

ภาคผนวกที่ 5

เอกสารสอบเทียบความถูกต้องของเครื่องมือ

- | | | |
|-----------|-----|---|
| เอกสารที่ | 5-1 | เอกสารสอบเทียบเครื่องมือการตรวจวัดคุณภาพอากาศ |
| เอกสารที่ | 5-2 | เอกสารสอบเทียบเครื่องมือการตรวจวัดระดับเสียง |
| เอกสารที่ | 5-3 | เอกสารสอบเทียบเครื่องมือการตรวจวิเคราะห์คุณภาพน้ำ |

ตารางสรุปรายการเอกสารการสอบเทียบเครื่องมือตรวจวัดคุณภาพสิ่งแวดล้อม

รายการตรวจวัด	เครื่องมือเก็บตัวอย่าง	เครื่องมือตรวจวิเคราะห์
	ชื่อเครื่องมือ	ชื่อเครื่องมือ
คุณภาพอากาศ		
- TSP	- High Volume Air Sampler No. B15, B41	- Electronic Balance
- PM ₁₀	- High Volume PM-10 Air Sampler No. B28, B32	- Electronic Balance
- CO	- CO Analyzer - No. B01, B02, B03, B06, B08, B11, B13, B14	- CO Analyzer No. B01, B02, B03, B06, B08, B11, B13, B14
ระดับเสียง		
- Leq 24 hr	- Acoustic Calibrator	-
- Lmax	- Sound Level Meter No. ACO-B14, B24, B31	
คุณภาพน้ำ		
- pH	-	- pH Meter
- BOD ₅	-	- DO Meter
- TSS	-	- Electronic Balance
- TDS	-	- Electronic Balance
- Settleable Solids	-	- Electronic Balance
- TKN	-	- Electronic Balance
- Sulfide	-	- Electronic Balance
- Grease & Oil	-	- Electronic Balance

เอกสารที่ 5-1

เอกสารสอบเทียบเครื่องมือการตรวจวัดคุณภาพอากาศ



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7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chulachak, Bangkok 10900
Tel : (662) 939-4370-72 Fax : (662) 513-4221 E-mail : sale@spscon.com, www.spscon.com

High Volume Air Sampler Calibration Report

Calibration Method : Multipoint Orifice Flow Transfer Standard

Model : TE 5025A

S/N : 3611

Calibration Data

High Volume Air Sampler Data

Calibration Data

Recorder No.	Blower No.	Date	Actual Flowrate (l/min)	R ²
B01	B01	01/11/2022	y = 1.277x-6.403	0.999
B02	B02	03/11/2022	y = 1.083x+3.505	0.995
B03	B03	03/11/2022	y = 1.143x-1.010	0.996
B04	B04	04/11/2022	y = 1.206x-3.858	0.995
B05	B05	01/11/2022	y = 1.317x-8.733	0.997
B06	B06	01/11/2022	y = 1.268x-5.920	0.998
B07	B07	01/11/2022	y = 1.228x-6.265	0.998
B08	B08	08/11/2022	y = 1.160x-3.496	0.995
B09	B09	03/11/2022	y = 1.245x-5.341	0.997
B10	B10	01/11/2022	y = 1.097x+1.837	0.997
B11	B11	07/11/2022	y = 1.153x-2.164	0.998
B12	B12	04/11/2022	y = 1.201x-3.884	0.998
B13	B13	01/11/2022	y = 1.266x-6.916	0.995
B14	B14	02/11/2022	y = 1.269x-6.120	0.999
B15	B15	02/11/2022	y = 1.149x-1.829	0.997
B16	B16	02/11/2022	y = 1.212x-4.259	0.999
B17	B17	04/11/2022	y = 1.172x-2.143	0.997
B18	B18	04/11/2022	y = 1.321x-9.413	0.996
B19	B19	02/11/2022	y = 1.356x-11.184	0.997
B20	B20	04/11/2022	y = 1.310x-8.682	0.997
B21	B21	03/11/2022	y = 1.156x-2.174	0.999
B22	B22	02/11/2022	y = 1.288x-8.740	0.998
B23	B23	04/11/2022	y = 1.247x-5.764	0.996
B24	B24	01/11/2022	y = 1.161x-2.123	0.999
B25	B25	02/11/2022	y = 1.025x+3.341	0.997
B26	B26	02/11/2022	y = 1.234x-6.128	0.995
B27	B27	03/11/2022	y = 1.220x-5.822	0.997
B28	B28	02/11/2022	y = 1.253x-6.605	0.999
B29	B29	08/11/2022	y = 1.311x-8.876	0.997
B30	B30	07/11/2022	y = 1.264x-7.252	0.998
B31	B31	07/11/2022	y = 1.215x-4.628	0.995
B32	B32	03/11/2022	y = 1.258x-6.433	0.997
B33	B33	03/11/2022	y = 1.329x-7.779	0.995
B34	B34	03/11/2022	y = 1.267x-7.491	0.998

Calibrated by :

Adul Dangklom
(Mr. Adul Dangklom)

Approved by :

Peera Detudom
(Mr. Peera Detudom)



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High Volume Air Sampler Calibration Report

Calibration Method : Multipoint Orifice Flow Transfer Standard

Model : TE 5025A

S/N : 3611

Calibration Data

High Volume Air Sampler Data

Calibration Data

Recorder No.	Blower No.	Date	Actual Flowrate (l/min)	R ²
B01	B01	01/02/2023	y = 1.278x-5.652	0.997
B02	B02	02/02/2023	y = 1.147x+0.663	0.999
B03	B03	01/02/2023	y = 1.123x-0.622	0.995
B04	B04	01/02/2023	y = 1.229x-4.835	0.996
B05	B05	02/02/2023	y = 1.280x-6.358	0.997
B06	B06	01/02/2023	y = 1.251x-5.438	0.999
B07	B07	03/02/2023	y = 1.165x-3.515	0.996
B08	B08	03/02/2023	y = 1.269x-7.559	0.997
B09	B09	01/02/2023	y = 1.198x-2.843	0.998
B10	B10	01/02/2023	y = 1.128x+0.785	0.999
B11	B11	02/02/2023	y = 1.138x-1.752	0.999
B12	B12	01/02/2023	y = 1.195x-4.080	0.998
B13	B13	01/02/2023	y = 1.254x-5.913	0.999
B14	B14	03/02/2023	y = 1.291x-7.822	0.999
B15	B15	01/02/2023	y = 1.149x-1.829	0.997
B16	B16	01/02/2023	y = 1.287x-7.502	0.997
B17	B17	02/02/2023	y = 1.207x-4.147	1.000
B18	B18	01/02/2023	y = 1.277x-7.238	0.999
B19	B19	03/02/2023	y = 1.243x-6.520	0.995
B20	B20	01/02/2023	y = 1.267x-7.055	1.000
B21	B21	03/02/2023	y = 1.141x-1.101	0.999
B22	B22	03/02/2023	y = 1.221x-5.534	0.996
B23	B23	02/02/2023	y = 1.197x-4.328	0.995
B24	B24	01/02/2023	y = 1.159x-2.269	0.999
B25	B25	01/02/2023	y = 1.050x+2.684	0.998
B26	B26	03/02/2023	y = 1.253x-6.203	0.997
B27	B27	03/02/2023	y = 1.220x-5.822	0.997
B28	B28	01/02/2023	y = 1.251x-6.762	0.999
B29	B29	01/02/2023	y = 1.201x-3.793	0.998
B30	B30	03/02/2023	y = 1.242x-6.540	0.995
B31	B31	03/02/2023	y = 1.255x-6.608	0.999
B32	B32	02/02/2023	y = 1.249x-6.292	0.997
B33	B33	02/02/2023	y = 1.260x-5.168	0.997
B34	B34	01/02/2023	y = 1.272x-7.454	1.000

Calibrated by :

Adul Dangklom
(Mr. Adul Dangklom)

Approved by :

Peera Detudom
(Mr. Peera Detudom)



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Model : TE 5025A

S/N : 3611


Calibration Data

High Volume Air Sampler Data		Calibration Data		
Recorder No.	Blower No.	Date	Actual Flowrate (ft ³ /min)	R ²
B35	B35	01/02/2023	y = 1.194x-4.992	0.995
B36	B36	02/02/2023	y = 1.201x-3.946	0.997
B37	B37	02/02/2023	y = 1.284x-6.745	0.997
B38	B38	02/02/2023	y = 1.250x-6.733	0.998
B39	B39	01/02/2023	y = 1.268x-7.186	0.998
B40	B40	03/02/2023	y = 1.214x-4.324	0.998
B41	B41	03/02/2023	y = 1.176x-2.734	0.999
B42	B42	02/02/2023	y = 1.283x-8.167	0.997
B43	B43	02/02/2023	y = 1.197x-3.772	0.996
B44	B44	02/02/2023	y = 1.249x-7.038	0.995
R01	R01	01/02/2023	y = 1.287x-8.462	0.998
R02	R02	01/02/2023	y = 1.239x-6.678	0.998
R03	R03	03/02/2023	y = 1.254x-7.928	0.999
R04	R04	02/02/2023	y = 1.206x-3.694	0.999
R05	R05	02/02/2023	y = 1.237x-6.503	0.997
R06	R06	02/02/2023	y = 1.239x-4.541	0.995
R07	R07	03/02/2023	y = 1.060x+1.983	0.999
R08	R08	03/02/2023	y = 1.274x-8.050	0.998
R09	R09	02/02/2023	y = 1.280x-7.005	0.998
R10	R10	03/02/2023	y = 1.244x-5.980	1.000
R11	R11	03/02/2023	y = 1.097x-0.462	0.998
R12	R12	02/02/2023	y = 1.151x-2.727	0.995
R13	R13	02/02/2023	y = 1.134x-1.526	1.000
R14	R14	02/02/2023	y = 1.172x-2.510	0.999
R15	R15	01/02/2023	y = 1.131x-2.129	0.998
R16	R16	01/02/2023	y = 1.202x-5.830	0.998
R17	R17	01/02/2023	y = 1.182x-3.281	0.998
R18	R18	03/02/2023	y = 1.217x-5.060	0.999
R19	R19	03/02/2023	y = 1.228x-6.084	0.998
R20	R20	03/02/2023	y = 1.277x-9.434	0.997

