
	#19	#20	#21	#22	#23	#24				
	151.542	150.907	151.560	151.077	150.774	150.723				

COD Reactor Performance Result

The performance of the COD Reactor are reported as shown below

Cal Point (°C)	UUC Setting (°C)	UUC Reading (°C)	Block Stability (± °C)
150	150	-	0.13

UUC : Unit Under Calibration

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

The above results are valid exclusively for calibration sample as mentioned in the report

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

-- End --



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CALIBRATION CERTIFICATE

CERTIFICATE No. : T26-1280

CSR No. : 260511

Page : 1 of 4

Customer : Southern Thai Consulting Co., Ltd.
59/45 Moo5 Srisoontorn, Talang, Phuket
83110

Equipment : Incubator

Manufacturer : ACCUPLUS

Model : I250

Serial No. : 0408-0415-0034

ID. No. : -

Resolution : 0.1 °C

Instrument Condition : Good Condition

Location of Calibration : Customer Laboratory

Ambient Temperature : (30 ± 15) °C

Relative Humidity : (60 ± 20) %

Date of Received : 7-May-2026

Date of Calibration : 7-May-2026

Date of Issued : 11-May-2026

APPROVED

Calibrated By : Mr. Athiwat Supacheewa
(Temperature Supervisor)

(/) MR. PIYAPONG RATTANAKAN / Calibration Manager
() MR. ATTAPOL JUNTASURAT / Calibration Engineer

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CERTIFICATE No. : T26-1280

CSR No. : 260511

Page : 2 of 4

Equipment : Incubator
Manufacturer : ACCUPLUS
Model : I250
Serial No. : 0408-0415-0034
ID. No. : -
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

REFERENCE STANDARD INSTRUMENT :

Instrument Type	Model	Serial No.	Cert. No.	Due Date	Traceability
Digital Thermometer with Sensor	34970 A	MY 44042662	DAT003/0825	31-07-2026	PSE

CALIBRATION METHOD :

This instrument was calibrated under procedure No. PSE.CA.WI.11.160 based on ASTM E145 : 94 (re-approved 2021) as calibration guidelines.

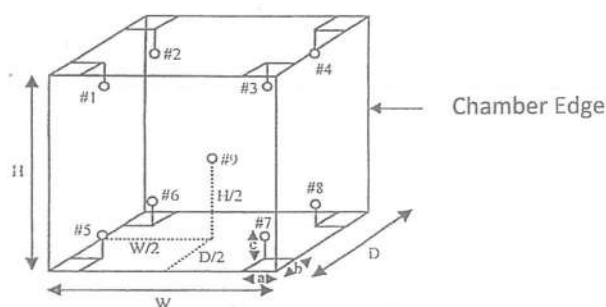
TRACEABILITY :

This Calibration Certificate is traceable to national standards which realize the unit of measurement according to the International System of Unit (SI) through :

PSE : Premier System Engineering Co., Ltd. ,(NSC-TISI-TIS 17025 CALIBRATION 0024)

CALIBRATION RESULTS :

Sensor Installation Diagram



Dimension of the chamber : $W \times H \times D = 39.5 \times 110 \times 50.5$ cm

Sensor Installation : $a \times b \times c = 5 \times 5 \times 5$ cm

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

The above results are valid exclusively for calibration sample as mentioned in the report.

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



CERTIFICATE NO. : T26-1280

CSR No. : 260511

Page : 3 of 4

Equipment : Incubator
Manufacture : ACCUPLUS
Model : I250
Serial No. : 0408-0415-0034
ID. No. : -
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

CALIBRATION RESULTS : (Cont.)

(/) Without Adjustment

() After Adjustment

Temperature Measurement Accuracy Test

The measurement results of the incubator and associates are reported in the manner as shown below

Cal Point (°C)	Measured Standard Temperature (°C) at Spread Locations									Uncertainty (± °C)
	#1	#2	#3	#4	#5	#6	#7	#8	Ref. 9	
20	20.483	20.515	20.478	20.423	20.561	20.450	20.444	20.423	20.475	0.42

Incubator Performance Result

The performance of the incubator are reported as shown below

Cal Point (°C)	UUC Setting (°C)	UUC Reading (°C)	Chamber Stability (± °C)	Chamber Uniformity (± °C)	Overall Variation (± °C)
20	20.0	20.0	0.13		

UUC : Unit Under Calibration

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

The above results are valid exclusively for calibration sample as mentioned in the report.

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

PSE.CA.AP.11.015-161124 R.04

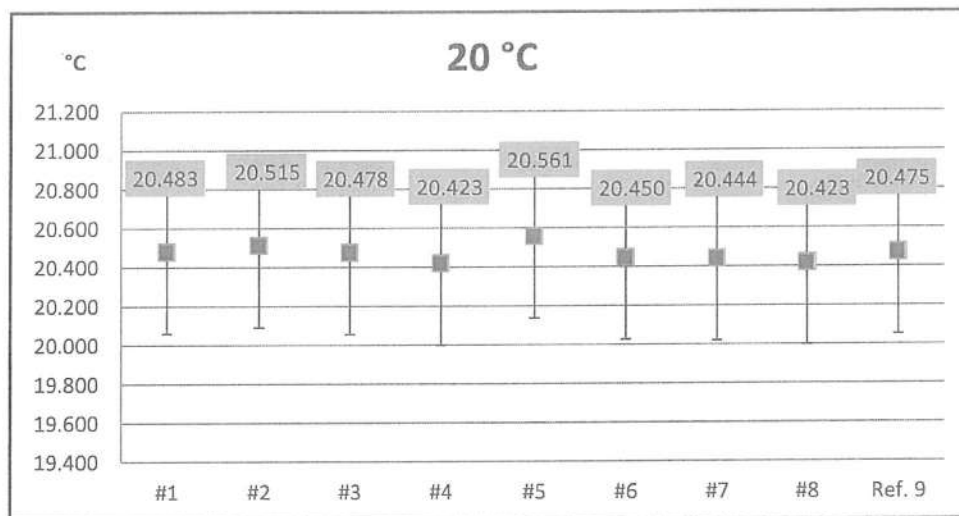


CERTIFICATE NO. : T26-1280

CSR No. : 260511

Page : 4 of 4

Report Graph



The above results are valid exclusively for calibration sample as mentioned in the

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

-- End --



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NSC-TISI-TIS 17025
CALIBRATION 0024

CALIBRATION CERTIFICATE

CERTIFICATE No. : T26-1282

CSR No. : 260511

Page : 1 of 4

Customer : Southern Thai Consulting Co., Ltd.
59/45 Moo5 Srisoontorn, Talang, Phuket
83110

Equipment : Water Bath

Manufacturer : Memmert

Model : WNB22

Serial No. : L522.1030

ID. No. : -

Resolution : 0.1 °C

Instrument Condition : Good Condition

Location of Calibrator : Customer Laboratory

Ambient Temperature : $(30 \pm 10) ^\circ\text{C}$

Relative Humidity : $(50 \pm 20) \%$

Date of Received : 7-May-2026

Date of Calibration : 7-May-2026

Date of Issued : 11-May-2026

APPROVED

Calibrated By : Mr. Athiwat Supacheewa
(Temperature Supervisor)

() MR. PIYAPONG RATTANAKAN / Calibration Manager
() MR. ATTAPOL JUNTASURAT / Calibration Engineer

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





CERTIFICATE No. : T26-1282

CSR No. : 260511

Page : 2 of 4

Equipment : Water Bath
Manufacturer : Memmert
Model : WNB22
Serial No. : L522.1030
ID. No. : -
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

REFERENCE STANDARD INSTRUMENT :

Instrument Type	Model	Serial No.	Cert. No.	Due Date	Traceability
Digital Thermometer with Sensor	34970 A	MY 44042662	DAT003W/0825	31-07-2026	PSE

CALIBRATION METHOD :

This instrument was calibrated under procedure No. PSE.CA.WI.11.161 based on ASTM E715 : 80 (re-approved 2022) as calibration guidelines.

TRACEABILITY :

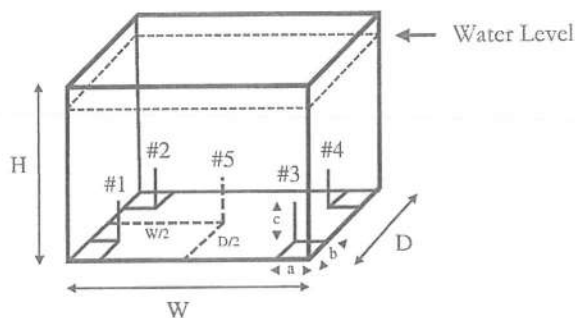
This Calibration Certificate is traceable to national standards which realize the unit of measurement according to the International System of Unit (SI) through :

PSE : Premier System Engineering Co., Ltd. ,(NSC-TISI-TIS 17025 CALIBRATION 0024)

CALIBRATION RESULTS :

(/) Without Adjustment () After Adjustment

Sensor Installation Diagram



Dimension of the chamber : $W \times H \times D = 35 \times 22 \times 29$ cm
Sensor Installation : $a \times b \times c = 5 \times 5 \times 5$ cm

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

The above results are valid exclusively for calibration sample as mentioned in the report.

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



CERTIFICATE NO. : T26-1282

CSR No. : 260511

Page : 3 of 4

Equipment : Water Bath
Manufacture : Memmert
Model : WNB22
Serial No. : L522.1030
ID. No. : -
Date of Received : 7-May-2026
Date of Received : 7-May-2026

CALIBRATION RESULTS : (Cont.)

(/) Without Adjustment

() After Adjustment

Temperature Measurement Accuracy Test

The measurement results of the water bath and associates are reported in the manner as shown below

Cal Point (°C)	Measured Standard Temperature (°C) at Spread Locations					Uncertainty (± °C)
	#1	#2	#3	#4	#5	
85	84.525	84.466	84.587	84.498	84.500	0.18
95	94.607	94.569	94.750	94.625	94.576	0.19

Water Bath Performance Result

The performance of the water bath are reported as shown below

Cal Point (°C)	UUC Setting (°C)	UUC Reading (°C)	Water Bath Stability (± °C)	Water Bath Uniformity (± °C)	Overall Variation (± °C)
85	85.0	85.0	0.053	0.11	0.20
95	95.0	95.0	0.067	0.21	0.21

UUC : Unit Under Calibration

The uncertainty is not combine uniformity of the water bath

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

The above results are valid exclusively for calibration sample as mentioned in the r

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

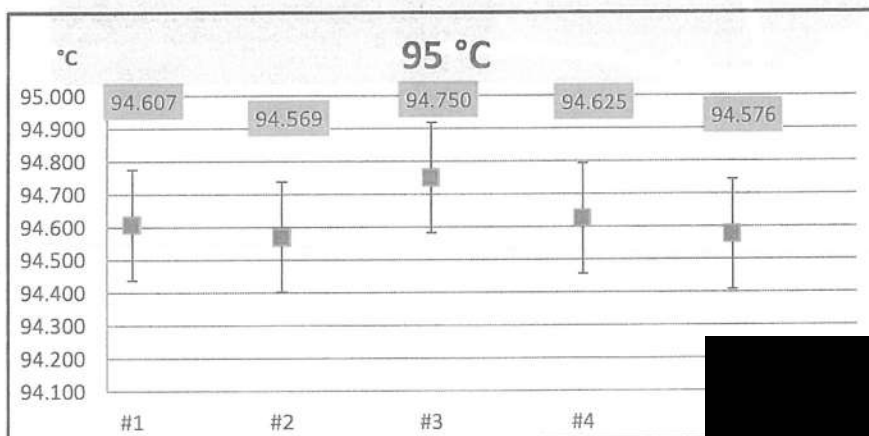
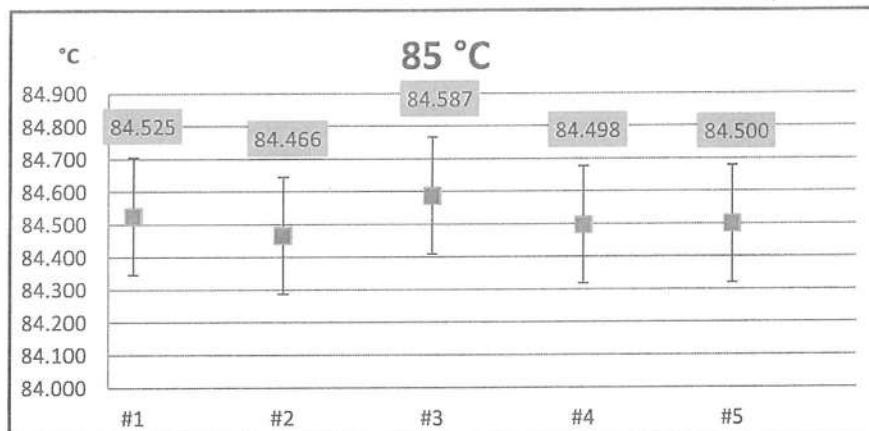


CERTIFICATE NO. : T26-1282

CSR No. : 260511

Page : 4 of 4

Report Graph



The above results are valid exclusively for calibration sample as mentioned in the

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

-- End --



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CALIBRATION CERTIFICATE

CERTIFICATE No. : T26-1283

CSR No. : 260511

Page : 1 of 4

Customer : Southern Thai Consulting Co., Ltd.
59/45 Moo5 Srisoontorn, Talang, Phuket
83110

Equipment : Refrigerator

Manufacturer : SANDEN INTERCOOL

Model : SEA-0405

Serial No. : SEA0405-191200194

ID. No. : -

Resolution : -

Instrument Condition : Good Condition

Location of Calibration : Customer Laboratory

Ambient Temperature : $(30 \pm 15) ^\circ\text{C}$

Relative Humidity : $(60 \pm 20) \%$

Date of Received : 7-May-2026

Date of Calibration : 7-May-2026

Date of Issued : 11-May-2026

APPROVE

Calibrated By : Mr. Athiwat Supacheewa
(Temperature Supervisor)

(/) MR. PIYAPONG RATTANAKAN / Calibration Manager
(/) MR. ATTAPOL JUNTASURAT / Calibration Engineer

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





CERTIFICATE No. : T26-1283

CSR No. : 260511

Page : 2 of 4

Equipment : Refrigerator
Manufacturer : SANDEN INTERCOOL
Model : SEA-0405
Serial No. : SEA0405-191200194
ID. No. : -
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

REFERENCE STANDARD INSTRUMENT :

Instrument Type	Model	Serial No.	Cert. No.	Due Date	Traceability
Digital Thermometer with Sensor	34970 A	MY 44042662	DAT003/0825	31-07-2026	PSE

CALIBRATION METHOD :

This instrument was calibrated under procedure No. PSE.CA.WI.11.160 based on ASTM E145 : 94 (re-approved 2021) as calibration guidelines.

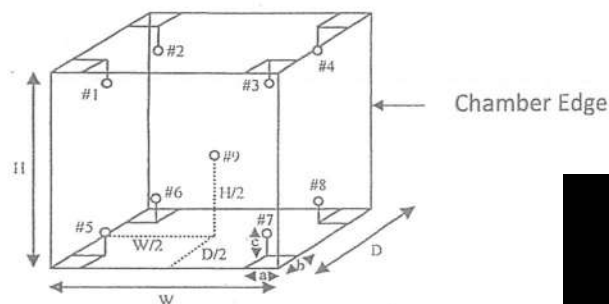
TRACEABILITY :

This Calibration Certificate is traceable to national standards which realize the unit of measurement according to the International System of Unit (SI) through :

PSE : Premier System Engineering Co., Ltd. ,(NSC-TISI-TIS 17025 CALIBRATION 0024)

CALIBRATION RESULTS :

Sensor Installation Diagram



Dimension of the chamber : $W \times H \times D = 110 \times 120 \times 48$ cm
Sensor Installation : $a \times b \times c = 5 \times 5 \times 5$ cm

The uncertainties are for a confidence probability of approximately 95 % .
The above results are valid exclusively for calibration sample as mentioned in the report.
This result of calibration was found accurate as shown on date and place of calibration only.



CERTIFICATE NO. : T26-1283

CSR No. : 260511

Page : 3 of 4

Equipment : Refrigerator
Manufacture : SANDEN INTERCOOL
Model : SEA-0405
Serial No. : SEA0405-191200194
ID. No. : -
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

CALIBRATION RESULTS : (Cont.)

(/) Without Adjustment

() After Adjustment

Temperature Measurement Accuracy Test

The measurement results of the refrigerator and associates are reported in the manner as shown below

Cal Point (°C)	Measured Standard Temperature (°C) at Spread Locations									Uncertainty (± °C)
	#1	#2	#3	#4	#5	#6	#7	#8	Ref. 9	
4	4.176	3.905	3.866	3.869	3.801	3.804	4.106	3.937	3.852	1.8

Refrigerator Performance Result

The performance of the refrigerator are reported as shown below

Cal Point (°C)	UUC Setting (°C)	UUC Reading (°C)	Chamber Stability (± °C)	Chamber Uniformity (± °C)	Overall Variation (± °C)
4	4	-	1.4	2.1	3.0

UUC : Unit Under Calibration

The uncertainties are for a confidence probability of approximately 95 %

The above results are valid exclusively for calibration sample as mentioned in the report.

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

PSE.CA.AP.11.015-161124 R.04

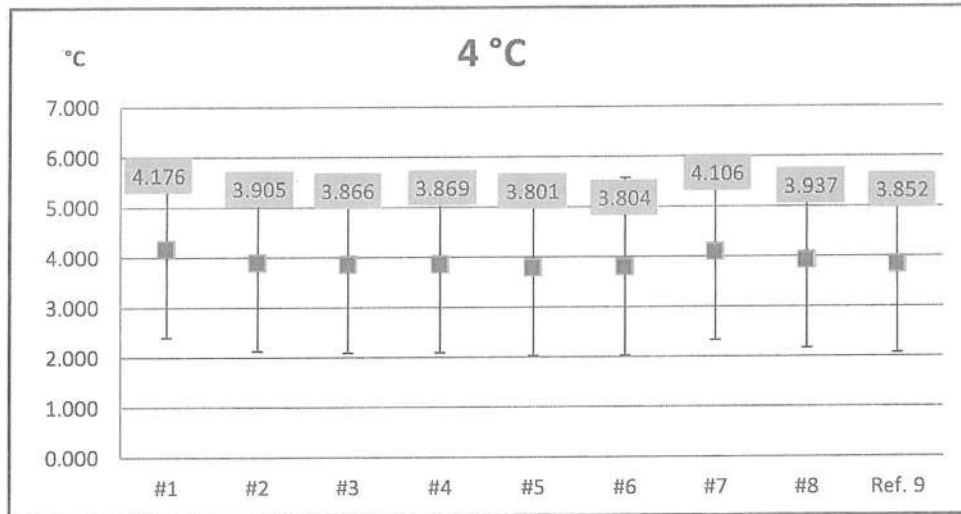


CERTIFICATE NO. : T26-1283

CSR No. : 260511

Page : 4 of 4

Report Graph



The above results are valid exclusively for calibration sample as mentioned in the report.

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

-- End --



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NSC-TISI-TIS 17025
CALIBRATION 0024

CALIBRATION CERTIFICATE

CERTIFICATE No. : T26-1284

CSR No. : 260511

Page : 1 of 4

Customer : Southern Thai Consulting Co., Ltd.
59/45 Moo5 Srisoontorn, Talang, Phuket
83110

Equipment : Hot Air Oven

Manufacturer : Binder

Model : FD 56

Serial No. : 20220000017352

ID. No. : -

Resolution : 1 °C

Instrument Condition : Good Condition

Location of Calibration : Customer Laboratory

Ambient Temperature : (30 ± 15) °C

Relative Humidity : (60 ± 20) %

Date of Received : 7-May-2026

Date of Calibration : 7-May-2026

Date of Issued : 11-May-2026

APPROVED

Calibrated By : Mr. Athiwat Supacheewa
(Temperature Supervisor)

(/) MR. PIYAPONG RATTANAKAN / Calibration Manager
() MR. ATTAPOL JUNTASURAT / Calibration Engineer

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PSE.CA.AP.11.015-161124 R.04



CERTIFICATE No. : T26-1284

CSR No. : 260511

Page : 2 of 4

Equipment : Hot Air Oven
Manufacturer : Binder
Model : FD 56
Serial No. : 20220000017352
ID. No. : -
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

REFERENCE STANDARD INSTRUMENT :

Instrument Type	Model	Serial No.	Cert. No.	Due Date	Traceability
Digital Thermometer with Sensor	34970 A	MY 44042662	DAT003/0825	31-07-2026	PSE

CALIBRATION METHOD :

This instrument was calibrated under procedure No. PSE.CA.WI.11.160 based on ASTM E145 : 94 (re-approved 2021) as calibration guidelines.

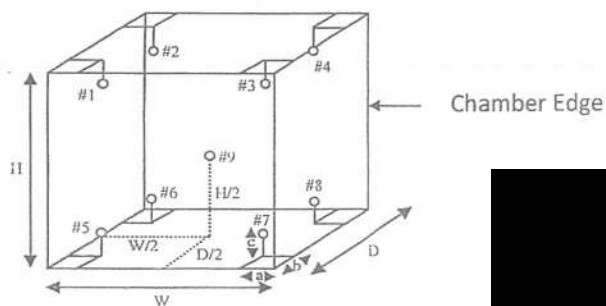
TRACEABILITY :

This Calibration Certificate is traceable to national standards which realize the unit of measurement according to the International System of Unit (SI) through :

PSE : Premier System Engineering Co., Ltd. ,(NSC-TISI-TIS 17025 CALIBRATION 0024)

CALIBRATION RESULTS :

Sensor Installation Diagram



Dimension of the chamber : $W \times H \times D = 40 \times 40 \times 30$
Sensor Installation : $a \times b \times c = 5 \times 5 \times 5$

The uncertainties are for a confidence probability of approximately 95 % .
The above results are valid exclusively for calibration sample as mentioned in the report.
This result of calibration was found accurate as shown on date and place of calibration only.



CERTIFICATE NO. : T26-1284

CSR No. : 260511

Page : 3 of 4

Equipment : Hot Air Oven
Manufacture : Binder
Model : FD 56
Serial No. : 20220000017352
ID. No. : -
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

CALIBRATION RESULTS : (Cont.)

(/) Without Adjustment

() After Adjustment

Temperature Measurement Accuracy Test

The measurement results of the hot air oven and associates are reported in the manner as shown below

Cal Point (°C)	Measured Standard Temperature (°C) at Spread Locations									Uncertainty (± °C)
	#1	#2	#3	#4	#5	#6	#7	#8	Ref. 9	
104	103.975	103.813	103.817	103.958	103.985	103.925	103.884	103.713	103.860	0.70
180	180.245	179.920	178.698	179.002	179.631	178.922	177.836	178.646	179.878	1.2

Hot Air Oven Performance Result

The performance of the hot air oven are reported as shown below

Cal Point (°C)	UUC Setting (°C)	UUC Reading (°C)	Chamber Stability (± °C)	Chamber Uniformity (± °C)	Overall Variation (± °C)
104	104	104	0.082	0.19	0.37
180	180	180	0.65	2.4	3.17

UUC : Unit Under Calibration

The uncertainties are for a confidence probability of approximately

The above results are valid exclusively for calibration sample as m

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

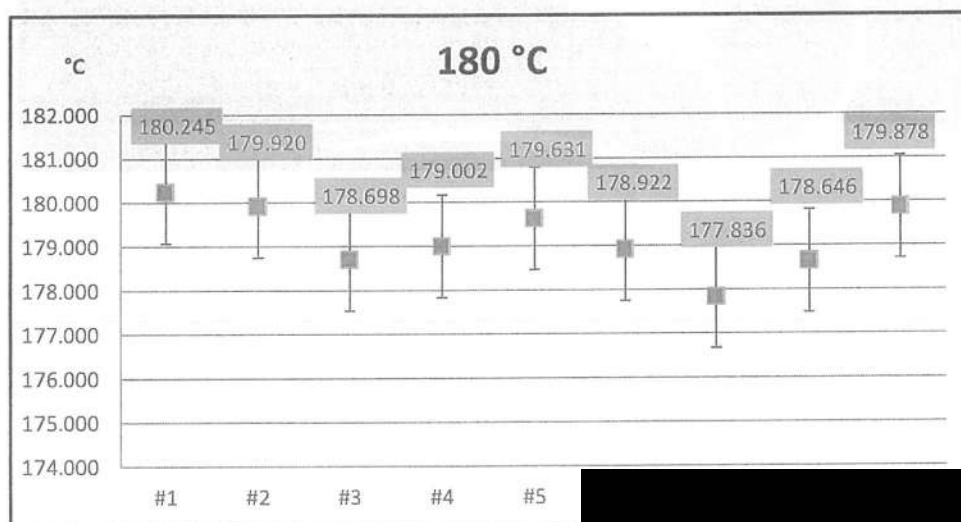
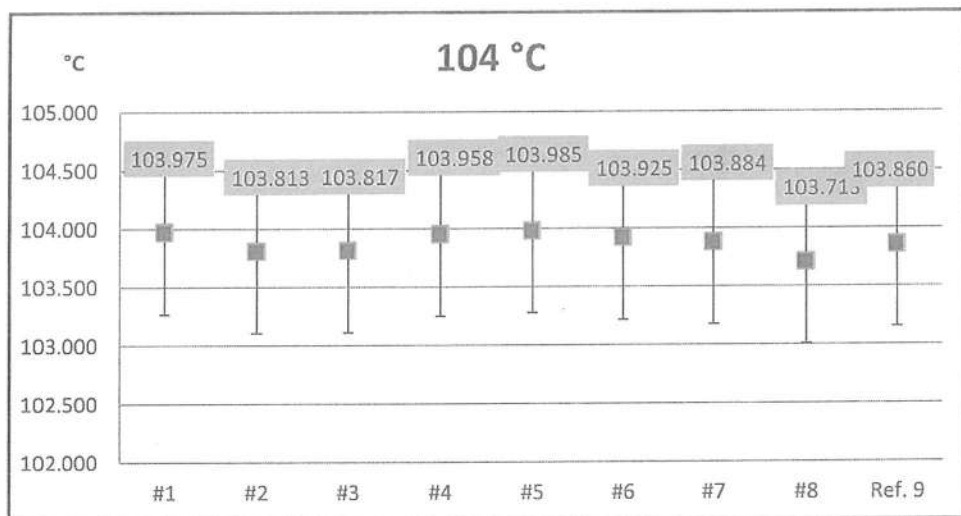


CERTIFICATE NO. : T26-1284

CSR No. : 260511

Page : 4 of 4

Report Graph



The above results are valid exclusively for calibration sample as mentioned.

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

-- End --



PREMIER SYSTEM ENGINEERING CO., LTD.

123 Moo 8 Kanjanavanit Rd., Banpru, Hatyai, Songkhla 90250

E-mail : pse-cal@sriranggroup.com ,Fax. : (074)222912 Tel. : 084-2148162, 084-2148165, 074-222900-9



CALIBRATION CERTIFICATE

CERTIFICATE No. : M26-0664

CSR No. : 260511

Page : 1 of 3

Customer : Southern Thai Consulting Co., Ltd.
59/45 Moo5 Srisoontorn, Talang, Phuket
83110

Equipment : Analytical Balance

Manufacturer : Sartorius

Model : PRACTUM2101-1S

Serial No. : 0033508410

ID. No. : -

Capacity : 2100 g

Resolution : 0.1 g

Instrument Condition : Good Condition

Location of Calibration : Customer Laboratory

Ambient Temperature : $(30 \pm 10) ^\circ\text{C}$

Relative Humidity : $(50 \pm 20) \%$

Barometric Pressure : (1010 ± 10) hPa

Date of Received : 7-May-2026

Date of Calibration : 7-May-2026

Date of Issued : 11-May-2026

APPROVED

APPROVED SIGNATORY

Calibrated By : Mr. Bowornnan Langlea
(Calibration Engineer)

(/) MR. PIYAPONG RATTANAKAN / Calibration Manager
() MR. ATTAPOL JUNTASURAT / Calibration Engineer

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





CERTIFICATE No. : M26-0664

CSR No. : 260511

Page : 2 of 3

Equipment : Analytical Balance
Manufacturer : Sartorius
Model : PRACTUM2101-1S
Serial No. : 0033508410
ID. No. : -
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

REFERENCE STANDARD INSTRUMENT :

Instrument Type	Normal Value	Serial No.	Cert. No.	Due Date	Traceability
Standard Weight Set	1 mg ~ 500 g	-	M2511127S	20-11-2026	TCS

CALIBRATION METHOD :

This instrument was calibrated under procedure No. PSE.CA.WI.11.015 based on UKAS LAB 14 : 2022 as calibration guidelines.

TRACEABILITY :

This Calibration Certificate is traceable to national standards which realize the unit of measurement according to the International System of Unit (SI) through :
TCS : Thai Calibration Services Co.,Ltd. , (NSC-TISI-TIS 17025 CALIBRATION 0189)

CALIBRATION RESULTS :

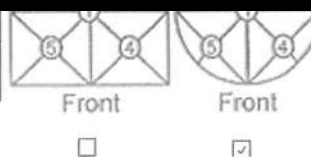
(/) Without Adjustment () After Adjustment

DETERMINATION OF THE STANDARD DEVIATION OF WEIGHT MACHINE (N=5)

Nominal Value (g)	Standard Deviation (g)
400	0.10

EFFECT OF OFF CENTER LOADING AT 200 g

Position					Maximum Difference
1	2	3	4	5	
199.8	196.3	195.1	199.5	200.7	4.7



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



CERTIFICATE NO. : M26-0664

CSR No. : 260511

Page : 3 of 3

Equipment : Analytical Balance
Manufacturer : Sartorius
Model : PRACTUM2101-1S
Serial No. : 0033508410
ID. No. : -
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

CALIBRATION RESULTS : (Cont.)

(/) Without Adjustment

() After Adjustment

EFFECT OF TARE AT 200 g

Nominal Value (g)	UUC* Reading (g)	Correction (g)
40	40.4	-0.40
80	80.5	-0.50
120	120.3	-0.30
160	160.3	-0.30
200	200.1	-0.10

ERROR OF INDICATION FROM NOMINAL VALUE

Nominal Value (g)	UUC* Reading (g)	Correction (g)	Uncertainty ($\pm$ g)	Coverage Factor (k)
* Unload	0.0	0.00	0.29	2.65
0.5	0.5	0.00	0.29	2.65
1	1.0	0.00	0.29	2.65
2	2.0	0.00	0.29	2.65
5	5.0	0.00	0.29	2.65
10	10.0	0.00	0.29	2.65
20	20.0	0.00	0.29	2.65
40	40.0	0.00	0.29	2.65
80	79.9	0.10	0.29	2.65
120	119.9	0.10	0.29	2.65
160	159.8	0.20	0.29	2.65
200	199.8	0.20	0.29	2.65
240	239.7	0.30	0.29	2.65
280	279.7	0.30	0.25	2.65
320	319.7	0.30	0.25	2.65
360	359.6	0.40	0.25	2.65
400	399.6	0.40	0.25	2.65

UUC : Unit Under Calibration

The table as per (*) marked are not NSC-ONSC accreditation scope.

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

The above results are valid exclusively for calibration sample as mentioned in the report.

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

-- End --



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123 Moo 8 Kanjanavanit Rd., Banpru, Hatyai, Songkhla 90250

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NSC-TISI-TIS 17025
CALIBRATION 0024

CALIBRATION CERTIFICATE

CERTIFICATE No. : M26-0665

CSR No. : 260511

Page : 1 of 3

Customer : Southern Thai Consulting Co., Ltd.
59/45 Moo5 Srisoontorn, Talang, Phuket
83110

Equipment : Analytical Balance

Manufacturer : Sartorius

Model : PRACTUM224-1S

Serial No. : 0035106544

ID. No. : -

Capacity : 220 g

Resolution : 0.0001 g

Instrument Condition : Good Condition

Location of Calibration : Customer Laboratory

Ambient Temperature : $(30 \pm 10) ^\circ\text{C}$

Relative Humidity : $(50 \pm 20) \%$

Barometric Pressure : (1010 ± 10)

Date of Received : 7-May-2026

Date of Calibration : 7-May-2026

Date of Issued : 11-May-2026

APPROV

Calibrated By : Mr. Bowornnan Langlea
(Calibration Engineer)

() MR. PIYAPONG KATTANAKAN / Calibration Manager
() MR. ATTAPOL JUNTASURAT / Calibration Engineer

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





CERTIFICATE No. : M26-0665

CSR No. : 260511

Page : 2 of 3

Equipment : Analytical Balance
Manufacturer : Sartorius
Model : PRACTUM224-1S
Serial No. : 0035106544
ID. No. : -
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

REFERENCE STANDARD INSTRUMENT :

Instrument Type	Normal Value	Serial No.	Cert. No.	Due Date	Traceability
Standard Weight Set	1 mg ~ 500 g	-	M2511127S	20-11-2026	TCS

CALIBRATION METHOD :

This instrument was calibrated under procedure No. PSE.CA.WI.11.015 based on UKAS LAB 14 : 2022
as calibration guidelines.

TRACEABILITY :

This Calibration Certificate is traceable to national standards which realize the unit of measurement
according to the International System of Unit (SI) through :
TCS : Thai Calibration Services Co.,Ltd. , (NSC-TISI-TIS 17025 CALIBRATION 0189)

CALIBRATION RESULTS :

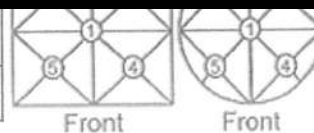
(/) Without Adjustment () After Adjustment

DETERMINATION OF THE STANDARD DEVIATION OF WEIGHT MACHINE

Nominal Value (g)	Standard Deviation (g)
200	0.00005

EFFECT OF OFF CENTER LOADING AT 100 g

Position					Maximum Difference (g)
1	2	3	4	5	
100.0000	100.0001	100.0002	100.0002	100.0000	0.0002



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



CERTIFICATE NO. : M26-0665

CSR No. : 260511

Page : 3 of 3

Equipment : Analytical Balance
Manufacturer : Sartorius
Model : PRACTUM224-1S
Serial No. : 0035106544
ID. No. : -
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

CALIBRATION RESULTS : (Cont.)

(/) Without Adjustment

() After Adjustment

EFFECT OF TARE AT 100 g

Nominal Value (g)	UUC* Reading (g)	Correction (g)
20	20.0000	0.00000
40	40.0000	-0.00002
60	60.0000	0.00003
80	80.0000	0.00003
100	100.0000	0.00009

ERROR OF INDICATION FROM NOMINAL VALUE

Nominal Value (g)	UUC* Reading (g)	Correction (g)	Uncertainty ($\pm$ g)	Coverage Factor (k)
* Unload	0.0000	0.00000	0.00014	2.25
0.01	0.0100	0.00000	0.00014	2.25
0.05	0.0500	0.00000	0.00014	2.25
0.1	0.1000	0.00001	0.00014	2.25
0.5	0.5001	-0.00010	0.00014	2.25
1	0.9999	0.00009	0.00014	2.25
2	2.0000	0.00000	0.00014	2.25
5	4.9999	0.00011	0.00015	2.25
10	10.0000	0.00001	0.00014	2.23
20	20.0001	-0.00010	0.00015	2.21
40	40.0000	-0.00002	0.00016	2.14
60	60.0000	0.00003	0.00017	2.08
80	80.0000	0.00003	0.00018	2.06
100	100.0000	0.00009	0.00018	2.02
120	120.0000	0.00008	0.00026	1.92
140	139.9999	0.00017	0.00026	1.82
160	159.9999	0.00022	0.00026	1.74
180	180.0000	0.00011	0.00028	1.66
200	200.0001	0.00001	0.00029	1.59

UUC : Unit Under Calibration

The table as per (*) marked are not NSC-ONSC accreditation scope.

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

The above results are valid exclusively for calibration sample as mentioned in

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

-- End --



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CALIBRATION CERTIFICATE

CERTIFICATE No. : V26-0993

CSR No. : 260511

Page : 1 of 2

Customer : Southern Thai Consulting Co., Ltd.
59/45 Moo5 Srisoontorn, Talang, Phuket
83110

Equipment : Conductivity

Manufacturer : APERA

Model : EC 8500

Serial No. : EC85001323271005

ID. No. : -

Resolution : 0.1μS/cm, 0.01mS/cm, 0.1mS/cm

Instrument Condition : Good Condition

Location of Calibration : Customer Laboratory

Ambient Temperature : (25 ± 5) °C

Relative Humidity : (55 ± 15) %

Date of Received : 7-May-2026

Date of Calibration : 7-May-2026

Date of Issued : 11-May-2026

APPROVED

Calibrated By : Mr. Settawut Paotong
(Calibration Technician)

(/) MR. PIYAPONG RATTANAKAN / Calibration Manager
() MR. ATTAPOL JUNTASURAT / Calibration Engineer

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



PSE.CA.AP.11.038-161124 R.03



CERTIFICATE NO. : V26-0993

CSR No. : 260511

Page : 2 of 2

Equipment : Conductivity
Manufacturer : APERA
Model : EC 8500
Serial No. : EC85001323271005
ID. No. : -
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

REFERENCE STANDARD INSTRUMENT :

Instrument Type	Nominal Value/Model	Lot No.	Batch. No.	Due Date	Traceability
Conductivity Standard	84 uS/cm	CS8425A1	CS8425A1	28-01-2027	METTLER TOLEDO
Conductivity Standard	12.88 mS/cm	1209497	1209497	02-04-2027	CPA Chem
Conductivity Standard	111.8 mS/cm	6877	6877	03-09-2026	HANNA

CALIBRATION METHOD :

This instrument was calibrated under procedure No. PSE.CA.WI.11.181 based on direct measurement by using certified reference material as calibration guidelines.

TRACEABILITY :

This Calibration Certificate is traceable to national standards which realize the unit of measurement according to the International System of Unit (SI) through :

METTLER TOLEDO : Mettler-Toledo GmbH, Analytical, Im Longacher 44, 8606 Greifensee, Switzerland

CPA Chem : CPA chem Ltd. (ANAB Cert No. AR-1835)

HANNA : Hanna Instruments Inc.

CALIBRATION RESULTS :

(/) Without Adjustment

() After Adjustment

Function : Chemical Measurement

Standard Buffer Solutions ($\mu\text{S/cm}$)	UUC Reading ($\mu\text{S/cm}$)	Correction ($\mu\text{S/cm}$)	Uncertainty ($\pm\mu\text{S/cm}$)	Coverage Factor (k)
* 84.05	84.4	-0.35	1.2	2.00

Standard Buffer Solutions (mS/cm)	UUC Reading (mS/cm)	Correction (mS/cm)	Uncertainty ($\pm \text{mS/cm}$)	Coverage Factor (k)
12.8895	12.87	0.0195	0.18	
* 111.8	112.1	-0.3	0.42	

UUC : Unit Under Calibration

The table as per (*) marked are not NSC-ONSC accreditation scope.

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

The above results are valid exclusively for calibration sample as mentioned in the report.

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

-- End --



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CALIBRATION CERTIFICATE

CERTIFICATE No. : V26-0994

CSR No. : 260511

Page : 1 of 3

Customer : Southern Thai Consulting Co., Ltd.
59/45 Moo5 Srisoontorn, Talang, Phuket
83110

Equipment : pH Meter

Manufacturer : SI Analytics

Model : lab 845

Serial No. : 21021943

ID. No. : -

Resolution : 0.01 pH

Instrument Condition : Good Condition

Location of Calibration : Customer Laboratory

Ambient Temperature : $(25 \pm 3)^{\circ}\text{C}$

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

Date of Received : 7-May-2026

Date of Calibration : 7-May-2026

Date of Issued : 11-May-2026

APPROVED

Calibrated By : Mr. Settawut Paotong
(Calibration Technician)

APPROVED SIGNATORY
() MR. PIYAPONG RATTANAKAN / Calibration Manager
() MR. ATTAPOL JUNTASURAT / Calibration Engineer

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





CERTIFICATE NO. : V26-0994

CSR No. : 260511

Page : 2 of 3

Equipment : pH Meter
Manufacturer : SI Analytics
Model : lab 845
Serial No. : 21021943
ID. No. : -
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

REFERENCE STANDARD INSTRUMENT :

Instrument Type	Nominal Value/Model	Serial No.	Cert. No.	Due Date	Traceability
pH Calibration Standard	4.00	1127311	1127311	28-08-2026	CPA Chem
pH Calibration Standard	7.00	1127312	1127312	28-08-2026	CPA Chem
pH Calibration Standard	10.00	1127313	1127313	28-08-2026	CPA Chem
Temperature/Electrical Calibrator	MC2-TE	10548	CAL0252-26P0032	26-01-2027	RKT

CALIBRATION METHOD :

This instrument was calibrated under procedure No. PSE.CA.WI.11.117 based on direct measurement by using standard voltage calibrator as calibration guidelines.

This instrument was calibrated under procedure No. PSE.CA.WI.11.117 based on direct measurement by using certified reference material (CRM) as calibration guidelines.

TRACEABILITY :

This Calibration Certificate is traceable to national standards which realize the unit of measurement according to the International System of Unit (SI) through :

CPA Chem : CPA chem Ltd. (ANAB Cert No. AR-1835)

RKT : Rockertek (Thailand) Co.,Ltd. , (NSC-TISI-TIS 17025 CALIBRATION 0069)

CALIBRATION RESULTS :**Function : Electrical Measurement**

Applied Voltage (mV)	pH meter Reading (mV)	Correction (mV)	Uncertainty ($\pm$ mV)	Coverage Factor (k)
177.48	178	-0.52	0.60	2.00
0.00	0	0.00	0.59	2.00
-177.48	-177	-0.48	0.60	2.00

Function : Chemical Measurement

Standard Buffer Solutions (pH)	pH meter Reading (pH)	Correction (pH)	Uncertainty ($\pm$ pH)	Coverage Factor (k)
3.986	3.99	-0.004	0.010	2.00
6.988	6.99	-0.002	0.010	2.00
10.010	10.06	-0.050	0.010	2.00

Calibration curve - % off set - mV

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

The above results are valid exclusively for calibration sample as mentioned in the report

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



CERTIFICATE No. : V26-0994

CSR No. : 260511

Page : 3 of 3

Equipment : pH Meter
Manufacturer : SI Analytics
Model : lab 845
Serial No. : 21021943
ID. No. : -
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

REFERENCE STANDARD INSTRUMENT :

Instrument Type	Model	Serial No.	Cert. No.	Due Date	Traceability
Digital Thermometer with Sensor	376	220608721	SDTH-002/1025	27-10-2026	PSE

CALIBRATION METHOD :

In-house method : CA.WT.11.180 comparison with standard thermometer

TRACEABILITY :

This Calibration Certificate is traceable to national standards which realize the unit of measurement according to the International System of Unit (SI) through :

PSE : Premier System Engineering Co., Ltd. ,(NSC-TISI-TIS 17025 CALIBRATION 0024)

CALIBRATION RESULTS : (Cont.)

(/) Without Adjustment

() After Adjustment

Cal Point (°C)	Standard Temperature (°C)	UUC Reading (°C)	Correction (°C)	Uncertainty (±°C)
25	25.16	25.3	-0.14	0.25

UUC : Unit Under Calibration

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

The above results are valid exclusively for calibration sample as mentioned in the report

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

--End--

PSE,CA,AP.11.017-161124 R.04



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CALIBRATION CERTIFICATE

CERTIFICATE No. : T26-1281

CSR No. : 260512

Page : 1 of 4

Customer : Southern Thai Consulting Co., Ltd.
59/45 Moo5 Srisoontorn, Talang, Phuket
83110

Equipment : Hot Air Oven

Manufacturer : Binder

Model : FD 56

Serial No. : 20210000003365

ID. No. : ST64030140

Resolution : 1 °C

Instrument Condition : Good Condition

Location of Calibration : Customer Laboratory

Ambient Temperature : (30 ± 15) °C

Relative Humidity : (60 ± 20) %

Date of Received : 7-May-2026

Date of Calibration : 7-May-2026

Date of Issued : 11-May-2026

APPROVED

Calibrated By : Mr. Athiwat Supachewa
(Temperature Supervisor)

APPROVED SIGNATORY

(/) MR. PIYAPONG RATTANAKAN / Calibration Manager
(/) MR. ATTAPOL JUNTASURAT / Calibration Engineer

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





CERTIFICATE No. : T26-1281

CSR No. : 260512

Page : 2 of 4

Equipment : Hot Air Oven
Manufacturer : Binder
Model : FD 56
Serial No. : 20210000003365
ID. No. : ST64030140
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

REFERENCE STANDARD INSTRUMENT :

Instrument Type	Model	Serial No.	Cert. No.	Due Date	Traceability
Digital Thermometer with Sensor	34970 A	MY 44042662	DAT003/0825	31-07-2026	PSE

CALIBRATION METHOD :

This instrument was calibrated under procedure No. PSE.CA.WI.11.160 based on ASTM E145 : 94 (re-approved 2021) as calibration guidelines.

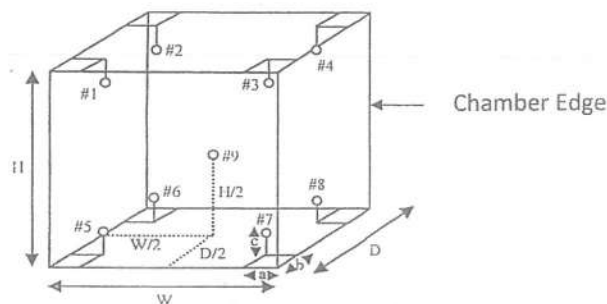
TRACEABILITY :

This Calibration Certificate is traceable to national standards which realize the unit of measurement according to the International System of Unit (SI) through :

PSE : Premier System Engineering Co., Ltd. ,(NSC-TISI-TIS 17025 CALIBRATION 0024)

CALIBRATION RESULTS :

Sensor Installation Diagram



Dimension of the chamber : $W \times H \times D = 40 \times 40 \times 34.5$ cm
Sensor Installation : $a \times b \times c = 5 \times 5 \times 5$ cm

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

The above results are valid exclusively for calibration sample as mentioned in the report

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



CERTIFICATE NO. : T26-1281

CSR No. : 260512

Page : 3 of 4

Equipment : Hot Air Oven
Manufacture : Binder
Model : FD 56
Serial No. : 20210000003365
ID. No. : ST64030140
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

CALIBRATION RESULTS : (Cont.)

(/) Without Adjustment

() After Adjustment

Temperature Measurement Accuracy Test

The measurement results of the hot air oven and associates are reported in the manner as shown below

Cal Point (°C)	Measured Standard Temperature (°C) at Spread Locations									Uncertainty (± °C)
	#1	#2	#3	#4	#5	#6	#7	#8	Ref. 9	
104	104.267	104.021	103.729	103.750	104.162	104.128	103.868	103.771	103.984	0.71
180	183.121	182.442	180.182	179.381	179.713	181.030	178.415	178.299	179.933	1.1

Hot Air Oven Performance Result

The performance of the hot air oven are reported as shown below

Cal Point (°C)	UUC Setting (°C)	UUC Reading (°C)	Chamber Stability (± °C)	Chamber Uniformity (± °C)	Overall Variation (± °C)
104	104	104	0.083	0.35	0.67
180	180	180	0.25	3.5	5.2

UUC : Unit Under Calibration

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

The above results are valid exclusively for calibration sample as mentioned in the report.

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

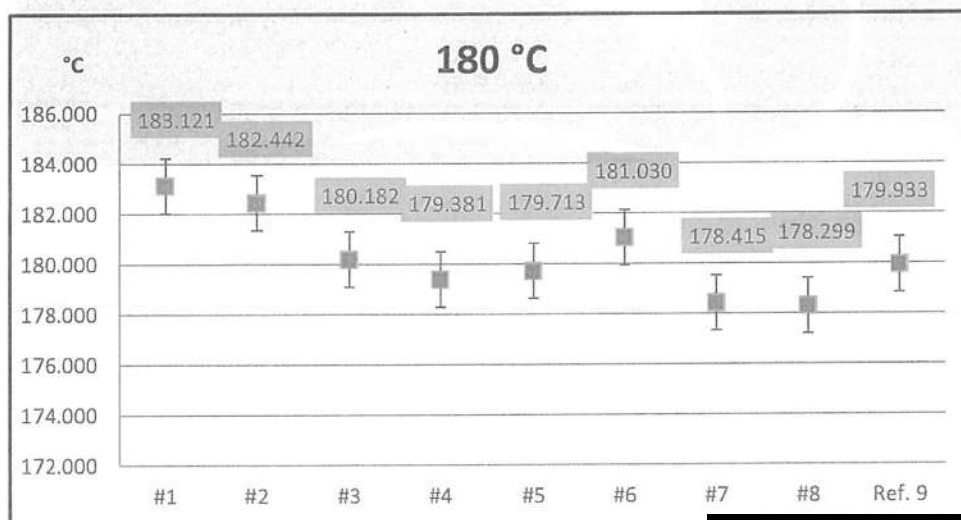
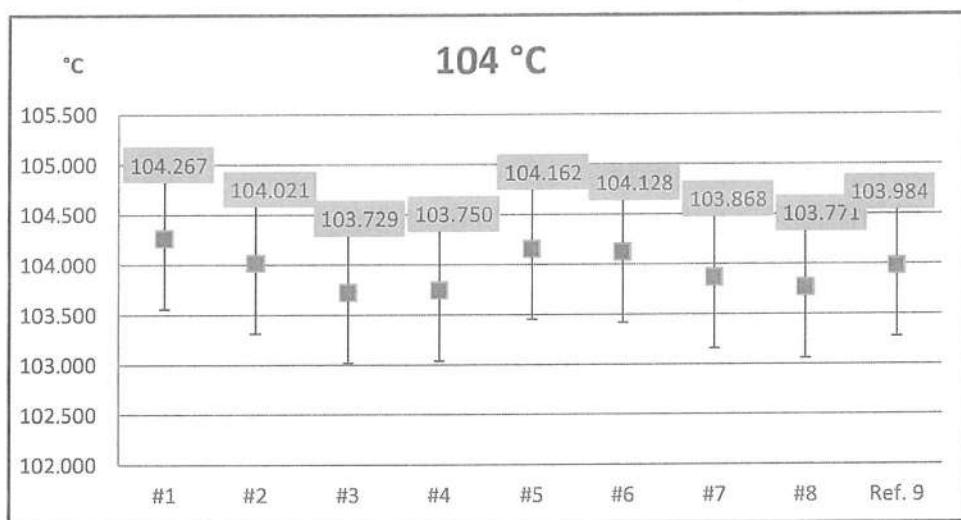


CERTIFICATE NO. : T26-1281

CSR No. : 260512

Page : 4 of 4

Report Graph



The above results are valid exclusively for calibration sample as mentioned in the re

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

-- End --



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CALIBRATION CERTIFICATE

CERTIFICATE No. : T26-1285

CSR No. : 260512

Page : 1 of 4

Customer : Southern Thai Consulting Co., Ltd.
59/45 Moo5 Srisoontorn, Talang, Phuket
83110

Equipment : Water Bath

Manufacturer : Memmert

Model : WNB 22

Serial No. : L519.1143

ID. No. : ST65030144

Resolution : 0.1 °C

Instrument Condition : Good Condition

Location of Calibration : Customer Laboratory

Ambient Temperature : (30 ± 10) °C

Relative Humidity : (50 ± 20) %

Date of Received : 7-May-2026

Date of Calibration : 7-May-2026

Date of Issued : 11-May-2026

APPROVED

Calibrated By : Mr. Athiwat Supacheewa
(Temperature Supervisor)

APPROVED SIGNATORY

(/) MR. PIYAPONG RATTANAKAN / Calibration Manager
() MR. ATTAPOL JUNTASURAT / Calibration Engineer

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





CERTIFICATE No. : T26-1285

CSR No. : 260512

Page : 2 of 4

Equipment : Water Bath
Manufacturer : Memmert
Model : WNB 22
Serial No. : L519.1143
ID. No. : ST65030144
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

REFERENCE STANDARD INSTRUMENT :

Instrument Type	Model	Serial No.	Cert. No.	Due Date	Traceability
Digital Thermometer with Sensor	34970 A	MY 44042662	DAT003W/0825	31-07-2026	PSE

CALIBRATION METHOD :

This instrument was calibrated under procedure No. PSE.CA.WI.11.161 based on ASTM E715 : 80 (re-approved 2022) as calibration guidelines.

TRACEABILITY :

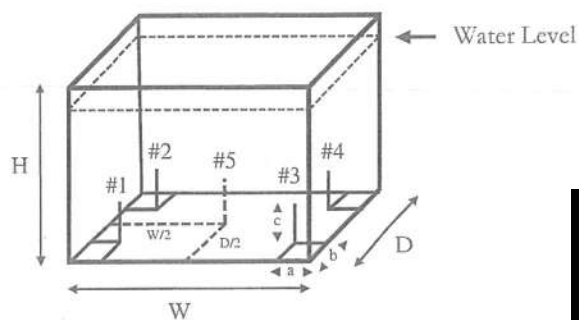
This Calibration Certificate is traceable to national standards which realize the unit of measurement according to the International System of Unit (SI) through :

PSE : Premier System Engineering Co., Ltd. ,(NSC-TISI-TIS 17025 CALIBRATION 0024)

CALIBRATION RESULTS :

(/) Without Adjustment () After Adjustment

Sensor Installation Diagram



Dimension of the chamber : $W \times H \times D = 35 \times 22 \times 29$ cm
Sensor Installation : $a \times b \times c = 5 \times 5 \times 5$ cm

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

The above results are valid exclusively for calibration sample as mentioned in the report.

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



CERTIFICATE NO. : T26-1285

CSR No. : 260512

Page : 3 of 4

Equipment : Water Bath
Manufacture : Memmert
Model : WNB 22
Serial No. : L519.1143
ID. No. : ST65030144
Date of Received : 7-May-2026
Date of Received : 7-May-2026

CALIBRATION RESULTS : (Cont.)

