

ตารางการสอบเทียบเครื่องมือที่ใช้ในการตรวจวัดแลรวิเคระห์

Item	Description	Parameter	List of Equipment	Equipment No.	Calibration Date	Next Calibration
I	Ambient Air	O <sub>3</sub> & TSP	Certificate of Calibration/Tisch	S/N 0058	27/03/2025	March 2026
			High Volume Air Sampler/TET	S/N TSP-30	02/06/2025	June 2026
			High Volume Air Sampler/TET	S/N TSP-9	03/06/2025	June 2026
			High Volume Air Sampler/TET	S/N TSP-31	03/06/2025	June 2026
			High Volume Air Sampler/TET	S/N TSP-17	03/06/2025	June 2026
		Oxide	Electronic Balance/XP 205 CR	S/N 1129273885	13/03/2025	March 2026
			Aerosol Mass Monitor/AEROCRT-831	S/N X26400	15/05/2025	May 2026
		PM-10	High Volume Air Sampler	S/N PM10-No.3	11/09/2025	September 2025
			High Volume Air Sampler	S/N PM10-No.4	11/09/2025	September 2025
			High Volume Air Sampler	S/N PM10-No.6	11/09/2025	September 2025
			High Volume Air Sampler	S/N PM10-No.9	11/09/2025	September 2025
		PM 2.5	Electronic Balance/XP 205 CR	S/N 1129273885	13/03/2025	March 2026
			Aerosol Mass Monitor/AEROCRT-831	S/N X26400	15/05/2025	May 2026
			Partisol FRM Air Sampler for PM-2.5/SCZ 30	S/N 2024EN0242009	09/02/2025	February 2026
			Thermo Scientific Partisol 2025i Sequential Air Sampler	S/N 2025L205151319	21/02/2025	February 2026
			Thermo Scientific Partisol FRM 2000 Air Sampler for PM-2.5	S/N 20068211491012	02/02/2025	February 2026
		NO <sub>2</sub>	PM-2.5 Partisol-Plus	S/N 2025A204399806	27/03/2025	March 2026
			Electronic Balance/XP 205 CR	S/N 1129273885	13/03/2025	March 2026
			CERTIFICATE OF ACCURACY - Linde	S/N A30917SK	05/07/2023	July 2026
			NO <sub>2</sub> Analyzer/API 200A	S/N 80	15/09/2025	March 2026
			NO <sub>2</sub> Analyzer/API 200A	S/N 1978	15/09/2025	March 2026
			NO <sub>2</sub> Analyzer/API 200A	S/N 542	03/10/2025	April 2026
			NO <sub>2</sub> Analyzer/Teledyne 200F	S/N 481	03/10/2025	April 2026

ตารางการสอบเทียบเครื่องมือที่ใช้ในการตรวจวัดและวิเคราะห์ (ต่อ)

Item	Description	Parameter	List of Equipment	Equipment No.	Calibration Date	Next Calibration		
1.	Ambient Air (Cont.)	SO <sub>2</sub>	CERTIFICATE OF ACCURACY - Linde	S/N D636157	18/09/2023	18/09/2027		
			SO <sub>2</sub> Analyzer/AFI 100E	S/N 139	03/10/2025	April 2026		
			SO <sub>2</sub> Analyzer/AFI 100E	S/N 856	03/10/2025	April 2026		
			SO <sub>2</sub> Analyzer/Teledyne 100E	S/N 110	02/10/2025	April 2026		
			SO <sub>2</sub> Analyzer/Teledyne 100E	S/N 084	08/09/2025	March 2026		
2.	Stack Air	WS & WD	Wind speed and wind direction/Weather Wizard II	S/N WC50206421	08/01/2025	January 2026		
		Particulate	Dry Gas Meter/SK25EX	S/N 1317	06/02/2025	February 2026		
			Digital Barometer/PHR-318	S/N 2011412	21/03/2025	March 2026		
			Digital Thermometer/DP-52	S/N L210096	19/24/11/2025	November 2026		
			Electronic Balance/XP 205 DR	S/N 1129273885	13/03/2025	March 2026		
		NO <sub>x</sub> as NO <sub>2</sub>	Gas Analyzer (E-Instrument)/44005	S/N 4101	02/06/2025	June 2026		
		SO <sub>2</sub>	Gas Analyzer (E-Instrument)/44005	S/N 4101	02/06/2025	June 2026		
		CO	Gas Analyzer (E-Instrument)/44005	S/N 4101	02/06/2025	June 2026		
		3.	Working Air	Total Dust	Personal Air Sampler/Gilian	S/N 20140605016	18/12/2025	January 2026
					Personal Air Sampler/Gilian	S/N 20140605017	18/12/2025	January 2026
Personal Air Sampler/Gilian	S/N 20140605018				18/12/2025	January 2026		
Personal Air Sampler/Gilian	S/N 20140605060				18/12/2025	January 2026		
Respirable Dust	Electronic Balance/XP 205 DR			S/N 1129273885	13/03/2025	March 2026		
	Personal Air Sampler/Gilian			S/N 20080703001	18/12/2025	January 2026		
	Personal Air Sampler/Gilian			S/N 20140605003	18/12/2025	January 2026		
	Personal Air Sampler/Gilian			S/N 20151102087	18/12/2025	January 2026		
	Personal Air Sampler/Gilian			S/N 20080703007	18/12/2025	January 2026		
	Electronic Balance/XP 205 DR			S/N 1129273885	13/03/2025	March 2026		

ตารางการเทียบเครื่องมือที่ใช้ในการตรวจวัดและวิเคราะห์ (ต่อ)

Item	Description	Parameter	List of Equipment	Equipment No.	Calibration Date	Next Calibration
4	Water	pH	pH Meter/Horiba F-7 LG	S/N V381F8H3	28/10/2025	October 2026
		Turbidity	Turbidity Meter/EUTECH T14-100	S/N 2655003	18/09/2025	September 2026
		BOD	BOD incubator/Model 1250	S/N 0408-0115-0008	12/03/2025	March 2026
		TSS	Electronic Balance/XP 205 DR	S/N 1129273885	13/03/2025	March 2026
		TDS	Electronic Balance/XP 205 OF	S/N 1129273885	13/03/2025	March 2026
		As, Se	Atomic Absorption Spectrophotometer Model/AAAnalyst 100	S/N 04050110503	14/09/2025	March 2026
		Fe, Ni	ICP394/PerkinElmer/OPTIMA8000	S/N 01841310024C	19/09/2025	March 2026
		Pb, Cd	ICP394/PerkinElmer/OPTIMA8000	S/N 078N1310024C	19/09/2025	March 2026
			Atomic Absorption Spectrophotometer Model/PinAAcle 900Z	S/N F2B323100502	30/06/2025	December 2025
		Hg	Atomic Absorption Spectrophotometer Model/AAAnalyst 100	S/N 04050110503	19/09/2025	March 2026
		Oil & Grease	Electronic Balance/XP 205 DR	S/N 1129273885	13/03/2025	March 2026
		H <sub>2</sub> S	Spectrophotometer/Blue Star A	S/N 1606UV1507	13/03/2025	March 2026
		Total Phosphorus	Spectrophotometer/Blue Star A	S/N 1606UV1507	13/03/2025	March 2026
		DO	DO Meter/HORIBA	S/N D75J0012	16/01/2025	January 2026
		NO <sub>3</sub> -N	Spectrophotometer/Blue Star A	S/N 1606UV1507	13/03/2025	March 2026
		Total Phosphate	Spectrophotometer/Blue Star A	S/N 1606UV1507	13/03/2025	March 2026
		Cl <sup>-</sup>	Spectrophotometer/Blue Star A	S/N 1606UV1507	13/03/2025	March 2026
		Cu, Mn, Zn	ICP394/PerkinElmer/OPTIMA8000	S/N 01841310024C	19/09/2025	March 2026
		Fecal Coliform Bacteria	incubator Model INF 500	E 505.1143	12-13/03/2025	March 2026
		Total Coliform Bacteria	Incubator Model INF 500	E 505.0595	12-13/03/2025	March 2026

ตารางการสอบเทียบเครื่องมือที่ใช้ในการตรวจวัดและวิเคราะห์ (ต่อ)

Item	Description	Parameter	List of Equipment	Equipment No.	Calibration Date	Next Calibration
5	Sludge	pH	pH Meter/Horiba F-7 JG	S/N 1281F8P3	28/10/2025	October 2026
		EC	Conductivity Meter/Horiba	S/N D8660009	19/01/2025	January 2026
		Hg, As, Sr	Atomic Absorption Spectrophotometer Model/AAAnalyst 100	S/N 04050110503	19/09/2025	March 2026
		Cu, Zn, Cd, Pb	ICP394/PerkinElmer/OPTIMA6000	S/N 07841310024C	19/09/2025	March 2026
		Total KjD	Atomic Absorption Spectrophotometer Model/AAAnalyst 100	S/N 04050110503	19/09/2025	March 2026
		Total P <sub>2</sub> O <sub>5</sub>	Spectrophotometer/Blue Star A	S/N 1606UV1507	13/03/2025	March 2026
		Cr <sup>6+</sup>	Spectrophotometer/Blue Star A	S/N 1606UV1507	13/03/2025	March 2026
6	Sound Level	Leq 24 hr	Sound Level Meter/SCARLETTech ST-110	S/N 820405	13/04/2025	April 2026
			Sound Level Meter/SCARLETTech ST-210	S/N 820406	13/04/2025	April 2026
			Sound Level Meter/SCARLETTech ST-210	S/N 820407	13/04/2025	April 2026
			Sound Level Meter/SCARLETTech ST-210	S/N 820408	13/04/2025	April 2026
			Sound Level Meter/SCARLETTech ST-210	S/N 820410	13/04/2025	April 2026
			Sound Level Meter/SCARLETTech ST-110	S/N 820392	17/10/2025	October 2026
			Sound Level Meter/SCARLETTech ST-110	S/N 820393	17/10/2025	October 2026

ตารางการสอบเทียบเครื่องมือที่ใช้ในการตรวจวัดมลพิษ (ต่อ)

Item	Description	Parameter	List of Equipment	Equipment No.	Calibration Date	Next Calibration
7.	Occupational Safety and Health	Leq 8 hr	Sound Level Calibrator/SCARLET ST-120	S/N ST120C1204E	20/04/2025	April 2026
			Sound Level Meter/ACO TYPE 6236	S/N 152075	01/08/2025	31/08/2025
			Sound Level Meter/ACO TYPE 6236	S/N 222037	01/08/2025	31/08/2025
			Sound Level Meter/ACO TYPE 6236	S/N 222038	01/08/2025	31/08/2025
			Sound Level Meter/ACO TYPE 6236	S/N 222039	01/08/2025	31/08/2025
			Sound Level Meter/SCARLET Tech ST-210	S/N 920486	15/06/2025	June 2026
			Sound Level Meter/SCARLET Tech ST-210	S/N 820488	15/06/2025	June 2026
			Sound Level Meter/ACO TYPE 6226	S/N 210093	22/05/2025	May 2026
			Sound Level Meter/ACO TYPE 6226	S/N 210095	22/05/2025	May 2026
		Noise Dose	Noise Dose Meter/SOUNDEK ST-130	S/N 200300133	04/03/2025	March 2026
			Noise Dose Meter/SOUNDEK ST-130	S/N 170400163	04/03/2025	March 2026
			Noise Dose Meter/SOUNDEK ST-130	S/N 220100056	17/03/2025	March 2026
			Noise Dose Meter/SOUNDEK ST-130	S/N 220100057	11/03/2025	March 2026
			Noise Dose Meter/SOUNDEK ST-130	S/N 170800193	16/01/2025	January 2026
			Noise Dose Meter/SOUNDEK ST-130	S/N 200300134	04/03/2025	March 2026
		Heat	Area Heat Stress Monitors/JAHTYTECH/HT2011-E2A	S/N 3522210141	23/03/2025	March 2026
			Area Heat Stress Monitors/JAHTYTECH/HT2011-E2A	S/N 3522210142	18/03/2025	March 2026
			Area Heat Stress Monitors/JAHTYTECH/HT2011-E2A	S/N 3522210148	23/03/2025	March 2026
		Light Intensity	Digital Lux Meter/DIGICOM X 50	S/N AA23076	22/07/2025	July 2026

## NOx Analyzer Calibration Report

Calibrate Date : 15-Sep-25  
Analyzer Type : NOx  
Brand : API  
Model : 200 A  
Serial Number : 80 (No. 7)  
Range : 500 ppb

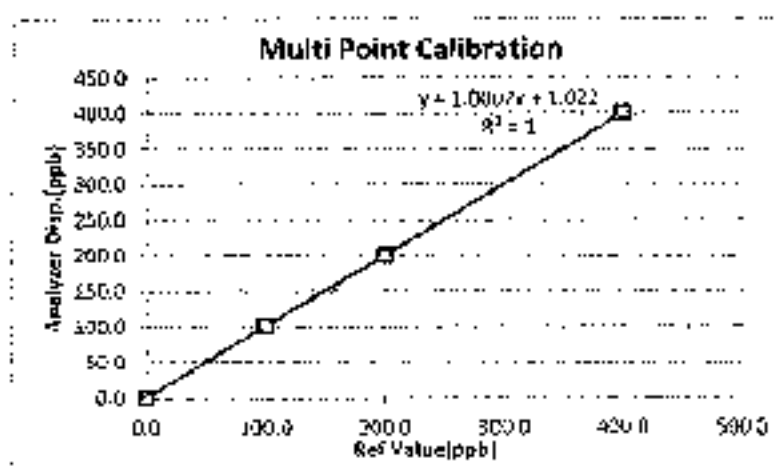
Temperature (°C) : 25°C  
Barometer (mmHg) : 759.7  
Humidity (50±15 %) : 56.1%RH  
Diluter : API 4700 S/N 625  
Zero Air : API 4700 S/N 1926  
Standard gas : A00917 SR

### Calibration of Span

Supply Gas	Ref Value(ppb)	Before of Span(ppb)			After of Span(ppb)			% diff of Span
		NOx	NO	NO <sub>2</sub>	NOx	NO	NO <sub>2</sub>	
Zero	0.0	2.7	2.4	0.3	0.0	0.0	0.0	0.0
Span	400.0	384.4	383.7	-1.0	400.0	400.0	0.0	0.0

### Multi Point Calibration

Ref Value(ppb)	Analyzer Disp.(ppb)			Output Difference		
	NOx	NO	NO <sub>2</sub>	Diff(ppb)	% Diff	Abs (% Diff)
0.0	0.6	0.4	0.2	0.37	0.001	0.003
100.0	102.7	101.9	0.9	1.80	0.018	1.80
200.0	201.7	201.4	0.3	1.40	0.007	0.70
400.0	401.8	401.0	0.8	1.00	0.003	0.25
Average Diff (%)						0.71



Calibrate by: [Signature]

Approved by: [Signature]

## NOx Analyzer Calibration Report

Calibrate Date : 15-Sep-25  
Analyzer Type : NOx  
Brand : API  
Model : 200A  
Serial Number : 1978 (No. 13)  
Range : 500 ppb

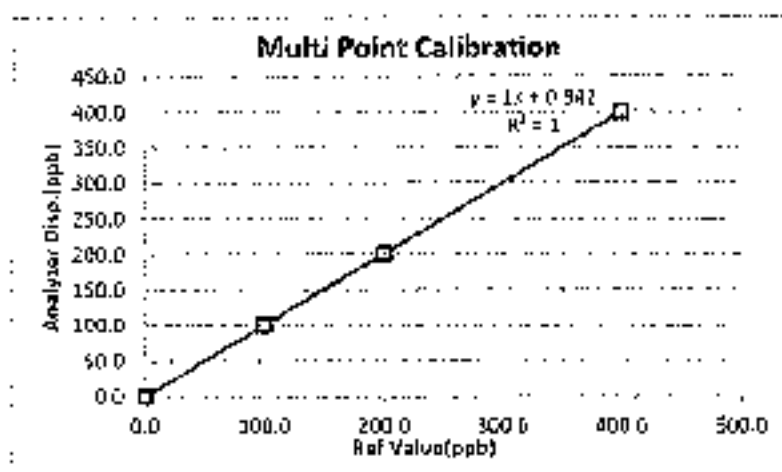
Temperature (°C) : 25°C  
Barometer (mmHg) : 760.5  
Humidity (50±15 %) : 56.4VPH  
Diluter : API M700 S/W 635  
Zero Air : API M701 S/W 1026  
Standard gas : A00917 SK

### Calibration of Span

Supply Gas	Ref Value(ppb)	Before of Span(ppb)			After of Span(ppb)			% Diff of Span
		NOx	NO	NO <sub>2</sub>	NOx	NO	NO <sub>2</sub>	
Zero	0.0	1.3	0.7	0.6	0.0	0.0	0.0	0.0
Span	400.0	384.0	383.4	0.6	400.0	400.0	0.0	0.0

### Multi Point Calibration

Ref Value(ppb)	Analyzer Disp (ppb)			Output Differences		
	NOx	NO	NO <sub>2</sub>	Diff(ppb)	% Diff	Abs (% Diff)
0.0	0.7	0.5	0.2	0.47	0.001	0.12
100.0	102.1	101.4	0.7	1.40	0.014	1.40
200.0	201.7	201.2	0.5	1.20	0.006	0.60
400.0	402.0	400.7	0.3	0.70	0.002	0.17
Average Diff (%)						0.57



Calibrate by: [Signature]

Approved by: [Signature]

## NOx Analyzer Calibration Report

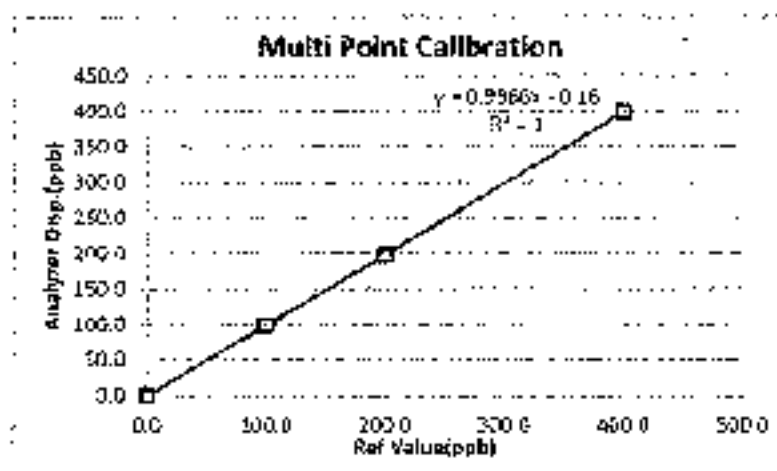
Calibrate Date	3-Oct-23	Temperature (°C)	25.0
Analyzer Type	NOx	Barometer (mmHg)	766.2
Brand	API	Humidity (50±15 %)	51.74%RH
Model	200 A	Dilutor	XFI M700 S/S 625
Serial Number	542/Mo. 291	Zero Air	API M701 S/S 1925
Range	500 ppb	Standard gas	NO2917 SK

### Calibration of Span

Supply Gas	Ref Value(ppb)	Before of Span(ppb)			After of Span(ppb)			% diff of Span
		NOx	NO	NO <sub>2</sub>	NOx	NO	NO <sub>2</sub>	
Zero	0.0	1.2	2.1	0.1	0.0	0.0	0.0	0.0
Span	400.0	405.0	402.0	3.0	400.0	400.0	0.0	0.0

### Multi Point Calibration

Ref Value(ppb)	Analyzer Disp (ppb)			Output Difference		
	NOx	NO	NO <sub>2</sub>	Diff(ppb)	% Diff	Abs (%) Diff
0.0	0.6	0.4	0.2	0.40	0.001	0.10
100.0	99.8	99.4	0.4	-0.60	-0.006	0.60
200.0	198.7	198.2	0.5	-1.80	-0.009	0.90
400.0	399.4	399.0	0.4	-1.00	-0.003	0.25
Average Diff (%)						0.58



Calibrate by: Prof. Jha

Approved by: Barua M



## NOx Analyzer Calibration Report

Calibrate Date : 3-Oct-25  
Analyzer Type : NOx  
Brand : Teledyne  
Model : 200 E  
Serial Number : 483 (No. 371)  
Range : 500 ppb

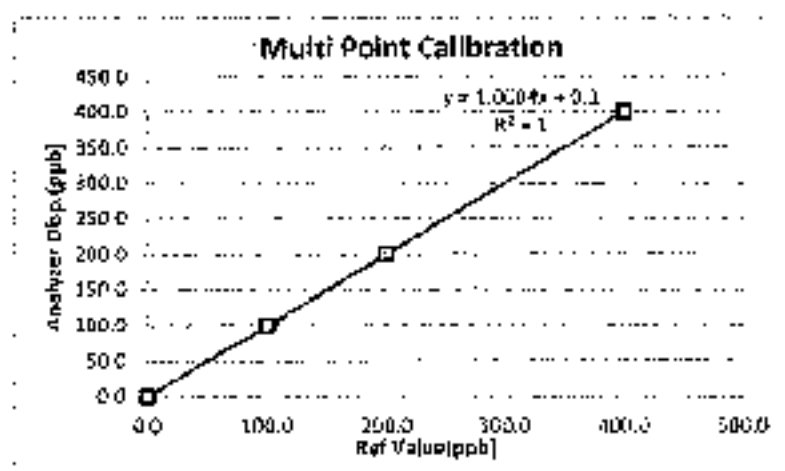
Temperature (°C) : 25°C  
Barometer (mmHg) : 768.5  
Humidity (50±15 %) : 53.0%RH  
Dilutor : API 4700 S/W 625  
Zero Air : API 4701 S/W 1526  
Standard gas : A00917 SR

### Calibration of Span

Supply Gas	Ref Value(ppb)	Before of Span(ppb)			After of Span(ppb)			% diff of Span
		NOx	NO	NO <sub>2</sub>	NOx	NO	NO <sub>2</sub>	
Zero	0.0	1.3	0.9	0.4	0.0	0.0	0.0	0.0
Span	400.0	402.0	401.5	0.5	400.0	400.0	0.0	0.0

### Multi Point Calibration

Ref Value(ppb)	Analyzer Disp (ppb)			Output Difference		
	NOx	NO	NO <sub>2</sub>	Diff(ppb)	% Diff	Abs (%) Diff
0.0	0.2	0.1	0.1	0.10	0.006	0.03
100.0	100.1	99.8	0.3	-0.20	-0.002	0.20
200.0	201.1	200.7	0.4	0.70	0.003	0.35
400.0	400.3	400.1	0.2	0.10	0.000	0.03
Average Diff (%)						0.15



Calibrate by: [Signature]

Approved by: [Signature]

### Certificate Of Analysis

Customer Details		Address:		Customer Tag No:	
Thai Environmental Tech Inc.		176 Soi Ramkhamhaeng 45, Saphan Song, Khet Saphan Song, Bangkok 10240			
Certificate Details					
Number	1234/23	Date of Issue:	5-Jun-2023	Expiry date:	5-Jul-2026
Material Details					
Production Order	90175500	Material Code:	640200-1SK-14	Cylinder No.	A00917SK
Gas content	3.520 m³	Filling pressure:	145.0 bar	Valve	CGA 660 SS
Cylinder Owner	THAI	Cylinder Material	Spectra seat	Cylinder Size	40L

### Analytical Result

Component	Normal Concentration	Analysis Result*	Uncertainty	Method of Analysis	Assay Date
Public Guide	40.0 ppm	40.5 ppm	±1% relative	(611) PG-352	7/8/2016 - 9/4/2017
Dietary impurity in Biotin		less than 2.0 ppm			

#### Reference Sfondard used in Assignment

Reference Standard	Cylinder Number	Concentration	Time (min)
Antic Acid	25801358	25.47 ± 0.25 pH	10.00
Antic Acid	25801358	25.47 ± 0.25 pH	10.00

Adults: 1000-1500 ft. in the U.S.

Instrument/Make/Model	Analysis Time (min)	Analysis Volume (µl)
618 Spectrometers Nicolet 550	10	10

### Recommended usage condition

Maximum utilization: 5% of actual content of building have been used  
 Structure condition: Insp in well ventilation and secure wall

## Comments

When reordering, please note the material number

# Index

1. The Commission has received information from the Department of the Interior, Bureau of Land Management, that the Bureau is currently conducting a study of the feasibility of establishing a National System of Public Lands. The study is being conducted in cooperation with the Department of the Army, Corps of Engineers, and the Department of the Navy, Bureau of Naval Facilities. The study is being conducted in order to determine the feasibility of establishing a National System of Public Lands which would include all public lands owned by the Federal Government, including lands owned by the Department of the Interior, the Department of the Army, the Department of the Navy, and the Department of the Air Force. The study is being conducted in order to determine the feasibility of establishing a National System of Public Lands which would include all public lands owned by the Federal Government, including lands owned by the Department of the Interior, the Department of the Army, the Department of the Navy, and the Department of the Air Force.

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

10/15/1964

Subsidiary Party Organization  
 Signature of Party Representative

United States

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

**Figure 1**

1. SECRET  
 2. SECRET  
 3. SECRET  
 4. SECRET  
 5. SECRET  
 6. SECRET  
 7. SECRET  
 8. SECRET  
 9. SECRET  
 10. SECRET  
 11. SECRET  
 12. SECRET  
 13. SECRET  
 14. SECRET  
 15. SECRET  
 16. SECRET  
 17. SECRET  
 18. SECRET  
 19. SECRET  
 20. SECRET  
 21. SECRET  
 22. SECRET  
 23. SECRET  
 24. SECRET  
 25. SECRET  
 26. SECRET  
 27. SECRET  
 28. SECRET  
 29. SECRET  
 30. SECRET  
 31. SECRET  
 32. SECRET  
 33. SECRET  
 34. SECRET  
 35. SECRET  
 36. SECRET  
 37. SECRET  
 38. SECRET  
 39. SECRET  
 40. SECRET  
 41. SECRET  
 42. SECRET  
 43. SECRET  
 44. SECRET  
 45. SECRET  
 46. SECRET  
 47. SECRET  
 48. SECRET  
 49. SECRET  
 50. SECRET  
 51. SECRET  
 52. SECRET  
 53. SECRET  
 54. SECRET  
 55. SECRET  
 56. SECRET  
 57. SECRET  
 58. SECRET  
 59. SECRET  
 60. SECRET  
 61. SECRET  
 62. SECRET  
 63. SECRET  
 64. SECRET  
 65. SECRET  
 66. SECRET  
 67. SECRET  
 68. SECRET  
 69. SECRET  
 70. SECRET  
 71. SECRET  
 72. SECRET  
 73. SECRET  
 74. SECRET  
 75. SECRET  
 76. SECRET  
 77. SECRET  
 78. SECRET  
 79. SECRET  
 80. SECRET  
 81. SECRET  
 82. SECRET  
 83. SECRET  
 84. SECRET  
 85. SECRET  
 86. SECRET  
 87. SECRET  
 88. SECRET  
 89. SECRET  
 90. SECRET  
 91. SECRET  
 92. SECRET  
 93. SECRET  
 94. SECRET  
 95. SECRET  
 96. SECRET  
 97. SECRET  
 98. SECRET  
 99. SECRET  
 100. SECRET



Thai Environmental Technic Limited  
บริษัท เทคโนโลยีสิ่งแวดล้อมไทย จำกัด

## High Volume TSP&PM-10 Calibration Report

Location : Thai Environmental Technic

Site ID : Bangkok

Date : 3-Jan-26

ITEM : TSP

Serial No : (No. 9)

Calibrate By : S. S. S.

### Site Conditions

Barometric Pressure (mm Hg) : 760.30

Temperature (°C) : 25.0

Average Press. (mm Hg) : 754.6

Average Temp (°C) : 31.5

Corrected Pressure (mm Hg) : 760.0

Temperature (deg K) : 25.0

Corrected Average (mm Hg) :

Average Temp (Deg K) :

### Calibration Orifice

Make : Tietz

Model : TS-50252

Serial : 0000

Qstd Slope : 2.00326

Qstd Intercept : -0.02003

Calibration Due Date : 26-Mar-26

### Calibration Information

Plate or Test #	ORIFICE (in H <sub>2</sub> O)	Qstd (m <sup>3</sup> /min)	mdrate (CFM)	IC (corrected)	Linear Regression Slope : 29.6870 Intercept : -5.2485 Corr. Coeff : 0.9910 # of Observations : 5
1	12.60	1.752	60.0	52.00	
2	9.80	1.572	54.0	52.00	
3	7.40	1.362	50.0	48.00	
4	5.20	1.148	40.0	48.00	
5	3.00	0.875	30.0	32.00	

### Calculations

$$Q_{std} = 1/m[\text{Sqrt}((120(P_a/P_{std})(T_{std}/T_a)) - b)]$$

$$IC = 1/\text{Sqrt}(P_a/P_{std})(T_{std}/T_a)$$

Qstd = standard flow rate

IC = corrected chart response

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pa = actual pressure during calibration (mm Hg)

Tstd = 298 deg K

Pstd = 760 mm Hg

For subsequent calculation of sampler flow,

$$1/\text{Wt}[(1/\text{Sqrt}(298/T_a))(P_a/760)] \text{ b}]$$

NOTE: Ensure calibration orifice has been certified within 12 months of use

m = sampler slope

b = sampler intercept

I = chart response

Ta = daily average temperature

Pa = daily average pressure

Calibrate By : S. S. S.

Approve By : S. S. S.

## High Volume TSP&PM-10 Calibration Report

Location: Thai Environmental Tech

Site ID: Bangkok

Date: 3-Jun-25

ITEM: TSP

Serial No: QN5-17-1

Calibrate By: Pipat

### Site Conditions

Barometric Pressure (mm Hg) : 760.00  
Temperature (°C) : 25.0  
Average Press. (mm Hg) : 754.6  
Average Temp (°C) : 31.9

Corrected Pressure (mm Hg) : 750.9  
Temperature (deg K) : 298.0  
Corrected Average (mm Hg) :  
Average Temp (Deg K) :

### Calibration Orifice

Make: Tisco  
Model: TF-9025A  
Serial: 0006

Qstd Slope : 2.00326  
Qstd Intercept : -0.02008  
Calibration Due Date : 25-Mar-26

### Calibration Information

Plate or Test #	ORIFICE (in H <sub>2</sub> O)	Qstd (m <sup>3</sup> /min)	Indicate (CFM)	IC (corrected)	Linear Regression Slope: 30.0269 Intercept: 5.4237 Corr. Coeff: 0.9969 N of Observations: 5
1	12.20	1.764	60.0	57.00	
2	9.80	1.573	54.0	52.00	
3	7.00	1.311	50.0	48.00	
4	5.00	1.126	40.0	40.00	
5	3.00	0.875	30.0	35.00	

### Calculations

$$Qstd = 1/m((S_{up}/(H_2O)(P_a/Pstd))(Tstd/Ta))-b$$

$$IC = ((S_{up}/(P_a/Pstd))Tstd/Ta)$$

Qstd = standard flow rate  
IC = corrected chart response  
I = actual chart response

m = calibrator Qstd slope  
b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pa = actual pressure during calibration (mm Hg)

Tstd = 298 deg K

Pstd = 760 mm Hg

For subsequent calculation of sampler flow:  
 $1/m((S_{up}/(298/Tav))(Pav/Pstd))-b$

NOTE: Ensure calibration orifice has been certified within 12 months of use

m = sampler slope  
b = sampler intercept  
I = chart response  
Tav = daily average temperature  
Pav = daily average pressure

Calibrate By : 

Approve By : 

## High Volume TSP&PM-10 Calibration Report

Location: Thai Environmental Technic

Site ID: Bangkok

Date: 3-Jun-25

Item: TSP

Serial No: (No. 31)

Calibrate By: Pipet

### Site Conditions

Barometric Pressure (mm Hg) : 755.00

Temperature (°C) : 29.2

Average Press (mm Hg) : 754.6

Average Temp (°C) : 30.4

Corrected Pressure (mm Hg) : 755.0

Temperature (deg K) : 302.0

Corrected Average (mm Hg) : -

Average Temp (deg K) : -

### Calibration Office

Make: Tish

Model: TR-5025A

Serial#: 0058

Qstd Slope : 2.96336

Qstd Intercept : -0.02058

Calibration Due Date : 26-Mar-25

### Calibration Information

Plate or Test #	ORIFICE (in. H <sub>2</sub> O)	Qstd (m <sup>3</sup> /min)	Indicate (CFM)	IC (corrected)	Linear Regression Slope: 2.99146 Intercept: 5.4112 Corr. Coeff: 0.9833 # of Observations: 5
2	12.30	1.763	60.0	37.00	
2	9.30	1.573	54.0	32.00	
3	7.20	1.349	50.0	48.00	
4	5.00	1.124	40.0	40.00	
5	3.00	0.875	30.0	30.00	

### Calculations

$$Q_{std} = 1/m[\text{Sqrt}(H_2O/P_a/P_{std})](T_{std}/T_a)-b]$$

$$IC = 1/[\text{Sqrt}(P_a/P_{std})](T_{std}/T_a)]$$

Qstd = standard flow rate

IC = corrected chart response

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

P<sub>a</sub> = actual pressure during calibration (mm Hg)

Tstd = 298 (deg K)

Pstd = 760 mm Hg

for subsequent calculation of sampler flow:

$$1/m[1/[\text{Sqrt}(258/T_a)](P_a/760)]-b]$$

NOTE: Ensure calibration orifice has been certified within 12 months of use

m = sampler slope

b = sampler intercept

I = chart response

T<sub>a</sub> = daily average temperature

P<sub>a</sub> = daily average pressure

Calibrate By : 

Approve By : 

## High Volume TSP&PM-10 Calibration Report

Location: Thai Environmental Tech

Site ID: Bangkok

Date: 2-Jun-25

ITEM: TSP

Serial No: (No. 40)

Calibrate By: PIPAC

### Site Conditions

Barometric Pressure (mm Hg): 760.00

Temperature (°C): 25.0

Average Press. (mm Hg): 754.6

Average Temp (°C): 31.8

Corrected Pressure (mm Hg): 758.0

Temperature (deg K): 298.0

Corrected Average (mm Hg):

Average Temp: (Deg K):

### Calibration Office

Make: Tishch

Model: TE-S025A

Serial: 0069

Qstd Slope: 2.99326

Qstd Intercept: -0.02000

Calibration Due Date: 26-Mar-26

### Calibration Information

Plate or Test #	ORIFICE (in H <sub>2</sub> O)	Qstd (m3/min)	Indicate (CFM)	IC (corrected)	Linear Regression
1	12.00	1.761	60.0	57.00	Slope: 30.0213
2	9.20	1.529	54.0	52.00	Intercept: 5.0217
3	7.00	1.331	50.0	48.00	Corr. Coeff: 0.9654
4	5.00	1.126	40.0	40.00	
5	3.00	0.975	30.0	30.00	N of Observations: 5

### Calculations

$$Q_{std} = 1/m[\sqrt{(H_2O/P_a)(T_{std}/T_a)} - b]$$

$$IC = 1/[\sqrt{(P_a/T_{std})(T_{std}/T_a)}]$$

Qstd = standard flow rate

IC = corrected chart response

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pa = actual pressure during calibration (mm Hg)

Tstd = 298 deg K

Pstd = 760 mm Hg

For subsequent calculation of sampler flow

$$1/m[1/[\sqrt{(298/T_a)}(P_{std}/P_a)] - b]$$

NOTE: Ensure calibration office has been certified within 12 months of use

m = sampler slope

b = sampler intercept

I = chart response

Ta = daily average temperature

Pa = daily average pressure

Calibrate By: Pipac

Approve By: Pipac

[illegible]

Flow Measurement Laboratory  
Civil and Environmental Engineering Department



NSC - TISI - 715 17025  
CALIBRATION 0367

# CERTIFICATE OF CALIBRATION

Confidential No. : CDF-011-68

Yes 1 n: 2 Power

MEASUREMENT ITEM	: Top Lead Office
MANUFACTURER	: TSCII
MODEL/TYPE	: TE-S025A
SERIAL NUMBER	: Q053
ID NUMBER	: -
CONDITION AS-RECEIVED	: Used Item
CUSTOMER	: Thai Environmental Technic Limited, 145 Soi Anulakharinheang 145, Khumong/Khet Suptorn Sungs, Bangkok 10310
RECEIVED DATE	: 13 Mar 2025
MEASUREMENT DATE	: 25 Mar 2025
ISSUE DATE	: 27 Mar 2025

**Calibration procedure**  
The efflux jet flow rate was calibrated against Standard Rotary Discharge Meter (Rexnord) Model G65A61A02-p6. The 149-02-006 was used as a comparison standard.