Calibrated by :


(Mr. Adul Dangklom)

Approved by :


(Mr. Peera Detudom)



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High Volume Air Sampler Calibration Report

Calibration Method : Multipoint Orifice Flow Transfer Standard

Model : TE 5025A

S/N : 3611

Calibration Data

High Volume Air Sampler Data		Calibration Data		
Recorder No.	Blower No.	Date	Actual Flowrate (ft ³ /min)	R ²
B01	B01	03/05/2023	y = 1.313x-6.873	0.998
B02	B02	03/05/2023	y = 1.116x+2.378	0.999
B03	B03	03/05/2023	y = 1.102x-0.827	0.997
B04	B04	02/05/2023	y = 1.246x-6.815	0.999
B05	B05	02/05/2023	y = 1.331x-9.589	0.998
B06	B06	04/05/2023	y = 1.282x-7.814	0.999
B07	B07	03/05/2023	y = 1.194x-5.233	0.999
B08	B08	03/05/2023	y = 1.274x-8.294	0.998
B09	B09	01/05/2023	y = 1.221x-3.849	0.997
B10	B10	01/05/2023	y = 1.181x-2.610	0.997
B11	B11	02/05/2023	y = 1.154x-1.998	0.998
B12	B12	02/05/2023	y = 1.200x-4.528	0.999
B13	B13	02/05/2023	y = 1.216x-4.270	0.998
B14	B14	02/05/2023	y = 1.326x-8.548	1.000
B15	B15	02/05/2023	y = 1.222x-5.693	0.997
B16	B16	01/05/2023	y = 1.287x-7.502	0.997
B17	B17	01/05/2023	y = 1.255x-6.198	0.999
B18	B18	02/05/2023	y = 1.243x-6.744	0.997
B19	B19	01/05/2023	y = 1.320x-8.840	0.999
B20	B20	03/05/2023	y = 1.245x-6.585	0.998
B21	B21	03/05/2023	y = 1.186x-3.464	0.999
B22	B22	03/05/2023	y = 1.297x-8.592	0.997
B23	B23	02/05/2023	y = 1.216x-4.912	0.998
B24	B24	02/05/2023	y = 1.144x-1.869	0.999
B25	B25	02/05/2023	y = 1.079x+1.654	0.999
B26	B26	02/05/2023	y = 1.218x-5.191	0.997
B27	B27	02/05/2023	y = 1.225x-5.812	0.998
B28	B28	02/05/2023	y = 1.305x-8.342	0.999
B29	B29	02/05/2023	y = 1.285x-8.182	0.996
B30	B30	02/05/2023	y = 1.299x-8.294	0.997
B31	B31	03/05/2023	y = 1.270x-6.531	0.998
B32	B32	02/05/2023	y = 1.249x-6.292	0.997
B33	B33	01/05/2023	y = 1.260x-7.688	0.997
B34	B34	02/05/2023	y = 1.291x-8.548	0.999

Calibrated by :


(Mr. Adul Dangklom)

Approved by :


(Mr. Peera Detudom)



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High Volume Air Sampler Calibration Report

Calibration Method : Multipoint Orifice Flow Transfer Standard

Model : TE 5025A

S/N : 3611

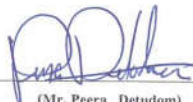
Calibration Data

High Volume Air Sampler Data		Calibration Data		
Recorder No.	Blower No.	Date	Actual Flowrate (l ³ /min)	R ²
B35	B35	01/05/2023	y = 1.310x-9.363	0.996
B36	B36	02/05/2023	y = 1.201x-4.686	0.999
B37	B37	02/05/2023	y = 1.239x-4.586	0.998
B38	B38	02/05/2023	y = 1.304x-9.606	0.997
B39	B39	01/05/2023	y = 1.240x-5.469	0.998
B40	B40	03/05/2023	y = 1.196x-4.045	0.999
B41	B41	03/05/2023	y = 1.179x-2.611	0.999
B42	B42	02/05/2023	y = 1.246x-7.813	0.996
B43	B43	02/05/2023	y = 1.206x-3.694	0.999
B44	B44	02/05/2023	y = 1.302x-9.108	0.999
R01	R01	02/05/2023	y = 1.268x-7.113	0.995
R02	R02	01/05/2023	y = 1.235x-6.759	0.997
R03	R03	03/05/2023	y = 1.247x-7.848	0.996
R04	R04	02/05/2023	y = 1.161x-1.778	0.999
R05	R05	02/05/2023	y = 1.288x-9.494	0.999
R06	R06	02/05/2023	y = 1.277x-6.891	0.997
R07	R07	02/05/2023	y = 1.046x+2.772	1.000
R08	R08	02/05/2023	y = 1.206x-5.068	0.997
R09	R09	02/05/2023	y = 1.296x-8.463	0.999
R10	R10	02/05/2023	y = 1.244x-6.477	0.999
R11	R11	02/05/2023	y = 1.097x-0.462	0.998
R12	R12	02/05/2023	y = 1.210x-5.084	0.998
R13	R13	01/05/2023	y = 1.149x-1.965	1.000
R14	R14	01/05/2023	y = 1.189x-3.035	0.998
R15	R15	02/05/2023	y = 1.161x-3.437	0.998
R16	R16	01/05/2023	y = 1.158x-4.330	0.997
R17	R17	02/05/2023	y = 1.218x-5.356	0.998
R18	R18	02/05/2023	y = 1.234x-5.546	0.999
R19	R19	02/05/2023	y = 1.267x-7.058	0.999
R20	R20	01/05/2023	y = 1.284x-8.743	0.999

Calibrated by :


(Mr. Abdul Dangklom)

Approved by :


(Mr. Peera Detudom)



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High Volume PM-10 Air Sampler Calibration Report

Calibration Method : Multipoint Orifice Flow Transfer Standard

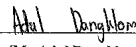
Model : TE 5025A

S/N : 3611

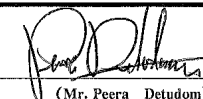
Calibration Data

High Volume PM-10 Data		Calibration Data		
Recorder No.	Blower No.	Date	Actual Flowrate (l ³ /min)	R ²
B01	B01	02/11/2022	y = 1.206x-0.557	0.998
B02	B02	02/11/2022	y = 1.024x+3.762	0.999
B03	B03	02/11/2022	y = 1.243x-4.455	0.998
B04	B04	03/11/2022	y = 1.293x-7.303	0.997
B05	B05	03/11/2022	y = 1.252x-5.903	0.999
B06	B06	04/11/2022	y = 1.313x-7.710	0.997
B07	B07	02/11/2022	y = 1.290x-6.671	0.999
B08	B08	04/11/2022	y = 1.330x-6.996	0.999
B09	B09	04/11/2022	y = 1.280x-6.331	0.995
B10	B10	02/11/2022	y = 1.298x-8.225	0.997
B11	B11	04/11/2022	y = 1.273x-5.540	0.995
B12	B12	04/11/2022	y = 1.282x-7.018	0.996
B13	B13	01/11/2022	y = 1.320x-9.281	0.998
B14	B14	02/11/2022	y = 1.230x-3.865	0.998
B15	B15	02/11/2022	y = 1.166x-2.184	0.997
B16	B16	01/11/2022	y = 1.260x-2.121	0.998
B17	B17	04/11/2022	y = 1.277x-4.847	0.998
B18	B18	01/11/2022	y = 1.165x-1.164	0.999
B19	B19	02/11/2022	y = 1.094x+1.145	0.999
B20	B20	02/11/2022	y = 1.221x-5.301	0.997
B21	B21	01/11/2022	y = 1.176x-0.519	0.999
B22	B22	02/11/2022	y = 1.286x-7.131	0.998
B23	B23	03/11/2022	y = 1.181x-2.246	0.999
B24	B24	03/11/2022	y = 1.253x-5.274	0.995
B25	B25	04/11/2022	y = 1.159x-3.062	0.996
B26	B26	03/11/2022	y = 1.264x-8.317	0.998
B27	B27	03/11/2022	y = 1.332x-10.385	0.996
B28	B28	03/11/2022	y = 1.165x-2.689	0.998
B29	B29	03/11/2022	y = 1.271x-7.065	0.996
B30	B30	01/11/2022	y = 1.274x-7.435	0.996
B31	B31	01/11/2022	y = 1.244x-3.676	0.999
B32	B32	01/11/2022	y = 1.186x-1.847	0.999
B33	B33	04/11/2022	y = 1.268x-6.742	0.996
B34	B34	01/11/2022	y = 1.321x-5.654	0.998

Calibrated by :


(Mr. Abdul Dangklom)

Approved by :


(Mr. Peera Detudom)

High Volume PM-10 Air Sampler Calibration Report

Calibration Method : Multipoint Orifice Flow Transfer Standard Model : TE 5025A S/N : 3611