(/) Without Adjustment

() After Adjustment

Temperature Measurement Accuracy Test

The measurement results of the water bath and associates are reported in the manner as shown below

Cal Point (°C)	Measured Standard Temperature (°C) at Spread Locations					Uncertainty (± °C)
	#1	#2	#3	#4	#5	
85	84.546	84.598	84.604	84.484	84.533	0.19
95	94.494	94.523	94.450	94.426	94.429	0.20

Water Bath Performance Result

The performance of the water bath are reported as shown below

Cal Point (°C)	UUC Setting (°C)	UUC Reading (°C)	Water Bath Stability (± °C)	Water Bath Uniformity (± °C)	Overall Variation (± °C)
85	85.0	85.0	0.068	0.14	0.22
95	95.0	95.0	0.095	0.19	0.28

UUC : Unit Under Calibration

The uncertainty is not combine uniformity of the water bath

The uncertainties are for a confidence probability of approximately 95 %

The above results are valid exclusively for calibration sample as mentioned

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

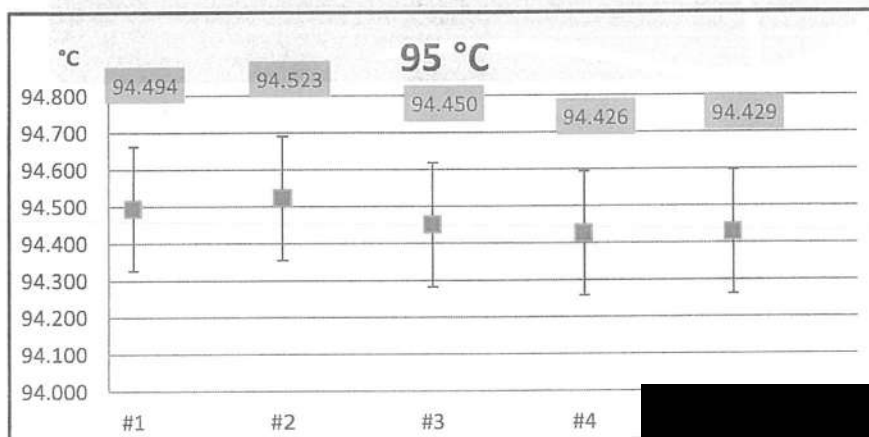
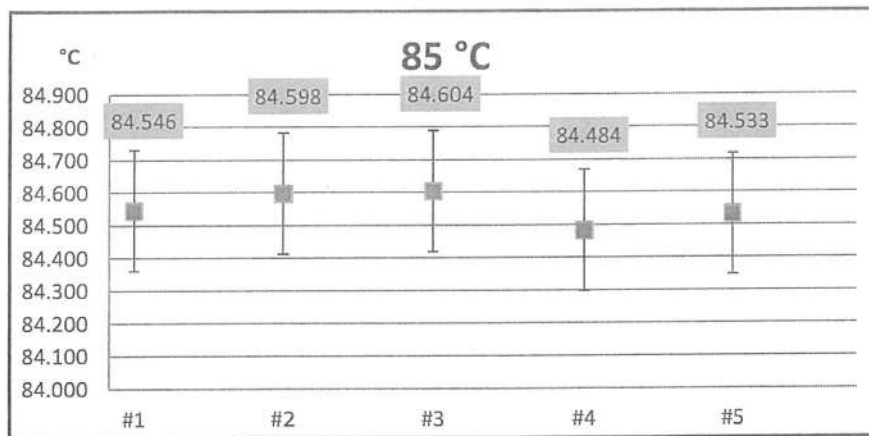


CERTIFICATE NO. : T26-1285

CSR No. : 260512

Page : 4 of 4

Report Graph



The above results are valid exclusively for calibration sample as mentioned.

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

-- End --



PREMIER SYSTEM ENGINEERING CO., LTD.

123 Moo 8 Kanjanavanit Rd., Banpru, Hatyai, Songkhla 90250

E-mail : pse-cal@sriranggroup.com ,Fax. : (074)222912 Tel. : 084-2148162, 084-2148165, 074-222900-9



CALIBRATION CERTIFICATE

CERTIFICATE No. : T26-1286

CSR No. : 260512

Page : 1 of 4

Customer : Southern Thai Consulting Co., Ltd.
59/45 Moo5 Srisoontorn, Talang, Phuket
83110

Equipment : Refrigerator

Manufacturer : Senden Intercool

Model : SEA-0405

Serial No. : SRR3375A-220900366R

ID. No. : ST660500419

Resolution : 1 °C

Instrument Condition : Good Condition

Location of Calibration : Customer Laboratory

Ambient Temperature : $(30 \pm 15) ^\circ\text{C}$

Relative Humidity : $(60 \pm 20) \%$

Date of Received : 7-May-2026

Date of Calibration : 7-May-2026

Date of Issued : 11-May-2026

APPR

Calibrated By : Mr. Athiwat Supacheewa
(Temperature Supervisor)

in Manager
Engineer

This certificate may not be reproduced other than in full except with the prior written approval of PREMIER SYSTEM ENGINEERING CO., LTD.
The uncertainties are for a confidence probability of approximately 95 % .





CERTIFICATE No. : T26-1286

CSR No. : 260512

Page : 2 of 4

Equipment : Refrigerator
Manufacturer : Senden Intercool
Model : SEA-0405
Serial No. : SRR3375A-220900366R
ID. No. : ST660500419
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

REFERENCE STANDARD INSTRUMENT :

Instrument Type	Model	Serial No.	Cert. No.	Due Date	Traceability
Digital Thermometer with Sensor	34970 A	MY 44042662	DAT003/0825	31-07-2026	PSE

CALIBRATION METHOD :

This instrument was calibrated under procedure No. PSE.CA.WI.11.160 based on ASTM E145 : 94 (re-approved 2021) as calibration guidelines.

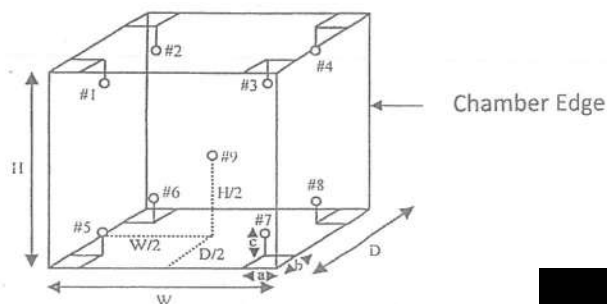
TRACEABILITY :

This Calibration Certificate is traceable to national standards which realize the unit of measurement according to the International System of Unit (SI) through :

PSE : Premier System Engineering Co., Ltd. ,(NSC-TISI-TIS 17025 CALIBRATION 0024)

CALIBRATION RESULTS :

Sensor Installation Diagram



Dimension of the chamber : $W \times H \times D = 100 \times 120 \times 48$
Sensor Installation : $a \times b \times c = 5 \times 5 \times 5$

The uncertainties are for a confidence probability of approximately 95 % .
The above results are valid exclusively for calibration sample as mentioned in the certificate.
This result of calibration was found accurate as shown on date and place of calibration.



CERTIFICATE NO. : T26-1286

CSR No. : 260512

Page : 3 of 4

Equipment : Refrigerator
Manufacture : Senden Intercool
Model : SEA-0405
Serial No. : SRR3375A-220900366R
ID. No. : ST660500419
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

CALIBRATION RESULTS : (Cont.)

(/) Without Adjustment

() After Adjustment

Temperature Measurement Accuracy Test

The measurement results of the refrigerator and associates are reported in the manner as shown below

Cal Point (°C)	Measured Standard Temperature (°C) at Spread Locations									Uncertainty (± °C)
	#1	#2	#3	#4	#5	#6	#7	#8	Ref. 9	
4	4.016	3.902	4.058	3.805	3.656	3.562	3.605	3.598	3.453	0.83

Refrigerator Performance Result

The performance of the refrigerator are reported as shown below

Cal Point (°C)	UUC Setting (°C)	UUC Reading (°C)	Chamber Stability (± °C)	Chamber Uniformity (± °C)	Overall Variation (± °C)
4	4	4	0.36	0.82	1.1

UUC : Unit Under Calibration

The uncertainties are for a confidence probability of approximately 95%

The above results are valid exclusively for calibration sample as mentioned in the report.

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

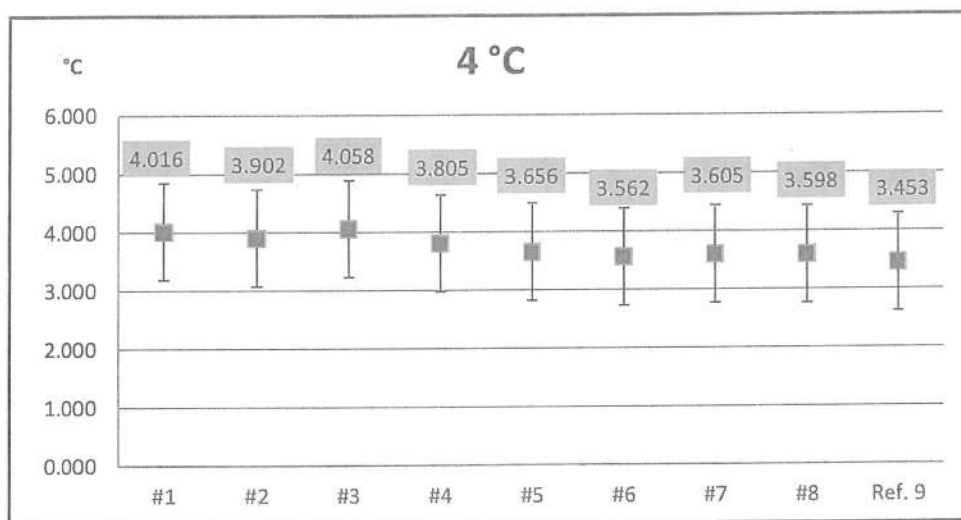


CERTIFICATE NO. : T26-1286

CSR No. : 260512

Page : 4 of 4

Report Graph



The above results are valid exclusively for calibration sample as mentioned in the report.

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

-- End --



PREMIER SYSTEM ENGINEERING CO., LTD.

123 Moo 8 Kanjanavanit Rd., Banpru, Hatyai, Songkhla 90250

E-mail : pse-cal@sriranggroup.com ,Fax. : (074)222912 Tel. : 084-2148162, 084-2148165, 074-222900-9



CALIBRATION CERTIFICATE

CERTIFICATE No. : M26-0666

CSR No. : 260512

Page : 1 of 3

Customer : Southern Thai Consulting Co., Ltd.
59/45 Moo5 Srisoontorn, Talang, Phuket
83110

Equipment : Analytical Balance

Manufacturer : Sartorius

Model : BCA2241I-1S

Serial No. : 39506504

ID. No. : ST640202139

Capacity : 220 g

Resolution : 0.0001 g

Instrument Condition : Good Condition

Location of Calibration : Customer Laboratory

Ambient Temperature : $(30 \pm 10) ^\circ\text{C}$

Relative Humidity : $(50 \pm 20) \%$

Barometric Pressure : (1010 ± 10) hPa

Date of Received : 7-May-2026

Date of Calibration : 7-May-2026

Date of Issued : 11-May-2026

APPROVED

Calibrated By : Mr. Bowornnan Langlea
(Calibration Engineer)

() MR. ATTAPOL JUNTASURAT / Calibration Engineer

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





CERTIFICATE No. : M26-0666

CSR No. : 260512

Page : 2 of 3

Equipment : Analytical Balance
Manufacturer : Sartorius
Model : BCA2241I-1S
Serial No. : 39506504
ID. No. : ST640202139
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

REFERENCE STANDARD INSTRUMENT :

Instrument Type	Normal Value	Serial No.	Cert. No.	Due Date	Traceability
Standard Weight Set	1 mg ~ 500 g	-	M2511127S	20-11-2026	TCS

CALIBRATION METHOD :

This instrument was calibrated under procedure No. PSE.CA.WI.11.015 based on UKAS LAB 14 : 2022 as calibration guidelines.

TRACEABILITY :

This Calibration Certificate is traceable to national standards which realize the unit of measurement according to the International System of Unit (SI) through :
TCS : Thai Calibration Services Co.,Ltd. , (NSC-TISI-TIS 17025 CALIBRATION 0189)

CALIBRATION RESULTS :

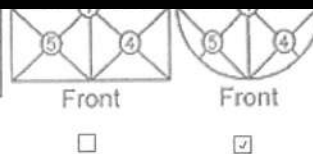
(/) Without Adjustment () After Adjustment

DETERMINATION OF THE STANDARD DEVIATION OF WEIGHT MACHINE (N=5)

Nominal Value (g)	Standard Deviation (g)
200	0.00006

EFFECT OF OFF CENTER LOADING AT 100 g

Position					Max Difference
1	2	3	4	5	
100.0000	100.0000	100.0000	100.0001	100.0001	0.0001



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



CERTIFICATE NO. : M26-0666

CSR No. : 260512

Page : 3 of 3

Equipment : Analytical Balance
Manufacturer : Sartorius
Model : BCA2241I-1S
Serial No. : 39506504
ID. No. : ST640202139
Date of Received : 7-May-2026
Date of Calibration : 7-May-2026

CALIBRATION RESULTS : (Cont.)

(/) Without Adjustment () After Adjustment

EFFECT OF TARE AT 100 g

Nominal Value (g)	UUC* Reading (g)	Correction (g)
20	20.0000	0.00000
40	40.0000	-0.00002
60	60.0000	0.00003
80	80.0000	0.00003
100	100.0000	0.00009

ERROR OF INDICATION FROM NOMINAL VALUE

Nominal Value (g)	UUC* Reading (g)	Correction (g)	Uncertainty ($\pm$ g)	Coverage Factor (k)
* Unload	0.0000	0.00000	0.00018	2.37
0.1	0.1000	0.00001	0.00018	2.37
0.2	0.2000	0.00001	0.00018	2.37
0.5	0.5000	0.00000	0.00018	2.37
1	1.0000	-0.00001	0.00018	2.37
2	2.0000	0.00000	0.00018	2.37
5	5.0000	0.00001	0.00018	2.37
10	10.0000	0.00001	0.00018	2.37
20	20.0000	0.00000	0.00018	2.37
40	40.0000	-0.00002	0.00019	2.23
60	60.0000	0.00003	0.00020	2.16
80	80.0000	0.00003	0.00021	2.12
100	100.0000	0.00009	0.00021	2.11
120	120.0000	0.00008	0.00026	2.03
140	139.9999	0.00017	0.00026	2.02
160	159.9999	0.00022	0.00026	2.02
180	179.9998	0.00031	0.00029	2.01
200	199.9998	0.00031	0.00030	2.01

UUC : Unit Under Calibration

The table as per (*) marked are not NSC-ONSC accreditation scope.

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

The above results are valid exclusively for calibration sample as mentioned in the report

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

-- End --



แบบ กมช./สมอ.๒
Form NSC/TISI 2

ใบรับรองเลขที่ 26-LB0015
(Certificate No.)

ใบรับรองระบบงาน (Certificate of Accreditation)

อาศัยอำนาจตามความในพระราชบัญญัติการมาตรฐานแห่งชาติ พ.ศ. ๒๕๕๑
(By Virtue of National Standardization Act B.E. 2551 (2008))

เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม
(Secretary-General, Thai Industrial Standards Institute)

ออกใบรับรองฉบับนี้ให้
(Issues this certificate to)

บริษัท เซ้าเทิร์นไทยคอนซัลติ้ง จำกัด
(Southern Thai Consulting Company Limited)

ตั้งอยู่เลขที่
(Address)

๕๙/๔๕ หมู่ที่ ๕ ตำบลศรีสุนทร อำเภอถลาง จังหวัดภูเก็ต
(59/45 Moo 5, Si Sunthon, Thalang, Phuket)

ได้รับการรับรองความสามารถ
(Certificate of competence)

ตามมาตรฐานเลขที่ มอก. ๑๗๐๒๕ - ๒๕๖๑
(Standard No. TIS 17025-2561 (2018) (ISO/IEC 17025: 2017))

ข้อกำหนดทั่วไปว่าด้วยความสามารถของ ห้องปฏิบัติการทดสอบและห้องปฏิบัติการสอบเทียบ
(General requirements for the competence of testing and calibration laboratories)

หมายเลขการรับรองที่ ทดสอบ ๑๘๓๔
(Accreditation No. Testing 1834)

โดยมีรายละเอียดสาขาและขอบข่ายที่ได้ใบรับรอง แสดงไว้ใน QR CODE และ www.tisi.go.th
(Details of the scheme and scope of the certificate are shown in QR CODE and www.tisi.go.th)

ออกให้ ณ วันที่ ๑๕ ธันวาคม พ.ศ. ๒๕๖๘
(Issue date : 15 December 2025)



Signed by สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม (สมอ.)
Thai Industrial Standards Institute (TISI)
Date: 2025-12-15T15:01:47.283+07:00
bf8ba089

(นายวิ
ผู้อำนวยการสำนักงานค
ปฏิบัติ
เลขานุการสำนักงานค

กระทรวงอุตสาหกรรม สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม
(Ministry of Industry Thailand, Thai Industrial Standards Institute)



รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 26-LB0015

(Certification No. 26-LB0015)



ชื่อห้องปฏิบัติการ

(Laboratory Name)

หมายเลขการรับรองที่

(Accreditation No.)

ฉบับที่ 01

(Issue No. 01)

สถานภาพห้องปฏิบัติการ

(Laboratory status)

บริษัท เซ้าเทิร์นไทยคอนซัลติ้ง จำกัด

(Southern Thai Consulting Company Limited)

ทดสอบ 1834

(Testing 1834)

ออกให้ตั้งแต่วันที่ 24 พฤศจิกายน พ.ศ. 2568

(Valid from 24 November B.E. 2568 (2025))

☒ ถาวร

(Permanent)

☐ นอกสถานที่

(Site)

☐ ชั่วคราว

(Temporary)

ถึงวันที่ 23 พฤศจิกายน พ.ศ. 2573

(Until 23 November B.E. 2573 (2030))

☐ เคลื่อนที่

(Mobile)

☐ หลายสถานที่

(Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
สาขาสีสิ่งแวดล้อม (environmental field) Water and wastewater	- Total dissolved solids (TDS) 25 mg/L to 5 000 mg/L - Total suspended solids (TSS) 5 mg/L to 2 000 mg/L	- Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th edition, 2023, part 2540 C - Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th edition, 2023, part 2540 D

เอกสารขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
บริษัท อีสเทิร์นไทยคอนกรีตติ้ง 1992 จำกัด

ที่ อก ๐๓๒๐/๑๑๓๔๒



กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๒๗ กรกฎาคม ๒๕๖๖

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด

อ้างถึง คำขอต่ออายุของห้องปฏิบัติการวิเคราะห์เอกชน ลงวันที่ ๗ มิถุนายน ๒๕๖๖

สิ่งที่ส่งมาด้วย เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

๑. รายชื่อผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๔๐ ราย
๒. รายชื่อเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๒๕ ราย
๓. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๒๙๒ รายการ จำนวน ๑๙ แผ่น

ตามหนังสือที่อ้างถึง บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด ขอต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๐๐๓ สถานที่ตั้งเลขที่ ๖๘๓ หมู่ที่ ๑๑ ถนนสุขาภิบาล ๘ ตำบลหนองขาม อำเภอสรีราชา จังหวัดชลบุรี ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

- ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๔๐ ราย ตามสิ่งที่ส่งมาด้วย ๑
- ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๒๕ ราย ตามสิ่งที่ส่งมาด้วย ๒
- ค. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย จำนวน ๔๗ รายการ อากาศเสีย (ปล่องระบาย) จำนวน ๒๑ รายการ น้ำใต้ดิน จำนวน ๑๑๑ รายการ สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน ๑๘ รายการ และดิน จำนวน ๙๕ รายการ รวมทั้งสิ้นจำนวน ๒๙๒ รายการ ตามสิ่งที่ส่งมาด้วย ๓

หนังสือฉบับนี้จะหมดอายุในวันที่ ๕ กรกฎาคม ๒๕๖๙ หากประสงค์จะต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อกรมโรงงานอุตสาหกรรม ภายใน ๓๐ วัน ก่อนวันสิ้นอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ทั้งนี้ สามารถยื่นคำขอผ่านระบบอิเล็กทรอนิกส์ได้ที่หน้าเว็บไซต์กรมโรงงานอุตสาหกรรม

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

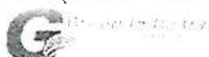
(นายทวี อำพาพันธ์)

ผู้อำนวยการศูนย์วิจัยและเตือนภัยมลพิษโรงงานภาคตะวันออก
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

ศูนย์วิจัยและเตือนภัยมลพิษโรงงานภาคตะวันออก

โทร. ๐ ๓๓๑๓ ๖๐๕๕ ต่อ ๕๐๐๓-๒

ไปรษณีย์อิเล็กทรอนิกส์ eirw@diw.mail.go.th



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"

COPY



เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท อีสเทิร์น ไทย คอนซัลติง ๑๙๙๒ จำกัด เลขทะเบียน ๖-๐๐๓

ที่ อก ๐๓๒๐/๑๑๓๕๒

ลงวันที่ ๒๗ กรกฎาคม ๒๕๖๖

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๔๐ ราย

๑) นางสาวมาลีเกษ เลขะวัจกุล	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๐๑
๒) นายวัฒนา โคตรหล้า	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๐๒
๓) นางวรรณเพ็ญ เหลาจินดาวัฒน์	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๐๓
๔) นายกะวีร์ สุธาทรัพย์	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๐๔
๕) นางสาวนันท์ณภัส แบบขุนทด	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๐๕
๖) นางสาวพรนภา หลงคำหงษ์	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๐๖
๗) นางสาวอภิรดี ชื่นอารมย์	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๐๗
๘) นางสาวอัจฉรี จิตตะยโสธร	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๐๘
๙) นางสาวจิรพร ปานคง	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๐๙
๑๐) นายสุทธา สองธนีชัย	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๑๐
๑๑) นางสาวนันท์ประภา อูยสูงเนิน	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๑๑
๑๒) นายธงไชย บุญศักดิ์	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๑๒
๑๓) นางสาวธนัชพร กลิ่นโสภณ	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๑๓
๑๔) นายธีระพงษ์ นวลอินทร์	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๑๔
๑๕) นางสาวแพรว พลแสน	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๑๕
๑๖) นายทรงพล ผิวอ้วน	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๑๖
๑๗) นายภาคภูมิ บัวสวัสดิ์	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๑๗
๑๘) นางสาวจันทน์ สายพันธ์	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๑๘
๑๙) นายภาณุพงศ์ บำรุงรส	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๑๙
๒๐) นางสาวปภาณิน จันตะสอน	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๒๐
๒๑) นายวรากร ไวยะเสวี	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๒๑
๒๒) นางสาววรรณภา ไชยศิริ	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๒๒
๒๓) นางสาวพรพิมล ภูมิคอนสาร	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๒๓
๒๔) นางสาวธมลวรรณ ผลอ้อ	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๒๔
๒๕) นางสาวบุญเรือง บุญถม	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๒๕
๒๖) นางสาวกัสนันท์ ป้อมน้อย	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๒๖
๒๗) นายขานวัฒน์ โชติวงค์	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๒๗
๒๘) นางสาวพจนีย์ งามวิสัย	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๒๘
๒๙) นายวิญญ์วัล สิงห์โต	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๒๙
๓๐) นางสาวนุกูล อารศรี	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๓๐
๓๑) นายศุภฤกษ์ พาดกลาง	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๓๑
๓๒) นายนิชพล ทองหล่อ	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๓๒
๓๓) นายธรรมรัตน์ โพธิ์ตันคำ	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๓๓
๓๔) นายโอชา ขวัญศิริมงคล	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๓๔
๓๕) นายเมธี สุขประเสริฐ	ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๓๕

COPY

๓๖) นางสาวพรพินันท์...

๓๖) นางสาวพรพินันท์ วิริยกุลกุล	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๖
๓๗) นางสาวอาภาภรณ์ เสริมสนธิ	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๗
๓๘) นางสาวนภัทร์ธมมภ์ ประดิษฐ์นุช	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๘
๓๙) นางสาวสุนิษา เอ็งเล้ง	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๙
๔๐) นางสาวระพีณ อ้นขัน	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๔๐

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๒๕ ราย

๑) นางสาวดวงกมล เนื้อทอง	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๑
๒) นางสาววัชรภรณ์ อินทสุข	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๒
๓) นางสาวกัญจน์ถวิกา จันทร์ชอดแก้ว	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๓
๔) นางสาวฉัตรสุตา มงคลโภชน์	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๔
๕) นางสาวณัฐวดี อำมาตย์คณ	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๕
๖) นางสาวนิอรอุมา ปาระ	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๖
๗) นางสาวธัญลักษณ์ ชันโต	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๗
๘) นางสาวสุทธิดา สร้างแก้ว	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๘
๙) นายอุดมทรัพย์ เจนจบจริง	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๙
๑๐) นายนาธิป สงวนศิลป์	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๐
๑๑) นายวีระชัย พอใจ	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๑
๑๒) นายอัญชลี ทะพงษ์	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๒
๑๓) นางสาวสมิตตรา มีแก่น	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๓
๑๔) นางสาวสวรรยา เพชรประไพ	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๔
๑๕) นางสาวจุฑามาศ เจริญพรหม	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๕
๑๖) นางสาวนิภาพร คำขมภู	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๖
๑๗) นางสาวอรชา พันธุ์เมือง	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๗
๑๘) นายกิตติ ไพโรจน์	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๘
๑๙) นายชาญณรงค์ ตั้งธรรมรักษ์	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๙
๒๐) นางสาวปวีรีสา เอสันเทียะ	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๒๐
๒๑) นางสาวจุฑาทิพย์ กิจดี	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๒๑
๒๒) นางสาวสุภาวดี ศรีละออง	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๒๒
๒๓) นางสาวณัฐชยา บรรพบุตร	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๒๓
๒๔) นางสาวณัฐนิช นนตานอก	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๒๔
๒๕) นางสาวดวงสุตา แสนวันดี	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๒๕

COPY

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด เลขทะเบียน ๖-๐๐๓

ที่ อก ๐๓๒๐/๑๑๓๔๒

ลงวันที่ ๒๗ กรกฎาคม ๒๕๖๖

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๒๙๒ รายการ

น้ำเสีย จำนวน 47 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
2	Arsenic	1) Continuous Hydride Generation/Atomic Absorption Spectrometric Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
3	Barium	Digestion, Inductively Coupled Plasma Method ^[4]
4	α -BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
5	β -BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
6	δ -BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
7	γ -BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
8	Biochemical Oxygen Demand	1) 5-Day BOD Test, Membrane Electrode Method ^[4] 2) 5-Day BOD Test, Azide Modification Method ^[4]
9	Cadmium	Digestion, Inductively Coupled Plasma Method ^[4]
10	Chemical Oxygen Demand	Closed Reflux, Titrimetric Method ^[4]
11	cis-Chlordane	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
12	trans-Chlordane	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
13	Chromium	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]

COPY

14 Color...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
14	Color	ADMI Weighted-Ordinate Spectrophotometric Method ^[4]
15	Copper	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
16	Cyanide	Distillation, Colorimetric Method ^[4]
17	4,4'-DDD	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
18	4,4'-DDE	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
19	DDT	Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
20	Dieldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
21	Endosulfan I	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
22	Endosulfan II	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
23	Endosulfan sulfate	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
24	Endrin	Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
25	Endrin aldehyde	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
26	Endrin ketone	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
27	Formaldehyde	Distillation, Colorimetric Method ^[3]
28	Free Chlorine	1) Iodometric Method ^[4] 2) Colorimetric Method ^[4]

COPY

29 Heptachlor...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
29	Heptachlor	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
30	Heptachlor Epoxide	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
31	Hexavalent Chromium	Filtration, Colorimetric Method ^[4]
32	Lead	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
33	Manganese	Digestion, Inductively Coupled Plasma Method ^[4]
34	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^[4]
35	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ^[4]
36	Nickel	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
37	Oil and Grease	Liquid-Liquid, Partition-Gravimetric Method ^[4]
38	pH	Electrometric Method ^[4]
39	Phenols	Distillation, Direct Photometric Method ^[4]
40	Selenium	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[4]
41	Sulfide	ZnS Precipitation, Iodometric Method ^[4]
42	Temperature	Field Method ^[4]
43	Trivalent Chromium	1) Digestion, Direct Air-Acetylene Flame Method; Filtration, Colorimetric Method; Calculation ^[4] 2) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation ^[4]
44	Total Dissolved Solids	Dried at 180 °C ^[4]
45	Total Kjeldahl Nitrogen	Macro Kjeldahl Method ^[4]
46	Total Suspended Solids	Dried at 103-105 °C ^[4]
47	Zinc	Digestion, Inductively Coupled Plasma Method ^[4]

COPY

อากาศเสีย...

อากาศเสีย (ปล่องระบาย) จำนวน 21 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Antimony	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
2	Arsenic	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
3	Cadmium	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
4	Carbon Monoxide	1) Bag, Non-Dispersive Infrared Method ^[5] 2) Instrumental Analyzer Method ^[5]
5	Chromium	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
6	Cobalt	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
7	Copper	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
8	Hydrogen Sulfide	Absorption Sampling, Iodometric Method ^[5]
9	Lead	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
10	Manganese	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
11	Mercury	Isokinetic Sampling, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^[5]
12	Nickel	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
13	Opacity	Ringelmann's Method ^[1,5]
14	Oxides of Nitrogen	1) Absorption Sampling, Phenoldisulfonic Acid Method ^[8] 2) Instrumental Analyzer Method ^[7]
15	Selenium	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
16	Sulfur Dioxide	1) Absorption Sampling, Barium-Thorin Titrimetric Method ^[5] 2) Instrumental Analyzer Method ^[5]
17	Sulfuric Acid	Isokinetic Sampling, Barium-Thorin Titrimetric Method ^[6]
18	Tin	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]

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19 Total Suspended Particulate...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
19	Total Suspended Particulate	Isokinetic Sampling, Gravimetric Method ^[6]
20	Vanadium	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
21	Xylene	Adsorption Sampling, Gas Chromatographic Method ^[6]

น้ำใต้ดิน จำนวน 111 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
2	Acetone	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
3	Aldrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
4	Anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
5	Antimony	Digestion, Inductively Coupled Plasma Method ^[4]
6	Arsenic	1) Continuous Hydride Generation/Atomic Absorption Spectrometric Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
7	Barium	Digestion, Inductively Coupled Plasma Method ^[4]
8	Benz(a)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
9	Benzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
10	Benzo(b)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
11	Benzo(k)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
12	Benzo(a)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
13	Benzo[g,h,i]perylene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
14	Beryllium	Digestion, Inductively Coupled Plasma Method ^[4]

COPY

15 Bis(2-chloroethyl)ether...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
15	Bis(2-chloroethyl)ether	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
16	Bis(2-ethylhexyl)phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
17	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
18	Bromoform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
19	Butanol	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
20	Butyl benzyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
21	Cadmium	Digestion, Inductively Coupled Plasma Method ^[4]
22	Carbazole	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
23	Carbon disulfide	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
24	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
25	Chlordane	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
26	p-Chloroaniline	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
27	Chlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
28	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
29	Chloroform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
30	2-Chlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
31	Chromium	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
32	Chromium (III)	1) Digestion, Direct Air-Acetylene Flame Method; Filtration, Colorimetric Method; Calculation ^[4] 2) Digestion, Inductively Coupled Plasma Method; Filtration, Colorimetric Method; Calculation ^[4]

COPY

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
33	Chromium (VI)	Filtration, Colorimetric Method ^[4]
34	Chrysene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
35	Cyanide	Distillation, Colorimetric Method ^[4]
36	DDD	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
37	DDE	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
38	DDT	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
39	Dibenz(a,h)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
40	Di-n-butyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
41	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
42	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
43	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
44	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
45	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
46	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
47	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
48	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
49	2,4-Dichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
50	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
51	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]



COPY

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
52	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
53	Diethyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
54	2,4-Dimethylphenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
55	2,4-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
56	2,6-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
57	Di-n-octyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
58	Endosulfan	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
59	Endrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
60	Ethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
61	Fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
62	Fluorene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
63	Heptachlor	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
64	Heptachlor epoxide	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
65	Hexachlorobenzene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
66	Hexachloro-1,3-butadiene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
67	n-Hexane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
68	α -HCH	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
69	β -HCH	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾

COPY

70 γ -HCH...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
70	γ -HCH	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
71	Hexachlorocyclopentadiene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
72	Hexachloroethane	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
73	Indeno(1,2,3-cd)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
74	Isophorone	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
75	Lead	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
76	Manganese	Digestion, Inductively Coupled Plasma Method ^[4]
77	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^[4]
78	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
79	Methylene chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
80	2-Methylphenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
81	2-Methylnaphthalene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
82	Methyl tert-butyl ether	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
83	Naphthalene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
84	Nickel	Digestion, Inductively Coupled Plasma Method ^[4]
85	Nitrobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
86	N-Nitrosodi-n-propylamine	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
87	pH	Electrometric Method ^[4]
88	Phenanthrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]

COPY

89 Phenol...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
89	Phenol	1) Distillation, Direct Photometric Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
90	Pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
91	Selenium	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[4]
92	Silver	Digestion, Inductively Coupled Plasma Method ^[4]
93	Styrene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
94	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
95	Trichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
96	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
97	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
98	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
99	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
100	Toluene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
101	2,4,5-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
102	2,4,6-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
103	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
104	Vanadium	Digestion, Inductively Coupled Plasma Method ^[4]
105	Vinyl acetate	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
106	Vinyl chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]

COPY

107 m-Xylene...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
107	m-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
108	o-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
109	p-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
110	Xylene (Total)	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
111	Zinc	Digestion, Inductively Coupled Plasma Method ^[4]

สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน 18 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Antimony	Digestion, Inductively Coupled Plasma Method ^[9,10]
2	Arsenic	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[2,9,10] 2) Digestion, Inductively Coupled Plasma Method ^[9,10]
3	Barium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[2,9,10] 2) Digestion, Inductively Coupled Plasma Method ^[9,10]
4	Beryllium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[2,9,10] 2) Digestion, Inductively Coupled Plasma Method ^[9,10]
5	Cadmium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[2,9,10] 2) Digestion, Inductively Coupled Plasma Method ^[9,10]
6	Chromium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[2,9,10] 2) Digestion, Inductively Coupled Plasma Method ^[9,10]
7	Chromium (VI)	1) Waste Extraction, Digestion, Colorimetric Method ^[2,13] 2) Alkaline Digestion, Colorimetric Method ^[9,13]
8	Cobalt	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[2,9,10] 2) Digestion, Inductively Coupled Plasma Method ^[9,10]
9	Copper	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[2,9,10] 2) Digestion, Inductively Coupled Plasma Method ^[9,10]

COPY

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
10	Lead	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[2,9,10] 2) Digestion, Inductively Coupled Plasma Method ^[9,10]
11	Mercury	1) Waste Extraction, Digestion, Cold Vapor Atomic Absorption Spectrometric Method ^[2,11] 2) Digestion, Cold vapor Atomic Absorption Spectrometric Method ^[9,11]
12	Nickel	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[2,9,10] 2) Digestion, Inductively Coupled Plasma Method ^[9,10]
13	Molybdenum	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[2,9,10] 2) Digestion, Inductively Coupled Plasma Method ^[9,10]
14	Selenium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[2,9,10] 2) Digestion, Inductively Coupled Plasma Method ^[9,10]
15	Silver	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[2,9,10] 2) Digestion, Inductively Coupled Plasma Method ^[9,10]
16	Thallium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[2,9,10] 2) Digestion, Inductively Coupled Plasma Method ^[9,10]
17	Vanadium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[2,9,10] 2) Digestion, Inductively Coupled Plasma Method ^[9,10]
18	Zinc	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[2,9,10] 2) Digestion, Inductively Coupled Plasma Method ^[9,10]



COPY

คืน...

ดิน จำนวน 95 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
2	Acetone	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
3	Anthracene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
4	Antimony	Digestion, Inductively Coupled Plasma Method ^[9,10]
5	Arsenic	Digestion, Inductively Coupled Plasma Method ^[9,10]
6	Barium	Digestion, Inductively Coupled Plasma Method ^[9,10]
7	Benz(a)anthracene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
8	Benzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
9	Benzo(b)fluoranthene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
10	Benzo(k)fluoranthene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
11	Benzo(a)pyrene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
12	Benzo[g,h,i]perylene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
13	Beryllium	Digestion, Inductively Coupled Plasma Method ^[9,10]
14	Bis(2-chloroethyl)ether	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
15	Bis(2-ethylhexyl)phthalate	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
16	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
17	Bromoform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
18	Butanol	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]

COPY

19 Butyl benzyl phthalate...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
19	Butyl benzyl phthalate	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
20	Cadmium	Digestion, Inductively Coupled Plasma Method ^[9,10]
21	Carbazole	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
22	Carbon disulfide	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
23	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
24	p-Chloroaniline	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
25	Chlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
26	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
27	Chloroform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
28	2-Chlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
29	Chromium	Digestion, Inductively Coupled Plasma Method ^[9,10]
30	Chromium (III)	Digestion, Inductively Coupled Plasma Method; Filtration, Colorimetric Method; Calculation ^[9,10]
31	Chromium (VI)	Alkaline Digestion, Colorimetric Method ^[12,13]
32	Chrysene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
33	Dibenz(a,h)anthracene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
34	Di-n-butyl phthalate	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
35	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
36	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
37	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]

COPY

38 1,1-Dichloroethane...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
38	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
39	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
40	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
41	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
42	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
43	2,4-Dichlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
44	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
45	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
46	Diethyl phthalate	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
47	2,4-Dimethylphenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
48	2,4-Dinitrotoluene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
49	2,6-Dinitrotoluene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
50	Di-n-octyl phthalate	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
51	Ethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
52	Fluoranthene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
53	Fluorene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
54	Hexachlorobenzene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
55	Hexachloro-1,3-butadiene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]

COPY

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
56	n-Hexane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(14,16)
57	Hexachlorocyclopentadiene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(15,17)
58	Hexachloroethane	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(15,17)
59	Indeno(1,2,3-cd)pyrene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(15,17)
60	Isophorone	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(15,17)
61	Lead	Digestion, Inductively Coupled Plasma Method ^(9,10)
62	Manganese	Digestion, Inductively Coupled Plasma Method ^(9,10)
63	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^(9,11)
64	Methylene chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(14,16)
65	2-Methylphenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(15,17)
66	2-Methylnaphthalene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(15,17)
67	Methyl tert-butyl ether	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(14,16)
68	Naphthalene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(14,16)
69	Nickel	Digestion, Inductively Coupled Plasma Method ^(9,10)
70	Nitrobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(14,16)
71	N-Nitrosodi-n-propylamine	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(15,17)
72	Phenanthrene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(15,17)
73	Phenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(15,17)
74	Pyrene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(15,17)

COPY

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
75	Selenium	Digestion, Inductively Coupled Plasma Method ^[9,10]
76	Silver	Digestion, Inductively Coupled Plasma Method ^[9,10]
77	Styrene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
78	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
79	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
80	Toluene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
81	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
82	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
83	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
84	Trichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
85	2,4,5-Trichlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
86	2,4,6-Trichlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[15,17]
87	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
88	Vanadium	Digestion, Inductively Coupled Plasma Method ^[9,10]
89	Vinyl acetate	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
90	Vinyl chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
91	m-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
92	o-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]
93	p-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[14,16]

COPY



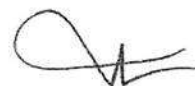
ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
94	Xylene (Total)	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(14,16)
95	Zinc	Digestion, Inductively Coupled Plasma Method ^(9,10)

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ที่ อก ๐๓๒๐/ ๕๖๐๕ 1

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๑๕ พฤษภาคม ๒๕๖๗

เรื่อง เปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษ เปลี่ยนแปลงสารมลพิษในดิน และเปลี่ยนแปลงบุคลากร
ของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๔ มีนาคม ๒๕๖๗

สิ่งที่ส่งมาด้วย เอกสารแนบท้ายหนังสือเปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษ และเปลี่ยนแปลง
สารมลพิษบริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด จำนวน ๑๒ แผ่น

ตามคำขอฯ ที่อ้างถึง บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด ห้องปฏิบัติการวิเคราะห์
เอกชน เลขทะเบียน ๖-๐๐๓ สถานที่ตั้งเลขที่ ๖๘๓ หมู่ที่ ๑๑ ถนนสุขาภิบาล ๘ ตำบลหนองขาม
อำเภอศรีราชา จังหวัดชลบุรี แจ้งขอเปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษในน้ำเสีย น้ำใต้ดิน
เปลี่ยนแปลงสารมลพิษในดิน และเปลี่ยนแปลงบุคลากร นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว มีความเห็นดังนี้

๑. ให้ยกเลิกผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑ ราย

นายวัฒนา โคตรหล้า ทะเบียนเลขที่ ๖-๐๐๓-ค-๐๐๐๐๒

๒. ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓ ราย

๑) นางสาวอัญชลี ทะพงษ์ ทะเบียนเลขที่ ๖-๐๐๓-จ-๐๐๑๐๒

๒) นางสาวจุฑามาศ เจริญพรหม ทะเบียนเลขที่ ๖-๐๐๓-จ-๐๐๑๑๕

๓) นางสาวณัฐนิช นนตานอก ทะเบียนเลขที่ ๖-๐๐๓-จ-๐๐๒๑๔

๓. ให้ยกเลิกขอขยายรายการสารมลพิษในน้ำเสีย และน้ำใต้ดินตามรายการเอกสารแนบท้าย
หนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชนที่ อก ๐๓๒๐/๑๑๓๔๒ ลงวันที่ ๒๗ กรกฎาคม ๒๕๖๖

๔. ให้วิเคราะห์สารมลพิษตามขอขยายที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย จำนวน ๔๗ รายการ
และน้ำใต้ดิน จำนวน ๑๑๑ รายการ รวมทั้งสิ้นจำนวน ๑๕๘ รายการ ตามเอกสารแนบท้ายหนังสือเปลี่ยนแปลง
เอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษ เปลี่ยนแปลงสารมลพิษในดิน และเปลี่ยนแปลงบุคลากร ดังสิ่งที่ส่งมาด้วย

๕. ให้วิเคราะห์สารมลพิษตามขอขยายที่ได้รับขึ้นทะเบียนให้วิเคราะห์เพิ่มเติมในดิน จำนวน
๑๒ รายการ ตามเอกสารแนบท้ายหนังสือเปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษเปลี่ยนแปลงสารมลพิษ
ในดิน และเปลี่ยนแปลงบุคลากร ดังสิ่งที่ส่งมาด้วย

อนึ่ง หนังสือ

COPY



อนึ่ง หนังสือฉบับนี้จะหมดอายุพร้อมหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์
เอกชนในวันที่ ๕ กรกฎาคม ๒๕๖๙

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ



(นายพริต กลั่นกรอง)

รองอธิบดี ปฏิบัติราชการแทน

อธิบดีกรมโรงงานอุตสาหกรรม

ศูนย์วิจัยและเตือนภัยมลพิษโรงงานภาคตะวันออก

โทร. ๐ ๓๓๑๓ ๖๐๕๙ ต่อ ๕๐๐๑-๒

ไปรษณีย์อิเล็กทรอนิกส์ airw@diw.mail.go.th

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“อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว”



เอกสารแนบท้ายหนังสือเปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษ

บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด

เลขทะเบียน ๖-๐๐๓

ที่ ออก ๐๓๒๐/

ลงวันที่

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๑๗๐ รายการ

น้ำเสีย จำนวน 47 รายการ

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽¹⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾
2	Arsenic	1) Continuous Hydride Generation/Atomic Absorption Spectrometric Method ⁽¹⁾ 2) Digestion, Inductively Coupled Plasma Method ⁽¹⁾
3	Barium	Digestion, Inductively Coupled Plasma Method ⁽¹⁾
4	α -BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽¹⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾
5	β -BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽¹⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾
6	δ -BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽¹⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾
7	γ -BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽¹⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾
8	Biochemical Oxygen Demand	1) 5-Day BOD Test, Membrane Electrode Method ⁽¹⁾ 2) 5-Day BOD Test, Azide Modification Method ⁽¹⁾
9	Cadmium	Digestion, Inductively Coupled Plasma Method ⁽¹⁾
10	Chemical Oxygen Demand	Closed Reflux, Titrimetric Method ⁽¹⁾
11	cis-Chlordane	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽¹⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾

COPY

12 trans-Chlordane ...

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
12	trans-Chlordane	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽¹⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾
13	Chromium	1) Digestion, Direct Air-Acetylene Flame Method ⁽¹⁾ 2) Digestion, Inductively Coupled Plasma Method ⁽¹⁾
14	Color	ADMI Weighted-Ordinate Spectrophotometric Method ⁽¹⁾
15	Copper	1) Digestion, Direct Air-Acetylene Flame Method ⁽¹⁾ 2) Digestion, Inductively Coupled Plasma Method ⁽¹⁾
16	Cyanide	Distillation, Colorimetric Method ⁽¹⁾
17	4,4'-DDD	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽¹⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾
18	4,4'-DDE	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽¹⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾
19	DDT	Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾
20	Dieldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽¹⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾
21	Endosulfan I	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽¹⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾
22	Endosulfan II	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽¹⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾
23	Endosulfan sulfate	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽¹⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾
24	Endrin	Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
25	Endrin aldehyde	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽¹⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾
26	Endrin ketone	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽¹⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾
27	Formaldehyde	Distillation, Colorimetric Method ⁽⁴⁾
28	Free Chlorine	1) Iodometric Method ⁽¹⁾ 2) Colorimetric Method ⁽¹⁾
29	Heptachlor	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽¹⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾
30	Heptachlor Epoxide	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽¹⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾
31	Hexavalent Chromium	Filtration, Colorimetric Method ⁽¹⁾
32	Lead	1) Digestion, Direct Air-Acetylene Flame Method ⁽¹⁾ 2) Digestion, Inductively Coupled Plasma Method ⁽¹⁾
33	Manganese	Digestion, Inductively Coupled Plasma Method ⁽¹⁾
34	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ⁽¹⁾
35	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method ⁽¹⁾
36	Nickel	1) Digestion, Direct Air-Acetylene Flame Method ⁽¹⁾ 2) Digestion, Inductively Coupled Plasma Method ⁽¹⁾
37	Oil and Grease	Liquid-Liquid, Partition-Gravimetric Method ⁽¹⁾
38	pH	Electrometric Method ⁽¹⁾
39	Phenols	Distillation, Direct Photometric Method ⁽¹⁾
40	Selenium	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ⁽¹⁾

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ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
41	Sulfide	ZnS Precipitation, Iodometric Method ⁽¹⁾
42	Temperature	Field Method ⁽¹⁾
43	Trivalent Chromium	1) Digestion, Direct Air-Acetylene Flame Method; Filtration, Colorimetric Method; Calculation ⁽¹⁾ 2) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation ⁽¹⁾
44	Total Dissolved Solids	Dried at 180 °C ⁽¹⁾
45	Total Kjeldahl Nitrogen	Macro Kjeldahl Method ⁽¹⁾
46	Total Suspended Solids	Dried at 103-105 °C ⁽¹⁾
47	Zinc	Digestion, Inductively Coupled Plasma Method ⁽¹⁾

น้ำใต้ดิน จำนวน 111 รายการ

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
2	Acetone	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
3	Aldrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
4	Anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
5	Antimony	Digestion, Inductively Coupled Plasma Method ⁽¹⁾
6	Arsenic	1) Continuous Hydride Generation/Atomic Absorption Spectrometric Method ⁽¹⁾ 2) Digestion, Inductively Coupled Plasma Method ⁽¹⁾
7	Barium	Digestion, Inductively Coupled Plasma Method ⁽¹⁾
8	Benz(a)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾

COPY

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
9	Benzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
10	Benzo(b)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
11	Benzo(k)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
12	Benzo(a)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
13	Benzo[g,h,i]perylene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
14	Beryllium	Digestion, Inductively Coupled Plasma Method ⁽¹⁾
15	Bis(2-chloroethyl)ether	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
16	Bis(2-ethylhexyl)phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
17	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
18	Bromoform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
19	Butanol	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
20	Butyl benzyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
21	Cadmium	Digestion, Inductively Coupled Plasma Method ⁽¹⁾
22	Carbazole	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
23	Carbon disulfide	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
24	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾

COPY

25 Chlordane ...

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
25	Chlordane	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
26	p-Chloroaniline	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
27	Chlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
28	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
29	Chloroform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
30	2-Chlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
31	Chromium	1) Digestion, Direct Air-Acetylene Flame Method ⁽¹⁾ 2) Digestion, Inductively Coupled Plasma Method ⁽¹⁾
32	Chromium (III)	1) Digestion, Direct Air-Acetylene Flame Method; Filtration, Colorimetric Method; Calculation ⁽¹⁾ 2) Digestion, Inductively Coupled Plasma Method; Filtration, Colorimetric Method; Calculation ⁽¹⁾
33	Chromium (VI)	Filtration, Colorimetric Method ⁽¹⁾
34	Chrysene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
35	Cyanide	Distillation, Colorimetric Method ⁽¹⁾
36	DDD	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
37	DDE	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
38	DDT	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
39	Dibenz(a,h)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾

COPY

40 Di-n-butyl phthalate ...

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
40	Di-n-butyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
41	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
42	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
43	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
44	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
45	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
46	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
47	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
48	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
49	2,4-Dichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
50	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
51	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
52	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
53	Diethyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
54	2,4-Dimethylphenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾

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55 2,4-Dinitrotoluene ...

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
55	2,4-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
56	2,6-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
57	Di-n-octyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
58	Endosulfan	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
59	Endrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
60	Ethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
61	Fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
62	Fluorene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
63	Heptachlor	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
64	Heptachlor epoxide	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
65	Hexachlorobenzene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
66	Hexachloro-1,3-butadiene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
67	n-Hexane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
68	α -HCH	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
69	β -HCH	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
70	γ -HCH	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
71	Hexachlorocyclopentadiene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
72	Hexachloroethane	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
73	Indeno(1,2,3-cd)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
74	Isophorone	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
75	Lead	1) Digestion, Direct Air-Acetylene Flame Method ⁽¹⁾ 2) Digestion, Inductively Coupled Plasma Method ⁽¹⁾
76	Manganese	Digestion, Inductively Coupled Plasma Method ⁽¹⁾
77	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ⁽¹⁾
78	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
79	Methylene chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
80	2-Methylphenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
81	2-Methylnaphthalene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
82	Methyl tert-butyl ether	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
83	Naphthalene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾
84	Nickel	Digestion, Inductively Coupled Plasma Method ⁽¹⁾
85	Nitrobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽¹⁾

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
86	N-Nitrosodi-n-propylamine	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1]
87	pH	Electrometric Method ^[4]
88	Phenanthrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
89	Phenol	1) Distillation, Direct Photometric Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
90	Pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
91	Selenium	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[4]
92	Silver	Digestion, Inductively Coupled Plasma Method ^[4]
93	Styrene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
94	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
95	Trichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
96	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
97	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
98	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
99	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
100	Toluene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
101	2,4,5-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
102	2,4,6-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
103	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
104	Vanadium	Digestion, Inductively Coupled Plasma Method ^[4]
105	Vinyl acetate	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
106	Vinyl chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
107	m-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
108	o-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
109	p-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
110	Xylene (Total)	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
111	Zinc	Digestion, Inductively Coupled Plasma Method ^[4]

ดิน จำนวน 12 รายการ

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
1	α -HCH	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[2,3]
2	β -HCH	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[2,3]
3	γ -HCH	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[2,3]
4	Heptachlor	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[2,3]

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5 Aldrin ...

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
5	Aldrin	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[2,3]
6	Heptachlor epoxide	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[2,3]
7	Chlordane	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[2,3]
8	Dieldrin	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[2,3]
9	Endrin	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[2,3]
10	DDD	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[2,3]
11	DDT	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[2,3]
12	Methoxychlor	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[2,3]

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เอกสารสอบเทียบอุปกรณ์เครื่องมือห้องปฏิบัติการ
บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด



Cert. No. : ACL26011
 Pages : 1 of 8

Cert. No. : ACL26011
 Job No. : VC69AC0048
 Pages : 2 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42A / Microphone UC-52 / Preamplifier NH-24
Serial No.: 00322750 / 196473 / 15482
ID No.:

Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by follow on IEC 61672-3 (2013) Standard for sound level meter (SLM).
 The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.

For test results of each item were made by observation of each instruments display and also with SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33210A	MY48017076	EF-0011-25	11-FEB-26
Waveform Generator	33511B	MY52302742	EF-0012-25	11-FEB-26
Digital Multimeter	33461A	MY53220104	EEL_BP 24/0268	22-APR-26
Digital Multimeter	33461A	MY53220076	EEL_BP 23/0268	22-APR-26
Digital Multimeter	34461A	MY60024273	CA2025120EA	18-MAR-26
Programmable Attenuator	MAT-1070	62100114	EF-0006-25	11-FEB-26
Condenser Microphone	4180	2977900	AA-1002-25	19-FEB-26
Measuring Amplifier	NA-42KAI	34560495	AA-3002-25	19-FEB-26

2. This result of calibration was found accurate as shown on 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).
- 3.3 Electrical And Electronics Institute (EEI).

Condition As Found : GOOD

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
 SAHA GROUP INDUSTRIAL PARK, 683 MOO 11,
 NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.

Location :
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %

Received Date : 26 DECEMBER 2025
Calibration Date : 05 - 07 JANUARY 2026
Date of Issue : 07 JANUARY 2026

Calibrated by : Nathakorn Pisutpaisan

Approved by :

(Nitinun Srihawan)

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.