**Transmissibility.** This certificate provides a transcript of the proceedings to recognize the national holidays, awards and recognition of the important season of water (EN) through the WWSF (National Waterways Institute of Louisiana) as Certificate number WA-0006-25.

**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'.

**ENVIRONMENTAL CONDITIONS:**

ambient condition in the laboratory are as follows.

Temperature	$-23.0 \pm 3.0$	$^{\circ}\text{C}$
Relative Humidity	$55.0 \pm 15.0$	%RH
Atmospheric Pressure	$1010 \pm 10$	hPa

#### CALIBRATION CONDITIONS

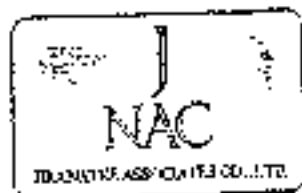
Preconditioning : 2d hours at anhydrous conditions.  
Measurement Condition : The average values during measurement are 23.3 °C and 52.5 %RH.

NOTED: The certificate is initially in the form submitted on date and place of collection.

#### TABLELATION OF RESULTS:

The rate on next page shows the measured value.

ÖZEL SÖĞÜTLÜ TEŞEKKÜR  
MİLLÎ İRZİMEYİ İSTİFA ETME



Approved signatory.....  
Mr. Pradyumn Bhandarkar  
Calibration Department Manager



ARABIAN GAS SERVICES CO., LTD.

Continuation of Certificate of Calibration Number COF-031-08

Page 2 of 2 Pages

# MEASUREMENT RESULTS:

The Orifice gas flow device was calibrated by direct comparison method with the Standard Rotary Displacement Meter (Rods Meter). The Humid air was used as a medium in the system. The standard conditions are 25°C (78.15 °F) and 760 mmHg for standard temperature and standard pressure respectively.

Table 1: The results of  $Q$ -Standard calibration data

Point	Flow rate $m^3/min$	Pressure [Pa] mmHg	Temperature [°F] °C	Temperature [°F] °C	Std. meter mmHg	Std. Orifice mmHg	$Z$	Standard Flow [ $Q_s$ ] $m^3/min$
1	0.703	759.322	23.41	22.45	51.046	1.702	1.507	0.651
2	1.001	759.331	23.49	22.67	55.418	1.894	1.599	0.931
3	1.114	759.331	23.57	22.76	58.123	4.443	2.312	1.063
4	1.173	759.310	23.63	22.98	58.265	5.063	2.254	1.136
5	1.420	759.258	23.82	24.19	57.879	7.473	2.238	1.375

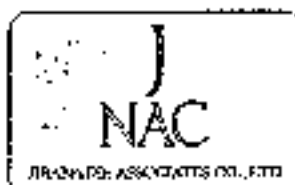
Slope (a): 2.00276  
Intercept (b): -0.02008  
Correlation coefficient (r): 0.99979  
Uncertainty (k=2): 0.015  $m^3/min$

Table 2: The results of  $Q$ -actual calibration data

Point	Flow rate $m^3/min$	Pressure [Pa] mmHg	Temperature [°F] °C	Temperature [°F] °C	Std. meter mmHg	Std. Orifice mmHg	$Z$	Standard Flow [ $Q_s$ ] $m^3/min$
1	0.703	759.322	23.41	22.45	51.046	1.702	0.515	0.655
2	1.001	759.331	23.49	22.67	55.418	1.894	1.159	0.931
3	1.114	759.331	23.57	22.76	58.123	4.443	1.318	1.063
4	1.173	759.310	23.63	22.98	58.265	5.063	1.407	1.136
5	1.420	759.258	23.82	24.19	57.879	7.473	1.750	1.375

Slope (a): 1.25471  
Intercept (b): -0.01252  
Correlation coefficient (r): 0.99960  
Uncertainty (k=2): 0.015  $m^3/min$

End of Certificate of Calibration





# ENVIR SERVICE CO., LTD.

42 Ramindra 14 Yeak 9, Tho Raeng, Bang Khen, Bangkok 10230  
Tel: 02-9435814-5 Fax: 02-9438201 www.envirservice.co.th

## PM10 HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Customer	ENVIR SERVICE CO., LTD.			Date	September 11, 2020
Address	42 Ramindra 14 Yeak 9, Tho Raeng, Bang Khen, Bangkok 10230			Start time	8:30 AM
Sample Number	PM10 No.3	Humid Standard type	Onion	Stop Time	9:55 AM
Major Serial Number	PM10 No.3	Calibrator Model	23A	Person	Mr. Pasagorn Samsri
Minor Serial Number	-	Calibrator Serial Number	V211		

### Calibration Office

Manufacturer	Gaspart CMV	Order Sheet	1-5221
Model	23A	Field Interceptor	001962
Serial#	3671	Calibration Date	14-06-21

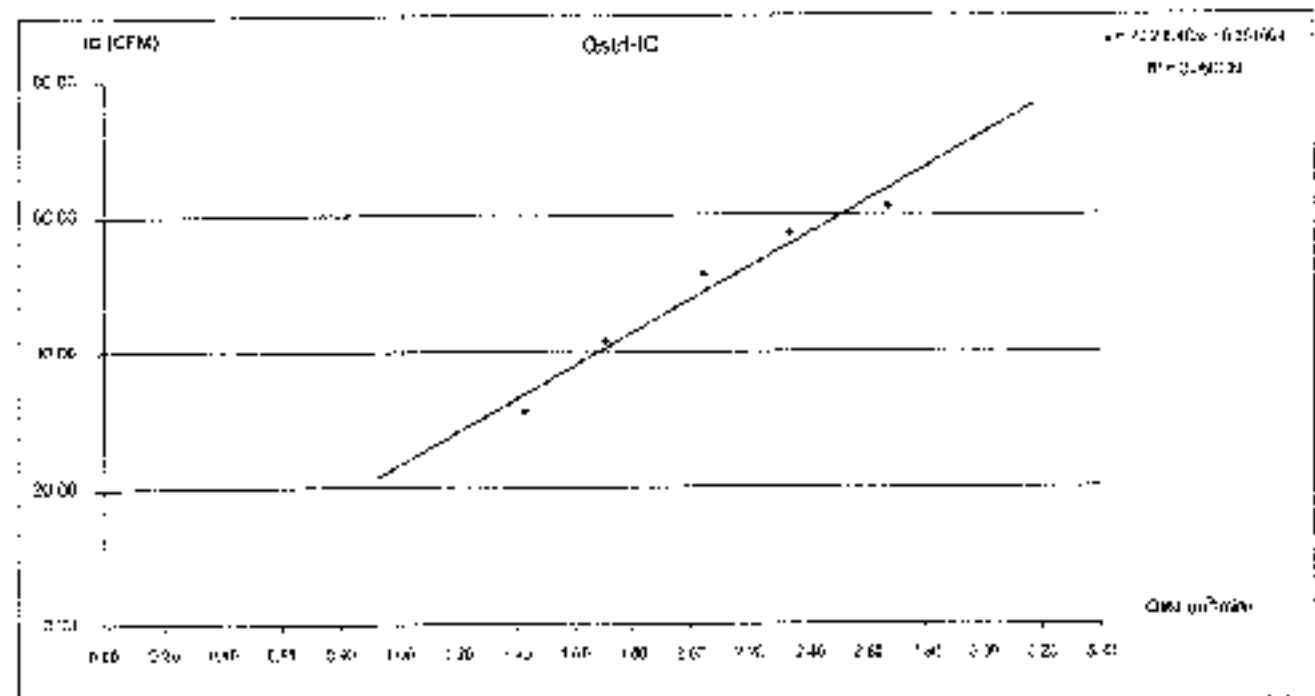
Vol No	Data 1			Data 2	Data 3	Data 4	Data 5	Data 6	Data 7	Data 8	Data 9	Data 10
	Flow Rate (L/min)	Flow Rate (m³/min)	Flow Rate (m³/hr)	Flow Rate (m³/hr)	Flow Rate (m³/hr)	Flow Rate (m³/hr)	Flow Rate (m³/hr)	Flow Rate (m³/hr)	Flow Rate (m³/hr)	Flow Rate (m³/hr)	Flow Rate (m³/hr)	Flow Rate (m³/hr)
5	1.0	1.0	60	2.0182	1.42875	85.725	31.25	21.3	1.05	6.10	-	-
7	2.0	2.0	120	3.9801	2.9513	177.078	61.51	36.1	1.20	-	-	-
10	3.0	3.0	180	4.9577	3.6274	217.644	81.24	49.6	1.80	-	-	-
15	5.0	5.0	300	7.9112	5.9316	355.896	121.23	79.7	2.90	-	-	-
16	5.0	5.0	300	8.4782	6.3581	381.486	131.28	84.8	3.00	-	-	3.05

Linear Regression (LINEAR) (m³/min)

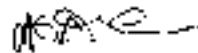
Average

1	Slope (m³/min)	7.0022 Linear Slope (m³/min)		r²	0.99911	Independed	7.0022
2	Intercept (m³/min)	-0.0015 (Set Point Flow Rate) (m³/min)		1.132	0.9912746	-	2.602
3	Calibration Coefficient (1)	0.00189 (Set Point Flow Rate) (m³/min)		0	0.99911 (Independed)	0.99911 (Independed)	0.99911 (Independed)

Result



Calibrate by:   
 MR. KIJARAK JANGNAWATTANA

Approve by:   
 MR. PASAGORN SAMRI



# ENVIR SERVICE CO., LTD.

42 Ramindra 14 Yeak 9, Tha Raeng, Bang Khen, Bangkok 10230  
Tel. 02-9435214-5 Fax. 02-9438201 www.envirservice.co.th

## PM10 HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Customer	ENVIR SERVICE CO., LTD.			Date	September 11, 2015
Address	42 Ramindra 14 Yeak 9, Tha Raeng, Bang Khen, Bangkok 10230			Start Time	1:30 PM
Sample Humidity	PM10 No. 4	Transfer Standard Type	Orifice	Stop Time	2:55 PM
Master Serial Number	PM10 No. 4	Calibrator Model	SSA	Person	Mr. Pasagorn Saman
Recorder Serial Number	-	Calibrator Serial Number	3075		

### Calibration Orifice

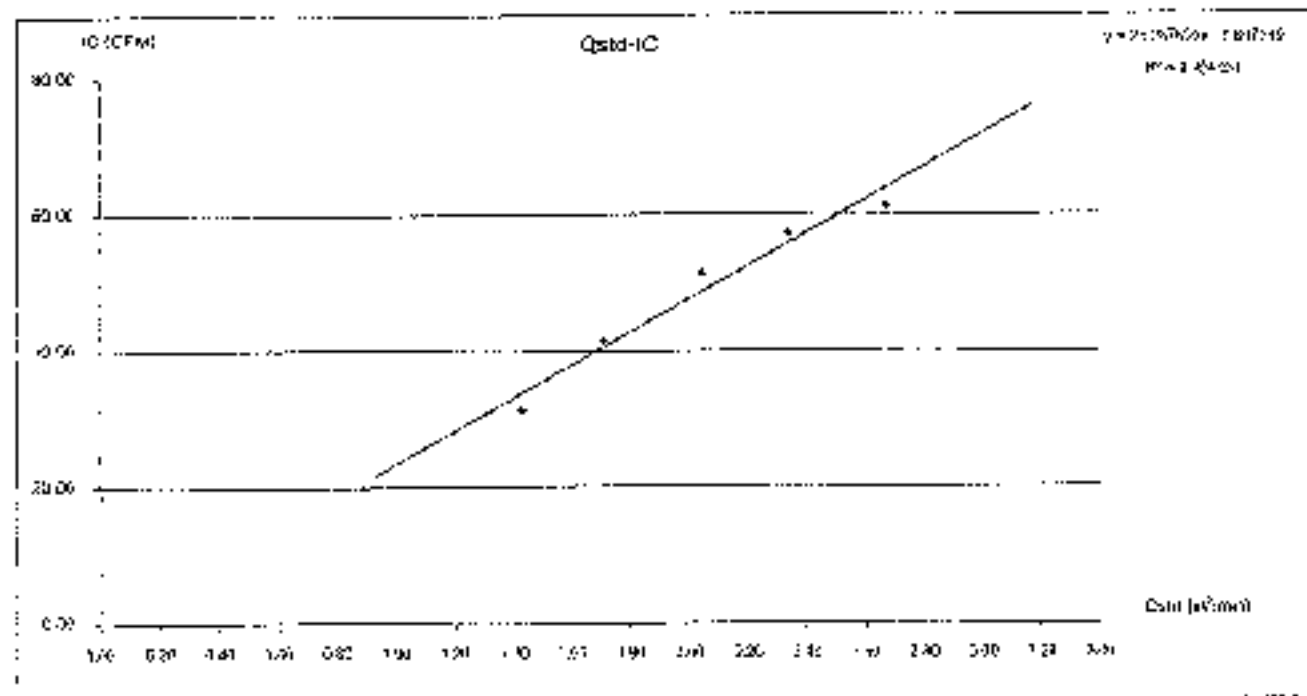
Manufacturer	Granby Orifice	Orifice Size	1.0413
Model	SSA	Orifice Intercept	0.01962
Serial #	3075	Calibration Date	11-Dec-14

Air No.	Flow Rate			Flow Rate at 100% Humidity	Flow Rate at 100% Humidity	Flow Rate at 100% Humidity	Flow Rate at 100% Humidity	Flow Rate at 100% Humidity	Flow Rate at 100% Humidity	Flow Rate at 100% Humidity	Flow Rate at 100% Humidity	Flow Rate at 100% Humidity
	Flow Rate at 100% Humidity	Flow Rate at 100% Humidity	Flow Rate at 100% Humidity									
3	1.0	1.0	9.7	1.0	1.0	9.7	1.0	1.0	9.7	1.0	1.0	9.7
7	2.0	2.0	12.5	2.0	2.0	12.5	2.0	2.0	12.5	2.0	2.0	12.5
10	4.0	4.0	17.1	4.0	4.0	17.1	4.0	4.0	17.1	4.0	4.0	17.1
15	5.1	5.2	19.9	5.1	5.2	19.9	5.1	5.2	19.9	5.1	5.2	19.9
16	6.4	6.5	20.8	6.4	6.5	20.8	6.4	6.5	20.8	6.4	6.5	20.8

Granby Regression Formula:  $Q = 1.0413 \cdot F + 0.01962$

1	Flow Rate (L/min)	2.0	Flow Rate (L/min)	2.0	Flow Rate (L/min)	2.0	Flow Rate (L/min)	2.0	Flow Rate (L/min)	2.0	Flow Rate (L/min)	2.0
2	Intercept (L/min)	0.01962	Set Point Flow Rate (L/min)	2.0	Set Point Flow Rate (L/min)	2.0	Set Point Flow Rate (L/min)	2.0	Set Point Flow Rate (L/min)	2.0	Set Point Flow Rate (L/min)	2.0
3	Granby Orifice Coefficient (L/min)	0.01962	Granby Orifice Coefficient (L/min)	0.01962	Granby Orifice Coefficient (L/min)	0.01962	Granby Orifice Coefficient (L/min)	0.01962	Granby Orifice Coefficient (L/min)	0.01962	Granby Orifice Coefficient (L/min)	0.01962

Result:  $Q = 1.0413 \cdot F + 0.01962$



Calibrate By

Mr. Rattana Jansangwattana

Approve by

Mr. Pasagorn Saman





# ENVIR SERVICE CO., LTD.

42 Ramindra 14 Yeak 9, Tha Raeng, Bang Khen, Bangkok 10230  
Tel. 02-9455314-5 Fax. 02-9438201 www.envirservice.co.th

## PM10 HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Customer	ENVIR SERVICE CO., LTD.			Date	September 11, 2021
Address	42 Ramindra 14 Yeak 9, Tha Raeng, Bang Khen, Bangkok 10230			Start Time	9:00 AM
Sampler Number	PM10-HV-9	Standard Standard Type	Online	Stop Time	9:25 AM
Filter Serial Number	PM10-HV-9	Calibrator Model	25A	Person	MR. PASADORN SAMOL
Recorder Serial Number	-	Calibrator Serial Number	202N		

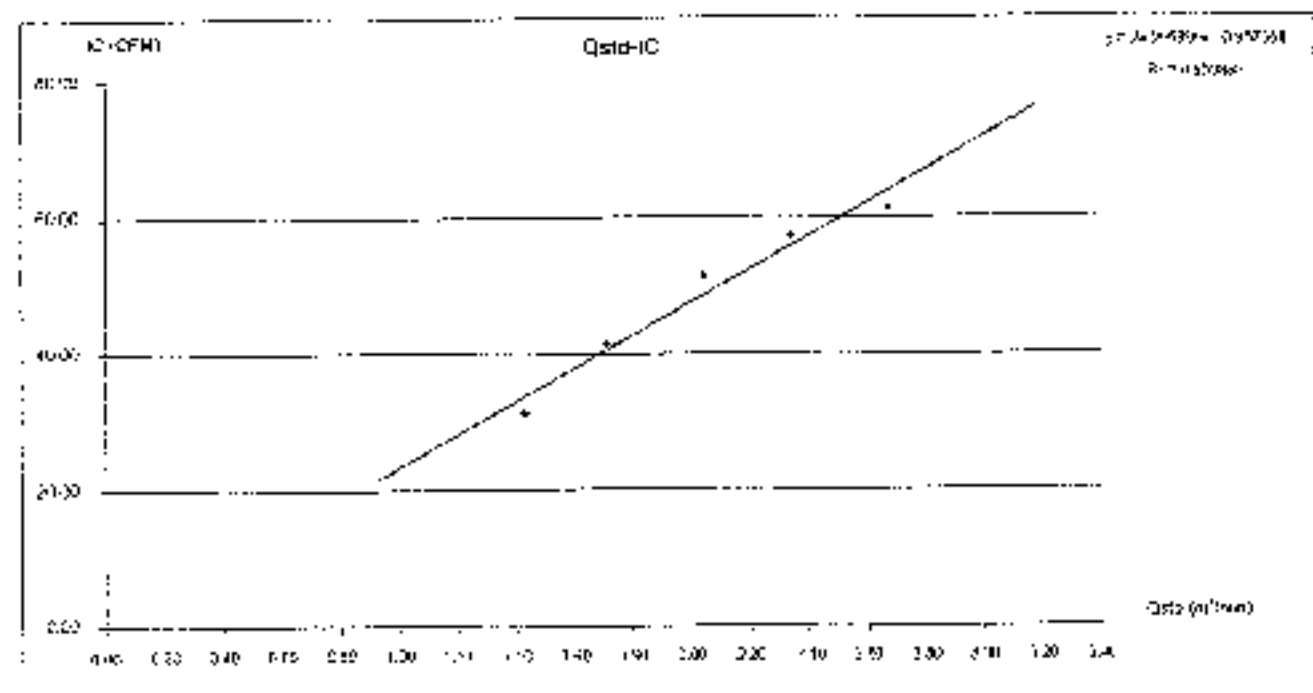
### Calibration Data

Manufacturer	Fluxus GMBH	Gold Label	170063
Model	25A	Unit Identifier	9.11762
Serial	3070	Calibration Cycle	14 Days

No.	Weather			Flow Rate (m³/min)	Flow Rate (m³/min)	Flow Rate (m³/min)	Flow Rate (m³/min)	Temperature (°C)	Relative Humidity (%)	Wind Speed (m/s)	Wind Direction
	Temp (°C)	Humidity (%)	Wind (m/s)								
5	19	16	0.2	191890	191890	191890	191890	25.0	70.0	0.0	-
7	23	17	0.3	199427	199427	199427	199427	25.1	76.0	-	-
10	29	32	0.4	190643	190643	190643	190643	30.0	79.0	-	-
12	33	40	0.5	192004	192004	192004	192004	30.7	76.0	-	-
15	34	43	0.7	197005	197005	197005	197005	30.7	71.0	-	4.25

Linear Regression: $Y = 0.99123725X + 0.00000000$								Average	30.5	76.0	-
1	Slope (m³/min)	0.99123725	Flow Rate (m³/min)	191890	191890	191890	191890	1	0.99123725	Flow Rate (m³/min)	191890
2	Intercept (m³/min)	0.00000000	Flow Rate (m³/min)	191890	191890	191890	191890	1	0.99123725	Flow Rate (m³/min)	191890
3	Correlation Coefficient (r)	0.99995	Flow Rate (m³/min)	191890	191890	191890	191890	1	0.99123725	Flow Rate (m³/min)	191890

Result: Calibration Good (Pass) 0.99123725



Calibrate by: MR. KIRIK JANGANGWATTANA

Approved by: MR. PASADORN SAMOL



# Certificate of Calibration

Certificate No.: WK2406-084-1

Page 1 of 2

Customer : ALL QUIP CO., LTD  
 84 Soi Petchkasem 74, Bangkhosuea,  
 Bangkok, Bangkok 10160

Instrument	: Aerosol Mass Monitor	Ambient Temperature	: $(23 \pm 2) ^\circ\text{C}$
Manufacturer	: Met One	Humidity	: $(60 \pm 10) \% \text{RH}$
Model	: AEROCHEP-891	Received Date	: 9-May-25
Serial No.	: X26490	Calibrated Date	: 18-May-25
Identity No.	: N/A	Issued Date	: 17-May-25
Range	: See to Data	Calibrated Location	: In Lab
Resolution	: See to Data		
Calibration Method	: (ISO 21501-1) 2007 and direct measurement with reference PM Detector Tester		

## Reference standard instruments :

<u>Instrument</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>	<u>Traceability to</u>
Flow Calibrator	140215-134	L205304114-001	18-Apr-25	MIT
PM Detector Tester	WK-PM-001	WK2401-049-8	6-Jan-25	WK Electric Co., Ltd.

MIT : Miracle International Technology Co., Ltd

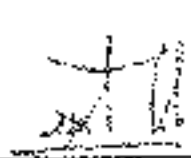
This result calibrate was found accurate as shown on date place of calibrate only

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

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

Calibrated by : Mr. Chanya Obchoo

Approved by :

  
 Mr. Buddasarn Petcha

Authorized Signatory

This certificate may not be reproduced except in full unless permission for the reproduction has been obtained in writing from the laboratory.



## Calibration Results

Certificate No. : WK2405-084-1

Page 2 of 2

### Calibration Result of the Accuracy

Function : Flow Rate Measurement

Range : 0.1 acfm

Unit : acfm

Function	Nominal Value	STD Reading	Error	Uncertainty ( $\pm$ acfm)
Air Flow Rate	0.1	0.116	-0.016	0.0046

Function : Particulate Matter Measurement

Range : 40 to 60  $\mu\text{g}/\text{m}^3$

Resolution : 0.1  $\mu\text{g}/\text{m}^3$

Unit :  $\mu\text{g}/\text{m}^3$

Particulate Matter	Nominal Value	UUC Reading	Error	Uncertainty ( $\pm$ $\mu\text{g}/\text{m}^3$ )
20	40	38.0	+2.0	0.29
10	50	47.0	+3.0	0.29

( X ) Without Adjustment ( ) After Adjustment

This certificate may not be reproduced except in full unless permission for the reproduction has been obtained in writing from the Laboratory

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



# **ENVIR SERVICE CO., LTD.**

42 Ramindra 14 Yeak 9, Tha Raeng, Bang Khen, Bangkok 10230  
Tel. 02-9435814-5 Fax 02-9438201 [www.envirservice.co.th](http://www.envirservice.co.th)

## **CALIBRATION TEST REPORT FOR Partisol Air Sampler**

Calibrated Date: 09 Feb 2025  
Calibrated Due on: 08 Feb 2026

Report No: PM-202411110

### **Instruments Information**

Description : Partisol FRM Air Sampler  
for PM-2.5  
Model : C.CZ-30  
Sample flow control and reporting : 3 - 30 L/min  
Serial No. : 2024EN0242009

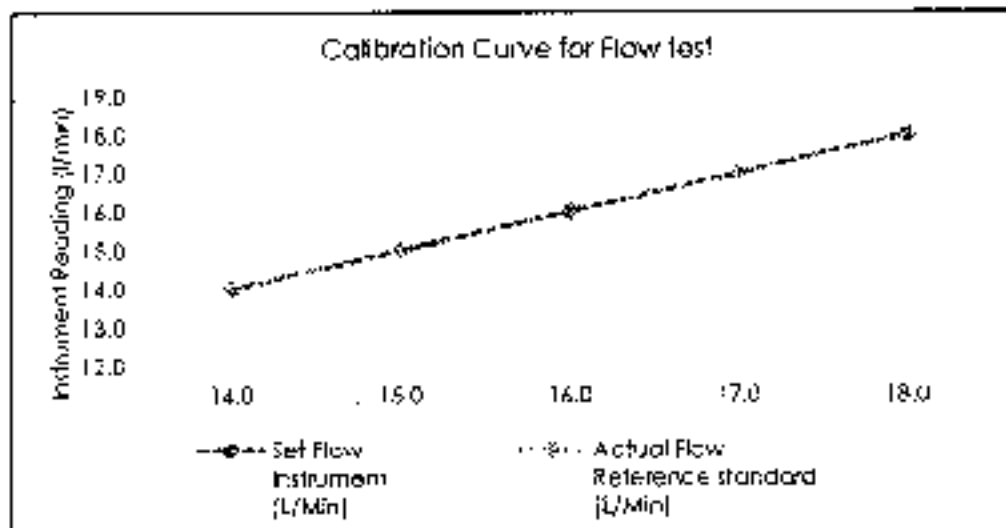
### **Instrument used for calibration (STD)**

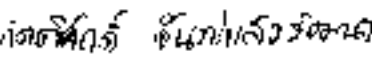
Description : Flow Meter  
BIO3 DryCal DC-Use  
Model : DCL-M REV. 1.06  
Range : 200 ml/min - 30 L/min  
Serial No. : 5016

Environment : Temperature 25.5 °C Humidity: 51 %RH

### **Calibration Report**

Filter	Set Flow Instrument (L/Min)	Current Flow Instrument reading (L/Min)	Actual Flow Reference standard (L/Min)	Error	Diff%
47 mm,	14.0	14.0	14.02	-0.02	-0.14
	15.0	15.0	15.01	0.01	-0.07
	16.0	16.0	16.01	0.01	-0.06
	17.0	17.0	17.01	0.01	-0.06
	18.0	18.0	18.01	0.01	-0.06



Calibrate By :   
MR. KITISAK JANSANGWATTANA

Approve by :   
MR. PASACHORN SAMOL



# **ENVIR SERVICE CO., LTD.**

42 Ramindra 14 Year 9, Tha Raeng, Bang Khen, Bangkok 10230  
Tel. 02-9435814-5 Fax. 02-9438201 www.envirservice.co.th

## **CALIBRATION TEST REPORT FOR Partisol Air Sampler**

**Calibrated Date:** 09 Feb 2025  
**Calibrated Due on:** 08 Feb 2026

**Report No:** PM-202411010

### **Instruments Information**

**Description:** Partisol FRM Air Sampler

for PM-2.5

**Model:** CCZ-30

**Sample flow control and reporting:** 3 - 30 L/min

**Serial No.:** 2024EN0242009

### **Instrument used for calibration (STD)**

**Description:** Flow meter

BIOS DryCal DC-Lite

**Model:** DC2-M REV 1.08

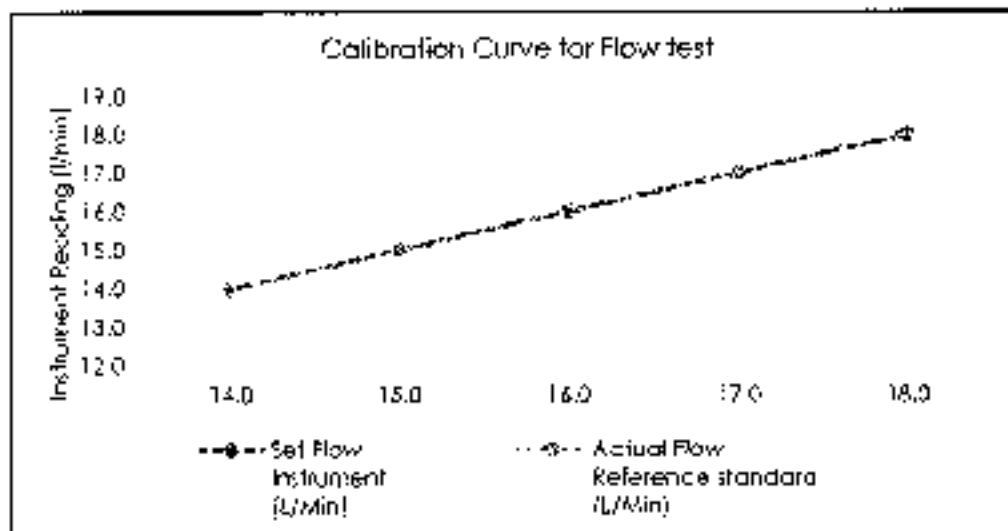
**Range:** 200 ml/min - 20 L/min

**Serial No.:** 5016

**Environment:** Temperature: 25.5 °C Humidity: 51 %RH

### **Calibration Report**

Filter	Set Flow Instrument (L/min)	Current Flow Instrument reading (L/min)	Actual Flow Reference standard (L/min)	Error	Diff%
47 mm.	14.0	14.0	14.02	-0.02	-0.14
	15.0	15.0	15.01	0.01	-0.07
	16.0	16.0	16.01	0.01	-0.06
	17.0	17.0	17.01	0.01	-0.06
	18.0	18.0	18.01	0.01	-0.06



**Calibrate By:** กิตติศักดิ์ จันทะวงษ์วัฒนา

MR. KITSACK JANSANGWATTANA

**Approve by:** [Signature]

MR. PASAGORN SAMOL





# ENVIR SERVICE CO., LTD.

42 Ramindra 14 Yeak 9, Tha Raeng, Bang Khen, Bangkok 10230  
Tel. 02-9435814-5 Fax. (02-9438201) www.envirservice.co.th

## CALIBRATION TEST REPORT FOR Partisol Air Sampler

Calibrated Date: 21 Feb 2025  
Calibrated Due on: 20 Feb 2026

Report No: PM-202504621

### Instruments Information

Description: Thermo Scientific Partisol 2025  
Sequential Air Sampler  
Model: 20251  
Sample flow control and reporting: 5 - 18 LPM  
Serial No.: 202512 0515 1310

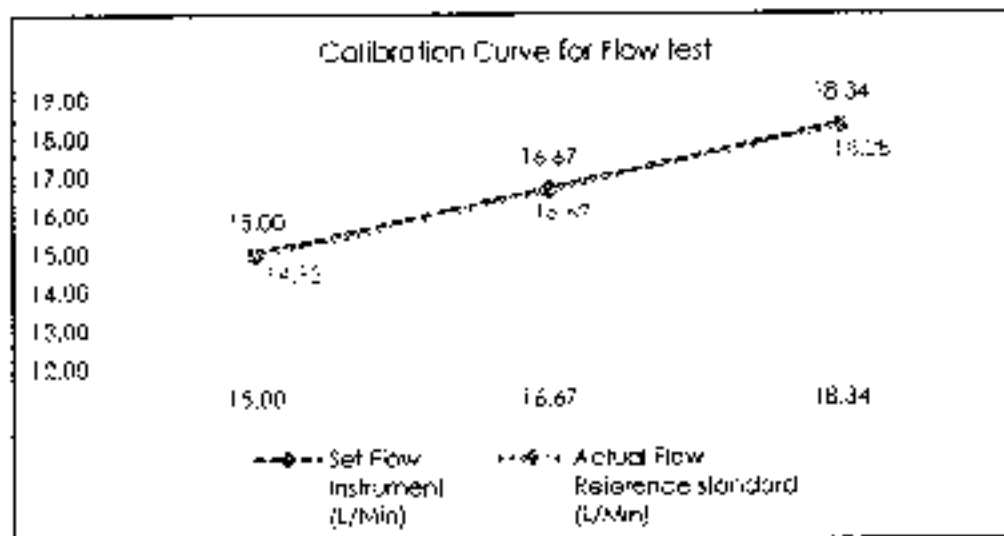
### Instrument used for calibration (STD)