Calibration Data

High Volume PM-10 Data		Calibration Data		
Recorder No.	Blower No.	Date	Actual Flowrate (l ³ /min)	R ²
B01	B01	02/02/2023	y = 1.210x-0.261	0.997
B02	B02	02/02/2023	y = 1.046x+2.414	0.998
B03	B03	02/02/2023	y = 1.199x-4.047	0.996
B04	B04	02/02/2023	y = 1.288x-7.602	0.997
B05	B05	01/02/2023	y = 1.222x-4.886	1.000
B06	B06	01/02/2023	y = 1.210x-3.612	0.996
B07	B07	03/02/2023	y = 1.270x-6.088	0.999
B08	B08	01/02/2023	y = 1.277x-5.288	0.998
B09	B09	03/02/2023	y = 1.289x-6.478	0.999
B10	B10	03/02/2023	y = 1.266x-8.106	0.997
B11	B11	01/02/2023	y = 1.258x-6.917	0.995
B12	B12	02/02/2023	y = 1.192x-3.640	0.998
B13	B13	02/02/2023	y = 1.289x-7.913	0.998
B14	B14	02/02/2023	y = 1.250x-4.233	0.999
B15	B15	01/02/2023	y = 1.118x+0.802	0.999
B16	B16	03/02/2023	y = 1.297x-3.106	0.998
B17	B17	01/02/2023	y = 1.204x-4.477	0.996
B18	B18	02/02/2023	y = 1.176x-1.624	0.998
B19	B19	02/02/2023	y = 1.097x+1.230	0.999
B20	B20	03/02/2023	y = 1.188x-4.372	0.999
B21	B21	03/02/2023	y = 1.156x-0.146	0.996
B22	B22	03/02/2023	y = 1.269x-6.647	0.998
B23	B23	02/02/2023	y = 1.197x-2.685	1.000
B24	B24	02/02/2023	y = 1.251x-6.437	0.995
B25	B25	01/02/2023	y = 1.144x-2.851	0.997
B26	B26	01/02/2023	y = 1.249x-5.704	0.996
B27	B27	01/02/2023	y = 1.241x-5.428	0.997
B28	B28	01/02/2023	y = 1.198x-4.626	0.998
B29	B29	02/02/2023	y = 1.244x-7.658	0.997
B30	B30	02/02/2023	y = 1.246x-7.229	0.997
B31	B31	02/02/2023	y = 1.178x-0.243	0.995
B32	B32	03/02/2023	y = 1.201x-2.954	0.998
B33	B33	03/02/2023	y = 1.168x-1.341	0.997
B34	B34	01/02/2023	y = 1.237x-2.684	0.995

Calibrated by :


 (Mr. Abdul Dangklom)

Approved by :


 (Mr. Peera Detudom)

High Volume PM-10 Air Sampler Calibration Report

Calibration Method : Multipoint Orifice Flow Transfer Standard Model : TE 5025A S/N : 3611


Calibration Data

High Volume PM-10 Data		Calibration Data		
Recorder No.	Blower No.	Date	Actual Flowrate (l ³ /min)	R ²
B01	B01	02/05/2023	y = 1.229x-0.738	0.998
B02	B02	03/05/2023	y = 1.024x+2.738	0.999
B03	B03	04/05/2023	y = 1.265x-6.624	0.996
B04	B04	04/05/2023	y = 1.213x-4.170	0.999
B05	B05	02/05/2023	y = 1.240x-5.164	0.998
B06	B06	02/05/2023	y = 1.196x-4.232	0.995
B07	B07	03/05/2023	y = 1.256x-5.478	0.998
B08	B08	04/05/2023	y = 1.215x-2.945	0.995
B09	B09	03/05/2023	y = 1.199x-3.875	0.998
B10	B10	03/05/2023	y = 1.281x-8.260	0.998
B11	B11	03/05/2023	y = 1.311x-9.505	0.996
B12	B12	04/05/2023	y = 1.289x-6.825	0.998
B13	B13	04/05/2023	y = 1.267x-6.736	0.997
B14	B14	04/05/2023	y = 1.215x-4.099	0.995
B15	B15	04/05/2023	y = 1.158x-0.666	0.995
B16	B16	03/05/2023	y = 1.259x-1.610	1.000
B17	B17	02/05/2023	y = 1.266x-6.673	0.998
B18	B18	02/05/2023	y = 1.205x-3.107	0.999
B19	B19	03/05/2023	y = 1.108x+0.786	0.999
B20	B20	03/05/2023	y = 1.193x-4.089	0.996
B21	B21	03/05/2023	y = 1.252x-3.159	0.995
B22	B22	03/05/2023	y = 1.256x-6.331	0.996
B23	B23	03/05/2023	y = 1.207x-3.098	0.997
B24	B24	03/05/2023	y = 1.298x-8.224	0.997
B25	B25	03/05/2023	y = 1.209x-5.271	0.999
B26	B26	03/05/2023	y = 1.204x-3.755	0.999
B27	B27	02/05/2023	y = 1.278x-8.286	0.999
B28	B28	03/05/2023	y = 1.165x-3.132	0.997
B29	B29	04/05/2023	y = 1.228x-6.940	0.995
B30	B30	04/05/2023	y = 1.140x-1.179	0.996
B31	B31	04/05/2023	y = 1.134x+2.226	0.999
B32	B32	04/05/2023	y = 1.166x-1.023	0.999
B33	B33	04/05/2023	y = 1.261x-9.211	0.998
B34	B34	04/05/2023	y = 1.254x-3.650	0.999

Calibrated by :


 (Mr. Abdul Dangklom)

Approved by :


 (Mr. Peera Detudom)



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CALIBRATION REPORT					
NON-DISPERSIVE INFRARED CO ANALYZER					
DATE :	04 January 2023	BRAND :	API	MODEL :	300E
NO.	CO-B01	SERIAL NO.	782		
Calibrator (Dilution System)					
Brand :	API		Model :	700	
Last Cal. Date :	06 September 2022		Serial No. :	421	
Reference Standard Gas					
Standard Gas :	Carbon Monoxide (CO)		Cylinder No. :	D196045	
Certified Date :	16 April 2022	Expired Date :	15 April 2024	Cylinder Conc. :	4,570 PPM
CALIBRATING CONDITION					
Pressure	1011	mmbar	Temp.	24.5	°C
% RH					50
CALIBRATION SETTING					
Span	Initial Reading (Before Adj.),PPM			Final Reading (After Adj.),PPM	
Set Point	Expected Concentration	Analyzer Response	%Dif	Analyzer Response	
Zero	0	0.10	-	0	
CO Span	40.00	39.95	-0.125	40.00	
API Model 300E CO Analyzer Check list					
Parameter	Observed Value	Units	Nominal Range		
RANGE	50	PPM	0-1000 ppm		
STABILITY	0.10	PPM	< 1 ppm with zero air		
CO MEASURE	4016.5	mV	2500-4800 mV		
CO REFERENCE	3948.7	mV	2500-4800 mV		
MEASURE/REFERENCE RATIO	1.180	-	1.1-1.3 w/zero air		
SAMPLE PRESSURE	28.7	In-Hg-A	~2" < ambient absolute pressure		
SAMPLE FLOW	808	cc/min	800 ± 10%		
SAMPLE TEMPERATURE	48.3	°C	48 ± 4		
BENCH TEMPERATURE	48.2	°C	48 ± 2		
WHEEL TEMPERATURE	68.4	°C	68 ± 2		
BOX TEMPERATURE	30.9	°C	Ambient temp + 7 ± 10		
PHOTO-DRIVE	3021.7	mV	250 mV to 4750 mV		
SLOPE	1.017	-	1.0 ± 0.3		
OFFSET	0.2	-	0 ± 0.3		

Calibrated by : Adul Dangklom
(Mr.Adul Dangklom)

Approved by : Peera Detudom
(Mr.Peera Detudom)



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CALIBRATION REPORT					
NON-DISPERSIVE INFRARED CO ANALYZER					
DATE :	04 January 2023	BRAND :	API	MODEL :	300E
NO.	CO-B06	SERIAL NO.	3117		
Calibrator (Dilution System)					
Brand :	API		Model :	700	
Last Cal. Date :	06 September 2022		Serial No. :	421	
Reference Standard Gas					
Standard Gas :	Carbon Monoxide (CO)		Cylinder No. :	D196045	
Certified Date :	16 April 2022	Expired Date :	15 April 2024	Cylinder Conc. :	4,570 PPM
CALIBRATING CONDITION					
Pressure	1011	mmbar	Temp.	24.5	°C
% RH					50
CALIBRATION SETTING					
Span	Initial Reading (Before Adj.),PPM			Final Reading (After Adj.),PPM	
Set Point	Expected Concentration	Analyzer Response	%Dif	Analyzer Response	
Zero	0	-0.10	-	0	
CO Span	40.00	39.97	-0.075	40.00	
API Model 300E CO Analyzer Check list					
Parameter	Observed Value	Units	Nominal Range		
RANGE	50	PPM	0-1000 ppm		
STABILITY	0.10	PPM	< 1 ppm with zero air		
CO MEASURE	4014.1	mV	2500-4800 mV		
CO REFERENCE	3947.9	mV	2500-4800 mV		
MEASURE/REFERENCE RATIO	1.179	-	1.1-1.3 w/zero air		
SAMPLE PRESSURE	28.7	In-Hg-A	~2" < ambient absolute pressure		
SAMPLE FLOW	805	cc/min	800 ± 10%		
SAMPLE TEMPERATURE	48.4	°C	48 ± 4		
BENCH TEMPERATURE	48.1	°C	48 ± 2		
WHEEL TEMPERATURE	68.4	°C	68 ± 2		
BOX TEMPERATURE	30.8	°C	Ambient temp + 7 ± 10		
PHOTO-DRIVE	3016.5	mV	250 mV to 4750 mV		
SLOPE	1.017	-	1.0 ± 0.3		
OFFSET	0.2	-	0 ± 0.3		

Calibrated by : Adul Dangklom
(Mr.Adul Dangklom)

Approved by : Peera Detudom
(Mr.Peera Detudom)



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CALIBRATION REPORT					
NON-DISPERSIVE INFRARED CO ANALYZER					
DATE :	01 February 2023	BRAND :	API	MODEL :	300E
NO.	CO-B02	SERIAL NO.	965		
Calibrator (Dilution System)					
Brand	: API		Model	: 700	
Last Cal. Date	: 06 September 2022		Serial No.	: 421	
Reference Standard Gas					
Standard Gas	: Carbon Monoxide (CO)		Cylinder No.	: D196045	
Certified Date	: 16 April 2022	Expired Date	: 15 April 2024	Cylinder Conc.	: 4,570 PPM
CALIBRATING CONDITION					
Pressure	1011	mmbar	Temp.	24.6	°C
% RH 48					
CALIBRATION SETTING					
Span	Initial Reading (Before Adj.),PPM			Final Reading (After Adj.),PPM	
Set Point	Expected Concentration	Analyzer Response	%Dif	Analyzer Response	
Zero	0	-0.10	-	0	
CO Span	40.00	39.96	-0.100	40.00	
API Model 300E CO Analyzer Check list					
Parameter	Observed Value	Units	Nominal Range		
RANGE	50	PPM	0-1000 ppm		
STABILITY	0.10	PPM	< 1 ppm with zero air		
CO MEASURE	4016.9	mV	2500-4800 mV		
CO REFERENCE	3949.3	mV	2500-4800 mV		
MEASURE/REFERENCE RATIO	1.180	-	1.1-1.3 w/zero air		
SAMPLE PRESSURE	28.5	In-Hg-A	~2" < ambient absolute pressure		
SAMPLE FLOW	813	cc/min	800 ± 10%		
SAMPLE TEMPERATURE	48.4	°C	48 ± 4		
BENCH TEMPERATURE	48.1	°C	48 ± 2		
WHEEL TEMPERATURE	68.3	°C	68 ± 2		
BOX TEMPERATURE	30.9	°C	Ambient temp + 7 ± 10		
PHOTO-DRIVE	3023.6	mV	250 mV to 4750 mV		
SLOPE	1.017	-	1.0 ± 0.3		
OFFSET	0.2	-	0 ± 0.3		