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Cert. No. : ACL26011

Job No. : VC69AC0048

Pages : 3 of 8

Cert. No. : ACL26011

Job No. : VC69AC0048

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Summary of Measurement Result :

Parameter	Uncertainty (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	0.3	0.6
1000 Hz	0.3	0.6
8000 Hz	0.3	0.7
4. Electrical signal tests of frequency weightings		
For 10 Hz to 4 kHz	0.3	0.6
For > 4 kHz to 10 kHz	0.3	0.7
For > 10 kHz to 20 kHz	0.3	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	0.3
8. Level linearity including the level range control	0.2	0.3
9. Tone burst response	0.2	0.3
10. Peak C sound level	0.2	0.35
11. Overload indication	0.2	0.25
12. High level stability	0.1	0.1

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
15.2

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

Frequency Weighting	Weighting (dB)
A - weight	12.9
C - weight	17.9
Flat	23.9

3. Acoustical signal tests of frequency weightings

Motor free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)		
	Flat	C-weight	A weight
125	0.1	0.2	0.2
1000	0.0	0.0	0.0
8000	0.3	0.4	0.4

Acceptance
Limits

± 1.5

± 1.0

± 5.0

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Cert. No. : ACL26011
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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
63	0.0	-0.1	0.0
125	0.0	0.0	0.0
250	0.0	0.0	0.0
500	0.0	0.0	-0.1
1000	0.0	0.0	0.0
2000	0.0	0.0	0.0
4000	0.0	0.0	0.0
8000	0.0	0.0	0.1

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

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

5.2 Time weighting at 1 kHz

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

6. Long - term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.3

7. Level linearity on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
117.0	117.0	0.0	± 1.1
116.0	116.0	0.0	± 1.1
115.0	115.0	0.0	± 1.1
114.0	114.0	0.0	± 1.1
113.0	112.9	-0.1	± 1.1
112.0	111.9	-0.1	± 1.1
111.0	110.9	-0.1	± 1.1
110.0	109.9	-0.1	± 1.1
109.0	109.0	0.0	± 1.1
108.0	108.0	0.0	± 1.1
107.0	107.0	0.0	± 1.1
106.0	106.0	0.0	± 1.1
105.0	105.0	0.0	± 1.1
104.0	104.0	0.0	± 1.1
103.0	103.0	0.0	± 1.1
102.0	102.0	0.0	± 1.1
101.0	101.0	0.0	± 1.1
100.0	100.0	0.0	± 1.1
99.0	99.0	0.0	± 1.1
98.0	98.0	0.0	± 1.1
97.0	97.0	0.0	± 1.1
96.0	96.0	0.0	± 1.1
95.0	95.0	0.0	± 1.1
94.0	94.0	0.0	± 1.1
93.0	93.0	0.0	± 1.1
92.0	92.0	0.0	± 1.1
91.0	91.0	0.0	± 1.1
90.0	90.0	0.0	± 1.1
89.0	89.0	0.0	± 1.1
88.0	88.0	0.0	± 1.1
87.0	87.0	0.0	± 1.1
86.0	86.0	0.0	± 1.1
85.0	85.0	0.0	± 1.1
84.0	84.0	0.0	± 1.1
83.0	83.0	0.0	± 1.1
82.0	82.0	0.0	± 1.1
81.0	81.0	0.0	± 1.1
80.0	80.0	0.0	± 1.1
79.0	79.0	0.0	± 1.1
78.0	78.0	0.0	± 1.1
77.0	77.0	0.0	± 1.1
76.0	76.0	0.0	± 1.1
75.0	75.0	0.0	± 1.1
74.0	74.0	0.0	± 1.1
73.0	73.0	0.0	± 1.1
72.0	72.0	0.0	± 1.1
71.0	71.0	0.0	± 1.1
70.0	70.0	0.0	± 1.1
69.0	69.0	0.0	± 1.1
68.0	68.0	0.0	± 1.1
67.0	67.0	0.0	± 1.1
66.0	66.0	0.0	± 1.1
65.0	65.0	0.0	± 1.1
64.0	64.0	0.0	± 1.1
63.0	63.0	0.0	± 1.1
62.0	62.0	0.0	± 1.1
61.0	61.0	0.0	± 1.1
60.0	60.0	0.0	± 1.1
59.0	59.0	0.0	± 1.1
58.0	58.0	0.0	± 1.1
57.0	57.0	0.0	± 1.1
56.0	56.0	0.0	± 1.1
55.0	55.0	0.0	± 1.1
54.0	54.0	0.0	± 1.1
53.0	53.0	0.0	± 1.1
52.0	52.0	0.0	± 1.1
51.0	51.0	0.0	± 1.1
50.0	50.0	0.0	± 1.1
49.0	49.0	0.0	± 1.1
48.0	48.0	0.0	± 1.1
47.0	47.0	0.0	± 1.1
46.0	46.0	0.0	± 1.1
45.0	45.0	0.0	± 1.1
44.0	44.0	0.0	± 1.1
43.0	43.0	0.0	± 1.1
42.0	42.0	0.0	± 1.1
41.0	41.0	0.0	± 1.1
40.0	40.0	0.0	± 1.1
39.0	39.0	0.0	± 1.1
38.0	38.0	0.0	± 1.1
37.0	37.0	0.0	± 1.1
36.0	36.0	0.0	± 1.1
35.0	35.0	0.0	± 1.1
34.0	34.0	0.0	± 1.1
33.0	33.0	0.0	± 1.1
32.0	32.0	0.0	± 1.1
31.0	31.0	0.0	± 1.1
30.0	30.0	0.0	± 1.1
29.0	29.0	0.0	± 1.1
28.0	28.0	0.0	± 1.1
27.0	27.0	0.0	± 1.1
26.0	26.0	0.0	± 1.1
25.0	25.0	0.0	± 1.1
24.0	24.0	0.0	± 1.1
23.0	23.0	0.0	± 1.1
22.0	22.0	0.0	± 1.1
21.0	21.0	0.0	± 1.1
20.0	20.0	0.0	± 1.1
19.0	19.0	0.0	± 1.1
18.0	18.0	0.0	± 1.1
17.0	17.0	0.0	± 1.1
16.0	16.0	0.0	± 1.1
15.0	15.0	0.0	± 1.1
14.0	14.0	0.0	± 1.1
13.0	13.0	0.0	± 1.1
12.0	12.0	0.0	± 1.1
11.0	11.0	0.0	± 1.1
10.0	10.0	0.0	± 1.1
9.0	9.0	0.0	± 1.1
8.0	8.0	0.0	± 1.1
7.0	7.0	0.0	± 1.1
6.0	6.0	0.0	± 1.1
5.0	5.0	0.0	± 1.1
4.0	4.0	0.0	± 1.1
3.0	3.0	0.0	± 1.1
2.0	2.0	0.0	± 1.1
1.0	1.0	0.0	± 1.1
0.0	0.0	0.0	± 1.1
-1.0	-1.0	0.0	± 1.1
-2.0	-2.0	0.0	± 1.1
-3.0	-3.0	0.0	± 1.1
-4.0	-4.0	0.0	± 1.1
-5.0	-5.0	0.0	± 1.1
-6.0	-6.0	0.0	± 1.1
-7.0	-7.0	0.0	± 1.1
-8.0	-8.0	0.0	± 1.1
-9.0	-9.0	0.0	± 1.1
-10.0	-10.0	0.0	± 1.1
-11.0	-11.0	0.0	± 1.1
-12.0	-12.0	0.0	± 1.1
-13.0	-13.0	0.0	± 1.1
-14.0	-14.0	0.0	± 1.1
-15.0	-15.0	0.0	± 1.1
-16.0	-16.0	0.0	± 1.1
-17.0	-17.0	0.0	± 1.1
-18.0	-18.0	0.0	± 1.1
-19.0	-19.0	0.0	± 1.1
-20.0	-20.0	0.0	± 1.1
-21.0	-21.0	0.0	± 1.1
-22.0	-22.0	0.0	± 1.1
-23.0	-23.0	0.0	± 1.1
-24.0	-24.0	0.0	± 1.1
-25.0	-25.0	0.0	± 1.1
-26.0	-26.0	0.0	± 1.1
-27.0	-27.0	0.0	± 1.1
-28.0	-28.0	0.0	± 1.1
-29.0	-29.0	0.0	± 1.1
-30.0	-30.0	0.0	± 1.1
-31.0	-31.0	0.0	± 1.1
-32.0	-32.0	0.0	± 1.1
-33.0	-33.0	0.0	± 1.1
-34.0	-34.0	0.0	± 1.1
-35.0	-35.0	0.0	± 1.1
-36.0	-36.0	0.0	± 1.1
-37.0	-37.0	0.0	± 1.1
-38.0	-38.0	0.0	± 1.1
-39.0	-39.0	0.0	± 1.1
-40.0	-40.0	0.0	± 1.1
-41.0	-41.0	0.0	± 1.1
-42.0	-42.0	0.0	± 1.1
-43.0	-43.0	0.0	± 1.1
-44.0	-44.0	0.0	± 1.1
-45.0	-45.0	0.0	± 1.1
-46.0	-46.0	0.0	± 1.1
-47.0	-47.0	0.0	± 1.1
-48.0	-48.0	0.0	± 1.1
-49.0	-49.0	0.0	± 1.1
-50.0	-50.0	0.0	± 1.1
-51.0	-51.0	0.0	± 1.1
-52.0	-52.0	0.0	± 1.1
-53.0	-53.0	0.0	± 1.1
-54.0	-54.0	0.0	± 1.1
-55.0	-55.0	0.0	± 1.1
-56.0	-56.0	0.0	± 1.1
-57.0	-57.0	0.0	± 1.1
-58.0	-58.0	0.0	± 1.1
-59.0	-59.0	0.0	± 1.1
-60.0	-60.0	0.0	± 1.1
-61.0	-61.0	0.0	± 1.1
-62.0	-62.0	0.0	± 1.1
-63.0	-63.0	0.0	± 1.1
-64.0	-64.0	0.0	± 1.1
-65.0	-65.0	0.0	± 1.1
-66.0	-66.0	0.0	± 1.1
-67.0	-67.0	0.0	± 1.1
-68.0	-68.0	0.0	± 1.1
-69.0	-69.0	0.0	± 1.1
-70.0	-70.0	0.0	± 1.1
-71.0	-71.0	0.0	± 1.1
-72.0	-72.0	0.0	± 1.1
-73.0	-73.0	0.0	± 1.1
-74.0	-74.0	0.0	± 1.1
-75.0	-75.0	0.0	± 1.1
-76.0	-76.0	0.0	± 1.1
-77.0	-77.0	0.0	± 1.1
-78.0	-78.0	0.0	± 1.1
-79.0	-79.0	0.0	± 1.1
-80.0	-80.0	0.0	± 1.1
-81.0	-81.0	0.0	± 1.1
-82.0	-82.0	0.0	± 1.1
-83.0	-83.0	0.0	± 1.1
-84.0	-84.0	0.0	± 1.1
-85.0	-85.0	0.0	± 1.1
-86.0	-86.0	0.0	± 1.1
-87.0	-87.0	0.0	± 1.1
-88.0	-88.0	0.0	± 1.1
-89.0	-89.0	0.0	± 1.1
-90.0	-90.0	0.0	± 1.1
-91.0	-91.0	0.0	± 1.1
-92.0	-92.0	0.0	± 1.1
-93.0	-93.0	0.0	± 1.1
-94.0	-94.0	0.0	± 1.1
-95.0	-95.0	0.0	± 1.1
-96.0	-96.0	0.0	± 1.1
-97.0	-97.0	0.0	± 1.1
-98.0	-98.0	0.0	± 1.1
-99.0	-99.0	0.0	± 1.1
-100.0	-100.0	0.0	± 1.1

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Cert. No. : ACL26011

Job No. : VC69AC0048

Pages : 7 of 8

Cert. No. : ACL26011

Job No. : VC69AC0048

Pages : 8 of 8

8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	94.0	94.0	0.0	±1.1

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	29.1	0.1	±1.1

9. Tone burst response

Time Weighting	Tone burst duration, Tb (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.5 ; -5.0
	2	8	117.0	117.0	0.0	1.0 ; -2.5
	200	800	134.0	134.0	0.0	±1.0
Slow	2	8	108.0	108.0	0.0	1.0 ; -5.0
	200	800	127.6	127.6	0.0	±1.0
	0.25	1	99.0	98.9	-0.1	1.5 ; -5.0
SEL	2	8	108.0	108.0	0.0	1.0 ; -2.5
	200	800	128.0	128.0	0.0	±1.0

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, L _{peak} (dB)	Deviated Value (dB)	Acceptance limits (dB)
Continuous	130.0	130.0	0.0	±3.0
One	133.4	133.4	0.0	±3.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	±2.0
Positive half cycle	135.4	135.1	-0.3	±2.0
Negative half cycle	135.4	135.2	-0.2	±2.0

11. Overload indication

Measured value (dB)	Deviated Value (dB)		Acceptance Limits (dB)
	Positive one-half cycle	Negative one-half cycle	
89.6	89.6	0.0	±1.5

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	137.0	137.0	0.0	±0.3

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

End of Calibration Certificate

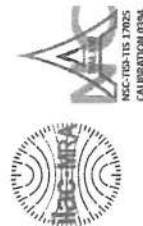
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SOUND LEVEL METER

MODEL : NL-42A

SERIAL No. : 00322744



Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42A / Microphone UC-52 / Preamplifier NH-24
Serial No.: 00322744 / 196467 / 15476
ID No.: -

Condition As Found : GOOD

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
 SAHA GROUP INDUSTRIAL PARK, 683 MOO 11,
 NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.

Location :
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %

Received Date : 26 DECEMBER 2025
Calibration Date : 05 - 07 JANUARY 2026
Date of Issue : 07 JANUARY 2026

Calibrated by : Nathakorn Pisutpaisan

Approved by :

(Nitinun Srihawan)

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.

Cert. No. : ACL26006
Pages : 1 of 8

Cert. No. : ACL26006
Job No. : VC69AC0048
Pages : 2 of 8

Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).
 The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.

For tests results of each items were made by observation of each Instruments display and also with SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33210A	MY48017076	EF-0011-25	11-FEB-26
Waveform Generator	33511B	MY52302742	EF-0012-25	11-FEB-26
Digital Multimeter	33461A	MY53220104	EEL-EP 24/0268	22-APR-26
Digital Multimeter	33461A	MY53220076	EEL-EP 23/0268	22-APR-26
Digital Multimeter	34461A	MY60024273	CA2025120EA	18-MAR-26
Programmable Attenuator	MAT-1070	62100114	EF-0006-25	11-FEB-26
Condenser Microphone	4180	2977900	AA-1002-25	19-FEB-26
Measuring Amplifier	NA-42KA1	34560495	AA-3002-25	19-FEB-26

2. This result of calibration was found accurate as shown on 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).
- 3.3 Electrical And Electronics Institute (EEI).

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Cert. No. : ACL26006
Job No. : VC69AC0048
Pages : 3 of 8

Summary of Measurement Result :

Parameter	Uncertainty (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	0.3	0.6
1000 Hz	0.3	0.6
8000 Hz	0.3	0.7
4. Electrical signal tests of frequency weightings		
For 10 Hz to 4 kHz	0.3	0.6
For > 4 kHz to 10 kHz	0.3	0.7
For > 10 kHz to 20 kHz	0.3	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	0.3
8. Level linearity including the level range control	0.2	0.3
9. Tone burst response	0.2	0.3
10. Peak C sound level	0.2	0.35
11. Overload indication	0.2	0.25
12. High level stability	0.1	0.1

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Cert. No. : ACL26006
Job No. : VC69AC0048
Page : 4 of 8

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
15.2

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

Frequency Weighting	Weighting (dB)
A - weight	10.8
C - weight	17.4
Flat	23.0

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)		
	Flat	C-weight	A-weight Acceptance Limits
125	0.1	0.2	± 1.5
1000	0.0	0.0	± 1.0
8000	1.1	1.2	±5.0

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Cert. No. : ACL26006
Job No. : VC69AC0048
Pages : 5 of 8

Cert. No. : ACL26006
Job No. : VC69AC0048
Pages : 6 of 8

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
63	0.0	-0.1	0.0
125	0.0	0.0	0.0
250	0.0	0.0	0.0
500	0.0	0.0	0.0
1000	0.0	0.0	0.0
2000	0.0	0.0	0.0
4000	0.0	0.0	0.0
8000	0.0	0.1	0.1

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

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

5.2 Time weighting at 1 kHz

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

6. Long - term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.3

7. Level linearity on the reference level range

Anticipated 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
124.0	124.0	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	89.1	0.1	± 1.1
84.0	84.0	0.0	± 1.1
79.0	79.0	0.0	± 1.1
74.0	74.1	0.1	± 1.1
69.0	69.1	0.1	± 1.1
64.0	64.0	0.0	± 1.1
59.0	59.1	0.1	± 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	0.0	± 1.1
34.0	34.1	0.1	± 1.1
30.0	30.0	0.0	± 1.1
29.0	29.1	0.1	± 1.1
28.0	28.1	0.1	± 1.1
27.0	27.1	0.1	± 1.1
26.0	26.1	0.1	± 1.1
25.0	25.1	0.1	± 1.1

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Cert. No. : ACL26006
Job No. : VC69AC0048
Pages : 7 of 8

8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	94.0	94.0	0.0	± 1.1
Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	28.9	-0.1	± 1.1

9. Tone burst response

Time Weighting	Tone burst duration, T _b (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.5 ; -5.0
	2	8	117.0	117.0	0.0	1.0 ; -2.5
	200	800	134.0	134.0	0.0	± 1.0
Slow	2	8	108.0	108.0	0.0	1.0 ; -5.0
	200	800	127.6	127.6	0.0	± 1.0
	0.25	1	99.0	98.9	-0.1	1.5 ; -5.0
SEL	2	8	108.0	108.0	0.0	1.0 ; -2.5
	200	800	128.0	128.1	0.1	± 1.0

Cert. No. : ACL26006
Job No. : VC69AC0048
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, L _{peak} (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	± 3.0
One	133.4	133.3	-0.1	± 3.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	± 2.0
Positive half cycle	135.4	135.2	-0.2	± 2.0
Negative half cycle	135.4	135.2	-0.2	± 2.0

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle	0.1	± 1.5
89.3	89.6		

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	137.0	137.0	0.0	± 0.3

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

End of Calibration Certificate

ANALYTICAL BALANCE

Model : MS204TS/00

Serial No. : B904136539



Certificate No. : 25-205714

Sample Code : 25-90375-004

CERTIFICATE OF CALIBRATION

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11, Sukhapibarn 8 Rd, Nongkham,
Sriracha, Chonburi 20230

Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.
(Analytical Balance Room)

Equipment : ELECTRONIC BALANCE

Manufacturer : METTLER TOLEDO

Model : MS204TS/00

Serial No. : B904136539

ID No. : LABE 05/4

Date of Receipt : 25 November 2025

Date of Calibration : 26 November 2025

Calibrated by : Mr. Pisek Into
Scientist

Issue date : 28 November 2025

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

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

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 traceability to recognized national standards and to the unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).



Certificate No. : 25-205714

Sample Code : 25-90375-004

REPORT OF CALIBRATION

Equipment : ELECTRONIC BALANCE
Manufacturer : METTLER TOLEDO
Model : MS204TS/00
Capacity : Max 220 g
Resolution : 0.0001 g
Serial No. : B904136539
ID No. : LABE 05/4

Result of Calibration

1. Test weight and repeatability of reading

Repeatability is a measure of the ability of a balance to supply the same result in repetitive weighings with one and the same load under the same measurement condition. The measurement of the repeatability must include both the balance specifications and the ambient (vibration, fluctuating air current/temperature/humidity, etc.). Operator handling of the balance is also included in the standard deviation.

Unit : g	Range : 220	☒ Before adjustment	☒ After adjustment
No adjustment	Nominal value	100 200 100 200	
Adjustment	Standard weight	100.000045 200.000047 100.000045 200.000047	
	Average reading of indicator	100.00002 200.00004 100.00000 200.00000	
	Standard deviation	0.00005 0.00006 0.00005 0.00005	
Unit : g	Range : g	☐ Before adjustment	☐ After adjustment
No adjustment	Nominal value		
Adjustment	Standard weight		
	Average reading of indicator		
	Standard deviation		



Certificate No. : 25-205714

Sample Code : 25-90375-004

Page 3 of 4

REPORT OF CALIBRATION

Result of Calibration

2. Sensitivity or value of a scale division

Change in the output variable of a measuring instrument divided by the associated change in the input variable.

Unit : g

Range :		Range :	
Test Point	Sensitivity, S	Test Point	Sensitivity, S
0	0.8972		
100	0.9969		
200	0.9969		

3. Departure of indication from nominal value, Linearity

Unit : g

Nominal Value	Standard Value	Average Reading of Indicator	Correction Value	Expanded Uncertainty	Coverage Factor (k)
Unload	0.0000000	0.0000	0.0000	0.000094	2.01
0.01	0.0100031	0.0100	0.0000	0.000094	2.01
0.05	0.0500055	0.0500	0.0000	0.000094	2.01
0.1	0.1000023	0.1000	0.0000	0.000094	2.01
1	1.0000136	1.0000	0.0000	0.000095	2.01
5	5.0000210	5.0000	0.0000	0.000096	2.01
10	10.000002	10.0000	0.0000	0.000097	2.01
50	50.000016	50.0000	0.0000	0.00012	2.01
100	100.000045	100.0000	0.0000	0.00016	2.00
150	150.000061	150.0000	0.0001	0.00022	2.00
200	200.000047	200.0000	0.0000	0.00027	2.00

The result expanded uncertainty of measurement U is stated as the standard uncertainty of measurement multiplied by the coverage factor k , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003.

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Certificate No. : 25-205714

Sample Code : 25-90375-004

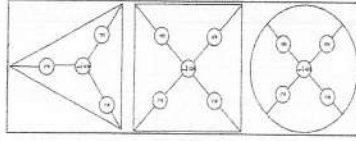
REPORT OF CALIBRATION

Result of Calibration :

4. Eccentric or off-centre loading

Deviation of the measurement value through off - center (eccentric) loading. The corner load increases with the weight of the load and its removal from the center of the pan support.

Weighing pan		Test weight : 100	
		Unit : g	
Range	Position	Reading of indicator	Reading of indicator
220			
1		100.0000	
2		100.0001	
3		99.9999	
4		100.0001	
5		99.9999	
6		100.0000	
Maximum difference		0.0001	



Condition of Calibration

1. Calibration Method : WI-CL-004 base on UKAS LAB 14: 2019

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

3. Condition of Calibration Item: Normal

4. This certification is traceable to the International System of Unit maintained at : Through the reference standard laboratory of Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (Instrument number 1).

5. Reference standard instrument :

Instrument

1) STANDARD WEIGHT 1 mg to 1 kg

Certificate No.
25-142885Due Date
27 July 2026

- End of Report -

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BAROMETER

Serial No. : N/A[S41020124]



CALIBRATION LABORATORY CO., LTD.

210-11, 14, 55 Soi Prasert Manulak 29 Yaek 4, Prasert Manulak Rd., Ladphrao, Bangkok 10230
Tel 02-578-0353-4 Fax 02-578-2672 www.cal-lab.co.th Email: sales@cal-lab.co.th



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ISO/IEC 17025



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ISO/IEC 17025

CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE : BAROMETER
MANUFACTURER : BARIO
MODEL / TYPE : N/A
SERIAL NO. : N/A[S41020124]
CLID. NO. : 212500828
JOB CONTROL NO. : 250507051351
CALIBRATION SERVICE : ☒ IN-LABORATORY ☐ ON-SITE

CUSTOMER : EASTERN THAI CONSULTING 1992 CO., LTD.
683 MOO 11, SUKHAPIBARN 8 RD,
NONGKHAM, SIRIRACHA, CHONBURI 20230

DATE OF RECEIVED : 07 May 2025

DATE OF ISSUED : 09 May 2025

The report of calibration shall not be reproduced except in full without approval of the Calibration Laboratory Co., Ltd.

Calibrated By :

Situpong Pimdee

Calibration Engineer



Approved By :

Mongkol Yotsoontorn

Authorized Signatory

09 May 2025

This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

Certificate No. Q25051351

E3-011-05/12-23



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210-11, 14, 55 Soi Prasert Manulak 29 Yaek 4, Prasert Manulak Rd., Ladphrao, Bangkok 10230
Tel 02-578-0353-4 Fax 02-578-2672 www.cal-lab.co.th Email: sales@cal-lab.co.th



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REPORT OF CALIBRATION

FOR

NOMENCLATURE : BAROMETER
MANUFACTURER : BARIO
MODEL / TYPE : N/A
SERIAL NO. : N/A[S41020124]
DATE OF CALIBRATION : 08 May 2025

ENVIRONMENT CONDITIONS :

Temperature : $(23 \pm 2) ^\circ\text{C}$

Relative Humidity : $(55 \pm 10) \% \text{RH}$

PROCEDURE USED :

This instrument was calibrated under procedure No. CLC-CPPP-08 according to DKD-R 6-1 as calibration guidelines.

The calibration was performed by direct measurement with Reference Pressure Monitor which maintained by the Calibration Laboratory Co., Ltd.

REFERENCE STANDARD USED :

Reference Pressure Monitor, Fluke Model RPM3 S/N. 829.

TRACEABILITY :

The measurements are traceable to International System of Units (SI), through National Institute of Metrology (Thailand).
Certificate No. MP-0245-24, Due Date 11 November 2025.

UNCERTAINTY :

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor of $k = 2$. It has been evaluated according to the "Calibration of Pressure Gauges (DKD-R 6-1)" which provides a level of confidence approximately 95%.

Certificate No. Q25051351

E3-011-05/12-23



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page 2 of 3



CALIBRATION LABORATORY Co., LTD.

270/11-14/55, Sae Prasert Manakul 29 Yank 4, Praset Manakul Rd, Ladphrao Bangkok 10230
Tel: 02-516 6553-4 Fax: 02-516 2612 www.cal-lab.co.th E-mail: cal-lab@cal-lab.co.th



CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION
MEASUREMENT RESULTS : (X) without adjustment () adjustment

The DUC was exercised by applying a known pressure from its zero to full scale 1 times. Then 2 series of known gauge pressure were applied. The STD reading were recorded and the means value were reported in the table below.

CALIBRATION DATA

CORRECTION OF PRESSURE

DUC Test point (hPa)	STD Reading (hPa)		Correction (hPa)	
	Up	Down	Up	Down
990	990.7	990.7	+0.7	+0.7
1000	1000.7	1000.8	+0.7	+0.8
1010	1010.8	1010.8	+0.8	+0.8
1020	1020.8	1020.9	+0.8	+0.9
1030	1030.9	1030.9	+0.9	+0.9

Uncertainty of measurement ± 0.7 hPa

Transmitting fluid : Air

Note: The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 015 Page 44 of 68

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

End of Certificate

Certificate No. Q25051351

F3-011-05/12-23

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gclid=calibration

CERTIFICATE OF ANALYSIS

EPA PROTOCOL GAS

Cylinder No. : EB0062815

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number: E04N199E15ACX9C
Cylinder Number: EB0062815
Laboratory: 124 - Riverton (SAP) - NJ
PGVP Number: B52018
Gas Code: CO,NO,NOX,SO2,BALN

Reference Number: 82-401135335-1
Cylinder Volume: 144.4 CF
Cylinder Pressure: 2015 PSIG
Valve Outlet: 660
Certification Date: Mar 13, 2018
Expiration Date: Mar 13, 2026

Certification performed in accordance with EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012) document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS				
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
NOX	50.00 PPM	50.55 PPM	G1	+/- 1.4% NIST Traceable
NITRIC OXIDE	50.00 PPM	50.50 PPM	G1	+/- 1.4% NIST Traceable
SULFUR DIOXIDE	50.00 PPM	51.01 PPM	G1	+/- 1.0% NIST Traceable
CARBON MONOXIDE	2000 PPM	1877 PPM	G1	+/- 1.0% NIST Traceable
NITROGEN	Balance			03/06/2018, 03/13/2018
CALIBRATION STANDARDS				
Type	Lot ID	Cylinder No	Concentration	Uncertainty
NTRM	16060607	CC442564	50.42 PPM NITRIC OXIDE/NITROGEN	+/- 0.8%
PRM	12367	APEX1099237	9.82 PPM NITROGEN DIOXIDE/AIR	+/- 2.0%
GMS	0315201604	CC503358	4.975 PPM NITROGEN DIOXIDE/NITROGEN	+/- 1.6%
NTRM	16011025	CC473218	49.02 PPM SULFUR DIOXIDE/NITROGEN	+/- 0.8%
NTRM	12060735	CC356192	2498 PPM CARBON MONOXIDE/NITROGEN	+/- 0.6%
The SRM, PRM or RGM noted above is only in reference to the GMS used in the assay and not part of the analysis.				
ANALYTICAL EQUIPMENT				
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration		
Nicolet 6700 APW1100391 CO	FTIR	Feb 08, 2018		
Nicolet 6700 APW1100391 NO	FTIR	Feb 15, 2018		
Nicolet 6700 APW1100391 NO2	FTIR	Feb 16, 2018		
Nicolet 6700 APW1100391 SO2	FTIR	Mar 01, 2018		

Triad Data Available Upon Request

NOTES-NET WEIGHT: 10.43lbs
GROSS WEIGHT: 60.93lbs
PO# 5218000763

This calibration std. has been certified in accordance with the May 2012 EPA Traceability Protocol.

Document EPA-600/R-12/531. All testing processes and measurements conform to the requirements of ISO/IEC 17025 and to Airgas ISO 9001:2000 and relate only to items identified on this certificate. All values are certified to be NIST Traceable with total uncertainty as detailed under Analytical Uncertainty. This document shall not be reproduced in full without written approval of the issuer.



TESTING CERT No. 3082.05

Don Moran
Approved for Release

Hot Air Oven

Model : UFE 500

Serial No. : G511.0182



CERTIFICATE OF CALIBRATION

Page 1 of 3

Certificate No. : 25-215653

Sample Code : 25-94507-006

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.

883 Moo 11, Sukhapibarn 8 Rd., Nongkham,

Sriacha, Chonburi 20230

Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.

(Hot Lab)

Equipment : Temperature controlled enclosures (Hot air oven)

Manufacturer : Memmert

Model : UFE 500

Serial No. : G511-0182

ID No. : LABE 17/4

Date of Receipt : 16 December 2025

Date of Calibration : 16 December 2025

Condition of Calibration

1. Environment
- | | | | | |
|---------------------------|-----------|-----------|-----------|-----------|
| 1.1 Ambient temperature | : Maximum | 27.6 °C | : Minimum | 26.4 °C |
| 1.2 Relative humidity | : Maximum | 61.4 % | : Minimum | 54.0 % |
| 1.3 Line voltage supplied | : Maximum | 229.7 VAC | : Minimum | 225.6 VAC |

2. Calibration method

TLAS-G-20: Guidelines for calibration and checks of temperature controlled enclosures.

3. Reference standard instrument

Instrument	ID No.	Certificate No.	Due Date
Data acquisition with sensor (RTD-P100)	LB-DA-19 (RTD-302 to RTD-303, RTD-311, RTD-305 to RTD-310)	25-010559	04 February 2026

4. This certificate is traceable to the international system of unit (SI Unit).

The measurement is traceable to Asia Medical and Agricultural Laboratory and Research Center Public Company Limited.

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

6. Condition of calibration item : Normal

Calibrated by

Mr. Nathanan Phosri

Approved by

(Mr. Somchai Neamrunt)

Scientist

Signed for Director

Issue date

17 December 2025

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

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

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 traceability to recognized national standards and to the unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

361 Soi Ladprao 122, Ladprao Road,

TEL 02-516-2422

CONTACT@AMARC.CO.TH

WWW.AMARC.CO.TH



REPORT OF CALIBRATION

Page 2 of 3

Certificate No. : 25-215653

Sample Code : 25-94507-006

Results of Calibration

Resolution : 0.5 °C

1. Reporting of Temperature

Calibration point (°C)	UUC* setting (°C)	UUC* reading (°C)	Measured temperature at each positions (°C)								Uncertainty ± (°C)	Coverage factor k	
			# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8			σ_{total}
104	103.5	103.5	103.98	103.97	103.67	103.76	104.10	104.22	103.80	103.52	103.92	0.47	2.00

2. Characterization results

Calibration point (°C)	Stability ± (°C)	Uniformity (°C)	Overall variation (°C)
104	0.07	0.48	0.84

Notes

UUC* = Unit Under Calibration

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NSC-TSI-TS17025
CALIBRATION 0132

Page 3 of 3

REPORT OF CALIBRATION

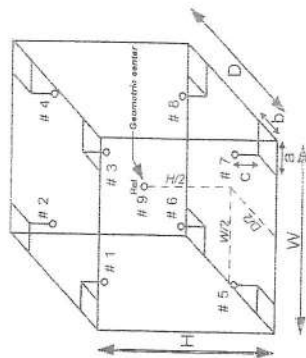
Certificate No. : 25-215653

Sample Code : 25-94507-006

Results of Calibration

Notes

1. Sensor installation locations
 - 1.1 All sensors at any corners or walls should be positioned
5 cm (a x b x c) from the wall.
 - 1.2 The reference sensor is preferably located of the geometric center of the chamber.
2. Interior dimensions approx of chamber :
W = 56 cm ; D = 40 cm ; H = 48 cm
3. Air valve or fresh air level : Off
4. Fan level : Open
5. The quoteec uncertainty includes "Stability of chamber and loading effect in chamber at 20% of uniformity."
6. Uniformity - the maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time.
7. Stability - one half of the greatest maximum difference of measured temperatures at any one sensor.
8. Overall variation - the difference of the maximum and the minimum measured temperatures throughout observation time.
9. UUC* reading - the average reading of indicating device that forms the integral part of the enclosure.
10. Calibration results without adjustment.

Figure: Example of sensor
Installation Positions

The result expanded uncertainty of measurement U is stated as the standard uncertainty of measurement multiplied by the coverage factor k , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with JIS S 9203.

- End of Report -

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ORIFICE TRANSFER STANDARD CERTIFICATION

WORKSHEET TE-5025A

ROOTSMETER S/N 0438320



TISCH ENVIRONMENTAL, INC.
145 SOUTH MIAMI AVE
VILLAGE OF CLEVELAND, OH
45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 24, 2016 Rootmeter S/N 0438320 Ta (K) - 295
Operator Tisch Orifice I.D. - 0136 Pa (mm) - 742.95

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORIFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3400	3.2	2.00
2	NA	NA	1.00	0.9510	6.3	4.00
3	NA	NA	1.00	0.8510	7.8	5.00
4	NA	NA	1.00	0.8130	8.6	5.50
5	NA	NA	1.00	0.6690	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9832	0.7337	1.4054	0.9957	0.7430	0.8911
0.9791	1.0296	1.9875	0.9915	1.0426	1.2603
0.9770	1.1481	2.2221	0.9894	1.1626	1.4090
0.9760	1.2006	2.3305	0.9884	1.2157	1.4778
0.9707	1.4510	2.8107	0.9830	1.4694	1.7823
Qstd slope (m)	1.96262		Qa slope (m)	1.22896	
intercept (b)	-0.03249		intercept (b)	-0.02060	
coefficient (r)	0.99993		coefficient (r)	0.99993	
y axis = SQRT[H2O(Pa/760) (298/Ta)]			y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

Vstd = Diff. Vol [(Pa-Diff. Hg)/760] (298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

For subsequent flow rate calculations:

Qstd = $1/m \{ [\text{SQRT}(\text{H}_2\text{O}(\text{Pa}/760) (298/\text{Ta}))] - b \}$
Qa = $1/m \{ [\text{SQRT}(\text{H}_2\text{O}(\text{Ta}/\text{Pa}))] - b \}$

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THERMO-HYGROMETER

Model : 608-H1

Serial No. : 45106737



CERTIFICATE OF CALIBRATION

Page 1 of 2
Certificate No. : 25-090091
Sample Code : 25-39161-001

Customer

: EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11, Sukhapbarn 8 Rd., Nongkham,
Sriacha, Chonburi 20230

Location of Calibration : Asia Medical and Agricultural Laboratory and Research Center Public Company Limited
(Calibration laboratory)

Equipment

Manufacturer : Digital thermo-hygrometer
Model : 608-H1
Serial No. : 45106737
ID No. : LABE 09/7
Date of Receipt : 21 May 2025
Date of Calibration : 23 May 2025

Condition of Calibration

1. Environment
1.1 Ambient temperature : $23.0^{\circ}\text{C} \pm 3.0^{\circ}\text{C}$
1.2 Relative humidity : $55.0\% \pm 15.0\%$

2. Calibration method

- 2.1 In-house method: WI-CL-045 By comparison with thermometer standard / chilled mirror hygrometer in controlled chamber.
2.2 The calibration by comparison unit under calibration (UUC) to the thermometer standard / chilled mirror hygrometer in a chamber at the controlled temperature / relative humidity.

3. Reference standard instrument

Instrument	Model	ID No.	Certificate No.	Due Date
3.1 Chilled Mirror	Optidew 401	LB DP-03 & LB DP-03 (DP)	TH-0122-24	26 September 2025
3.2 Digital Thermometer	Optidew 401	LB DP-03 & LB DP-03 (Temp.)	24-138856	28 October 2025
3.3 Digital Thermometer	34972A	LB-DA-07 with RTD-89	24-106857	21 August 2025

4. This certificate is traceable to the international system of unit (SI Unit).

- 4.1 Instrument No. 3.1 through National Institute of Metrology (Thailand).
4.2 Instrument No. 3.2 and 3.3 through Asia Medical and Agricultural Laboratory and Research Center Public Company Limited.
5. This result of calibration was found accurate as shown on date and place of calibration only.

6. Condition of calibration item

: Normal

Calibrated by

Miss Pornsuda Lohabul

Approved by

(Mr. Somchai Neamput)

Scientist

Signed for Director

Issue date

26 May 2025

The uncertainties are for a confidence probability of approximately 95%.
The calibration result is valid only for the above calibrated item and was found accurate as shown on date and place of calibration only.
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 traceability to recognized national standards and to the unit of measurement realized at the corresponding national laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

361 Soi Ladprao 122, Ladprao Road,
Phlabphla, Wang Thonglang, Bangkok 10310
PM-CL-114

TEL 02-516-2422
FAX 02-516-5949
Rev.01

CONTACT@AMARC.CO.TH
WWW.AMARC.CO.TH
Effective Date: 15/10/21



REPORT OF CALIBRATION

Page 2 of 2
Certificate No. : 25-090091
Sample Code : 25-39161-001

Results of Calibration

Temperature measurement

Resolution : 0.1°C
Range : 0°C to 50°C

Calibration point $^{\circ}\text{C}$	Average of standard reading		Unit under calibration		uncertainty $^{\circ}\text{C}$
	Controlled humidity %RH	Temperature $^{\circ}\text{C}$	Average reading $^{\circ}\text{C}$	Correction value $^{\circ}\text{C}$	
20	50	20.01	20.2	- 0.19	± 0.39
25	50	25.01	25.0	+ 0.01	± 0.39
30	50	30.01	30.0	+ 0.01	± 0.39

Humidity measurement

Resolution : $0.1\% \text{RH}$
Range : $10\% \text{RH}$ to $95\% \text{RH}$

Calibration point %RH	Average of standard reading		Unit under calibration		uncertainty %RH
	Air temperature $^{\circ}\text{C}$	Calculated humidity %RH	Average reading %RH	Correction value %RH	
45	25.02	45.10	50.2	- 5.10	± 1.3
60	25.02	60.15	65.2	- 5.05	± 1.5
75	25.02	75.01	82.1	- 7.09	± 1.7

Notes

- Calibration results without adjustment.

The result expanded uncertainty of measurement U is stated as the standard uncertainty multiplied by the coverage factor $k=2.00$, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with ISO G003.

- End of Report -

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SOUND LEVEL CALIBRATOR

MODEL : NC-75

SERIAL No. : 34302326



Cert. No. : ACC25018
Pages : 1 of 3

Calibration Certificate

Equipment : SOUND CALIBRATOR
Manufacturer : RION
Model : NC-75
Serial No.: 34302326
ID No.:

Condition As Found : GOOD

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
SAHA GROUP INDUSTRIAL PARK, 683 MOO 11,
NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.

Location :
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %

Received Date : 02 APRIL 2025
Calibration Date : 30 APRIL 2025
Date of Issue : 02 MAY 2025

Calibrated by : Nathakorn Pisutpaisan

Approved by :
(Thanakul Petchurai)

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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.

Cert. No. : ACC25018
Job No. : VC68AC0077
Pages : 2 of 3
Calibration Procedure : CP-AC-03

Calibration Method :

This equipment was calibrated by follow on IEC 60942:2003 Standard
The sound pressure level, frequency and total distortion of the sound calibrator was measured using the reference microphone.

Condition of this result of calibration :

1. Reference Standard Instruments

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33511B	MY52302742	IEF-0012-25	11-FEB-26
Digital Multimeter	33461A	MY60024273	CA3025170EA	18-MAR-26
Programmable Attenuator	MA1-1070	62100114	GF-0906-25	11-FEB-26
Condenser Microphone	4180	2977900	AA-1002-25	19-FEB-26
Measuring Amplifier	NA-42KAI	34560495	AA-3002-25	19-FEB-26
Audio Analyzer	AYR-3360A	V74416069	IEF-0013-25	13-FEB-26

2. This result of calibration was found accurate as shown on 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 Electrical And Electronics Institute (EEI).

COPY

T. Petchurai

Cert. No. : ACC25018
Job No. : VC68AC0077
Pages : 3 of 3

Result of calibration :**1. Sound pressure level**

Specified sound pressure level (dB)	Measured value (dB)	Deviated value (dB)	Uncertainty (dB)	Acceptance limit (dB)
94	94.03	0.03	0.15	0.40

2. Frequency

Specified Frequency (Hz)	Measured value (Hz)	Deviated value (%)	Uncertainty (%)	Acceptance limit (%)
1000	1000.0	0.0	0.1	1.0

3. Total distortion

Measured value (%)	Uncertainty (%)	Acceptance limit (%)
0.79	0.10	3.0

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

End of Calibration Certificate**COPY**

7. Petch

SOUND LEVEL METER

MODEL : NL-52A

SERIAL No. : 00230986



Cert. No. : ACL26022
 Pages : 1 of 8

Cert. No. : ACL26022
 Job No. : VC69AC0048
 Pages : 2 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-52A / Microphone UC-59 / Preamplifier NH-25
Serial No.: 00230986 / 21951 / 22334
ID No.: -

Condition As Found : GOOD

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
 SAHA GROUP INDUSTRIAL PARK, 683 MOO 11,
 NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.

Location : -
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %

Received Date : 26 DECEMBER 2025
Calibration Date : 05 - 07 JANUARY 2026
Date of Issue : 07 JANUARY 2026

Calibrated by : Nathakorn Pisutpaisan

Approved by :

(Nitinun Srihawan)

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Calibration Procedure : CP-AC-02

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).
 The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.

For tests results of each items were made by observation of each Instruments display and also with SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33210A	MY48017076	EF-0011-25	11-FEB-26
Waveform Generator	33511B	MY52302742	EF-0012-25	11-FEB-26
Digital Multimeter	33461A	MY53220104	EEL-BP 24/0268	22-APR-26
Digital Multimeter	33461A	MY53220076	EEL-BP 23/0268	22-APR-26
Digital Multimeter	34461A	MY60024273	CA2025120EA	18-MAR-26
Programmable Attenuator	MAT-1070	62100114	EF-0006-25	11-FEB-26
Condenser Microphone	4180	2977900	AA-1002-25	19-FEB-26
Measuring Amplifier	NA-42KAI	34560495	AA-3002-25	19-FEB-26

2. This result of calibration was found accurate as shown on 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).
- 3.3 Electrical And Electronics Institute (EEI).

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Cert. No. : ACL26022
Job No. : VC69AC0048
Pages : 3 of 8

Cert. No. : ACL26022
Job No. : VC69AC0048
Page : 4 of 8

Summary of Measurement Result :

Parameter	Uncertainty (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	0.3	0.6
1000 Hz	0.3	0.6
8000 Hz	0.3	0.7
4. Electrical signal tests of frequency weightings		
For 10 Hz to 4 kHz	0.3	0.6
For > 4 kHz to 10 kHz	0.3	0.7
For > 10 kHz to 20 kHz	0.3	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	0.3
8. Level linearity including the level range control	0.2	0.3
9. Tone burst response	0.2	0.3
10. Peak C sound level	0.2	0.35
11. Overload indication	0.2	0.25
12. High level stability	0.1	0.1

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	94.0	0.0	±0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
14.2

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

Frequency Weighting	Weighting (dB)
A - weight	8.7
C - weight	14.2
Flat	19.6

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)		
	Flat	C-weight	A-weight
125	0.0	0.0	0.0
1000	0.0	0.0	0.0
8000	0.7	0.7	0.7
			Acceptance Limits
			± 1.0
			± 0.7
			+ 1.5, - 2.5

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Cert. No. : ACL26022

Job No. : VC69AC0048

Pages : 5 of 8

Cert. No. : ACL26022

Job No. : VC69AC0048

Pages : 6 of 8

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
63	0.0	0.1	0.0
125	0.1	0.1	0.0
250	0.1	0.1	0.0
500	0.1	0.1	0.0
1000	0.0	0.0	0.0
2000	0.0	0.1	0.0
4000	0.0	0.1	0.0
8000	0.1	0.1	0.1
16000	0.1	-1.2	-1.1
			+ 1.5, - 2.5
			+ 2.5, -16.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

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

5.2 Time weighting at 1 kHz

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

6. Long - term stability

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

7. Level linearity on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	± 0.8
136.0	136.0	0.0	± 0.8
135.0	135.0	0.0	± 0.8
134.0	134.0	0.0	± 0.8
133.0	133.0	0.0	± 0.8
132.0	132.0	0.0	± 0.8
131.0	131.0	0.0	± 0.8
129.0	129.0	0.0	± 0.8
124.0	124.0	0.0	± 0.8
119.0	119.1	0.1	± 0.8
114.0	114.0	0.0	± 0.8
109.0	109.0	0.0	± 0.8
104.0	104.1	0.1	± 0.8
99.0	99.0	0.0	± 0.8
94.0	94.0	0.0	± 0.8
89.0	89.0	0.0	± 0.8
84.0	84.0	0.0	± 0.8
79.0	79.0	0.0	± 0.8
74.0	74.0	0.0	± 0.8
69.0	69.0	0.0	± 0.8
64.0	64.0	0.0	± 0.8
59.0	59.0	0.0	± 0.8
54.0	54.0	0.0	± 0.8
49.0	49.0	0.0	± 0.8
44.0	44.0	0.0	± 0.8
39.0	39.0	0.0	± 0.8
34.0	34.0	0.0	± 0.8
30.0	30.0	0.0	± 0.8
29.0	29.0	0.0	± 0.8
28.0	28.0	0.0	± 0.8
27.0	27.0	0.0	± 0.8
26.0	25.9	-0.1	± 0.8
25.0	25.0	0.0	± 0.8

Cert. No. : ACL26022
Job No. : VC69AC0048
Pages : 7 of 8

8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	94.0	94.0	0.0	± 0.8
Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	29.0	0.0	± 0.8

9. Tone burst response

Time Weighting	Tone burst duration, Tb (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	108.0	0.0	1.0 ; -3.0
	2	8	117.0	117.0	0.0	1.0 ; -1.5
	200	800	134.0	134.1	0.1	± 0.5
Slow	2	8	108.0	108.0	0.0	1.0 ; -3.0
	200	800	127.6	127.6	0.0	± 0.5
	0.25	1	99.0	98.9	-0.1	1.0 ; -3.0
SEL	2	8	108.0	108.0	0.0	1.0 ; -1.5
	200	800	128.0	128.1	0.1	± 0.5

Cert. No. : ACL26022
Job No. : VC69AC0048
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Lepeak (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	± 2.0
One	133.4	133.4	0.0	± 2.0
Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	± 1.0
Positive half cycle	135.4	135.1	-0.3	± 1.0
Negative half cycle	135.4	135.2	-0.2	± 1.0

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle	0.0	± 1.5
89.5	89.5		

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	137.0	137.0	0.0	± 0.1

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

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End of Calibration Certificate

COPY

SOUND LEVEL METER

MODEL : NL-52A

SERIAL No. : 01120949

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-52A / Microphone UC-59 / Preamplifier NH-25
Serial No.: 01120949 / 22118 / 22421
ID No.: -

Condition As Found : GOOD

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
SAHA GROUP INDUSTRIAL PARK, 683 MOO 11,
NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.

Location : -
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %

Received Date : 26 DECEMBER 2025
Calibration Date : 05 - 07 JANUARY 2026
Date of Issue : 07 JANUARY 2026

Calibrated by : Nathakorn Pisutpaisan

Approved by :

(Nitinun Srihawan)

Cert. No. : ACL26019
Pages : 1 of 8

Cert. No. : ACL26019
Job No. : VC69AC0048
Pages : 2 of 8

Calibration Procedure : CP-AC-02

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).
The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.
For tests results of each items were made by observation of each Instruments display and also with SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33210A	MY48017076	EF-0011-25	11-FEB-26
Waveform Generator	33511B	MY52302742	EF-0012-25	11-FEB-26
Digital Multimeter	33461A	MY53220104	EEL_BP 24/0268	22-APR-26
Digital Multimeter	33461A	MY53220076	EEL_BP 23/0268	22-APR-26
Digital Multimeter	34461A	MY60024273	CA2025120EA	18-MAR-26
Programmable Attenuator	MAT-1070	62100114	EF-0006-25	11-FEB-26
Condenser Microphone	4180	2977900	AA-1002-25	19-FEB-26
Measuring Amplifier	NA-42KAI	34560495	AA-3002-25	19-FEB-26

2. This result of calibration was found accurate as shown on 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).
- 3.3 Electrical And Electronics Institute (EEI).

(Nitinun Srihawan)

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.

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(Nitinun Srihawan)

Cert. No. : ACL26019
Job No. : VC69AC0048
Pages : 3 of 8

Summary of Measurement Result :

Parameter	Uncertainty (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	0.3	0.6
1000 Hz	0.3	0.6
8000 Hz	0.3	0.7
4. Electrical signal tests of frequency weightings		
For 10 Hz to 4 kHz	0.3	0.6
For > 4 kHz to 10 kHz	0.3	0.7
For > 10 kHz to 20 kHz	0.3	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	0.3
8. Level linearity including the level range control	0.2	0.3
9. Tone burst response	0.2	0.3
10. Peak C sound level	0.2	0.35
11. Overload indication	0.2	0.25
12. High level stability	0.1	0.1

Cert. No. : ACL26019
Job No. : VC69AC0048
Page : 4 of 8

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	94.0	0.0	±0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
14.8

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

Frequency Weighting	Weighting (dB)
A - weight	9.9
C - weight	14.6
Flat	20.1

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)		
	Flat	C-weight	A-weight Acceptance Limits
125	0.0	0.1	± 1.0
1000	0.1	0.1	± 0.7
8000	0.3	0.4	+ 1.5, - 2.5

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Cert. No. : ACL26019
Job No. : VC69AC0048
Pages : 5 of 8

Cert. No. : ACL26019
Job No. : VC69AC0048
Pages : 6 of 8

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
63	0.0	0.0	0.0
125	0.0	0.0	0.0
250	0.0	0.0	0.0
500	0.0	0.0	0.0
1000	0.0	0.0	0.0
2000	0.0	0.0	0.0
4000	0.0	0.0	0.0
8000	0.0	0.1	0.1
16000	0.0	-1.2	-1.2

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

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

5.2 Time weighting at 1 kHz

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

6. Long - term stability

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

7. Level linearity on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	± 0.8
136.0	136.0	0.0	± 0.8
135.0	135.0	0.0	± 0.8
134.0	134.0	0.0	± 0.8
133.0	133.0	0.0	± 0.8
132.0	132.0	0.0	± 0.8
131.0	131.0	0.0	± 0.8
129.0	129.0	0.0	± 0.8
124.0	124.0	0.0	± 0.8
119.0	119.0	0.0	± 0.8
114.0	114.0	0.0	± 0.8
109.0	109.0	0.0	± 0.8
104.0	104.0	0.0	± 0.8
99.0	99.0	0.0	± 0.8
94.0	94.0	0.0	± 0.8
89.0	89.0	0.0	± 0.8
84.0	84.0	0.0	± 0.8
79.0	78.9	-0.1	± 0.8
74.0	74.0	0.0	± 0.8
69.0	69.0	0.0	± 0.8
64.0	63.9	-0.1	± 0.8
59.0	59.0	0.0	± 0.8
54.0	53.9	-0.1	± 0.8
49.0	48.9	-0.1	± 0.8
44.0	43.9	-0.1	± 0.8
39.0	38.9	-0.1	± 0.8
34.0	33.9	-0.1	± 0.8
30.0	29.9	-0.1	± 0.8
29.0	28.9	-0.1	± 0.8
28.0	27.9	-0.1	± 0.8
27.0	27.0	0.0	± 0.8
26.0	25.9	-0.1	± 0.8
25.0	24.9	-0.1	± 0.8

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Cert. No. : ACL26019
Job No. : VC69AC0048
Pages : 7 of 8

8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	94.0	94.0	0.0	±0.8

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	28.9	-0.1	±0.8

9. Tone burst response

Time Weighting	Tone burst duration, Tb (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.0 ; -3.0
	2	8	117.0	117.0	0.0	1.0 ; -1.5
	200	800	134.0	134.0	0.0	±0.5
Slow	2	8	108.0	108.0	0.0	1.0 ; -3.0
	200	800	127.6	127.6	0.0	±0.5
	0.25	1	99.0	98.9	-0.1	1.0 ; -3.0
SEL	2	8	108.0	108.0	0.0	1.0 ; -1.5
	200	800	128.0	128.0	0.0	±0.5

Cert. No. : ACL26019
Job No. : VC69AC0048
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Lepeak (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	±2.0
One	133.4	133.3	-0.1	±2.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	±1.0
Positive half cycle	135.4	135.2	-0.2	±1.0
Negative half cycle	135.4	135.2	-0.2	±1.0

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle	0.0	±1.5
89.5	89.5		

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	137.0	137.0	0.0	±0.1

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

End of Calibration Certificate

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ANALYTICAL BALANCE (DU)

Model : XS205DU

Serial No. : B344940005



Certificate No. : 25-205/16
Sample Code : 25-90375-006

Page 1 of 4

CERTIFICATE OF CALIBRATION

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11, Sukhapiabarn 8 Rd, Nongkharn,
Sriacha, Chonburi 20230

Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.
(Analytical Balance Room)

Equipment : ELECTRONIC BALANCE

Manufacturer : METTLER TOLEDO

Model : XS205DU

Serial No. : B344940005

ID No. : LABE 05/3

Date of Receipt : 26 November 2025

Date of Calibration : 26 November 2025

Calibrated by : Mr. Thanadol Phothep

Scientist

Issue date : 28 November 2025

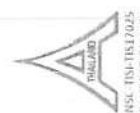
The uncertainty are for a confidence probability of approximately 95%.

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

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 traceability to recognized national standards and to the unit of measurement indicated at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

393 Soi Ladprao 122, Ladprao Road,
Phaholapha, Wang Thonglang, Bangkok 10310
Tel. 02-516-2472
Fax 02-516-1649
Rev.05

CONTACT: AMARC CO., LTD.
WWW.AMARC.CO.TH
Effective Date: 15/10/21



Certificate No. : 25-205/16
Sample Code : 25-90375-006

Page 2 of 4

REPORT OF CALIBRATION

Equipment : ELECTRONIC BALANCE
Manufacturer : METTLER TOLEDO
Model : XS205DU
Capacity : Max 81 g / 200 g
Resolution : 0.00001 g / 0.0001 g
Serial No. : B344940005
ID No. : LABE 05/3

Result of Calibration

1. Test weight and repeatability of reading

Repeatability is a measure of the ability of a balance to supply the same result in repetitive weighings with one and the same load under the same measurement condition. The measurement of the repeatability must include both the balance specifications and the ambient (vibration, fluctuating air current/temperature/humidity, etc.) Operator handling of the balance is also included in the standard deviation.

Unit : g	Range : 81	☐ Before adjustment	☐ After adjustment
☒ No adjustment	Nominal value	40	80
☐ Adjustment	Standard weight	40.000087	80.000088
	Average reading of indicator	40.000004	80.000004
	Standard deviation	0.000007	0.000007
Unit : g	Range : 200	☐ Before adjustment	☐ After adjustment
☒ No adjustment	Nominal value	100	200
☐ Adjustment	Standard weight	99.999988	200.000016
	Average reading of indicator	99.9999	199.9997
	Standard deviation	0.000005	0.000005

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393 Soi Ladprao 122, Ladprao Road,
Phaholapha, Wang Thonglang, Bangkok 10310
Tel. 02-516-2472
Fax 02-516-1649
Rev.03

CONTACT: AMARC CO., LTD.
WWW.AMARC.CO.TH
Effective Date: 15/10/21

Certificate No. : 25-205716
Sample Code : 25-90375-006

REPORT OF CALIBRATION

Result of Calibration

2. Sensitivity or value of a scale division

Change in the output variable of a measuring instrument divided by the associated change in the input variable

Unit : g

Test Point	Sensitivity, S	Test Point	Sensitivity, S
Range : 81		Range : 200	
0	1.00000	0	1.0000
40	1.00000	100	1.0000
80	1.00000	200	1.0000

3. Departure of indication from nominal value, Linearity

Unit : g

Nominal Value	Standard Value	Average Reading of Indicator	Correction Value	Expanded Uncertainty	Coverage Factor (k)
Unload	0.0000000	0.00000	0.00000	0.00001	2.04
0.01	0.0100016	0.01000	0.00000	0.00001	2.04
0.1	0.1000056	0.10000	0.00001	0.00002	2.02
1	1.0000110	1.00000	0.00001	0.000015	2.01
5	4.9999996	4.99998	0.00002	0.000020	2.00
10	9.999994	9.99999	0.00000	0.000026	2.00
20	20.000042	20.00000	0.00004	0.000037	2.00
50	50.000052	50.00003	0.00002	0.000067	2.00
100	99.999988	100.00000	0.00000	0.00016	2.00
150	150.000040	150.00001	-0.00001	0.00022	2.00
200	200.000015	200.00001	-0.00001	0.00027	2.00

The result expanded uncertainty of measurement U is stated as the standard uncertainty multiplied by the coverage factor k , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with

UKAS M3003

ASIA MEDICAL AND
RESEARCH CENTER
THAILAND

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Certificate No. : 25-205716
Sample Code : 25-90375-006

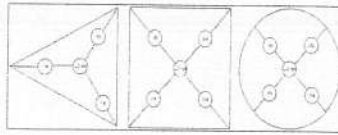
REPORT OF CALIBRATION

Result of Calibration

4. Eccentric or off-centre loading

Deviation of the measurement value through off-center (eccentric) loading. The corner load increases with the weight of the load and its removal from the center of the pan support.