Description: Flow Meter  
Bios DryCal DC-Lite  
Model: DCL-M REV. 1.08  
Range: 200 ml/min - 20 L/min  
Serial No.: 5016

Environment: Temperature 25.5 °C Humidity: 61 %RH

### Calibration Report

Filter	Set Flow Instrument (L/Min)	Current Flow Instrument reading (L/Min)	Actual Flow Reference standard (L/Min)	Error	DnR%
47 mm	15.00	15.00	14.92	-0.08	0.56
	16.67	16.67	16.62	-0.05	0.30
	18.34	18.34	18.28	-0.06	0.31



Calibrate by: นายพิษณุ จันทะวงษ์  
MR. KITSAK JANSANGWATANA

Approve by: MR. PASAGORN SAMOL



# **ENVIR SERVICE CO., LTD.**

42 Ramindra 14 Year 9, Tha Raeng, Bang Chen, Bangkok 10230  
Tel: 02-9435814-5 Fax: 02-9438201 [www.envirservice.co.th](http://www.envirservice.co.th)

## **CALIBRATION TEST REPORT FOR Partisol® Model 2000-H Air Sampler**

**Calibrated Date:** 02 Feb 2025  
**Calibrated Due on:** 01 Feb 2026

**Report No:** PM-202405003

### **Instrument Information**

**Description:** thermo Scientific Partisol FRM  
2000 Air Sampler for PM-2.5

**Model:** 2000

**Sample flow control and reporting:** 5 - 18 L/min

**Serial No.:** 200FB211491012

### **Instrument used for calibration [STD]**

**Description:** Flow Meter

BIGS DryCal DC-Lite

**Model:** DCL-M REV. 1.06

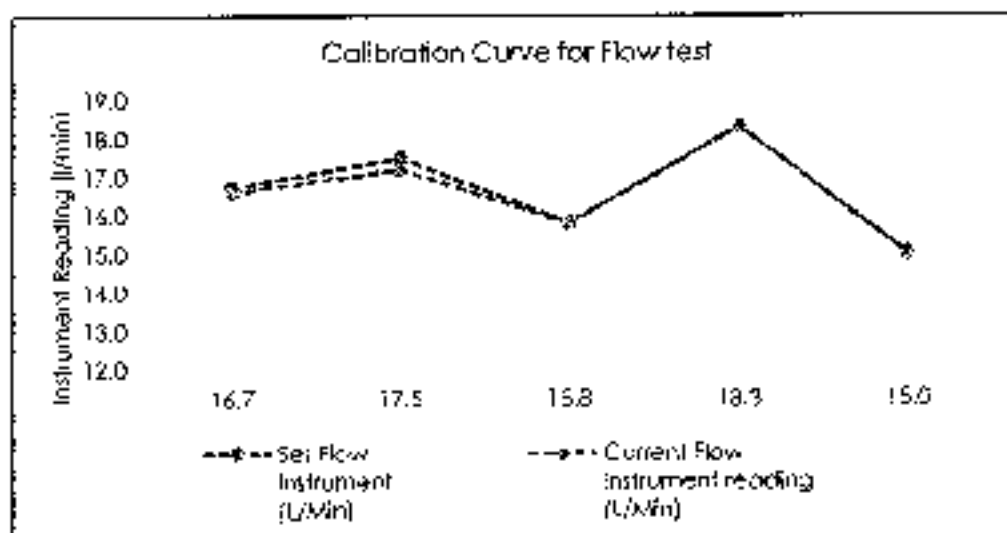
**Range:** 2X L/min/min - 20 L/min

**Serial No.:** 1519

**Environment:** Temperature 25.5 °C Humidity: 51 %RH

### **Calibration Report**

Filter	Set Flow Instrument (L/min)	Current Flow Instrument reading (L/min)	Actual Flow Reference standard (L/min)	Flow Offset	Flow Scan
47 mm.	16.7	16.6	16.7	0.0098	0.9987
	17.5	17.2	17.4	0.0098	0.9718
	15.8	15.8	15.7	0.0098	0.9634
	18.3	18.3	18.3	0.0098	0.9556
	15.0	15.0	15.1	0.0096	0.9635



**Calibrate by:**

MR. KITTISAK JANSANGWATANA

**Approve by:**

MR. PASAGORN SAMDI



### PM-2.5 Calibration Report

Equipment Name	PM 2.5	Ambient Temperature	31 °C
Manufacturer	: Partisol-Plus	Relative Humidity	: 58.0% RH
Model	2425	Barometric	758.7 mm Hg
Serial Number	2425A 204399806	Calibration Date	: 27-Mar-25
ID Number	: 01	Due Date of Calibrate	: 27-Mar-26

### Reference Standards

Equipment Name	Model	Serial No.	Certificate No.	Due Date
Multi-Tube Automatic Gas Calibrator	Delta Cal DCI	172508	FM-00266 Rev F	25-Sep-25

### System Flow Performance Test ( Unit : l/min )

STD Setting	UUC Reading	Error	1σ Uncertainty
15.00	15.08	0.00	0.08
16.70	16.70	0.00	0.01
18.40	18.48	0.00	0.08

### System Temperature Performance Test ( Unit : °C )

STD Setting	UUC Reading	Error	1σ Uncertainty
25	25.08	0.00	0.11
28	28.08	0.00	0.13
32	32.00	0.00	0.09

### Barometric Pressure Test ( Unit : mmHg )

STD Setting	UUC Reading	Error	1σ Uncertainty
758.1	758.90	0.00	0.35

Calibration by :

Calibration Officer

Approved by :

Authorized Signatory

Certificate of Analysis  
Special Gases Mixture

## Customer Details

Name	Address	Customer Tag No.
Thai Environmental Technic Limited	176/501 Pankhamaeng 45, Sapanwong, Khet Saphan Song, Bangkok 10240	

## Certificate Details

Number	2500723	Date of Issue	18-Sep-2023	Expiry date	18-Sep-2024
--------	---------	---------------	-------------	-------------	-------------

## Material Details

Production Code	96179345	Material Code	608400-SK-42	Cylinder No.	0636192
Gas content	5.335 M <sup>3</sup>	Filling pressure	145 bar	Valve	CGA 560.15
Cylinder Owner	UKOL	Cylinder Material	Spectrosval	Cylinder Size	40 L

## Laboratory Report

## Analytical Result

Component	Nominal Concentration	Analysis Result <sup>1</sup>	Uncertainty <sup>2</sup>	Method of Analysis <sup>3</sup>	Assay Date
Sulphur Dioxide in Nitrogen	80.0 ppm	41.0 ppm	± 10% relative	(G)1-P8-351	8-Sep-23 18-Sep-23

## Reference Standard used in Assay

Reference Standard	Cylinder Number	Concentration	Expiry date
Sulphur Dioxide in Nitrogen	60015062936	25.35 ± 0.25 ppm	4 Jun-2024

## Analytical Instruments used in Assay

Instrument / Make / Model	Analytical Principle	Last Multipoint Calibration
FID Spec (Himmel) / Nickel n50	170-902	6-Sep-2023

## Recommend usage condition

Minimum utilization	5% of actual content or before expiry date whichever comes first
Storage condition	Keep in well ventilation and secure area

## Comments

When recording, please quote the material number

## Note:

1. All results are given in the report as measured only. Based on the other use, limited. The loss of this standard has been measured in accordance with the last traceability from 4.574920, 0.127501 for the assay and from 100% and 100% as the other. Gas is in accordance with 1.
2. The reported expanded uncertainty does not show measurement uncertainty taken as a relative factor. This provides a general overview of the measurement. In this standard it is possible to use it through the reference gas standard and/or the standard. For more information, please contact our other responsible person for the region. Validity:
3. (1) Gas Chromatography (GC) using a non-fluorescent detector, (2) Gas Chromatography (GC) using a non-fluorescent detector, (3) Gas Chromatography (GC) using a non-fluorescent detector, (4) Gas Chromatography (GC) using a non-fluorescent detector.

Sukanya Panmyasaporn

Expiry for and on behalf of Linde (Thailand) Co., Ltd.

Page 1 of 1

This document shall be controlled when updated

18-Sep-2023

6:12:21 AM August 2023

บริษัท ลินด์ (ประเทศไทย) จำกัด (มหาชน)

Linde (Thailand) Public Company Limited

เลขที่ 15 ถนนพหลโยธิน 273 หมู่ 16 แขวงจตุจักร เขตจตุจักร กรุงเทพฯ

โทรศัพท์: 02-556-1515 โทรสาร: 02-556-1516 โทรสาร: 02-556-1517 โทรสาร: 02-556-1518

โทรสาร: 02-556-1519 โทรสาร: 02-556-1520 โทรสาร: 02-556-1521 โทรสาร: 02-556-1522

โทรสาร: 02-556-1523 โทรสาร: 02-556-1524

โทรสาร: 02-556-1525 โทรสาร: 02-556-1526

Linde (Thailand) Public Company Limited

เลขที่ 15 ถนนพหลโยธิน 273 หมู่ 16

แขวงจตุจักร เขตจตุจักร กรุงเทพฯ โทรสาร: 02-556-1515 โทรสาร: 02-556-1516 โทรสาร: 02-556-1517 โทรสาร: 02-556-1518

โทรสาร: 02-556-1519 โทรสาร: 02-556-1520 โทรสาร: 02-556-1521 โทรสาร: 02-556-1522

โทรสาร: 02-556-1523 โทรสาร: 02-556-1524 โทรสาร: 02-556-1525 โทรสาร: 02-556-1526

โทรสาร: 02-556-1527 โทรสาร: 02-556-1528 โทรสาร: 02-556-1529 โทรสาร: 02-556-1530

## Analyzer Calibration Report

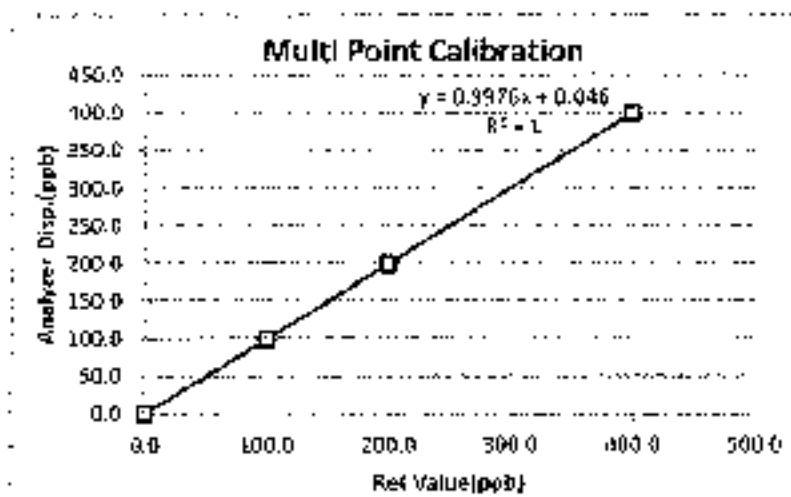
Calibrate Date	3-Oct-25	Temperature (°C)	25°C
Analyzer Type	SO <sub>2</sub>	Barometer (mmHg)	762.3
Brand	API	Humidity (50±15 %)	53.1 %RH
Model	100 E	Dilutor	API M700 S/N 525
Serial Number	139 (No. 1)	Zero Air	API M701 S/N 1324
Range	500 ppb	Standard gas	D636157

### Calibration of Span

Supply Gas	Ref Value(ppb)	Before of Span(ppb)	After of Span(ppb)	Abs%, diff of Span
Zero	0.0	3.8	0.0	0.0
Span	400.0	411.0	400.0	0.0

### Multi Point Calibration

Ref Value(ppb)	Analyzer Disp.(ppb)	Output Difference		
		Diff (ppb)	Percent Diff	Abs Percent Diff
0.0	0.6	0.6	0.00	0.15
100.0	99.3	-0.7	-0.01	0.70
200.0	199.2	-0.8	0.00	0.40
400.0	399.4	-0.6	0.00	0.15
Average Diff (%)				0.35



Calibrate by:

Approved by:

## Analyzer Calibration Report

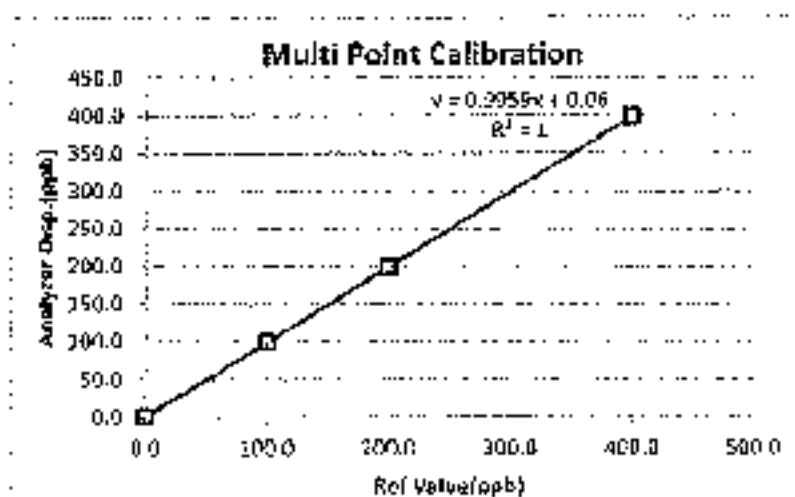
Calibrate Date	3-Oct-25	Temperature (°C)	25°C
Analyzer Type	SO <sub>2</sub>	Barometer (mmHg)	762.2
Brand	API	Humidity (50±15 %)	52.1 %RH
Model	150 A	Dilutor	API M700 S/D 525
Serial Number	856 (Mo. 51)	Zero Air	API M700 S/D 1526
Range	500 ppb	Standard gas	D836157

### Calibration of Span

Supply Gas	Ref Value(ppb)	Before of Span(ppb)	After of Span(ppb)	Abs% diff of Span
Zero	0.0	0.9	0.0	0.0
Span	400.0	382.0	400.0	0.0

### Multi Point Calibration

Ref Value(ppb)	Analyzer Disp.(ppb)	Output Difference		
		Diff (ppb)	Percent Diff	Abs Percent Diff
0.0	0.4	0.4	0.00	0.10
100.0	99.3	-0.7	-0.01	0.70
200.0	199.1	-0.9	0.00	0.45
400.0	398.6	-1.4	0.00	0.35
Average Diff (%)				0.40



Calibrate by: [Signature]

Approved by: [Signature]

แก้ไขครั้งที่ 01

วันที่อนุมัติ : 11/07/25

เลขที่แบบฟอร์ม QP-QP16-06

## Analyzer Calibration Report

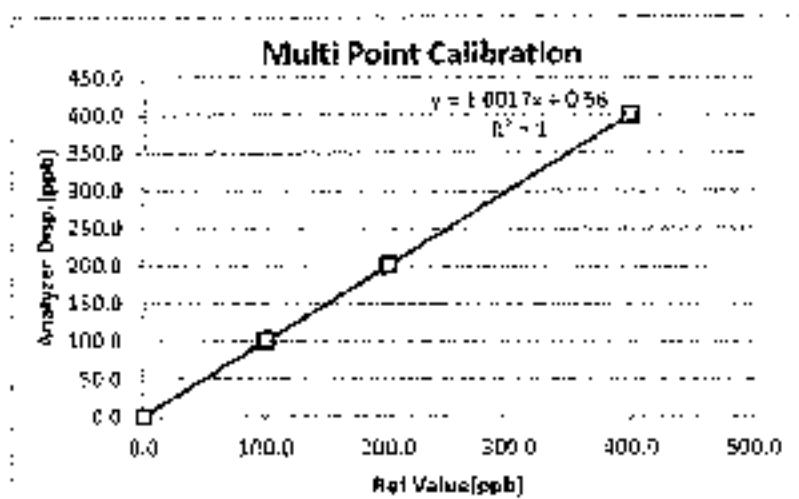
Calibrate Date	2-Oct-25	Temperature (°C)	25.9°C
Analyzer Type	SO <sub>2</sub>	Barometer (mmHg)	762.2
Brand	Teledyne	Humidity (50±15 %)	53.1 %RH
Model	100 B	Dilutor	API M700 S/N 825
Serial Number	116 (No. 21)	Zero Au	API M701 S/N 1926
Range	500 ppb	Standard gas	D636157

### Calibration of Span

Supply Gas	Ref Value(ppb)	Before of Span.(ppb)	After of Span.(ppb)	Abs% diff of Span
Zero	0.0	2.0	0.0	0.0
Span	400.0	390.0	400.0	0.0

### Multi Point Calibration

Ref Value(ppb)	Analyzer Disp.(ppb)	Output Difference		
		Diff (ppb)	Percent Diff	Abs Percent Diff
0.0	0.4	0.4	0.00	0.10
100.0	100.8	0.8	0.01	0.80
200.0	201.1	1.1	0.01	0.55
400.0	401.1	1.1	0.00	0.28
Average Diff (%)				0.43



Calibrate by: [Signature]

Approved by: [Signature]

## Analyzer Calibration Report

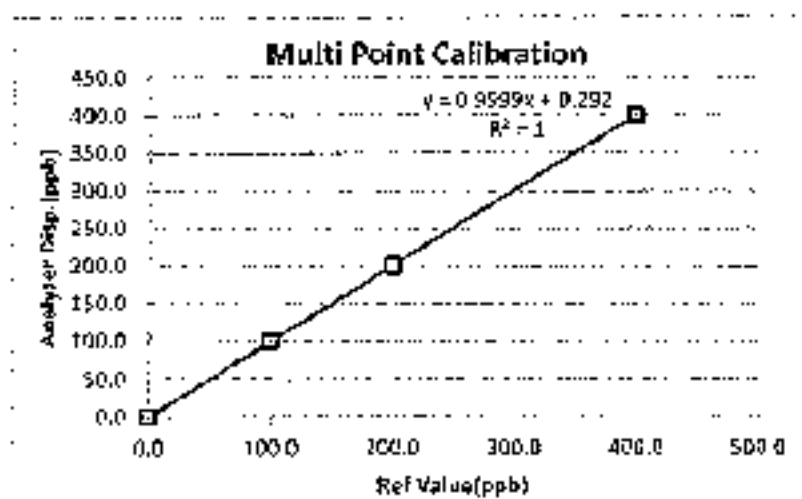
Calibrate Date	8-SEP-20	Temperature (°C)	25.9°C
Analyzer Type	SO <sub>2</sub>	Barometer (mmHg)	763.4
Brand	Teledyne	Humidity (50±15 %)	55.2 %RH
Model	100 B	Diffuser	API M700 S/N 525
Serial Number	364 (PI-24)	Zero Air	API M701 S/N 1926
Range	500 ppb	Standard gas	5836157

### Calibration of Span

Supply Gas	Ref Value(ppb)	Before of Span(ppb)	After of Span(ppb)	Abs% diff of Span
Zero	0.0	1.1	0.0	0.0
Span	400.0	398.3	400.0	0.0

### Multi Point Calibration

Ref Value(ppb)	Analyzer Disp.(ppb)	Output Difference		
		Diff (ppb)	Percent Diff	Abs Percent Diff
0.0	0.1	0.1	0.00	0.03
100.0	100.3	0.3	0.00	0.30
200.0	200.6	0.6	0.00	0.30
400.0	400.1	0.1	0.00	0.03
Average Diff (%)				0.16



Calibrate By: [Signature]

Approved by: [Signature]

แก้ไขครั้งที่ 01

ทำเรื่องขึ้นที่ 11/07/25

เลขที่เอกสารอื่น QP-QM16-06





# THAI METEOROLOGICAL DEPARTMENT

4353 Sukhumvit, Bangna, Bangkok 10260 Tel. 081-454-2894, 0-2399-0469

## Calibration Certificate

Issued by : Calibration & Test Section , Meteorological Instruments Bureau

Date of Issue : 8 January, 2025

Certification No. 004/25

Page : 1 of 2

Object : Wind speed and wind direction

Manufacturer : Davis Instruments Inc.

Type : Weather Wizard III

Serial No. : WC511206A21 ID No. : No.22

Customer : Thai Environmental Technic Limited.  
1/3 Soi Ramkhamhaeng 14b,  
Khwaeng/Khet Saphan Sung, Bangkok 10240.

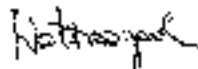
Calibration Condition : Temperature 25.1 °C Barometric Pressure 1012.9 hPa

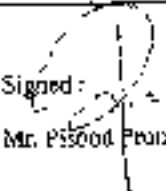
### NATIONAL STANDARD WIND TUNNEL :

• Micromanometer Theodor Friedrichs FD014 Serial No. 9310119  
• FIDUC GAGE NO 1425 Pilot Tube Theodor Friedrichs Type 080) 0050 serial 9023  
N.I.S.T. Test Reference Number 731/241460 Standard Velocity at 20 - 30 m/sec  
• Ultrasonic Anemometer Model DA-650-3TV (sensor TR-90AH)  
Serial Number 110730029 (sensor 120629506)

### JAPAN QUALITY ASSURANCE ORGANIZATION

Standard Velocity at 20 - 25 m/sec

Calibrated by :   
Mr. Wittharanon Sabwat  
Mechanical Engineer

Signed :   
Mr. Pisoot Promsai

(Authorized Signatory)

For the Chief

Sub-Standard Instrument



# THAI METEOROLOGICAL DEPARTMENT

4353 Sukhumvit, Bangna, Bangkok 10260 Tel 661-454-1804, 0-2399-0469

## The Result of Calibration

Certification No. 004/25

8 January, 2025

Page : 2 of 2

Standard	HOOK GAGE NO. 1425			TESTED ANEMOMETER	
	Pressure	Vacuum	Velocity	Velocity	Correction
mmHg	mmHg	mmHg	m/sec	m/sec	m/sec
1.00	-	-	-	0.9	0.10
3.02	-	-	-	2.7	0.32
5.00	-	-	-	4.9	0.10
7.00	-	-	-	6.7	0.30
9.02	-	-	-	8.9	0.12
11.01	-	-	-	10.7	0.31
13.01	-	-	-	13.0	0.01
15.01	-	-	-	14.9	0.11
17.02	-	-	-	17.0	0.02
20.02	-	-	-	19.9	0.12

Wind Aloft Plotting Board.	
U.S. DEPARTMENT OF COMMERCE WEATHER BUREAU	
WIND DIRECTION	TESTED WIND DIRECTION
0	0
90	90
180	180
270	270

Calibrated by :

*Watchapol Subwai*

Mr. Watchapol Subwai  
Mechanical Engineer

Calibration & Test Section

Meteorological Instruments Bureau



THAI ENVIRONMENTAL TECHNOLOGY LIMITED  
บริษัท เทคโนโลยีสิ่งแวดล้อมไทย จำกัด

## CONTROL UNIT CALIBRATION

( Metric units : mm Hg )

Date: **6-Feb-25**

Barometric press. Ph

Initial	Final	Average
758.3	758.1	758.2

mmHg

### Dry Gas Meter Data

Console No. **M50-07**

Metering System ID

DGM Number **0317**

DGM Model **SK22EN**

### Reference Dry Gas Meter Data

Serial No. **913428**

Model **S-110**

Correction factor (VF) **0.9903**

Last Calibration Date **08-Feb-24**

Orifice nominal size setting $\Delta H$ mm H <sub>2</sub> O	Ref. - DMM Volume V <sub>1</sub> , Liters	DGM Volume V <sub>2</sub> , Liters	Temperature (°C)				Time min	DGM Correction factor (VF)	$\Delta H_{ref}$ mm H <sub>2</sub> O
			Inlet DGM T <sub>1</sub>	Dry Gas Meter					
				Inlet T <sub>1</sub>	Outlet T <sub>2</sub>	Avg T <sub>m</sub>			
15.00	100.00	100.00	27.00	27.00	28.00	27.50	8.19	0.9903	46.3207
25.00	100.00	100.00	27.00	27.00	28.00	27.50	6.33	0.9903	46.0622
50.00	100.00	100.00	27.00	27.00	28.00	27.50	4.47	0.9903	46.0502
50.00	100.00	100.00	27.00	27.00	28.00	27.50	3.53	0.9903	46.0834
100.00	100.00	100.00	27.00	27.00	28.00	27.50	3.17	1.0000	46.5432

Average **0.9903** **46.1919**

Fixed Date of Calibrate **7-Feb-26**

Calibrated by: *[Signature]*

Approved: *[Signature]*

Note: For Calibration Factor (VF) correction for loading effect, add the correction factor (VF) to the average correction factor (VF) of 0.9903.

Note: For  $\Delta H_{ref}$  correction, use the correction factor (VF) of 0.9903 for the correction factor (VF) of 0.9903 and the correction factor (VF) of 0.9903 for the correction factor (VF) of 0.9903.



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES  
3344 PATTANAKARN ROAD SOI 18 SUANLUANG, SUANLUANG, BANGKOK 10250  
TEL. 0-2512-3000-24 FAX. 0-2310-4584



## Certificate of Calibration

Certificate No. : 25P1030

Page 1 of 2

Equipment : Humidity/Barometer/Temp.

Manufacturer : Lutron

Model : PHB-368

Serial No. : B011412

ID No. : NG.5

Condition As-Received: Used Item

Received Date: 20 March 2025

Calibration Date: 21 March 2025

Reference: 2503-0666DSC

Submitted by: Thai Environmental Techno Limited

Ambient Temperature: ( 23 ± 2 ) °C

Relative Humidity: ( 50 ± 15 ) %

Atmospheric Pressure: 1012 mbar

This certificate may not be reproduced other than in full,  
except with the prior written approval of the head of  
Corporate Services 3: Equipment Calibration and Testing Services.

116 Soi Ramkhamhaeng 145, Khwaeng Khwaeng Saphan Sung  
Bangkok 10240

**Procedure used:** The calibration was conducted by direct comparison method against Pressure Measuring Instruments Standard according to calibration procedure GP-P10, using "OKD-R 6-1 : Calibration of Pressure Gauges" as a guidelines.

### Condition of this result of calibration

#### 1. Reference standards instruments :

Instrument	Model	Serial No.	Certificate No.	Due Date
1) Standard Barometer	DP1142	1422505046	MP-0133-24	15 May 2025

2, This result of calibration was made on requested at the point specified by customer.

3, Scale and conversion factor is 1 kPa = 7.50062 mmHg

4, This result of calibration instrument was in absolute pressure.

5, This instrument was used clean air as pressure media.

6, This instrument was installed in vertical orientation and center of the device was used as the reference level

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

8, This Certification is traceable to the International System of Unit maintained through:-

-National Institute of Metrology Thailand (NIMT)

Calibrated by : Kaekepon Saichai

Issue Date : 24 March 2025

Approved Signatory :

Atlapol P.

| | Phatnua Prathapipal

| | Sura Suwannee

| | Atlapol Panurach



Cert No.: 25P1260

Page: 2 of 2

Result of calibration:- Without adjustment

Range: 730 mmHg to 770 mmHg

Function:- Absolute Pressure Measurement

Resolution:- 0.1 mmHg

Increasing Pressure

Applied Pressure (mmHg)	729.73	739.73	749.73	759.73	769.73
UUC* Indication (mmHg)	730.4	740.4	750.4	760.4	770.4
Error (mmHg)	0.67	0.67	0.67	0.67	0.67

Decreasing Pressure

Applied Pressure (mmHg)	769.73	759.73	749.73	739.73	729.73
UUC* Indication (mmHg)	770.4	760.4	750.4	740.4	730.4
Error (mmHg)	0.67	0.67	0.67	0.67	0.67

The uncertainty of measurement was  $\pm 0.12$  mmHg

\* UUC = Unit Under Calibration

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

-000-



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES  
534 TOTTANAKARN ROAD SOI 33 SUKHUMVIT ROAD SUKHUMVIT 33 BANGKOK 10250  
TEL. 02-513-0826 FAX. 02-513-9484



## Certificate of Calibration

Certificate No. : 25T1884

Page : 1 of 2

Equipment : Digital Thermometer With Sensor  
Manufacturer: Digicon  
Model : DP-52  
Serial No.: 1210084  
ID No.: NO.5

Condition As-Received: Used Item

Received Date: 07 November 2025

Calibration Date: 18 November 2025  
to 24 November 2025

Reference: 2511-0240DSC

Submitted by: Thai Environmental Technic Limited

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

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

This certificate may not be reproduced other than in full,  
except with the prior written approval of the head of  
Corporate Services 3: Equipment Calibration and Testing Services.

1/8 Soi Ramkhamhaeng 146, Khwaeng-Khet Saphan Sung,  
Bangkok 10240

Procedure used: Calibration were conducted using in-house calibration procedure CP-T01 according to comparison with Industrial Platinum Resistance Thermometer (IPRT) into liquid bath temperature controller and comparison with Standard Thermocouple (Type R/S) into high temperature furnace.  
The temperature scale used was based on ITS-90.

### Condition of this result of calibration

1. Reference standards instruments :

Instrument	Model	Serial No.	Certificate No.	Due Date
1) Block Stack Thermometer	1980	8C454	251625	08 Jun 2026
2) PRT Scanner Module	2582	A01308	251625	08 Jun 2026
3) Industrial PRT Probe	5627A	979442	251625	08 Jun 2026
4) Digital Thermometer	1528	A4B760	2511048	29 Sep 2026
5) Industrial Platinum Resistance Thermometer	5827	824362	2511048	29 Sep 2026
6) Standard Thermocouple Probe (Type S)	5650-20	5068	TY-0007-25	10 Apr 2025
7) Digital Multimeter	2700	4016315	25EH27	16 Oct 2026

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

3. This measurement result is traceable to the International System of Unit maintained through -

- Technology Promotion Association (Thailand-Japan), NSG-ONSC Accredited No. Calibration 0008
- National Institute of Metrology Thailand (NIMT)

Calibrated by: Suttanon Poontai  
Issue Date: 18 November 2025

Approved Signatory :

- ☐ Phatinee Phabpaol  
☒ Chalchawan Khunpuek  
☐ Wanlop Larpkem



Cal. No.: 25T1884

Page: 2 of 2

Result of Calibration:

Without Adjustment

Function:

Temperature measurement for Channel T1

This equipment was connected with Thermocouple Type K ID No. No.5

Dimension of probe - Diameter 8 mm, Length 1030 mm Sheath material : Stainless Steel

Immersion	Standard	UUC*	Uncertainty	
<u>Depth</u>	<u>Temperature</u>	<u>Reading</u>	<u>Error</u>	<u>of Measurement</u>
(mm)	(°C)	(°C)	(°C)	(±°C)
180	200.0042	200.5	0.4958	0.73
180	400.0025	399.8	-0.1025	1.4
180	600.03	601.6	1.57	2.7

UUC\* : Unit Under Calibration

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

-006-



Thai Environmental Technic Limited  
บริษัท เทคโนโลยีสิ่งแวดล้อมไทย จำกัด

### Portable Gas Calibration Report

Manufacturer: E-instruments  
 Instrument Model: 4400S  
 Instrument serial no.: 4101  
 Instrument ID: 5

Date of Calibration: 2-3-2565  
 Ambient Condition  
 Temperature (23±5 °C): 25.0 °C  
 Humidity (55±15 % RH): 52.0 % RH  
 Barometer (mmHg): 758.2 mmHg

### Standard gas References

Standard gas	Cylinder No.	Traceability	Due date
Oxygen (O <sub>2</sub> )	X22186	Linde	August 8, 2032
Nitric Oxide(NO)	D824463	Linde	June 5, 2026
	D824524	Linde	August 22, 2025
Sulfer Dioxide (SO <sub>2</sub> )	D621725	Linde	October 4, 2032
	D025763	Linde	October 4, 2032
Carbon Monoxide(CO)	D621725	Linde	October 4, 2032
	D025763	Linde	October 4, 2032

### Calibration Results

Parameter	Standard gas	Reading	Actual Error	Test Limit	Results
O <sub>2</sub> (%vol)	0.0	0.0	0.0	±0.2 % vol	PASS
	12.5	12.5	0.0		
NO (ppm)	0.0	0.0	0.0	±5.0 ppm 0...100 ppm ±5% measured Value 101...5000 ppm	PASS
	196.0	196.3	-1.7		
	392.0	390.5	-1.5		
SO <sub>2</sub> (ppm)	0.0	0.0	0.0		PASS
	404.0	402.9	-1.1		
	792.0	793.4	1.4		
CO (ppm)	0.0	0.0	0.0		PASS
	406.0	404.6	-1.4		
	788.0	786.4	-1.6		

Calibrate by:  Approved by: 



## Personal Pump Calibration Report

Equipment Type : Personal Pump/Parameter

Equipment Range : 0.1-7.3 1/min.

Calibration Range : 0.2-4.0 l/min.

Calibration Type : Drycal

Calibration S/N : 66.71

[illegible]

Calibration Date 18 / 12 / 68

Calibration By: phumvith

Remark : **Uncertainty Type A** =  $\sigma$  = SD

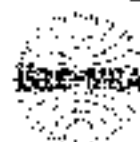
7

: SD                      = Standard deviation

:  $\bar{X}$  = Mean



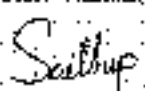
TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
CORPORATE SERVICES & EQUIPMENT CALIBRATION AND TESTING SERVICES  
3314 PATTANAKARNI ROAD SOI 16, SUANLUANG, SUANLUANG BANGKOK 10250  
TEL.0-2717-3008-29 FAX.0-2715-9484



## Certificate of Calibration

Cert.No.: 25CHO572

Page: 1 of 2

Equipment :	pH Meter
Manufacturer :	Horiba
Model :	F-71G
Serial No. :	V3B1F8H3
ID No. :	Ins-LAB-025
Condition As-Received:	Used Item
Received Date :	28 October 2025
Calibration Date :	28 October 2025
Reference :	2510-0662OC-1
Submitted by :	Thai Environmental Technic Limited 116 Soi Ramkhamhaeng 145, Khwaeng/Khet Saphan Sung, Bangkok 10240
Calibration Place :	Laboratory (Thai Environmental Technic Limited)
Ambient Temperature :	( 27.1 to 28.2 ) °C (On-Site)
Relative Humidity :	( 56 to 59 ) % (On-Site)
Calibration Procedure :	In - house method - CP-OCH2 by direct measurement with DC voltage standard and direct measurement with certified reference material (CRM)
Calibrated by :	Utthan Kankawil
Approved by :	 Approved Signatory
( ) Chakrit Wasuwanjua	
( ) Ponpan Paipin	
(✓) Saithip Meangmal	
Issue Date :	30 October 2025

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written  
Approval of the head of Corporate Services & Equipment Calibration and Testing Services.