CALIBRATION REPORT					
NON-DISPERSIVE INFRARED CO ANALYZER					
DATE :	01 February 2023	BRAND :	Thermo	MODEL :	48C
NO.	CO-B08	SERIAL NO.	0508011067		
Calibrator (Dilution System)					
Brand	: API		Model	: 700	
Last Cal. Date	: 06 September 2022		Serial No.	: 421	
Reference Standard Gas					
Standard Gas	: Carbon Monoxide (CO)		Cylinder No.	: D196045	
Certified Date	: 16 April 2022	Expired Date	: 15 April 2024	Cylinder Conc.	: 4,570 PPM
CALIBRATING CONDITION					
Pressure	1011	mmbar	Temp.	24.6	°C
% RH 48					
CALIBRATION SETTING					
Span	Initial Reading (Before Adj.),PPM			Final Reading (After Adj.),PPM	
Set Point	Expected Concentration	Analyzer Response	%Dif	Analyzer Response	
Zero	0	-0.10	-	0	
CO Span	40.00	39.93	-0.175	40.00	
INSTRUMENT STATUS					
CHAMBER TEMP	47.2	°C	FLOW	1.5 LPM	
PRESSURE	730.6	mm Hg	MOTOR SPEED	100.00%	

Calibrated by : Adul Dangklom
(Mr.Adul Dangklom)

Approved by : Peera Detudom
(Mr.Peera Detudom)

Calibrated by : Adul Dangklom
(Mr.Adul Dangklom)

Approved by : Peera Detudom
(Mr.Peera Detudom)



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CALIBRATION REPORT					
NON-DISPERSIVE INFRARED CO ANALYZER					
DATE :	22 March 2023	BRAND :	API	MODEL :	300E
NO.	CO-B02	SERIAL NO.	965		
Calibrator (Dilution System)					
Brand	: API		Model	: 700	
Last Cal. Date	: 06 September 2022		Serial No.	: 421	
Reference Standard Gas					
Standard Gas	: Carbon Monoxide (CO)		Cylinder No.	: D196045	
Certified Date	: 16 April 2022	Expired Date	: 15 April 2024	Cylinder Conc.	: 4,570 PPM
CALIBRATING CONDITION					
Pressure	1011	mmbar	Temp.	24.6	°C
% RH	48				
CALIBRATION SETTING					
Span	Initial Reading (Before Adj.),PPM			Final Reading (After Adj.),PPM	
Set Point	Expected Concentration	Analyzer Response	%Dif	Analyzer Response	
Zero	0	-0.10	-	0	
CO Span	40.00	39.94	-0.150	40.00	
API Model 300E CO Analyzer Check list					
Parameter	Observed Value	Units	Nominal Range		
RANGE	50	PPM	0-1000 ppm		
STABILITY	0.10	PPM	< 1 ppm with zero air		
CO MEASURE	4016.6	mV	2500-4800 mV		
CO REFERENCE	3949.2	mV	2500-4800 mV		
MEASURE/REFERENCE RATIO	1.180	-	1.1-1.3 w/zero air		
SAMPLE PRESSURE	28.7	In-Hg-A	-2" < ambient absolute pressure		
SAMPLE FLOW	812	cc/min	800 ± 10%		
SAMPLE TEMPERATURE	48.3	°C	48 ± 4		
BENCH TEMPERATURE	48.1	°C	48 ± 2		
WHEEL TEMPERATURE	68.5	°C	68 ± 2		
BOX TEMPERATURE	30.9	°C	Ambient temp + 7 ± 10		
PHOTO-DRIVE	3030.4	mV	250 mV to 4750 mV		
SLOPE	1.017	-	1.0 ± 0.3		
OFFSET	0.2	-	0 ± 0.3		

Calibrated by : Adul Dangklom
(Mr.Adul Dangklom)

Approved by : Peera Detudom
(Mr.Peera Detudom)



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CALIBRATION REPORT					
NON-DISPERSIVE INFRARED CO ANALYZER					
DATE :	22 March 2023	BRAND :	Thermo	MODEL :	48C
NO.	CO-B11	SERIAL NO.	0401304262		
Calibrator (Dilution System)					
Brand	: API		Model	: 700	
Last Cal. Date	: 06 September 2022		Serial No.	: 421	
Reference Standard Gas					
Standard Gas	: Carbon Monoxide (CO)		Cylinder No.	: D196045	
Certified Date	: 16 April 2022	Expired Date	: 15 April 2024	Cylinder Conc.	: 4,570 PPM
CALIBRATING CONDITION					
Pressure	1011	mmbar	Temp.	24.6	°C
% RH	48				
CALIBRATION SETTING					
Span	Initial Reading (Before Adj.),PPM			Final Reading (After Adj.),PPM	
Set Point	Expected Concentration	Analyzer Response	%Dif	Analyzer Response	
Zero	0	-0.10	-	0	
CO Span	40.00	40.06	0.150	40.00	
INSTRUMENT STATUS					
CHAMBER TEMP	47.5	°C	FLOW	1.5 LPM	
PRESSURE	730.8	mm Hg	MOTOR SPEED	100.00%	

Calibrated by : Adul Dangklom
(Mr.Adul Dangklom)

Approved by : Peera Detudom
(Mr.Peera Detudom)



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CALIBRATION REPORT					
NON-DISPERSIVE INFRARED CO ANALYZER					
DATE :	20 April 2023	BRAND :	API	MODEL :	300E
NO.	CO-B03	SERIAL NO.	3019		
Calibrator (Dilution System)					
Brand	: API		Model	: 700	
Last Cal. Date	: 06 September 2022		Serial No.	: 421	
Reference Standard Gas					
Standard Gas	: Carbon Monoxide (CO)		Cylinder No.	: D196045	
Certified Date	: 16 April 2022	Expired Date	: 15 April 2024	Cylinder Conc.	: 4,570 PPM
CALIBRATING CONDITION					
Pressure	1011	mmbar	Temp.	24.5	°C
% RH	48				
CALIBRATION SETTING					
Span	Initial Reading (Before Adj.),PPM			Final Reading (After Adj.),PPM	
Set Point	Expected Concentration	Analyzer Response	%Dif	Analyzer Response	
Zero	0	-0.10	-	0	
CO Span	40.00	39.94	-0.150	40.00	
API Model 300E CO Analyzer Check list					
Parameter	Observed Value	Units	Nominal Range		
RANGE	50	PPM	0-1000 ppm		
STABILITY	0.10	PPM	< 1 ppm with zero air		
CO MEASURE	4014.5	mV	2500-4800 mV		
CO REFERENCE	3947.1	mV	2500-4800 mV		
MEASURE/REFERENCE RATIO	1.180	-	1.1-1.3 w/zero air		
SAMPLE PRESSURE	28.6	In-Hg-A	~2" < ambient absolute pressure		
SAMPLE FLOW	803	cc/min	800 ± 10%		
SAMPLE TEMPERATURE	48.4	°C	48 ± 4		
BENCH TEMPERATURE	48.2	°C	48 ± 2		
WHEEL TEMPERATURE	68.5	°C	68 ± 2		
BOX TEMPERATURE	30.8	°C	Ambient temp + 7 ± 10		
PHOTO-DRIVE	3035.9	mV	250 mV to 4750 mV		
SLOPE	1.017	-	1.0 ± 0.3		
OFFSET	0.2	-	0 ± 0.3		

Calibrated by :

Adul Dangklom
(Mr.Adul Dangklom)

Approved by :

Peera Detudom
(Mr.Peera Detudom)



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7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900
Tel : (662) 939-4370-72, Fax : (662) 513-4221, E-mail : sale@spscn.com, www.spscn.com

CALIBRATION REPORT					
NON-DISPERSIVE INFRARED CO ANALYZER					
DATE :	20 April 2023	BRAND :	API	MODEL :	300E
NO.	CO-B13	SERIAL NO.	176		
Calibrator (Dilution System)					
Brand	: API		Model	: 700	
Last Cal. Date	: 06 September 2022		Serial No.	: 421	
Reference Standard Gas					
Standard Gas	: Carbon Monoxide (CO)		Cylinder No.	: D196045	
Certified Date	: 16 April 2022	Expired Date	: 15 April 2024	Cylinder Conc.	: 4,570 PPM
CALIBRATING CONDITION					
Pressure	1011	mmbar	Temp.	24.5	°C
% RH	48				
CALIBRATION SETTING					
Span	Initial Reading (Before Adj.),PPM			Final Reading (After Adj.),PPM	
Set Point	Expected Concentration	Analyzer Response	%Dif	Analyzer Response	
Zero	0	0.10	-	0	
CO Span	40.00	39.92	-0.200	40.00	
API Model 300E CO Analyzer Check list					
Parameter	Observed Value	Units	Nominal Range		
RANGE	50	PPM	0-1000 ppm		
STABILITY	0.10	PPM	< 1 ppm with zero air		
CO MEASURE	4015.7	mV	2500-4800 mV		
CO REFERENCE	3948.5	mV	2500-4800 mV		
MEASURE/REFERENCE RATIO	1.180	-	1.1-1.3 w/zero air		
SAMPLE PRESSURE	28.5	In-Hg-A	~2" < ambient absolute pressure		
SAMPLE FLOW	808	cc/min	800 ± 10%		
SAMPLE TEMPERATURE	48.3	°C	48 ± 4		
BENCH TEMPERATURE	48.0	°C	48 ± 2		
WHEEL TEMPERATURE	68.3	°C	68 ± 2		
BOX TEMPERATURE	30.6	°C	Ambient temp + 7 ± 10		
PHOTO-DRIVE	3029.3	mV	250 mV to 4750 mV		
SLOPE	1.017	-	1.0 ± 0.3		
OFFSET	0.2	-	0 ± 0.3		