Weighting pan	Triangular	Rectangular	Circle	Test weight : 50 and 100 Unit : g
Range	81	200		
Position				Reading of indicator
1		50.00000		100.0000
2		49.99997		100.0000
3		49.99993		99.9999
4		49.99989		100.0000
5		50.00003		99.9999
6		50.00000		100.0000
Maximum difference		0.00007		0.0001



Condition of Calibration

1. Calibration Method : W-CL-004 base on UKAS LAB 14: 2019

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

3. Condition of Calibration item: Normal

4. This certification is traceable to the International System of Unit maintained at :

Company Limited (first instrument number 1).

5. Reference standard instrument :

Instrument : STANDARD WEIGHT 1mg to 1 kg
Class : E2
ID No : LB-WE-78

Certificate No : 25-134074
Due Date : 18 July 2026

- End of Report -

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Signature

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ATOMIC ABSORPTION SPECTROPHOTOMETER

Model : Pin AAcle 900F

Serial No. : PFBS22080801

PinAAcle 900F Preventive Maintenance (PM)

Company Name: Eastern Thai Consulting	
Address: 683 Moo 11 Nong Kham, Sri Racha, Chonburi 20230	
Serial Number: PFB522080801	PM Number: 2/2
Customer Name (if applicable): K.Thamonwan	Telephone Number: 096-8761232
Customer Support Engineer Name: Prasit	Service Order Number: WO-06379055
Date PM Performed: (DD-MMM-YYY) 20 OCT 2025	Next PM Due Date: (DD-MMM-YYY) 20 APR 2026
Standard Labor Hours to Complete PM : 5 hours	

Part Number	Release	Publication Date
09370145 Rev.9	A	January 2018

 **PerkinElmer**

Scope

The purpose of this PM is to ensure the continued functionality of the PinAAcle 900F by inspecting and replacing any worn or damaged parts. This service should only be performed by a trained representative of PerkinElmer.

The customer should save their method before the PM begins.

General Instructions:

The customer must provide the engineer operational data to demonstrate recent instrument performance prior to starting the PM.

Always check with the customer before making any changes that may affect the customer's analysis or calibration, including a current back-up of system software and/or data files.

The completed document should be signed by an authorized PerkinElmer and customer representative and left with the customer.

Update the PM sticker and instrument logbook as required.

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Component List

Component / Specific Model	Serial #	Configuration Notes
PinAAcle 900F	PFB522080801	Syngistix Ver 5.0.1.2029

Parts Lists

Parts Included with the PM		
Part Number (if applicable)	Description	Quantity
B0501696	Fan Filters	N/A
N3160156	O-Ring Kits for Sampling Introduction (Stainless Steels Nebulizer)	N/A
N3160157	O-Ring Kits for Sampling Introduction (Plastic Nebulizer)	N/A
N9301714	Replacement Acetylene Filter Cartridge	N/A
TH001022	Replacement Air Filter Cartridge	N/A

Additional Reagents and Standards Required for PM

Part Number (if applicable)	Description	Quality	Batch/Lot #	Expired Date (MM/YY)
N9300183	1000 mg/L Copper Standard	AR	27-156CUIY1	SEP-2026

Additional Reagents and Standards Required for PM (Customer Support Solution)

Part Number (if applicable)	Description	Quantity	Batch/Lot #	Expiration Date (MM/YY)
N/A	DI Water	250 ml.	AR	AR
N/A	0.5% HNO ₃	250 ml.	AR	AR

Additional Tools Required for PM

Part Number (if applicable)	Description	Quantity	Serial #
N1013000	0.2A Neutral density filter	1	MG0-704
N1013002	1.0A Neutral density filter	1	MG2-891
03030997	System 2 EDL Driver	1	030309-97E
N3050605	As System 2 EDL	1	17986
N3050121	Cu Lumina HCL	1	000003793D12
N3050109	Ba Lumina HCL	1	041123-010120
N3050139	K Lumina HCL	1	000003788E1D
N3050152	Ni Lumina HCL	1	

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Procedure Checklist

Use (✓) to check off those steps in the checklist that have been completed.

1. General:

- ☒ Review the instrument performance with the customer and document any recent problems.
- ☒ Inspect the customer log book and make any appropriate PM entries.
- ☒ Perform general inspection of system for cleanliness.

2. PC Instrument Software:

- ☒ Instrument Software user files/databases archived, packed, and/or deleted as needed.

3. Mechanical:

- ☒ Inspect and clean all fans and filters. Replace filters if necessary
- ☒ Inspect all gas lines for leaks and/or wear. Replace if needed.
- ☒ Clean exterior of the instrument.
- ☒ Inspect the burner head, burner chamber, and nebulizer. Clean if needed as stated in the Hardware Guide.
- ☒ Check burner head dimensions with the feeler gauge as stated in the Hardware Guide in the Maintenance chapter section on cleaning the burner head and checking slot width. Replace if out of specification
- ☒ Check the condition of the end cap, burner head, and nebulizer O-rings. Replace if necessary.
- ☒ Check the drain system for signs of wear. Replace worn or damaged parts.
- ☒ Visually check for proper flame conditions when igniting the Air-C2H2 and N2O-C2H2 flames (if applicable).

4. Electrical:

- ☒ Inspect PC boards. Clean if necessary.
- ☒ Carefully check all internal and external cable connections.
- ☒ Check instrument firmware revisions upgrade to current levels (if necessary)
- ☒ Run Diagnostics Test within the Advanced function of the Spectrometer page. Check the results in the service log folder in the Spectrometer BM Log Viewer.

5. Optics:

- ☒ Inspect and clean the sample compartment windows, if needed.
- ☒ Inspect optics. Clean or replace if necessary.

6. Gasses:

- ☒ Verify that the Gasses supplied to the instrument are within the pressure and purity specifications found in the PinAAcle 900 Series Pre-Installation Checklist SDB.
- ☒ Verify that the acetylene filter and air filter element is dry. Replace if necessary.

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7. Flame Interlock Check:

Description: Check to ensure that all safety interlocks are closed.

Parameter	Specification	Test Results	Pass/Fail
Flame Sensor	Air/C ₂ H ₂ Flame correctly shuts down	Active	Passed
Drain Sensor	Air/C ₂ H ₂ Flame correctly shuts down	Active	Passed
Nebulizer Sensor	Air/C ₂ H ₂ Flame correctly shuts down	Active	Passed
C ₂ H ₂ Pressure Sensor	Air/C ₂ H ₂ Flame correctly shuts down	Active	Passed
Air Pressure Sensor	Air/C ₂ H ₂ Flame correctly shuts down	Active	Passed
Burner Head Sensor	Choosing Nitrous Oxide as the oxidant should trigger an interlock shuts down	Active	Passed

8. After PM Performance tests:

8.1 Detector Linearity with Barium

Description: Ensures that the detector is linear in the Visible Range.

Parameter	Specification	Certificate Value at 553.6 nm (Abs.)	Test Results	Pass/Fail
1.0 A ND Filter	± 5% from Cert.	0.9995	0.9641	Passed
0.2 A ND Filter	± 5% from Cert.	0.1886	0.1755	Passed

8.2 Baseline Noise at 1.0 Absorbance with Barium

Description: Ensures that a high absorbance will not produce excessive noise.

Parameter	Specification	Results	Pass/Fail
Standard Deviation	≤ 0.010	0.0013	Passed

8.3 AA Baseline Noise with Copper

Description: Check baseline noise.

Parameter	Specification	Results	Pass/Fail
Standard Deviation	≤ 0.001	0.0001	Passed

8.4 D₂ Background Compensation with Copper

Description: Verifies the instruments ability to compensate for Background absorption.

Parameter	Specification	Results	Pass/Fail
Standard Deviation	≤ 0.010	0.0021	Passed

8.5 AA-BG Baseline Noise with Copper

Description: Ensures that background correction does not produce excessive noise.

Parameter	Specification	Results	Pass/Fail
Standard Deviation	≤ 0.005	0.0002	Passed

8.6 AA-BG Baseline Noise with Arsenic

Description: Ensures that background correction does not produce excessive noise at a low wavelength.

Parameter	Specification	Results	Pass/Fail
Standard Deviation	≤ 0.005	0.0002	Passed

8.7 Flame Sensitivity

Description: Instrument Sensitivity checked against Copper standard.

Standard Copper Sensitivity	Specification	Results (Abs.)	Pass/Fail
5 mg/L Sensitivity SS Neb (if applicable)	> 0.250 Abs.	N/A	Not Applicable
2 mg/L Sensitivity HS Neb (if applicable)	> 0.250 Abs.	0.3218	Passed

10. Review:

- ☒ Review with the customer PM work performed.
- ☒ Review with the customer routine maintenance procedures.
- ☒ Discuss recommended customer supplied materials to have on hand.
- ☒ Attach PM sticker.

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Additional Comments

Additional Comments Regarding the PM

Review

The preventive maintenance checks and if applicable performance tests for PinAAcle 900F have been completed.

This PinAAcle 900F Passes ☒ Fails ☐ the preventive maintenance.

Review of Preventive Maintenance:

Authorized PerkinElmer Representative:

Rasit

Date:

20 Oct 2025
(DD-MMM-YYYY)

Authorized Customer Representative:

0a000000

Date:

20 OCT 2025
(DD-MMM-YYYY)

COPY

BAROMETER

Serial No. : N/A[S41020124]



CALIBRATION LABORATORY CO., LTD.

210-11, 4, 55 Soi Prasert Manukit 25 Yoea 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-lab.co.th Email: sale@cal-lab.co.th



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CALIBRATION
ISO/IEC 17025

CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE : BAROMETER
MANUFACTURER : BARIO
MODEL / TYPE : N/A
SERIAL NO. : N/A[S41020124]
CLID. NO. : 212500828
JOB CONTROL NO. : 250507051351
CALIBRATION SERVICE : ☒ IN-LABORATORY ☐ ON-SITE

CUSTOMER : EASTERN THAI CONSULTING 1992 CO., LTD.
683 MOO 11, SUKHAPIBARN 8 RD,
NONGKHAM, SRIRACHA, CHONBURI 20230

DATE OF RECEIVED : 07 May 2025

DATE OF ISSUED : 09 May 2025

The report of calibration shall not be reproduced except in full without approval of the Calibration Laboratory Co., Ltd.

Calibrated By :

Sittipong Pimdee
Calibration Engineer



Approved By :

Mongkol Yotsoontorn
Authorized Signatory
09 May 2025

This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

Certificate No. Q25051351

F3-011-05/12-23



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CALIBRATION LABORATORY CO., LTD.

210-11, 4, 55 Soi Prasert Manukit 25 Yoea 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-lab.co.th Email: sale@cal-lab.co.th



ANAB
ASIA PACIFIC ACCREDITED
A C C R E D I T E D
CALIBRATION
ISO/IEC 17025

REPORT OF CALIBRATION

FOR

NOMENCLATURE : BAROMETER
MANUFACTURER : BARIO
MODEL / TYPE : N/A
SERIAL NO. : N/A[S41020124]
DATE OF CALIBRATION : 08 May 2025

ENVIRONMENT CONDITIONS :

Temperature : $(23 \pm 2) ^\circ\text{C}$

Relative Humidity : $(55 \pm 10) \% \text{RH}$

PROCEDURE USED :

This instrument was calibrated under procedure No. CLC-CPPP-08 according to DKD-R 6-1 as calibration guidelines.

The calibration was performed by direct measurement with Reference Pressure Monitor which maintained by the Calibration Laboratory Co., Ltd.

REFERENCE STANDARD USED :

Reference Pressure Monitor, Fluke Model RPM3 S/N. 829.

TRACEABILITY :

The measurements are traceable to International System of Units (SI), through National Institute of Metrology (Thailand).
Certificate No. MP-0245-24, Due Date 11 November 2025.

UNCERTAINTY :

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor of $k = 2$. It has been evaluated according to the "Calibration of Pressure Gauges (DKD-R 6-1)" which provides a level of confidence approximately 95%.

Certificate No. Q25051351

F3-011-05/12-23

page 2 of 3

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2/10-11/14, 55 Soi Prasert Manokul 29 Yoek 4, Prasert Manokul Rd, 1 Indiphrato, Bangkok 10230
Tel: 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail: sales@cal-laboratory.com



CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION MEASUREMENT RESULTS : (X) without adjustment () adjustment

The DUC was exercised by applying a known pressure from its zero to full scale 1 times, Then 2 series of known gauge pressure were applied. The STD reading were recorded and the means value were reported in the table below.

CALIBRATION DATA

CORRECTION OF PRESSURE

DUC Test point (hPa)	STD Reading (hPa)		Correction (hPa)	
	Up	Down	Up	Down
990.7	990.7	990.7	-0.7	+0.7
1000	1000.7	1000.8	+0.7	+0.8
1010	1010.8	1010.8	+0.8	+0.8
1020	1020.8	1020.9	+0.8	+0.9
1030	1030.9	1030.9	+0.9	+0.9

Uncertainty of measurement ± 0.7 hPa

Transmitting fluid : Air,

Note, The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 015 Page 44 of 68

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

End of Certificate

Certificate No. Q25051351

F3-011 / 05/12-23

Signature



CERTIFICATE OF ANALYSIS

EPA PROTOCOL GAS

Cylinder No. : EB0145030

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number: E03N199E15AC004
Cylinder Number: EB0145030
Laboratory: 124 - Plymouthville - PA
PGVP Number: A12021
Gas Code: CH4, PPN, BALN
Reference Number: 160-40224242-1
Cylinder Volume: 144.4 CF
Cylinder Pressure: 2015 PSIG
Valve Outlet: 350
Certification Date: Oct 15, 2021

Expiration Date: Oct 15, 2029

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/5-19/021, which may be purchased later. Analytical Methodology does not require correction for analytical interference. This cylinder has a full analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a molar basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS				
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
METHANE	180.0 PPM	177.0 PPM	G1	+/- 1.0% NIST Traceable
PROPANE	185.0 PPM	187.0 PPM	G1	+/- 1.0% NIST Traceable
NITROGEN	Balance			
CALIBRATION STANDARDS				
Type	Lot ID	Cylinder No	Concentration	Uncertainty
NTRM	08011503	K002564	246.7 PPM METHANE/AIR	+/- 0.6%
NTRM	200602-06	6162660Y	243.3 PPM PROPANE/AIR	+/- 0.5%
ANALYTICAL EQUIPMENT				
Instrument/Make/Model			Analytical Principle	
Nicolet IS50 FTIR AUP2110295 CH4			FTIR	
Nicolet IS50 FTIR AUP2110295 C3H8			FTIR	
			Last Multipoint Calibration	
			Oct 13, 2021	
			Oct 14, 2021	

Triad Data Available Upon Request

NOTES:

Gross Weight: 28.0 Kg
Net Weight: 4.9 Kg
PO# 5221004861



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Michael A. Harker
Approved for Release

DRY GAS METER XC-572-V

Serial No. : 1110070



WISDOM SCIENCE

Certificate Of Calibration

Method 5 Pre-Test Console Calibration - Cubic meter (m3)

Meter Console Information

Console Model : XC-572-V
 Console serial : 1110070
 DGM Model #: SK25EX
 DGM Serial #: 00010036

Calibration Condition

Cal. Date: 30-Jul-25
 Due Date: 30-Jul-26
 Cal. Report No.: WDS-SV6806004
 Ambient Temp (°C): 25
 Pressure (mm Hg): 758
 Relative Humidity (%): 60

Factors/Conversion

Std. Temp. (°K): 298
 Std. Pressure (mm Hg): 760
 K₁ (K/mm Hg): 0.3857

Reference Equipment

WTM Model: W-NKoDa-5B WTM Cal. Due Date: Dec. 2026
 WTM Serial: 600245 Gamma: 1.0000

UUT Meter (DGM)

Run Time (minutes)	DGM Orifice (mm H ₂ O)	Volume		Outlet Temp		Volume		Outlet Temp	
		Initial	Final	Initial	Final	Initial	Final	Initial	Final
15.00	13.0	2.1638	2.3279	28	28	126.27216	126.43261	26	26
10.00	25.0	2.3396	2.4977	28	28	126.44405	126.59853	27	27
8.00	50.0	2.5143	2.6957	29	29	126.61477	126.79196	27	27
7.00	80.0	2.7083	2.9147	29	29	126.80434	127.00613	27	27
5.00	120.0	2.9325	3.1125	31	31	127.02345	127.19970	27	27

Reference Meter (WTM)

Standardized Data

Test Meter		Reference Meter		Correction Factor		Flow Rate		ΔH@ (mm H ₂ O)	
Std. Volume	Std. Flow Rate	Std. Volume	Std. Flow Rate	"Gamma"	Variation	Std & Corr	0.0212 SCMM	Variation	
V _{m(std)} (m ³)	Q _{m(std)} m ³ /min	V _{w(std)} (m ³)	Q _{w(std)} m ³ /min	(Y)	(ΔY)	Q _{m(std)} (corr)	ΔH _g	ΔΔH _g	
0.160	0.011	0.157	0.010	0.983	0.003	0.010	52.228	4.584	
0.154	0.015	0.150	0.015	0.977	-0.002	0.015	48.640	0.997	
0.176	0.022	0.173	0.022	0.979	-0.001	0.022	47.347	-0.296	
0.201	0.029	0.197	0.028	0.977	-0.003	0.028	44.980	-2.663	
0.175	0.035	0.172	0.034	0.982	0.003	0.034	45.022	-2.622	

0.980 = Y Avg.

47.644 = ΔH@ Avg.

Pass/Fail Result: Pass

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is ±0.02.

Note: For ΔH_g, orifice pressure differential that equates to 0.75cfm (0.0212m³/min) at standard temperature and pressure, acceptable tolerance of individual values from the average is ±0.2inches (5.1mm) H₂O.

Approved By:

Patpasu Chaisana
 (Patpasu Chaisana)
 Service Manager

Date: 30-Jul-25

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Certificate of Calibration - Supplemental

METHOD 5 PRE-TEST CONSOLE CALIBRATION

Nomenclature

P_b - Barometric Pressure
 DGM - Dry Gas Meter
 K₁ - Constant based on standard temp and press
 θ - Run time, in minutes
 P_m - ΔH (Meter Pressure, gauge)
 V_m - Volume collected by test meter, corrected for STP
 Q_{m(std)} - Calculated flow rate of test meter
 K - Critical orifice coefficient
 P_w - Measured pressure of reference meter
 T_w - Temperature measured in reference meter
 T_m - Temperature measured in test meter
 Y - Ratio of volume collected from test meter and reference
 sc - Scaling Factor
 Counts_{std} - Number of pulse counts, standardized
 C_{total} - Number of raw pulse counts of a calibration run

Equations

$$V_{w(std)} = Y * K_1 \frac{V_w * (P_{bar} + \frac{P_{m(std)}}{13.6})}{T_w}$$

$$V_{m(std)} = Counts_{std} * Y_{sc(avg)}$$

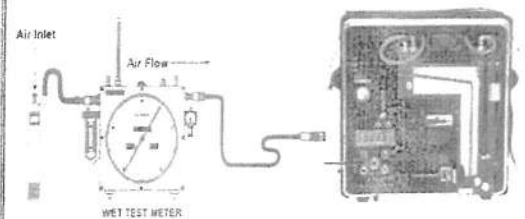
$$Counts_{std} = K_1 \frac{C_{total} * (P_{bar} + \frac{P_{m(std)}}{13.6})}{T_m}$$

$$Q_{w(std)} = \frac{V_{w(std)}}{\theta} \quad Y_{sc} = \frac{V_{w(std)}}{Counts_{std}}$$

$$K_1 = \frac{T_{std}}{P_{std}} \quad Y = \frac{V_{w(std)}}{V_{m(std)}}$$

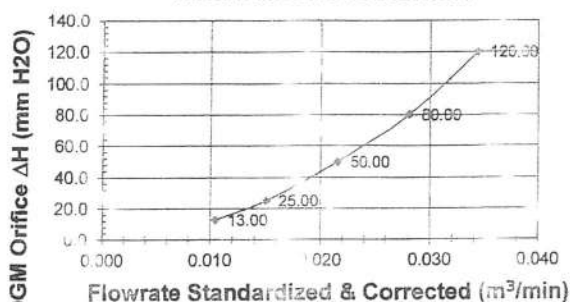
$$Metric \Delta H_g = \frac{P_{m(std)} * 0.0011696 * (P_{bar} + \frac{P_{m(std)}}{13.6})}{T_m} * \left(\frac{T_w * \theta}{V_w * P_{bar}} \right)^2$$

Calibration Train



Calibration Graphs

Meter Pressure vs Flowrate

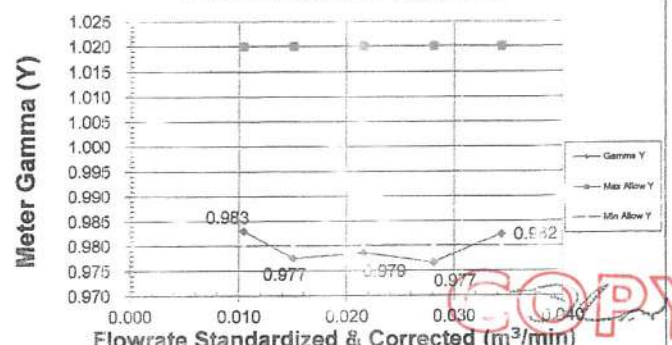


Console Serial: 1110070

Console Model:

XC-572-V

Meter Gamma vs Flowrate



Console Serial: 1110070

Console Model:

XC-572-V



WISDOM SCIENCE

TEMPERATURE DISPLAY CALIBRATION

Meter Console Information

Console Model : XC-572-V
Console Serial : 1110070
Temp. Indicator Model : 765-KF
Temp. Indicator Serial : JC20668

Calibration Conditions

Cal. Date : 30-Jul-25
Due Date : 30-Jul-26
Cal. Report No. : WDS-SV606004
Ambient Temp. (°C) : 25
Pressure (mm Hg) : 758
Humidity (%) : 60

Reference Equipment

Temp. Meter Model : Fluke 714B
Serial No. : 60590035
Cal. Date : 07-Apr-25
Temp. Meter Model : Fluke 179
Serial No. : 59620112
Cal. Date : 06-Feb-25

Temperature Sensor Calibration

Reference Point #	Ref. Thermometer Temperature °C	Thermocouple Display Temperature °C	Temperature Difference °C
1	-18.0	-18.0	0.0
2	38.0	38.0	0.0
3	93.0	93.0	0.0
4	149.0	149.0	0.0
5	260.0	260.0	0.0
6	371.0	371.0	0.0
7	482.0	482.0	0.0
8	593.0	593.0	0.0
9	816.0	817.0	-1.0
10	1038.0	1038.0	-1.0
Maximum :			1.0

Note

* For valid test results, the maximum difference between temperature readings should $\leq 1.0^{\circ}\text{C}$ (EPA Method 5, Section 6.1.1.8).
Perform all TC Channel calibrations, Except meter (DGM) channel!

PASS

DCM Out Temperature Sensor Calibration

Temperature point #	Ref. Thermometer Temperature °C	Thermocouple Display Temperature °C	Temperature Difference °C
Ice	0.0	0.0	0.0
Ambient	26.5	27.0	-0.5
Heat	109.8	110.0	-0.2

Difference Range

Temp. Difference $\pm 2^{\circ}\text{F}$ or $\pm 1.1^{\circ}\text{C}$

PASS

Note

The temperatures of the thermocouple and reference thermometers shall agree to within $\pm 2^{\circ}\text{F}$. (EPA Method 5, section 10.5)

Approved By :

(Patpasu Chaisana)
Service Manager

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DRY GAS METER XC-572-V

Serial No. : A2007510

Certificate Of Calibration

Method 5 Pre-Test Console Calibration - Cubic meter (m3)

Meter Console Information

Console Model : XC-572-V
 Console Serial : A2007510
 DGM Model #: SK25EX
 DGM Serial #: 00010219

Calibration Condition

Cal. Date: 24-Sep-25
 Due Date: 24-Sep-26
 Cal. Report No.: WDS-SV6809001
 Ambient Temp (°C): 25
 Pressure (mm Hg): 758
 Relative Humidity (%): 60

Factors/Conversion

Std. Temp. (°K): 298
 Std. Pressure (mm Hg): 760
 K₁ (K/mm Hg): 0.3857

Reference Equipment

WTM Model: W-NKoDa-5B WTM Cal. Due Date: Dec. 2026
 WTM Serial: 600245 Gamma: 1.0000

UUT Meter (DGM)

Run Time (minutes)	DGM Orifice (mm H ₂ O)	Volume		Outlet Temp		Volume		Outlet Temp	
		Initial	Final	Initial	Final	Initial	Final	Initial	Final
θ	P _{m(g)}	V _{in}	V _{out}	t _{in}	t _{out}	V _{in}	V _{out}	t _{in}	t _{out}
15.00	13.0	0.2808	0.4541	31	31	134.96748	135.13508	25	25
10.00	25.0	0.4844	0.6485	31	31	135.16304	135.32127	25	26
8.00	50.0	0.6702	0.8561	32	32	135.34120	135.52029	26	26
7.00	80.0	0.8899	1.0948	32	32	135.55153	135.74909	26	26
5.00	120.0	1.1160	1.2917	32	32	135.76810	135.93872	26	26

Standardized Data

Test Meter		Reference Meter		Correction Factor		Calibration Results		
Std. Volume	Std. Flow Rate	Std. Volume	Std. Flow Rate	"Gamma"	Variation	Flow Rate	ΔH@ (mm H ₂ O)	Variation
V _{m(std)} (m ³)	Q _{m(std)} m ³ /min	V _{w(std)} (m ³)	Q _{w(std)} m ³ /min	(Y)	(ΔY)	Q _{m(std)corr}	ΔH _g	ΔΔH _g
0.167	0.011	0.164	0.011	0.985	0.006	0.011	47.078	0.689
0.158	0.016	0.155	0.015	0.980	0.000	0.015	45.402	-0.988
0.179	0.022	0.175	0.022	0.978	-0.002	0.022	45.587	-0.803
0.198	0.028	0.193	0.028	0.976	-0.004	0.028	46.157	-0.233
0.170	0.034	0.167	0.033	0.979	0.000	0.033	47.725	1.335
				0.980	= Y Avg.	46.390 = ΔH@ Avg.		

Pass/Fail Result: Pass

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is ±0.02.

Note: For ΔH_g, orifice pressure differential that equates to 0.75cfm (0.0212m³/min) at standard temperature and pressure, acceptable tolerance of individual values from the average is ±0.2inches (5.1mm) H₂O.

Approved By:

(Patpasu Chaisana)
 Service Manager

WISDOM SCIENCE

WISDOM SCIENCE SINGAPORE SERVICE GROUP COMPANY LIMITED

Date: 24-Sep-25

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Certificate of Calibration - Supplemental

METHOD 6 PRE-TEST CONSOLE CALIBRATION

Nomenclature

P_b - Barometric Pressure
 DGM - Dry Gas Meter
 K₁ - Constant based on standard temp and press
 θ - Run time, in minutes
 P_m - ΔH (Meter Pressure, gauge)
 V_m - Volume collected by test meter, corrected for STP
 Q_{m(std)} - Calculated flow rate of test meter
 K' - Critical orifice coefficient
 P_w - Measured pressure of reference meter
 t_w - Temperature measured in reference meter
 t_m - Temperature measured in test meter
 Y - Ratio of volume collected from test meter and orifice
 sc - Scaling Factor
 Counts_{std} - Number of pulse counts, standardized
 Counts_{total} - Number of raw pulse counts of a calibration run

Equations

$$V_{w(std)} = Y * K_1 \frac{V_w * (P_{bar} + \frac{P_{m(g)}}{13.6})}{T_w}$$

$$V_{m(std)} = Counts_{std} * Y_{sc(avg)}$$

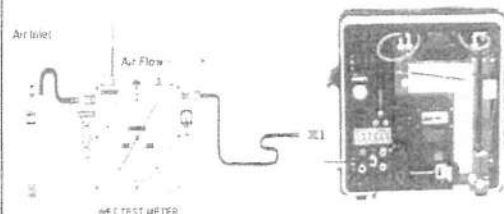
$$Counts_{std} = K_1 \frac{C_{total} * (P_{bar} + \frac{P_{m(g)}}{13.6})}{T_m}$$

$$Q_{w(std)} = \frac{V_{w(std)}}{\theta} \quad Y_{sc} = \frac{V_{w(std)}}{Counts_{std}}$$

$$K_1 = \frac{T_{std}}{P_{std}} \quad Y = \frac{V_{w(std)}}{V_{m(std)}}$$

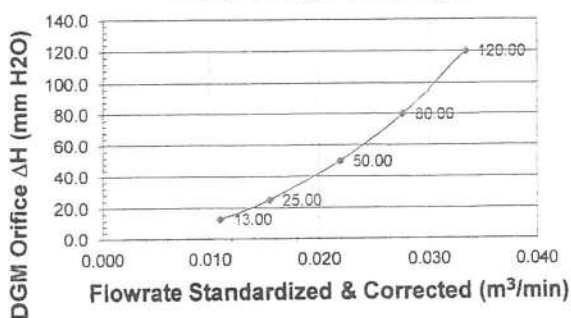
$$Metric \Delta H_g = \frac{P_{m(g)} * 0.0011696 * (P_{bar} + \frac{P_{m(g)}}{13.6})}{T_m} * \left(\frac{T_{std}}{T_m * P_{std}} \right)^2$$

Calibration Train



Calibration Graphs

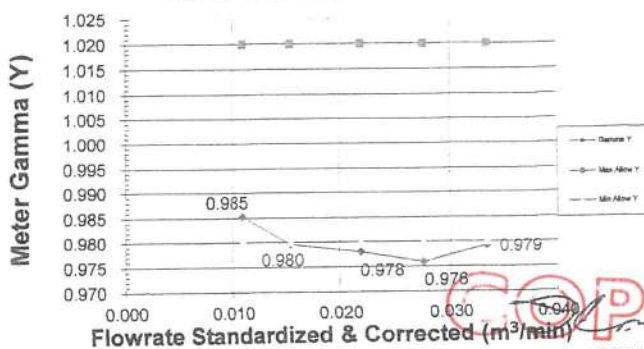
Meter Pressure vs Flowrate



Console Serial: A2007510

Console Model: XC-

Meter Gamma vs Flowrate



Console Serial: A2007510

Console Model: XC-572-V

TEMPERATURE DISPLAY CALIBRATION

Meter Console Information

Console Model : XC-572-V
 Console serial : A2007510
 Temp. Indicator Model : 765-KF
 Temp. Indicator Serial : JC17852

Calibration Conditions

Cal. Date : 24-Sep-25
 Due Date : 24-Sep-26
 Cal. Report No. : WDS-SV6909001
 Ambient Temp. (°C) : 25
 Pressure (mm Hg) : 758
 Humidity (%) : 90

Reference Equipment

Temp. Meter Model : Fluke 714B
 Serial No. : 60590035
 Cal. Date : 07-Apr-25
 Temp. Meter Model : Fluke 179
 Serial No. : 58620112
 Cal. Date : 08-Feb-25

Temperature Sensor Calibration

Reference Point	Ref. Thermocouple Temperature	Thermocouple Display Temperature	Temperature Difference
#	°C	°C	°C
1	-18.0	-18.0	0.0
2	38.0	38.0	0.0
3	93.0	93.0	0.0
4	149.0	149.0	0.0
5	280.0	280.0	0.0
6	371.0	372.0	-1.0
7	482.0	483.0	-1.0
8	583.0	594.0	-1.0
9	816.0	817.0	-1.0
10	1038.0	1038.0	-1.0
Maximum *			1.0

Note

* For valid test results, the maximum difference between temperature readings should $\pm 1.0^{\circ}\text{C}$ (EPA Method 5, Section 6.1.1.8).
 Perform all TC Channel calibrations. Except meter (DGM) channel

PASS

DGM Out Temperature Sensor Calibration

Temperature point	Ref. Thermocouple Temperature	Thermocouple Display Temperature	Temperature Difference
#	°C	°C	°C
Ice	0.0	0.0	0.0
Ambient	28.5	27.0	-0.5
Heat	114.3	115.0	-0.7
Difference Range			
Temp. Difference $\pm 2^{\circ}\text{F}$ or $\pm 1.1^{\circ}\text{C}$			

Note

The temperatures of the thermocouple and reference thermometers shall agree to within $\pm 2^{\circ}\text{F}$ (EPA Method 5, section 10.5)

PASS

Approved By :

P. Chaisana

(Palpasu Chaisana)

Service Manager

WISDOM SCIENCE

WISDOM SCIENCE (SALE AND SERVICE GROUP COMPANY) LIMITED
 43/10-12/13 Moo 10, Bang Krasang, Bangkok 10140, Thailand
 Tel. 02-123-4567

COPY

Flue gas Analyzer

Testo 350

Serial No. 63455658/0722

Certificate No: G 250296
Date of issue : 04-Nov-25

Instrument description : Flue Gas Analyzer
Instrument model : Testo 350
Instrument serial no. : 63455658/0722
Control unit serial no. : 03601409/0722
ID no. or control no. :
Manufacturer : Testo SE & Co. KGaA
Probe description :
Probe model :
Probe serial no. :
Customer name : Eastern Thai Consulting 1992 Company Limited
Customer address : 683 Moo 11, Sukhapibarn 8 Road, Nongkham, Si Racha, Chon Buri 20280

Total pages of certificate : 2 Pages
Receiving no. : L-253802
Receiving date. : 03-Nov-25
Parameter of calibration :
Gas Calibration(Oxygen 2.506, 9.984, 21.01 %vol, Carbon Monoxide 80.38, 300.9, 1001 ppm,
Nitrogen Dioxide 30.68, 81.8, 202.3 ppm, Nitric Oxide 30.0, 151.8, 322 ppm,
Sulphur Dioxide 50.4, 100.7, 605.9 ppm)

Condition of UUC. : Used
Ambient condition : All of the Measurement were carried out the stabilized laboratory
Temperature : 23 ± 5 °C
Humidity : 55 ± 15 %RH

Calibration place : 17/121 Soi Ngamwongwan 47 Yaek 48, Toongsonghong, Laksi, Bangkok 10210

Calibration procedure no : This instrument was calibrated by comparison with Standard gas mixture according to calibration Work Instruction no. WI-CL-28-C

*The calibration certificate expanded uncertainty of measurement is stated as the standard uncertainty of measurent
Multiplied by coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.
This certificate is applied only to item under test Environmental condition.*
*This Calibration Certificate may not be reproduced other than in full except with the permission of the issuing laboratory.
Calibration certificates without signature and seal not valid and The results relate only to the items tested/calibrated.
This calibration certificate documents are traceability to national standards, which realize measurement according to the International System of Units (SI).*

Date of calibration : 04-Nov-25

Kamnonkij

Mr. Kwanchai Khamdoun
Calibration Technician

D-Willie

Mrs. Nongluck Wongsettee
Technical Manager

Standard References (Table 1)

Standard	Certificate No.	Vendor	Due date
Oxygen (O2) 2.506 % Vol	1287/25	Linde	08-May-29
Oxygen (O2) 9.984 % Vol	CG-0090-25	Nimt	24-Jun-30
Oxygen (O2) 21.01 % Vol	CG-0112-24	Nimt	01-Aug-29
Carbon monoxide (CO) 80.38 ppm	CG-0105-25	Nimt	04-Aug-30
Carbon monoxide (CO) 300.9 ppm	1422/25	Linde	21-May-29
Carbon monoxide (CO) 1001 ppm	CG-0085-24	Nimt	22-May-29
Nitrogen Dioxide (NO2) 30.68 ppm	2832/24	Linde	08-Sep-26
Nitrogen Dioxide (NO2) 81.8 ppm	2330/24	Linde	01-Aug-26
Nitrogen Dioxide (NO2) 202.3 ppm	2558/25	Linde	02-Sep-27
Nitric Oxide (NO) 30.0 ppm	CG-0065-24	Nimt	06-May-26
Nitric Oxide (NO) 151.8 ppm	0404/25	Linde	09-Feb-27
Nitric Oxide (NO) 322 ppm	1234/25	Linde	04-May-27
Sulphur Dioxide (SO2) 50.4 ppm	1306/25	Linde	12-May-27
Sulphur Dioxide (SO2) 100.7 ppm	2662/24	Linde	25-Aug-26
Sulphur Dioxide (SO2) 605.9 ppm	1229/25	Linde	04-May-27

Measured room conditions

Temperature : 22.6 °C Humidity : 67.7 %RH Pressure : 1011.9 mbar
Calibration conditions
Gas Temperature : 23 °C Flow rate : 1,300 ml/min Gas pressure : 1016.5 mbar

Calibration Results (Without adjustment) (Table 2)

Parameter of Standard	Standard Values	Mean of UUC	Error	Uncertainty (±)
O2 (%Vol)	2.506	2.44	-0.066	0.15
O2 (%Vol)	9.984	10.12	0.136	0.23
O2 (%Vol)	21.01	21.15	0.14	0.30
CO (ppm)	80.38	81	0.62	3.0
CO (ppm)	300.9	303	2.1	6.0
CO (ppm)	1001	1006	5	12
NO2 (ppm)	30.68	29.4	-1.28	8.0
NO2 (ppm)	81.8	79.7	-2.1	8.0
NO2 (ppm)	202.3	199.1	-3.2	12
NO (ppm)	30.0	30	0.0	8.0
NO (ppm)	151.8	151	-0.8	8.0
NO (ppm)	322	323	1	12
SO2 (ppm)	50.4	50	-0.4	6.0
SO2 (ppm)	100.7	102	1.3	6.0
SO2 (ppm)	605.9	610	4.1	13

Remark : 1 cmol/mol = 1 %vol, 1 µmol/mol = 1 ppm., Sensor(CO, NO2)New.

End of Report

Flue gas Analyzer

Testo 350

Serial No. 63455616/0722

Certificate No: G 250384
Date of issue : 02-Dec-25

Instrument description : Flue Gas Analyzer
Instrument model : Testo 350
Instrument serial no. : 6345616/0722
Control unit serial no. : 03600177/0722
ID no. or control no. : -
Manufacturer : Testo SE & Co. KGaA
Probe description : -
Probe model : -
Probe serial no. : -
Customer name : Eastern Thai Consulting 1992 Company Limited
Customer address : 683 Moo 11, Sukhapibarn 8 Road, Nongkham, Si Racha, Chon Buri 20280

Total pages of certificate : 2 Pages
Receiving no. : L-254783
Receiving date. : 27-Nov-25
Parameter of calibration : Gas Calibration (Oxygen, Carbon Monoxide, Nitrogen Dioxide, Nitric Oxide, Sulphur Dioxide)

Condition of UUC. : Used
Ambient condition : All of the Measurement were carried out the stabilized laboratory
Temperature : 23 $\pm$ 5 $^{\circ}$ C
Humidity : 55 $\pm$ 15 %RH
Calibration place : 17/121 Soi Ngamwongwan 47 Yaek 48, Toongsonghong, Lakso, Bangkok 10210
Calibration procedure no. : This instrument was calibrated by comparison with Standard gas mixture according to calibration Work Instruction no. WI-CL-28-C

The calibration certificate expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%. This certificate is applied only to item under test Environmental condition.
This Calibration Certificate may not be reproduced other than in full except with the permission of the issuing laboratory.
Calibration certificates without signature and seal not valid and The results relate only to the items tested/calibrated.
This calibration certificate documents are traceability to national standards, which realize measurement according to the International System of Units (SI).

Date of calibration : 02-Dec-25

Kannanohw
Mr. Kwanchai Khamdoun
Calibration Technician

D-Willie
Mrs. Nongluck Wongsettee
Technical Manager

COPY

Certificate No.: G 250384

Standard References (Table 1)

Standard	Certificate No.	Vendor	Due date
Oxygen (O ₂) 2.506 % Vol	1287/25	Linde	08-May-29
Oxygen (O ₂) 9.984 % Vol	CG-0090-25	Nimt	24-Jun-30
Oxygen (O ₂) 21.01 % Vol	CG-0112-24	Nimt	01-Aug-29
Carbon monoxide (CO) 80.38 ppm	CG-0105-25	Nimt	04-Aug-30
Carbon monoxide (CO) 300.9 ppm	1422/25	Linde	21-May-29
Carbon monoxide (CO) 1000 ppm	3131/25	Linde	27-Oct-29
Nitrogen Dioxide (NO ₂) 30.68 ppm	2832/24	Linde	08-Sep-26
Nitrogen Dioxide (NO ₂) 81.8 ppm	2330/24	Linde	01-Aug-26
Nitrogen Dioxide (NO ₂) 202.3 ppm	2558/25	Linde	02-Sep-27
Nitric Oxide (NO) 30.0 ppm	CG-0065-24	Nimt	06-May-26
Nitric Oxide (NO) 151.8 ppm	0404/25	Linde	09-Feb-27
Nitric Oxide (NO) 322 ppm	1234/25	Linde	04-May-27
Sulphur Dioxide (SO ₂) 50.4 ppm	1306/25	Linde	12-May-27
Sulphur Dioxide (SO ₂) 100.7 ppm	2662/24	Linde	25-Aug-26
Sulphur Dioxide (SO ₂) 605.9 ppm	1229/25	Linde	04-May-27

Measured room conditions

Temperature : 23.3 $^{\circ}$ C **Humidity :** 61.9 %RH **Pressure :** 1010.4 mbar

Calibration conditions

Gas Temperature : 23 $^{\circ}$ C **Flow rate :** 1,300 ml/min **Gas pressure :** 1016.5 mbar

Calibration Results (Without adjustment) (Table 2)

Parameter of Standard	Standard Values	Mean of UUC	Error	Uncertainty ($\pm$)
O ₂ (%Vol)	2.506	2.45	-0.056	0.15
O ₂ (%Vol)	9.984	10.02	0.036	0.20
O ₂ (%Vol)	21.01	21.08	0.07	0.30
CO (ppm)	80.38	81	0.62	3.0
CO (ppm)	300.9	300	-0.9	6.0
CO (ppm)	1000	997	-3	12
NO ₂ (ppm)	30.68	28.7	-1.98	8.0
NO ₂ (ppm)	81.8	80.2	-1.6	8.0
NO ₂ (ppm)	202.3	202.8	0.5	12
NO (ppm)	30.0	31	1.0	8.0
NO (ppm)	151.8	154	2.2	8.0
NO (ppm)	322	325	3	12
SO ₂ (ppm)	50.4	50	-0.4	6.0
SO ₂ (ppm)	100.7	100	-0.7	6.0
SO ₂ (ppm)	605.9	605	-0.9	13

Remark : 1 cmol/mol = 1 %vol, 1 μ mol/mol = 1 ppm, Sensor(CO, NO₂, NO, SO₂)New.

End of Certificate of Calibration

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Hot Air Oven

Model : UFE 500

Serial No. : G511.0182

NSC-TSI-TSI7025
CALIBRATION 0152

Page 1 of 3

CERTIFICATE OF CALIBRATION

Certificate No. : 25-215653

Sample Code : 25-94507-006

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.

683 Moo 11, Sukhapbarn 8 Rd., Nongkham,

Sriacha, Chonburi 20230

Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.

(Hot Lab)

Equipment : Temperature controlled enclosures (Hot air oven)

Manufacturer : Memmert Model : UFE 500

Serial No. : G511.0182 ID No. : LABE 17/4

Date of Receipt : 16 December 2025 Date of Calibration : 16 December 2025

Condition of Calibration

1. Environment 1.1 Ambient temperature : Maximum 27.6 °C : Minimum 25.4 °C
1.2 Relative humidity : Maximum 61.4 % : Minimum 54.0 %
1.3 Line voltage supplied : Maximum 229.7 VAC : Minimum 225.6 VAC

2. Calibration method

TLAS-G-20: Guidelines for calibration and checks of temperature controlled enclosures.

3. Reference standard instrument

Instrument	ID No.	Certificate No.	Due Date
Data acquisition with sensor (RTD-PH00)	LB-DA-19 (RTD-302 to RTD-303, RTD-311, RTD-305 to RTD-310)	25-010559	04 February 2026

4. This certificate is traceable to the international system of unit (SI Unit).

The measurement is traceable to Asia Medical and Agricultural Laboratory and Research Center Public Company Limited.

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

6. Condition of calibration item : Normal

Calibrated by

Mr. Natthanon Phosri

Approved by

(Mr. Somchai Neampunt)

Scientist

Signed for Director

Issue date

17 December 2025

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

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

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 traceability to recognized national standards and to the unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

361 Soi Ladprao 122, Ladprao Road,

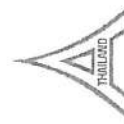
Bhitthakhe, Muang Thongburi, Bangkok 10310

TEL 02-516-2422

FAX 02-516-6049

CONTACT@AMARC.CO.TH

WWW.AMARC.CO.TH

NSC-TSI-TSI7025
CALIBRATION 0152

Page 2 of 3

REPORT OF CALIBRATION

Certificate No. : 25-215653

Sample Code : 25-94507-006

Results of Calibration

Resolution : 0.5 °C

1. Reporting of Temperature

Calibration point (°C)	UUC* setting (°C)	UUC* reading (°C)	Measured temperature at each positions (°C)								Uncertainty ± (°C)	Coverage factor k	
			# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8			# g ^{Ref}
104	103.5	103.5	103.98	103.97	103.67	103.76	104.10	104.22	103.80	103.52	103.92	0.47	2.00

2. Characterization results

Calibration point (°C)	Stability ± (°C)	Uniformity (°C)	Overall variation (°C)
104	0.07	0.48	0.84

Notes

UUC* = Unit Under Calibration

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REPORT OF CALIBRATION

Certificate No. : 25-215653

Sample Code : 25-94507-006

Results of Calibration

Notes

1. Sensor installation locations
 - 1.1 All sensors at any corners or walls should be positioned 5 cm (a x b x c) from the wall.
 - 1.2 The reference sensor is preferably located of the geometric center of the chamber.
2. Interior dimensions approx of chamber :
W = 56 cm ; D = 40 cm ; H = 48 cm
3. Air valve or fresh air level : Off
4. Fan level : Open
5. The quoted uncertainty includes "Stability of chamber and loading effect in chamber at 20% of uniformity".
6. Uniformity - the maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time.
7. Stability - one-half of the greatest maximum difference of measured temperatures at any one sensor.
8. Overall variation - the difference of the maximum and the minimum measured temperatures throughout observation time.
9. UUC* reading - the average reading of indicating device that forms the integral part of the enclosure.
10. Calibration results without adjustment.

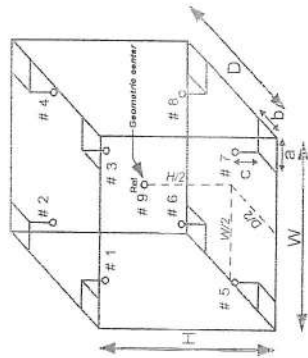


Figure: Example of sensor
Installation Positions

The result expanded uncertainty of measurement U is stated as the standard uncertainty of measurement multiplied by the coverage factor k, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003.

- End of Report -

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INDUCTIBELY COUPLED PLASMA SPECTROMETER

Model : Prodigy 7

Serial No. : P70177



Instrument Performance Certificate
For ICP-OES

PRODUCT ID
Serial Number

Prodigy 7, Teledyne Leeman Labs
P70177

Customer Name
Address

Eastern Thai Consulting 1992 Co.,Ltd
683 Moo 11 Tambon Nong Kham, Si Racha, Chonburi 20230

Date of Qualified
Next Due date

Nov 3, 2025
May 2, 2025

This certifies for products which was performed in acceptable criteria specifications

- Gas supply /Water chiller/Exhaust hood
Spectrometer PASSED
- RF Generator PASSED
- Sample Introduction & Autosampler PASSED
- Software & Computer PASSED
- Hardware Diagnostics Test PASSED
- Analytical Test PASSED

Provided by

Scientist Instrument Co.,Ltd.
113 Soi Ekachai 44, Ekachai Road
Khlong Bang Phran, Bangbon
Bangkok 10150 Thailand

Certified by

Thunraphol Sakdayos

Service Engineer



Preventive Maintenance Report

Customer Name: Eastern Thai Consulting 1992 Co.,Ltd
Instrument/Equipment: ICP-OES
Brand: Teledyne Leeman Labs
Date: Nov 3 2025
Model: Prodigy 7
S/N: P70177

1. Gas Supply / Water Chiller / Exhaust Hood:		Status
Gas systems:	Argon Pressure (80-95 psi): 90 psi	OK ☒
	Nitrogen Pressure (80-95 psi): - psi	OK ☐
	No leak inspected	OK ☒
	Replace camera purge gas Dehydrator	OK ☒ Checked ok
Water Chiller for RF generator		OK ☒
	Pressure 30 psi (2 L/min)	OK ☒
	Temperature: 22-46 °C	OK ☒ Ambient ok
Water Chiller for Detector		OK ☒
	No leak inspected	OK ☒
	Check water level and refill	OK ☒
	Change water	OK ☒
	Temperature: 28 °C	OK ☒
Exhaust Hood:		OK ☒
	Air Flow rate (> 105 cfm) >105 cfm	OK ☒
2.Spectrometer		Status
Optical view position		
	Axial peak positions x 3320 y 1200	OK ☒
	Radial peak positions x 4226 y 1150	OK ☒
	Hg lamp peak positions x 3245 y 3415	OK ☒
Wavelength Calibrate with HG Lamp		OK ☒
	Full Frame Image	OK ☒
	Temperature controlled 31 °C	OK ☒
	Purge gas flow control Low/High	OK ☒
	Camera Support Module	OK ☒

Engineer Sign

Signature



3.RF Generator		Status
Plasma Control		
Auto Start	OK ☒	
Extinguish	OK ☒	
RF power setting	OK ☒	
Igniter	OK ☒	
Air Knife	OK ☒	
Coolant /Plasma Flow control	OK ☒	
Aux Flow	OK ☒	
Optimize sample introduction function	OK ☒	
Camera Support Module	OK ☒	
4.Sample Introduction & Autosampler		
Plasma torch		
Plasma Torch	OK ☒	
Spray chamber	OK ☒	
Injector	OK ☒	
Nebulizer pressure	OK ☒	
Peristaltic pump and control		
speed control	OK ☒	
Sample tubing	OK ☒	
Drain tubing	OK ☒	
Autosampler Control		
Position movement	OK ☒	No Option
Drain tubing	OK ☒	
Auto Rinse	OK ☒	
5.Computer & Software Check:		
Interface Cable USB	OK ☒	
Software Version 5.2	OK ☒	
Operation function check :	OK ☒	
Open /Save /Edit method	OK ☒	
Instrument Control	OK ☒	
Sequence	OK ☒	
Full Frame Capture	OK ☒	
Auto alignment /Hg alignment	OK ☒	
Calibration Curve	OK ☒	
Re-Calculaton	OK ☒	
Print Report	OK ☒	

Engineer Sign
Esmat

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6.Hardware Diagnostics Test

Power Supply	Reference Value	Reading Value	Status
	-12 VDC (+/- 5 %)	-13.7	Passed ☒
	+12 VDC (+/- 5 %)	11.91	Passed ☒
	+3.3VDC (+/- 5 %)	3.306	Passed ☒
	+5.0 VDC (+/- 5 %)	4.995	Passed ☒
	+13.5 VDC (+/- 7.5 %)	13.4	Passed ☒
Plasma Generator			
	ICP Current 0.500A = 1kW	0.502	Passed ☒
	ICP Ref 5.0Vdc = 1kW	5.001	Passed ☒
	ICP Current 0.00 Vdc = 0kW	0.000	Passed ☒
	ICP Ref 0.00Vdc = 0kW	0.000	Passed ☒
	RF Water (Hz) OFF (1 Hz)	0	Passed ☒
	RF Water (Hz) ON (20-35 Hz)	22	Passed ☒
	Air Knife Pres. (0.00V) OFF	0.0	Passed ☒
	Air Knife Pres. (3.0 – 7.0 V) ON	4.2	Passed ☒
	Neb pressure setting of 2.5 psi	2.5	Passed ☒
	Cool flowrate setting of 16 lpm	16.0	Passed ☒
	Aux flowrate setting of 0.3 lpm	0.34	Passed ☒
Camera Support Module			
	Pump Current (0.000 A) OFF	0.0	Passed ☒
	Pump Voltage (0.000 V) OFF	0.0	Passed ☒
	Pump Current (0.8 to 4.0A) ON	1.03	Passed ☒
	Pump Voltage (8 to 13 V) ON	12.52	Passed ☒
	Water chiller Temp. Setting 25 °C	24.2	Passed ☒
	Cam Tec Temperature Setting -22 °C	-22	Passed ☒
Optical purge flowrate			
	Optical Purge Low Setting 5 lpm	5.0	Passed ☒
	Optical Purge High Setting 10 lpm	10.0	Passed ☒

7.Cleaning & Replacement

	Status
O-Ring Torch replacement	OK ☒
Pump Tubing replacement	OK ☒
Glassware cleaning	OK ☒
Lubricate the roll peristaltic pump	OK ☒
Optical windows cleaning	OK ☒
Change & refilled Detector water chiller	OK ☒
Change & refilled RF Generator water Chiller	OK ☒

Engineer Sign
Esmat

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8.Safety Interlock	Status
Argon pressure	OK ☒
Air Knife	OK ☒
RF power regulator	OK ☒
RF power temp	OK ☒
RF power current	OK ☒
RF water	OK ☒
Oscillator cover	OK ☒
Door switch	OK ☒
Camera purge	OK ☒
Camera TE cooler	OK ☒
Water chiller	OK ☒
Heater Fans	OK ☒

9. Analytical Test	Details	Status
Method Name	Mn Setup	
SRM Standard	Mn 5 ppm	
Calibration curve type	Linear	
Rho	1.0	OK ☒
Element	Mn	
QC standard Check	5 ppm	OK ☒

Customer Sign	Engineer Sign

Customer Sign	Engineer Sign

2

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Mn Setup - Mn 257.610

Linear



A= 0.0000e+000
B= 1.2345e-007
C= -3.8588e-004
Rho= 1.0000000
Exp=
Accept= Accepted

Mn Setup - Mn 257.610 r

Linear



A= 0.0000e+000
B= 1.3596e-005
C= -1.6587e-003
Rho= 1.0000000
Exp=
Accept= Accepted

Max Conc.: 5,000 ppm

Std ID	Conc	Calc	Dev.	Mean	SD or %RSD	Rep 1	Rep 2	Rep 3	Rep 4	R _t	Std ID
Mn	5,000	5,000	0.000	40506599	0.2 %	40500970	40404947	40613882			Mn
Blank	0	1.66e-016	0.000	3134	578.179	3952	2727	2724			Blank

Max Conc.: 5,000 ppm

Mean	SD or %RSD	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
367888	0.6 %	368243	364847	370576		
122	3.859	126	117	124		

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PM Test Report 3 November 2025

QMS File Ref: 03 Nov 2025 11:44:06

11/03/2025 11:44:06

Sample ID	Line	Conc.	Intensity
Blank - 1	Mn 257.610	-	3952
Blank - 1	Mn 257.610 r	-	126
Blank - 2	Mn 257.610	-	2727
Blank - 2	Mn 257.610 r	-	117
Blank - 3	Mn 257.610	-	2724
Blank - 3	Mn 257.610 r	-	124
Mn - 1	Mn 257.610	-	40500970
Mn - 1	Mn 257.610 r	-	368243
Mn - 2	Mn 257.610	-	40404947
Mn - 2	Mn 257.610 r	-	364847
Mn - 3	Mn 257.610	-	40613882
Mn - 3	Mn 257.610 r	-	370576
QC Check 5 ppm - 1	Mn 257.610	5.0594	40988160
QC Check 5 ppm - 1	Mn 257.610 r	5.0111	368708
QC Check 5 ppm - 2	Mn 257.610	5.0271	40726441
QC Check 5 ppm - 2	Mn 257.610 r	5.0148	368980
QC Check 5 ppm - 3	Mn 257.610	5.0679	41056315
QC Check 5 ppm - 3	Mn 257.610 r	4.9538	365228
QC Check 5 ppm - 4	Mn 257.610	5.0515	40923751
QC Check 5 ppm - 4	Mn 257.610 r	5.0040	368180
QC Check 5 ppm - 5	Mn 257.610	5.0533	40938450
QC Check 5 ppm - 5	Mn 257.610 r	4.9881	367015
QC Check 5 ppm - 6	Mn 257.610	5.0864	41206181
QC Check 5 ppm - 6	Mn 257.610 r	4.9493	364157
QC Check 5 ppm - 7	Mn 257.610	5.0544	40947211
QC Check 5 ppm - 7	Mn 257.610 r	5.0685	372928
QC Check 5 ppm - 8	Mn 257.610	5.0681	41058127
QC Check 5 ppm - 8	Mn 257.610 r	4.9847	366763
QC Check 5 ppm - 9	Mn 257.610	5.0659	41048908
QC Check 5 ppm - 9	Mn 257.610 r	5.0494	371520
QC Check 5 ppm - 10	Mn 257.610	5.0481	40896149
QC Check 5 ppm - 10	Mn 257.610 r	4.9444	363799

COPY

IC-THERMO

Serial No. : 20053176



Certificate of Calibration
Integriion RFIC: Anion and Cation (ID#960)

This certificate is to verify that instrument below are calibrated

by Archemica Lab Co., Ltd.