Cert.No.: 25CH0572

Page.: 2 of 2

**Condition of this calibration result****1. Reference Standard Instrument**

<u>Instrument</u>	<u>Serial No.</u>	<u>ID No.</u>	<u>Cert. No.</u>	<u>Due Date</u>
1) Document Process Calibrator	58440003	130RC120	24E3731	14 Nov 2025
2) Digital Thermometer	-	130RC017	25T625	23 Apr 2026

- This measurement result is traceable to SI through Technology Promotion Association (Thailand - Japan)

**2. Certified Reference Materials**

- The measurement results are traceable to SI through CPA chem Ltd.,

ANSI-ASQ National Accreditation Board, Accredited No. AP-1835

<u>Buffer Solution</u>	<u>Manufacturer</u>	<u>Lot No.</u>	<u>Exp. date</u>
pH 4.007	CPA chem	1114384	12 Jun 2027
pH 6.876	CPA chem	1005301	15 Jun 2026
pH 9.180	CPA chem	1135356	16 Aug 2026

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

**Calibration Results**

**Function : mV Measurement**

**Performing standard curve by Document Process Calibrator at pH (4,7,10)**

Unit Under Calibration	Nominal Value	Standard Voltage Input	Actual Reading		Uncertainty of Measurement (±mV)	Coverage factor k
	pH	mV	mV	pH		
pH Meter S/N.: V3B1F8HS	4.000	177.48	177.5	4.000	0.058	2.00
	6.860	8.28	8.3	6.860	0.058	2.00
	7.000	0.00	0.0	7.000	0.058	2.00
	9.180	-128.97	-128.9	9.180	0.058	2.00
	10.000	-177.48	-177.4	10.000	0.058	2.00

**Function : pH Measurement**

**Performing three buffers standard curve by using buffer nominal pH (4,7,9)**

Unit Under Calibration	Standard pH Buffer Solution	Actual pH Reading	Actual mV Reading (mV)	Uncertainty of pH Measurement (±)	Coverage factor k
pH Electrode S/N.: 9X2E0223	4.007	4.007	188.7	0.0048	2.00
	6.876	6.875	1.2	0.0086	2.00
	9.180	9.176	-194.4	0.014	2.00

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

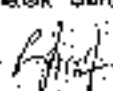


TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
CORPORATE SERVICES 2: EQUIPMENT CALIBRATION AND TESTING SERVICES  
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250  
TEL.0-2717-3000-29 FAX 0-2719-9484

## Certificate of Calibration

Cert.No.: 25CH1096

Page.: 1 of 2

Equipment : Turbidity Meter  
Manufacturer : Thermo Scientific  
Model : EUTECH TN-100  
Serial No. : 2655003  
ID. No. :  
Condition As-Received: Used Item  
Received Date : 05 September 2025  
Calibration Date : 18 September 2025  
Reference : 2509-0224DSC-13  
Submitted by : Thai Environmental Technic Limited  
1/8 Soi Ramkhamhaeng-145,  
Khwaeng/Khet Saphan Sung, Bangkok 10240  
Ambient Temperature :  $(23 \pm 3.0) ^\circ\text{C}$   
Relative Humidity :  $(50 \pm 20) \%$   
Calibration Procedure : in-house method CP-CH11  
Direct measurement by  
using Formazin standard solution  
Calibrated by : Welatek Srinhean  
Approved by :   
Approved Signatory  
(☒) Chakrit Waewwanjua  
(☐) Ponpan Paipin  
(☐) Sathip Meangmai  
Issue Date : 18 September 2025

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written  
Approval of the head of Calibration and Testing Equipment Services.



Cert.No. : 25CH1095

Page. : 2 of 2

**Condition of this calibration result**

**1. Reference Standard Instruments :**

<u>Instruments</u>	<u>ID No.</u>	<u>Certificate No.</u>	<u>Due date</u>
1) Data Logger	130EC012	24H2043	23 Sep 2025
2) Liquid-in Glass Thermometer	130RC003	251440	16 Apr 2026

- This measurement result is traceable to SI through Technology Promotion Association (Thailand - Japan)

**2. Certified Reference Materials : Turbidity Standard solution (Formazin)**

- The measurement results are traceable to SI through CPA chem Ltd.,

<u>Turbidity Solution</u>	<u>Manufacturer</u>	<u>Lot No.</u>	<u>Exp. date</u>
20.0 NTU	CPA Chem	1098006	18 Mar 2026
100.0 NTU	CPA Chem	1098007	18 Mar 2026
800 NTU	CPA Chem	1098017	18 Mar 2026

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

**Calibration result**

Performing three - Formazin suspension standard curve by using 20, 100, 800 NTU  
Turbidity Meter serial number 2655063

<u>Standard Formazine suspension (NTU)</u>	<u>UUC* Reading (NTU)</u>	<u>Uncertainty of Measurement (<math>\pm</math>NTU)</u>	<u>Coverage Factor k</u>
0.1	0.23	0.027	2.00
20.0	20.1	0.21	2.00
100.0	101	1.3	2.05
800	800	4.3	2.00

**Remark**

- UUC\* = Unit Under Calibration
- NTU = Nephelometric Turbidity Units
- 0.1 NTU has been prepared dilution from 20.0 NTU

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



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES  
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250  
TEL.0-2717-3000-29 FAX.0-2719-9484



## Certificate of Calibration

Cert. No.: 25TM172

Page : 1 of 3

Equipment : BOD Incubator

Manufacturer : Accuplus

Model : J250

Serial No. : 0408-0115-0008

ID No. : -

Submitted by : Thai Environmental Technic Limited  
1/6 Soi Ramkhamhaeng 145,  
Khuwaeng/Khet Saphan Sung,  
Bangkok 10240

Location : Laboratory (Thai Environmental Technic Limited)

Received Order : 12 March 2025

Calibration Date : 12 March 2025

Ambient Temperature : ( 26 ± 10 ) °C

Relative Humidity : ( 50 ± 30 ) %

AC Line Voltage : ( 220 ± 22 ) V

Calibrated by : Uthen Kankawi

Approved by :

Approved Signatory

- ( ) Chakrit Weewwanjua  
(✓) Suwit Injai  
( ) Kunchit Promprat

Issue Date : 24 March 2025

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written  
Approval of the head of Corporate Services 3 : Equipment Calibration and Testing Services.



Equipment : BOD Incubator  
 Condition As-Received : Used Item  
 Reference : 2503-022700-11

Cert. No.: 25TM172

Page : 2 of 3

**Procedure Used :-**

Calibration were conducted using calibration procedure CP-OT02 based on TLAS G-20 according to direct measurement method with Data Acquisition which connected with Resistance Temperature Detector ( RTD ).

The temperature scale used was based on ITS-90.

**Condition of this result of calibration**

**1. Reference standard Instrument:-**

Instrument	Serial No.	Cert. No.	Traceable	Due Date
1 ) Data Acquisition	MF59003411	24LM192	TPA	24 Dec 2025

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

3. This certification is traceable to the International System of Unit.

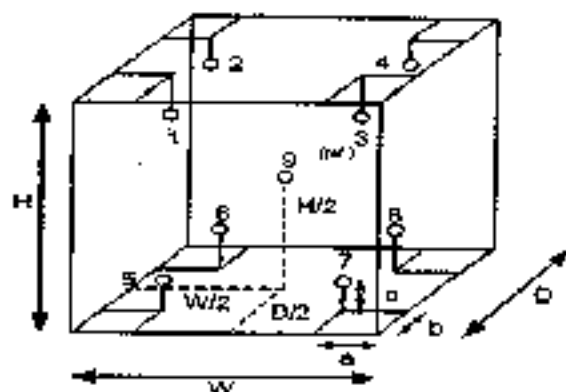
Remark : TPA : Technology Promotion Association ( Thailand - Japan )

**Result of Calibration :-** ( \* ) Without Adjustment

Function of UUC\* : Temperature Source

Fresh air setting : Close

Environment during calibration		
	Beginning	Finished
Temp. ( °C )	26	25
REL.Humid. ( % )	59	62
AC Supply ( Volt )	225	224



Position :	Ref. Std. ID No.:
1	25-20RTD-2/1
2	25-20RTD-2/2
3	26-20RTD-2/3
4	20RTD-2/4
5	20RTD-2/5
6	20RTD-2/6
7	20RTD-2/7
8	20RTD-2/8
9 (ref.)	20RTD-2/9

**Probe Installation Details :**

a = 10 cm  
 b = 10 cm  
 c = 10 cm

**Dimension of Chamber :**

D = 0.48 m  
 W = 0.50 m  
 H = 1.1 m  
 Capacity = 0.26 m<sup>3</sup>



**Equipment :** BOD Incubator  
**Condition As-Received :** Used Item  
**Reference :** 2503-022700-11  
**Result of Calibration :-** ( ' ) Without Adjustment  
**Function of UUC\* :** Temperature Source  
**Fresh air setting :** Close

**Cert. No.:** 25TM172  
**Page :** 3 of 3

Calibration Point ( °C )	UUC* Setting ( °C )	UUC* Reading ( °C )	Temperature stability ( ± °C )	Temperature uniformity ( °C )	Overall Variation ( °C )	Coverage Factor <i>k</i>
20.0	20.0	20.0	0.37	0.21	0.92	2

Calibration Point ( °C )	Measured Temperature ( °C )									Uncertainty  ( ± °C )
	Position									
	1	2	3	4	5	6	7	8	9 (ref.)	
20.0	20.231	20.227	20.146	20.243	20.131	20.095	19.970	20.050	20.081	0.53

**Average<sup>a</sup> :** The average of 30 values in each position.

**Temperature stability :** One-half of the greatest maximum difference of measured temperature at any one sensor.

**Temperature 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 or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.

**Overall Variation :** The Difference of the maximum and minimum measured temperatures throughout observation.

**UUC\* :** Unit Under Calibration

**Note :** The reported uncertainty of measurement was included stability and excluded uniformity .

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





TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES  
634/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250  
TEL 0-2717-8000-25 FAX 0-2719-9484



2/14/25

## Certificate of Calibration

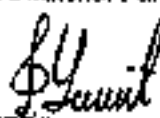
Cert.No.: 25NM27

Page.: 1 of 3

Equipment : Electronic Balance  
Manufacturer : Mettler Toledo  
Model : XP205DR  
Serial No. : 1129273885  
ID No. :  
Submitted by : Thai Environmental Technic Limited  
1/6 Soi Ramkhamhaeng 145,  
Khwaeng/Khet Saphan Sung,  
Bangkok 10240  
Location : Balance Room  
Received order : 12 March 2025  
Calibration Date : 13 March 2025  
Ambient Temperature : 15 °C to 40 °C  
Relative Humidity : 30 % to 80 %

Calibrated by : Tawatchai Pama

Approved by :

  
Approved Signatory

- ☐ Chakrit Waeerwanjue  
☒ Suwit Imjai  
☐ Kunchit Promprat

Issue Date : 24 March 2025

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written  
Approval of the Head of Corporate Services 3: Equipment Calibration and Testing Services.



Equipment : Electronic Balance  
 Condition As-Received : Used Item  
 Reference : 2503-02270C-15

Cert.No.: 25MM27  
 Page: 2 of 3

Procedure used :-

Calibration were conducted using in-house calibration procedure OP-OB01 based on UKAS LAB 14 according to direct measurement method against standard weight.

**Condition of this result of calibration**

1. Reference standard instruments:-

Instruments	Serial No.	Cert. No.	Traceable	Due date
1) Standard Weight Set (E2)	GD902134	MM-0086-24	NIMT	25 Apr 2026
2) Standard Weight Set (E2)	-	MM-0087-24	NIMT	23 Apr 2026

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

3. This result of calibration was made on requested at the point specified by customer.

4. This certificate is not certified for any commercial transaction.

5. This certification is traceable to the International System of Unit.

Remark : NIMT : National Institute of Metrology Thailand

**Result of calibration** ( ) Without Adjustment ( \* ) After Adjustment by Internal Calibration

Range capacity :	0 g to 81 g	Resolution	0.00001 g
	81 g to 220 g	Resolution	0.0001 g

Before Adjustment :

Applied Weight (g)	Balance Reading (g)	Correction (g)	Measurement Uncertainty (± mg)	Coverage Factor (k)
80	79.99997	+0.00003	0.15	2
200	199.9998	+0.0002	0.30	2

After Adjustment :

1. Determination of the standard deviation of weighing machine		(n = 10)
Applied Weight (g)	Standard Deviation of Reading (g)	
80	0.000007	
200	0.00005	



Equipment : Electronic Balance  
 Condition As-Received : Used Item  
 Reference : 2503-0227OC-15

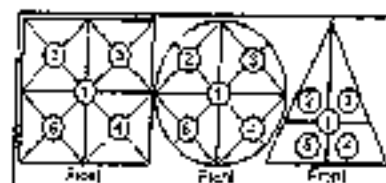
Cert.No.: 25MM27

Page: 3 of 3

### Result of calibration

#### 2. Effect of off center loading

A mass of 100 g was placed to various position on the pan.  
 The weighing machine reading error obtained is given in the table



Maximum difference between  
 off-center and central loading  
 (g)  
 0.00010

Position 1	Position 2	Position 3	Position 4	Position 5
(g)	(g)	(g)	(g)	(g)
0.00000	0.00000	-0.00010	-0.00010	+0.00010

#### 3. Departure from nominal value

Applied Weight	Balance Reading	Correction	Measurement Uncertainty	Coverage Factor
(g)	(g)	(g)	( $\pm$ mg)	(k)
Unload	0.00000	0.00000	0.015	2.13
0.01	0.00999	+0.00001	0.015	2.11
0.05	0.04999	+0.00001	0.015	2.11
1	1.00000	0.00000	0.018	2.04
2	2.00000	0.00000	0.019	2.03
5	4.99999	+0.00001	0.026	2
10	10.00000	0.00000	0.033	2
20	20.00000	0.00000	0.045	2
50	49.99999	+0.00001	0.080	2
80	79.99999	+0.00002	0.15	2
200	199.9999	+0.0001	0.30	2

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



# MAINTENANCE REPORT

## ATOMIC ABSORPTION SPECTROPHOTOMETER MODEL

### AAAnalyst 100

<b>Customer :</b> บริษัท เทคโนโลยีสิ่งแวดล้อมไทย <b>Address :</b> จำกัด 1/5 ซอยราชดำเนิน 145, แขวงสีลม เขตพระนคร, กรุงเทพฯ 10240 TH <b>User Name:</b> คุณ ศิรดิษฐ์ ธีธงงาม <b>Phone:</b> 02-3737799 <b>E-mail:</b> Kategrin.Citayaphin@eurofinetech.com	<b>Date Tested:</b> 19-11-68 <b>Recommendation Recertification</b> <b>Period</b> 6 Months <b>Recertification Due:</b> 19-11-69 <b>Date Last Certified:</b> 25-11-68 <b>Visit Number:</b> 2 of 2 <b>TH ONE SOURCE Phone:</b> 081-7316733, 082-1086572 <b>E-mail:</b> thonesource@gmail.com
--	--

#### CONFIGURATION TESTED

MODEL	SERIAL NUMBER	SOFTWARE
AAAnalyst 100	040S0110503	AA WinLab 3.2

#### TEST STANDARD USED

TEST STANDARD USED	PART NUMBER
Copper	N9300133
Filter 0.2 %	MG0-057



# MAINTENANCE REPORT

## ATOMIC ABSORPTION SPECTROPHOTOMETER MODEL

### AAAnalyst 100

SERIAL NUMBER 040S0110503

DATE TESTED

19-n.u.-68**1. OPTIC CHECKS**

A. Optical alignment condition (if necessary)

☒ OK

B. Condition of Mirrors, Lenses etc. (if necessary)

☒ OK**2. GAS SYSTEM CHECKS**

A. Leak test all internal and external gas box joints

☒ OK

B. All gas box safety features

☒ OK

C. Burner system including nebulizer and all o-ring and gasket

☒ OK

D. Drain system ( safety )

☒ F**3. ELECTRONICS CHECKS**

A. Power Supplies

+ 5.00 Vdc  $\pm$  0.2 Vdc+ 5.02 Vdc+ 11.50 Vdc  $\pm$  0.2 Vdc+ 11.46 Vdc+ 15.00 Vdc  $\pm$  1.0 Vdc+14.98 Vdc- 15.00 Vdc  $\pm$  1.0 Vdc-15.06 Vdc+ 35.00 Vdc  $\pm$  3.0 Vdc+35.14 Vdc**4. WAVELENGTH ACCURACY TEST**A. Zn Lamp wavelength 213.9 nm  $\pm$  0.3 nm.213.87 nm.B. Fe Lamp wavelength 248.8 nm  $\pm$  0.3 nm.248.24 nm.C. Cu Lamp wavelength 324.8 nm  $\pm$  0.3 nm.324.83 nm.



# MAINTENANCE REPORT

## ATOMIC ABSORPTION SPECTROPHOTOMETER MODEL

AAAnalyst 100

SERIAL NUMBER <u>040S0110503</u>	DATE TESTED <u>19-11-68</u>
5. PERFORMANCE TESTS	SPEC.                      RESULTS
*A. Neutral density filter checks with Copper (324.8 nm) Neutral Density Filter 0.2 Abs.	<div style="display: flex; justify-content: space-between;"> <span>0.180 ± 10%</span> <span><u>0.170</u>      Abs.</span> </div>
B. AA Baseline noise test with Copper (324.8 nm) Integration time            = 0.5 seconds Replicates                    = 99 times Standard Deviation	<div style="display: flex; justify-content: space-between;"> <span>≤ 0.001</span> <span><u>0.000</u></span> </div>
C. Flame sensitivity with Copper (324.8nm) (5 mg/L Cu Standard a read time of 10 seconds 10 replicates, standard burner)	<div style="display: flex; justify-content: space-between;"> <span>≥ 0.25</span> <span><u>0.294</u>      Abs.</span> </div>
%RSD	<div style="display: flex; justify-content: space-between;"> <span></span> <span><u>0.60</u>      %</span> </div>
Measured Characteristic Concentration :	<div style="display: flex; justify-content: space-between;"> <span></span> <span><u>0.075</u>      mg/L</span> </div>

Page 3 of 4



**MAINTENANCE REPORT**  
**ATOMIC ABSORPTION SPECTROPHOTOMETER MODEL**  
**AAAnalyst 100**

**SERIAL NUMBER** 04090110803

**DATE TESTED** 19-Nov-88

**Remarks :**

---

---

---

---

---

---

---

---

This is to certify that the above tests have been performed and the configuration tested



meets



does not meet

This certificate does not modify PerkinElmer's standard terms and condition of sale,  
including warranty terms.

**Service Department TH ONE SOURCE CO., LTD.**

*Krungchai T.*

( Krungchai Treavichien )

**Customer Support Engineer**



## MAINTENANCE REPORT

### OPTIMA 8000

<b>Customer :</b> บริษัท เทคโนโลยีสิ่งแวดล้อมไทย <b>Address :</b> จำกัด 1/6 ซอยรามคำแหง 145, แขวงคลองตันเหนือ, เขตวัฒนา, กรุงเทพฯ 10240 TH <b>User Name:</b> คุณ.ณัฐพงศ์ ไชยชนะ <b>Phone:</b> 02-3737709, 081-1303485 <b>E-mail:</b> Netpan.Chueyphan@euroinsasiz.com Phornpapha.theeraporn@euroinsasiz.com	<b>Date Tested:</b> September 19, 2025 <b>Recommendation Recertification</b> <b>Period</b> 3 Months <b>Recertification Due:</b> March 19, 2026 <b>Date Last Certified:</b> March 21, 2025 <b>Visit Number:</b> 2 OF 2 <b>TH ONE SOURCE Phone:</b> 081-7316732, 081-1086572 <b>E-mail :</b> thonsources@gmail.com
--	---

CONFIGURATION TESTED	ACCESSORIES/COMPONENT NOT INCLUDED
<b>MODEL</b> OPTIMA 8000 NDT72045	<b>SERIAL NUMBER</b> 078S13100240 1F1300368
<b>TESTED EQUIPMENT</b> IPV Methods	<b>WinLab32 Version 5.5.0</b> <b>PN:6150T31E4Q1E</b>
<b>TEST STANDARD USED</b> Mixed standard 1/10 Mixed standard 1/100	<b>PE NUMBER</b> N0601579 N9300221
<b>CUSTOMER SUPPLIED</b> 2 % HNO3 10 % HNO3	<b>COMMENTS</b>





## MAINTENANCE REPORT

### OPTIMA 8000

SERIAL NUMBER 07651310024C

DATE TESTED

September 19, 2024**1. MECHANICAL CHECKS**

- A. Inspect and clean all lens and filters.
- B. Inspect and replace as necessary, all torch components including the RF Flat coil
- C. Inspect all tubing for sign of cracking or leaking.
- D. Adjust water and gas pressure regulator settings.
- E. Inspect and leak check pneumatics drawers.
- F. Clean the exterior of the instrument.

☐ OK  
☐ OK  
☐ OK  
☐ OK  
☐ OK  
☐ OK
**2. OPTICAL CHECKS**

- A. Inspect and clean all optical components.
- B. As required, check and replace all purge filters.
- C. Recheck optical alignment.

☐ OK  
☐ OK  
☐ OK
**3. COOLING SYSTEM CHECKS**

- A. Perform preventive maintenance on chiller.
- B. Flush out water the chiller and replace with coolant mix 50plus every twelve months

☐ OK  
☐ OK
**4. PERFORMANCE CHECKS**

- A. Torch View Alignment.
- B. Wavelength Calibration.

☐ OK  
☐ OK



# MAINTENANCE REPORT

## OPTIMA 8000

SERIAL NUMBER	078913198240	DATE TESTED	September 19, 2025
PARAMETER	SPECIFICATION	FINAL VALUE	
Precision			
Zn 213.855	% RSD $\leq 1.0$	0.58	
Mg 250.260	% RSD $\leq 1.0$	0.78	
Mg 285.207	% RSD $\leq 1.0$	0.74	
Ba 455.403	% RSD $\leq 1.0$	0.58	
Detection Limits: Axial			
	As 188 nm, 3(sd) $\leq 10.0$ ppb	1.2	
	Se 196 nm, 3(sd) $\leq 5.0$ ppb	5.6	
	Tl 200 nm, 3(sd) $\leq 10.0$ ppb	1.31	
	Pb 220 nm, 3(sd) $\leq 9.0$ ppb	0.93	
	Mn 257 nm, $\leq 80$ ppb	2.72	
BEC: Axial			
Detection Limits: Radial			
	As 188 nm, 3(sd) $\leq 60.0$ ppb	3.48	
	Zn 212 nm, 3(sd) $\leq 2.0$ ppb	0.33	
	Mn 267 nm, 3(sd) $\leq 1.0$ ppb	0.02	
	La 379 nm, 3(sd) $\leq 9.0$ ppb	0.19	
	Ba 455 nm, 3(sd) $\leq 0.9$ ppb	0.03	
	Ba 493 nm, 3(sd) $\leq 0.6$ ppb	0.03	
	Mn 257 nm, $\leq 80$ ppb	9.78	
BEC: Radial			
Spectral Resolution: UV			
	As 188 nm, $\leq 0.009$	0.00687	
	Ni 231 nm, $\leq 0.011$	0.00808	
	Ni 341 nm, $\leq 0.015$	0.01209	
Spectral Resolution: VIS			
	Ba 455 nm, $\leq 0.020$	0.01520	



## MAINTENANCE REPORT

### OPTIMA 8000

SERIAL NUMBER 078S1310024C DATE TESTED September 13, 2025

**Remarks :**

Commissioning follow as commissioning performance sheets.

Calculate  $\text{MnBEC} = \text{IS} \cdot \text{STD Conc} / \text{IS-IS}$ , where standard conc = 1000 ug/L

IS = Intensity of blank

IS = Intensity of Standard

Used Mira Mist Nebulizer

This is to certify that the above tests have been performed and the configuration tested

☒

☐

meets

does not meet

This certificate does not modify PerkinElmer's standard terms and condition of sale,  
including warranty terms.

**Service Department TH One Source Co., Ltd.**

*Kumpol T.*

( Kumpol Treevichien )

Customer Support Engineer

# Analysis Summary

Start Time: 10/9/2008 10:11:48  
 Logged In Analyst: TBT  
 Spectrometer: Optima 8000

Sample On Time: 10/9/2008 10:11:50  
 Technique: ICP Continous  
 Autosampler: C15

## Sample Information File:

Batch ID:  
 Results Data Set: DLX2\_288025  
 Results Library: C:\Users\Public\ParMInet\ICP\data\results\Results.rdb

## Method Loaded

Method Name: DLX2-Cal

Method Last Saved: 11/1/2008 14:25:51

JSC File:

MSD File:

Method Description: Calibration for later test

## Sequence No: 2

Sample ID: Calib Blank 1

Analyst:

Initial Sample Wt:

Dilution:

Wash Time:

## Autosampler Location:

Date Collected: 10/9/2008 10:11:48

Date Type: Original

Initial Sample Vol:

Sample Prep Vol:

## Nebulizer Parameters: Calib Blank 1

Analyst: Back Pressure Flow  
 All 257.0 kPa 0.39 L/min

## Mean Data: Calib Blank 1

Analyst	Mean Corrected Intensity	Std.Dev.	RSD	Conc. Units	Calib
As 193.696	49.1	1.34	2.84%	[0.00]	g/L
Se 198.026	37.3	0.43	1.15%	[0.00]	g/L
Tl 210.881	91.5	1.82	2.00%	[0.00]	g/L
Pb 228.353	961.6	2.68	0.28%	[0.00]	g/L

## Sequence No: 2

Sample ID: DL-Standard

Analyst:

Initial Sample Wt:

Dilution:

Wash Time:

## Autosampler Location:

Date Collected: 10/9/2008 10:17:26

Date Type: Original

Initial Sample Vol:

Sample Prep Vol:

## Nebulizer Parameters: DL-Standard

Analyst: Back Pressure Flow  
 All 203.0 kPa 0.35 L/min

## Mean Data: DL-Standard

Analyst	Mean Corrected Intensity	Std.Dev.	RSD	Conc. Units	Calib
As 193.696	2874.1	56.61	1.97%	[1880]	g/L
Se 198.026	121.9	0.34	0.28%	[500]	g/L
Tl 210.881	1585.2	70.44	4.43%	[1000]	g/L
Pb 228.353	1662.0	171.67	10.33%	[500]	g/L

## Calibration Summary

As 193.696	3	Lin, Calc Int	2.8	1.474	0.00000	1.000000
Se 198.026	1 <th>Lin, Calc Int</th> <td>-3.0</td> <td>0.1550</td> <td>0.00000</td> <td>1.000000</td>	Lin, Calc Int	-3.0	0.1550	0.00000	1.000000
Tl 210.881	1 <th>Lin, Calc Int</th> <td>0.8</td> <td>0.0005</td> <td>0.00000</td> <td>1.000000</td>	Lin, Calc Int	0.8	0.0005	0.00000	1.000000
Pb 228.353	1 <th>Lin, Calc Int</th> <td>2.0</td> <td>11.81</td> <td>0.00000</td> <td>1.000000</td>	Lin, Calc Int	2.0	11.81	0.00000	1.000000

## Sequence No: 3

## Autosampler Location:

Sample ID: 10 #  
Analyst:  
Initial Sample Wt:  
Dilution:  
Wash Time:

Date Collected: 10/0/2000 11:20:30  
Data Type: Original  
Initial Sample Vol:  
Sample Prep Vols:

-----  
Nebulizer Parameters: 10 %

Analyte Back Pressure Flow  
All 200.0 kPa 0.35 L/min

-----  
Mean Data: 10 %

Analyte	Mean Corrected Intensity	Conc. Units	Calib.	Std. Dev.	Conc. Units	Std. Dev.	RSD
As 193.406	270.1	300 g/L	0.35	0.35	100 g/L	0.35	65.40%
Sa 196.026	0.3	40 g/L	0.39	0.39	40 g/L	0.39	1.02%
Tl 198.002	1.0	0 g/L	0.91	0.91	0 g/L	0.91	114.05%
Pb 220.353	50.3	5 g/L	0.77	0.77	5 g/L	0.77	3.26%

-----  
Method Loaded

Method Name: OLYM-Check

Method Last Saved: 10/0/2000 11:29:07

Int. Files:

MSF File:

Method Description: Sample Std. Dev As/Tl <-10 g/L, Se/As <-5 g/L, Pb/As <-5 g/L

-----  
Sequence No.: 4

Autosampler Location:

Sample ID: 2X

Date Collected: 10/0/2000 11:23:20

Analyst:

Data Type: Original

Initial Sample Wt:

Initial Sample Vol:

Dilution:

Sample Prep Vols:

Wash Time:

-----  
Nebulizer Parameters: 2X

Analyte Back Pressure Flow  
All 200.0 kPa 0.35 L/min

-----  
Mean Data: 2X

Analyte	Mean Corrected Intensity	Conc. Units	Calib.	Std. Dev.	Conc. Units	Std. Dev.	RSD
As 193.406	26.5	5 g/L	1.29	1.29	5 g/L	1.29	13.02%
Sa 196.026	10.0	20 g/L	5.00	5.00	20 g/L	5.00	25.00%
Tl 198.002	0.9	0.5 g/L	1.51	1.51	0.5 g/L	1.51	120.27%
Pb 220.353	1.7	0.5 g/L	0.70	0.70	0.5 g/L	0.70	50.00%

## MAINTENANCE REPORT AND CALIBRATION CERTIFICATE

ATOMIC ABSORPTION SPECTROPHOTOMETER MODEL

PinAAcle 900Z

Customer :	THAI ENVIRONMENTAL	Date Tested:	June 20, 2025
	TECHNIO LIMITED	Recommendation Recertification	
Address :	1/6 Soi Ramkhamhaeng 145	Period	12 Months
	Khwaeng Khat Saphan Sung	Recertification Due:	June 19, 2026
	Bangkok 10240	Date Last Certified:	December 30, 2024
User Name:	Khun Kanokwan Rernprachadhipalai	Visa Number:	1 of 2
Phone:	02-7353101-3	PerkinElmer Phone:	02-749-6020 ext 3
Fax:	phamlo.0@let1503.com	PerkinElmer Fax:	02-318-5597
	achmin@let1503.com		

CONFIGURATION TESTED		
MODEL	SERIAL NUMBER	SOFTWARE
PinAAcle 900Z	PZBS23100902	Syngnetix V 6.1
AS 900	AS9C23047632	
TEST STANDARD USED	PART NUMBER	EXPIRATION DATE
GFAA6 Mixed standard	NB300244	DEC 30, 2025

## MAINTENANCE REPORT AND CALIBRATION CERTIFICATE

### ATOMIC ABSORPTION SPECTROPHOTOMETER MODEL

PinAAcle 800Z

SERIAL NUMBER	<u>PZEE23100902</u>	DATE TESTED	<u>June 20, 2025</u>
<b>1. INSTRUMENT CHECKS</b>			
A. The Mirror and Lenses Condition			<input checked="" type="checkbox"/> OK
B. Grating Condition			<input checked="" type="checkbox"/> OK
C. Replace or Clean Quil Filter			<input checked="" type="checkbox"/> OK
D. Cleaning the Contact Cylinders			<input checked="" type="checkbox"/> OK
E. Cleaning the Furnace Windows			<input checked="" type="checkbox"/> OK
<b>2. AUTO-SAMPLE CHECK</b>			
A. Sampling and Arm			<input checked="" type="checkbox"/> OK
B. Sampling & Rinse Pump			<input checked="" type="checkbox"/> OK
C. Sample Position & Clean			<input checked="" type="checkbox"/> OK
<b>3. COOLING SYSTEM CHECKS</b>			
A. Clean and Change Distill Water			<input checked="" type="checkbox"/> OK
B. Thermosensor			<input checked="" type="checkbox"/> OK
<b>4. FLAS CHECKS</b>			
A. Pump and 5 Port Valve			<input checked="" type="checkbox"/> OK
B. Chemifold and Tubing			<input checked="" type="checkbox"/> OK
C. Power Supply			<input checked="" type="checkbox"/> OK
D. Flowmeter and Gas system			<input checked="" type="checkbox"/> OK

## MAINTENANCE REPORT AND CALIBRATION CERTIFICATE

ATOMIC ABSORPTION SPECTROPHOTOMETER MODEL

PDAAC16 8002

SERIAL NUMBER	PZB223100202	DATE TESTED	June 20, 2026
PARAMETER	SPECIFICATION	ACTUAL VALUE	
THGA Tests			
1. Furnace Gas Flow			
Internal Flow	250 ± 25 mL/min	250	mL/min
External Flow	100 ± 10 mL/min	100	mL/min
2. Chromium Baseline Noise (357.87 nm) (measure 5 furnace dry firings without any sample)			
	Baseline ≤ 0.005 Int. Abs	0.001	Int. Abs
	SD ≤ 0.006 Int. Abs	0.0005	Int. Abs
3. Chromium Characteristic Mass ( $m_0$ ) and Precision (357.87 nm) (measure 5 furnace firing using 20 $\mu$ L sample injections of 10 $\mu$ g/L Cr standard)			
	$m_0$ Results ≤ 7.0 pg/0.0044A-s	3.6	pg/0.0044A-s
	Precision ≤ 2.0%	0.78	%
4. Copper Characteristic Mass ( $m_0$ ) and Zeeman Ratio (324.75 nm) (measure 5 furnace firing using 20 $\mu$ L sample injections of 25 $\mu$ g/L Cu standard)			
	$m_0$ Results ≤ 17.0 pg/0.0044A-s	16.3	pg/0.0044A-s
	Zeeman Ratio 0.52 ± 0.04	0.494	



## MAINTENANCE REPORT AND CALIBRATION CERTIFICATE

ATOMIC ABSORPTION SPECTROPHOTOMETER MODEL

PinAAcle 8002

SERIAL NUMBER PZB523100882 DATE TESTED June 20, 2025

Remarks:

Zeeman Ratio	=	Atomic Signal(peak area)
		Atomic Signal(peak area)+Background Signal(peak area)
	=	0.1350 ( 0.1350+0.1395)
	=	0.494

This is to certify that the above tests have been performed and the configuration tested

☒

meets

does not meet

the PerkinElmer Specifications listed on this certificate.