Calibrated by :

Adul Dangklom
(Mr.Adul Dangklom)

Approved by :

Peera Detudom
(Mr.Peera Detudom)



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CALIBRATION REPORT					
NON-DISPERSIVE INFRARED CO ANALYZER					
DATE :	17 May 2023	BRAND :	API	MODEL :	300E
NO.	CO-B02	SERIAL NO.	965		
Calibrator (Dilution System)					
Brand	: API		Model	: 700	
Last Cal. Date	: 06 September 2022		Serial No.	: 421	
Reference Standard Gas					
Standard Gas	: Carbon Monoxide (CO)		Cylinder No.	: D196045	
Certified Date	: 16 April 2022		Expired Date	: 15 April 2024	
Cylinder Conc.	: 4,570 PPM				
CALIBRATING CONDITION					
Pressure	1011	mmbar	Temp.	24.6	°C
% RH	49				
CALIBRATION SETTING					
Span	Initial Reading (Before Adj.),PPM			Final Reading (After Adj.),PPM	
Set Point	Expected Concentration	Analyzer Response	%Dif	Analyzer Response	
Zero	0	0.11	-	0	
CO Span	40.00	40.10	0.250	40.00	
API Model 300E CO Analyzer Check list					
Parameter	Observed Value	Units	Nominal Range		
RANGE	50	PPM	0-1000 ppm		
STABILITY	0.10	PPM	< 1 ppm with zero air		
CO MEASURE	4016.3	mV	2500-4800 mV		
CO REFERENCE	3948.7	mV	2500-4800 mV		
MEASURE/REFERENCE RATIO	1.180	-	1.1-1.3 w/zero air		
SAMPLE PRESSURE	28.5	In-Hg-A	~2"± ambient absolute pressure		
SAMPLE FLOW	810	cc/min	800 ± 10%		
SAMPLE TEMPERATURE	48.4	°C	48 ± 4		
BENCH TEMPERATURE	48.2	°C	48 ± 2		
WHEEL TEMPERATURE	68.5	°C	68 ± 2		
BOX TEMPERATURE	30.8	°C	Ambient temp + 7 ± 10		
PHOTO-DRIVE	3027.8	mV	250 mV to 4750 mV		
SLOPE	1.017	-	1.0 ± 0.3		
OFFSET	0.2	-	0 ± 0.3		

Calibrated by : Adul Dangklom
(Mr.Adul Dangklom)

Approved by : Peera Detudom
(Mr.Peera Detudom)



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CALIBRATION REPORT					
NON-DISPERSIVE INFRARED CO ANALYZER					
DATE :	17 May 2023	BRAND :	Thermo	MODEL :	48C
NO.	CO-B11	SERIAL NO.	0401304262		
Calibrator (Dilution System)					
Brand	: API		Model	: 700	
Last Cal. Date	: 06 September 2022		Serial No.	: 421	
Reference Standard Gas					
Standard Gas	: Carbon Monoxide (CO)		Cylinder No.	: D196045	
Certified Date	: 16 April 2022		Expired Date	: 15 April 2024	
Cylinder Conc.	: 4,570 PPM				
CALIBRATING CONDITION					
Pressure	1011	mmbar	Temp.	24.6	°C
% RH	49				
CALIBRATION SETTING					
Span	Initial Reading (Before Adj.),PPM			Final Reading (After Adj.),PPM	
Set Point	Expected Concentration	Analyzer Response	%Dif	Analyzer Response	
Zero	0	0.11	-	0	
CO Span	40.00	39.89	-0.275	40.00	
INSTRUMENT STATUS					
CHAMBER TEMP	47.2	°C	FLOW	1.5	LPM
PRESSURE	730.6	mm Hg	MOTOR SPEED	100.00	%

Calibrated by : Adul Dangklom
(Mr.Adul Dangklom)

Approved by : Peera Detudom
(Mr.Peera Detudom)



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CALIBRATION REPORT					
NON-DISPERSIVE INFRARED CO ANALYZER					
DATE :	8 June 2023	BRAND :	API	MODEL :	300E
NO.	CO-B03	SERIAL NO.	3019		
Calibrator (Dilution System)					
Brand	: API		Model	: 700	
Last Cal. Date	: 06 September 2022		Serial No.	: 421	
Reference Standard Gas					
Standard Gas	: Carbon Monoxide (CO)		Cylinder No.	: D196045	
Certified Date	: 16 April 2022		Expired Date	: 15 April 2024	
Cylinder Conc.			: 4,570 PPM		
CALIBRATING CONDITION					
Pressure	1011	mmbar	Temp.	24.6	°C
% RH	49				
CALIBRATION SETTING					
Span	Initial Reading (Before Adj.),PPM			Final Reading (After Adj.),PPM	
Set Point	Expected Concentration	Analyzer Response	%Dif	Analyzer Response	
Zero	0	-0.10	-	0	
CO Span	40.00	40.07	0.175	40.00	
API Model 300E CO Analyzer Check list					
Parameter	Observed Value	Units	Nominal Range		
RANGE	50	PPM	0-1000 ppm		
STABILITY	0.10	PPM	< 1 ppm with zero air		
CO MEASURE	4013.6	mV	2500-4800 mV		
CO REFERENCE	3947.2	mV	2500-4800 mV		
MEASURE/REFERENCE RATIO	1.180	-	1.1-1.3 w/zero air		
SAMPLE PRESSURE	28.7	In-Hg-A	~2"± ambient absolute pressure		
SAMPLE FLOW	805	cc/min	800 ± 10%		
SAMPLE TEMPERATURE	48.3	°C	48 ± 4		
BENCH TEMPERATURE	48.0	°C	48 ± 2		
WHEEL TEMPERATURE	68.5	°C	68 ± 2		
BOX TEMPERATURE	30.7	°C	Ambient temp + 7 ± 10		
PHOTO-DRIVE	3038.9	mV	250 mV to 4750 mV		
SLOPE	1.017	-	1.0 ± 0.3		
OFFSET	0.2	-	0 ± 0.3		

Calibrated by : Adul Dangklom
(Mr.Adul Dangklom)

Approved by : Peera Detudom
(Mr.Peera Detudom)



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CALIBRATION REPORT					
NON-DISPERSIVE INFRARED CO ANALYZER					
DATE :	8 June 2023	BRAND :	API	MODEL :	300EU
NO.	CO-B14	SERIAL NO.	131		
Calibrator (Dilution System)					
Brand	: API		Model	: 700	
Last Cal. Date	: 06 September 2022		Serial No.	: 421	
Reference Standard Gas					
Standard Gas	: Carbon Monoxide (CO)		Cylinder No.	: D196045	
Certified Date	: 16 April 2022		Expired Date	: 15 April 2024	
Cylinder Conc.			: 4,570 PPM		
CALIBRATING CONDITION					
Pressure	1011	mmbar	Temp.	24.6	°C
% RH	49				
CALIBRATION SETTING					
Span	Initial Reading (Before Adj.),PPM			Final Reading (After Adj.),PPM	
Set Point	Expected Concentration	Analyzer Response	%Dif	Analyzer Response	
Zero	0	-0.10	-	0	
CO Span	40.00	40.02	0.050	40.00	
API Model 300EU CO Analyzer Check list					
Parameter	Observed Value	Units	Nominal Range		
RANGE	50	PPM	0-1000 ppm		
STABILITY	0.10	PPM	< 1 ppm with zero air		
CO MEASURE	4016.6	mV	2500-4800 mV		
CO REFERENCE	3948.5	mV	2500-4800 mV		
MEASURE/REFERENCE RATIO	1.180	-	1.1-1.3 w/zero air		
SAMPLE PRESSURE	28.5	In-Hg-A	~2"± ambient absolute pressure		
SAMPLE FLOW	804	cc/min	800 ± 10%		
SAMPLE TEMPERATURE	48.3	°C	48 ± 4		
BENCH TEMPERATURE	48.1	°C	48 ± 2		
WHEEL TEMPERATURE	68.3	°C	68 ± 2		
BOX TEMPERATURE	30.6	°C	Ambient temp + 7 ± 10		
PHOTO-DRIVE	3040.3	mV	250 mV to 4750 mV		
SLOPE	1.017	-	1.0 ± 0.3		
OFFSET	0.2	-	0 ± 0.3		

Calibrated by : Adul Dangklom
(Mr.Adul Dangklom)

Approved by : Peera Detudom
(Mr.Peera Detudom)



CERTIFICATE No : 23M2441
REFERENCE No : 68471-1

PAGE : 1 OF 2

Certificate of Calibration

EQUIPMENT : DIGITAL BALANCE
MANUFACTURER : METTLER TOLEDO
MODEL : XS105DU
SERIAL No : 1126422905
ID No : BA 05/50
CONDITION AS RECEIVED : USED ITEM
SUBMITTED BY : S.P.S. CONSULTING SERVICE CO., LTD.
7 SOI PHAHOLYOTHIN 24, PHAHOLYOTHIN RD.,
JOMPOL, CHATUCHAK, BANGKOK 10900

CALIBRATED BY : ATSAWIN Y.
CALIBRATION DATE : 10-Mar-23
APPROVED BY : PONGSAK J.
ISSUED DATE : 16-Mar-23
RECEIVED DATE : 10-Mar-23

THIS CERTIFICATE MAY NOT BE REPRODUCED OTHER THAN IN FULL EXCEPT WITH THE PRIOR WRITTEN APPROVAL OF
QUALITY CALIBRATION CO., LTD.