Integriion	S/N: 20053176
AS-DV	S/N: 2008880131

for
Eastern Thai Consulting 1992 Co., Ltd.



Operator Signature : Saharat Popayom Date : October 6-7, 2025

(Mr. Saharat Popayom)

Applications Chemist

COPY

UV/VIS SPECTROPHOTOMETER

Model : UV-1800

Serial No. : A11635101643 CD



Bara Scientific Co., Ltd.
968 U Chu Liang Building Floor 7 Rama4 Road
Silom Bangkok Bangkok Thailand 10500
Tel : 02-6324300 Fax : 02-6375496-7
www.barascientific.com



Certificate of Calibration

Number of Page(s) 1 of 3

Certificate No.

BSCC-UV-153/25

Equipment

UV/Vis Spectrophotometer

Model

UV-1800

Manufacturer

Shimadzu

Serial No.

A11635101643 CD

ID No.

LABE 03/2

Date of receipt

21 April 2025

Date of calibration

21 April 2025

Date of issue

25 April 2025

Customer name

Eastern Thai Consulting 1992 Co., Ltd

Address

683 Moo 11, Sukkhaphitbarn 8 Rd., Nongkham, Sriracha, Chonburi 20230

Temperature

(24.7-26.8) °C (On site)

Humidity

(36.9-46.2) %RH (On site)

Equipment condition

Good Operation

Calibration Location

Analysis Department

Calibration Procedure

In-house method WI-UV-702-01 based on ASTM E275-01

Traceability

Wavelength Accuracy is traceable to certificate No.

Photometric Accuracy is traceable to certificate No.

Stray Light is traceable to certificate No.

The above certificate are traceable to SI unit through NIST through Starna Scientific Ltd.

(UKAS accredited calibration laboratory NO. 0659)

Calibrated by

Mr Phongpak Sontunuch

Approved by

Mr. Pannaphong Phannmekakul
Technical Manager

The above results are valid exclusively for the calibrated item(s) as mention in this report / certificate.
Advertising this report / Certificate and publicity of the results are prohibited and also shall not be reproduced
except in full, without written approval of the Bara Scientific Co., Ltd

FMJUV-708-02 Rev.01 (22/01/63)



Bara Scientific Co., Ltd.
968 U Chu Liang Building Floor 7 Rama4 Road
Silom Bangkok Bangkok Thailand 10500
Tel : 02-6324300 Fax : 02-6375496-7
www.barascientific.com



Certificate of Calibration

Number of Page(s) 2 of 3

Certificate No.

BSCC-UV-153/25

Calibration Results:

1. Wavelength Accuracy

Certified Wavelength (nm)	UUC (nm)	Error (nm)	Uncertainty (nm)
287.71	287.70	-0.01	0.18
445.82	445.87	0.05	0.18
536.52	536.52	0.00	0.18
741.02	741.05	0.03	0.18
879.41	879.33	-0.08	0.18

2. Photometric Accuracy (UV)

Wavelength (nm)	Certified Absorbance (A)	UUC (A)	Error (A)	Uncertainty (±A)
235	0.0000	-0.0001	-0.0001	0.0075
	0.7404	0.7416	0.0012	0.0075
257	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
313	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
350	0.0000	0.0000	0.0000	0.0075
	0.6397	0.6398	0.0001	0.0075

*CNR = Customer not request

The above results are valid exclusively for the calibrated item(s) as mention in this report / certificate.
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FMJUV-708-02 Rev.01 (22/01/63)



Bara Scientific
908 U Chu Liang Building Floor 7 Rama4 Road
Silom Bangkok Thailand 10500
Tel : 02-6324300 Fax : 02-6375496-7
www.barascientific.com



Certificate of Calibration

Certificate No. **BSCC-JV-153/25** Number of Page(s) **3 of 3**

Calibration Results:

3. Photometric Accuracy (Visible)

Wavelength (nm)	Certified Absorbance (A)	UUC (A)	Error (A)	Uncertainty (±A)
420.0	0.0000	0.0001	0.0001	0.0042
	0.5733	0.5712	-0.0021	0.0042
	0.7113	0.7097	-0.0016	0.0042
	1.0164	1.0150	-0.0014	0.0042
440.0	0.0000	0.0000	0.0000	0.0042
	0.5581	0.5559	-0.0022	0.0042
	0.6996	0.6975	-0.0021	0.0042
	1.0000	0.9984	-0.0016	0.0042
465.0	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
546.1	0.0000	0.0000	0.0000	0.0042
	0.5217	0.5202	-0.0015	0.0042
	0.6970	0.6947	-0.0023	0.0042
	0.9982	0.9969	-0.0013	0.0042
590.0	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
635.0	0.0000	0.0000	0.0000	0.0042
	0.5630	0.5620	-0.0010	0.0042
	0.7615	0.7594	-0.0021	0.0042
	1.0953	1.0943	-0.0010	0.0042

*CNR = Customer not request

4. Stray Light*

Standard cut-off wavelength (nm)	Unit Under Calibration(UUC)	
	Wavelength (nm)	Absorbance (A)
201.10±0.11nm	200.85	2.0116

The Stray light transmission reference is less than 1.0%T and Stray light absorbance reference is greater than 2.00A
*Stray Light not NSC-ONSC Accredited.

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

End of Certificate

COPY

The above results are valid exclusively for the calibrated item(s) as mention in this report / certificate.
Advertising this report / Certificate and publicity of the results are prohibited and also shall not be reproduced
except in full, without written approval of the Bara Scientific Co., Ltd.

Heat Stress Monitor

Model : Ques Temp 34

Serial No. : TEU080015

CERTIFICATE OF CALIBRATION

Certificate No. : CDT-013-69

MEASUREMENT ITEM
MANUFACTURER
MODEL/TYPE
SERIAL NUMBER
ID NUMBER
CONDITION AS RECEIVED
CUSTOMER

: Heat Stress Monitor
: TSI QUEST
: Ques Temp 34
: TEU080015
: NO. 14
: Used item
: Eastern Thai consulting 1992 Co., Ltd.
683 Moo 11, Sukhapiarn 8 Rd,
Nongkham, Sriracha, Chonburi 20230
: 25 Dec 2025
: 08 Jan 2026
: 08 Jan 2026

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:
Temperature : 23.0 ± 3.0 °C
Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:
☐ Mr. Sorawit Thachalad
☒ Miss Jitraporn Lertsomphol
☐ Miss Ruangrumpai Phoommit

Approved signatory:

Mr. Parinya Booncharoen

Calibration Department Manager



NSC-TISI - TIS 17025
CALIBRATION 0367

Page 1 of 2 Pages

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

Traceability:
The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT).
Certificate number: TT-1013-25, Certificate number: ER-0061-25.

Reference Used During Calibration:

1. Standard Temperature Probe
Model: STS-100 AS500, Serial No.: 667682 09,
Due date: 9 Apr 2026
2. Digital Temperature Indicator
Model: DTI-1000-A MK II, Serial No.: 671407-00591 Due date: 22 Apr 2026

Uncertainty of measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement".

Continuation of Certificate of Calibration Number CDT-013-69

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 20 °C to 40 °C

Function:

Table 1: This equipment was connected with wet bulb Temperature probe Model: -, S/N: -.
Dimension: Diameter 4.77 mm. Length 70 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
65	20.052	20.4	0.3	0.099
65	25.042	25.3	0.3	0.099
65	30.032	30.3	0.3	0.099
65	35.020	35.3	0.3	0.14
65	40.011	40.2	0.2	0.099

Table 2: This equipment was connected with Globe Temperature probe Model: -, S/N: -.
Dimension: Diameter 4.77 mm. Length 70 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
65	20.052	20.4	0.3	0.099
65	25.042	25.3	0.3	0.099
65	30.032	30.2	0.2	0.099
65	35.020	35.2	0.2	0.14
65	40.011	40.2	0.2	0.099

Table 3: This equipment was connected with Dry Bulb Temperature probe Model: -, S/N: -.
Dimension: Diameter 4.77 mm. Length 70 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
65	20.052	20.4	0.3	0.099
65	25.042	25.3	0.3	0.099
65	30.032	30.2	0.2	0.099
65	35.020	35.2	0.2	0.14
65	40.011	40.2	0.2	0.14

UUC*: Unit Under Calibration

Remark: The reported uncertainty of measurement is 0.14, based on standard uncertainty multiplied by a coverage factor $k=2$, 14 providing a level of confidence of approximately 95%.

End of Certificate of Calibration



COPY

Heat Stress Monitor

Model : Ques Temp 34

Serial No. : TEU080011

Continuation of Certificate of Calibration Number CDT-009-69

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 20 °C to 40 °C

Function:

Table 1: This equipment was connected with wet bulb Temperature probe Model: -, S/N: -,
Dimension: Diameter 4.77 mm. Length 70 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
65	20.053	20.3	0.2	0.099
65	25.042	25.3	0.3	0.099
65	30.028	30.2	0.2	0.099
65	35.019	35.1	0.1	0.099
65	40.005	40.1	0.1	0.099

Table 2: This equipment was connected with Globe Temperature probe Model: -, S/N: -,
Dimension: Diameter 4.77 mm. Length 70 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
65	20.053	20.4	0.3	0.099
65	25.042	25.3	0.3	0.099
65	30.028	30.2	0.2	0.099
65	35.017	35.2	0.2	0.099
65	40.005	40.0	0.0	0.099

Table 3: This equipment was connected with Dry Bulb Temperature probe Model: -, S/N: -,
Dimension: Diameter 4.77 mm. Length 70 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
65	20.053	20.1	0.0	0.099
65	25.042	25.1	0.1	0.099
65	30.028	30.1	0.1	0.099
65	35.017	35.0	0.0	0.099
65	40.005	40.1	0.1	0.099

UUC*: Unit Under Calibration

End of Certificate of Calibration



COPY

CERTIFICATE OF CALIBRATION

Certificate No. : CDT-009-69

: Heat Stress Monitor

: TSI QUEST

: Ques Temp 34

: TEU080011

: NO. 10

: Used item

: Eastern Thai Consulting 1992 Co., Ltd.
683 Moo 11, Sukhaphibarn 8 Rd,
Nongkham, Sriracha, Chonburi 20230

: 25 Dec 2025

: 07 Jan 2026

: 08 Jan 2026

RECEIVED DATE

MEASUREMENT DATE

ISSUE DATE

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature : 23.0 ± 3.0 °C

Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

- ☐ Mr. Sorawit Thachalad
☒ Miss Jitraporn Lertsomphol
☐ Miss Ruangrumpai Phoommit

Approved signatory:

Mr. Parinya Booncharoen
Calibration Department Manager



COPY

SOUND LEVEL CALIBRATOR

MODEL : NC-75

SERIAL No. : 34745929

Calibration Certificate

Cert. No. : ACC25046
Pages : 1 of 3

Equipment : SOUND CALIBRATOR
Manufacturer : RION
Model : NC-75
Serial No. : 34745929
ID No. :

Condition As Found : GOOD

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
SAHA GROUP INDUSTRIAL PARK, 683 MOO 11,
NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.

Location :
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %

Received Date : 18 AUGUST 2025
Calibration Date : 01 SEPTEMBER 2025
Date of Issue : 02 SEPTEMBER 2025

Calibrated by :

Nathakorn Pisutpaisan

Approved by :

(Nitinun S.)

(Nitinun Srihawan)

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.

Cert. No. : ACC25046
Job No. : VC68AC0165
Pages : 2 of 3

Calibration Procedure : CP-AC-03

Calibration Method :

This equipment was calibrated by follow on IEC-60942-2003 Standard.

The sound pressure level, frequency and total distortion of the sound calibrator was measured using the reference microphone.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33511B	MY52302742	EF-0012-25	11-FEB-26
Digital Multimeter	33461 A	MY53220104	EEL-BP 24/0268	22-APR-26
Digital Multimeter	33461 A	MY53220076	EEL-BP 23/0268	22-APR-26
Digital Multimeter	33461 A	MY60024273	CA2025120EA	18-MAR-26
Programmable Attenuator	MAT-1070	62100114	EF-0006-25	11-FEB-26
Condenser Microphone	4180	2977900	AA-1002-25	19-FEB-26
Measuring Amplifier	NA-42KAI	34560495	AA-3002-25	19-FEB-26
Audio Analyzer	AVR-3360A	V744B6069	EF-0013-25	13-FEB-26

2. This result of calibration was found accurate as shown on 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).
- 3.3 Electrical And Electronics Institute (EEI).

COPY

Cert. No. : ACC25046
Job No. : VC68AC0165
Pages : 3 of 3

Result of calibration :**1. Sound pressure level**

Specified sound pressure level (dB)	Measured value (dB)	Deviated value (dB)	Uncertainty (dB)	Acceptance limit (dB)
94	93.95	-0.05	0.15	0.40

2. Frequency

Specified Frequency (Hz)	Measured value (Hz)	Deviated value (%)	Uncertainty (%)	Acceptance limit (%)
1000	1000.0	0.0	0.1	1.0

3. Total distortion

Measured value (%)	Uncertainty (%)	Acceptance limit (%)
0.58	0.10	3.0

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

End of Calibration Certificate

COPY

SOUND LEVEL METER

MODEL : NL-42A

SERIAL No. : 00322753



Cert. No. : ACL26130
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42A / Microphone UC-52 / Preamplifier NH-24
Serial No. : 00322753 / 196476 / 15485
ID No. :

Condition As Found : GOOD

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
SAHA GROUP INDUSTRIAL PARK, 683 MOO 11,
NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.

Location :
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %

Received Date : 01 APRIL 2026
Calibration Date : 07 APRIL 2026
Date of Issue : 08 APRIL 2026

Calibrated by : Nathakorn Pisulpaisan

Approved by :
(Nitinun Srihawan)

Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).
The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.

For tests results of each items were made by observation of each instruments display and also with SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33210A	MY48017076	EF-0014-26	12-FEB-27
Waveform Generator	33511B	MY52302742	EF-0015-26	11-FEB-27
Digital Multimeter	33461A	MY53220104	CA20260104E/A	17-MAR-27
Digital Multimeter	33461A	MY53220076	CA20260102E/A	18-MAR-27
Digital Multimeter	34461A	MY60024273	CA20260103E/A	18-MAR-27
Programmable Attenuator	MAT-1070	62100114	EF-0016-26	11-FEB-27
Condenser Microphone	4180	2977900	AA-1006-26	12-FEB-27
Measuring Amplifier	NA-42KA1	34560495	AA-3004-26	17-FEB-27

2. This result of calibration was found accurate as shown on 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 Electrical And Electronics Institute (EIEI).

Cert. No. : ACL26130
Job No. : VC69AC0074
Pages : 3 of 8

Cert. No. : ACL26130
Job No. : VC69AC0074
Page : 4 of 8

Summary of Measurement Result :

Parameter	Uncertainty (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	0.3	0.6
1000 Hz	0.3	0.6
8000 Hz	0.3	0.7
4. Electrical signal tests of frequency weightings		
For 10 Hz to 4 kHz	0.3	0.6
For > 4 kHz to 10 kHz	0.3	0.7
For > 10 kHz to 20 kHz	0.3	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	0.1	0.3
8. Level linearity including the level range control	0.2	0.3
9. Tone burst response	0.2	0.3
10. Peak C sound level	0.2	0.35
11. Overload indication	0.1	0.25
12. High level stability	0.1	0.1

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.99)	94.0	0.0	±0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
14.8

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

Frequency Weighting	Weighting (dB)
A - weight	12.0
C - weight	17.8
Flat	23.3

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)		
	Flat	C-weight	A-weight Acceptance Limits
125	0.3	0.3	± 1.5
1000	0.0	0.1	± 1.0
8000	0.8	0.9	±5.0

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COPY

Cert. No. : ACL26130
Job No. : VC69AC0074
Pages : 5 of 8

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	0.0	0.0	-0.1 ±2.0
125	0.0	0.0	0.0 ±1.5
250	0.0	0.0	0.0 ±1.5
500	0.0	0.1	0.0 ±1.5
1000	0.0	0.0	0.0 ±1.0
2000	0.1	0.1	0.1 ±2.0
4000	0.1	0.1	0.1 ±3.0
8000	0.1	0.1	0.1 ±5.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

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

5.2 Time weighting at 1 kHz

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

6. Long - term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.1	0.1	± 0.1

7. Level linearity on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	± 1.1
136.0	136.1	0.1	± 1.1
135.0	135.1	0.1	± 1.1
134.0	134.1	0.1	± 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	129.1	0.1	± 1.1
124.0	124.0	0.0	± 1.1
119.0	119.1	0.1	± 1.1
114.0	114.1	0.1	± 1.1
109.0	109.1	0.1	± 1.1
104.0	104.1	0.1	± 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	0.0	± 1.1
34.0	34.0	0.0	± 1.1
30.0	30.0	0.0	± 1.1
29.0	29.0	0.0	± 1.1
28.0	28.0	0.0	± 1.1
27.0	27.0	0.0	± 1.1
26.0	26.0	0.0	± 1.1
25.0	25.0	0.0	± 1.1

COPY

COPY

Cert. No. : ACL26130
Job No. : VC69AC0074
Pages : 7 of 8

8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	94.0	94.0	0.0	± 1.1

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	28.9	-0.1	± 1.1

9. Tone burst response

Time Weighting	Tone burst duration, Tb (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.5 ; -5.0
	2	8	117.0	116.9	-0.1	1.0 ; -2.5
	200	800	134.0	134.0	0.0	± 1.0
Slow	2	8	108.0	108.0	0.0	1.0 ; -5.0
	200	800	127.6	127.6	0.0	± 1.0
	200	800	127.6	127.6	0.0	± 1.0
SEL	0.25	1	99.0	98.8	-0.2	1.5 ; -5.0
	2	8	108.0	107.9	-0.1	1.0 ; -2.5
	200	800	128.0	128.0	0.0	± 1.0

Cert. No. : ACL26130
Job No. : VC69AC0074
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Lopeak (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	± 3.0
One	133.4	133.3	-0.1	± 3.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.1	0.1	± 2.0
Positive half cycle	135.4	135.2	-0.2	± 2.0
Negative half cycle	135.4	135.2	-0.2	± 2.0

11. Overload indication

Measured value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle		
89.5	0.0	± 1.5

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	137.0	137.0	0.0	± 0.3

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

End of Calibration Certificate

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SOUND LEVEL METER

MODEL : NL-42A

SERIAL No. : 00322752

Cert. No. : ACL25266
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42A / Microphone UC-52 / Preamplifier NH-24
Serial No.: 00322752 / 196475 / 15484
ID No.: -

Condition As Found : GOOD

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
SAHA GROUP INDUSTRIAL PARK, 683 MOO 11,
NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.

Location : -
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %

Received Date : 26 JUNE 2025
Calibration Date : 08 JULY 2025
Date of Issue : 09 JULY 2025

Calibrated by : Nathakorn Pisutpaisan

Approved by : *Wichon E.*
(Wichon Ekpongpradit)

Cert. No. : ACL25266
Job No. : VC68AC0096
Pages : 2 of 8

Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).
The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.

For tests results of each items were made by observation of each Instruments display and also with SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33210A	MY48017076	EF-0011-25	11-FEB-26
Waveform Generator	33511B	MY52302742	EF-0012-25	11-FEB-26
Digital Multimeter	33461A	MY53220104	EEL_BP 24/0268	22-APR-26
Digital Multimeter	33461A	MY53220076	EEL_BP 23/0268	22-APR-26
Digital Multimeter	34461A	MY60024273	CA2025120EA	18-MAR-26
Programmable Attenuator	MAT-1070	62100114	EF-0006-25	11-FEB-26
Condenser Microphone	4180	2977900	AA-1002-25	19-FEB-26
Measuring Amplifier	NA-42KAI	34560495	AA-3002-25	19-FEB-26

2. This result of calibration was found accurate as shown on 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).
- 3.3 Electrical And Electronics Institute (EEI).

Cert. No. : ACL25266
Job No. : VC68AC009
Pages : 3 of 8

Summary of Measurement Result :

Parameter	Uncertainty (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	0.3	0.6
1000 Hz	0.3	0.6
8000 Hz	0.3	0.7
4. Electrical signal tests of frequency weightings		
For 10 Hz to 4 kHz	0.3	0.6
For > 4 kHz to 10 kHz	0.3	0.7
For > 10 kHz to 20 kHz	0.3	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	0.3
8. Level linearity including the level range control	0.2	0.3
9. Tone burst response	0.2	0.3
10. Peak C' sound level	0.2	0.35
11. Overload indication	0.2	0.25
12. High level stability	0.1	0.1

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Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	+0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
17.50000003

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

Frequency Weighting	Weighting (dB)
A - weight	13.6
C - weight	20.1
Flat	25.8

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)		
	Flat	C-weight	A-weight
125	-0.3	-0.3	-0.3
1000	-0.3	-0.3	-0.3
8000	0.8	0.9	0.9
Acceptance Limits			± 1.5
			± 1.0
			± 5.0

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Cert. No. : ACL25266
Job No. : VC68AC009
Pages : 5 of 8

Cert. No. : ACL25266
Job No. : VC68AC009
Pages : 6 of 8

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
63	-0.1	-0.1	-0.1
125	0.0	0.0	-0.1
250	0.0	0.0	-0.1
500	0.0	0.0	-0.1
1000	0.0	0.0	0.0
2000	0.0	0.0	0.0
4000	0.0	0.0	0.0
8000	0.0	0.1	0.1

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

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

5.2 Time weighting at 1 kHz

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

6. Long - term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.3

7. Level linearity on the reference level range

Anticipated 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	132.9	-0.1	± 1.1
132.0	131.9	-0.1	± 1.1
131.0	130.9	-0.1	± 1.1
129.0	129.0	0.0	± 1.1
124.0	124.0	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	0.0	± 1.1
34.0	34.1	0.1	± 1.1
30.0	30.1	0.1	± 1.1
29.0	29.2	0.2	± 1.1
28.0	28.2	0.2	± 1.1
27.0	27.3	0.3	± 1.1
26.0	26.3	0.3	± 1.1
25.0	25.4	0.4	± 1.1

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Cert. No. : ACL25266
Job No. : VC68AC009
Pages : 7 of 8

Cert. No. : ACL25266
Job No. : VC68AC009
Pages : 8 of 8

8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	94.0	94.0	0.0	±1.1

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	29.1	0.1	±1.1

9. Tone burst response

Time Weighting	Tone burst duration, Tb (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.5 ; -5.0
	2	8	117.0	117.0	0.0	1.0 ; -2.5
	200	800	134.0	134.0	0.0	±1.0
Slow	2	8	108.0	108.0	0.0	1.0 ; -5.0
	200	800	127.6	127.6	0.0	±1.0
	0.25	1	99.0	98.9	-0.1	1.5 ; -5.0
SEL	2	8	108.0	108.0	0.0	1.0 ; -2.5
	200	800	128.0	128.0	0.0	±1.0

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Lepeak (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	±3.0
One	133.4	133.4	0.0	±3.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	±2.0
Positive half cycle	135.4	135.1	-0.3	±2.0
Negative half cycle	135.4	135.1	-0.3	±2.0

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle	0.0	±1.5
89.5	89.5		

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	137.0	137.0	0.0	±0.3

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

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End of Calibration Certificate

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SOUND LEVEL METER

MODEL : NL-42A

SERIAL No. : 00322751

Cert. No. : ACL26117

Job No. : VC69AC0048

Pages : 3 of 8

Cert. No. : ACL26117

Job No. : VC69AC0048

Page : 4 of 8

Summary of Measurement Result :

Parameter	Uncertainty (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	0.3	0.6
1000 Hz	0.3	0.6
8000 Hz	0.3	0.7
4. Electrical signal tests of frequency weightings		
For 10 Hz to 4 kHz	0.3	0.6
For > 4 kHz to 10 kHz	0.3	0.7
For > 10 kHz to 20 kHz	0.3	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	0.3
8. Level linearity including the level range control	0.2	0.3
9. Tone burst response	0.2	0.3
10. Peak C sound level	0.2	0.35
11. Overload indication	0.2	0.25
12. High level stability	0.1	0.1

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	+0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
14.2

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

Frequency Weighting	Weighting (dB)
A - weight	10.8
C - weight	17.3
Flat	23.0

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)		
	Flat	C-weight	A-weight Acceptance Limits
125	0.2	0.2	± 1.5
1000	0.0	0.0	± 1.0
8000	-0.4	-0.3	± 5.0

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Cert. No. : ACL26117
Job No. : VC69AC0048
Pages : 5 of 8

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
63	0.0	0.0	0.0
125	0.0	0.0	0.0
250	0.0	0.0	0.0
500	0.0	0.0	0.0
1000	0.0	0.0	0.0
2000	0.0	0.0	0.0
4000	0.0	0.0	0.0
8000	0.0	0.1	0.1

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

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

5.2 Time weighting at 1 kHz

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

6. Long-term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	94.0	0.0	± 0.3

7. Level linearity on the reference level range

Anticipated 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
124.0	124.0	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	53.9	-0.1	± 1.1
49.0	49.0	0.0	± 1.1
44.0	44.0	0.0	± 1.1
39.0	38.9	-0.1	± 1.1
34.0	34.0	0.0	± 1.1
30.0	29.9	-0.1	± 1.1
29.0	28.9	-0.1	± 1.1
28.0	27.9	-0.1	± 1.1
27.0	26.9	-0.1	± 1.1
26.0	25.9	-0.1	± 1.1
25.0	24.9	-0.1	± 1.1

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Cert. No. : ACL26117

Job No. : VC69AC0048

Pages : 7 of 8

Cert. No. : ACL26117

Job No. : VC69AC0048

Pages : 8 of 8

8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	94.0	94.0	0.0	± 1.1

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	28.9	-0.1	± 1.1

9. Tone burst response

Time Weighting	Tone burst duration, T_b (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.5 ; -5.0
	2	8	117.0	117.0	0.0	1.0 ; -2.5
	200	800	134.0	134.0	0.0	± 1.0
Slow	2	8	108.0	108.0	0.0	1.0 ; -5.0
	200	800	127.6	127.6	0.0	± 1.0
	0.25	1	99.0	98.9	-0.1	1.5 ; -5.0
SEL	2	8	108.0	108.0	0.0	1.0 ; -2.5
	200	800	128.0	128.0	0.0	± 1.0

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Lepeak (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	± 3.0
One	133.4	135.3	-0.1	± 3.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	± 2.0
Positive half cycle	135.4	135.2	-0.2	± 2.0
Negative half cycle	135.4	135.2	-0.2	± 2.0

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle	0.0	± 1.5
89.6	89.6		

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	137.0	137.0	0.0	± 0.3

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

End of Calibration Certificate

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SOUND LEVEL CALIBRATOR

MODEL : NC-75

SERIAL No. : 34802645



Cert. No. : ACC25065
Pages : 1 of 3

Cert. No. : ACC25065
Job No. : VC68AC0181
Pages : 2 of 3

Calibration Certificate

Equipment : SOUND CALIBRATOR
Manufacturer : RION
Model : NC-75
Serial No.: 34802645
ID No.:

Condition As Found : GOOD

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
SAHA GROUP INDUSTRIAL PARK, 683 MOO 11,
NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.

Location :
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %

Received Date : 08 SEPTEMBER 2025
Calibration Date : 10 OCTOBER 2025
Date of Issue : 10 OCTOBER 2025

Calibrated by :

Nathakorn Pisutpaisan

Approved by :

(Nitinun Srihawan)

Calibration Procedure : CP-AC-03

Calibration Method :

This equipment was calibrated by follow on IEC-60942-2003 Standard
The sound pressure level, frequency and total distortion of the sound calibrator was measured using the reference microphone.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33511B	MY52302742	EF-0012-25	11-FEB-26
Digital Multimeter	33461A	MY53220104	EEL_BP_24/0268	22-APR-26
Digital Multimeter	33461A	MY53220076	EEL_BP_23/0268	22-APR-26
Digital Multimeter	33461A	MY60024273	CA20251201A	18-MAR-26
Programmable Attenuator	MAT-1070	62100114	EF-0006-25	11-FEB-26
Condenser Microphone	4180	2977900	AA-1002-25	19-FEB-26
Measuring Amplifier	NA-42KA1	34560495	AA-3002-25	19-FEB-26
Audio Analyzer	AVR-3360A	V744186069	EF-0013-25	13-FEB-26

2. This result of calibration was found accurate as shown on 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).
- 3.3 Electrical And Electronics Institute (EEI).

Cert. No. : ACC25065
Job No. : VC68AC0181
Pages : 3 of 3

Result of calibration :

1. Sound pressure level

Specified sound pressure level (dB)	Measured value (dB)	Deviated value (dB)	Uncertainty (dB)	Acceptance limit (dB)
94	93.98	0.02	0.15	0.40

2. Frequency

Specified Frequency (Hz)	Measured value (Hz)	Deviated value (%)	Uncertainty (%)	Acceptance limit (%)
1000	1000.0	0.0	0.1	1.0

3. Total distortion

Measured value (%)	Uncertainty (%)	Acceptance limit (%)
0.46	0.10	3.0

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

End of Calibration Certificate

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SOUND LEVEL METER

MODEL : NL-42A

SERIAL No. : 00322748

Cert. No. : ACL26009
Pages : 1 of 8

Cert. No. : ACL26009
Job No. : VC69AC0048
Pages : 2 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42A / Microphone MK 216 / Preamplifier NH-24
Serial No.: 00322748 / 412753E / 15480
ID No.: -

Condition As Found : GOOD

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
SAHA GROUP INDUSTRIAL PARK, 683 MOO 11,
NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.

Location : -
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %

Received Date : 26 DECEMBER 2025
Calibration Date : 05 - 07 JANUARY 2026
Date of Issue : 07 JANUARY 2026

Calibrated by : Nathakorn Pisulpaisan

Approved by :

(Nitinun Srihawan)

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.

Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).
The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.

For tests results of each items were made by observation of each instruments display and also with SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33210A	MY48017076	EF-0011-25	11-FEB-26
Waveform Generator	33511B	MY52302742	EF-0012-25	11-FEB-26
Digital Multimeter	33461A	MY53220104	EF1-IP 24/0268	22-APR-26
Digital Multimeter	33461A	MY53220076	EF1-IP 23/0268	22-APR-26
Digital Multimeter	34461A	MY60024273	CA2025120EA	18-MAR-26
Programmable Attenuator	MAT-1070	62100114	EF-0006-25	11-FEB-26
Condenser Microphone	4180	2977960	AA-1002-25	19-FEB-26
Measuring Amplifier	NA-42KAI	34560495	AA-3002-25	19-FEB-26

2. This result of calibration was found accurate as shown on 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).
- 3.3 Electrical And Electronics Institute (EEI).

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Summary of Measurement Result :

Parameter	Uncertainty (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	0.3	0.6
1000 Hz	0.3	0.6
8000 Hz	0.3	0.7
4. Electrical signal tests of frequency weightings		
For 10 Hz to 4 kHz	0.3	0.6
For > 4 kHz to 10 kHz	0.3	0.7
For > 10 kHz to 20 kHz	0.3	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	0.3
8. Level linearity including the level range control	0.2	0.3
9. Tone burst response	0.2	0.3
10. Peak C sound level	0.2	0.35
11. Overload indication	0.2	0.25
12. High level stability	0.1	0.1

Result of calibration :**1. Absolute sensitivity**

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise**2.1 Normal test**

Measured Value (dB)
15.3

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

Frequency Weighting	Weighting (dB)
A - weight	7.8
C - weight	15.0
Flat	20.7

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)		
	Flat	C-weight	A-weight
125	0.6	0.6	0.6
1000	0.2	0.1	0.1
8000	-3.1	-3.1	-3.1
			Acceptance Limits
			± 1.5
			± 1.0
			±5.0

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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
63	0.0	0.0	0.0
125	0.0	0.0	0.0
250	0.0	0.0	0.0
500	0.0	0.0	0.0
1000	0.0	0.0	0.0
2000	0.0	0.0	0.0
4000	0.0	0.0	0.0
8000	0.0	0.1	0.1

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

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

5.2 Time weighting at 1 kHz

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

6. Long - term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.3

7. Level linearity on the reference level range

Anticipated 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
124.0	124.0	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	53.9	-0.1	± 1.1
49.0	49.0	0.0	± 1.1
44.0	44.0	0.0	± 1.1
39.0	38.9	-0.1	± 1.1
34.0	34.0	0.0	± 1.1
30.0	30.0	0.0	± 1.1
29.0	28.9	-0.1	± 1.1
28.0	27.9	-0.1	± 1.1
27.0	27.0	0.0	± 1.1
26.0	25.9	-0.1	± 1.1
25.0	25.0	0.0	± 1.1

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8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	94.0	94.0	0.0	± 1.1

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	29.0	0.0	± 1.1

9. Tone burst response

Time Weighting	Tone burst duration, T _b (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.5 ; -5.0
	2	8	117.0	117.0	0.0	1.0 ; -2.5
	200	800	134.0	134.0	0.0	± 1.0
Slow	2	8	108.0	108.0	0.0	1.0 ; -5.0
	200	800	127.6	127.6	0.0	± 1.0
	0.25	1	99.0	98.9	-0.1	1.5 ; -5.0
SEL	2	8	108.0	108.0	0.0	1.0 ; -2.5
	200	800	128.0	128.0	0.0	± 1.0

10. Peak C_{peak} standard level

Number of cycles in test signal	Anticipated Value (dB)	Measured Value, f _{peak} (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	± 2.0
1hr	133.4	133.3	-0.1	± 3.0

Number of cycles in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	± 2.0
Positive half cycle	135.4	135.2	-0.2	± 2.0
Negative half cycle	135.4	135.2	-0.2	± 2.0

11. Overload indication

Measured value (dB)	Deviated Value (dB)		Acceptance Limits (dB)
	Positive one-half cycle	Negative one-half cycle	
89.5	89.5	0.0	± 1.5

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	137.0	137.0	0.0	± 0.3

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

End of Calibration Certificate

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SOUND LEVEL METER

MODEL : NL-42A

SERIAL No. : 00322750

หนังสือแจ้งผลการพิจารณาการขออนุญาตให้นำสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว
ออกนอกบริเวณโรงงาน กรมโรงงานอุตสาหกรรม (กอ.1)



หนังสือแจ้งผลการพิจารณา
การขออนุญาตให้นำสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้วออกนอกบริเวณโรงงาน
กรมโรงงานอุตสาหกรรม

เลขที่ 2569-8155

หนังสือฉบับนี้ออกให้เพื่อแจ้งผลการพิจารณาของ

บริษัท พีเจที เทคโนโลยี จำกัด

ทะเบียนโรงงานเลขที่ 10830000225548

โดยมีรายละเอียดผลการพิจารณาดังนี้

ลำดับที่	รหัสสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว	ชื่อสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว	ปริมาณ(ตัน)	รหัสการจัดการ	ผู้รับดำเนินการ	เหตุผล
1	100116	เถ้าลอยจากกระบวนการผลิต	500.000	073	20190300225401	

รายการที่ได้รับอนุญาตมีผลบังคับใช้ตั้งแต่วันที่ 16 มิถุนายน 2569 ถึงวันที่ 31 ธันวาคม 2569

ออกให้ ณ วันที่ 16 มิถุนายน 2569

โดยกรมโรงงานอุตสาหกรรม

หนังสือแจ้งผลการพิจารณาฉบับนี้อนุญาตโดยใช้ระบบอิเล็กทรอนิกส์

รหัสการจัดการสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว

011 คัดแยกประเภทเพื่อจำหน่ายต่อ (sorting)	057 เข้ากระบวนการคืนสภาพทรายหล่อแบบที่ใช้งานแล้ว (spent green sand / no bake sand regeneration)
021 กักเก็บในภาชนะบรรจุ (storage) ให้ระบุลักษณะการกักเก็บและภาชนะบรรจุ	059 นำวัสดุที่ไม่ใช้แล้วอื่น ๆ กลับคืนมาใหม่ (other recovery unlisted materials) ให้ระบุ
031 นำกลับมาใช้ซ้ำ (reuse) ตามวัตถุประสงค์เดิมของวัสดุที่ไม่ใช้แล้วนั้น ๆ	061 บำบัดด้วยวิธีชีวภาพ (biological treatment) หรือวิธีเคมีชีวภาพ (chemical biological treatment)
032 ส่งกลับผู้ขายเพื่อกำจัด (return to original producer for disposal) ให้ระบุชื่อผู้ขายที่รับคืน	062 บำบัดด้วยวิธีชีวภาพ (biological treatment) เพื่อใช้ก๊าซชีวภาพหรือก๊าซไฮโดรเจนเป็นพลังงาน
033 นำบรรจุภัณฑ์กลับไปบรรจุใหม่หรือใช้ซ้ำ (reuse container; to be refilled) ให้ระบุชื่อผู้ขายที่รับคืน	063 บำบัดด้วยวิธีทางเคมี (chemical treatment) หรือบำบัดด้วยวิธีทางกายภาพ (physical treatment) หรือบำบัดด้วยวิธีทางเคมีกายภาพ (physico-chemical treatment)
039 นำกลับมาใช้ซ้ำด้วยวิธีอื่น ๆ (other reuse methods) ตามวัตถุประสงค์เดิมของวัสดุที่ไม่ใช้แล้วนั้น ๆ ให้ระบุ	065 บำบัดน้ำเสียด้วยวิธีทางเคมีกายภาพ (physico-chemical treatment of wastewater)
041 ใช้เป็นเชื้อเพลิงทดแทน (use as fuel substitution or burn for energy recovery) โดยตรงในเตาเผา (incinerator) หรือเตาอุตสาหกรรมซีเมนต์ (cement industrial furnace)	066 เข้าระบบบำบัดน้ำเสียรวม (discharge into central wastewater treatment plant)
042 ทำเชื้อเพลิงผสม (fuel blending) เพื่อนำไปใช้เป็นเชื้อเพลิงสำหรับเตาเผา (incinerator) เตาอุตสาหกรรมซีเมนต์ (cement industrial furnace) หรือหม้อไอน้ำและเตาอุตสาหกรรม (boiler and industrial furnace) ระบุปลายทาง	067 ปรับเสถียรด้วยวิธีทางเคมี (chemical stabilization)
043 เเผาเพื่อใช้เป็นพลังงาน (burn for energy recovery) เฉพาะวัสดุที่ไม่ใช้แล้วที่ไม่เป็นของเสียอันตรายสำหรับเตาไฟ (stove) หรือหม้อไอน้ำและเตาอุตสาหกรรม (boiler and industrial furnace)	068 ปรับเสถียรหรือตรึงทางเคมีโดยใช้ซีเมนต์หรือวัสดุ pozzolanic (chemical fixation using cementitious and/or pozzolanic material)
044 ใช้เป็นวัตถุดิบทดแทน (use as raw material substitution) ในเตาอุตสาหกรรมซีเมนต์ (cement industrial furnace)	069 ใช้วิธีบำบัดอื่น ๆ เพื่อทำลายความเป็นพิษ (other detoxification methods) ให้ระบุ
045 ทำวัสดุผสม (material blending) เพื่อใช้เป็นวัตถุดิบทดแทน (use as raw material substitution) ในเตาอุตสาหกรรมซีเมนต์ (cement industrial furnace) ระบุปลายทาง	071 ผังกลบตามหลักสุขาภิบาล (sanitary landfill) เฉพาะสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว ที่ไม่เป็นของเสียอันตรายเท่านั้น
046 ทำเชื้อเพลิงทดแทนจากวัสดุที่ไม่ใช้แล้วที่ไม่เป็นของเสียอันตราย สำหรับเตาอุตสาหกรรม เพื่อใช้ผลิตกระแสไฟฟ้าโดยเฉพาะ (use as fuel blending for energy recovery) ระบุปลายทาง	072 ผังกลบอย่างปลอดภัย (secure landfill)
047 ใช้วัสดุที่ไม่ใช้แล้วที่ไม่เป็นของเสียอันตราย เพื่อใช้เป็นเชื้อเพลิงทดแทนโดยตรงในเตาเผา (incinerator) เพื่อผลิตกระแสไฟฟ้า	073 ผังกลบอย่างปลอดภัย เมื่อทำการปรับเสถียรหรือทำให้เป็นก้อนแข็งแล้ว (secure landfill of stabilized and/or solidified wastes)
048 ใช้วัสดุที่ไม่ใช้แล้วที่เป็นของเสียอันตราย เพื่อใช้เป็นเชื้อเพลิงทดแทนโดยตรง ในเตาเผา (incinerator) เพื่อผลิตกระแสไฟฟ้า	074 เผาทำลาย (burn for destruction) ในเตาเผาขยะชุมชน หรือเตาเผาเฉพาะสำหรับสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้วที่ไม่เป็นของเสียอันตรายเท่านั้น
049 นำกลับมาใช้ประโยชน์อีกด้วยวิธีอื่น ๆ (other recycle methods)	075 เผาทำลายในเตาเผาเฉพาะสำหรับของเสียอันตราย (burn for destruction in hazardous waste incinerator)
051 เข้ากระบวนการนำตัวทำละลายกลับมาใหม่ (solvent reclamation/regeneration)	076 เผาทำลายร่วมในเตาอุตสาหกรรมซีเมนต์ (co-incineration in cement kiln)
052 เข้ากระบวนการนำโลหะกลับมาใหม่ (reclamation/regeneration of metal and metal compounds)	077 อัดฉีดลงบ่อใต้ดิน หรือฉีดดินใต้ทะเล (deep well or underground injection; sea-bed insertion)
053 เข้ากระบวนการคืนสภาพกรด/ด่าง (acid/base regeneration)	079 กำจัดด้วยวิธีอื่น ๆ (other disposal methods) ให้ระบุ
054 เข้ากระบวนการคืนสภาพตัวเร่งปฏิกิริยา (catalyst regeneration)	081 รวบรวมและส่งออกนอกประเทศ (collect and export)
055 เข้ากระบวนการคืนสภาพ ถ่านกัมมันต์ใช้งานแล้ว (spent activated carbon regeneration)	082 ถมทะเลหรือที่ลุ่ม (land reclamation) เฉพาะวัสดุที่ไม่ใช้แล้วที่ไม่เป็นของเสียอันตรายเท่านั้น
056 เข้ากระบวนการคืนสภาพเรซินหรือเมมเบรนที่ใช้งานแล้ว (spent resin or membrane regeneration)	083 หมักทำปุ๋ยหรือสารปรับปรุงคุณภาพดิน (composting or soil conditioner) เฉพาะสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้วที่ไม่เป็นของเสียอันตรายเท่านั้น
	084 ทาอาหารสัตว์ (animal feed) เฉพาะสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้วที่ไม่เป็นของเสียอันตรายเท่านั้น
	085 ศึกษา วิจัยและพัฒนา (study research and develop) เพื่อการทดลองในลักษณะโครงการนำร่องเท่านั้น

- เหตุผลการอื่นฯ
- 01 ผู้รับดำเนินการไม่ได้รับอนุญาตให้ บำบัด/ กําจัด/นำกลับไปใช้ประโยชน์ใหม่

02 วิธีการบําบัด/กําจัด/นำกลับไปใช้ประโยชน์ใหม่ ไม่เหมาะสม

03 ผู้รับดำเนินการได้รับคำสั่งปรับปรุงตามมาตรา 37 หรือหยุดประกอบกิจการตามมาตรา 39 ตามพระราชบัญญัติโรงงาน

04 ผู้รับดำเนินการไม่ยินยอมรับบําบัด/กําจัด/นำกลับไปใช้ประโยชน์ใหม่

05 ไม่สามารถยื่นขออนุญาตฯ ผ่านสื่ออิเล็กทรอนิกส์ได้

06 ผู้ให้บริการยังไม่ได้แจ้งประกอบกิจการโรงงาน หรือไม่ได้แจ้งประกอบในส่วนขยาย

07 ไม่เข้าข่ายต้องขออนุญาตตามประกาศกระทรวงอุตสาหกรรมเรื่องการจัดการสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว พ.ศ. 2566

เหตุผลการไม่อนุญาต

99 อื่นๆ ระบุ.....

- เหตุผลที่ไม่สามารถพิจารณาได้ เนื่องจากขาดเอกสาร หรือเอกสารไม่สมบูรณ์ดังนี้
- 11 สำเนาใบอนุญาตประกอบกิจการโรงงานของผู้รับดำเนินการ และหรือ ผู้ก่อกำเนิดวัสดุที่ไม่ใช้แล้ว

12 สำเนาหนังสือรับรองจดทะเบียนนิติบุคคลของผู้รับดำเนินการ และหรือ ผู้ก่อกำเนิดวัสดุที่ไม่ใช้แล้ว

13 สัญญาหรือหนังสือยินยอมการรับบริการระหว่างผู้รับดำเนินการและ ผู้ก่อกำเนิดวัสดุที่ไม่ใช้แล้ว

14 หนังสือการประกันความรับผิด (Liability) ระหว่างผู้รับดำเนินการและ ผู้ก่อกำเนิดวัสดุที่ไม่ใช้แล้ว

15 หนังสือมอบอำนาจให้ผู้หนึ่งผู้ใดกระทำการใดๆ แทนกรรมการผู้มีอำนาจพร้อมติดอากรแสตมป์ของผู้รับดำเนินการ และหรือ ผู้ก่อกำเนิดวัสดุที่ไม่ใช้แล้ว

16 ผลวิเคราะห์ค่าความเข้มข้นทั้งหมดของสิ่งเจือปน (total concentration : mg/kg)

17 ผลวิเคราะห์ด้วยวิธีการสกัดสาร (waste extraction test : mg/l)

18 รายละเอียดกระบวนการผลิตพร้อมแสดงจุดที่เกิดของเสีย

19 รายละเอียดกระบวนการนำของเสียมาบําบัด/บําบัด/นำกลับมาใช้ประโยชน์ใหม่

20 สำเนาใบอนุญาตส่งออกวัตถุอันตราย (วอ.6)

21 หนังสือรับรองจากกรมวิชาการเกษตรในการทำปุ๋ยหรือสารปรับปรุงคุณภาพดิน

22 รหัสประเภทหรือชนิดหรือวัสดุที่ไม่ใช้แล้วไม่ถูกต้อง

23 รหัสการจัดการไม่ถูกต้อง

24 การลงนามของกรรมการผู้มีอำนาจในคำขอ/สัญญา ไม่ครบถ้วนตามเงื่อนไขในหนังสือรับรองการจดทะเบียนนิติบุคคล

25 เอกสารข้อมูลความปลอดภัย

หมายเหตุ

- กรณีไม่อนุญาต หากท่านไม่เห็นด้วย สามารถแจ้งเป็นหนังสือพร้อมเหตุผลไปยังอธิบดีกรมโรงงานอุตสาหกรรม ภายใน 15 วัน นับตั้งแต่วันที่ได้รับแจ้งคำสั่งทางการปกครองนี้
- หากท่านสนใจฝ่าฝืนนำสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้วออกนอกบริเวณโรงงานโดยไม่ได้รับอนุญาต ถือเป็นความผิดตามมาตรา 45 แห่งพระราชบัญญัติโรงงาน พ.ศ.2535 ต้องระวางโทษปรับไม่เกิน 2 แสนบาท



หนังสือแจ้งผลการพิจารณา
การขออนุญาตให้นำสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้วออกนอกบริเวณโรงงาน
กรมโรงงานอุตสาหกรรม

เลขที่ 2569-8155

หนังสือฉบับนี้ออกให้เพื่อแจ้งผลการพิจารณาของ

บริษัท พีเจที เทคโนโลยี จำกัด

ทะเบียนโรงงานเลขที่ 10830000225548

โดยมีรายละเอียดผลการพิจารณาดังนี้

ลำดับที่	รหัสสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว	ชื่อสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว	ปริมาณ(ตัน)	รหัสการจัดการ	ผู้รับดำเนินการ	เหตุผล
1	100116	เถ้าลอยจากกระบวนการผลิต	0.000	073	20190300225401	

รายการที่ได้รับอนุญาตมีผลบังคับใช้ตั้งแต่วันที่ 1 มกราคม 2569 ถึงวันที่ 31 มกราคม 2569

ออกให้ ณ วันที่ 1 มกราคม 2569

โดยกรมโรงงานอุตสาหกรรม

หนังสือแจ้งผลการพิจารณาฉบับนี้อุญาตโดยใช้ระบบอิเล็กทรอนิกส์



หนังสือแจ้งผลการพิจารณา
การขออนุญาตให้นำสิ่งปฏิภูลหรือวัสดุที่ไม่ใช่แล้วออกนอกบริเวณโรงงาน
กรมโรงงานอุตสาหกรรม

เลขที่ 2569-8155

หนังสือฉบับนี้ออกให้เพื่อแจ้งผลการพิจารณาของ

บริษัท พีเจที เทคโนโลยี จำกัด

ทะเบียนโรงงานเลขที่ 10830000225548

โดยมีรายละเอียดผลการพิจารณาดังนี้

ลำดับที่	รหัสสิ่งปฏิภูลหรือวัสดุที่ไม่ใช่แล้ว	ชื่อสิ่งปฏิภูลหรือวัสดุที่ไม่ใช่แล้ว	ปริมาณ(ตัน)	รหัสการจัดการ	ผู้รับดำเนินการ	เหตุผล
1	100116	ถ้ำลอยจากกระบวนการผลิต	0.000	073	20190300225401	

รายการที่ได้รับอนุญาตมีผลบังคับใช้ตั้งแต่วันที่ 1 กุมภาพันธ์ 2569 ถึงวันที่ 28 กุมภาพันธ์ 2569

ออกให้ ณ วันที่ 1 กุมภาพันธ์ 2569

โดยกรมโรงงานอุตสาหกรรม

หนังสือแจ้งผลการพิจารณาฉบับนี้อุญาตโดยใช้ระบบอิเล็กทรอนิกส์



หนังสือแจ้งผลการพิจารณา
การขออนุญาตให้นำสิ่งปฏิภูลหรือวัสดุที่ไม่ใช่แล้วออกนอกบริเวณโรงงาน
กรมโรงงานอุตสาหกรรม

เลขที่ 2569-8155

หนังสือฉบับนี้ออกให้เพื่อแจ้งผลการพิจารณาของ

บริษัท พีเจที เทคโนโลยี จำกัด

ทะเบียนโรงงานเลขที่ 10830000225548

โดยมีรายละเอียดผลการพิจารณาดังนี้

ลำดับที่	รหัสสิ่งปฏิภูลหรือวัสดุที่ไม่ใช่แล้ว	ชื่อสิ่งปฏิภูลหรือวัสดุที่ไม่ใช่แล้ว	ปริมาณ(ตัน)	รหัสการจัดการ	ผู้รับดำเนินการ	เหตุผล
1	100116	ถ้ำลอยจากกระบวนการผลิต	0.000	073	20190300225401	

รายการที่ได้รับอนุญาตมีผลบังคับใช้ตั้งแต่วันที่ 1 มีนาคม 2569 ถึงวันที่ 31 มีนาคม 2569

ออกให้ ณ วันที่ 1 มีนาคม 2569

หนังสือแจ้งผลการพิจารณาขออนุญาตโดยใช้ระบบอิเล็กทรอนิกส์



**หนังสือแจ้งผลการพิจารณา
การขออนุญาตให้นำสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้วออกนอกบริเวณโรงงาน
กรมโรงงานอุตสาหกรรม**

เลขที่ 2569-8155

หนังสือฉบับนี้ออกให้เพื่อแจ้งผลการพิจารณาของ

บริษัท พีเจที เทคโนโลยี จำกัด

ทะเบียนโรงงานเลขที่ 10830000225548

โดยมีรายละเอียดผลการพิจารณาดังนี้

ลำดับที่	รหัสสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้ว	ชื่อสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้ว	ปริมาณ(ตัน)	รหัสการจัดการ	ผู้รับดำเนินการ	เหตุผล
1	100116	ถ่ายลงจากกระบวนการผลิต	0.000	073	20190300225401	

รายการที่ได้รับอนุญาตมีผลบังคับใช้ตั้งแต่วันที่ 1 เมษายน 2569 ถึงวันที่ 30 เมษายน 2569

ออกให้ ณ วันที่ 1 เมษายน 2569

โดยกรมโรงงานอุตสาหกรรม

หนังสือแจ้งผลการพิจารณาขออนุญาตโดยใช้ระบบอิเล็กทรอนิกส์



**หนังสือแจ้งผลการพิจารณา
การขออนุญาตให้นำสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้วออกนอกบริเวณโรงงาน
กรมโรงงานอุตสาหกรรม**

เลขที่ 2569-8155

หนังสือฉบับนี้ออกให้เพื่อแจ้งผลการพิจารณาของ

บริษัท พีเจที เทคโนโลยี จำกัด

ทะเบียนโรงงานเลขที่ 10830000225548

โดยมีรายละเอียดผลการพิจารณาดังนี้

ลำดับที่	รหัสสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้ว	ชื่อสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้ว	ปริมาณ(ตัน)	รหัสการจัดการ	ผู้รับดำเนินการ	เหตุผล
1	100116	ถ่ายลงจากกระบวนการผลิต	0.000	073	20190300225401	

รายการที่ได้รับอนุญาตมีผลบังคับใช้ตั้งแต่วันที่ 1 พฤษภาคม 2569 ถึงวันที่ 31 พฤษภาคม 2569

ออกให้ ณ วันที่ 1 พฤษภาคม 2569
โดยกรมโรงงานอุตสาหกรรม

หนังสือแจ้งผลการพิจารณาฉบับนี้อนุญาตโดยใช้ระบบอิเล็กทรอนิกส์



**หนังสือแจ้งผลการพิจารณา
การขออนุญาตให้นำสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้วออกนอกบริเวณโรงงาน
กรมโรงงานอุตสาหกรรม**