This certificate does not modify PerkinElmer's standard terms and condition of sale, including warranty limits.

**Service Department PerkinElmer Ltd.**

Customer Service Engineer:

*Wiphan Promlunda*

Wiphan Promlunda

Service Engineer

# PerkinElmer TruQ

Atomic Spectroscopy Standard



## Certificate of Analysis

PerkinElmer Number: N8300244  
Description: GFAAS Mixed Standard  
Matrix: 5% HNO<sub>3</sub> / Tr. HF / Tr. Treh. Acid  
Lot Number: 63-011CRY1

Certification Date: JUN - - 2024  
Expiration Date: DEC 30 2025

\* Instrumental Analysis using ICP Spectrometer:

Analyte	Labeled	Measured	SRM	Analyte	Labeled	Measured	SRM
Al	100 µg/mL	100 µg/mL	3101a*	Cu	50.0 µg/mL	50.6 µg/mL	3114*
As	100 µg/mL	101 µg/mL	3105a*	Ni	50.0 µg/mL	50.7 µg/mL	3136*
Pb	100 µg/mL	100 µg/mL	3138*	Co	20.0 µg/mL	19.8 µg/mL	3112a*
Se	100 µg/mL	101 µg/mL	3103a*	Fe	20.0 µg/mL	20.2 µg/mL	3126a*
Sc	100 µg/mL	100 µg/mL	3148*	Mn	20.0 µg/mL	19.8 µg/mL	3132*
Ti	100 µg/mL	99.5 µg/mL	3159*	Ag	10.0 µg/mL	10.0 µg/mL	3151*
Zn	50.0 µg/mL	49.9 µg/mL	3104a*	Ba	5.00 µg/mL	5.02 µg/mL	3105a*
Cr	50.0 µg/mL	50.0 µg/mL	3112*	Cd	5.00 µg/mL	5.00 µg/mL	3108*

\* Indicates NIST SRM

1 - Indicates CRM (per NIST SRM is not available)

Reference Mix: Lot# 60-004CR, 58-142CR

Refer to page 2 for details of certification.

Solutions are calibrated with weight sets traceable to NIST.

We guarantee that our PerkinElmer TruQ Atomic Spectroscopy Standards are stable and accurate to ±0.5% of certified concentration until the expiration date, provided the standards are kept tightly capped and stored under normal laboratory conditions. This value is the sum of cumulative errors associated with the analytical determinations, pipetting, and diluting to final volume. For these solutions we use high purity acids, ASTM Type I water (16 megohm deionized), and laminated, ultra-fused bottles. All glassware used is class A.



PerkinElmer\*

Certifying Officer:

Y. Pavlov

PerkinElmer, Inc.

U.S.A. Toll 1-800-825-4600

U.S.S. Toll Free 1-800-762-4000



Visit [www.perkinelmer.com/usaoffices](http://www.perkinelmer.com/usaoffices) for a complete listing of our global offices.



## Certificate of Calibration

Cert.No.: 25CHO138

Page.: 1 of 3

Equipment :	Spectrophotometer
Manufacturer :	Labtech
Model :	Blue Star 4
Serial No. :	1806UV1507
ID No. :	-
Condition As-Received:	Used Item
Received Date :	12 March 2025
Calibration Date :	13 March 2025
Reference :	2503-022700-2
Submitted by :	Thai Environmental Technic Limited 1/6 Soi Ramkhamhaeng 145, Khwang/Khet Saphan Sung, Bangkok 10240
Calibration Place :	Laboratory ( Thai Environment Technic Limited)
Ambient Temperature :	( 26.8 to 27.0 ) °C (On-Site)
Relative Humidity :	( 57 to 58 ) % (On-Site)
Calibration Procedure :	In - house method CP-QCH4 based on ASTM E 276-06
Calibrated by :	Uthair Kantawi 
Approved by :	 Approved Signatory
( ) Chakrit Waewwanjua	
( ) Ponpan Paipim	
(✓) Saithip Weehimai	
Issue Date :	15 March 2025

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written  
Approval of the head of Corporate Services 3 : Equipment Calibration and Testing Services.



Cert. No. : 26CHO138

Page : 2 of 3

**Condition of calibration result**

**1. Reference Standard Material :**

<u>Material</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due date</u>
1. Absorbance Standard set	44487	122584	31 May 2026
2. Wavelength Standard set	29829	114509	11 Sep 2025
3. Wavelength Standard set	29829	114510	11 Sep 2025
4. Stray Light Standard set	45507	126056	04 Oct 2026

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

3. This certificate is traceable to the International System of Unit maintained through :

- Sterna Scientific Ltd.

4. Spectral BandWidth : 2 nm

Scan Speed : Slow

**Calibration Results : without adjustment**

**Wavelength Accuracy**

<b>Certified Values of Reference Material ( nm )</b>	<b>UUC Reading ( nm )</b>	<b>Uncertainty of Measurement ( <math>\pm</math> nm )</b>	<b>Coverage Factor <i>k</i></b>
364.00	360.8	0.16	2.00
472.47	472.4	0.16	2.00
536.66	536.4	0.16	2.00
748.48	748.8	0.16	2.00
879.27	879.4	0.16	2.00



Cert. No. : 25CHO136

Page : 3 of 3

**Calibration Results** : without adjustment**Photometric Accuracy**

Wavelength (nm)	Certified Values of Reference Material ( Abs )	UUC Reading ( Abs )	Uncertainty of Measurement ( $\pm$ Abs )	Coverage Factor <i>k</i>
420.0	Zero	0.000	0.0028	2.00
	0.5750	0.569	0.0028	2.00
	0.7156	0.710	0.0028	2.00
	1.0176	1.009	0.0028	2.00
546.1	Zero	0.000	0.0028	2.00
	0.5234	0.520	0.0028	2.00
	0.7007	0.697	0.0028	2.00
	0.9992	0.995	0.0028	2.00
635.0	Zero	0.000	0.0028	2.00
	0.5348	0.562	0.0028	2.00
	0.7654	0.762	0.0028	2.00
	1.0961	1.092	0.0028	2.00

**Stray Light**

* Straylight at 260.57 $\pm$ 0.11 nm	Reading at 260.57 $\pm$ 0.11 nm
Abs	2.0840
%T	0.60

**Remark**

- Each individual filter is measured against the empty filter holder (blank) used to zero the spectrophotometer
- Cut-off wavelength of stray light reference material (Potassium Iodide) at Wavelength 260.57  $\pm$  0.11 nm
- Result = Pass, if Absorbance  $>$  2.00 Abs and Transmission  $<$  1.0 %T at Wavelength 260.57  $\pm$  0.11 nm
- \* : Not NIS-ONSC Accredited
- UUC = Unit Under Calibration

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



## Certificate of Calibration

Certificate Number : SFR25010036-1

Page : 1 of 3

Customer : Thai Environmental Technic Limited,

116 Soi Ramkhamhaeng 146, Khwaeng Saphan Sung, Khet Saphan  
Sung Bangkok 10240, Thailand.

Equipment Name : DO Meter

Manufacturer : Horiba

Model : OM-71G

Serial Number : D75J0012

ID. Number : HQ.07

### Environmental Conditions

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

Received Date : 08 Jan 2025

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

Calibration Date : 10 Jan 2025

Location of Calibration : In-Lab

Recommend Due Date : 10 Jan 2026

Calibration Procedure : In-House Method

Date of Issue : 11 Jan 2025

### Method of Calibration

This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are verified by to NIST or equivalent, National metrology institute, Natural physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full, without written approval of SP Metrology System (Thailand).

Calibrated by : Mr. Kittapong Kanchanajitkader

Approved by :

Calibration Officer

( Mr Prayoon Topan )

Authorized Signatory



## Calibration Report

Certificate Number : SPR25010698-1

Page : 2 of 3

### Reference Standards

Equipment Name	Model	Serial No.	Certificate No.	Due Date
Zero Oxygen Solution	HI7040L	Lot S0027-28	21621	21 Mar 2028

### Traceability

This certification is traceable to the International System of Unit maintained at :  
HANNA - Hanna Instruments (Thailand) Ltd.







TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES  
534/4 PASTANAKARN ROAD SOI 19, SUANLUANG, SUANLUANG BANGKOK 10250  
TEL.0-2717-3000-29 FAX.0-2719-8434



## Certificate of Calibration

Cert. No.: 25TM3E7

Page: 1 of 3

Equipment : Incubator  
Manufacturer : Memmert  
Model : INE 500  
Serial No. : E505.1143  
ID No. : -  
Submitted by : Thai Environmental Technic Limited  
1/6 Soi Ramkhamhaeng 145,  
Khwaeng/Khet Saphan Sung,  
Bangkok 10240  
Location : Bacteria Room  
Received Order : 12 March 2025  
Calibration Date : 12 - 13 March 2025  
Ambient Temperature :  $( 25 \pm 10 ) ^{\circ}\text{C}$   
Relative Humidity :  $( 50 \pm 30 ) \%$   
AC Line Voltage :  $( 220 \pm 22 ) \text{ V}$

Calibrated by : Tawatchai Pansa

Approved by :

Approved Signatory

- ( ) Chakrit Waewwanjua  
(☒) Suwit Imjai  
( ) Kunchit Promprat

Issue Date : 24 March 2025

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full except with the prior written  
Approval of the head of Corporate Services 3: Equipment Calibration and Testing Services.



Equipment : Incubator  
 Condition As-Received : Used Item  
 Reference : 2503-02270C-4

Cert. No.: 25TM387

Page : 2 of 3

**Procedure Used :-**

Calibration were conducted using calibration procedure CP-DT02 based on TLAS G-20 according to direct measurement method with Data Acquisition which connected with Resistance Temperature Detector ( RTD ).

The temperature scale used was based on ITS-90.

**Condition of this result of calibration**

**1. Reference standard instrument-**

Instrument	Serial No.	Cert. No.	Traceable	Due Date
1 ) Data Acquisition	MY57013711	24LM115	TPA	13 Jul 2025

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

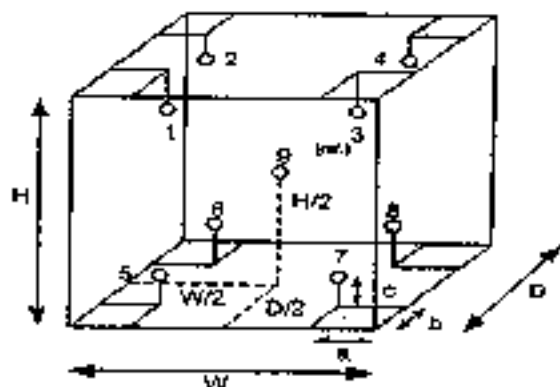
3. This certification is traceable to the International System of Unit.

Remark : TPA : Technology Promotion Association ( Thailand - Japan )

**Result of Calibration :-** ( \* ) Without Adjustment

**Function of UUC\* :** Temperature Source

**Fresh air setting :** Close



Environment during calibration		
	Beginning	Finished
Temp. ( °C )	28	24
REL.Humid. ( % )	38	36
AG Supply ( Volt )	223	224

Position :	Ref. Std. ID No.:
1	18-18RTD-01
2	24-18RTD-02
3	18-18RTD-03
4	18-18RTD-04
5	18-18RTD-05
6	23-18RTD-06
7	18-18RTD-07
8	22-18RTD-08
9 (ref.)	24-18RTD-09

**Probe Installation Details :**

a = 10 cm  
 b = 10 cm  
 c = 10 cm

**Dimension of Chamber :**

D = 0.40 m  
 W = 0.56 m  
 H = 0.48 m  
 Capacity = 0.11 m<sup>3</sup>



**Equipment :** Incubator  
**Condition As-Received :** Used Item  
**Reference :** 2503-02270C-4  
**Result of Calibration :-** ( ) Without Adjustment  
**Function of UUC\* :** Temperature Source  
**Fresh air setting :** Close

Cert. No.: 25TM337

Page : 3 of 3

Calibration Point (°C)	UUC* Setting (°C)	UUC* Reading (°C)	Temperature stability (± °C)	Temperature uniformity (°C)	Overall Variation (°C)	Coverage Factor k
35.0	35.0	35.0	0.041	0.95	0.57	2
41.5	41.5	41.5	0.046	0.81	0.75	2
44.5	44.5	44.5	0.077	0.80	0.84	2

Calibration Point ( °C )	Measured Temperature ( °C )									Uncertainty  ( ± °C )
	Position									
	1	2	3	4	5	6	7	8	9 (ref.)	
35.0	35.004	35.057	35.006	34.962	34.859	35.353	34.875	35.190	35.197	0.30
41.5	41.344	41.393	41.358	41.296	41.140	41.826	41.192	41.817	41.625	0.30
44.5	44.363	44.465	44.391	44.285	43.962	44.654	44.013	44.507	44.621	0.31

**Average\*** : The average of 30 values in each position.

**Temperature stability** : One-half of the greatest maximum difference of measured temperature at any one sensor.

**Temperature 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 or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.

**Overall Variation** : The Difference of the maximum and minimum measured temperatures throughout observation.

**UUC\*** : Unit Under Calibration

**Note** : The reported uncertainty of measurement was included stability and excluded uniformity .

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



**TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)**  
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES  
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250  
TEL.0-2717-3000-29 FAX.0-2719-9484



## Certificate of Calibration

Cert. No.: 25TM386

Page : 1 of 3

**Equipment :** Incubator  
**Manufacturer :** Memmert  
**Model :** INE 500  
**Serial No. :** E505.0595  
**ID No. :** -  
**Submitted by :** Thai Environmental Technic Limited  
1/6 Soi Ramkhamhaeng 145,  
Khwaeng/Khet Saphan Sung,  
Bangkok 10240  
**Location :** Backless Room  
**Received Order :** 12 March 2025  
**Calibration Date :** 12 - 13 March 2025  
**Ambient Temperature :** ( 26 ± 10 ) °C  
**Relative Humidity :** ( 50 ± 30 ) %  
**AC Line Voltage :** ( 220 ± 22 ) V

**Calibrated by :** Tawatchai Pame

**Approved by :**

Approved Signatory

- ( ) Chakrit Waewwanjua  
( ☒ ) Suwit Imjai  
( ) Kunchit Promprat

**Issue Date :** 24 March 2025

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

This certificate may not be reproduced other than in full, except with the prior written  
Approval of the head of Corporate Services 3: Equipment Calibration and Testing Services.



Equipment : Incubator  
 Condition As-Received : Used Item  
 Reference : 2503-022700-3

Cert. No.: 25TM386

Page : 2 of 3

**Procedure Used :-**

Calibration were conducted using calibration procedure GP-OT02 based on TLAS G-20 according to direct measurement method with Data Acquisition which connected with Resistance Temperature Detector ( RTD ).

The temperature scale used was based on ITS-90.

**Condition of this result of calibration**

**1. Reference standard instrument -**

<u>Instrument</u>	<u>Serial No.</u>	<u>Cert. No.</u>	<u>Traceable</u>	<u>Due Date</u>
1 ) Data Acquisition	MY57013711	24LM115	TPA	13 Jul 2025

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

3. This certification is traceable to the International System of Unit.

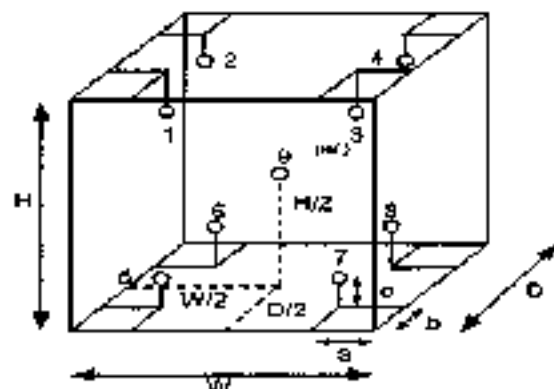
Remark : TPA : Technology Promotion Association ( Thailand - Japan )

**Result of Calibration :-** ( ~ ) Without Adjustment

Function of UUC\* : Temperature Source

Fresh air setting : Close

Environment during calibration		
	Beginning	Finished
Temp. ( °C )	26	23
REL.Humid. ( % )	38	39
AC Supply ( Volt )	223	224



Position :	Ref. Std. ID No.:
1	22-18RTD-2/1
2	18RTD-2/2
3	18RTD-2/3
4	18RTD-2/4
5	18RTD-2/5
6	21-18RTD-2/10
7	18RTD-2/7
8	18RTD-2/8
9 (ref.)	18RTD-2/9

**Probe Installation Details :**

a = 10 cm  
 b = 10 cm  
 c = 10 cm

**Dimension of Chamber :**

D = 0.40 m  
 W = 0.56 m  
 H = 0.48 m  
 Capacity = 0.11 m<sup>3</sup>



**Equipment :** Incubator  
**Condition As-Received :** Used Item  
**Reference :** 2503-02270C-3  
**Result of Calibration :-** ( \* ) Without Adjustment  
**Function of UUC\* :** Temperature Source  
**Fresh air setting :** Close

Cert. No.: 25TM386

Page : 3 of 3

Calibration Point ( °C )	UUC* Setting ( °C )	UUC* Reading ( °C )	Temperature stability ( ± °C )	Temperature uniformity ( °C )	Overall Variation ( °C )	Coverage Factor k
35.0	35.0	35.0	0.038	0.23	0.45	2
41.5	41.5	41.5	0.041	0.57	0.66	2
44.5	44.5	44.5	0.019	0.65	0.81	2

Calibration Point ( °C )	Measured Temperature ( °C )									Uncertainty  ( ± °C )
	Position									
	1	2	3	4	5	6	7	8	9 (ref.)	
35.0	34.886	34.862	34.882	34.860	34.837	35.179	34.784	35.171	35.002	0.30
41.5	41.577	41.425	41.489	41.467	41.066	41.492	41.004	41.641	41.556	0.30
44.5	44.673	44.633	44.541	44.514	44.013	44.460	43.876	44.498	44.514	0.30

**Average\* :** The average of 30 values in each position.

**Temperature stability :** One-half of the greatest maximum difference of measured temperature at any one sensor

**Temperature 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 or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.

**Overall Variation :** The Difference of the maximum and minimum measured temperatures throughout observation.

**UUC\* :** Unit Under Calibration

**Note .** The reported uncertainty of measurement was included stability and excluded uniformity


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



## Certificate of Calibration

Cert.No.: 26CH50

Page: 1 of 2

Equipment :	Conductivity Meter
Manufacturer :	Horiba
Model :	ES-71
Serial No. :	DS6G0003
ID No. :	No.1
Condition As-Received :	Used Item
Received Date :	14 January 2025
Calibration Date :	15 January 2025
Reference :	2501-0469VSG-1
Submitted by :	Thai Environmental Technic Limited 1/6 Soi Raminthemhaeng 145, Khwaeng/Khet Saphan Sung, Bangkok 10240
Ambient Temperature :	(25 ± 2.5) °C
Relative Humidity :	(50 ± 15) %
Calibration Procedure:	In-house method : - CP-CH6 by direct measurement with certified reference material (CRM)
Calibrated by :	Watalek Sontharn 
Approved by :	<hr/> Approved Signatory
( ) Pornthipa Tameyakut	
( ) Pongpan Pajin	
(✓) Sathip Mesngmai	
Issue Date :	15 January 2025

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written  
Approval of the head of Calibration and Testing Equipment Services



Cert.No.: 25CH50

Page.: 2 of 2

Condition of this result of calibration

1. Reference Standard Instrument :-

<u>Instrument</u>	<u>Serial No.</u>	<u>ID No.</u>	<u>Certificate No.</u>	<u>Due date</u>
1) Thermometer	9549224	130RC003	241426	24 Apr 2025

- This Certification is traceable to SI Through Technology Promotion Association (Thailand - Japan)

2. Certified Reference Materials :-

- Conductivity calibration solution, Thermo Scientific (Traceable to NIST)

<u>Conductivity Solution</u>	<u>Manufacturer</u>	<u>Lot No.</u>	<u>Exp. date</u>
84 $\mu$ S/cm	Thermo Scientific	134/02	20 Mar 2025
1.413 mS/cm	Thermo Scientific	382/01	30 Sep 2025
12.88 mS/cm	Thermo Scientific	422/01	21 Oct 2025

- Control Conductivity calibration solution temperature by Water bath ( $25 \pm 0.1$ ) °C

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

Calibration results

Function : Conductivity Measurement

(\*) After Adjustment at 1.413 mS/cm

Conductivity Electrode Serial No.: 906E0212

Standard Conductivity Solution	Before Adjustment UUC* Reading	After Adjustment UUC* Reading	Uncertainty of Measurement { $\pm$ }	Coverage factor k
84 $\mu$ S/cm	99.2 $\mu$ S/cm	68.6 $\mu$ S/cm	4.3 $\mu$ S/cm	2.00
1.413 mS/cm	1.420 mS/cm	1.413 mS/cm	0.015 mS/cm	2.00
12.88 mS/cm	12.71 mS/cm	12.63 mS/cm	0.14 mS/cm	2.00

Remark : - UUC\* = Unit Under Calibration

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

-000-



**SMART TECH CALIBRATION & SERVICES CO., LTD.**

14/308 MOO 3, RANGSIT-BUKHON MAYOK ROAD, LAM PHAK KUT,  
THANYABURI, PATHUM THANI 12110, THAILAND

Tel. +662-114-3143 Email: stcalmtd@gmail.com Website: stc-cal.com



Certificate No. STCP-2504098-3

Work Order No. STCP-2504098

Page 1 of 4

**Customer Name** : C.F. ENVIRONMENT AND CHEMICAL CO., LTD.  
840-41 M 2 T.Bangkrueang A.Bangkray Nonlhaburi 11130

**Equipment Name** : Sound Level Meter  
**Manufacturer** : Scautel Tech  
**Model** : ST 21D  
**Serial Number** : 020405  
**Control Number** : N/A  
**Received Date** : Apr 12, 2025  
**Calibration Date** : Apr 13, 2025  
**Recommended Due Date** : N/A  
**Calibration Method** : Calibration Procedure No. CPE-04-01

**Environmental Conditions**

**Ambient Temperature** :  $125 \pm 2$  °C  
**Ambient Relative Humidity** :  $(50 \pm 15)$  %RH  
**Calibration Place** : Permanent Calibration Laboratory

**Condition as received** : Normal

**Calibration Result** : See data attached

1. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level of confidence of approximately 95%
2. The Unit Under Calibration (UUC) has been calibrated by using the working standard which is traceable to SI-Units. The calibration procedure documented is intended to implement the requirements of ISO/IEC 17026 : 2017
3. The working standard is indicated in page 2 of this certificate.
4. This report applies to the item calibrated and shall not be reproduced except in full, without written approval by Calibration Laboratory, Smart Tech Calibration & Services Co., Ltd.
6. This results of this report only to the items calibrated

**Date of Issue** : Apr 28, 2025

**Calibrated by** : C. Jirayr

Approved by :



# Calibration Report

Smart Tech Calibration & Services Co., Ltd

Certificate No : STCR-2504098-3

Page 2 of 4

## Standards Equipment Used

<u>Equipment Name</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>	<u>Traceability to</u>
Sound Calibrator	N975185	5523631091364566	Nov 6, 2025	AMP-TH

## Traceability

This calibration is traceable to the International System of Unit via :

- AMP-TH : Micro Precision Calibration Laboratory (Thailand) Co., Ltd.



# Calibration Report

Smart Tech Calibration & Services Co., Ltd.

Certificate No : STCR-2504099-3

Page 3 of 4

UUC Range : (30 to 130) dB

Resolution : 0.1 dB

Results of Calibration [ ] Without adjustment [ ☒ ] With adjustment

Appearance and Function of Use Inspection : GOOD

Sound Level Calibration @ Frequency 1 kHz

Select : A

Response times	STD. Value	UUC Reading		Correction	(±) Tolerance	(±) Uncertainty	Judgment
		Before Adjustment	After Adjustment				
FAST	94.09 dB	93.7 dB	94.1 dB	-0.01 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	113.5 dB	113.9 dB	0.17 dB	1.0 dB	0.40 dB	Pass
SLOW	94.09 dB	93.7 dB	94.1 dB	-0.01 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	113.5 dB	113.9 dB	0.17 dB	1.0 dB	0.40 dB	Pass

Sound Level Calibration @ Frequency 1 kHz

Select : C

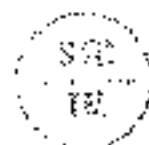
Response times	STD. Value	UUC Reading		Correction	(±) Tolerance	(±) Uncertainty	Judgment
		Before Adjustment	After Adjustment				
FAST	94.09 dB	93.7 dB	94.0 dB	0.09 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	113.5 dB	113.9 dB	0.17 dB	1.0 dB	0.40 dB	Pass
SLOW	94.09 dB	93.7 dB	94.0 dB	0.09 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	113.5 dB	113.9 dB	0.17 dB	1.0 dB	0.40 dB	Pass

STD = Standard

UUC = Unit Under Calibration

## Notes :

- 1) Tolerances or specifications report in table above are based on the IEC61672-1 : 2013 (Class 2).
- 2) Statements of conformity (Judgment) are based on the decision rule described in the last page in this certificate.



# Calibration Report

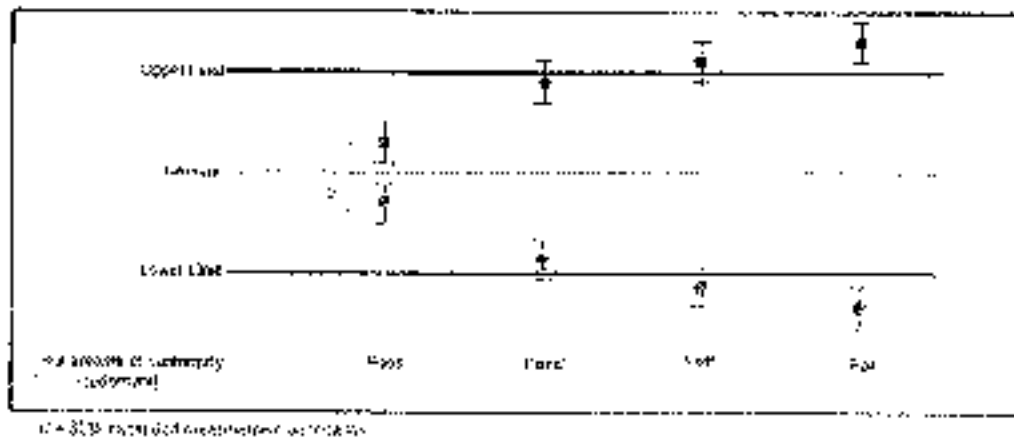
Smart Tech Calibration & Services Co., Ltd.

Certificate No. - STCR-2504098-3

Page 4 of 4

## Statements of Conformity

The standard decision rule employed for the statement of conformity to each calibration result will be applied using ILAC-Q8:08/2018: Guidelines on Decision Rules and Statements of Conformity as following Fig. and statements when the measurement uncertainty is taken in to account.



- Pass** : The measurement result plus the expanded uncertainty with a 95% coverage probability were within the specification limit. Then conformity with the specification is stated.
- Marg** : The measurement result was within the specification limit, but a portion of the expanded uncertainty with a 95% coverage probability was overlapped the specification limit. It is not possible to state conformity using the 95% coverage probability for the expanded uncertainty with although the measurement result was below the limit.
- Not** : The measurement result was out of the specification limit, but a portion of the expanded uncertainty with a 95% coverage probability was in the specification. It is not possible to state non-conformity using the 95% coverage probability for the expanded uncertainty although the measurement result was out of the limit.
- Fail** : The measurement result plus the expanded uncertainty with a 95% coverage probability was outside the specification limit. Then non-conformity with the specification is stated.

The measurement results and the statements of conformity with specification only relate to the item calibrated.

When functional verification tests and other inspection without measure uncertainty are performed, the reported results do not affect these statements of Conformity.

- End of Certificate -

**SMART TECH CALIBRATION & SERVICES CO., LTD.**

14506 MDO 8, RANGSIT-NAKHON NAYOK ROAD, LAM PHAK KUT.

THANVATURN, PATHUM THANI 12130, THAILAND

Tel. +662-414-3148 Email: stcal.mdo@gmail.com Website: stc-call.com



Certificate No. STCR-2504098-4

Work Order No. STCR-2504098

Page 1 of 4

**Customer Name** : G.T. ENVIRONMENT AND CHEMICAL CO., LTD.  
8/40-41 M 2 T.Bangkrueang A,Bangkrueang Nonhaburi 11130

**Equipment Name** : Sound Level Meter  
**Manufacturer** : Scalet Tech  
**Model** : ST 210  
**Serial Number** : 820408  
**Control Number** : N/A  
**Received Date** : Apr 12, 2025  
**Calibration Date** : Apr 13, 2025  
**Recommended Due Date** : N/A  
**Calibration Method** : Calibration Procedure No. CPE-04-01

**Environmental Conditions**

**Ambient Temperature** :  $(25 \pm 2) ^\circ\text{C}$   
**Ambient Relative Humidity** :  $(50 \pm 15) \% \text{RH}$   
**Calibration Place** : Permanent Calibration Laboratory

**Condition as received** : Nominal

**Calibration Result** : See data attached

1. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level of confidence of approximately 95%.
2. The Unit Under Calibration (UUC) has been calibrated by using the working standard which is traceable to SI Units. The calibration procedure documented is intended to implement the requirements of ISO/IEC 17025 : 2017
3. The working standard is indicated in page 2 of this certificate
4. This report applies to the item calibrated and shall not be reproduced except in full, without written approval by Calibration Laboratory, Smart Tech Calibration & Services Co., Ltd.
5. This results of this report only to the items calibrated.

**Date of Issue** : Apr 28, 2025

**Approved by :**

**Calibrated by** : G. Jitayu



# Calibration Report

Smart Tech Calibration & Services Co., Ltd.

Certificate No.: STCR-2504098-4

Page 2 of 4

## Standards Equipment Used

<u>Equipment Name</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>	<u>Traceability to</u>
Sound Calibrator	N975185	5523631031354588	Nov 6, 2025	MP-TH

## Traceability

This calibration is traceable to the International System of Unit via -

- MP-TH : Micro Precision Calibration Laboratory (Thailand) Co., Ltd.



# Calibration Report

Smart Tech Calibration & Services Co., Ltd

Certificate No.: STCR-2504086-4

Page 3 of 4

UUC Range : 130 to 130) dB

Resolution : 0.1 dB

Results of Calibration : ☐ Without adjustment : ☒ With adjustment

Appearance and Function of Use Inspection : GOOD

Sound Level Calibration @ Frequency 1 kHz

Select : A

Response times	STD. Value	UUC. Reading		Correction	(a) Tolerance	(z) Uncertainty	Judgment
		Before Adjustment	After Adjustment				
FAST	94.06 dB	94.4 dB	94.1 dB	-0.01 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	114.5 dB	114.0 dB	0.07 dB	1.0 dB	0.40 dB	Pass
SLOW	94.09 dB	94.4 dB	94.1 dB	-0.01 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	114.5 dB	114.0 dB	0.07 dB	1.0 dB	0.40 dB	Pass

Sound Level Calibration @ Frequency 1 kHz

Select : C

Response times	STD. Value	UUC. Reading		Correction	(a) Tolerance	(z) Uncertainty	Judgment
		Before Adjustment	After Adjustment				
FAST	94.09 dB	94.5 dB	94.1 dB	-0.01 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	114.5 dB	114.0 dB	0.07 dB	1.0 dB	0.40 dB	Pass
SLOW	94.09 dB	94.5 dB	94.0 dB	-0.09 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	114.5 dB	114.0 dB	0.07 dB	1.0 dB	0.40 dB	Pass

STD = Standard

UUC = Unit Under Calibration

## Notes :

- 1) Tolerances or specifications report in table above are based on the IEC61672-1 : 2013 (Class 2).
- 2) Statements of conformity (Judgment) are based on the decision rule described in the last page in the certificate



# Calibration Report

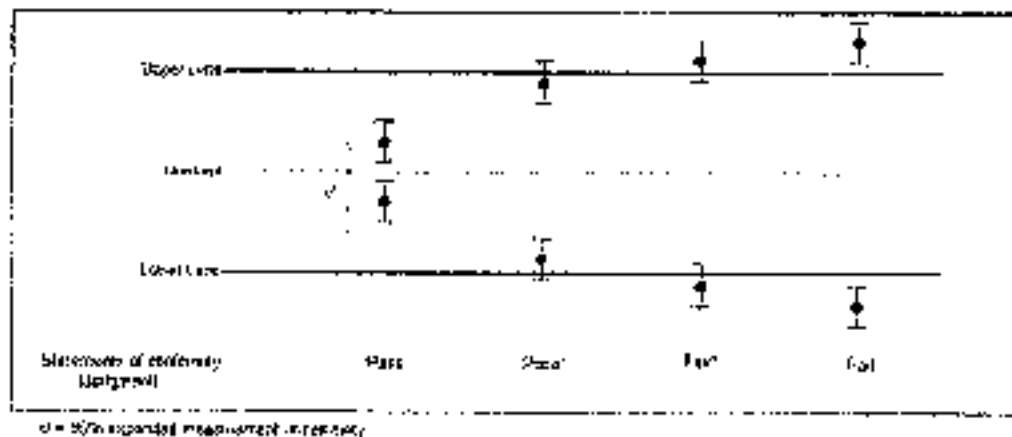
Smart Tech Calibration & Services Co., Ltd

Certificate No. : STCR-230409B-4

Page 4 of 4

## Statements of Conformity

The standard decision rule employed for the statement of conformity to each calibration result will be applied using ILAC-G8:08/2018, Guidelines on Decision Rules and Statements of Conformity as following Fig. and statements when the measurement uncertainty is taken in to account.