CERTIFICATE No : 23M2441

PAGE : 2 OF 2

Calibration Report

EQUIPMENT : DIGITAL BALANCE MODEL : XS105DU
MANUFACTURER : METTLER TOLEDO S/N : 1126422905
ID No : BA 05/50 RECEIVED DATE : 10-Mar-23
AIR PRESSURE : 1010mbar \pm 1mbar CALIBRATION DATE : 10-Mar-23
AMBIENT TEMPERATURE : 23°C \pm 1°C RELATIVE HUMIDITY : 49%RH \pm 10% RH

CONDITION OF THIS RESULTS OF CALIBRATION

1. THIS INSTRUMENT WAS CALIBRATED BY ACCORDING TO UKAS LAB 14 EDITION 6:2019 BY USING KNOWN WEIGHT STANDARD WEIGHT. THE BALANCE WAS NOT ADJUSTED BEFORE CALIBRATION. THE BALANCE HAS NO ZERO TRACKING FUNCTION. REPEATABILITY WAS MEASURED BY USING 10 REPEATED MEASUREMENTS. LINEARITY WAS MEASURED COVERING 10 POINTS, EVENLY SPREAD OVER THE RANGE. THE INSTRUMENT WAS SET ZERO BEFORE PERFORMING THE LINEARITY TEST. OFF-CENTER LOADING WAS MEASURED BY USING STANDARD WEIGHTS PLACED ON THE PAN AND MOVED TO VARIOUS POSITIONS ON THE PAN.
2. REFERENCE STANDARD INSTRUMENTS :-

INSTRUMENT	MODEL	SERIAL No	CERTIFICATE No	DUE DATE
1) STANDARD WEIGHT SET	E2	QK-I-151	M2302013S	02-Feb-25
2) STANDARD WEIGHT	E2	15843	M2302014S	02-Feb-25
3. THIS RESULT WAS FOUND ACCURATE AS SHOWN ON DATE AND PLACE OF CALIBRATION ONLY.
4. THIS RESULT EXCLUDE LONG TERM STABILITY OF THE UNIT UNDER CALIBRATION.
5. THIS CERTIFICATE IS TRACEABLE TO THE INTERNATIONAL SYSTEM OF UNIT MAINTAINED AT:-
- NATIONAL INSTITUTE OF METROLOGY (THAILAND) THROUGH CENTRAL BUREAU OF WEIGHTS&MEASURES

RESULT OF CALIBRATION :- WITHOUT ADJUSTMENT

1. ZERO SETTING FUNCTION : NORMAL
2. TARE FUNCTION : NORMAL
3. REPEATABILITY OF READING AT 200 g WAS 0 g
4. DEPARTURE FROM NOMINAL VALUE/ LINEARITY

NOMINAL VALUE (g)	BALANCE READING (g)	CORRECTION (g)	UNCERTAINTY (\pm g)
0.00	0.00000	0.00000	0.000039
0.02	0.02000	0.00000	0.000039
0.10	0.10000	0.00000	0.000039
0.20	0.20001	-0.00001	0.000040
0.50	0.50001	-0.00001	0.000040
1.00	1.00000	0.00000	0.000041
2.00	2.00003	-0.00003	0.000042
5.00	5.00001	-0.00001	0.000046
10.00	10.00003	-0.00003	0.000053
20.00	20.00005	-0.00005	0.000067
50.00	50.00001	-0.00001	0.00011
100.00	100.00001	-0.00001	0.00019
200.00	200.00001	-0.00001	0.00032

5. OFF CENTER LOADING ERROR



POINT	READING (g)
1	50.0000
2	50.0001
3	50.0000
4	50.0000
5	49.9999
OFF-CENTER LOADING	0.0001

NOTE: THIS CALIBRATION WAS CARRIED OUT AT THE CUSTOMER'S PLACE AT LABORATORY AREA
THE REPORTED UNCERTAINTY OF MEASUREMENT WAS BASED ON A STANDARD UNCERTAINTY MULTIPLIED BY A
COVERAGE FACTOR $k=2$, PROVIDING A LEVEL OF CONFIDENCE APPROXIMATELY 95%.
END OF CALIBRATION REPORT

เอกสารที่ 5-2

เอกสารสอบเทียบเครื่องมือการตรวจวัดระดับเสียง



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-66/0413

MTC No. EEL. BP. 109/0366

CALIBRATION CERTIFICATE

Submitted by : S.P.S. Consulting Service Co.,Ltd.

Address : 7 Soi Phaholyothin 24, Phaholyothin Road, Jompol, Chatuchak, Bangkok 10900.

Calibrated at : Electrical and Electronic Standards Laboratory, Industrial Metrology and Testing Service Centre.

: Soi 1C, Bangpoo Industrial Estate, Sukhumvit Rd., Muang, Samutprakan 10280.

Instrument Calibrated :

Description : Sound Calibrator

Manufacturer : ACO

Model : 2127

Serial No. : 130006

Standards used : 1. Digital Function Synthesizer NF Electronic DF-193A S/N 122037.

2. Measuring Amplifier Bruel&Kjaer 2636 S/N 1537484.

3. Programmable Attenuator Tamagawa TPA-303A S/N OF 2214.

4. Digital Multimeter Agilent 34401A S/N MY44005560.

5. Pressure Transmitter Vaisala PTB202AD S/N T0650001.

6. Audio Analyzer Keithley 2015-P S/N 4106495.

7. Condenser Microphone Bruel&Kjaer 4180 S/N 2889871.

Ambient Environment

Temperature : $(23 \pm 3) ^\circ\text{C}$

Relative Humidity : $(50 \pm 15) \%$

Ambient Pressure : $(101.325 \pm 1.500) \text{ kPa}$

Calibration Procedure: CP-102-04 based on IEC 60942-2003. The sound pressure level of instrument was measured by standard microphone using an insert voltage technique.

This instrument has been calibrated against standards maintained at Electrical and Electronic Standards Laboratory (EEL), which are traceable to the International System of Units through the National Institute of Metrology (Thailand).

The information on actual reading is attached herewith and the uncertainty limits quoted refer to the measured values only.

Date of Receipt : 27 Mar. 2023

Date of Calibration : 29 Mar. 2023

1/2

The results relate only to the items tested/calibrated or value assigned.

Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BLMTC.002 Rev.4



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-66/0413

MTC No. EEL. BP. 109/0366

The reported expanded uncertainty is based upon a standard uncertainty multiplied by a coverage factor $k = 2$, providing a level of confidence of approximately 95%.

Nominal Output of Unit Under Test = 94 dB re 20 μPa at 1000 Hz

Acoustic Output in dB re 20 μPa , Corrected to Reference Conditions : 101.325 kPa, 23.0 $^\circ\text{C}$ and 50 %RH

1. Sound Pressure Level

Standard Microphone Type	Measured Sound Pressure Level (dB)	Deviated value (dB)	Uncertainty (dB)	Tolerance limit IEC60942:2003 Class 1
1/2 inch Bruel&Kjaer 4180	93.94	-0.06	± 0.10	$\pm 0.40 \text{ dB}$

2. Frequency

Standard Microphone Type	Measured Frequency (Hz)	Deviated value (Hz)	Uncertainty (Hz)	Tolerance limit IEC60942:2003 Class 1
1/2 inch Bruel&Kjaer 4180	999.9	-0.1	± 1.5	$\pm 1.0\%$

3. Total distortion

Standard Microphone Type	Measured Total distortion (%)	Uncertainty (%)	Tolerance limit IEC60942:2003 Class 1
1/2 inch Bruel&Kjaer 4180	1.80	± 0.50	$\pm 3.0\%$

Note : 1. No adjustment.

2. The calibrator pressure correction was not included.

3. The microphone volume correction was not included.

Calibrated by :

(Mr. Weerachai Deechaiyae)

Approved by :

(Mr. Prawate Kludaya)

Director

Electrical and Electronic Standards Laboratory

Industrial Metrology and Testing Service Centre

Date of Calibration : 29 Mar. 2023

Date of Issue : 30 Mar. 2023

Ref : 2011266032701228001

End of Certificate

2 / 2

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FM.BLMTC.002 Rev.4

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Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

Noise B_002/23

Sound Level Meter Calibration Report

Acoustic Calibrator Data

Brand	ACO	Number	AC 03/56
Model	2127	Serial No.	130006
Calibration Range	94 dB, 1000 Hz	Last Calibration	28 April 2022
		Due Date	28 April 2023

Calibration Data

Sound Level Meter Data				Calibration Data		
SLM No.	Brand	Model	Serial No.	Date	Actual Reading [dB]	
					Before Adjustment	After Adjustment
ACO-B14	ACO	6236	00172034	04 January 2023	94.0	94.0
ACO-B31	ACO	6236	00182013	04 January 2023	93.9	94.0
Acoustic Certified Value : Thailand Institute of Scientific and Technological Research (TISTR)					93.93 ± 0.10 dB	

Calibrated by :


 (Mr. Adul Dangklom)

Approved by :


 (Mr. Peera Detudom)

Noise B_028/23

Sound Level Meter Calibration Report

Acoustic Calibrator Data

Brand	ACO	Number	AC 03/56
Model	2127	Serial No.	130006
Calibration Range	94 dB, 1000 Hz	Last Calibration	28 April 2022
		Due Date	28 April 2023

Calibration Data

Sound Level Meter Data				Calibration Data		
SLM No.	Brand	Model	Serial No.	Date	Actual Reading [dB]	
					Before Adjustment	After Adjustment
ACO-B14	ACO	6236	00172034	01 February 2023	93.9	94.0
ACO-B24	ACO	6236	00182005	01 February 2023	94.0	94.0
Acoustic Certified Value : Thailand Institute of Scientific and Technological Research (TISTR)					93.93 ± 0.10 dB	

Calibrated by :


 (Mr. Adul Dangklom)

Approved by :


 (Mr. Peera Detudom)



บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด
S.P.S. CONSULTING SERVICE CO., LTD.
7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจตุจักร กรุงเทพฯ 10900
Tel : (662) 939-4370-72 Fax : (662) 513-4221 E-mail : sales@spscon.com, www.spscon.com

Noise B_102/23

Sound Level Meter Calibration Report

Acoustic Calibrator Data

Brand	ACO	Number	AC 03/56
Model	2127	Serial No.	130006
Calibration Range	94 dB, 1000 Hz	Last Calibration	28 April 2022
		Due Date	28 April 2023