เลขที่ 2569-8155

หนังสือฉบับนี้ออกให้เพื่อแจ้งผลการพิจารณาของ
บริษัท พีเจที เทคโนโลยี จำกัด
ทะเบียนโรงงานเลขที่ 10830000225548
โดยมีรายละเอียดผลการพิจารณาดังนี้

ลำดับที่	รหัสสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้ว	ชื่อสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้ว	ปริมาณ(ตัน)	รหัสการจัดการ	ผู้รับดำเนินการ	เหตุผล
1	100116	ถ้ำลอยจากกระบวนการผลิต	0.000	073	20190300225401	

รายการที่ได้รับอนุญาตมีผลบังคับใช้ตั้งแต่วันที่ 1 มิถุนายน 2569 ถึงวันที่ 30 มิถุนายน 2569

ออกให้ ณ วันที่ 1 มิถุนายน 2569
โดยกรมโรงงานอุตสาหกรรม

หนังสือแจ้งผลการพิจารณาฉบับนี้อนุญาตโดยใช้ระบบอิเล็กทรอนิกส์



**หนังสือแจ้งผลการพิจารณา
การขออนุญาตให้นำสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้วออกนอกบริเวณโรงงาน
กรมโรงงานอุตสาหกรรม**

เลขที่ 2569-8155

หนังสือฉบับนี้ออกให้เพื่อแจ้งผลการพิจารณาของ
บริษัท พีเจที เทคโนโลยี จำกัด

โดยมีรายละเอียดผลการพิจารณาดังนี้

ลำดับที่	รหัสสิ่งปฏิกูลหรือ วัสดุที่ไม่ใช่แล้ว	ชื่อสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้ว	ปริมาณ(ตัน)	รหัสการ จัดการ	ผู้รับดำเนินการ	เหตุผล
1	100116	ถ่ายออกจากกระบวนการผลิต	0.000	073	20190300225401	

รายการที่ได้รับอนุญาตมีผลบังคับใช้ตั้งแต่วันที่ 1 กรกฎาคม 2569 ถึงวันที่ 31 กรกฎาคม 2569

ออกให้ ณ วันที่ 1 กรกฎาคม 2569

โดยกรมโรงงานอุตสาหกรรม

หนังสือแจ้งผลการพิจารณามับนี้อนุญาตโดยใช้ระบบอิเล็กทรอนิกส์



หนังสือแจ้งผลการพิจารณา

การขออนุญาตให้นำสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้วออกนอกบริเวณโรงงาน
กรมโรงงานอุตสาหกรรม

เลขที่ 2569-8155

หนังสือฉบับนี้ออกให้เพื่อแจ้งผลการพิจารณาของ

บริษัท พีเจที เทคโนโลยี จำกัด

ทะเบียนโรงงานเลขที่ 10830000225548

โดยมีรายละเอียดผลการพิจารณาดังนี้

ลำดับที่	รหัสสิ่งปฏิกูลหรือ วัสดุที่ไม่ใช่แล้ว	ชื่อสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้ว	ปริมาณ(ตัน)	รหัสการ จัดการ	ผู้รับดำเนินการ	เหตุผล
1	100116	ถ่ายออกจากกระบวนการผลิต	500.000	073	20190300225401	

รายการที่ได้รับอนุญาตมีผลบังคับใช้ตั้งแต่วันที่ 1 สิงหาคม 2569 ถึงวันที่ 31 สิงหาคม 2569

ออกให้ ณ วันที่ 1 สิงหาคม 2569

โดยกรมโรงงานอุตสาหกรรม

หนังสือแจ้งผลการพิจารณามับนี้อนุญาตโดยใช้ระบบอิเล็กทรอนิกส์



หนังสือแจ้งผลการพิจารณา

การขออนุญาตให้นำสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้วออกนอกบริเวณโรงงาน
กรมโรงงานอุตสาหกรรม

เลขที่ 2569-8155

หนังสือฉบับนี้ออกให้เพื่อแจ้งผลการพิจารณาของ

บริษัท พีเจที เทคโนโลยี จำกัด

ทะเบียนโรงงานเลขที่ 10830000225548

โดยมีรายละเอียดผลการพิจารณาดังนี้

ลำดับที่	รหัสสิ่งปฏิกูลหรือ วัสดุที่ไม่ใช่แล้ว	ชื่อสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้ว	ปริมาณ(ตัน)	รหัสการ จัดการ	ผู้รับดำเนินการ	เหตุผล
1	100116	ถ่ายออกจากกระบวนการผลิต	0.000	073	20190300225401	

รายการที่ได้รับอนุญาตมีผลบังคับใช้ตั้งแต่วันที่ 1 กันยายน 2569 ถึงวันที่ 30 กันยายน 2569

ออกให้ ณ วันที่ 1 กันยายน 2569

โดยกรมโรงงานอุตสาหกรรม

หนังสือแจ้งผลการพิจารณาฉบับนี้อุญาตโดยใช้ระบบอิเล็กทรอนิกส์



หนังสือแจ้งผลการพิจารณา

การขออนุญาตให้นำสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้วออกนอกบริเวณโรงงาน

กรมโรงงานอุตสาหกรรม

เลขที่ 2569-8155

หนังสือฉบับนี้ออกให้เพื่อแจ้งผลการพิจารณาของ

บริษัท พีเจที เทคโนโลยี จำกัด

ทะเบียนโรงงานเลขที่ 10830000225548

โดยมีรายละเอียดผลการพิจารณาดังนี้

ลำดับที่	รหัสสิ่งปฏิกูลหรือ วัสดุที่ไม่ใช่แล้ว	ชื่อสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้ว	ปริมาณ(ตัน)	รหัสการ จัดการ	ผู้รับดำเนินการ	เหตุผล
1	100116	ถ่ายออกจากกระบวนการผลิต	0.000	073	20190300225401	

รายการที่ได้รับอนุญาตมีผลบังคับใช้ตั้งแต่วันที่ 1 ตุลาคม 2569 ถึงวันที่ 31 ตุลาคม 2569

ออกให้ ณ วันที่ 1 ตุลาคม 2569

โดยกรมโรงงานอุตสาหกรรม

หนังสือแจ้งผลการพิจารณาฉบับนี้อุญาตโดยใช้ระบบอิเล็กทรอนิกส์



หนังสือแจ้งผลการพิจารณา
การขออนุญาตให้นำสิ่งปฏิภูลหรือวัสดุที่ไม่ใช่แล้วออกนอกบริเวณโรงงาน
กรมโรงงานอุตสาหกรรม

เลขที่ 2569-8155

หนังสือฉบับนี้ออกให้เพื่อแจ้งผลการพิจารณาของ

บริษัท พีเจที เทคโนโลยี จำกัด

ทะเบียนโรงงานเลขที่ 10830000225548

โดยมีรายละเอียดผลการพิจารณาดังนี้

ลำดับที่	รหัสสิ่งปฏิภูลหรือวัสดุที่ไม่ใช่แล้ว	ชื่อสิ่งปฏิภูลหรือวัสดุที่ไม่ใช่แล้ว	ปริมาณ(ตัน)	รหัสการจัดการ	ผู้รับดำเนินการ	เหตุผล
1	100116	ถ้ำลอยจากกระบวนการผลิต	0.000	073	20190300225401	

รายการที่ได้รับอนุญาตมีผลบังคับใช้ตั้งแต่วันที่ 1 พฤศจิกายน 2569 ถึงวันที่ 30 พฤศจิกายน 2569

ออกให้ ณ วันที่ 1 พฤศจิกายน 2569

โดยกรมโรงงานอุตสาหกรรม

หนังสือแจ้งผลการพิจารณาฉบับนี้อุญาตโดยใช้ระบบอิเล็กทรอนิกส์



หนังสือแจ้งผลการพิจารณา
การขออนุญาตให้นำสิ่งปฏิภูลหรือวัสดุที่ไม่ใช่แล้วออกนอกบริเวณโรงงาน
กรมโรงงานอุตสาหกรรม

เลขที่ 2569-8155

หนังสือฉบับนี้ออกให้เพื่อแจ้งผลการพิจารณาของ

บริษัท พีเจที เทคโนโลยี จำกัด

ทะเบียนโรงงานเลขที่ 10830000225548

โดยมีรายละเอียดผลการพิจารณาดังนี้

ลำดับที่	รหัสสิ่งปฏิภูลหรือวัสดุที่ไม่ใช่แล้ว	ชื่อสิ่งปฏิภูลหรือวัสดุที่ไม่ใช่แล้ว	ปริมาณ(ตัน)	รหัสการจัดการ	ผู้รับดำเนินการ	เหตุผล
1	100116	ถ้ำลอยจากกระบวนการผลิต	0.000	073	20190300225401	

รายการที่ได้รับอนุญาตมีผลบังคับใช้ตั้งแต่วันที่ 1 ธันวาคม 2569 ถึงวันที่ 31 ธันวาคม 2569

ออกให้ ณ วันที่ 1 ธันวาคม 2569

โดยกรมโรงงานอุตสาหกรรม

หนังสือแจ้งผลการพิจารณาฉบับนี้อุญาตโดยใช้ระบบอิเล็กทรอนิกส์

ภาคผนวกที่ 45

ผังแสดงข้อมูลอุปกรณ์ดับเพลิง

ข้อมูลอุปกรณ์ดับเพลิง

ที่	รายการ	ชนิด	จำนวนที่ติดตั้ง	หมายเหตุ
1	ถังดับเพลิง	ผงเคมีแห้ง (ABC)	43 ถัง	ขนาด 10 ปอนด์
2	ถังดับเพลิง	คาร์บอนไดออกไซด์	32 ถัง	ขนาด 10, 15, 50 ปอนด์
3	ถังดับเพลิง	โฟม	4 ถัง	ขนาด 2.5 แกลลอน
4	ถังดับเพลิง	สารสะอาด (Non-CFC)	8 ถัง	ขนาด 10 ปอนด์
5	หัวรับน้ำดับเพลิง	2.5 นิ้ว	1 จุด	ขนาดมาตรฐาน 2.5 นิ้ว
6	หัวจ่ายน้ำดับเพลิง	2.5 นิ้ว	6 จุด	ขนาดมาตรฐาน 2.5 นิ้ว
7	สายฉีดน้ำดับเพลิง	2.5 นิ้ว	6 เส้น	ขนาดมาตรฐาน 2.5 นิ้ว
8	สายฉีดน้ำดับเพลิง	1 นิ้ว (ในอาคาร)	6 กงล้อ	-



บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.

บริษัท พีเจที เทคโนโลยี จำกัด
ทะเบียนรายการถังดับเพลิง

ลำดับ	ตำแหน่งติดตั้ง	ชนิด	ขนาด	เกอวัดความดัน	น้ำหนัก (CO2)	สายฉีด	สภาพถัง	หมายเหตุ
1	เคาท์เตอร์ รปภ.	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
2	บันไดทางขึ้นฝั่งสำนักงาน	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
12	ห้องปั๊มน้ำดับเพลิง (2)	ABC	10 lbs		✓	✓	✓	พร้อมใช้งาน
13	ห้องปั๊มน้ำดับเพลิง (3)	ABC	10 lbs		✓	✓	✓	พร้อมใช้งาน
17	ABR (3)	ABC	10 lbs		✓	✓	✓	พร้อมใช้งาน
18	ABR (4)	ABC	10 lbs		✓	✓	✓	พร้อมใช้งาน
19	ABR (5)	ABC	10 lbs		✓	✓	✓	พร้อมใช้งาน
22	Air Compressor Room (1)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
23	Air Compressor Room (2)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
24	Air Compressor Room (3)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
26	Pipe Mezzonine Floor (1)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
27	Pipe Mezzonine Floor (2)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
28	Office Area (1)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
29	Office Area (2)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
30	Laboratory Room (1)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
31	Laboratory Room (2)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
32	Deaerator (1)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
33	Deaerator (2)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
38	Oil Tank (2)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
39	Oil Tank (3)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
40	Store ชั้น 1 (1)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
41	Store ชั้น 1 (2)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
43	Store ชั้น 2	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
44	Water Traetment (1)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
45	Water Traetment (2)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
46	Water Traetment (3)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
48	หน้าห้องซ่อมบำรุงชั้น 2	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
49	ห้องบังคับเครนซีดี	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
54	Sampling Inter - Color	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
55	Shop maintenance 1	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
56	Shop maintenance 2	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
57	แก๊สอะเซทิลีน	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
58	ปั๊มขามทางเข้า 1	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
59	ปั๊มขามทางเข้า 2	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน



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บริษัท พีเจที เทคโนโลยี จำกัด
ทะเบียนรายการถังดับเพลิง

ลำดับ	ตำแหน่งติดตั้ง	ชนิด	ขนาด	เกจวัดความดัน	น้ำหนัก (CO2)	สายฉีด	สภาพถัง	หมายเหตุ
60	ป้อม خامทางออก 1	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
61	ป้อม خامทางออก 2	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
63	หน้าพื้นที่เก็บแก๊ส	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
64	หน้าพื้นที่เก็บแก๊ส	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
65	Feeder hopper ชั้น 4 Boiler (1)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
66	Feeder hopper ชั้น 4 Boiler (2)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
67	Flue gas (1)	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
83	Electrical Room & Instrument	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน
86	หน้าห้อง Shredder	ABC	10 lbs	✓		✓	✓	พร้อมใช้งาน

นางสาวนันท์วัน อะนะรัตน์
เจ้าหน้าที่ความปลอดภัยในการทำงานระดับวิชาชีพ
ผู้บันทึก



YUNNAN WATER



Member of YUNNAN WATER (HONG KONG) COMPANY LIMITED

บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.

EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

PJT Technology Co.,Ltd.

ชื่ออุปกรณ์ :

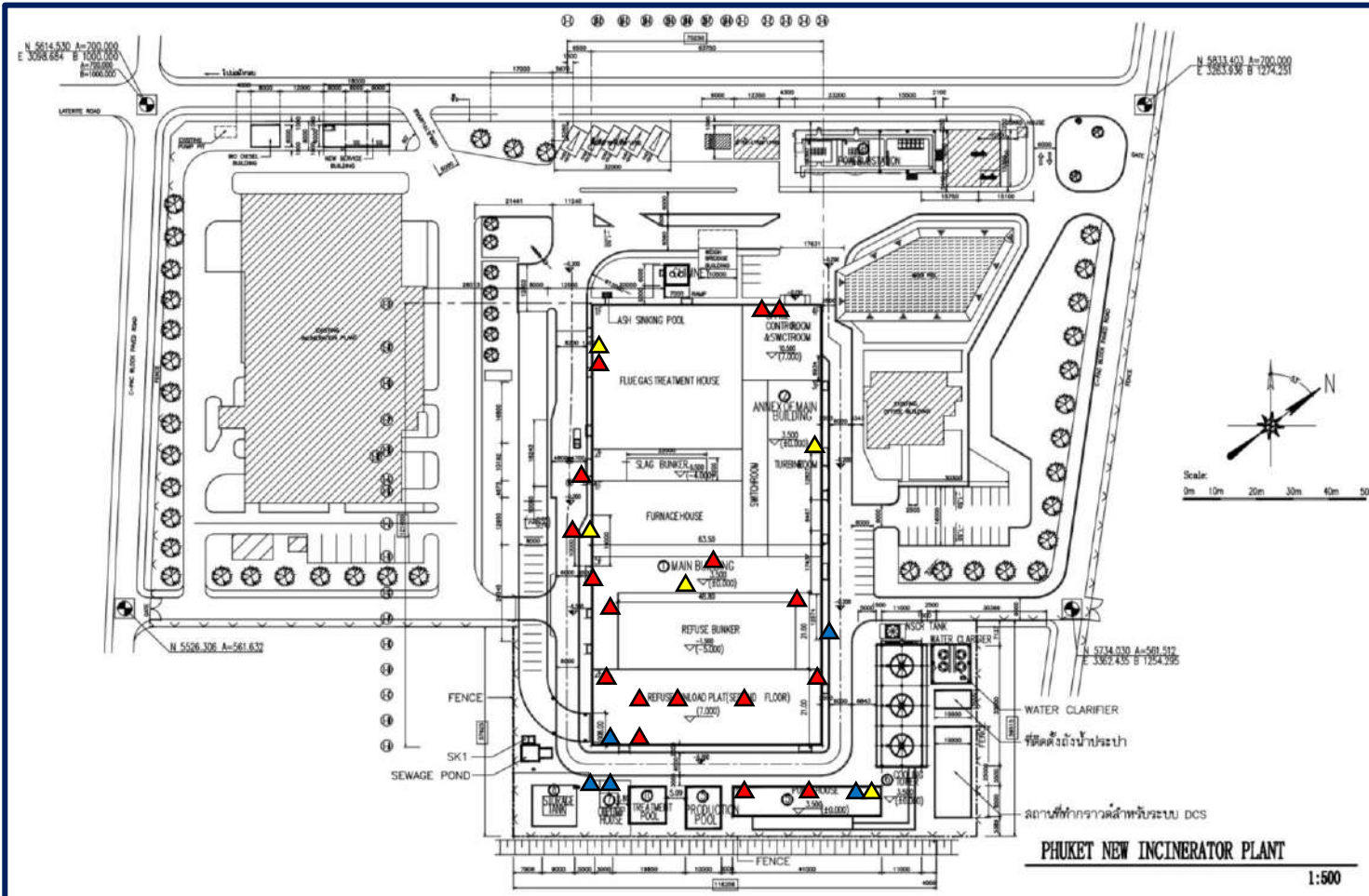
ถังดับเพลิง

ตำแหน่งติดตั้ง ชั้น :

1

คำอธิบายสัญลักษณ์ :

	= ถังดับเพลิง Dry Chemical
	= ถังดับเพลิง CO2
	= ถังดับเพลิง BF2000, FireAde
	= AFFF (Foam)





บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.

Member of YUNNAN WATER (HONG KONG) COMPANY LIMITED

EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

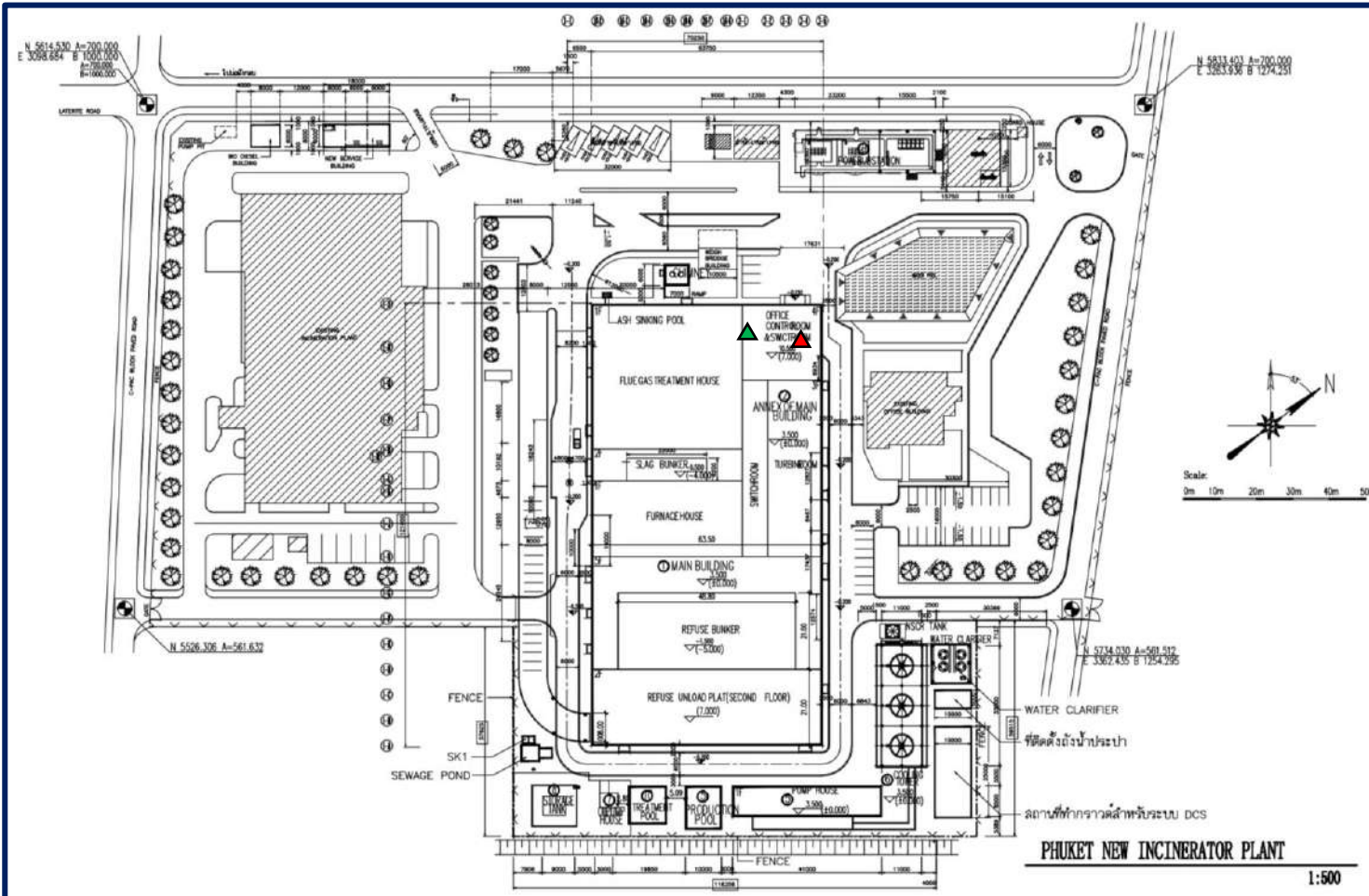
PJT Technology Co.,Ltd.

ชื่ออุปกรณ์ :

ถังดับเพลิง

ตำแหน่งติดตั้ง ชั้น :

2 (สำนักงาน)



คำอธิบายสัญลักษณ์ :

	= ถังดับเพลิง Dry Chemical
	= ถังดับเพลิง CO2
	= ถังดับเพลิง BF2000, FireAde
	= AFFF (Foam)



YUNNAN WATER



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บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.

EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

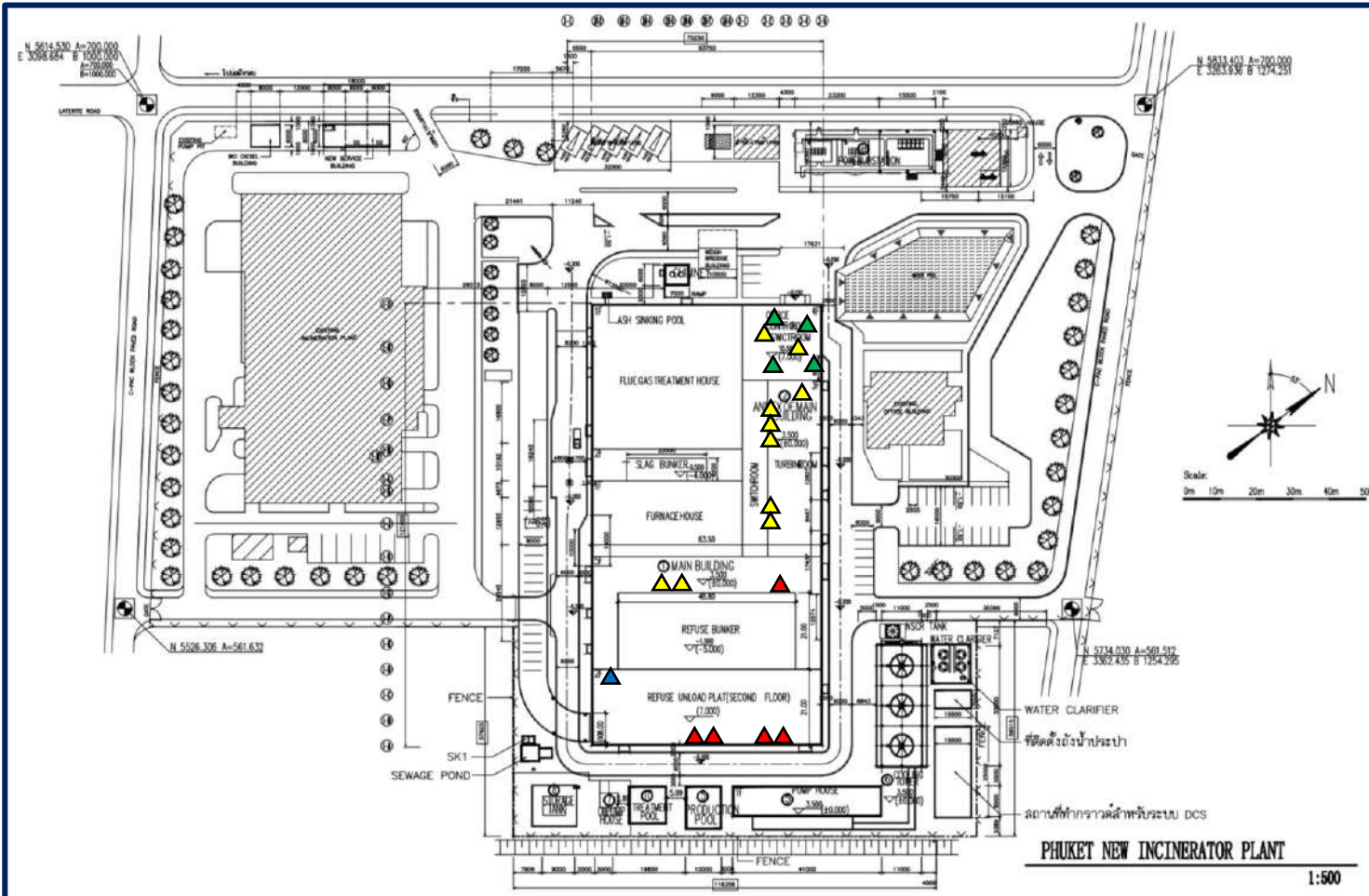
PJT Technology Co.,Ltd.

ชื่ออุปกรณ์ :

ถังดับเพลิง

ตำแหน่งติดตั้ง ชั้น :

2, และส่นง.ชั้น3



คำอธิบายสัญลักษณ์ :

	= ถังดับเพลิง Dry Chemical
	= ถังดับเพลิง CO2
	= ถังดับเพลิง BF2000, FireAde
	= AFFF (Foam)



YUNNAN WATER



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บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.

EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

PJT Technology Co.,Ltd.

ชื่ออุปกรณ์ :

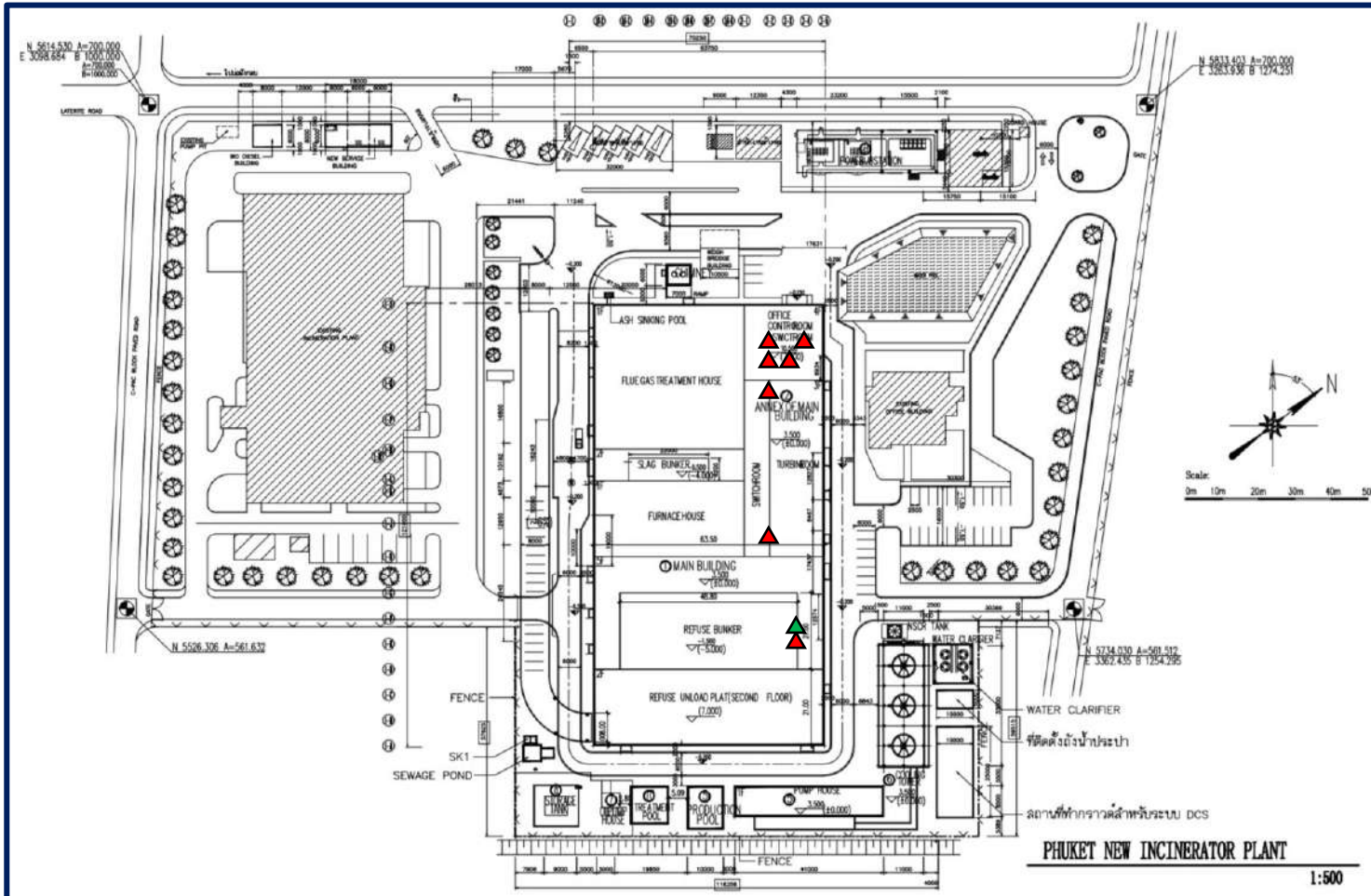
ถังดับเพลิง

ตำแหน่งติดตั้ง ชั้น :

3, และส่นง.ชั้น4
(Dearator)

คำอธิบายสัญลักษณ์ :

	= ถังดับเพลิง Dry Chemical
	= ถังดับเพลิง CO2
	= ถังดับเพลิง BF2000, FireAde
	= AFFF (Foam)





YUNNAN WATER



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บริษัท พีเจที เทคโนโลยี จำกัด
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EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

PJT Technology Co.,Ltd.

ชื่ออุปกรณ์ :

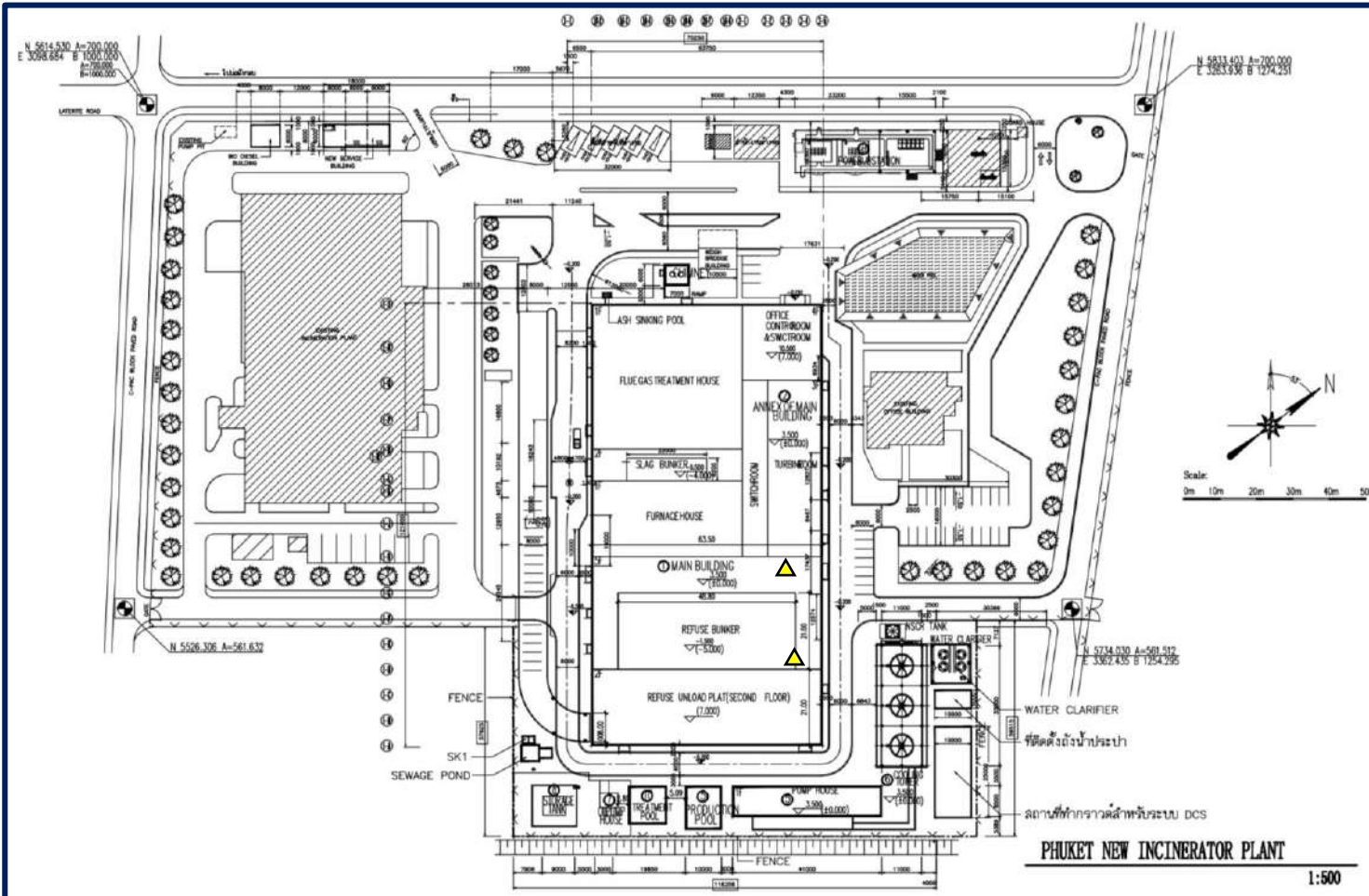
ถังดับเพลิง

ตำแหน่งติดตั้ง ชั้น :

5 (ห้องเครน)

คำอธิบายสัญลักษณ์ :

	= ถังดับเพลิง Dry Chemical
	= ถังดับเพลิง CO2
	= ถังดับเพลิง BF2000, FireAde
	= AFFF (Foam)





YUNNAN WATER



Member of YUNNAN WATER (HONG KONG) COMPANY LIMITED

บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.

EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

PJT Technology Co.,Ltd.

ชื่ออุปกรณ์ :

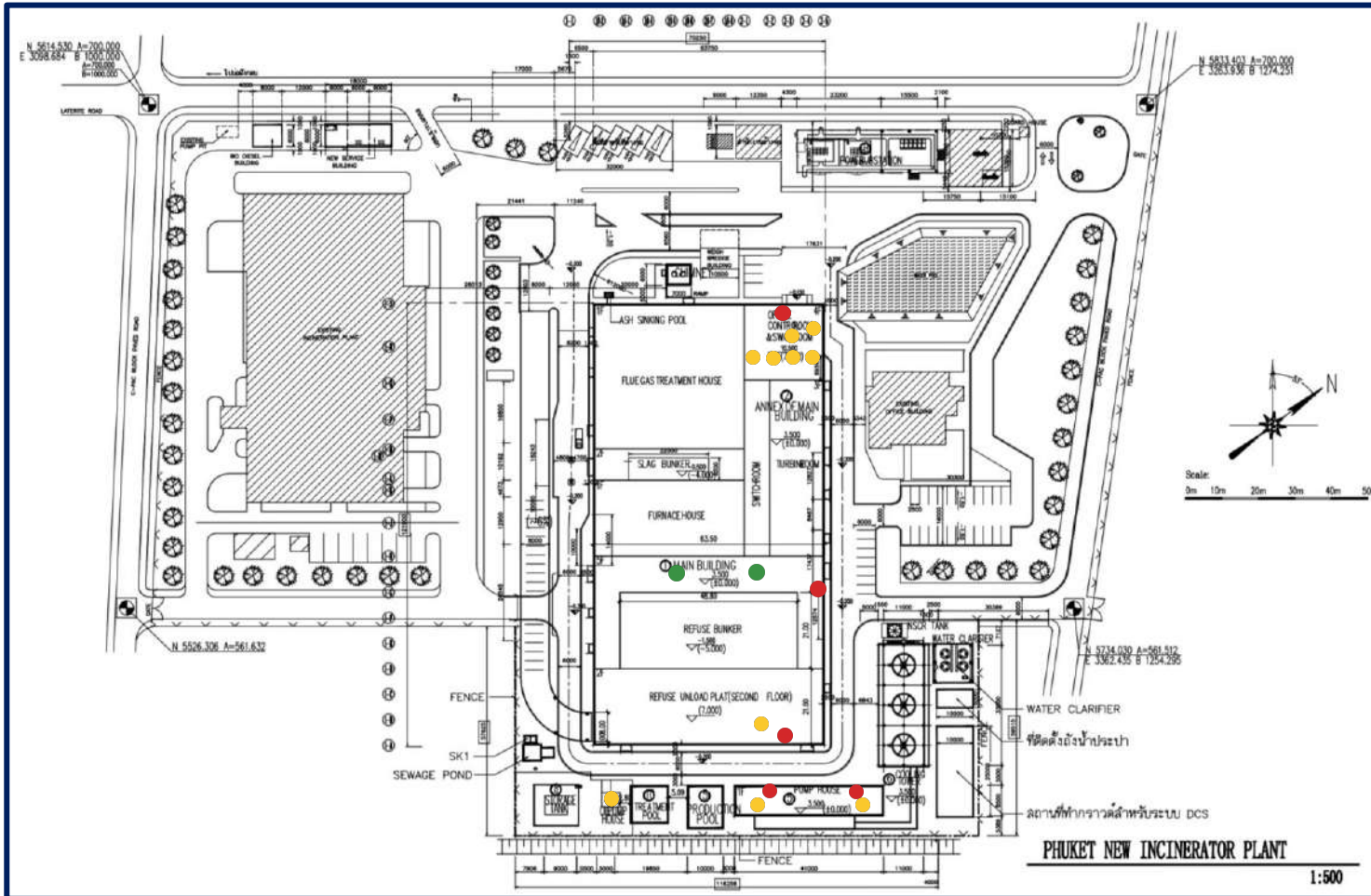
Fire Alarm System

ตำแหน่งติดตั้ง ชั้น :

1

คำอธิบายสัญลักษณ์ :

	Fire Alarm
	Smoke Detector
	Heat Detector





YUNNAN WATER



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บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.

EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

PJT Technology Co.,Ltd.

ชื่ออุปกรณ์ :

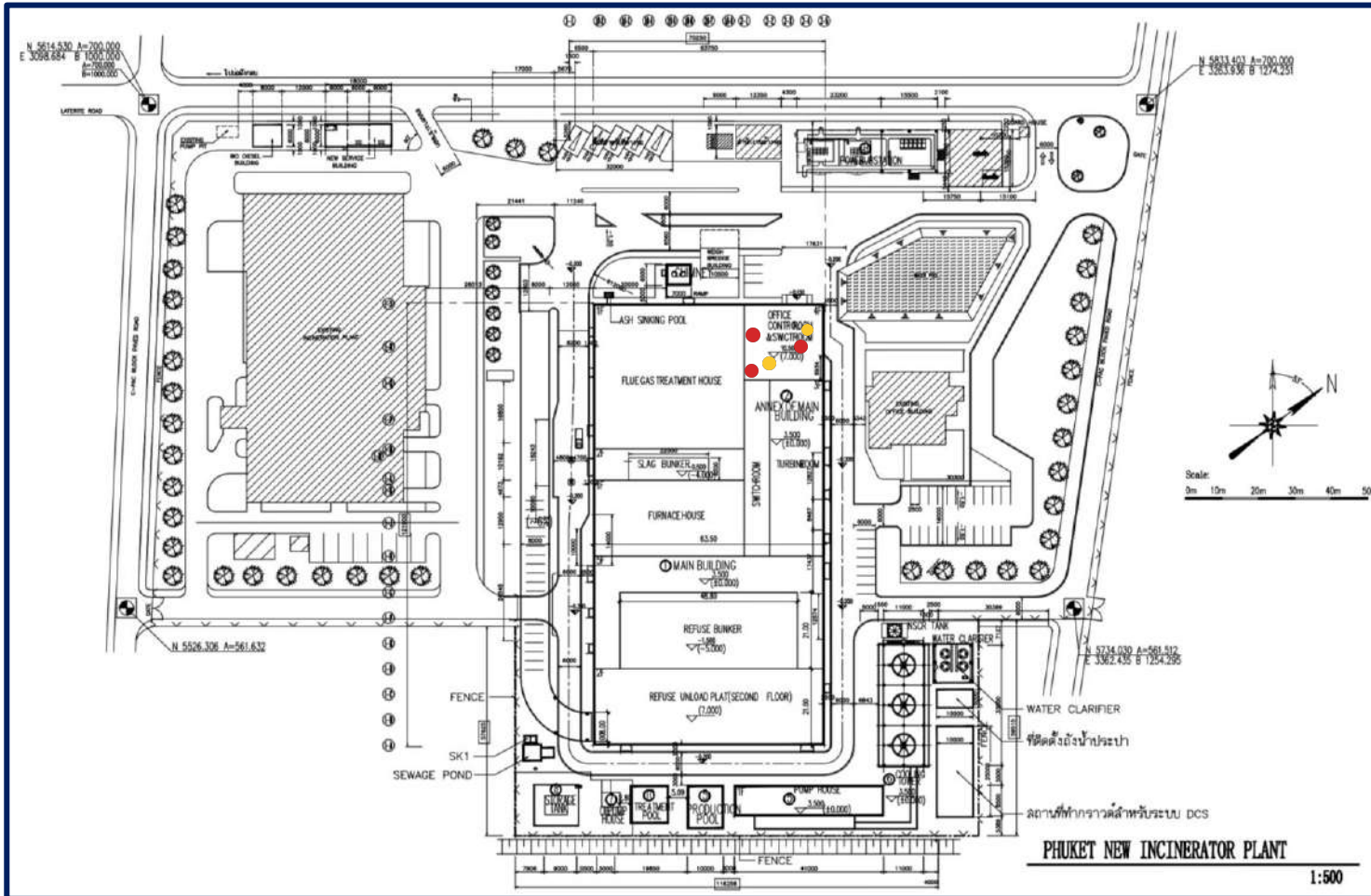
Fire Alarm System

ตำแหน่งติดตั้ง ชั้น :

2

คำอธิบายสัญลักษณ์ :

	Fire Alarm
	Smoke Detector
	Heat Detector





บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.

Member of YUNNAN WATER (HONG KONG) COMPANY LIMITED

EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

PJT Technology Co.,Ltd.

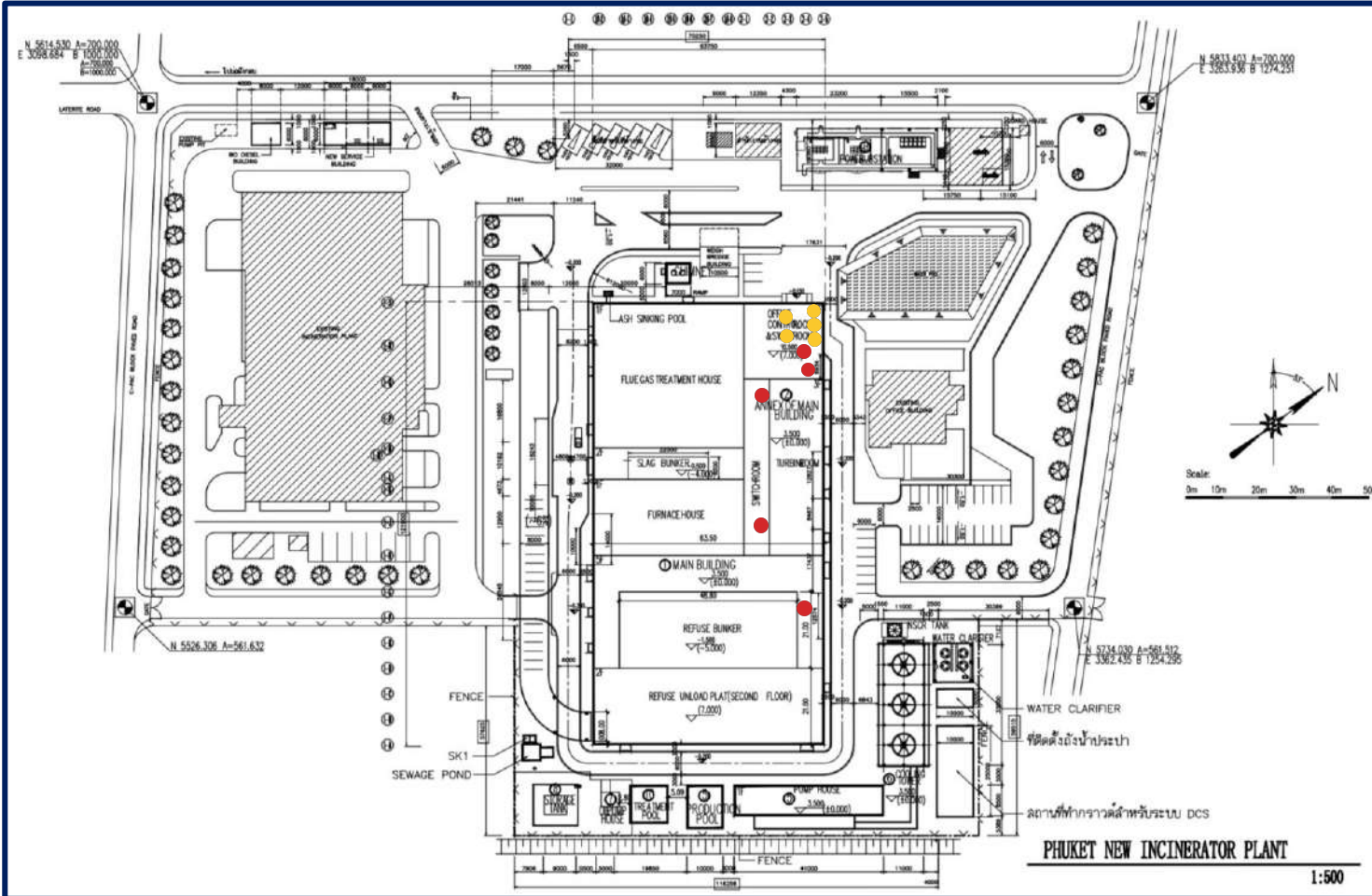
ชื่ออุปกรณ์ :

Fire Alarm System

ตำแหน่งติดตั้ง ชั้น : 3,2อาคารผลิต

คำอธิบายสัญลักษณ์ :

	Fire Alarm
	Smoke Detector
	Heat Detector





YUNNAN WATER



Member of YUNNAN WATER (HONG KONG) COMPANY LIMITED

บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.

EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

PJT Technology Co.,Ltd.

ชื่ออุปกรณ์ :

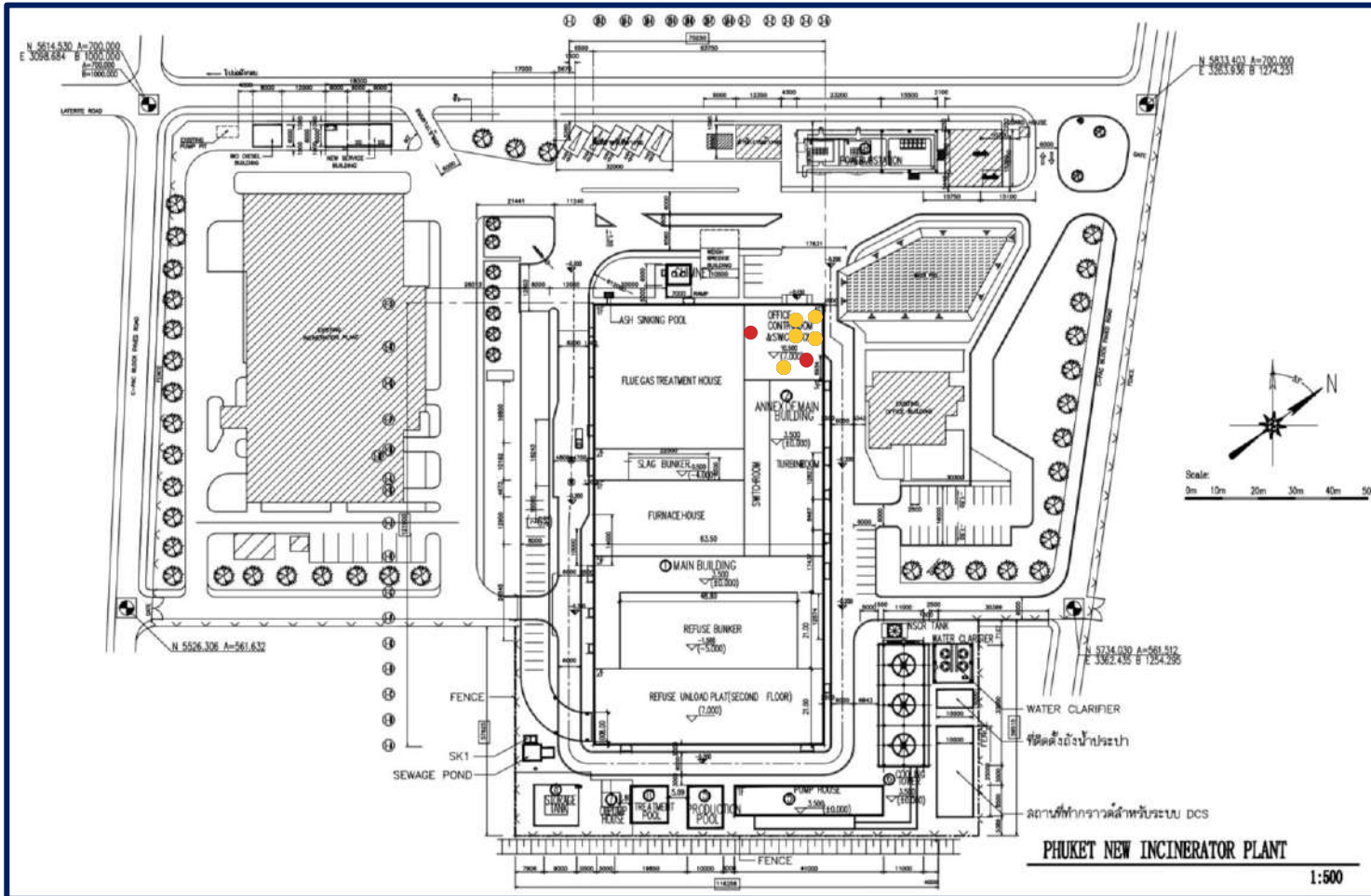
Fire Alarm System

ตำแหน่งติดตั้ง ชั้น :

4 อาคารสำนักงาน

คำอธิบายสัญลักษณ์ :

	Fire Alarm
	Smoke Detector
	Heat Detector





บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.

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EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

PJT Technology Co.,Ltd.

ชื่ออุปกรณ์ :

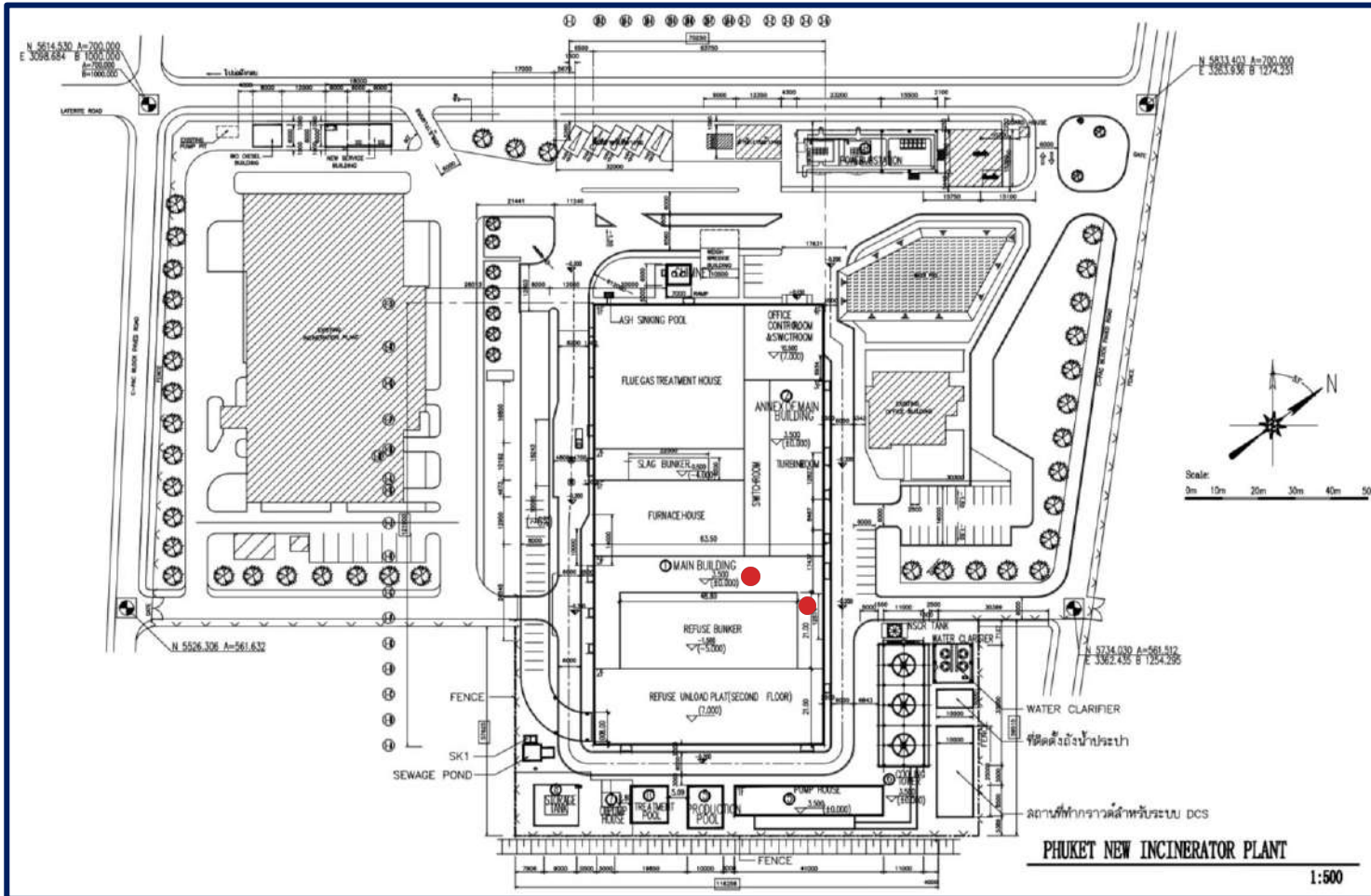
Fire Alarm System

ตำแหน่งติดตั้ง ชั้น :

3 อาคารผลิต

คำอธิบายสัญลักษณ์ :

	Fire Alarm
	Smoke Detector
	Heat Detector





บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.