- Pass** : The measurement result plus the expanded uncertainty with a 95% coverage probability were within the specification limit. Then conformity with the specification is stated.
- Pass\*** : The measurement result was within the specification limit but a portion of the expanded uncertainty with a 95% coverage probability was overlapped the specification limit. It is not possible to state conformity using the 95% coverage probability for the expanded uncertainty even although the measurement result was below the limit.
- Fail\*** : The measurement result was out of the specification limit but a portion of the expanded uncertainty with a 95% coverage probability was in the specification. It is not possible to state non-conformity using the 95% coverage probability for the expanded uncertainty although the measurement result was out of the limit.
- Fail** : The measurement result plus the expanded uncertainty with a 95% coverage probability was outside the specification limit. Then non-conformity with the specification is stated.

The measurement results and the statements of conformity with specification only relate to the items calibrated.

When functional verification tests and other inspection without measure uncertainty are performed, the reported results do not affect these statements of Conformity.

- End of Certificate -



**SMART TECH CALIBRATION & SERVICES CO., LTD.**

14908 WDD 3, RANGSEI-NAKHON NAYOK ROAD, LAM PHAK KUT,  
THANYABURI, PATHUM THANI 12110, THAILAND  
Tel : 092-114-8148 Email : stc.n4@gmail.com Website : stc-cal.com



Certificate No. STCR-2504098-5

Work Order No. STCR-0904098

Page 1 of 4

**Customer Name** : C.T. ENVIRONMENT AND CHEMICAL CO., LTD.  
940-41 M 2 T.Bangkrueang A.Bangkrue Nonthaburi 11130

**Equipment Name** : Sound Level Meter  
**Manufacturer** : Scalet Tech  
**Model** : ST 210  
**Serial Number** : 820407  
**Control Number** : N/A  
**Received Date** : Apr 12, 2025  
**Calibration Date** : Apr 13, 2025  
**Recommended Due Date** : N/A  
**Calibration Method** : Calibration Procedure No. CPE-01-01

**Environmental Conditions**

**Ambient Temperature** :  $(25 \pm 2) ^\circ\text{C}$   
**Ambient Relative Humidity** :  $(50 \pm 15) \% \text{RH}$   
**Calibration Place** : Permanent Calibration Laboratory

**Condition as received** : Normal

**Calibration Result** : See data attached

1. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level of confidence of approximately 95%.
2. The Unit Under Calibration (UUC) has been calibrated by using the working standard which is traceable to SI-Units.  
The calibration procedure documented is intended to implement the requirements of ISO/IEC 17025 : 2017
3. The working standard is indicated in page 2 of this certificate.
4. This report applies to the item calibrated and shall not be reproduced except in full, without written approval by Calibration Laboratory, Smart Tech Calibration & Services Co., Ltd.
5. This results of this report only to the items calibrated.

**Date of Issue** : Apr 28, 2026

**Approved by :**

**Calibrated by** : C. Jarayu



# Calibration Report

Smart Tech Calibration & Services Co., Ltd

Certificate No.: STCR-2504098-5

Page 2 of 4

## Standards Equipment Used

<u>Equipment Name</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>	<u>Traceability to</u>
Sound Calibrator	N975185	5523531031354566	Nov 6, 2025	MP·TH

## Traceability

This calibration is traceable to the International System of Unit via :

- MP·TH : Micro Precision Calibration Laboratory (Thailand) Co., Ltd.



# Calibration Report

Smart Tech Calibration & Services Co. Ltd

Certificate No.: STCR-25040908-5

Page 3 of 4

UUC Range : (30 to 130) dB

Resolution : 0.1 dB

Results of Calibration: ( ✓ ) Without adjustment | ( ) With adjustment

Appearance and Function of Use Inspection : GOOD

Sound Level Calibration @ Frequency 1 kHz

Select : A

Response times	STD. Value	UUC. Reading		Correction	(±) Tolerance	(±) Uncertainty	Judgment
		Before Adjustment	After Adjustment				
FAST	94.09 dB	94.0 dB	-	0.09 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	113.9 dB	-	0.17 dB	1.0 dB	0.40 dB	Pass
SLOW	94.09 dB	94.1 dB	-	-0.01 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	113.9 dB	-	0.17 dB	1.0 dB	0.40 dB	Pass

Sound Level Calibration @ Frequency 1 kHz

Select : C

Response times	STD. Value	UUC. Reading		Correction	(±) Tolerance	(±) Uncertainty	Judgment
		Before Adjustment	After Adjustment				
FAST	94.09 dB	94.1 dB	-	-0.01 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	113.9 dB	-	0.17 dB	1.0 dB	0.40 dB	Pass
SLOW	94.09 dB	94.1 dB	-	-0.01 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	113.9 dB	-	0.17 dB	1.0 dB	0.40 dB	Pass

STD = Standard

UUC = Unit Under Calibration

Notes :

- 1) Tolerances or specifications report in table above are based on the IEC61672-1 : 2013 (Class 2)
- 2) Statements of conformity (Judgment) are based on the decision rule described in the last page in this certificate



# Calibration Report

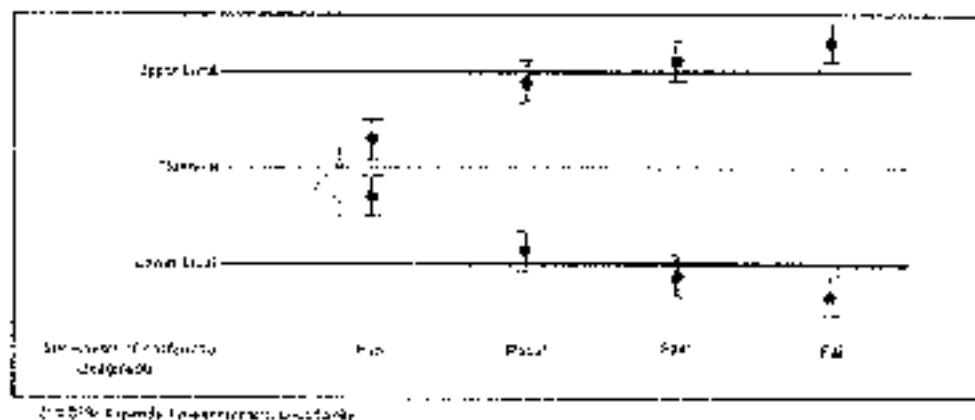
Smart Tech Calibration & Services Co., Ltd.

Certificate No. : STCR-250409B-5

Page 4 of 4

## Statements of Conformity

The standard decision rule employed for the statement of conformity to each calibration result will be applied using ILAC-G8:09/2019: Guidelines on Decision Rules and Statements of Conformity as following Fig. and statements when the measurement uncertainty is taken in to account.



- Pass** : The measurement result plus the expanded uncertainty with a 95% coverage probability were within the specification limit. Then conformity with the specification is stated.
- Pass** : The measurement result was within the specification limit, but a portion of the expanded uncertainty with a 95% coverage probability was overlapped the specification limit. It is not possible to state conformity using the 95% coverage probability for the expanded uncertainty with although the measurement result was below the limit.
- Fail** : The measurement result was out of the specification limit, but a portion of the expanded uncertainty with a 95% coverage probability was in the specification. It is not possible to state non-conformity using the 95% coverage probability for the expanded uncertainty although the measurement result was out of the limit.
- Fail** : The measurement result plus the expanded uncertainty with a 95% coverage probability was outside the specification limit. Then non-conformity with the specification is stated.

The measurement results and the statements of conformity with specification only relate to the item calibrated.

When functional verification tests and other inspection without measure uncertainty are performed, the reported results do not affect these statements of Conformity.

- End of Certificate -

**SMART TECH CALIBRATION & SERVICES CO., LTD.**

14508 MOO 3, RANGSIT-NAKHON NAYOK ROAD, LAM PHAK KUT.

THANYABURI, PATHUM THANI 12110, THAILAND

Tel. +662-114-3148 Email : stcalund@gmail.com Website : stc-08.com



Certificate No. STCR-2604096-7

Work Order No. STCR-2604096

Page 1 of 4

**Customer Name** : C.T. ENVIRONMENT AND CHEMICAL CO., LTD  
940-41 M 2 T Bangkrueang A Bangmuay Nonthaburi 11130

**Equipment Name** : Sound Level Meter  
**Manufacturer** : Scandl Tech  
**Model** : ST 210  
**Serial Number** : 820409  
**Control Number** : N/A  
**Received Date** : Apr 12, 2025  
**Calibration Date** : Apr 13, 2025  
**Recommended Due Date** : N/A  
**Calibration Method** : Calibration Procedure No. CPE-04-01

**Environmental Conditions**

**Ambient Temperature** :  $(25 \pm 2) ^\circ\text{C}$   
**Ambient Relative Humidity** :  $(50 \pm 15) \% \text{RH}$   
**Calibration Place** : Permanent Calibration Laboratory  
**Condition as received** : Normal  
**Calibration Result** : See data attached

1. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level of confidence of approximately 95%.
2. The Unit Under Calibration (UUC) has been calibrated by using the working standard which is traceable to SI Units.  
The calibration procedure documented is intended to implement the requirements of ISO/IEC 17025 : 2017
3. The working standard is included in page 2 of this certificate.
4. This report applies to the item calibrated and shall not be reproduced except in full, without written approval by Calibration Laboratory, Smart Tech Calibration & Services Co., Ltd.
5. This results of this report only to the items calibrated.

**Date of Issue** : Apr 28, 2025**Approved by :****Calibrated by** : C. Jirayu

# Calibration Report

Smart Tech Calibration & Services Co., Ltd

Certificate No.: STCR-2504098-7

Page 2 of 4

## Standards Equipment Used

<u>Equipment Name</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>	<u>Traceability to</u>
Sound Calibrator	N875185	552383+03+354586	Nov 6, 2025	MP-TH

## Traceability

This calibration is traceable to the International System of Unit via :  
- MP-TH : Micro Precision Calibration Laboratory (Thailand) Co., Ltd.



# Calibration Report

Smart Tech Calibration & Services Co., Ltd

Certificate No.: STCR-2354006-7

Page 3 of 4

UUC Range : (30 to 130) dB

Resolution : 0.1 dB

Results of Calibration : ☒ Without adjustment ☐ With adjustment

Appearance and Function of Use Inspection : GOOD

Sound Level Calibration @ Frequency 1 kHz

Select : A

Response times	STD Value	UUC Reading		Correction	(+/-) Tolerance	(+/-) Uncertainty	Judgment
		Before Adjustment	After Adjustment				
FAST	94.09 dB	94.0 dB	-	0.09 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	113.9 dB	-	0.17 dB	1.0 dB	0.40 dB	Pass
SLOW	94.09 dB	94.0 dB	-	0.09 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	113.9 dB	-	0.17 dB	1.0 dB	0.40 dB	Pass

STD = Standard

UUC = Unit Under Calibration

Notes :

- 1) Tolerances or specifications report in table above are based on the IEC61672-1 :2013 (Class 2)
- 2) Statements of conformity (Judgment) are based on the decision rule described in the last page in this certificate



# Calibration Report

Smart Tech Calibration & Services Co., Ltd

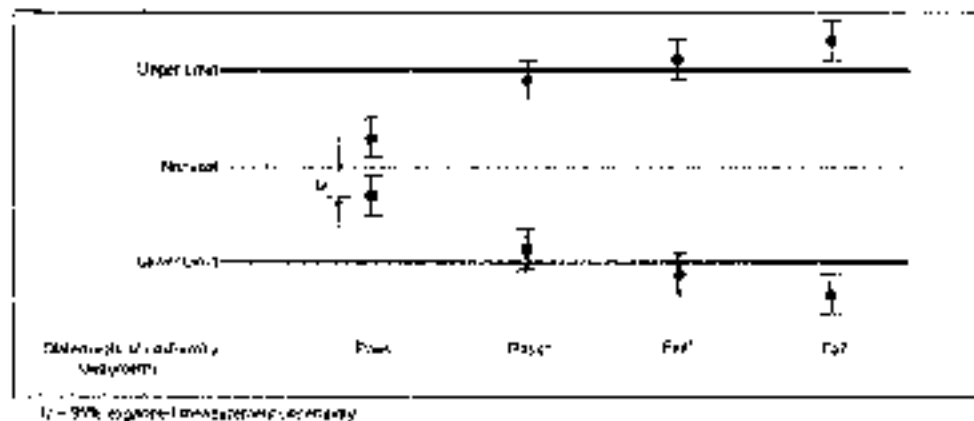
Certificate No. : STCR-2504098-7

Page 4 of 4

## Statements of Conformity

The standard decision rule employed for the statement of conformity to each calibration result will be applied using ILAC-

GB/98/2013; Guidelines on Decision Rules and Statements of Conformity as following Fig. and statements when the measurement uncertainty is taken in to account.



- Pass** : The measurement result plus the expanded uncertainty with a 95% coverage probability were within the specification limit. Then conformity with the specification is stated.
- Pass\*** : The measurement result was within the specification limit, but a portion of the expanded uncertainty with a 95% coverage probability was overlapped the specification limit. It is not possible to state conformity using the 95% coverage probability for the expanded uncertainty with although the measurement result was below the limit.
- Fail\*** : The measurement result was out of the specification limit, but a portion of the expanded uncertainty with a 95% coverage probability was in the specification. It is not possible to state non-conformity using the 95% coverage probability for the expanded uncertainty although the measurement result was out of the limit.
- Fail** : The measurement result plus the expanded uncertainty with a 95% coverage probability was outside the specification limit. Then nonconformity with the specification is stated.

The measurement results and the statements of conformity with specification only relate to the item calibrated.

When functional verification tests and other inspection without measure uncertainty are performed, the reported results do not affect these statements of Conformity.

- End of Certificate -



**SMART TECH CALIBRATION & SERVICES CO., LTD.**

14306 MOO 3, RANGSIT-NAKHON NAYOK ROAD, LAM PHEK KUT,  
THANYABURI PATHUM THANI 12110, THAILAND  
Tel +662-114-3148 Email: [stcLtd@gmail.com](mailto:stcLtd@gmail.com) WebSite : [stc-cbi.com](http://stc-cbi.com)



Certificate No. STCR-2504098-8

Work Order No. STCR-2504098

Page 1 of 4

**Customer Name** : C.T. ENVIRONMENT AND CHEMICAL CO., LTD.  
9460-41 M 2 T Bangkrueang A. Bangkruay Nonthaburi 11130

**Equipment Name** : Sound Level Meter  
**Manufacturer** : Scaier Tech  
**Model** : ST 21D  
**Serial Number** : 820410  
**Control Number** : N/A  
**Received Date** : Apr 12, 2025  
**Calibration Date** : Apr 13, 2025  
**Recommended Due Date** : N/A  
**Calibration Method** : Calibration Procedure No. CPE-04-01

**Environmental Conditions**

**Ambient Temperature** :  $(25 \pm 2) ^\circ\text{C}$   
**Ambient Relative Humidity** :  $(50 \pm 15) \% \text{RH}$   
**Calibration Place** : Permanent Calibration Laboratory

**Condition as received** : Normal

**Calibration Result** : See data attached

1. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level of confidence of approximately 95%.
2. The Unit Under Calibration (UUC) has been calibrated by using the working standard which is traceable to SI-Units.  
The calibration procedure documented is intended to implement the requirements of ISO/IEC 17025 : 2017
3. The working standard is indicated in page 2 of this certificate.
4. This report applies to the item calibrated and shall not be reproduced except in full without written approval by Calibration Laboratory, Smart Tech Calibration & Services Co., Ltd.
5. This results of this report only to the items calibrated.

**Date of Issue** : Apr 28, 2025

**Approved by** .

**Calibrated by** : C. Jiraya



# Calibration Report

Smart Tech Calibration & Services Co., Ltd

Certificate No.: STCR-2504098-B

Page 2 of 4

## Standards Equipment Used

<u>Equipment Name</u>	<u>Serial No</u>	<u>Certificate No</u>	<u>Due Date</u>	<u>Traceability to</u>
Sound Calibrator	N9751B5	5523631031354566	Nov 6, 2025	MP-TH

## Traceability

This calibration is traceable to the International System of Unit via :

- MP-TH : Micro Precision Calibration Laboratory (Thailand) Co., Ltd.



# Calibration Report

Smart Tech Calibration & Services Co., Ltd

Certificate No.: STCR-2504099-0

Page 2 of 4

UUC Range : (30 to 132) dB

Resolution : 0.1 dB

Results of Calibration: [ ☒ ] Without adjustment [ ☐ ] With adjustment

Appearance and Function of Use Inspection : GOOD

Sound Level Calibration @ Frequency 1 kHz

Select : A

Response times	STD Value	UUC Reading		Correction	L1 Tolerance	(±) Uncertainty	Judgment
		Before Adjustment	After Adjustment				
FAST	94.09 dB	94.1 dB	-	-0.01 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	113.9 dB	-	0.17 dB	1.0 dB	0.40 dB	Pass
SLOW	94.09 dB	94.1 dB	-	-0.01 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	113.9 dB	-	0.17 dB	1.0 dB	0.40 dB	Pass

Sound Level Calibration @ Frequency 1 kHz

Select : C

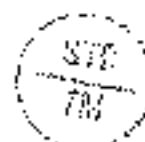
Response times	STD Value	UUC Reading		Correction	(±) Tolerance	(±) Uncertainty	Judgment
		Before Adjustment	After Adjustment				
FAST	94.09 dB	94.0 dB	-	0.09 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	113.9 dB	-	0.17 dB	1.0 dB	0.40 dB	Pass
SLOW	94.09 dB	94.0 dB	-	0.09 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	113.9 dB	-	0.17 dB	1.0 dB	0.40 dB	Pass

STD = Standard

UUC = Unit Under Calibration

Notes :

- 1) Tolerances or specifications report in table above are based on the IEC61672-1 : 2013 (Class 2)
- 2) Statements of conformity (Judgment) are based on the decision rule described in the last page in this certificate.



# Calibration Report

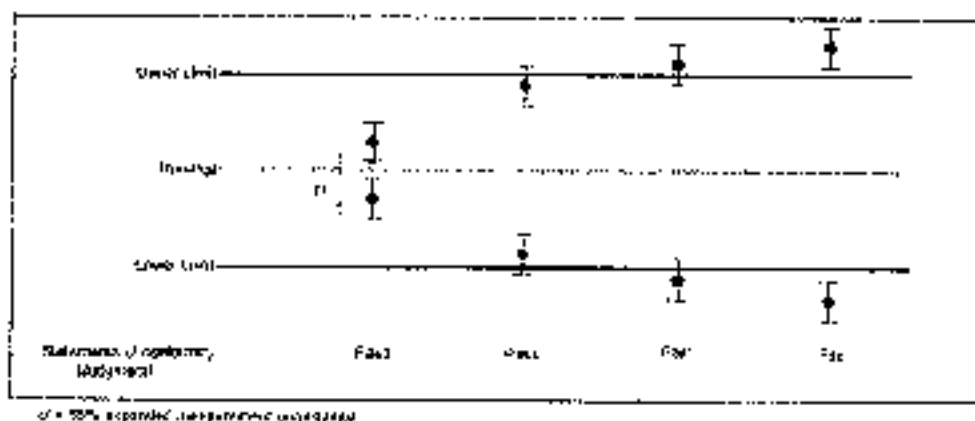
Smart Tech Calibration & Services Co., Ltd.

Certificate No. : STCR-2504098-8

Page 4 of 4

## Statements of Conformity

The standard decision rule employed for the statement of conformity to each calibration result will be applied using ILAC-Q8:08/2019, Guidelines on Decision Rules and Statements of Conformity as following Fig. and statements when the measurement uncertainty is taken in to account.



- Pass** : The measurement result plus the expanded uncertainty with a 95% coverage probability were within the specification limit. Then conformity with the specification is stated.
- Pass\*** : The measurement result was within the specification limit, but a portion of the expanded uncertainty with a 95% coverage probability was overlapped the specification limit. It is not possible to state conformity using the 95% coverage probability for the expanded uncertainty with although the measurement result was below the limit.
- Fail\*** : The measurement result was out of the specification limit, but a portion of the expanded uncertainty with a 95% coverage probability was in the specification. It is not possible to state non-conformity using the 95% coverage probability for the expanded uncertainty although the measurement result was out of the limit.
- Fail** : The measurement result plus the expanded uncertainty with a 95% coverage probability was outside the specification limit. Then non-conformity with the specification is stated.

The measurement results and the statements of conformity with specification only relate to the item calibrated.

When functional verification tests and other inspection without measure uncertainty are performed, the reported results do not affect these statements of Conformity.

- End of Certificate -

Smart Tech  
Calibration & Services Co., Ltd.



## Certificate of Calibration

Certificate Number : SPR25100223-3

Page : 1 of 3

Customer : Thai Environmental Technic Limited.

116 Soi Ramkhamhaeng 145, Khwaeng Saphan Sung, Khet Saphan  
Sung, Bangkok 10240, Thailand.

Equipment Name : Sound Level Meter

Manufacturer : Scaier Toch

Model : ST11D

Serial Number : 820092

ID. Number : No.80

### Environmental Conditions

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

Received Date : 16 Oct 2025

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

Calibration Date : 17 Oct 2025

Location of Calibration : In-Lab

Recommend Due Date : 17 Oct 2026

Calibration Procedure : SP-CPE-04-01

Date of Issue : 18 Oct 2025

### Method of Calibration

This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent, National metrology institute, Natural physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full, without written approval of SP Metrology System (Thailand).

Calibrated by : Mr.Namwasi Wanasi

Approved by

Calibration Officer



( Mr.Pootthapong A. )

Authorized Signatory



## Calibration Report

Certificate Number : SPR25100223-3

Page : 2 of 3

### Reference Standards

Equipment Name	Model	Serial No.	Certificate No.	Due Date
Sound Level Calibrator	ST-120	211203773	S&L BP.22/C265	20 Feb 2026

### Traceability

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

TISTR - Thailand Institute of Scientific and Technological Research



## Result of Calibration

Certificate Number : SPR25100223-3

Page : 3 of 3

Range : 94 to 114 dB

Function : @1kHz

Select : A

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty ( ± )
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
114	114.0	114.0	0.0	0.0	0.15

Select : C

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty ( ± )
	Fast	Slow	Fast	Slow	
94	93.9	93.9	-0.1	-0.1	0.15
114	113.9	113.9	-0.1	-0.1	0.15

Select : Z

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty ( ± )
	Fast	Slow	Fast	Slow	
94	93.9	93.9	-0.1	-0.1	0.15
114	113.9	113.9	-0.1	-0.1	0.15

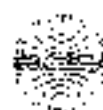
### Note:

The result of calibration was found accurate as show on date and place of calibration only.  
This Certificate is not certified for any commercial transaction.

### Measurement Uncertainty

The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor  $k = 2.00$  providing a level of confidence approximately 95%.

- End of Certificate -



## Certificate of Calibration

Certificate Number : SPR25/00223-4

Page : 1 of 3

Customer : Thai Environmental Techno Limited.

110 Soi Ramkhamphaeng 1-5, Khwaeng Saphan Sung, Khet Saphan  
Sung, Bangkok 10240, Thailand.

Equipment Name : Sound Level Meter

Manufacturer : Scarlett Tech

Model : ST110

Serial Number : 820393

ID. Number : No.81

### Environmental Conditions

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

Received Date : 15 Oct 2025

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

Calibration Date : 17 Oct 2025

Location of Calibration : In-Lab

Recommend Due Date : 17 Oct 2026

Calibration Procedure : SP-CPE-04-01

Date of Issue : 18 Oct 2025

### Method of Calibration

This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent, National metrology institute, Natural physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full, without written approval of SP Metrology System (Thailand).

Calibrated by : Mr.Nanthawat Wanasit

Approved by

Calibration Officer



( Mr.Poorthipong A. )

Authorized Signatory

SP-FM-04-15 rev.C





## Calibration Report

Certificate Number : SPR25100223-4

Page : 2 of 3

### Reference Standards

Equipment Name	Model	Serial No.	Certificate No.	Due. Date
Sound Level Calibrator	ST-120	211203773	EEL.BP.2240269	20 Feb 2025

### Traceability

This certification is traceable to the international System of Unit maintained at .

TISTR : Thailand Institute of Scientific and Technological Research



## Result of Calibration

Certificate Number : SPR25100223-4

Page : 3 of 3

Range : 94 to 114 dB

Function : @1kHz

Select : A

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty ( ± )
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
114	113.9	113.9	-0.1	-0.1	0.15

Select : C

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty ( ± )
	Fast	Slow	Fast	Slow	
94	93.9	93.9	-0.1	-0.1	0.15
114	113.8	113.8	-0.2	-0.2	0.15

Select : Z

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty ( ± )
	Fast	Slow	Fast	Slow	
94	93.9	93.9	-0.1	-0.1	0.15
114	113.8	113.8	-0.2	-0.2	0.15

### Note:

The result of calibration was found accurate as show on date and place of calibration only.  
This Certificate is not certified for any commercial transaction.

### Measurement Uncertainty

The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor  $k = 2.00$ , providing a level of confidence approximately 95%.

- End of Certificate -

## Sound Level Meter Calibration Report

Equipment Type : Sound Level Meter  
Calibrator : SCARLET ST-120  
Standard : IEC 60942:2017 CLASS1  
Accuracy :  $\pm 0.1 \pm 0.3$  dB and  $\pm 1.4 \pm 0.5$  dB  
Frequency : at 1,000 Hz  $\pm 1\%$   
Calibrator Serial NO. : S1129CL204E

Calibration Date : 1-Aug-2025  
Barometric pressure (mmHg) : 759.0 mmHg  
Temperature (23-30°C) : 25.00 °C  
Relative Humidity (50 $\pm$ 15 %) : 50.0 % RH  
Used Date of Calibrate : 31-Aug-2025

Item	Instrument Calibrated			Reference Acoustic dB	Before Adjust				After Adjust $\pm$ dB	Deviation $\pm$ dB	Result Calibrate
	Brand	Model	Serial NO		เครื่อง 1	เครื่อง 2	เครื่อง 3	เฉลี่ย			
46	ACO	6206	112029	94.0	94.0	94.0	94.0	94.0	94.0	0.0	PASS
				114.0	114.0	114.0	114.0	114.0			
48	ACO	6206	152074	94.0	94.1	94.1	94.1	94.1	94.0	0.1	PASS
				114.0	114.0	114.0	114.0	114.0			
49	ACO	6206	152075	94.0	94.1	94.1	94.1	94.1	94.0	0.1	PASS
				114.0	114.1	114.1	114.1	114.1			
50	ACO	6206	152076	94.0	94.1	94.1	94.1	94.1	94.0	0.1	PASS
				114.0	114.1	114.1	114.1	114.1			
51	ACO	6206	152077	94.0	94.2	94.2	94.2	94.2	94.0	0.2	PASS
				114.0	114.1	114.1	114.1	114.1			
52	ACO	6226	150142	94.0	94.2	94.2	94.2	94.2	94.0	0.2	PASS
				114.0	114.2	114.2	114.2	114.2			
53	ACO	6226	160095	94.0	94.2	94.2	94.2	94.2	94.0	0.2	PASS
				114.0	114.2	114.2	114.2	114.2			
54	ACO	6206	160096	94.0	93.8	93.8	93.8	93.8	94.0	0.2	PASS
				114.0	113.8	113.8	113.8	113.8			
55	ACO	6206	160097	94.0	94.1	94.1	94.1	94.1	94.0	0.1	PASS
				114.0	114.1	114.1	114.1	114.1			
56	ACO	6226	160098	94.0	93.9	93.9	93.9	93.9	94.0	0.1	PASS
				114.0	113.8	113.8	113.8	113.8			

Calibration By : 

Approved By :

## Sound Level Meter Calibration Report

Equipment Type	: Sound Level Meter	Calibration Date	: 1-Aug-2025
Calibrator	: SCARLET ST-120	Barometric pressure (mmHg)	: 759.0 mmHg
Standard	: IEC 60942:2017 CLASS1	Temperature (23±3)°C	: 25.00 °C
Accuracy	: 94.0 ±0.3 dB and 114.0±0.5 dB	Relative Humidity(50±15 %)	: 50.0 % RH
Frequency	: at 1,000 Hz ±1%	Due Date of Calibrate	: 31-Aug-2025
Calibrator Serial NO.	: ST120C1204E		

Items	Instrument Calibrated			Reference Acoustic dB	Before Adjust				After Adjust ± dB	Deviation ± dB	Result Calibrate
	Brand	Model	Serial NO.		ครั้งที่ 1	ครั้งที่ 2	ครั้งที่ 3	เฉลี่ย			
66	ACO	6236	222036	94.0	94.0	94.0	94.0	94.0	94.0	0.0	PASS
				114.0	114.0	114.0	114.0	114.0			
69	ACO	6236	222037	94.0	94.0	94.0	94.0	94.0	94.0	0.0	PASS
				114.0	114.0	114.0	114.0	114.0			
70	ACO	6236	222038	94.0	94.1	94.1	94.1	94.1	94.0	0.1	PASS
				114.0	114.1	114.1	114.1	114.1			
71	ACO	6236	222039	94.0	94.0	94.0	94.0	94.0	94.0	0.0	PASS
				114.0	114.0	114.0	114.0	114.0			
72	ACO	6236	222040	94.0	94.1	94.1	94.1	94.1	94.0	0.1	PASS
				114.0	114.1	114.1	114.1	114.1			
74	ACO	6236	222243	94.0	94.0	94.0	94.0	94.0	94.0	0.0	PASS
				114.0	114.0	114.0	114.0	114.0			
75	ACO	6236	222246	94.0	94.1	94.1	94.1	94.1	94.0	0.1	PASS
				114.0	114.1	114.1	114.1	114.1			
76	ACO	6236	222247	94.0	93.9	93.9	93.9	93.9	94.0	0.1	PASS
				114.0	113.9	113.9	113.9	113.9			

Calibration By : 

Approved By : 



SCARLET TECH

# Certificate of Calibration

## for ST-120 Sound Calibrator

No. 20250420J102

Name of Product	Sound Calibrator
Model	ST-120
Serial Number	ST120C1204E
Specifications	Class 1
Date	2025/04/20

Tested by: C. Hsiao



This certificate may not be published or reproduced, except in full, unless  
obtaining permission in writing from Scarlet Tech Ltd.  
4F-3, No. 347, 2nd Sec, Heping E. Rd., Daan Dist, Taipei City 106, Taiwan

## Certificate of ST-120 Sound Calibrator

No. 20250420J102

### 1. Preliminary Inspection

	Result
Visual inspection	Pass

### 2. Sound Pressure Level

Measured Level (dB)	Actual Level (dB)	Tolerance (dB)	Measurement Uncertainty (dB)	Result
94.01	93.99	93.60-94.40	0.11	Pass
114.01	114.07	113.60-114.40	0.11	Pass

### 3. Frequency

Measured Frequency (Hz)	Actual Frequency (Hz)	Tolerance (Hz)	Measurement Uncertainty (Hz)	Result
999.0	1000	990.00-1010.00	0.10	Pass

### 4. Distortion

Measured Distortion (%)	Calibration Level (dB)	Tolerance (%)	Measurement Uncertainty (dB)	Result
0.5	94	<3.00	0.13	Pass
0.5	114	<3.00	0.13	Pass

### Environment conditions

Air temperature : 24 °C

Relative humidity : 80 %

Static pressure : 1 kPa

The standard generators used for calibration procedure are checked once a year and can be traceable to the standard authorized by public organization.

**SMART TECH CALIBRATION & SERVICES CO., LTD.**

14/508 MOO 3, RANGSIT-NAKHON NAYOK ROAD, LAM PHAK KUT,  
THANYABURI, PATHUM THANI 12110, THAILAND  
Tel: +662-114-3148 Email: stc@red@gmail.com Website: stc-cal.com



Certificate No. STCR-2806001-1

Work Order No. STCR-2806001

Page 1 of 4

**Customer Name** : C.T. ENVIRONMENT AND CHEMICAL CO., LTD.  
9rd-41 M.2 T.Bangrueng A.Bangbuay Northaburi 11130

**Equipment Name** : Sound Level Meter  
**Manufacturer** : Scepter Tech  
**Model** : ST 210  
**Serial Number** : 820486  
**Control Number** : N/A  
**Received Date** : Jun 14, 2025  
**Calibration Date** : Jun 15, 2025  
**Recommended Due Date** : N/A  
**Calibration Method** : Calibration Procedure No. CPE-01-01

**Environmental Conditions**

**Ambient Temperature** :  $(25 \pm 2) ^\circ\text{C}$   
**Ambient Relative Humidity** :  $(50 \pm 15) \% \text{RH}$   
**Calibration Place** : Permanent Calibration Laboratory

**Condition as received** : Normal

**Calibration Result** : See data attached

1. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level of confidence of approximately 95%.
2. The Unit Under Calibration (UUC) has been calibrated by using the working standard which is traceable to SI-Units. The calibration procedure documented is intended to implement the requirements of ISO/IEC 17025 : 2017.
3. The working standard is indicated in page 2 of the certificate.
4. This report applies to the item calibrated and shall not be reproduced except in full, without written approval by Calibration Laboratory, Smart Tech Calibration & Services Co., Ltd.
5. This result of this report only to the items calibrated.

**Date of Issue** : Jun 15, 2025  
**Calibrated by** : C. Jaiyu

**Approved by :**

# Calibration Report

Smart Tech Calibration & Services Co., Ltd

Certificate No.: STCR-2508001-1

Page 2 of 4

## Standards Equipment Used

<u>Equipment Name</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>	<u>Traceability to</u>
Sound Calibrator	N975185	6523531031354566	Nov 6, 2025	MP-TH

## Traceability

This calibration is traceable to the International System of Unit via :

- MP-TH : Micro Precision Calibration Laboratory (Thailand) Co., Ltd.