Calibration Data

Sound Level Meter Data				Calibration Data		
SLM No.	Brand	Model	Serial No.	Date	Actual Reading [dB]	
					Before Adjustment	After Adjustment
ACO-B24	ACO	6236	00182005	22 March 2023	93.9	94.0
ACO-B31	ACO	6236	00182013	22 March 2023	94.0	94.0
Acoustic Certified Value : Thailand Institute of Scientific and Technological Research (TISTR)					93.93 ± 0.10 dB	

Calibrated by :

Adul Dangklom
(Mr. Adul Dangklom)

Approved by :

Peera Detudom
(Mr. Peera Detudom)



บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด
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7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจตุจักร กรุงเทพฯ 10900
Tel : (662) 939-4370-72 Fax : (662) 513-4221 E-mail : sales@spscon.com, www.spscon.com

Noise B_139/23

Sound Level Meter Calibration Report

Acoustic Calibrator Data

Brand	ACO	Number	AC 03/56
Model	2127	Serial No.	130006
Calibration Range	94 dB, 1000 Hz	Last Calibration	29 March 2023
		Due Date	29 March 2024

Calibration Data

Sound Level Meter Data				Calibration Data		
SLM No.	Brand	Model	Serial No.	Date	Actual Reading [dB]	
					Before Adjustment	After Adjustment
ACO-B14	ACO	6236	00172034	20 April 2023	94.0	94.0
ACO-B31	ACO	6236	00182013	20 April 2023	93.9	94.0
Acoustic Certified Value : Thailand Institute of Scientific and Technological Research (TISTR)					93.94 ± 0.10 dB	

Calibrated by :

Adul Dangklom
(Mr. Adul Dangklom)

Approved by :

Peera Detudom
(Mr. Peera Detudom)

Noise B_200/23

Sound Level Meter Calibration Report

Acoustic Calibrator Data

Brand	ACO	Number	AC 03/56
Model	2127	Serial No.	130006
Calibration Range	94 dB, 1000 Hz	Last Calibration	29 March 2023
		Due Date	29 March 2024

Calibration Data

Sound Level Meter Data				Calibration Data	
SLM No.	Brand	Model	Serial No.	Date	Actual Reading [dB]
					Before Adjustment After Adjustment
ACO-B14	ACO	6236	00172034	17 May 2023	94.0 94.0
ACO-B31	ACO	6236	00182013	17 May 2023	94.0 94.0
Acoustic Certified Value : Thailand Institute of Scientific and Technological Research (TISTR)					93.94 ± 0.10 dB

Calibrated by :

Adul Dangklom
(Mr. Adul Dangklom)

Approved by :

Peera Detudom
(Mr. Peera Detudom)

Noise B_244/23

Sound Level Meter Calibration Report

Acoustic Calibrator Data

Brand	ACO	Number	AC 03/56
Model	2127	Serial No.	130006
Calibration Range	94 dB, 1000 Hz	Last Calibration	29 March 2023
		Due Date	29 March 2024

Calibration Data

Sound Level Meter Data				Calibration Data	
SLM No.	Brand	Model	Serial No.	Date	Actual Reading [dB]
					Before Adjustment After Adjustment
ACO-B14	ACO	6236	00172034	08 June 2023	93.9 94.0
ACO-B24	ACO	6236	00182005	08 June 2023	94.0 94.0
Acoustic Certified Value : Thailand Institute of Scientific and Technological Research (TISTR)					93.94 ± 0.10 dB

Calibrated by :

Adul Dangklom
(Mr. Adul Dangklom)

Approved by :

Peera Detudom
(Mr. Peera Detudom)

เอกสารที่ 5-3

เอกสารสอบเทียบเครื่องมือการตรวจวิเคราะห์คุณภาพน้ำ



CALIBRATION LABORATORY Co.,LTD.

2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE : pH METER
MANUFACTURER : ECOSENSE/YSI
MODEL / TYPE : PH100A
SERIAL NO. : JC03148/YSI60537718A[PH 05/61]
CLID. NO. : 272101139
JOB CONTROL NO. : 230314028617

CUSTOMER : S.P.S. CONSULTING SERVICE CO., LTD.
7 SOI PHAHOLYOTHIN 24 ROAD, JOMPOL,
CHATUCHAK, BANGKOK 10900

DATE OF RECEIVED : 14 March 2023

DATE OF ISSUED : 17 March 2023

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Sukgasem Sechanart
Monthira Treechum
Calibration Engineer

Approved By : Mongkol Yotsoontorn
Authorized Signatory
17 March 2023



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. Q23028617

F3-011-04/01-12

page 1 of 4



@clccalibration



CALIBRATION LABORATORY Co.,LTD.

2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



REPORT OF CALIBRATION

FOR

NOMENCLATURE : pH METER
MANUFACTURER : ECOSENSE/YSI
MODEL / TYPE : PH100A
SERIAL NO. : JC03148/YSI60537718A[PH 05/61]
DATE OF CALIBRATION : 15 March 2023

ENVIRONMENT CONDITIONS :

Temperature : $(25 \pm 2.5) ^\circ\text{C}$ Relative Humidity : $(50 \pm 15) \% \text{ RH}$

PROCEDURE USED :

This instrument was calibrated under procedure No. CLC-CPCH-01 [pH Meter]. The calibration was performed by direct measurement with Certified Reference Material (CRM).

This instrument was calibrated under procedure No. CLC-CPTH-04 [pH Temperature] based on ASTM E 644-04 as calibration guidelines. The calibration was performed by using Calibration Bath, Precision Thermometer and IPRT which maintained by the Calibration Laboratory Co., Ltd.

REFERENCE STANDARD USED :

1. pH Standard Solution, NIMT TRM CODE TRM-S-2003, TRM CODE TRM-S-2007.
2. pH Standard Solution, Control Company Catalog Number 06-664-260,11754256, Lot Number CC728484.
3. Calibration Bath, Kambic Model OB-22/2 ULT S/N. 17115653.
4. Precision Thermometer, ASL Model F200-A-8 S/N. 014433/03.
5. IPRT, ASL Model T100-250-1D S/N. L0193A-1-I.

Certificate No. Q23028617

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@clccalibration



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Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



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Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



TRACEABILITY :

1. The measurements are traceable to International System of Units (SI) , through National Institute of Metrology (Thailand).
Lot Number. 160221 , 180121. Due Date 05 May 2023.
2. The measurements are traceable to International System of Units (SI) , through Control Company.
Certificate No. 4281-12405788 , Due Date 30 June 2023.
3. The measurements are traceable to International System of Units (SI) , through Calibration Laboratory Co., Ltd.
Certificate No. Q22130792, Due Date 05 January 2024.
4. The measurements are traceable to International System of Units (SI) , through Thailand Institute of Scientific and Technological Research (TISTR). Certificate No. PSL-T 0010/66, Due Date 06 November 2023.
5. The measurements are traceable to International System of Units (SI) , through National Institute of Metrology (Thailand).
Certificate No. TT-0166-22, Due Date 01 December 2023.

UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor complies with the table which for a normal distribution corresponds to a coverage probability of approximately 95 %.
It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2022)"

CONDITION OF CALIBRATION ITEM : GOOD

MEASUREMENT RESULTS : (X) without adjustment () adjustment

The table in the following gives the calibration results and associated measurement uncertainties of pH meter.

CALIBRATION DATA

1. pH METER RESULT @ 25 °C

Standard pH Buffer Solution (pH)	pH Meter Reading (pH)	pH Meter Reading (mV)	Correction (pH)	Uncertainty of pH Measurement (\pm pH)	k Factor
4.000	4.00	140	0.000	0.012	2,20
6.996	6.99	-34	+0.006	0.015	2,06
10.007	9.98	-205	+0.027	0.015	2,05

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 008 Page 2,3 of 54

2. TEMPERATURE RESULT [pH PROBE]

Immersion depth (mm)	Actual Temperature (°C)	DUC Reading (°C)	Correction (°C)	Uncertainty \pm (°C)
100	25.00	25.0	0.00	0.07

Note. Probe \varnothing 12 mm

The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 008 Page 47 of 54

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor of $k = 2,00$.

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

End of Certificate

Certificate No. Q23028617

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Certificate No. Q23028617

F3-011-04/01-12

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CERT.No.: HS-U017D

Calibration Date : 3 Apr 23
Submitted by : S.P.S CONSULTING SERVICE CO.,LTD
7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol,
Chatuchak, Bangkok, Thailand 10900

Avg Room Temp : 20 °C
Avg Water Temp : 20 °C
Air Pressure : 760.00 mmHg
Salinity : 0 ppt

Model : YSI 5000
S/N : 15B100751
Probe : YSI 5010
S/N : 22D100097
ID NO. : -
Air Temp ref : S/N. E00522
Barometric ref : S/N. E00522
Water Temp ref : S/N. 11431
Technician : Kittipong M.

Calibration Details

Calibration Point	100% air sat. (@20 °C, DO = 9.09 mg/l)	(status)	(status)
Measurement 1 (mg/l)	9.08	(PASS)	-
Measurement 2 (mg/l)	9.08	(PASS)	-
Measurement 3 (mg/l)	9.08	(PASS)	-
Measurement 4 (mg/l)	9.08	(PASS)	-
Measurement 5 (mg/l)	9.08	(PASS)	-
Measurement 6 (mg/l)	9.08	(PASS)	-
Measurement 7 (mg/l)	9.08	(PASS)	-
Measurement 8 (mg/l)	9.08	(PASS)	-
Measurement 9 (mg/l)	9.08	(PASS)	-
Measurement 10 (mg/l)	9.08	(PASS)	-

Mean Measurement	9.08	mg/l	-	-
Inaccuracy	0.01	mg/l	-	-

Overall Status (PASS)

Manufacturer Specification

Accuracy = +/- 0.02 mg/l

- 1) This certificate is issued based on the result that are found as shown on date and place of test only.
- 2) The calibration procedure followed in accordance with Harikul Science Co., Ltd.
- 3) This result shall not be used for advertising purpose.