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EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

PJT Technology Co.,Ltd.

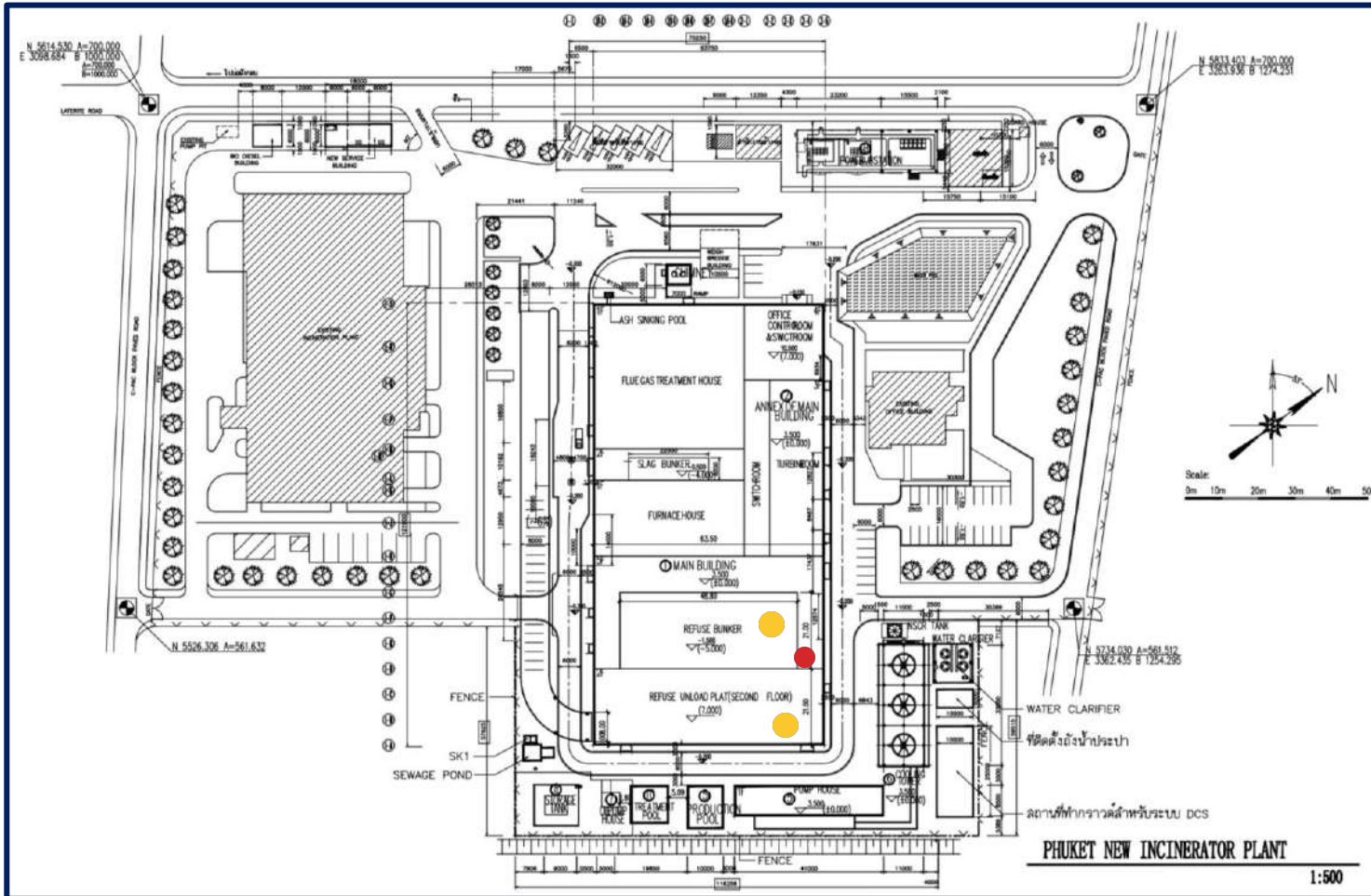
ชื่ออุปกรณ์ :

Fire Alarm System

ตำแหน่งติดตั้ง ชั้น : 4 อาคารผลิต

คำอธิบายสัญลักษณ์ :

	Fire Alarm
	Smoke Detector
	Heat Detector





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EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

PJT Technology Co.,Ltd.

ชื่ออุปกรณ์ :

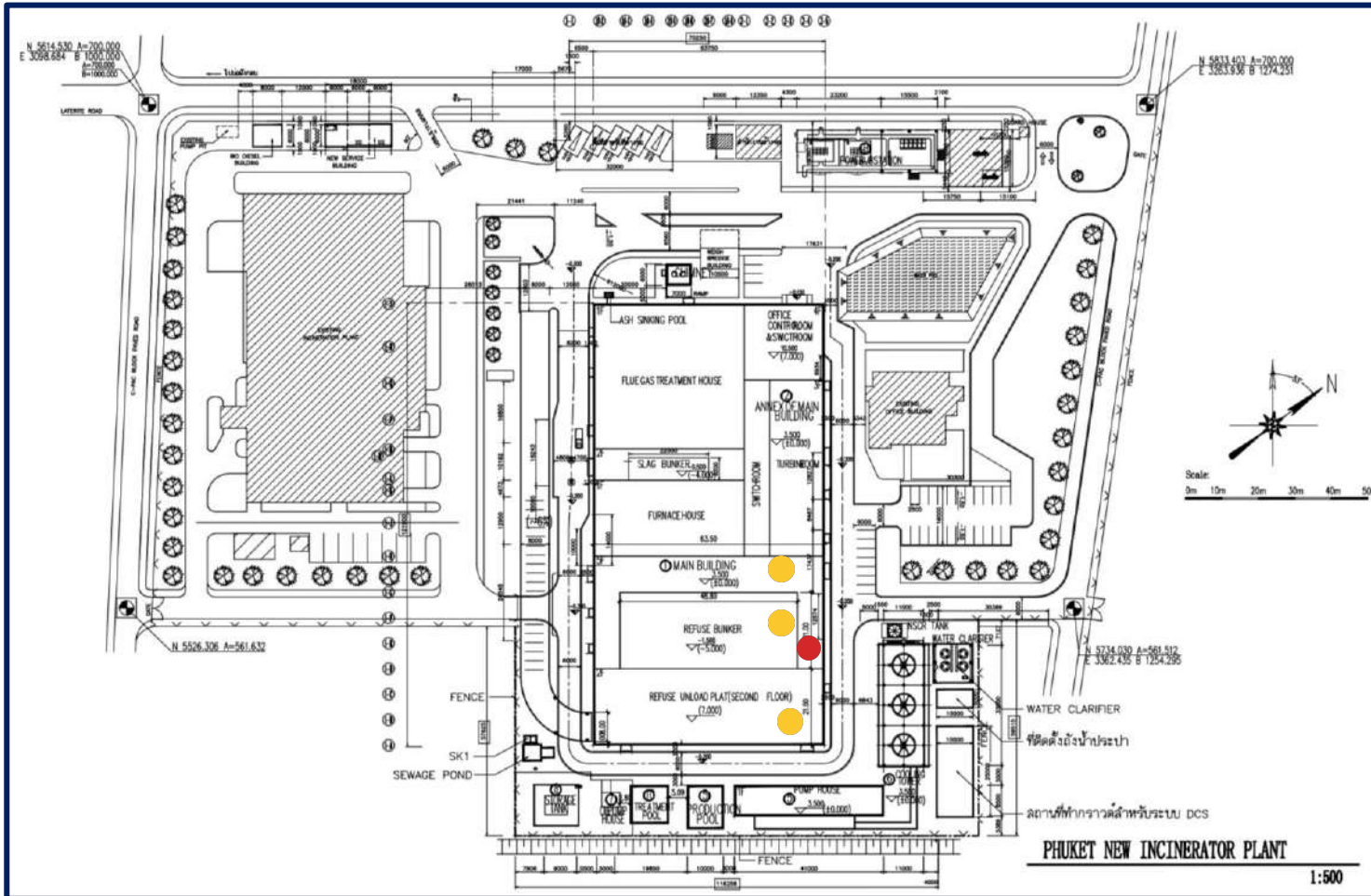
Fire Alarm System

ตำแหน่งติดตั้ง ชั้น :

5 อาคารผลิต

คำอธิบายสัญลักษณ์ :

	Fire Alarm
	Smoke Detector
	Heat Detector





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EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

PJT Technology Co.,Ltd.

ชื่ออุปกรณ์ :

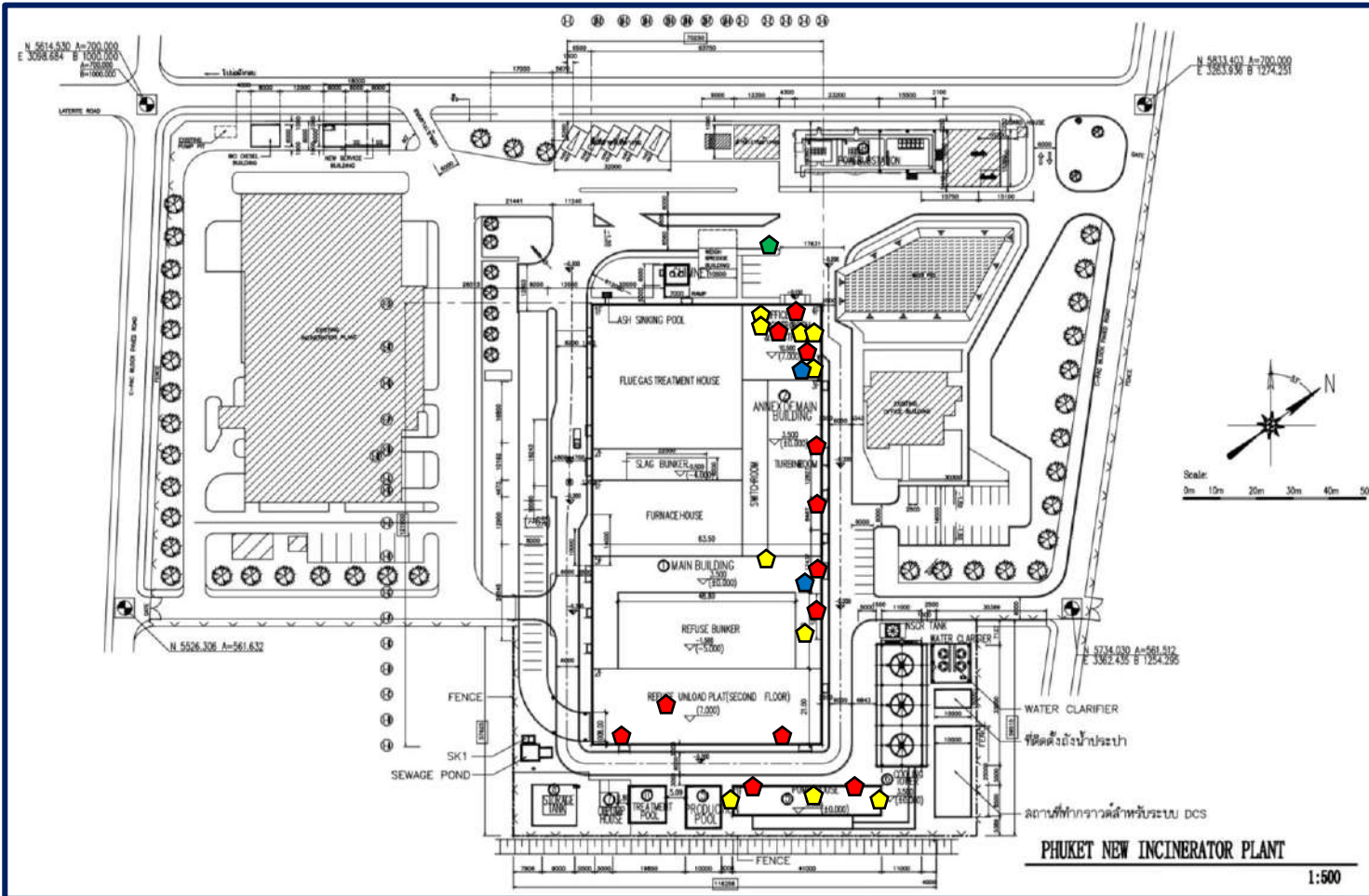
เส้นทางอพยพหนีไฟ

ตำแหน่งติดตั้ง ชั้น :

1

คำอธิบายสัญลักษณ์ :

	= Fire Exit
	= Emergency Lighting
	= Assembly Point (จุดรวมพล)
	= แผนผังเส้นทางอพยพหนีไฟ





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PJT TECHNOLOGY CO.,LTD.

EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

PJT Technology Co.,Ltd.

ชื่ออุปกรณ์ :

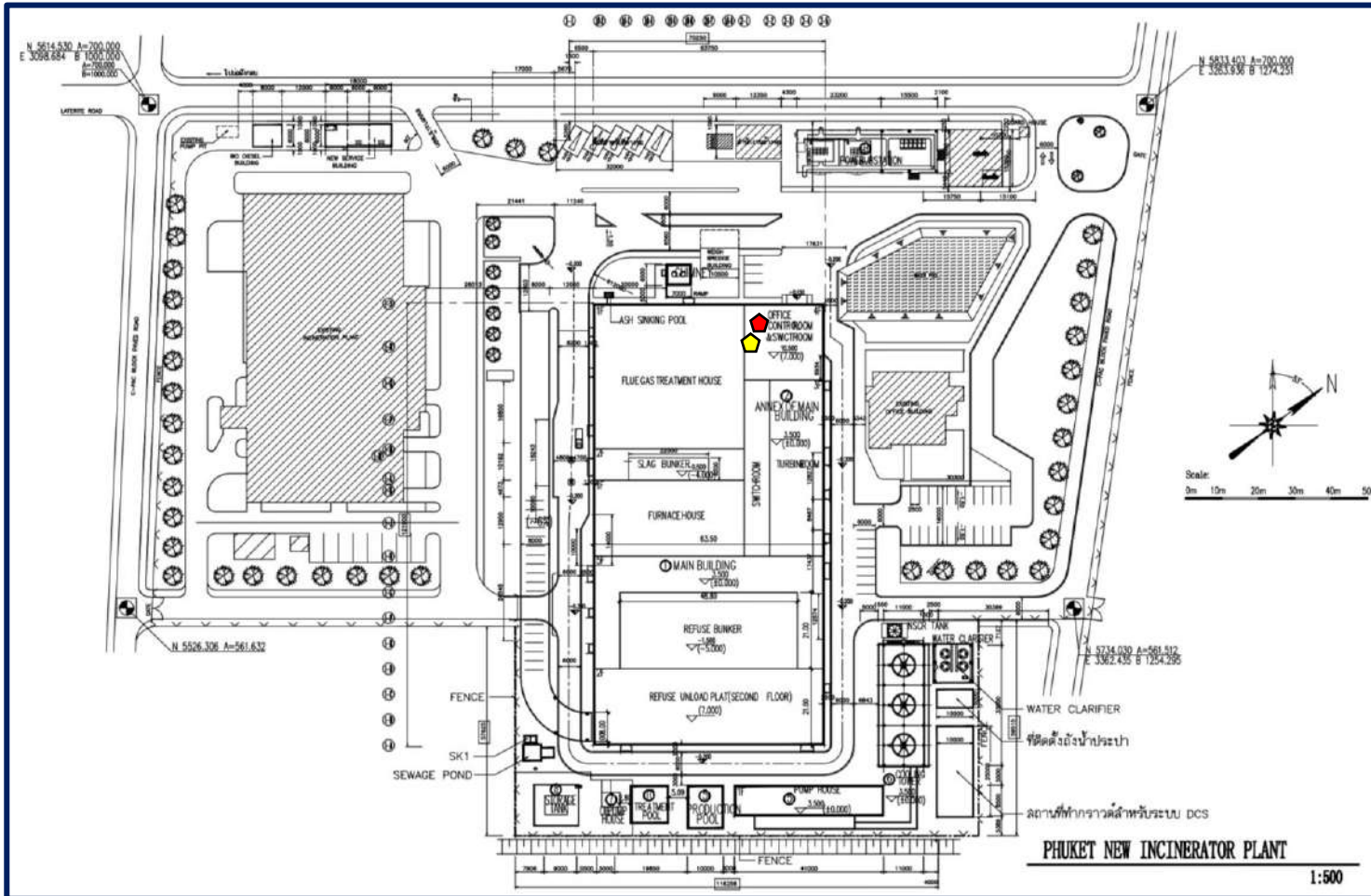
เส้นทางอพยพหนีไฟ

ตำแหน่งติดตั้ง ชั้น :

2 (สำนักงาน)

คำอธิบายสัญลักษณ์ :

	= Fire Exit
	= Emergency Lighting
	= Assembly Point (จุดรวมพล)
	= แผนผังเส้นทางอพยพหนีไฟ





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EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

PJT Technology Co.,Ltd.

ชื่ออุปกรณ์ :

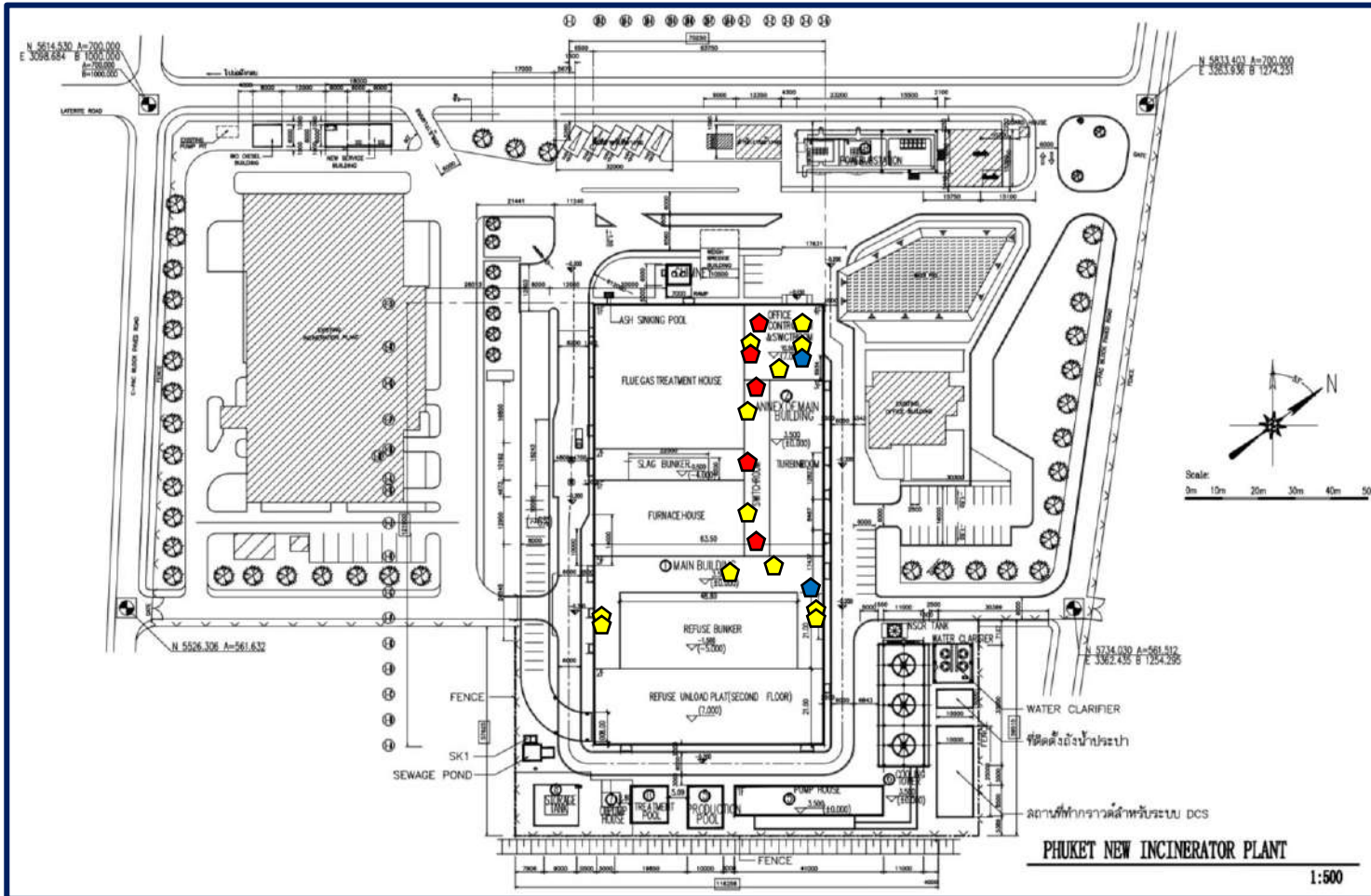
เส้นทางอพยพหนีไฟ

ตำแหน่งติดตั้ง ชั้น :

2, และสง.ชั้น3

คำอธิบายสัญลักษณ์ :

	= Fire Exit
	= Emergency Lighting
	= Assembly Point (จุดรวมพล)
	= แผนผังเส้นทางอพยพหนีไฟ





บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.

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EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

PJT Technology Co.,Ltd.

ชื่ออุปกรณ์ :

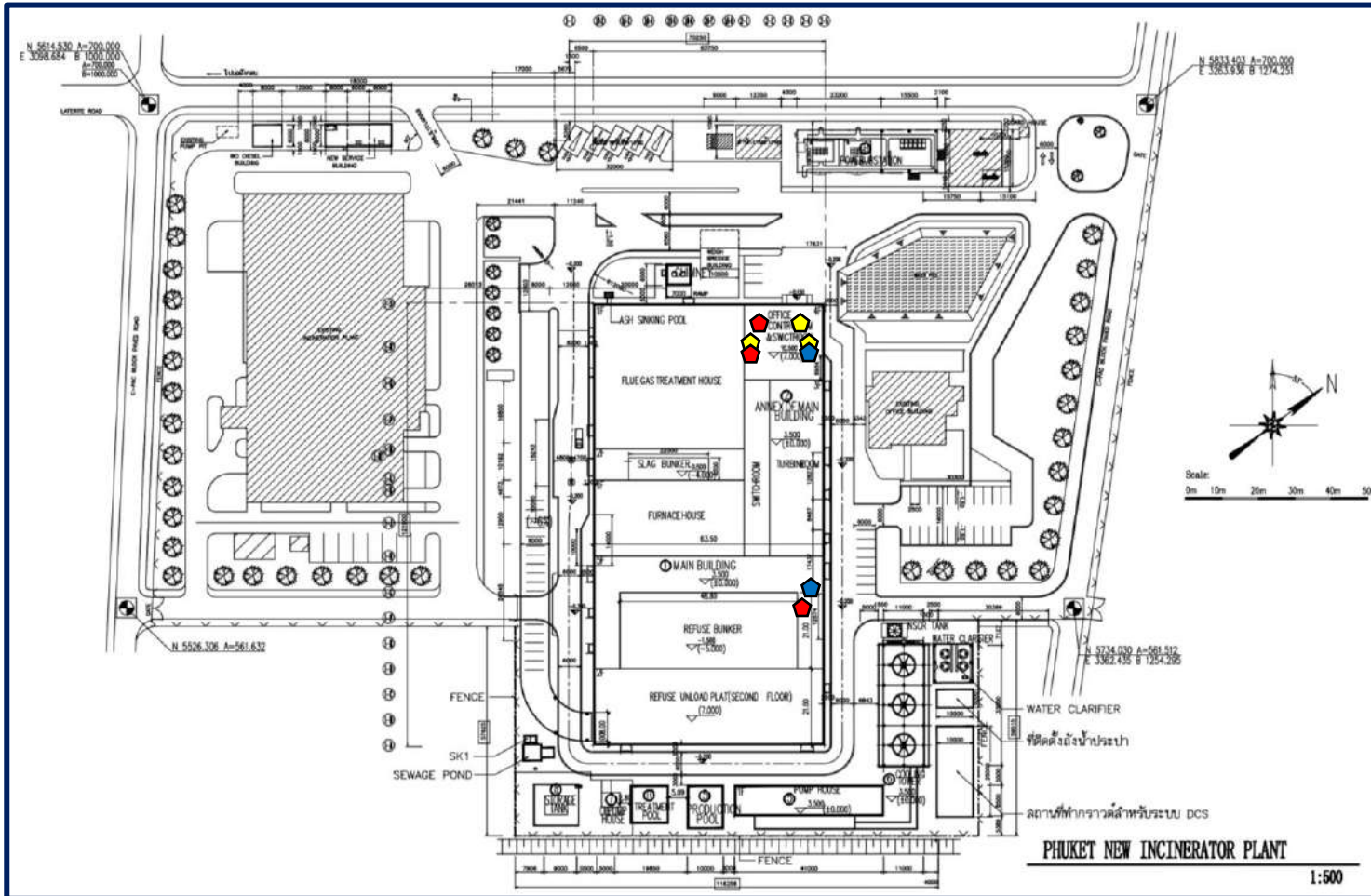
เส้นทางอพยพหนีไฟ

ตำแหน่งติดตั้ง ชั้น :

3, และสง.ชั้น4
(Dearator)

คำอธิบายสัญลักษณ์ :

	= Fire Exit
	= Emergency Lighting
	= Assembly Point (จุดรวมพล)
	= แผนผังเส้นทางอพยพหนีไฟ





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EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

PJT Technology Co.,Ltd.

ชื่ออุปกรณ์ :

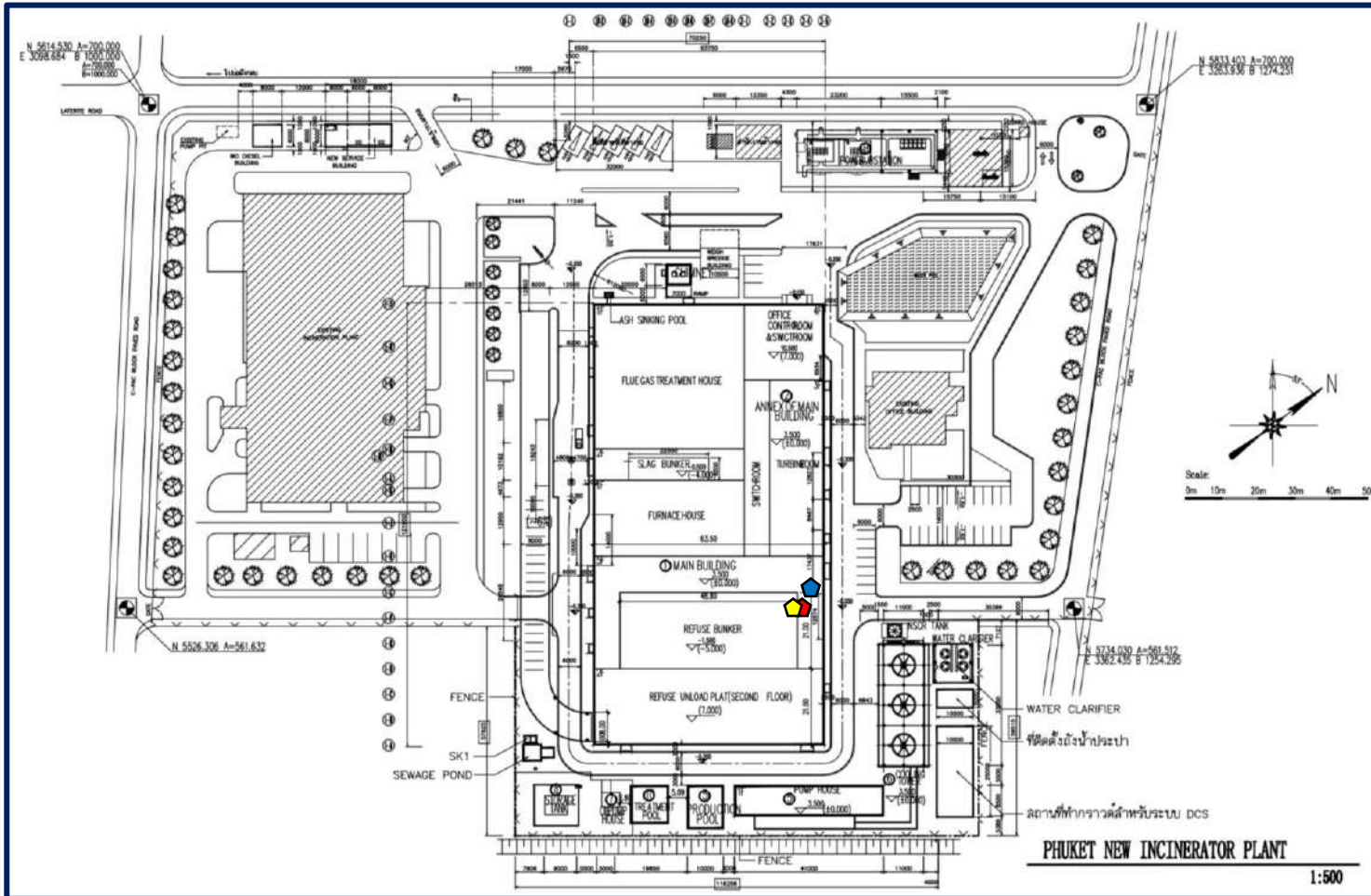
เส้นทางอพยพหนีไฟ

ตำแหน่งติดตั้ง ชั้น :

5 (ห้องแครน)

คำอธิบายสัญลักษณ์ :

	= Fire Exit
	= Emergency Lighting
	= Assembly Point (จุดรวมพล)
	= แผนผังเส้นทางอพยพหนีไฟ





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PJT TECHNOLOGY CO.,LTD.

EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

PJT Technology Co.,Ltd.

ชื่ออุปกรณ์ :

หัวจ่ายน้ำดับเพลิง

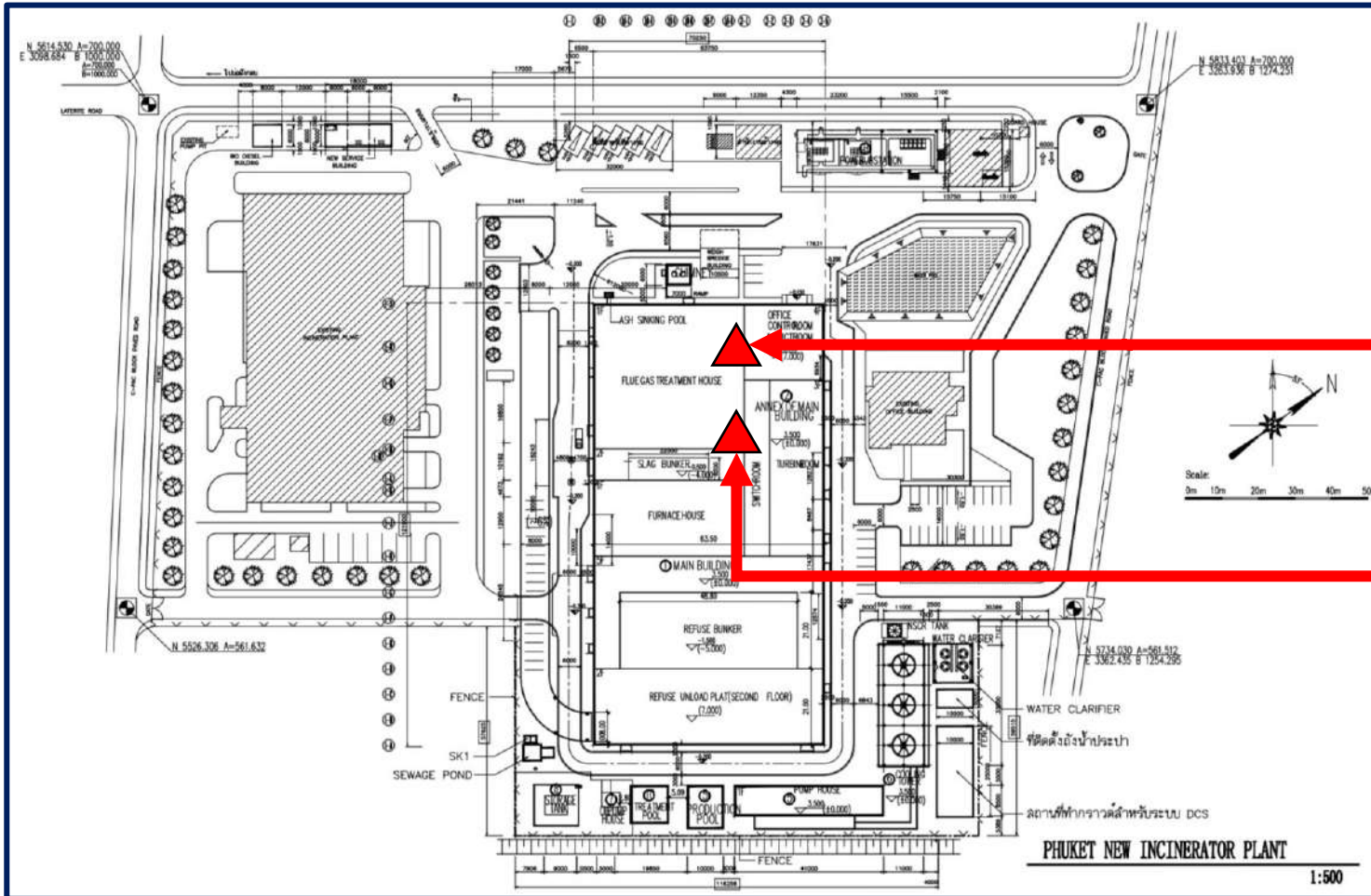
ตำแหน่งติดตั้ง ชั้น :

1

คำอธิบายสัญลักษณ์ :



= หัวจ่ายน้ำดับเพลิง 2.5 นิ้ว





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EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

PJT Technology Co.,Ltd.

ชื่ออุปกรณ์ :

หัวจ่ายน้ำดับเพลิง

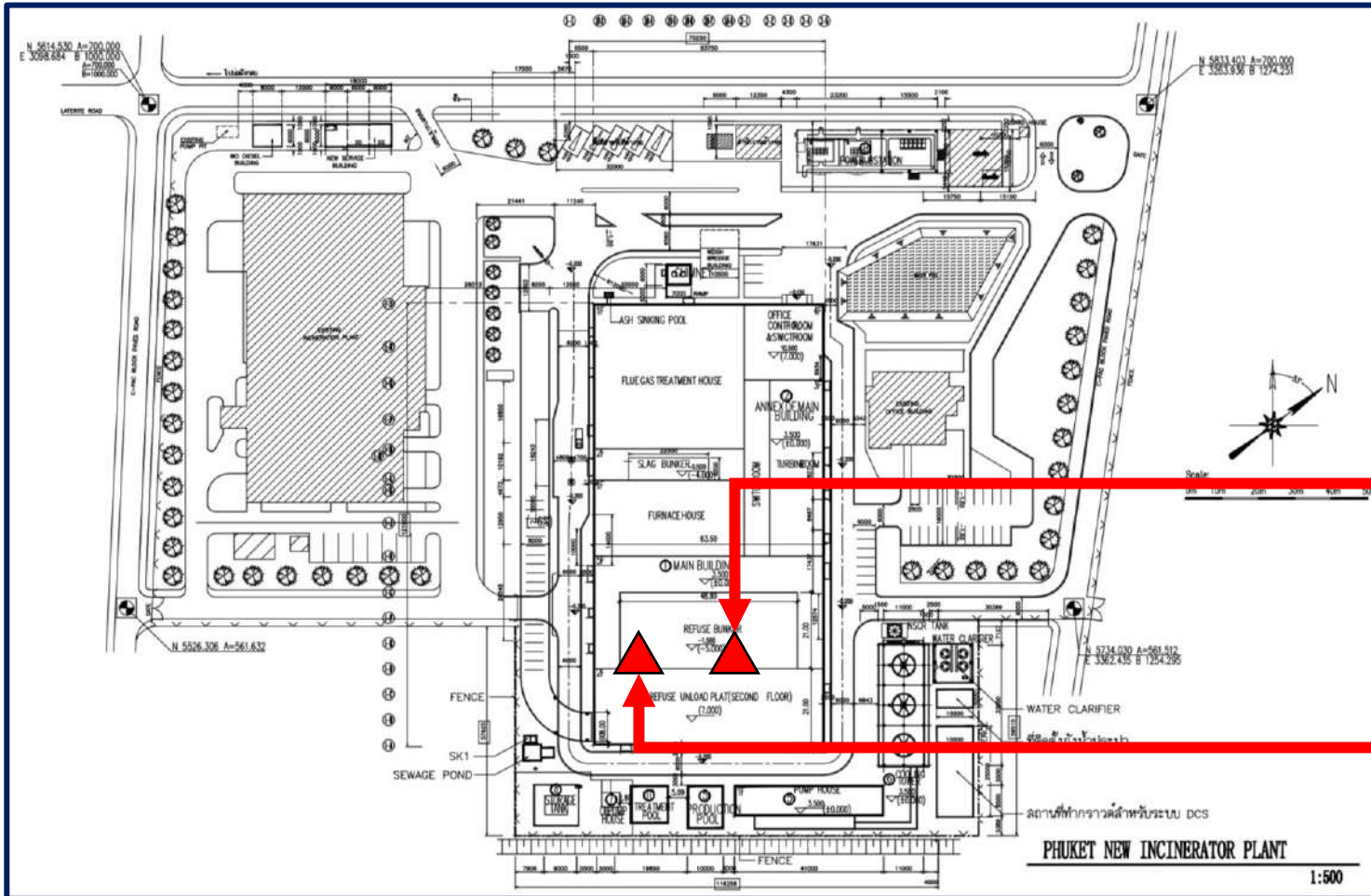
ตำแหน่งติดตั้ง ชั้น :

2 (อาคารผลิต)

คำอธิบายสัญลักษณ์ :



= หัวจ่ายน้ำดับเพลิง 2.5 นิ้ว





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EMERGENCY EQUIPMENT LAYOUT

พื้นที่ :

PJT Technology Co.,Ltd.

ชื่ออุปกรณ์ :

หัวจ่ายน้ำดับเพลิง

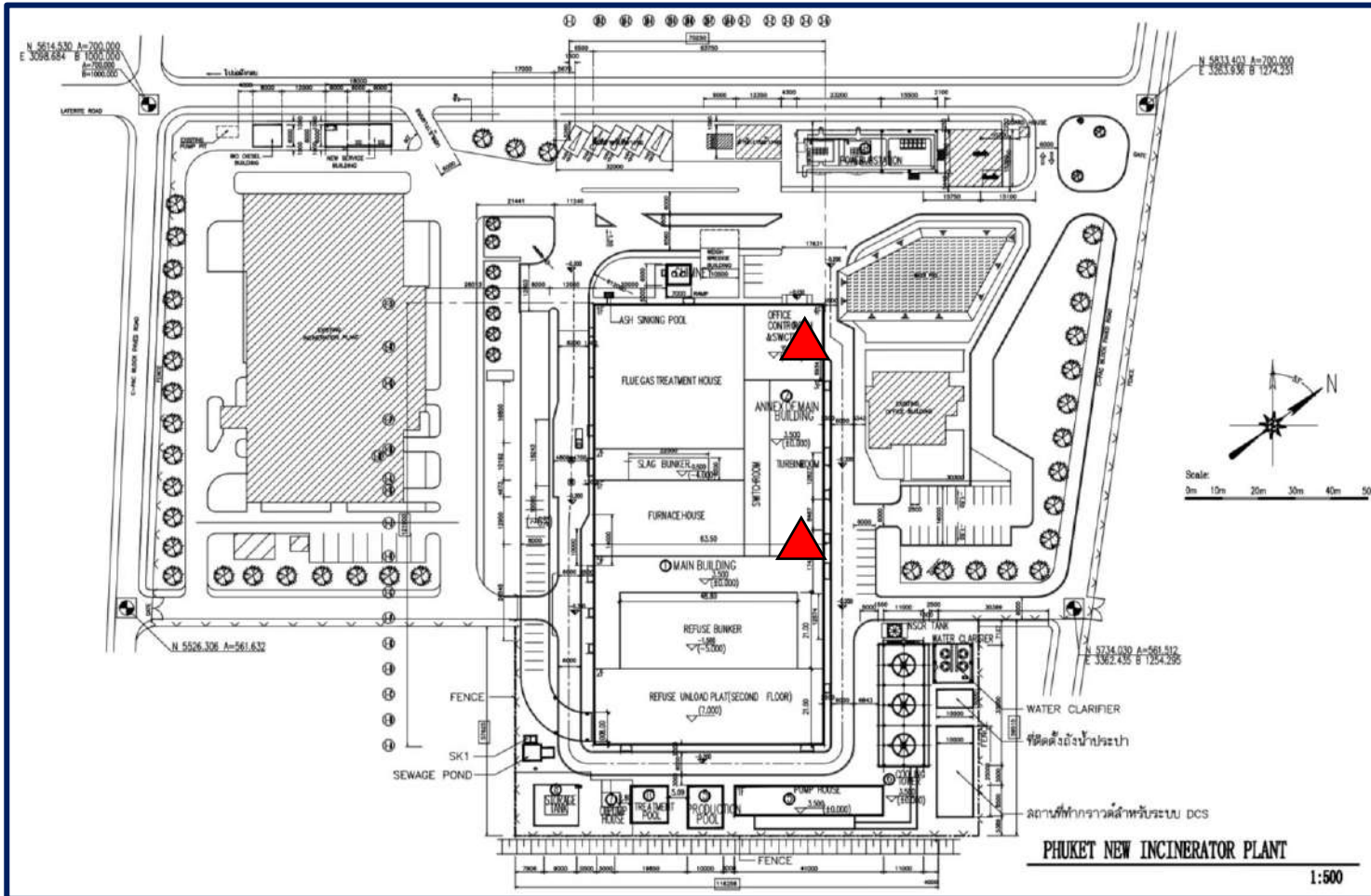
ตำแหน่งติดตั้ง ชั้น :

5 (อาคารผลิต)

คำอธิบายสัญลักษณ์ :



= หัวจ่ายน้ำดับเพลิง 2.5 นิ้ว



ภาคผนวกที่ 46

สัญญาจ้างกำจัดขยะมูลฝอย



บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.

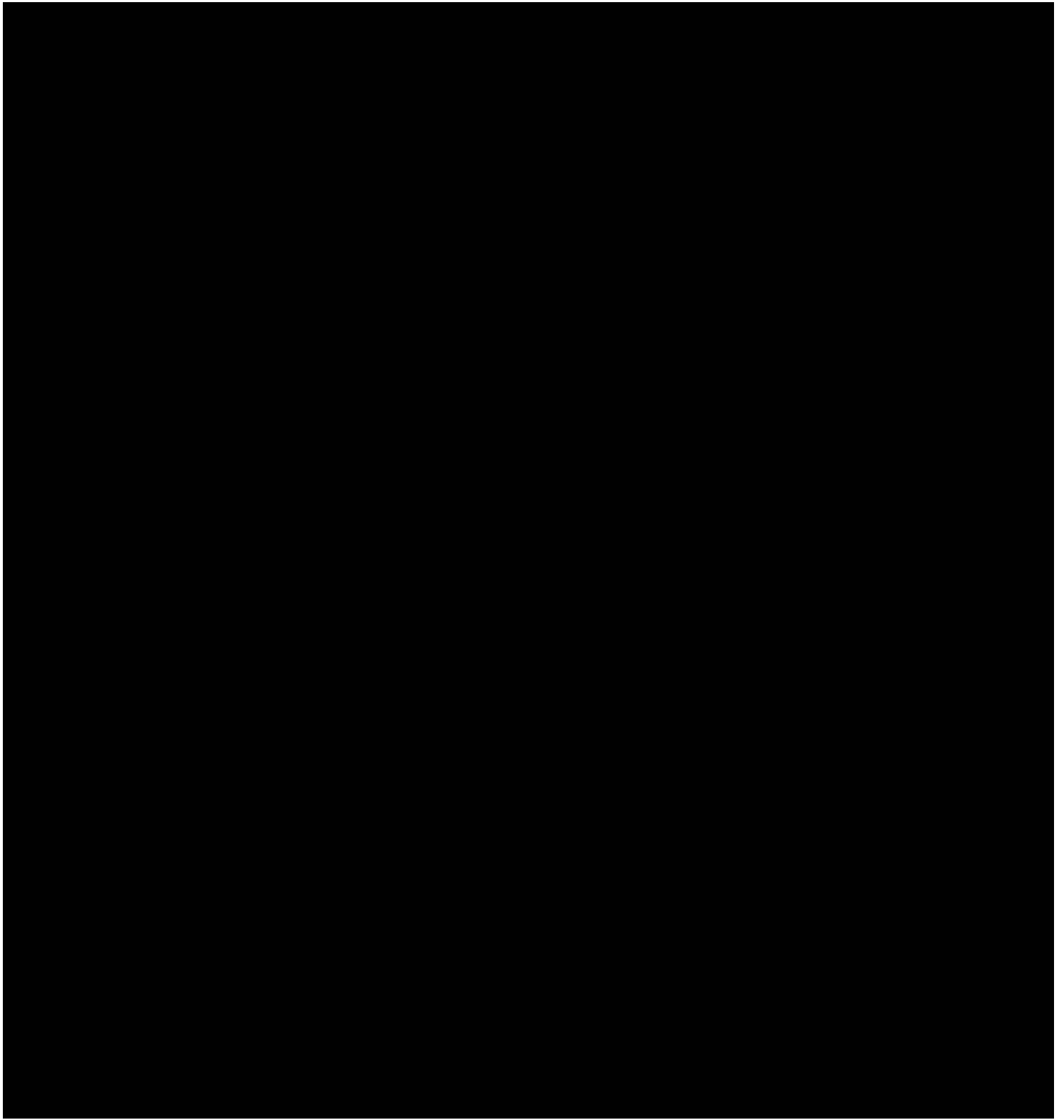
สัญญาจ้างกำจัดขยะมูลฝอย

ใบสั่งซื้อ เลขที่ PO 69-06-075

飞灰转运处理承包合同

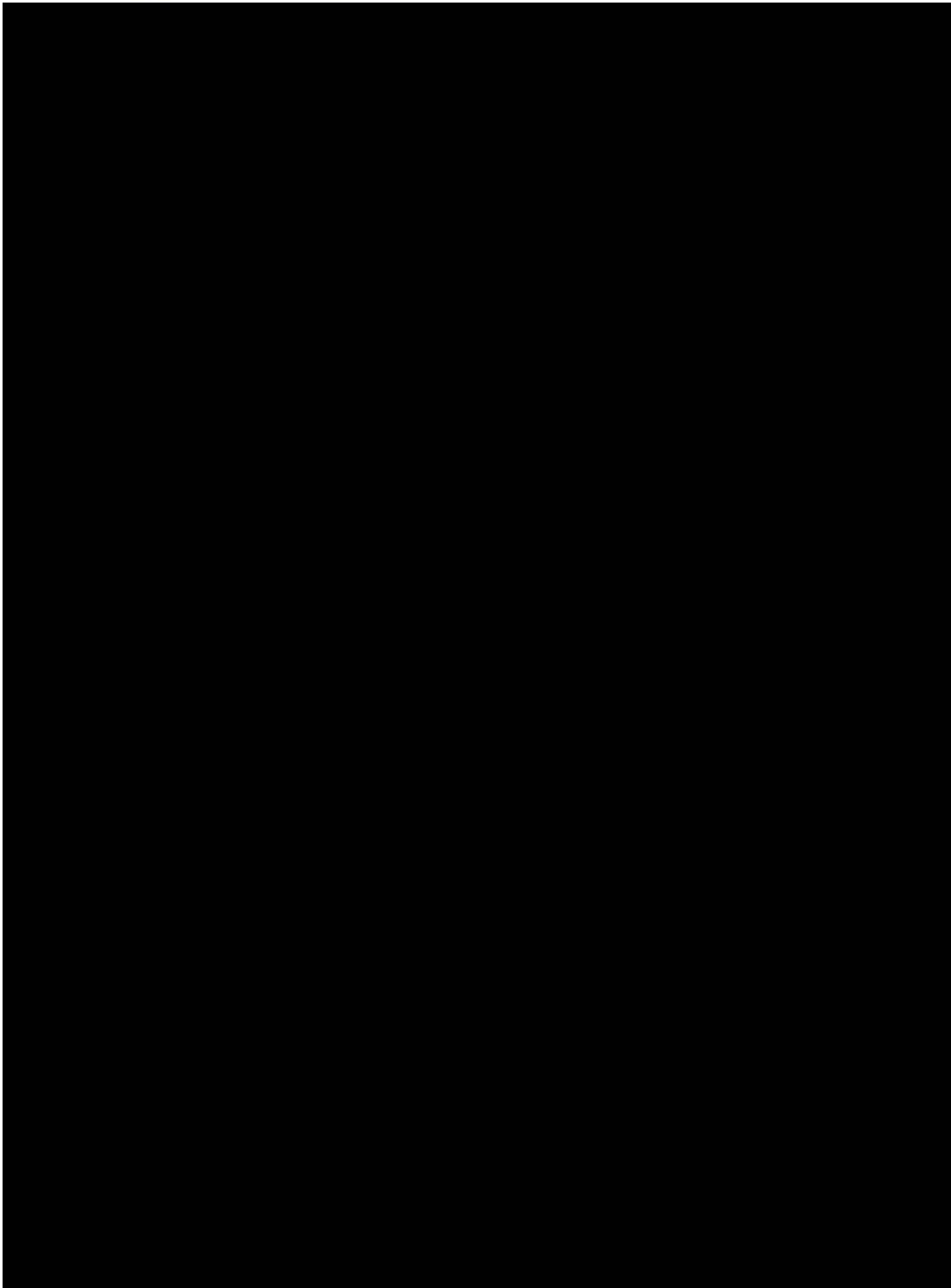
PO 单编号 : PO 69-06-075

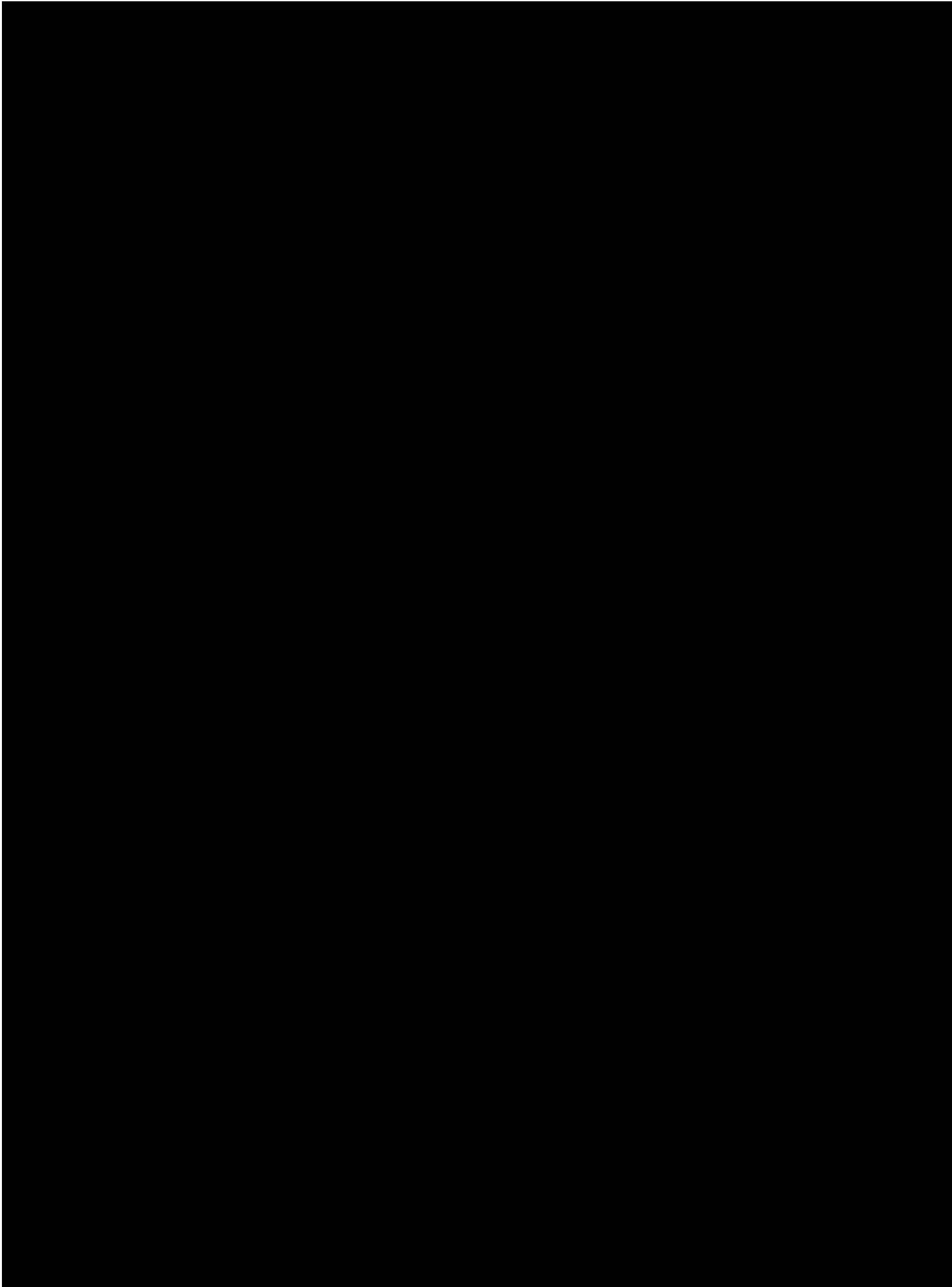
วันที่ 18 เดือน มิถุนายน พ.ศ. 2569





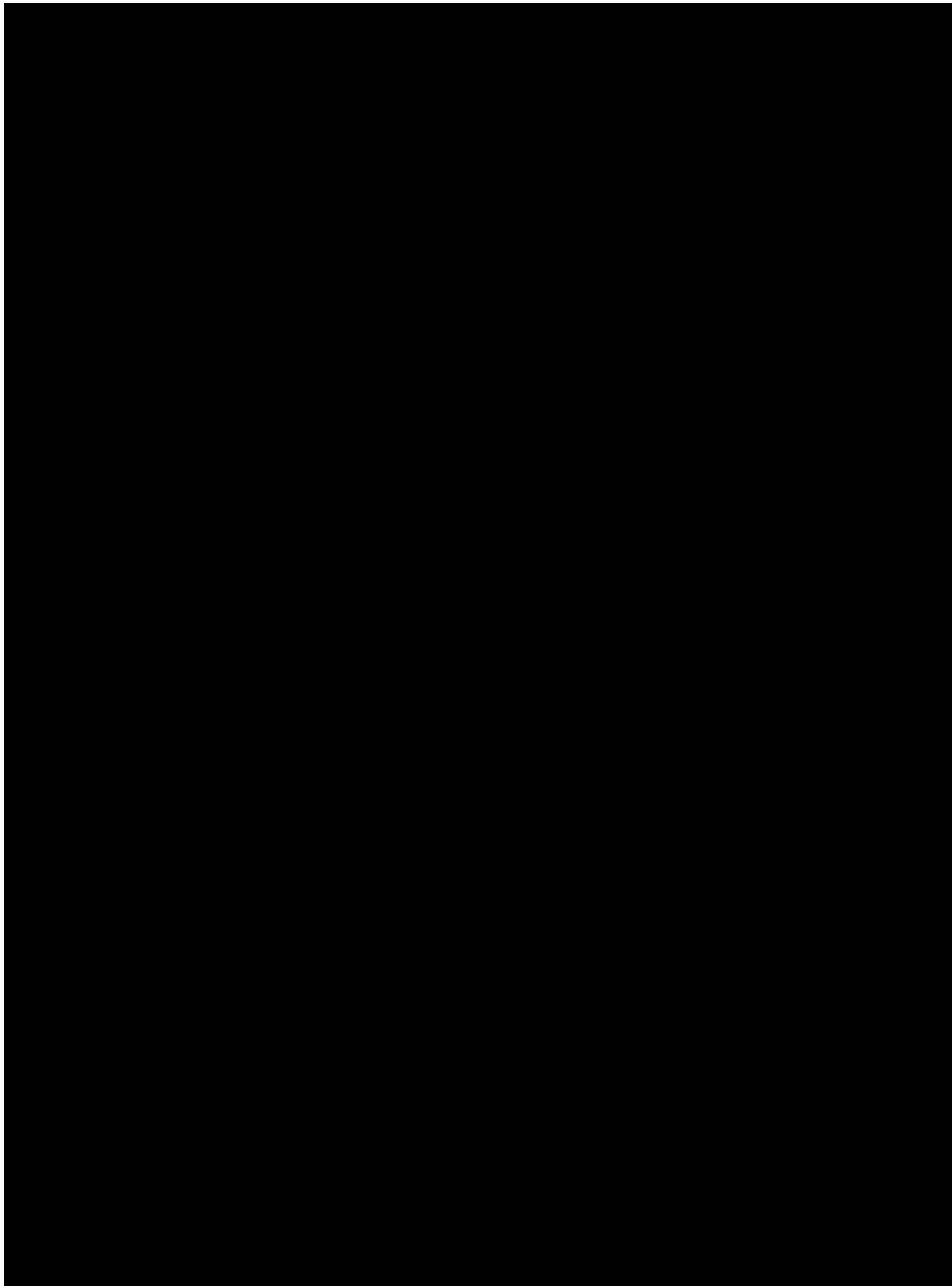
บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.