# Calibration Report

Sinan Tech Calibration & Services Co., Ltd

Certificate No.: STCR-2300003-1

Page 3 of 4

UUC Range : (00 to +30) dB Resolution : 0.1 dB

Results of Calibration : ☐ Without adjustment ☒ With adjustment

Appearance and Function of Use Inspection : GOOD

Sound Level Calibration @ Frequency 1 kHz Select : A

Response times	STD. Value	UUC Reading		Correction	(±) Tolerance	(±) Uncertainty	Judgment
		Before Adjustment	After Adjustment				
FAST	94.09 dB	94.5 dB	94.1 dB	-0.01 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	114.2 dB	113.9 dB	0.17 dB	1.0 dB	0.40 dB	Pass
SLOW	94.09 dB	94.4 dB	94.1 dB	-0.01 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	114.2 dB	113.9 dB	0.17 dB	1.0 dB	0.40 dB	Pass

Sound Level Calibration @ Frequency 5 kHz Select : C

Response times	STD. Value	UUC Reading		Correction	(±) Tolerance	(±) Uncertainty	Judgment
		Before Adjustment	After Adjustment				
FAST	94.09 dB	94.5 dB	94.1 dB	-0.01 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	114.2 dB	113.9 dB	0.17 dB	1.0 dB	0.40 dB	Pass
SLOW	94.09 dB	94.5 dB	94.1 dB	-0.01 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	114.3 dB	114.0 dB	0.07 dB	1.0 dB	0.40 dB	Pass

STD = Standard

UUC = Unit Under Calibration

Notes :

- 1) Tolerances or specifications report in table above are based on the IEC61672-1 : 2013 (Class 2).
- 2) Statements of conformity (Judgment) are based on the decision rule described in the last page in this certificate.



# Calibration Report

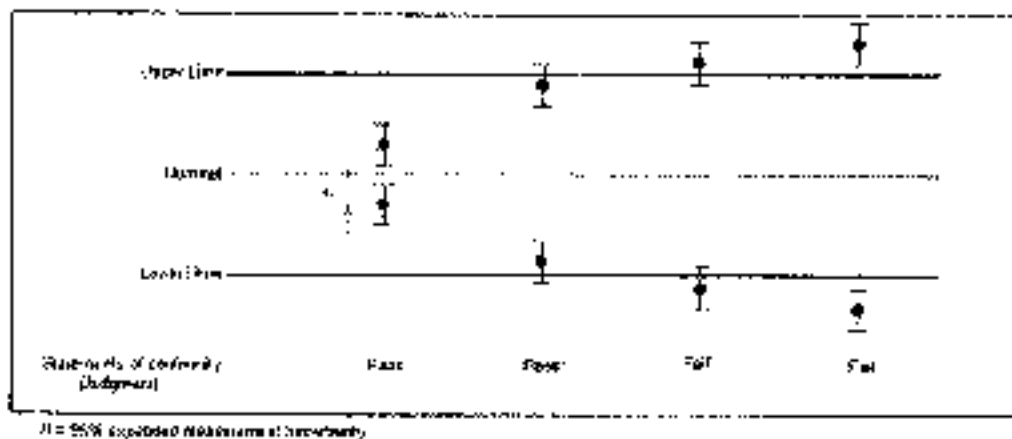
Smart Tech Calibration & Services Co., Ltd.

Certificate No. : STCR-2506001-1

Page 4 of 4

## Statements of Conformity

The standard decision rule employed for the statement of conformity to each calibration result will be applied using ILAC-G8:09/2019; Guidelines on Decision Rules and Statements of Conformity as following Fig. and statements when the measurement uncertainty is taken in to account,



- Pass :** The measurement result plus the expanded uncertainty with a 95% coverage probability were within the specification limit. Then conformity with the specification is stated.
- Pass? :** The measurement result was within the specification limit, but a portion of the expanded uncertainty with a 95% coverage probability was overlapped the specification limit. It is not possible to state conformity using the 95% coverage probability for the expanded uncertainty with although the measurement result was below the limit.
- Fail? :** The measurement result was out of the specification limit, but a portion of the expanded uncertainty with a 95% coverage probability was in the specification. It is not possible to state non-conformity using the 95% coverage probability for the expanded uncertainty although the measurement result was out of the limit.
- Fail :** The measurement result plus the expanded uncertainty with a 95% coverage probability was outside the specification limit. Then non-conformity with the specification is stated.

The measurement results and the statements of conformity with specification only relate to the item calibrated.

When functional verification tests and other inspection without measure uncertainty are performed, the reported results do not affect these statements of Conformity.

- End of Certificate -

**SMART TECH CALIBRATION & SERVICES CO., LTD.**

541508 MOO 3, RANGSIT-NAKHON NAYOK ROAD, LAM PHAK KOT,  
THANYABURI, PATHUM THANI 12110, THAILAND  
Tel :+662-114-3146 Email : stcal.mtd@gmail.com Website : stcal.com



Certificate No. STCR-2306001-3

Work Order No. STCR-2509001

Page 1 of 4

**Customer Name** : C T ENVIRONMENT AND CHEMICAL CO., LTD  
8/40-41 M.2 T.Banglaueang A.Bangkray Nonthaburi 11130

**Equipment Name** : Sound Level Meter  
**Manufacturer** : Scaitel Tech  
**Model** : BT 21D  
**Serial Number** : B20488  
**Control Number** : N/A  
**Received Date** : Jun 14, 2025  
**Calibration Date** : Jun 15, 2025  
**Recommended Due Date** : N/A  
**Calibration Method** : Calibration Procedure No. CPE-04.01

**Environmental Conditions**

**Ambient Temperature** :  $(26 \pm 2) ^\circ\text{C}$   
**Ambient Relative Humidity** :  $(50 \pm 15) \% \text{RH}$   
**Calibration Place** : Permanent Calibration Laboratory

**Condition as received** : Normal

**Calibration Result** : See data attached

1. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level of confidence of approximately 95%.
2. The Unit Under Calibration (UUC) has been calibrated by using the working standard which is traceable to SI-Units. The calibration procedure documented is intended to implement the requirements of ISO/IEC 17025 : 2017
3. The working standard is indicated in page 2 of this certificate.
4. This report applies to the item calibrated and shall not be reproduced except in full, without written approval by Calibration Laboratory, Smart Tech Calibration & Services Co., Ltd.
5. This results of this report only to the items calibrated

**Date of Issue** : Jun 15, 2025  
**Calibrated by** : C. Jitayu

Approved by .



# Calibration Report

Smart Tech Calibration & Services Co., Ltd

Certificate No.: STCR-2506001-3

Page 2 of 4

## Standards Equipment Used

<u>Equipment Name</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>	<u>Traceability to</u>
Sound Calibrator	N875185	5523631031354586	Nov 8, 2025	MP-TH

## Traceability

This calibration is traceable to the International System of Unit via :

- MP-TH : Micro Precision Calibration Laboratory (Thailand) Co., Ltd.



# Calibration Report

Smart Tech Calibration & Services Co., Ltd

Certificate No : STCR/2506001-3

Page 3 of 4

LWC Range : 130 to 130.5 dB

Resolution : 0.1 dB

Results of Calibration: [ ] Without adjustment [ ☒ ] With adjustment

Appearance and Function of Use Inspection : GOOD

Sound Level Calibration @ Frequency 1 kHz

Select : A

Response times	STD. Value	LWC Reading		Correction	(±) Tolerance	(±) Uncertainty	Judgment
		Before Adjustment	After Adjustment				
FAST	94.09 dB	94.3 dB	94.1 dB	-0.01 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	114.2 dB	114.0 dB	0.07 dB	1.0 dB	0.40 dB	Pass
SLOW	94.09 dB	94.4 dB	94.1 dB	-0.01 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	114.3 dB	114.0 dB	0.07 dB	1.0 dB	0.40 dB	Pass

Sound Level Calibration @ Frequency 1 kHz

Select : C

Response times	STD. Value	LWC Reading		Correction	(±) Tolerance	(±) Uncertainty	Judgment
		Before Adjustment	After Adjustment				
FAST	94.09 dB	94.1 dB	94.1 dB	-0.01 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	114.2 dB	113.9 dB	0.17 dB	1.0 dB	0.40 dB	Pass
SLOW	94.09 dB	94.4 dB	94.1 dB	-0.01 dB	1.0 dB	0.40 dB	Pass
	114.07 dB	114.2 dB	113.9 dB	0.17 dB	1.0 dB	0.40 dB	Pass

STD = Standard

LWC = Unit Under Calibration

Notes :

- 1) Tolerances or specifications report in table above are based on the IEC61672-1 : 2013 (Class 2).
- 2) Statements of conformity (Judgment) are based on the decision rule described in the last page in this certificate



# Calibration Report

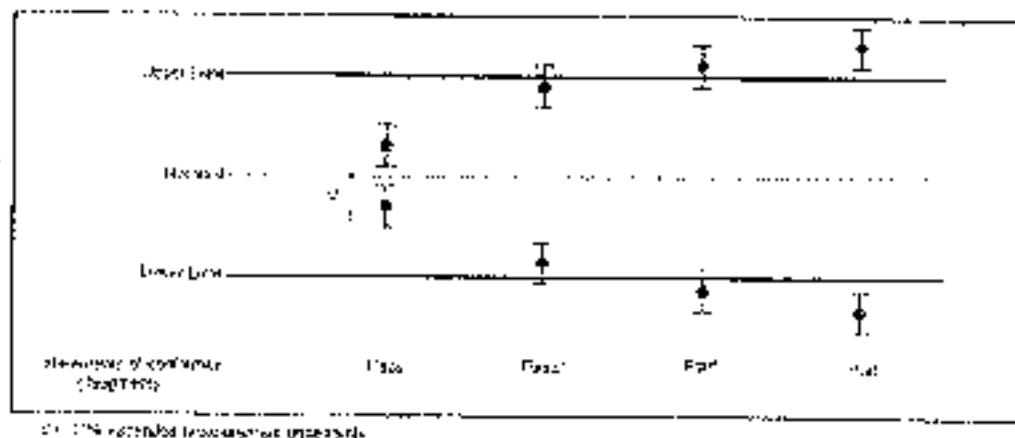
Smart Tech Calibration & Services Co., Ltd.

Certificate No.: STCR-2506001-3

Page 4 of 4

## Statements of Conformity

The standard decision rule employed for the statement of conformity to each calibration result will be applied using ILAC-G8:08/2019, Guidelines on Decision Rules and Statements of Conformity as following Fig. and statements when the measurement uncertainty is taken in to account.



- Pass** : The measurement result plus the expanded uncertainty with a 95% coverage probability were within the specification limit. Then conformity with the specification is stated.
- Pass?** : The measurement result was within the specification limit, but a portion of the expanded uncertainty with a 95% coverage probability was overlapped the specification limit. It is not possible to state conformity using the 95% coverage probability for the expanded uncertainty with although the measurement result was below the limit.
- Fail?** : The measurement result was out of the specification limit, but a portion of the expanded uncertainty with a 95% coverage probability was in the specification. It is not possible to state non-conformity using the 95% coverage probability for the expanded uncertainty although the measurement result was out of the limit.
- Fail** : The measurement result plus the expanded uncertainty with a 95% coverage probability was outside the specification limit. Then non-conformity with the specification is stated.

The measurement results and the statements of conformity with specification only relate to the item calibrated.

When functional verification tests and other inspection without measure uncertainty are performed, the reported results do not affect these statements of Conformity.

- End of Certificate -



บริษัท เอส ซี เจ ไซแอนติฟิก จำกัด  
S. P. J. SCIENTIFIC COMPANY LIMITED

89 Moo 10, 10th Floor, Bangrak Road, Bangrak, Bangkok 10250  
89 Moo 10, 10th Floor, Bangrak Road, Bangkok 10250

Tel : 0 2745-7600-2 E-mail : spj@spj-science.com หรือ spj@spj.co.th

## Verification Test Report

Report No.: AC-6805016

Calibrated Date: 22-May-2025

☒ PM ☐ Onsite UTM:

Site: S.P.J. SCIENTIFIC COMPANY LIMITED

Equipment: Sound Level meter

Manufacturer: ACO

Model: 6226

Serial or ID No. 210060

Environment: Temperature 25.7 °C Humidity 51 %RH

Reference Standard: Sound Level Calibrator TEMMARS

S/N : 210502647

Date of Calibration: 9 April 2025

Measured Acoustic Calibrator (dB)	deviated value (dB)	Tolerance limit (dB)	Uncertainty (dB)
94.18	0.18	$\pm 0.75$	0.10

### Result of Test

Reference Standard (dB)	Instrument reading (dB)	Error (dB)	Adjust (dB)
94.18	94.18	0.00	94.18
Error After Adjust (dB)	Total Error (dB)	Acceptance value (dB)	Pass/Fail Judgment
0.00	0.10	$\pm 1.0$ dB	Pass

Calibrated By: Sathaporn  
Sathaporn Dileangsa

Date: 22-May-25

Approve By: Pawant  
Pawant Mitchoo

Date: 22-May-25



บริษัท เอส.พี.เจ. ไซออนเทค จำกัด  
S. P. J. SCIENTIFIC COMPANY LIMITED

111 ซอยวิภาวดีรังสิต 111 แขวงสามยุคใหญ่ เขตจตุจักร กรุงเทพมหานคร 10250  
111 Soi Wiphawadee Rangsit 111, Thung Chuang, Saphanbuechi, Bangkok 10250

โทร : 02-255-7520 อีเมล : [spj@spj-science.com](mailto:spj@spj-science.com) เว็บไซต์ : [www.spj-science.com](http://www.spj-science.com)

## Verification Test Report

Report No.: AC-6806021

Calibrated Date: 22-May-2025

☒ FM ☐ Onsite UTM

Site: S.P.J. SCIENTIFIC COMPANY LIMITED

Equipment: Sound Level meter

Manufacturer: ACO

Model: 6228

Serial or ID No. 210096

Environment: Temperature 24.6 °C Humidity: 50 %RH

Reference Standard: Sound Level Calibrator TENMARS

S/N : 210502647

Date of Calibration : 9 April, 2025

Measured Acoustic Calibrator (dB)	deviated value (dB)	Tolerance Limit (dB)	Uncertainty (dB)
94.18	0.18	+0.75	0.10

### Result of Test

Reference Standard (dB)	Instrument reading (dB)	Error (dB)	Adjust (dB)
94.18	94.18	0.00	94.18
Error After Adjust (dB)	Total Error (dB)	Acceptant value (dB)	Pass/Fail Judgment
0.00	0.10	+/-1.0 dB	Pass

Calibrated By: Sethaporn Duangsa  
Sethaporn Duangsa

Date: 22-May-25

Approve By: Pavanit Milchoo  
Pavanit Milchoo

Date: 22-May-25





## Certificate of Calibration

Certificate Number : SPR25030469-3

Page 1 of 3

Customer : Thai Environmental Technic Limited.

116 Soi Rattakhamhaeng 145, Khwaeng Saphan Sung, Khet Saphan  
Sung, Bangkok 10240, Thailand.

Equipment Name : Noise Dosa Meter

Manufacturer : SOUNDTEK

Model : ST-130

Serial Number : 170400163

ID. Number : No.20

### Environmental Conditions

Ambient Temperature : 23 °C ± 3 °C

Received Date : 28 Feb 2025

Relative Humidity : 50 % ± 15 %

Calibration Date : 04 Mar 2025

Location of Calibration : In-Lab

Recommend Due Date : 04 May 2026

Calibration Procedure : SP-CPE-04-01

Date of Issue : 05 Mar 2025

### Method of Calibration

This certifies that the above instrument was calibrated in compliance with the calibration system requirements of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent, National metrology institute, Natural physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to correct the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full, without written approval of SF Metrology System (Thailand).

Calibrated by : Mr.Natchawat Wansat

Approved by :

Calibration Officer

Mr.Prayoon Toperti

Authorized Signatory



## Calibration Report

Certificate Number : SPR25020469-3

Page 12 of 3

### Reference Standards

Equipment Name	Model	Serial No.	Certificate No.	Due Date
Sound Level Calibrator	ST-120	211203773	EELBP. 140/0167	26 Jan 2026

### Traceability

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

TISTR - Thailand Institute of Scientific and Technological Research



### Result of Calibration

Certificate Number - SPB25020463-3

Page : 3 of 3

Page : 04 of 14 c5

Function :  $\mathbb{R}^n \rightarrow \mathbb{R}^n$

Selected A

Unit : 45

Standard Setting	UoC Reading		Error		Uncertainty ( $\pm$ )
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
114	113.9	113.9	-0.1	-0.1	0.15

Select C

Unit dP

Standard Setting	LUC Reading		Error		Uncertainty ( $\pm$ )
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
~14	113.9	113.9	-0.1	-0.1	0.15

Seacl 7

Unit . 19

Standard Setting	LUC Reading		Error		Uncertainty ( $\pm$ )
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.25
114	113.9	113.9	-0.1	-0.1	0.25

Nota

The result of calibration was found accurate as shown on date and place of calibration only.  
This Certificate is not certified for any commercial transaction.

### Measurement Uncertainty

The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor  $k = 2.00$ , providing a level of confidence approximately 95%.

- End of Certificate -



## Certificate of Calibration

Certificate Number : SPR25019247-4

Page : 1 of 3

Customer : Thai Environmental Technic Limited

1/6 Soi Ramkhamhaeng 345, Khwaeng Saphan Sung, Khet Saphan  
Sung, Bangkok 10240 Thailand

Equipment Name : Noise Dose Meter

Manufacturer : SOUNDTEK

Model : ST-130

Serial Number : 170800193

ID Number : No.24

### Environmental Conditions

Ambient Temperature : 23 °C ± 3 °C

Received Date : 15 Jan 2025

Relative Humidity : 50 % ± 15 %

Calibration Date : 16 Jan 2025

Location of Calibration : In-Lab

Recommend Due Date : 16 Jan 2026

Calibration Procedure : SP-CPE-04-01

Date of Issue : 17 Jan 2025

### Method of Calibration

This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent, National metrology institute, National physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full, without written approval of SP Metrology System (Thailand)

Calibrated by : Mr.Narinhawat Wanasri

Approved by :

Calibration Officer

( Mr Poollitpong A. )

Authorized Signatory



## Calibration Report

Certificate Number : SPR25010247-4

Page : 2 of 3

### Reference Standards

Equipment Name	Model	Serial No	Certificate No.	Due. Date
Sound Level Calibrator	ST-120	211203773	EEL.BP. 14070167	26 Jan 2025

### Traceability

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

TISTR - Thailand Institute of Scientific and Technological Research



## Result of Calibration

Certificate Number - SP025010247-4

Page : 3 of 5

Range : 94 to 114 dB

Function : @1kHz

Select : A

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty ( ± )
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
114	114.0	114.0	0.0	0.0	0.15

Select : C

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty ( ± )
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
114	113.9	113.9	-0.1	-0.1	0.15

Select : Z

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty ( ± )
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
114	114.0	114.0	0.0	0.0	0.15

### Note :

The result of calibration was found accurate as show on data and place of calibration only.  
This Certificate is not certified for any commercial transaction.

### Measurement Uncertainty

The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor  $k = 2.00$ , providing a level of confidence approximately 95%.

- End of Certificate -



## Certificate of Calibration

Certificate Number : SPR25020469-8

Page : 1 of 3

Customer : Tha. Environmental Technic Limited

176 Soi Ramkhamhaeng 145, Khwaeng Saphan Sung, Khet Saphan  
Sung, Bangkok 10240 Thailand

Equipment Name : Noise Dose Meter

Manufacturer : SOUNDTEK

Model : ST-130

Serial Number : 200300134

ID. Number : No.29

### Environmental Conditions

Ambient Temperature :  $23^{\circ}\text{C} \pm 3^{\circ}\text{C}$  Received Date : 28 Feb 2025

Relative Humidity :  $50\% \pm 15\%$  Calibration Date : 04 Mar 2025

Location of Calibration : In-Lab Recommend Due Date : 04 Mar 2026

Calibration Procedure : SP-CPE-04-01 Date of Issue : 05 Mar 2025

### Method of Calibration


This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent, National metrology institute. Natural physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainty and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full without written approval of SP Metrology System (Thailand).

Calibrated by : Mr.Hanthawat Wangsit

Calibration Officer

Approved by :

  
(Mr.Prayoon Teapad)

Authorized Signatory



## Calibration Report

Certificate Number : SPR25020469-B

Page : 2 of 3

### Reference Standards

Equipment Name	Model	Serial No.	Certificate No.	Due Date
Sound Level Calibrator	ST-120	211203773	EEL.BP. 140/0457	26 Jan 2023

### Traceability

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

TISTR - Thailand Institute of Scientific and Technological Research

SD Metrology System (Thailand) Co., Ltd. is a company registered in Thailand with registration number 01055532000001 and is a member of the Association of Metrology Service Providers (AMSP) in Thailand.





## Result of Calibration

Certificate Number : SPR25120452-3

Page : 3 of 3

Range : 94 to 114 dB

Function : @1KHz

Select : A

Unit : dG

Standard Setting	UUC Reading		Error		Uncertainty ( ± )
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
114	114.0	114.0	0.0	0.0	0.15

Select : C

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty ( ± )
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
114	114.0	114.0	0.0	0.0	0.15

Select : Z

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty ( ± )
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
114	114.0	114.0	0.0	0.0	0.15

### Note :

The result of calibration was found accurate as shown in date and place of calibration only.  
This Certificate is not certified for any commercial transaction.

### Measurement Uncertainty

The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor  $k = 2.00$ , providing a level of confidence approximately 95%.

- End of Certificate -



## Certificate of Calibration

Certificate Number : SPR25020469-7

Page : 1 of 3

Customer : Thai Environmental Technic Limited

1/6 Soi Ramkhamhaeng 145, Khwaeng Saphan Sung, Khet Saphan  
Sung, Bangkok 10240, Thailand

Equipment Name : Noise Dose Meter

Manufacturer : SOUNDTEK

Model : ST-130

Serial Number : 200300133

ID. Number : No 28

### Environmental Conditions

Ambient Temperature : 23 °C  $\pm$  3 °C Received Date : 28 Feb 2025

Relative Humidity : 50 %  $\pm$  15 % Calibration Date : 04 Mar 2025

Location of Calibration : In-Lab Recommend Due Date : 04 Mar 2026

Calibration Procedure : SP-CPE-04-01 Date of Issue : 05 Mar 2025

### Method of Calibration

This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent National metrology institute, Natural physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full, without written approval of SP Metrology System (Thailand).

Calibrated by : Mr Nanthawat Wanast

Approved by :

Calibration Officer

( Mr. Prayoon Topan )

Authorized Signatory



## Calibration Report

Certificate Number : SPR25020469-7

Page : 2 of 3

### Reference Standards

Equipment Name	Model	Serial No.	Certificate No.	Due. Date
Sound Level Calibrator	SE-120	211203773	EELBP.14090167	28 Jan 2026

### Traceability

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

TISTR - Thailand Institute of Scientific and Technological Research

SP-FM-04-15 rev.01  
This report is the property of Metrology System (Thailand) Co., Ltd. and is not to be distributed outside the company without prior written permission.



## Result of Calibration

Certificate Number : SPR25020469-7

Page : 3 of 3

Range : 94 to 114 dB

Function : 2 kHz

Select : A

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty ( ± )
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
114	114.0	114.0	0.0	0.0	0.15

Select : C

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty ( ± )
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
114	113.9	113.9	-0.1	0.1	0.15

Select : Z

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty ( ± )
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
114	113.9	113.9	-0.1	-0.1	0.15

### Note :

The result of calibration was found accurate as show on date and place of calibration only.  
This Certificate is not certified for any commercial transaction.

### Measurement Uncertainty

The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor  $k = 2.00$ , providing a level of confidence approximately 95%.

- End of Certificate -



## Certificate of Calibration

Certificate Number : SPR25030147-9

Page : 1 of 3

Customer : Thai Environmental Technic Limited.

17/ Soi Ramkhamhaeng 148, Kruaeng Saphan Sung, Khet Saphan

Sung Bangkok 10240, Thailand

Equipment Name : Noise Dose Meter

Manufacturer : SOUNDTEK

Model : ST-130

Serial Number : 220100068

ID. Number : No.36

### Environmental Conditions

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

Received Date : 07 Mar 2025

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

Calibration Date : 17 Mar 2025

Location of Calibration : In-Lab

Recommend Due Date : 17 Mar 2026

Calibration Procedure : SP-CPE 04-01

Date of Issue : 18 Mar 2025

### Method of Calibration

This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent, National metrology institute, Natural physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full, without written approval of SP Metrology System (Thailand).

Calibrated by : Mr.Chunpon Sakokul

Calibration Officer

Approved by :

( Mr.Poothipong A )

Authorized Signatory



## Calibration Report

Certificate Number : SPR25030147-9

Page 12 of 3

### Reference Standards

Equipment Name	Model	Serial No.	Certificate No.	Due Date
Sound Level Calibrator	ST-120	211203773	EEL-SP-22/0259	20 Feb 2026

### Traceability

This certification is traceable to the International System of Unit maintained at  
TISTR - Thailand Institute of Scientific and Technological Research

SP Metrology System (Thailand) Co., Ltd. is a company registered with the Ministry of Commerce of Thailand. The company is a member of the International Bureau of Weights and Measures (BIPM) and the International Union of Pure and Applied Chemistry (IUPAC). The company is also a member of the International Union of Pure and Applied Physics (IUPAP) and the International Union of Pure and Applied Mathematics (IUPM). The company is a member of the International Union of Pure and Applied Biology (IUPAB) and the International Union of Pure and Applied Chemistry (IUPAC). The company is a member of the International Union of Pure and Applied Physics (IUPAP) and the International Union of Pure and Applied Mathematics (IUPM). The company is a member of the International Union of Pure and Applied Biology (IUPAB) and the International Union of Pure and Applied Chemistry (IUPAC).



## Result of Calibration

Certificate Number : SPF25030147-9

Page : 3 of 3

Range : 94 to 114 dB

Function : @12Hz

Select A

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty ( ± )
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
114	113.9	113.9	-0.1	-0.1	0.15

Select C

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty ( ± )
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
114	114.0	114.0	0.0	0.0	0.15

Select Z

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty ( ± )
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
114	114.0	114.0	0.0	0.0	0.15

### Note :

The result of calibration was found accurate as show on date and page of calibration only.  
This Certificate is not certified for any commercial transaction

### Measurement Uncertainty

The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor  $k = 2.00$ , providing a level of confidence approximately 95%.

- End of Certificate -



## Certificate of Calibration

Certificate Number : SPR25080147-2

Page : 1 of 3

Customer : Thai Environmental Technic Limited,

146 Soi Ramkhamhaeng 146, Khwaeng Saphan Sung, Khet Saphan  
Sung, Bangkok 10240, Thailand.

Equipment Name : Noise Dose Meter

Manufacturer : SOUNDTEK

Model : ST-130

Serial Number : 250100057

ID Number : No.37

### Environmental Conditions

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

Received Date : 07 Mar 2025

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

Calibration Date : 11 Mar 2025

Location of Calibration : In-Lab

Recommend Due Date : 11 Mar 2026

Calibration Procedure : SP-CPE-04-01

Date of Issue : 12 Mar 2025

### Method of Calibration

This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent, National metrology institute, National physical constants consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full, without written approval of SP Metrology System (Thailand).

Calibrated by : Mr.Nanthawit Wansert

Calibration Officer

Approved by :

( Mr.Prayoon Topant )

Authorized Signatory





404451 15C17021



Certificate Number : SPR25030147-2

Page : 2 of 3

Equipment Name	Model	Serial No.	Certificate No.	Due Date
Sound Level Calibrator	ST-120	211203773	EELBP.22/0268	20 Feb 2026

### Traceability

<sup>a</sup>This certification is traceable to the International System of Units maintained at

TISTR - Thailand Institute of Scientific and Technological Research



## Result of Calibration

Certificate Number : SPR25000147-2

Page : 2 of 3

Range : 94 to 114 dB

Function : 315Hz

Select : A

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty (± 1)
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
114	114.0	114.0	0.0	0.0	0.15

Select : C

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty (± 1)
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
114	114.0	114.0	0.0	0.0	0.15

Select : Z

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty (± 1)
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
114	114.0	114.0	0.0	0.0	0.15

### Note :

The result of calibration was found accurate as show on date and place of calibration only.  
This Certificate is not certified for any commercial transaction.

### Measurement Uncertainty

The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor  $k = 2.00$ , providing a level of confidence approximately 95%.

- End of Certificate -



## Certificate of Calibration

Certificate Number : SP-R25030147-6

Page : 1 of 3

Customer : Thai Environmental Technic Limited.

1/6 Soi Rantamhaeng 143, Khwaeng Saphan Sung, Khet Saphan  
Sung, Bangkok 10240, Thailand

Equipment Name : Area Heat Stress Monitor

Manufacturer : JANTYTECH

Model : JT2011-E2A

Serial Number : 3522210142

ID. Number : HQ 4

### Environmental Conditions

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

Received Date : 07 Mar 2025

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

Calibration Date : 18 Mar 2025

Location of Calibration : in-Lab

Recommend Due Date : 16 Mar 2026

Calibration Procedure : SP-CPT-04-13

Date of Issue : 19 Mar 2025

### Method of Calibration

This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent, National Metrology Institute, Natural physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full, without written approval of SP Metrology System (Thailand).

Calibrated by : Mr Navaporn Uengsorn

Calibration Officer

Approved by :

( Mr Poolthipong A. )

Authorized Signatory



## Calibration Report

Certificate Number : SPR25030147-3

Page : 2 of 3

### Reference Standards

Equipment Name	Model	Serial No.	Certificate No	Due. Date
Humidity Chamber	TH-80S	N/A	SPR25010173-14	30 Jan 2026
THERMO-HYGROMETER	5020A	A47046	TMU2500342	29 Jan 2026

### Traceability

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

SP Metrology - SP Metrology system (Thailand) Co.Ltd

NA - NA Caltechnologies Co., Ltd.



## Result of Calibration

Certificate Number : SPR25000147-6

Page : 3 of 3

Temperature Accuracy in the Measurement. (Tnw)

Unit : °C

Temperature Setting	Standard Reading	UUC Reading	Error	Uncertainty ( ± )
20.0	20.005	20.1	0.095	0.20
30.0	30.008	30.1	0.092	0.20
40.0	40.012	40.1	0.088	0.20

Temperature Accuracy in the Measurement. (Tta)

Unit : °C

Temperature Setting	Standard Reading	UUC Reading	Error	Uncertainty ( ± )
20.0	20.005	19.8	-0.105	0.20
30.0	30.008	29.9	-0.108	0.20
40.0	40.012	39.9	-0.112	0.20

Temperature Accuracy in the Measurement. (Tgi)

Unit : °C

Temperature Setting	Standard Reading	UUC Reading	Error	Uncertainty ( ± )
20.0	20.005	19.8	-0.205	0.20
30.0	30.008	29.8	-0.208	0.20
40.0	40.012	39.8	-0.212	0.20

### Note:

The result of calibration was found accurate as show on date and place of calibration only.  
This Certificate is not certified for any commercial transaction.

### Measurement Uncertainty

The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor  $k = 2$  providing a level of confidence approximately 95%.

- End of Certificate -



## Certificate of Calibration

Certificate Number : SPR25020147-13

Page : 1 of 3

Customer : Thai Environmental Technic Limited,

56 Soi Ramkhamhaeng 145, Khwaeng Saphan Sung, Khet Saphan  
Sung, Bangkok 10210, Thailand,

Equipment Name : Area Heat Stress Monitors

Manufacturer : JANTYTECH

Model : JT2011-E2A

Serial Number : 3522210141

ID Number : HD 3

### Environmental Conditions

Ambient Temperature : 23 °C ± 2 °C

Received Date : 07 Mar 2025

Relative Humidity : 50 % ± 15 %

Calibration Date : 23 Mar 2025

Location of Calibration : In-Lab

Recommend Due Date : 23 Mar 2026

Calibration Procedure : SP-CPT.04-13

Date of Issue : 24 Mar 2025

### Method of Calibration

This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform the calibration are certified by to NIST or equivalent National metrology institute, Natural physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full without written approval of SP Metrology System (Thailand).

Calibrated by : Mr Navaporn Uengseng

Calibration Officer

Approved by

( Mr Pootnipong A. )

Authorized Signatory



## Calibration Report

Certificate Number : SPR25030147-13

Page : 2 of 3

### Reference Standards

Equipment Name	Model	Serial No.	Certificate No.	Due Date
Humidity Chamber	TH-80S	N/A	SPR25010173-14	30 Jan 2026
THERMO-HYGROMETER	5020A	A47046	TMU2500342	29 Jan 2026

### Traceability

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

SP Metrology - SP Metrology system (Thailand) Co.Ltd.

NA - NA Caltechnologies Co., Ltd.



ID LINE : IDL17003

## Result of Calibration

Certificate Number : SP225060147-13

Page : 3 of 3

Temperature Accuracy in the Measurement. (T<sub>W</sub>)

Unit : °C

Temperature Setting	Standard Reading	UUC Reading	Error	Uncertainty ( ± )
20.0	20.010	20.1	0.090	0.20
30.0	30.008	30.1	0.092	0.20
40.0	40.012	40.1	0.088	0.20

Temperature Accuracy in the Measurement. (T<sub>z</sub>)

Unit : °C

Temperature Setting	Standard Reading	UUC Reading	Error	Uncertainty ( ± )
20.0	20.010	20.2	0.190	0.20
30.0	30.008	30.2	0.192	0.20
40.0	40.012	40.2	0.188	0.20

Temperature Accuracy in the Measurement. (T<sub>g</sub>)

Unit : °C

Temperature Setting	Standard Reading	UUC Reading	Error	Uncertainty ( ± )
20.0	20.010	20.2	0.190	0.20
30.0	30.008	30.2	0.192	0.20
40.0	40.012	40.2	0.188	0.20

### Note:

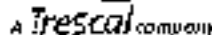
The result of calibration was found accurate as show on data and place of calibration only.  
This Certificate is not certified for any commercial transaction

### Measurement Uncertainty

The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor  $k = 2$ , providing a level of confidence approximately 95%.

- End of Certificate -





דליה יערי

Certificate Number . SPB25030147-15

Page: 1 of 3

Customer : Zonal Environmental Technics Limited.