Technician Signature
(Kittipong Maekwong)



Laboratory Manager
(Natenapha Pisatkunchon)

Harikul Science Co.,Ltd.
694 Soi Ratchadanivet 24, Pracharatbamphen,
Samsaenok, Huaikhwang, Bangkok 10310
Tel: 0-2274-2456 Fax: 0-2274-2443
Email: info@harikul.com www.harikul.com
Certificate of Calibration



QUALITY CALIBRATION CO.,LTD.

235 Petchkasem 63/2 Road, Laksong, Bangkae, Bangkok 10160
Tel (662) 421-5402, (662) 444-0152-3, Fax (662) 809-4584

www.qcalibration.com



CERTIFICATE No : 23M2443
REFERENCE No : 68471-3

PAGE : 1 OF 2

Certificate of Calibration

EQUIPMENT : DIGITAL BALANCE
MANUFACTURER : SARTORIUS
MODEL : BSA224S-CW
SERIAL No : 36591842
ID No : BA 08/61
CONDITION AS RECEIVED : USED ITEM
SUBMITTED BY : S.P.S. CONSULTING SERVICE CO., LTD.
7 SOI PHAHOLYOTHIN 24, PHAHOLYOTHIN RD.,
JOMPOL, CHATUCHAK, BANGKOK 10900

CALIBRATED BY : ATSAWIN Y.

CALIBRATION DATE : 10-Mar-23

APPROVED BY : PONGSAK J.

ISSUED DATE : 16-Mar-23

RECEIVED DATE : 10-Mar-23

THIS CERTIFICATE MAY NOT BE REPRODUCED OTHER THAN IN FULL EXCEPT WITH THE PRIOR WRITTEN APPROVAL OF
QUALITY CALIBRATION CO., LTD.



CERTIFICATE No : 23M2443

PAGE : 2 OF 2

Calibration Report

EQUIPMENT : DIGITAL BALANCE MODEL : BSA224S-CW
MANUFACTURER : SARTORIUS S/N : 36591842
ID No : BA 08/61 RECEIVED DATE : 10-Mar-23
AIR PRESSURE : 1010mbar \pm 1mbar CALIBRATION DATE : 10-Mar-23
AMBIENT TEMPERATURE : 23° C \pm 1° C RELATIVE HUMIDITY : 49 %RH \pm 10 % RH

CONDITION OF THIS RESULTS OF CALIBRATION

1. THIS INSTRUMENT WAS CALIBRATED BY ACCORDING TO UKAS LAB 14 EDITION 6:2019 BY USING KNOWN WEIGHT STANDARD WEIGHT. THE BALANCE WAS NOT ADJUSTED BEFORE CALIBRATION. THE BALANCE HAS NO ZERO TRACKING FUNCTION. REPEATABILITY WAS MEASURED BY USING 10 REPEATED MEASUREMENTS. LINEARITY WAS MEASURED COVERING 10 POINTS, EVENLY SPREAD OVER THE RANGE. THE INSTRUMENT WAS SET ZERO BEFORE PERFORMING THE LINEARITY TEST. OFF-CENTER LOADING WAS MEASURED BY USING STANDARD WEIGHTS PLACED ON THE PAN AND MOVED TO VARIOUS POSITIONS ON THE PAN.

2. REFERENCE STANDARD INSTRUMENTS :-

	<u>INSTRUMENT</u>	<u>MODEL</u>	<u>SERIAL No</u>	<u>CERTIFICATE No</u>	<u>DUE DATE</u>
1) STANDARD WEIGHT SET	E2	QK-I-151	M2302013S	02-Feb-25	
2) STANDARD WEIGHT	E2	15843	M2302014S	02-Feb-25	

3. THIS RESULT WAS FOUND ACCURATE AS SHOWN ON DATE AND PLACE OF CALIBRATION ONLY.

4. THIS RESULT EXCLUDE LONG TERM STABILITY OF THE UNIT UNDER CALIBRATION.

5. THIS CERTIFICATE IS TRACEABLE TO THE INTERNATIONAL SYSTEM OF UNIT MAINTAINED AT:-

- NATIONAL INSTITUTE OF METROLOGY (THAILAND) THROUGH CENTRAL BUREAU OF WEIGHTS&MEASURES

RESULT OF CALIBRATION :- WITHOUT ADJUSTMENT

1. ZERO SETTING FUNCTION : NORMAL

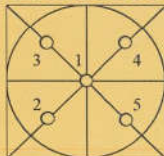
2. TARE FUNCTION : NORMAL

3. REPEATABILITY OF READING AT 200 g WAS 0 g

4. DEPARTURE FROM NOMINAL VALUE/ LINEARITY

NOMINAL VALUE (g)	BALANCE READING (g)	CORRECTION (g)	UNCERTAINTY (\pm g)
0.0	0.0000	0.0000	0.000058
0.1	0.1000	0.0000	0.000059
0.2	0.2000	0.0000	0.000059
0.5	0.5000	0.0000	0.000060
1.0	1.0000	0.0000	0.000060
2.0	2.0000	0.0000	0.000061
5.0	5.0000	0.0000	0.000063
10.0	10.0000	0.0000	0.000067
20.0	20.0001	-0.0001	0.000073
50.0	50.0000	0.0000	0.00011
100.0	100.0001	-0.0001	0.00019
200.0	200.0000	0.0000	0.00032

5. OFF CENTER LOADING ERROR



POINT	READING (g)
1	100.0000
2	100.0000
3	99.9999
4	99.9998
5	100.0000
OFF-CENTER LOADING	0.0002

NOTE: THIS CALIBRATION WAS CARRIED OUT AT THE CUSTOMER'S PLACE AT LABORATORY AREA
THE REPORTED UNCERTAINTY OF MEASUREMENT WAS BASED ON A STANDARD UNCERTAINTY MULTIPLIED BY A COVERAGE FACTOR $k=2$, PROVIDING A LEVEL OF CONFIDENCE APPROXIMATELY 95%.

END OF CALIBRATION REPORT

ภาคผนวกที่ 6

สำเนานั่งสื่อนขอนุญาตใช้พื้นที่ตรวจวัดคุณภาพสิ่งแวดล้อม

เอกสารที่ 6-1 สำเนานั่งสื่อนขอนุญาตใช้พื้นที่ฯ บริเวณบ้านเลขที่ 68/25

เอกสารที่ 6-1

สำเนาหนังสือขออนุญาตใช้พื้นที่ฯ บริเวณบ้านเลขที่ 68/25



บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด
S.P.S. CONSULTING SERVICE CO., LTD.

7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจอมพล เขตจตุจักร กรุงเทพฯ 10900
7 SOI PHAHOLYOTHIN 24, PHAHOLYOTHIN RD., JOMPOL, CHATUCHAK, BANGKOK 10900
TEL. 0-2939-4370 (Automatic 3 Lines) FAX : 0-2513-4221
E-MAIL : SALE@SPSCON.COM WEBSITE : WWW.SPSCON.COM



SPS_IM. 19/06/64

18 มิถุนายน 2564

เรื่อง ขออนุญาตใช้พื้นที่ติดตั้งเครื่องตรวจวัดสิ่งแวดล้อม (ระยะก่อสร้าง)

เรียน ท่านเจ้าของบ้านเลขที่ 68/25

- สิ่งที่ส่งมาด้วย
1. รายละเอียดค่าใช้จ่ายสำหรับการตรวจวัดสิ่งแวดล้อม
 2. ภาพเครื่องตรวจวัดสิ่งแวดล้อม
 3. แผนและรายละเอียดการตรวจวัดสิ่งแวดล้อมฯ เดือนมิถุนายน 2564 (ครั้งที่ 1)
 4. แบบตอบรับคำขออนุญาตใช้สถานที่เป็นจุดติดตามตรวจสอบผลกระทบสิ่งแวดล้อม

ด้วยบริษัท บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด ได้รับมอบหมายจากบริษัท เพาเวอร์ไลน์เอ็นจิเนียริ่ง จำกัด (มหาชน) ให้เป็นบุคคลที่ 3 (Third Party) ผู้ดำเนินการติดตามตรวจสอบผลกระทบสิ่งแวดล้อมจากการดำเนินโครงการ โฮล์ม เอกมัย 22 (HOLME EKKAMAI 22) ระยะก่อสร้าง นั้น

เพื่อการการดำเนินโครงการฯ เป็นไปตามข้อกำหนดในรายงานการประเมินผลกระทบสิ่งแวดล้อม (EIA) ซึ่งได้กำหนดให้ติดต่อประสานงานบ้านเลขที่ 68/25 เพื่อขออนุญาตให้ดำเนินการตรวจวัดคุณภาพอากาศ เสียง และความสั่นสะเทือน กรณีมีการพักอาศัยในบ้านช่วงที่มีการก่อสร้างโครงการบริษัทฯ จึงใคร่ขอความอนุเคราะห์ขอใช้พื้นที่และกระแสไฟฟ้าสำหรับการตรวจวัดดังกล่าว ในช่วงก่อสร้างเดือน มิถุนายน 2564 - พฤศจิกายน 2565 โดยบริษัทฯ ยินดีชำระอัตราค่าใช้ไฟฟ้ารวม 54,000 บาท (ห้าหมื่นสี่พันบาท) รายละเอียดตามสิ่งที่ส่งมาด้วย 1

ในการนี้ บริษัทฯ ได้แนบภาพเครื่องมือตรวจวัดและแผนการดำเนินงานตรวจวัด มาเพื่อพิจารณาพร้อมด้วยแล้ว ตามสิ่งที่ส่งมาด้วย 2 และ 3 และมอบหมายให้นายศุภชัย สุพรรณ นักวิชาการสิ่งแวดล้อม หมายเลขโทรศัพท์ 083-423-0961 เป็นผู้ประสานงานโดยตรงต่อไป

จึงเรียนมาเพื่อพิจารณาและโปรดตอบรับตามสิ่งที่ส่งมาด้วย 4 จักขอบคุณยิ่ง

ขอแสดงความนับถือ

(นายพีระ เดชอุดม)

ผู้จัดการฝ่ายปฏิบัติการภาคสนาม

ฝ่ายติดตามตรวจสอบผลกระทบสิ่งแวดล้อม

โทรศัพท์ : 0 2939 4370 #511-515, 081 441 3540

โทรสาร : 0 2513 4221

อีเมล : i.monitor@spsccon.com