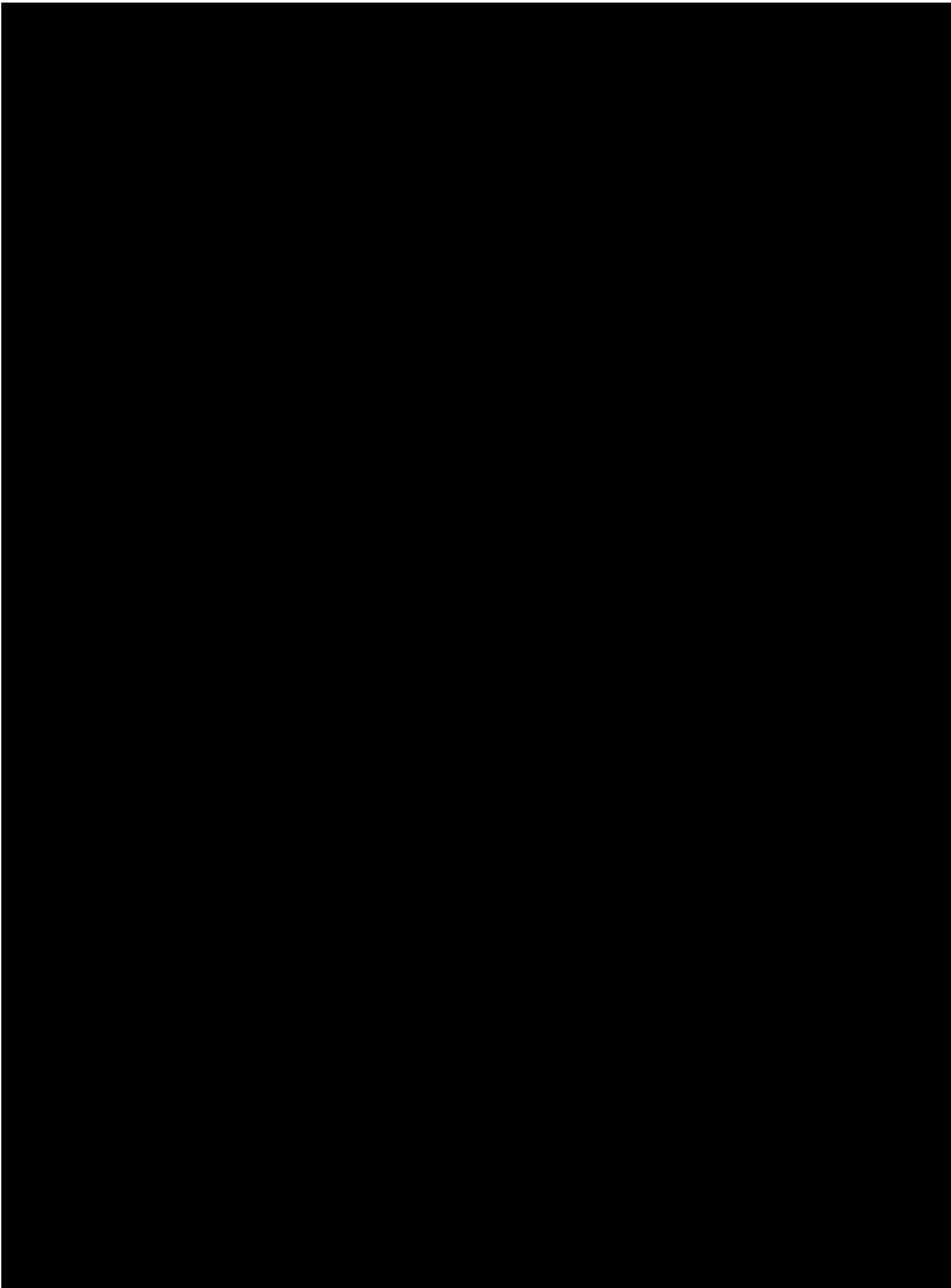


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PJT TECHNOLOGY CO.,LTD.



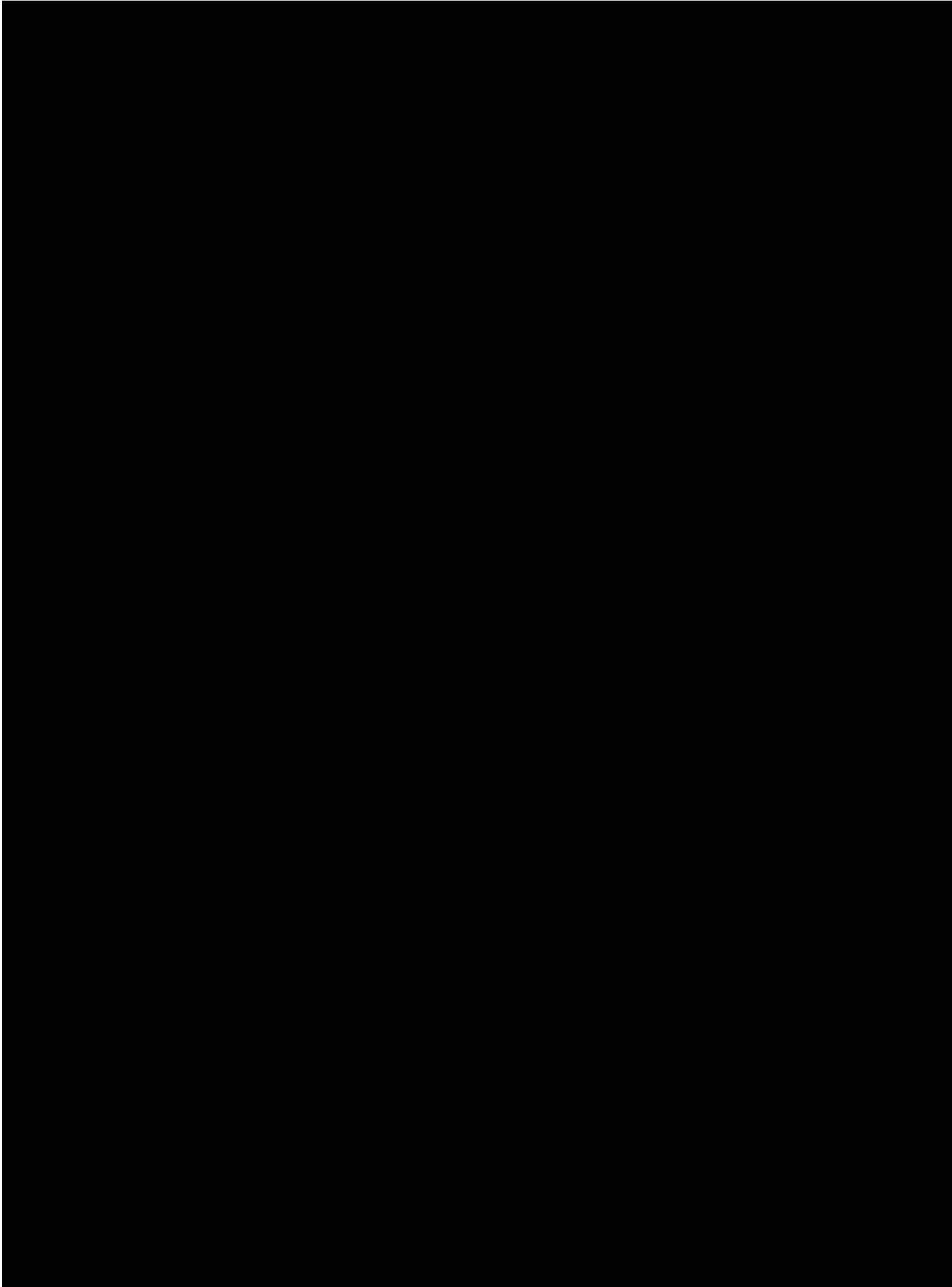


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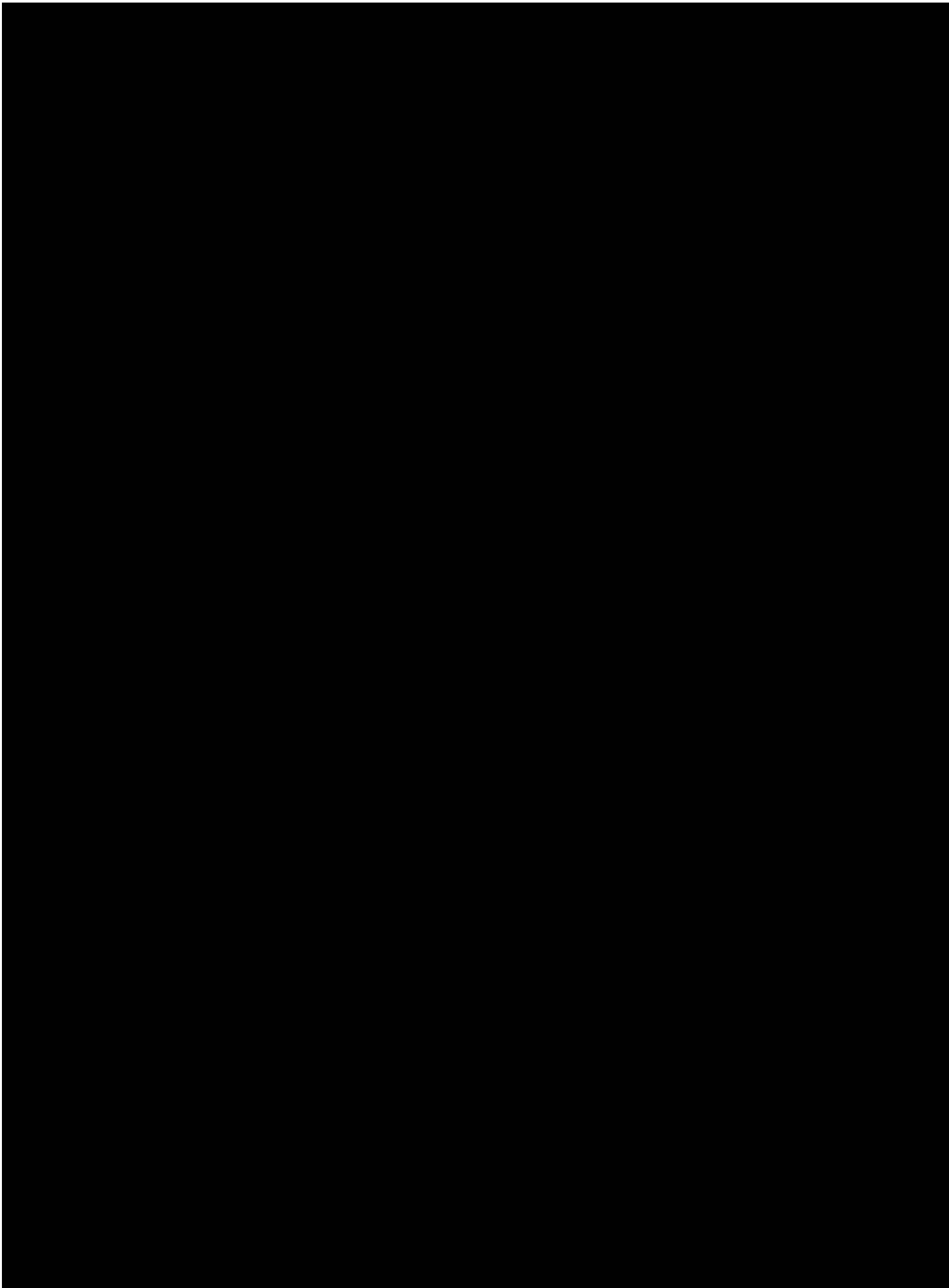


บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.



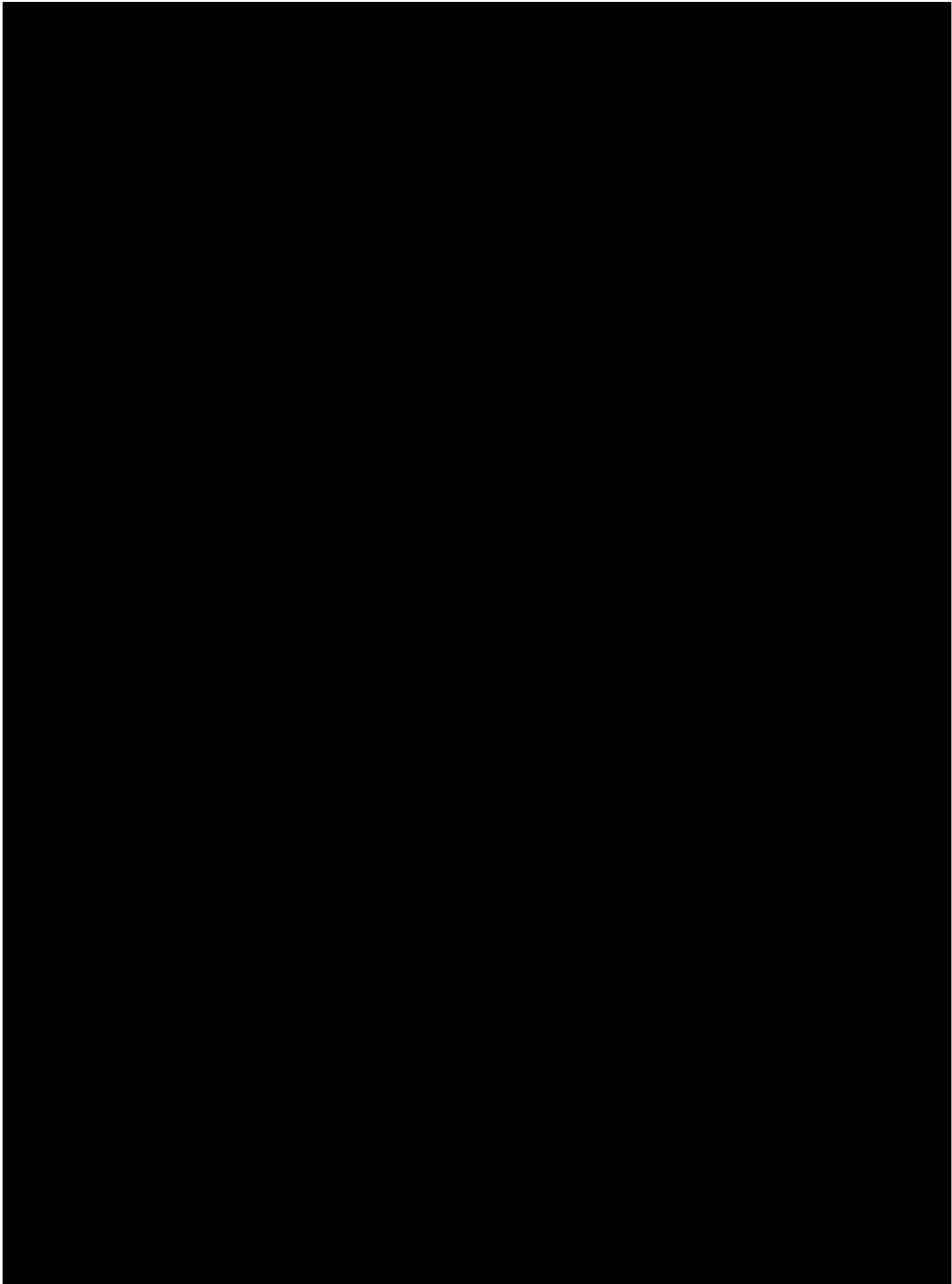


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PJT TECHNOLOGY CO.,LTD.



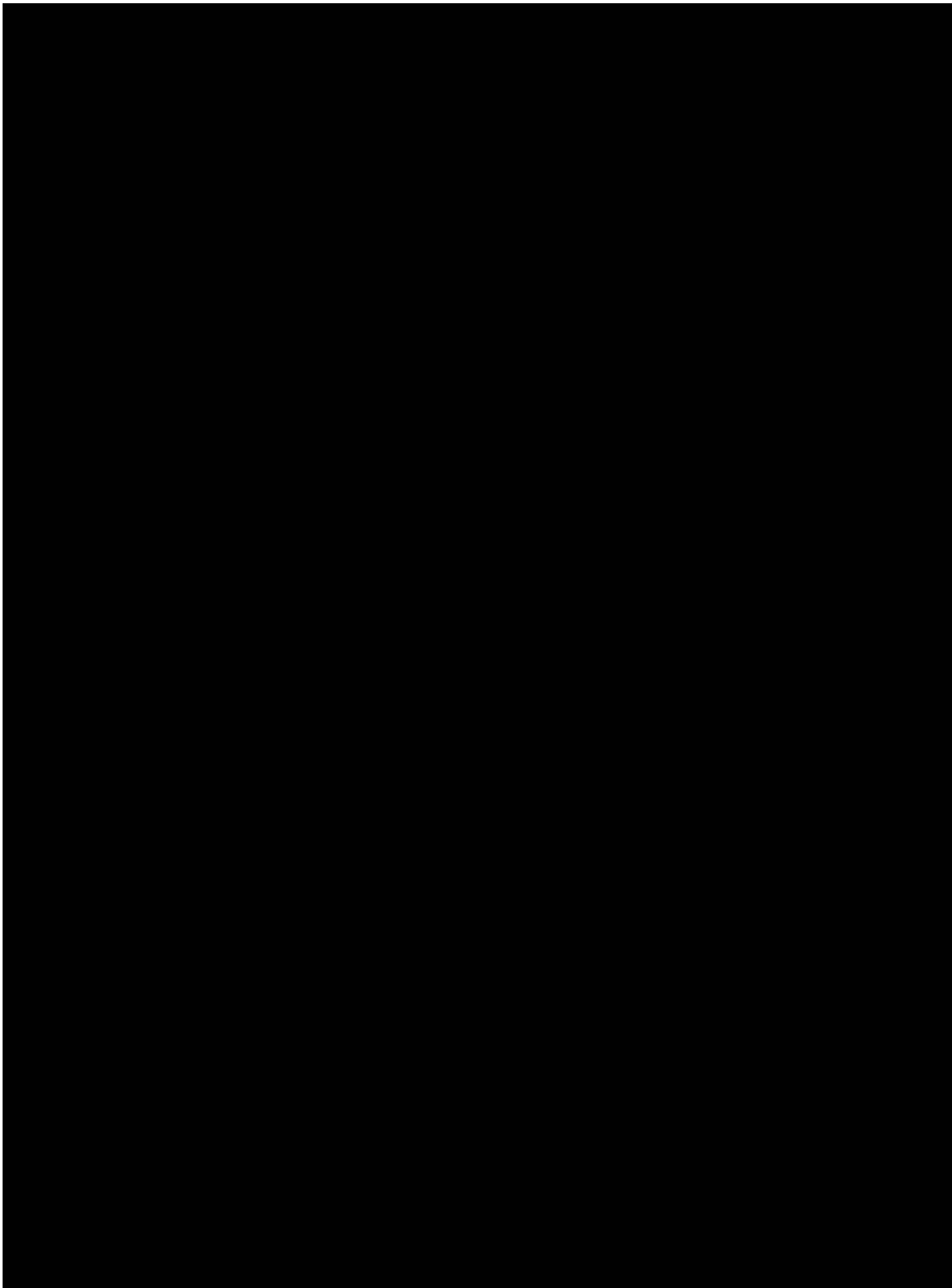


บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.



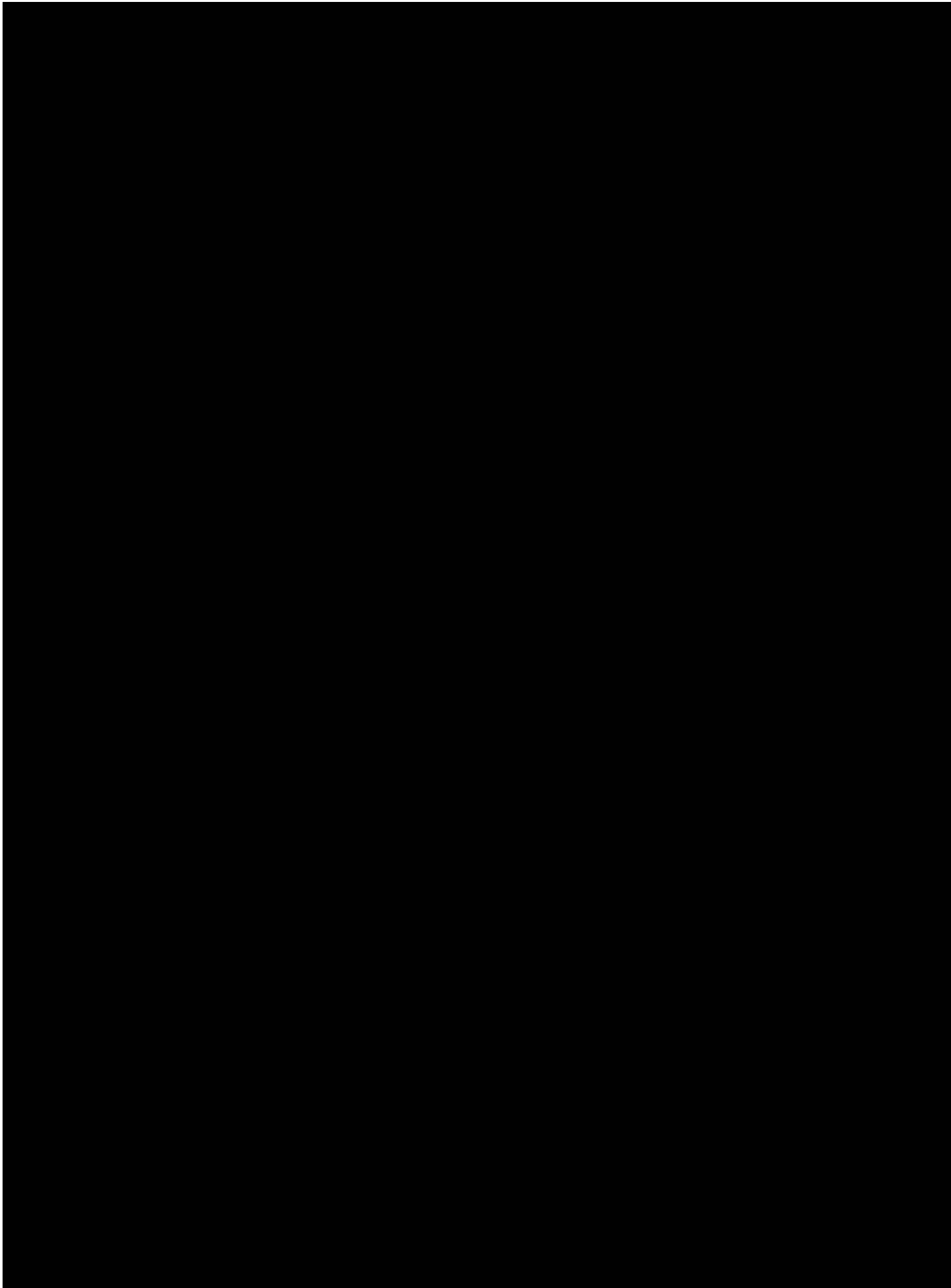


บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.





บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.

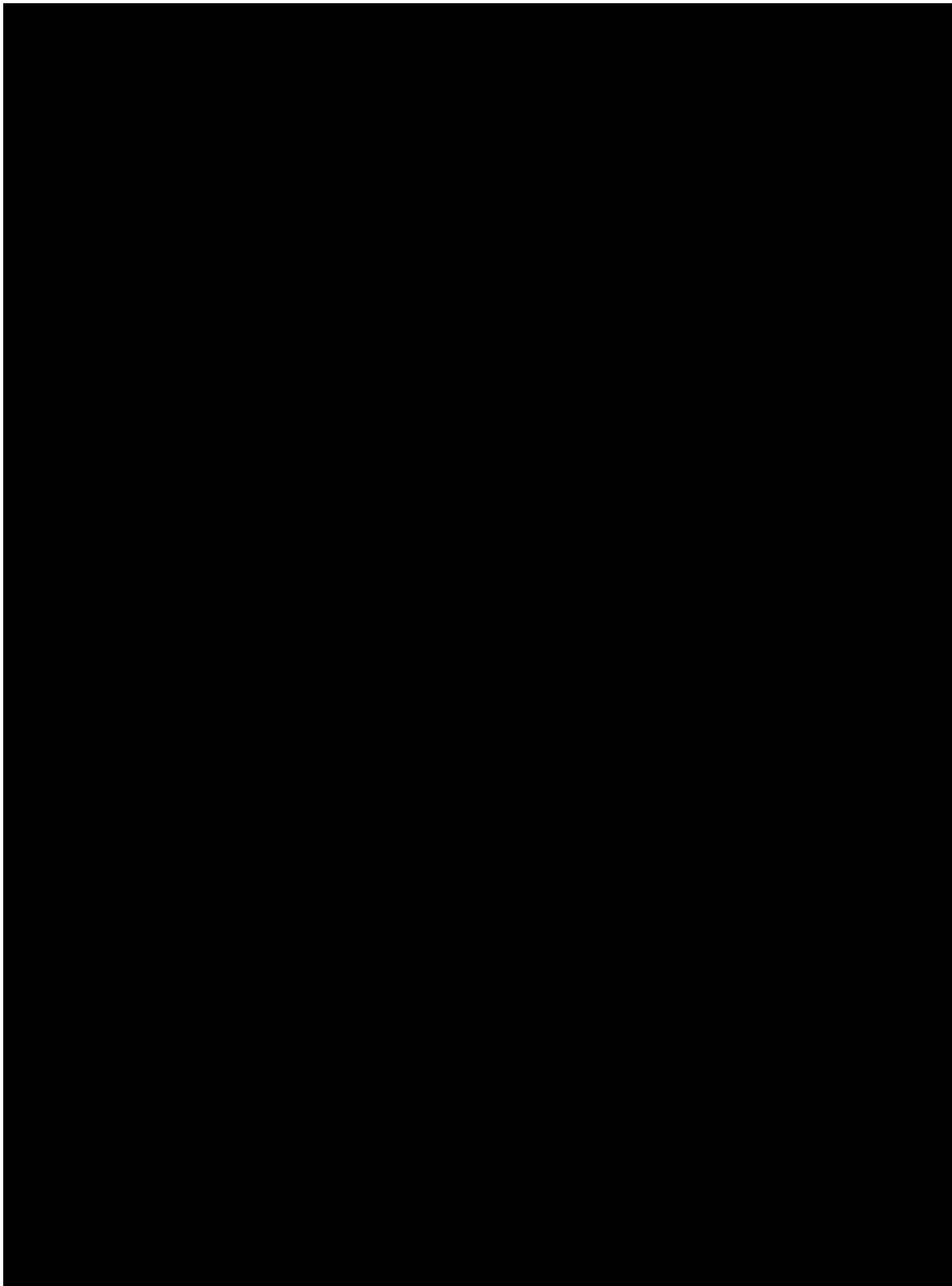




บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.

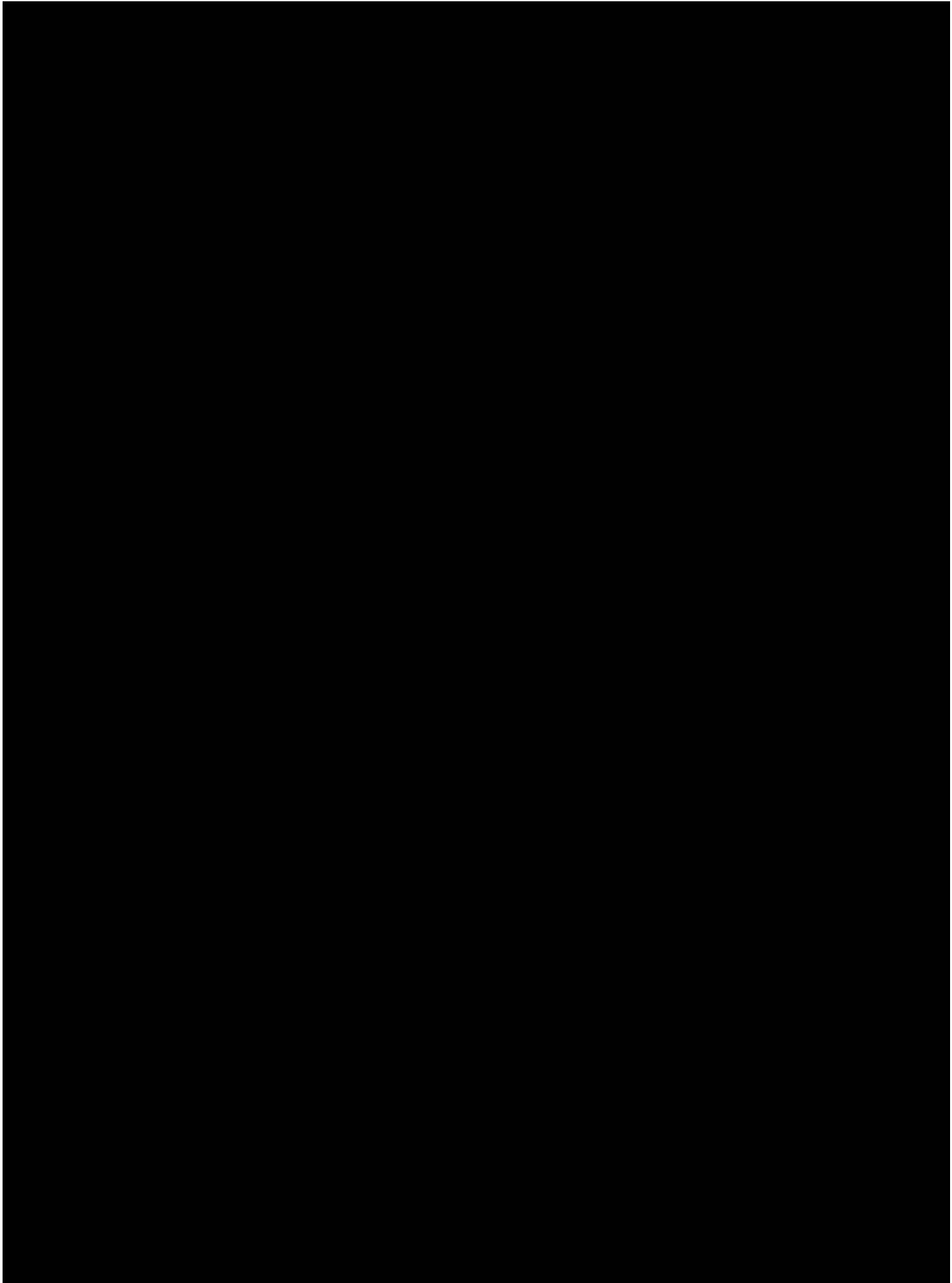


บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.



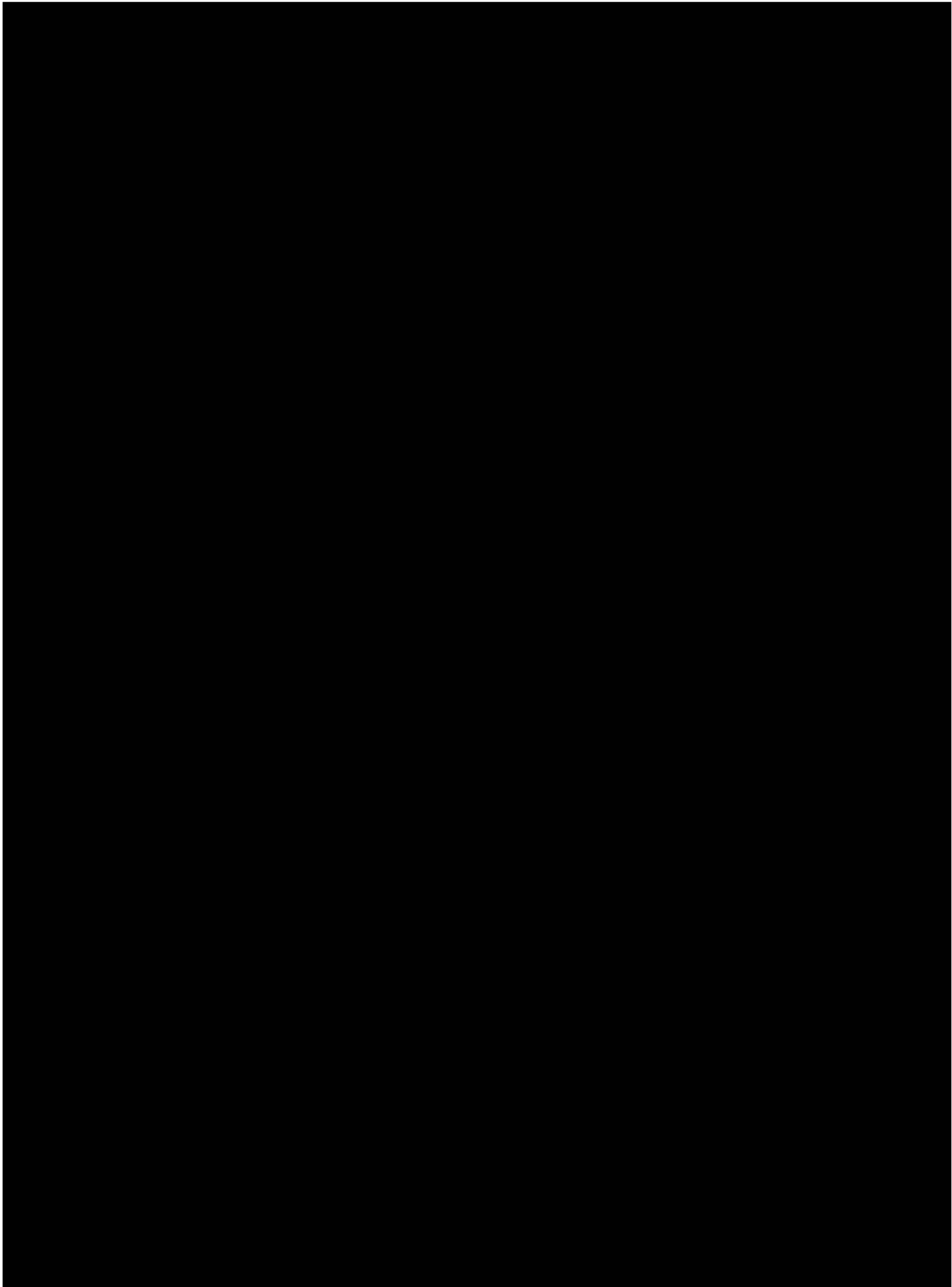


บริษัท พิจิต เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.





บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.

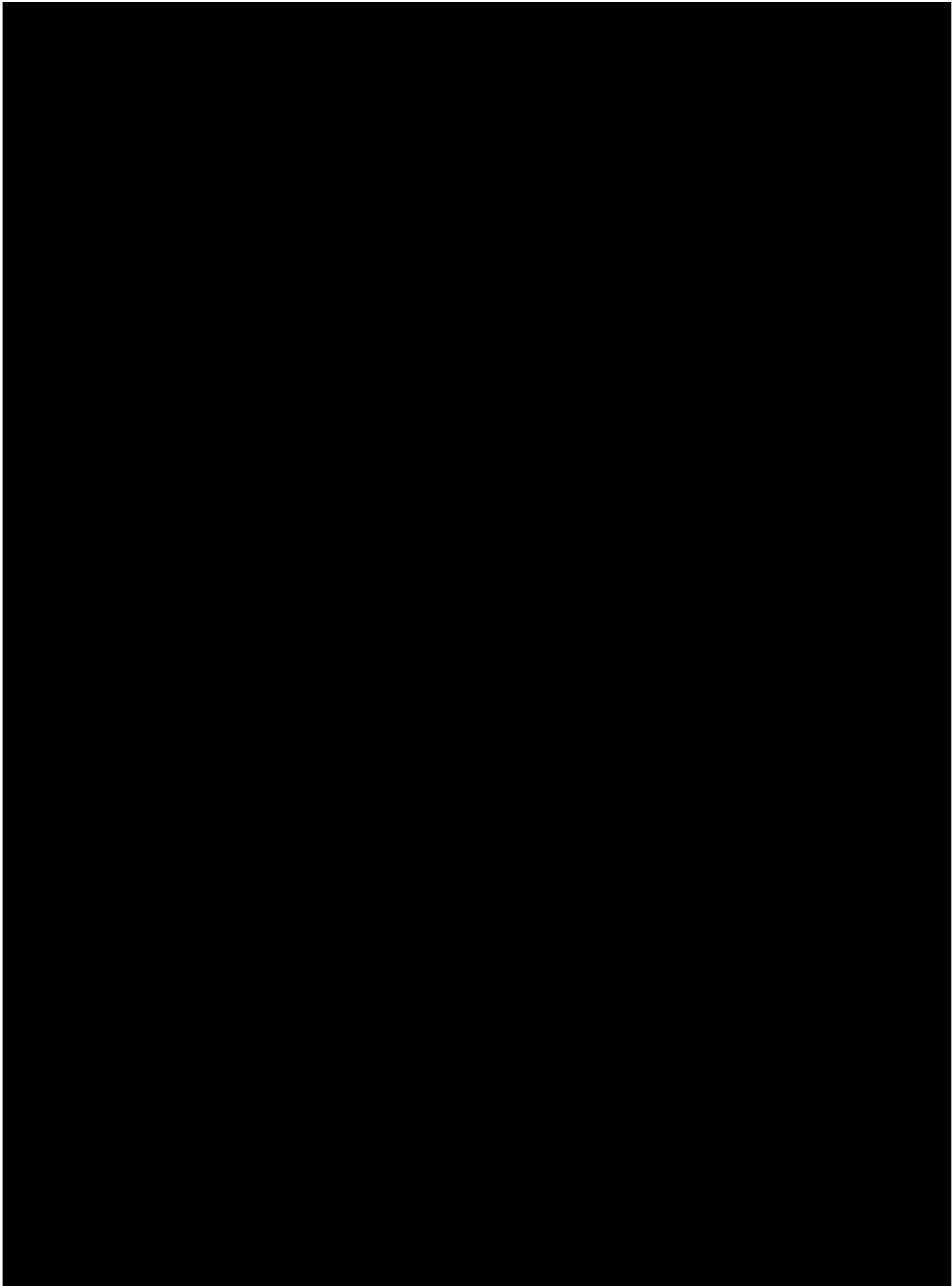




บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO., LTD.

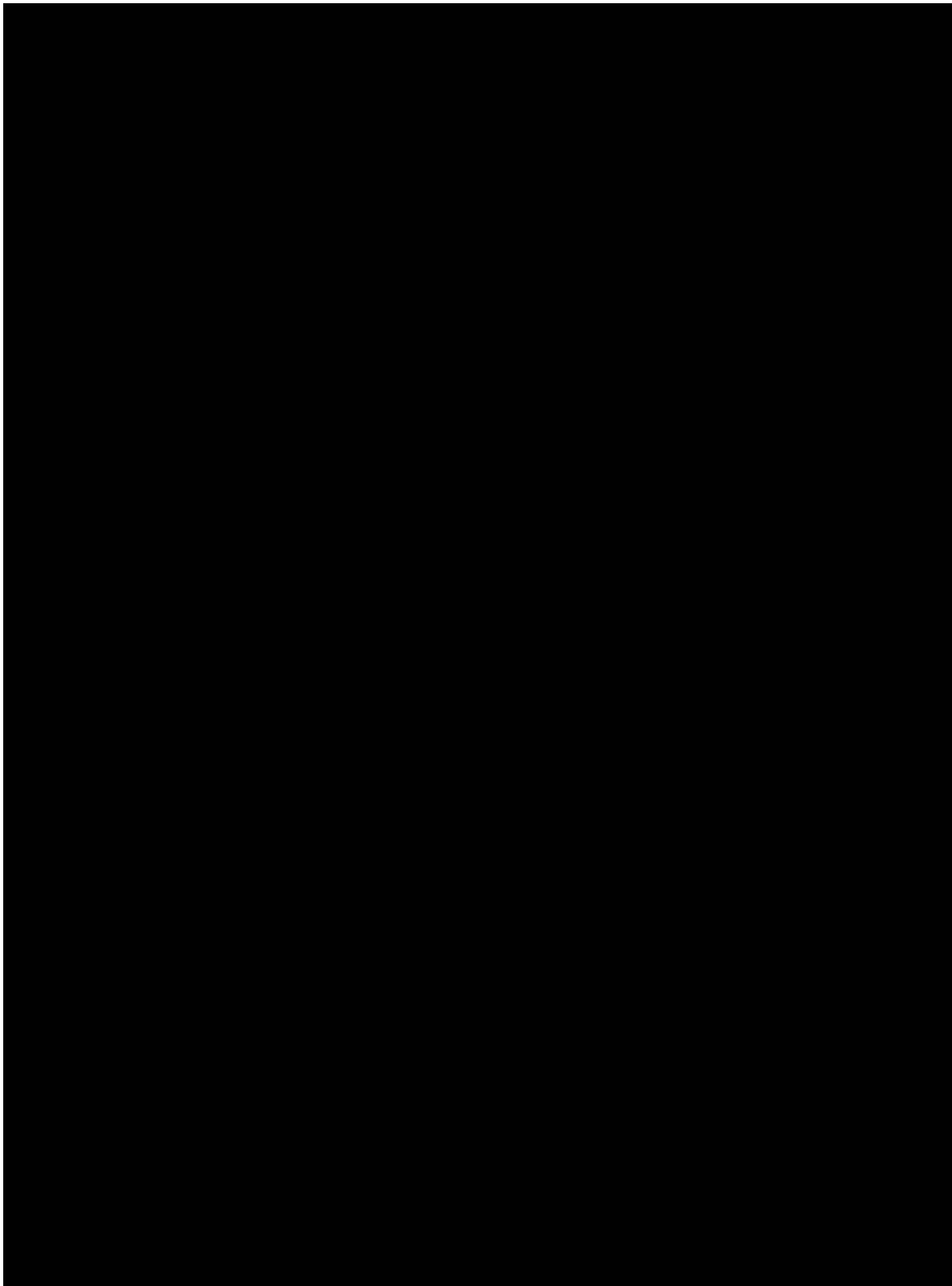


บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.



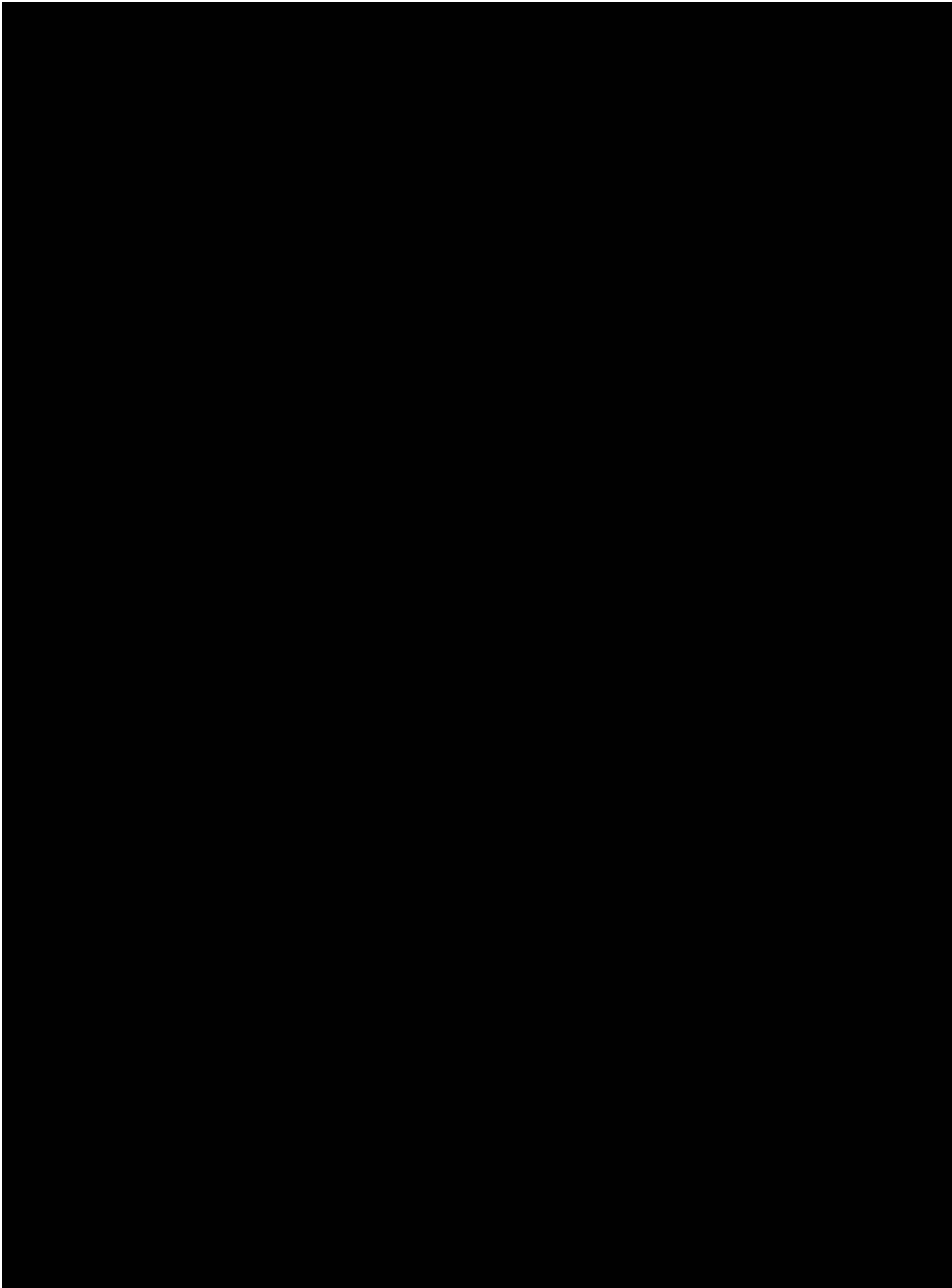


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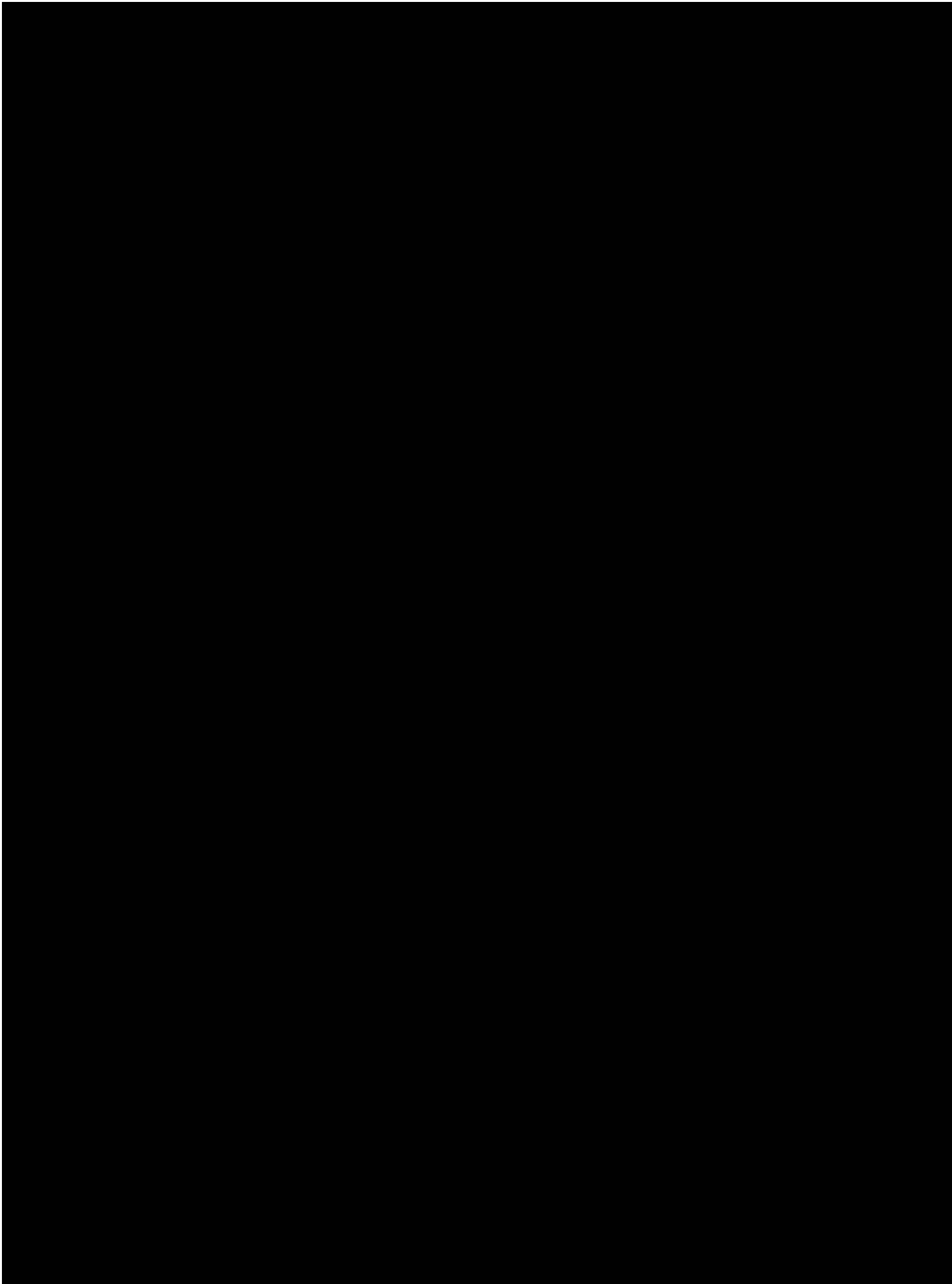


บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.



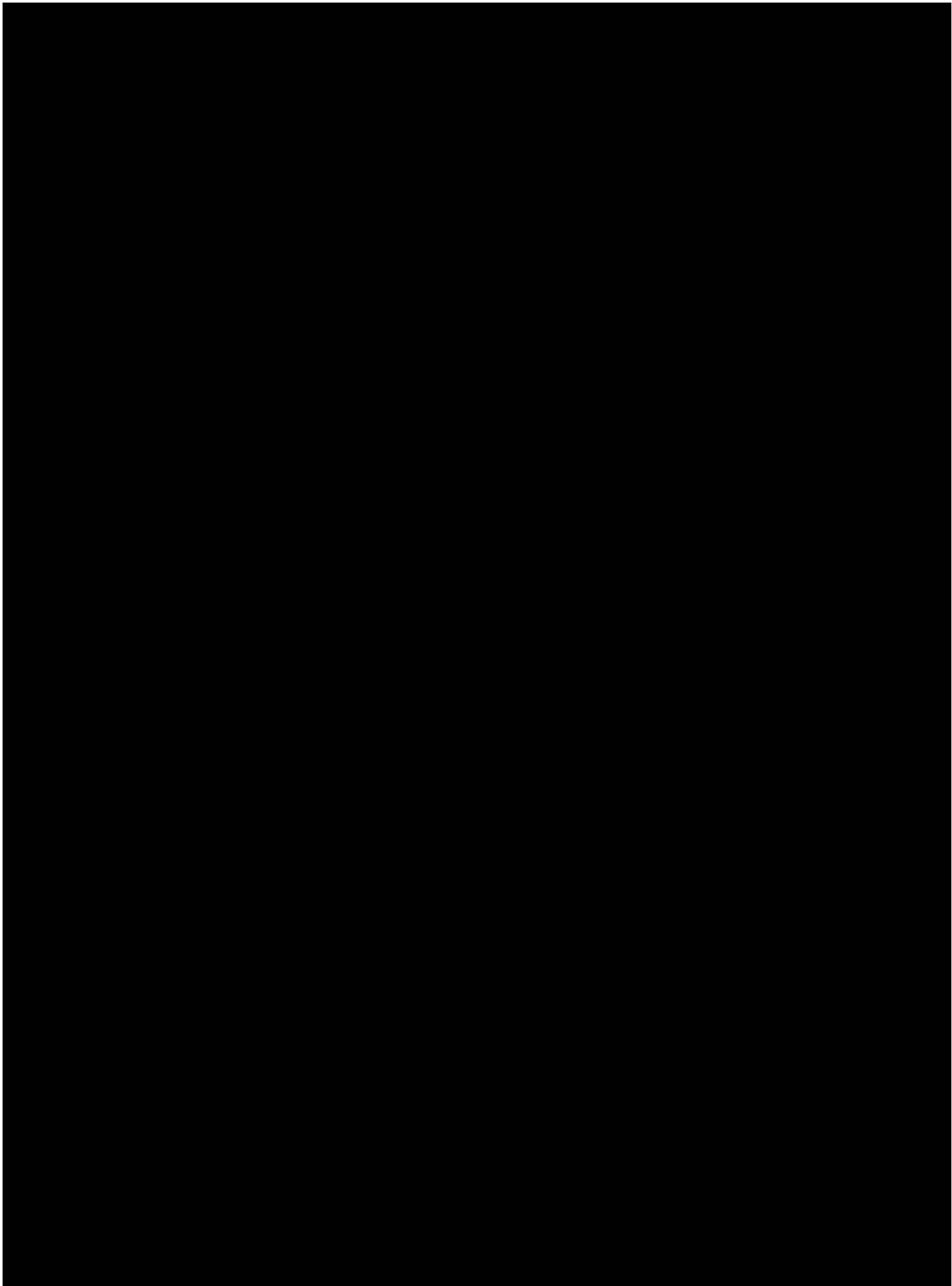


บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO., LTD.





บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.





บริษัท พีเจที เทคโนโลยี จำกัด
PJT TECHNOLOGY CO.,LTD.