16/ Sor Rangkhamhaeng 145, Khwaeng Saphan Sung, Khet Saphan  
Sung, Bangkok 10240, Thailand\*

Equipment Name	Area Heat Stress Monitors
----------------	---------------------------

Manufacturer : JANTYTECH

Model JT2011-E3A

Serial Number : 3522210148

ID Number: HD 51

### Environmental Conditions

Ambient Temperature : 23 °C ± 2 °C

Received Date : 07 Mar 2025

Relative Humidity : 50 %  $\pm$  15 %

Calibration Date : 23 Mar 2025

Location of Calibration : 10-Lab

Recommend Due Date : 23 Mar 2026

Calibration Procedure : SF-CST-04-13

Date of Issue : 24 Mar 2025

### Method of Calibration

The confirms that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent, National metrology institute, Natural physical constants consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full without written approval of SP Metrology System (Thailand).

Calibrated by : Mr Navaporn Ungsungsri

Calibration Officer

Approved by :

1 Mr Poothong A.

Authorized Signatory

[illegible]





## Result of Calibration

Certificate Number : SPF25030147-15

Page : 3 of 3

Temperature Accuracy in the Measurement (Tow)

Unit : °C

Temperature Setting	Standard Reading	JUC Reading	Error	Uncertainty ( ± )
20.0	20.010	20.1	0.090	0.20
30.0	30.008	30.1	0.092	0.20
40.0	40.012	40.1	0.088	0.20

Temperature Accuracy in the Measurement (Ts)

Unit : °C

Temperature Setting	Standard Reading	JUC Reading	Error	Uncertainty ( ± )
20.0	20.010	20.2	0.190	0.20
30.0	30.008	30.2	0.192	0.20
40.0	40.012	40.2	0.188	0.20

Temperature Accuracy in the Measurement (Tq)

Unit : °C

Temperature Setting	Standard Reading	JUC Reading	Error	Uncertainty ( ± )
20.0	20.010	20.2	0.190	0.20
30.0	30.008	30.2	0.192	0.20
40.0	40.012	40.2	0.188	0.20

### Note:

The result of calibration was found accurate as shown on date and page of calibration only.  
This Certificate is not certified for any commercial transaction.

### Measurement Uncertainty

The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor  $k = 2$  providing a level of confidence approximately 95%.

- End of Certificate -



Request No. : 22-68 / 0614

MTC No. : PSL-P 0156 / 68

## CERTIFICATE OF CALIBRATION

Nomenclature : Digital Lux Meter  
Maker : DIGICON

Serial No. : AA.23026  
Model : LX-50

Customer : **THAI ENVIRONMENTAL TECHNIC LIMITED**

Address : 116 Soi Ramkhamhaeng 145, Saphan Sung, Saphan Sung, Bangkok 10240

Date of receipt : 9 July 2025

Date of calibration : 22 July 2025

Place of calibration : Photometry and Temperature Standards Laboratory, MTC (Bangkok)

Basis of calibration : calibration at 0 ~ 5000 lux

Condition of calibration : - Ambient temperature :  $(25 \pm 2) ^\circ\text{C}$   
- Relative humidity :  $(60 \pm 20) \%$

Reference Standard : Working Standard Luminous Intensity Lamp, Serial No.: FEL003 and 3501,  
can be traceable to international system of units (SI), through calibration certificate  
MTC No. PSL-P 0113/68 and PSL-P 0114/68, date of calibration 8 May 2025.

Traceability : This certificate is traceable to SI units through the National Institute of Metrology (Thailand)  
calibration certificate No. TP-1002-25, TP-1003-25 and TP-1004-25

Support Equipment : 1. Photometric bench, 3.0 meter long  
2. DC power supply, Serial No.: BC - 341006093007/2  
3. Digital Multimeter, Model : R 6551, S/N : 92041186 and 92041192

Calibration Procedure : The measurement was done in accordance with WJ-CP-10,  
The reported uncertainty is based on a standard uncertainty multiplied by a coverage  
factor  $k = 2$ , providing a level of confidence of approximately 95 %.

page 1 of 2

TISTR

This report shall be used for the purpose intended, and shall not be abused.  
Adjusting and Repair Certificate and validity of the results obtained for equipment that is not within the scope of calibration of the government TISTR.

Rev. 01, MTC 001, Rev. 03

Head Office  
251 Sukhumvit 22, Bangkok 10110, Thailand  
Tel : (66) 2 2517 9026  
Fax : (66) 2 2517 9019

Office Laboratory  
662 Mu 2, Thungyai Yung Yung, Chiang Mai, Thailand  
Tel : (66) 5313 4000  
Fax : (66) 5313 4000  
E-mail : tistr@tistr.go.th

Office  
199 Phrasimthong Road, Bangkok 10600, Thailand  
Tel : (66) 2 2517 9026  
Fax : (66) 2 2517 9027



Request No. : 22-68 / 0614

MTC No. - PSL-P 0156 / 68

Serial No. : AA.23026

**Results :**

UUC Range (lux)	Standard (lux)	*UUC Reading Before Adj.(lux)	UUC Reading After Adj.(lux)	Uncertainty of Measurement $\pm$ (lux)
2000	100	97	102	2.1
	500	487	497	11
	1000	969	987	21
	1500	1450	1473	31
	2000	1931	1966	41
20000 ( $\times 10$ )	2000	193	200	41
	3000	291	298	61
	4000	388	396	81
	5000	484	495	101

Note : \*UUC = Unit Under Calibration.

End of certificate...

Calibrated by :

(Ms. Rattanawadee Pholprom)

Approved by :

(Mr. Kamethai Singhaporn)

Director

Photometry and Temperature Standards Laboratory

Ref. : 2012268070902651002

Issued date : 1 August 2025

page 2 of 2

The results relate only to the item tested/calibrated or set in signance.

Advancing the Research/Certificate and publicly of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

TISTR/MTC.002 Rev.5

**Head Office**

55 Mu 2 Tambon Khlong Ha, Amphoe Chula, Changwat Pathumthani 12120 Thailand  
Tel. (66) 0 2577 9000  
Fax. (66) 0 2577 9009

**Office/Laboratory**

668 Mu 2 Tambon Bangsuanwong, Amphoe Muang Saengphakhan, Changwat Samutprakan 10260 Thailand  
Tel. (66) 0 2323 1672-80 ext. 115-116  
(66) 03 2329 6440  
E-mail : mt0606@tistr.go.th Website : www.tistr.go.th

**Office**

106 Phahonyothin Road, Lat Yao, Chuechak, Bangkok 10900, Thailand  
Tel. (66) 0 2579 1321-30 ext. 5202, 5225, 5117  
(66) 03 1002 6817

## ภาคผนวก ฉ

หนังสือขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน  
เลขทะเบียน ว-236



เอกสารแนบท้ายฉบับนี้จัดทำขึ้นเพื่อเป็นแนวทางปฏิบัติในการวิเคราะห์หาสาร

บิวทีล ไซยาไนด์ ในผักผลไม้ไทย จำนวน 10 ชนิด

เอกสารแนบท้ายฉบับที่ 1

ปี พ.ศ. ๒๕๖๐ (๒) / ๓ / ๑ / ๑

ฉบับที่ ๑๒ มีผลใช้บังคับ วันที่ ๑๖

กรมส่งเสริมการค้าระหว่างประเทศ กระทรวงพาณิชย์ กรุงเทพมหานคร

บัญชีรายชื่อสาร ๑๐ รายการ

ลำดับที่	สารเคมี	วิธีการตรวจ
1	Alkaline	Liquid/Liquid Extraction, Gas Chromatographic Method <sup>H</sup>
2	Ascorbic	Digestion, Hydrolysis, Inductively Coupled Plasma Atomic Absorption Spectrometric Method <sup>H</sup>
3	Barium	1) Digestion, Direct Atomic Oxide-Acetylene Flame Method <sup>H</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>H</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>H</sup>
4	Cadmium	Liquid/Liquid Extraction, Gas Chromatographic Method <sup>H</sup>
5	γ-BHC	Liquid/Liquid Extraction, Gas Chromatographic Method <sup>H</sup>
6	Beckmann's Copper Demand	5-Day BOD Test, Azide Modification Method <sup>H</sup>
7	Calcium	1) Digestion, Direct Air-Acetylene Flame Method <sup>H</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>H</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>H</sup>
8	Chlorine & Oxygen Demand	Closed Reflux, Titrimetric Method <sup>H</sup>
9	Cyanide	Liquid/Liquid Extraction, Gas Chromatographic Method <sup>H</sup>
10	Cyanide	1) Digestion, Direct Air-Acetylene Flame Method <sup>H</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>H</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>H</sup>
11	Cyanide	ASAM Weighable Oxidate Sulfate Inductively Coupled Plasma Method <sup>H</sup>
12	Copper	1) Digestion, Direct Air-Acetylene Flame Method <sup>H</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>H</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>H</sup>
13	Cyanide	Distillation, Colorimetric Method <sup>H</sup>
14	4,4'-DDE	Liquid/Liquid Extraction, Gas Chromatographic Method <sup>H</sup>
15	4,4'-DDT	Liquid/Liquid Extraction, Gas Chromatographic Method <sup>H</sup>
16	Dieldrin	Liquid/Liquid Extraction, Gas Chromatographic Method <sup>H</sup>

17 Endosulfan...

๑๒

ลำดับที่	สารเคมี	วิธีการตรวจ
17	Endosulfan I	Liquid/Liquid Extraction, Gas Chromatographic Method <sup>H</sup>
18	Endosulfan II	Liquid/Liquid Extraction, Gas Chromatographic Method <sup>H</sup>
19	Endosulfan sulfate	Liquid/Liquid Extraction, Gas Chromatographic Method <sup>H</sup>
20	Endrin	Liquid/Liquid Extraction, Gas Chromatographic Method <sup>H</sup>
21	Formaldehyde	Distillation, Colorimetric Method <sup>H</sup>
22	Free Chlorine	DPD Ferrous Sulfate Method <sup>H</sup>
23	Heptachlor	Liquid/Liquid Extraction, Gas Chromatographic Method <sup>H</sup>
24	Heptachlor Epoxide	Liquid/Liquid Extraction, Gas Chromatographic Method <sup>H</sup>
25	Heptachlor Chlorine	Colorimetric Method <sup>H</sup>
26	Lead	1) Digestion, Direct Air-Acetylene Flame Method <sup>H</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>H</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>H</sup>
27	Manganese	1) Digestion, Direct Air-Acetylene Flame Method <sup>H</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>H</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>H</sup>
28	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>H</sup>
29	Organic	1) Digestion, Direct Air-Acetylene Flame Method <sup>H</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>H</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>H</sup>
30	Oil & Grease	1) Liquid/Liquid, Potentiometric Method <sup>H</sup> 2) Solvent Extraction Method <sup>H</sup>
31	pH	Mercurimetric Method <sup>H</sup>
32	Phenols	Distillation, Direct Fluorimetric Method <sup>H</sup>
33	Potassium	Digestion, Hydrolysis, Generation Atomic Absorption Spectrometric Method <sup>H</sup>
34	Sulfide	1) Colorimetric Method <sup>H</sup> 2) Methylene Blue Method <sup>H</sup>
35	Temperature	Laboratory and Field Methods <sup>H</sup>
36	Total Dissolved Solids	Dried at 105 °C <sup>H</sup>
37	Total Volatile Nitrogen	Mercuric Sulfide Method <sup>H</sup>
38	Total Suspended Solids	Dried at 105 °C <sup>H</sup>

39 Triphenyl Chloride...



ลำดับที่	สารเคมี	วิธีการวิเคราะห์
39	Triphenyl Carbazone	Digestion, Inductively Coupled Plasma Atomic Emission Spectrometric Method <sup>1)</sup>
40	Zinc	1) Digestion, Direct Aqueous Stripping Polarography Method <sup>1)</sup> 2) Digestion, Electrothermic Atomic Absorption Spectrometric Method <sup>2)</sup> 3) Digestion, Inductively Coupled Plasma Atomic Method <sup>3)</sup>

สารเคมี จำนวน 122 รายการ

ลำดับที่	สารเคมี	วิธีการวิเคราะห์
1	Arsenophthalic	1) Dilution, Distillation, Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
2	Azobenzene	Purge and Trap Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
3	Biotin	Liquid Liquid Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
4	Benzenesulfonamide	Liquid Liquid Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
5	Anthracene	1) Digestion, Direct Aqueous Stripping Polarography Method <sup>1)</sup> 2) Digestion, Electrothermic Atomic Absorption Spectrometric Method <sup>2)</sup> 3) Digestion, Inductively Coupled Plasma Atomic Method <sup>3)</sup>
6	Antimony	1) Digestion, Direct Aqueous Stripping Polarography Method <sup>1)</sup> 2) Digestion, Electrothermic Atomic Absorption Spectrometric Method <sup>2)</sup> 3) Digestion, Inductively Coupled Plasma Atomic Method <sup>3)</sup>
7	Ascorbic	Liquid Liquid Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
8	Ascorbic	Liquid Liquid Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
9	Ascorbic	Liquid Liquid Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
10	Ascorbic	Liquid Liquid Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
11	Ascorbic	Liquid Liquid Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
12	Ascorbic	Liquid Liquid Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>

ลำดับที่	สารเคมี	วิธีการวิเคราะห์
13	Benzoic acid	Liquid Liquid Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
14	Benzoic acid	Liquid Liquid Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
15	Benzoic acid	Liquid Liquid Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
16	Benzoic acid	1) Digestion, Electrothermic Atomic Absorption Spectrometric Method <sup>2)</sup> 2) Digestion, Inductively Coupled Plasma Atomic Method <sup>3)</sup>
17	Benzoic acid	Liquid Liquid Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
18	Benzoic acid	Liquid Liquid Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
19	Benzoic acid	Purge and Trap Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
20	Benzoic acid	Purge and Trap Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
21	Benzoic acid	Purge and Trap Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
22	Benzoic acid	Liquid Liquid Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
23	Benzoic acid	1) Digestion, Inductively Coupled Plasma Atomic Method <sup>3)</sup> 2) Digestion, Electrothermic Atomic Absorption Spectrometric Method <sup>2)</sup>
24	Benzoic acid	Liquid Liquid Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
25	Benzoic acid	Purge and Trap Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
26	Benzoic acid	Purge and Trap Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
27	Benzoic acid	Liquid Liquid Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
28	Benzoic acid	Liquid Liquid Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
29	Benzoic acid	Purge and Trap Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>
30	Benzoic acid	Purge and Trap Gas Chromatography/Mass Spectrometric Method <sup>1)</sup>

ลำดับที่	สารเคมี	วิธีการวิเคราะห์
32	Chrysene	1) Digestion, Direct Air-Acetylene Flame Method <sup>1)</sup> 2) Digestion, Spectrofluorimetric Atomic Absorption Spectrometric Method <sup>2)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>3)</sup>
33	Chrysene (2)	1) Digestion, Direct Air-Acetylene Flame Method, Colorimetric Method, Calculation <sup>1)</sup> 2) Digestion, Spectrofluorimetric Atomic Absorption Spectrometric Method, Condensimetric Method, Calculation <sup>1)</sup> 3) Digestion, Inductively Coupled Plasma Method, Colorimetric Method, Calculation <sup>2)</sup> Condensimetric Method <sup>3)</sup>
34	Chrysene (3)	Condensimetric Method <sup>1)</sup>
35	Chrysene	1) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
36	Quinole	Distillation, Colorimetric Method <sup>1)</sup>
37	2,4-D	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1)</sup>
38	DDT	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1)</sup>
39	DDE	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1)</sup>
40	DDE	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1)</sup>
41	Dibenz[a,h]anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
42	Benzo[a]phenanthrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
43	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
44	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
45	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
46	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
47	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
48	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
49	Gas 1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>

50 more 1,2-Dichloroethylene.

ลำดับที่	สารเคมี	วิธีการวิเคราะห์
50	more 1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
51	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
52	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
53	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
54	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1)</sup>
55	Dieldrin, phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
56	2,4,4-Dimethylphenol	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1)</sup>
57	2,4-Dimethylphenol	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1)</sup>
58	2,4-Dimethylphenol	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1)</sup>
59	2,5-Dimethylphenol	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1)</sup>
60	Dieldrin, phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
61	Dieldrin, fat	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1)</sup>
62	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1)</sup>
63	Dieldrin, benzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
64	Dieldrin, benzene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
65	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
66	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1)</sup>
67	Dieldrin, benzene	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1)</sup>
68	Dieldrin-1,3,5-trichloro	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
69	Dieldrin	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>
70	1,4-DCP	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1)</sup>
71	1,4-DCP	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1)</sup>
72	1,4-DCP	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1)</sup>
73	1,4-Dichlorobenzene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>1)</sup>

74 more 1,4-Dichlorobenzene.

สารเคมี	สารเคมี	วิธีการทดสอบ
74	Hexachloroethane	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
75	Hexachlorocyclopentadiene	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
76	Isoprene	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
77	LiPA	1) Digestion, Electrodeless Atomic Absorption Spectrometric Method <sup>1)</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>1)</sup>
78	Manganese	1) Digestion, Direct Electrodeless Flame Method <sup>1)</sup> 2) Digestion, Electrodeless Atomic Absorption Spectrometric Method <sup>1)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>1)</sup>
79	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>1)</sup>
80	Mollusk	Purge and Trap Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
81	Mothaxalolol	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
82	Nitrofen bromide	Purge and Trap Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
83	Nitrofen chlorhydrate	Purge and Trap Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
84	2,4-Dichlorophenol	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
85	2,4-Dichlorophenyls	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
86	Nitrofen herbicide	Purge and Trap Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
87	Nitrofenolol	Purge and Trap Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
88	Parathion	1) Digestion, Electrodeless Atomic Absorption, Fluorimetric Method <sup>1)</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>1)</sup>
89	Phenololol	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
90	Phenylpropanolamine	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>

สารเคมี	สารเคมี	วิธีการทดสอบ
91	Hexachlorocyclopentadiene	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
92	Propylene glycol Diacetate	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
93	Endosulfan sulphate	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
94	Endosulfan	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
95	Endosulfan	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
96	Endosulfan	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
97	Endosulfan	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
98	Endosulfan	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
99	Endosulfan	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
100	Endosulfan	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
101	Endosulfan	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
102	Endosulfan	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
103	Endosulfan	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
104	Endosulfan	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
105	Endosulfan	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
106	Endosulfan	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
107	Endosulfan	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
108	Endosulfan	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
109	Endosulfan	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>
110	Endosulfan	Liquid Liquid Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>1)</sup>

ลำดับที่	สารเคมี	วิธีวิเคราะห์
106	THF, C <sub>4</sub> Cut	Separatory Funnel Liquid/Liquid Extraction, Gas Chromatographic Method <sup>1,2</sup>
107	TPH C <sub>4</sub> Cut	Separatory Funnel Liquid/Liquid Extraction, Gas Chromatographic Method <sup>1,2</sup>
108	1,2,4-Trichlorobenzene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1,2</sup>
109	1,1,1,4-Tetrachloroethane	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
110	1,1,2-Trichloroethane	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
111	Trichloroethylene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
112	2,3,5-Trichlorobenzene	Liquid/Liquid Extraction, Gas Chromatographic Method <sup>1</sup>
113	2,3,6-Trichlorobenzene	Liquid/Liquid Extraction, Gas Chromatographic Method <sup>1</sup>
114	1,3,5-Trichlorobenzene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
115	Vanadium	1) Digestion, Perchloric Acid Atomic Absorption Spectrometric Method <sup>1</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>1</sup>
116	Vinyl acetate	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
117	Vinyl chloride	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
118	m-Xylene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
119	p-Xylene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
120	o-Xylene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
121	Xylenes (Total)	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
122	Zinc	1) Digestion, Direct Air-Acetylene Flame Method <sup>1</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>1</sup>

## สารเคมี (กลุ่มของสารที่ 1 ถึง 122)

ลำดับที่	สารเคมี	วิธีวิเคราะห์
1	Arsenite	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>1</sup> 2) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method <sup>1</sup>
2	Arsenic	1) Isokinetic Sampling, Digestion, Graphite Furnace Atomic Absorption Spectrometric Method <sup>1</sup> 2) Isokinetic Sampling, Digestion, Hydride Generation/ Atomic Absorption Spectrometric Method <sup>1</sup>
3	Cadmium	Instrumental Analysis Method <sup>1</sup>
4	Chlorine	Absorption Sampling, Ion Chromatographic Method <sup>1</sup>
5	Copper	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>1</sup> 2) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method <sup>1</sup>
6	Cross	Absorption Sampling, Gas Chromatographic Method <sup>1</sup>
7	Dioxibenzene	Isokinetic Sampling, Analysis by GC/MS/MS Accredited Laboratory or Analysis by Department of Industrial Waste Registration Laboratory Speciation for Analysis Approval <sup>1</sup>
8	Hydrogen Chloride	Absorption Sampling, Ion Chromatographic Method <sup>1</sup>
9	Hydrogen Peroxide	Absorption Sampling, Ion Chromatographic Method <sup>1</sup>
10	Hydrogen Sulfide	Absorption Sampling, Isokinetic Method <sup>1</sup>
11	Lead	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>1</sup> 2) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method <sup>1</sup> 3) Isokinetic Sampling, Digestion, Graphite Furnace Atomic Absorption Spectrometric Method <sup>1</sup>
12	Mercury	Isokinetic Sampling, Digestion, Cold Vapor Atomic Absorption Spectrometric Method <sup>1</sup>
13	Opacity	Rangelmann's Method <sup>1</sup>
14	Organic Solvents	1) Absorption Sampling, Thermal Desorption Method <sup>1</sup> 2) Instrumental Analysis Method <sup>1</sup>



ลำดับที่	สารเคมี	วิธีวิเคราะห์
9	Chromium (v)	<p>3) Waste Extraction, Digestion, Inductively Coupled Plasma Method<sup>1,4)</sup></p> <p>4) Digestion, Flame Atomic Absorption Spectrometric Method<sup>1,5)</sup></p> <p>5) Digestion, Graphite Furnace Atomic Absorption Spectrometric Method<sup>1,6)</sup></p> <p>6) Digestion, Inductively Coupled Plasma Method<sup>1,4)</sup></p> <p>1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method, Waste Extraction, Colorimetric Method, Calculation<sup>1,7,8)</sup></p> <p>2) Waste Extraction, Digestion, Graphite Furnace Atomic Absorption Spectrometric Method, Waste Extraction, Colorimetric Method, Calculation<sup>1,7,8)</sup></p> <p>3) Waste Extraction, Digestion, Inductively Coupled Plasma Method, Waste Extraction, Colorimetric Method, Calculation<sup>1,7,8)</sup></p> <p>4) Digestion, Flame Atomic Absorption Spectrometric Method, Alkaline Digestion, Colorimetric Method, Calculation<sup>1,9,10)</sup></p> <p>5) Digestion, Graphite Furnace Atomic Absorption Spectrometric Method, Alkaline Digestion, Colorimetric Method, Calculation<sup>1,9,10)</sup></p> <p>6) Digestion, Inductively Coupled Plasma Method, Alkaline Digestion, Colorimetric Method, Calculation<sup>1,9,10)</sup></p>
10	Chromium (VI)	<p>1) Waste Extraction, Colorimetric Method<sup>1,11)</sup></p> <p>2) Alkaline Digestion, Colorimetric Method<sup>1,12)</sup></p>
11	Cobalt	<p>1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method<sup>1,13)</sup></p> <p>2) Waste Extraction, Digestion, Graphite Furnace Atomic Absorption Spectrometric Method<sup>1,14)</sup></p> <p>3) Waste Extraction, Digestion, Inductively Coupled Plasma Method<sup>1,15)</sup></p> <p>4) Digestion, Flame Atomic Absorption Spectrometric Method<sup>1,16)</sup></p> <p>5) Digestion, Graphite Furnace Atomic Absorption Spectrometric Method<sup>1,17)</sup></p> <p>6) Digestion, Inductively Coupled Plasma Method<sup>1,18)</sup></p>

ลำดับที่	สารเคมี	วิธีวิเคราะห์
12	Copper	<p>1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method<sup>1,19)</sup></p> <p>2) Waste Extraction, Digestion, Graphite Furnace Atomic Absorption Spectrometric Method<sup>1,20)</sup></p> <p>3) Waste Extraction, Digestion, Inductively Coupled Plasma Method<sup>1,21)</sup></p> <p>4) Digestion, Flame Atomic Absorption Spectrometric Method<sup>1,22)</sup></p> <p>5) Digestion, Graphite Furnace Atomic Absorption Spectrometric Method<sup>1,23)</sup></p> <p>6) Digestion, Inductively Coupled Plasma Method<sup>1,24)</sup></p>
13	24-0	<p>1) Waste Extraction, Separation, Flame Liquid Liquid Extraction, Gas Chromatographic Method<sup>1,25)</sup></p> <p>2) Solid Phase Extraction, Gas Chromatographic Method<sup>1,26)</sup></p>
14	000	<p>1) Waste Extraction, Solid-Phase Extraction, Gas Chromatographic Method<sup>1,27)</sup></p> <p>2) Solid-Phase Extraction, Gas Chromatographic Method<sup>1,28)</sup></p> <p>3) Soxhlet Extraction, Gas Chromatographic Method<sup>1,29)</sup></p>
15	200	<p>1) Waste Extraction, Solid-Phase Extraction, Gas Chromatographic Method<sup>1,30)</sup></p> <p>2) Solid-Phase Extraction, Gas Chromatographic Method<sup>1,31)</sup></p> <p>3) Soxhlet Extraction, Gas Chromatographic Method<sup>1,32)</sup></p>
16	100	<p>1) Waste Extraction, Solid-Phase Extraction, Gas Chromatographic Method<sup>1,33)</sup></p> <p>2) Solid-Phase Extraction, Gas Chromatographic Method<sup>1,34)</sup></p> <p>3) Soxhlet Extraction, Gas Chromatographic Method<sup>1,35)</sup></p>
17	200.00	<p>1) Waste Extraction, Solid-Phase Extraction, Gas Chromatographic Method<sup>1,36)</sup></p> <p>2) Solid-Phase Extraction, Gas Chromatographic Method<sup>1,37)</sup></p> <p>3) Soxhlet Extraction, Gas Chromatographic Method<sup>1,38)</sup></p>

สารเคมี	สารละลาย	วิธีการทดสอบ
18	Stridlin	1) Waste Extraction, Solid Phase Extraction, Gas Chromatographic Method <sup>11000</sup> 2) Solid Phase Extraction, Gas Chromatographic Method <sup>11000</sup> 3) Soxhlet Extraction, Gas Chromatographic Method <sup>11000</sup>
19	Hexachloro	1) Waste Extraction, Solid Phase Extraction, Gas Chromatographic Method <sup>11000</sup> 2) Solid Phase Extraction, Gas Chromatographic Method <sup>11000</sup> 3) Soxhlet Extraction, Gas Chromatographic Method <sup>11000</sup>
20	Lead	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method <sup>11000</sup> 2) Waste Extraction, Digestion, Graphite Furnace Atomic Absorption Spectrometric Method <sup>11000</sup> 3) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>11000</sup> 4) Digestion, Flame Atomic Absorption Spectrometric Method <sup>11000</sup> 5) Digestion, Graphite Furnace Atomic Absorption Spectrometric Method <sup>11000</sup> 6) Digestion, Inductively Coupled Plasma Method <sup>11000</sup>
21	Urethane	1) Waste Extraction, Solid Phase Extraction, Gas Chromatographic Method <sup>11000</sup> 2) Solid Phase Extraction, Gas Chromatographic Method <sup>11000</sup> 3) Soxhlet Extraction, Gas Chromatographic Method <sup>11000</sup>
22	Hexachloro	1) Waste Extraction, Digestion, Cold Vapor Atomic Absorption Spectrometric Method <sup>11000</sup> 2) Digestion, Cold Vapor Atomic Absorption Spectrometric Method <sup>11000</sup>
23	Hexachloro	1) Waste Extraction, Solid Phase Extraction, Gas Chromatographic Method <sup>11000</sup> 2) Solid Phase Extraction, Gas Chromatographic Method <sup>11000</sup>

2.2.4.5.8

สารเคมี	สารละลาย	วิธีการทดสอบ
24	Hexachloro	1) Waste Extraction, Gas Chromatographic Method <sup>11000</sup> 2) Waste Extraction, Separatory Funnel Liquid Liquid Extraction, Gas Chromatographic Method <sup>11000</sup> 3) Soxhlet Extraction, Gas Chromatographic Method <sup>11000</sup>
25	Hexachloro	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method <sup>11000</sup> 2) Waste Extraction, Digestion, Graphite Furnace Atomic Absorption Spectrometric Method <sup>11000</sup> 3) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>11000</sup> 4) Digestion, Flame Atomic Absorption Spectrometric Method <sup>11000</sup> 5) Digestion, Graphite Furnace Atomic Absorption Spectrometric Method <sup>11000</sup> 6) Digestion, Inductively Coupled Plasma Method <sup>11000</sup>
26	Hexachloro	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method <sup>11000</sup> 2) Waste Extraction, Digestion, Graphite Furnace Atomic Absorption Spectrometric Method <sup>11000</sup> 3) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>11000</sup> 4) Digestion, Flame Atomic Absorption Spectrometric Method <sup>11000</sup> 5) Digestion, Graphite Furnace Atomic Absorption Spectrometric Method <sup>11000</sup> 6) Digestion, Inductively Coupled Plasma Method <sup>11000</sup>
27	Hexachloro	1) Waste Extraction, Separatory Funnel Liquid Liquid Extraction, Gas Chromatographic Method <sup>11000</sup> 2) Waste Extraction, Solid Phase Extraction, Gas Chromatographic Method <sup>11000</sup> 3) Soxhlet Extraction, Gas Chromatographic Method <sup>11000</sup>

2.2.4.5.9

2.2.4.5.9

สารเคมี	ตัวอย่าง	วิธีการวิเคราะห์
28	2,2',4,5,5'-Pentachlorophenyl 2,2',3,4,4',5'- hexachlorophenyl 2,2',4,4',5,5'- hexachlorophenyl 2,2',3,4,4',5,5'- Heptachlorophenyl Pentachlorophenol	1) Waste Extraction, Separation Funnel, Tripoli liquid extraction, Gas Chromatography Method <sup>1,2,3,4</sup> 2) Soxhlet Extraction, Gas Chromatography Method <sup>1,2,3,4</sup>
	Selenium	1) Waste Extraction, Digestion, Hydride Generation Atomic Absorption Spectrometric Method <sup>1,2,3,4</sup> 2) Digestion, Hydride Generation Atomic Absorption Spectrometric Method <sup>1,2,3,4</sup>
29	Fluor	1) Waste Extraction, Digestion, Fluoride Ion-Specific Absorption Spectrometric Method <sup>1,2,3,4</sup> 2) Waste Extraction, Digestion, Graphite Furnace Atomic Absorption Spectrometric Method <sup>1,2,3,4</sup> 3) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>1,2,3,4</sup> 4) Digestion, Flame Atomic Absorption Spectrometric Method <sup>1,2,3,4</sup> 5) Digestion, Graphite Furnace Atomic Absorption Spectrometric Method <sup>1,2,3,4</sup> 6) Digestion, Inductively Coupled Plasma Method <sup>1,2,3,4</sup>
	Bromine	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method <sup>1,2,3,4</sup> 2) Waste Extraction, Digestion, Graphite Furnace Atomic Absorption Spectrometric Method <sup>1,2,3,4</sup> 3) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>1,2,3,4</sup> 4) Digestion, Flame Atomic Absorption Spectrometric Method <sup>1,2,3,4</sup> 5) Digestion, Graphite Furnace Atomic Absorption Spectrometric Method <sup>1,2,3,4</sup> 6) Digestion, Inductively Coupled Plasma Method <sup>1,2,3,4</sup>

สารเคมี	ตัวอย่าง	วิธีการวิเคราะห์
32	Torsaphon	1) Waste Extraction, Solid Phase Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1,2,3,4</sup> 2) Solid Phase Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1,2,3,4</sup> 3) Soxhlet Extraction, Gas Chromatography/Mass Spectrometric Method <sup>1,2,3,4</sup>
	Trichloroethylene	1) Waste Extraction, Purge and Trap Gas Chromatography/Mass Spectrometric Method <sup>1,2,3,4</sup> 2) Purge and Trap, Gas Chromatography/Mass Spectrometric Method <sup>1,2,3,4</sup>
34	Chloroform	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method <sup>1,2,3,4</sup> 2) Waste Extraction, Digestion, Graphite Furnace Atomic Absorption Spectrometric Method <sup>1,2,3,4</sup> 3) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>1,2,3,4</sup> 4) Digestion, Flame Atomic Absorption Spectrometric Method <sup>1,2,3,4</sup> 5) Digestion, Graphite Furnace Atomic Absorption Spectrometric Method <sup>1,2,3,4</sup> 6) Digestion, Inductively Coupled Plasma Method <sup>1,2,3,4</sup>
	Vinyl Chloride	Purge and Trap, Gas Chromatography/Mass Spectrometric Method <sup>1,2,3,4</sup>
36	Zinc	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method <sup>1,2,3,4</sup> 2) Waste Extraction, Digestion, Graphite Furnace Atomic Absorption Spectrometric Method <sup>1,2,3,4</sup> 3) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>1,2,3,4</sup> 4) Digestion, Flame Atomic Absorption Spectrometric Method <sup>1,2,3,4</sup> 5) Digestion, Graphite Furnace Atomic Absorption Spectrometric Method <sup>1,2,3,4</sup> 6) Digestion, Inductively Coupled Plasma Method <sup>1,2,3,4</sup>



Table 12. Continued

Sl. No.	Compound	Reference
1	Acetophenone	Sorichter Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
2	Acetone	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
3	Albin	Sorichter Extraction, Gas Chromatography/Method <sup>(1)(2)</sup>
4	Anthracene	Sorichter Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
5	Anthracene	Digestion, Flame Atomic Absorption Spectrometric Method <sup>(1)(2)</sup> 2) Digestion, Graphite Furnace Atomic Absorption/ Gas Chromatic Method <sup>(1)(2)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(1)(2)</sup>
6	Arsenic	Digestion, Flame Atomic Absorption Spectrometric Method <sup>(1)(2)</sup>
7	Asphalt	Sorichter Extraction, Gas Chromatography/Method <sup>(1)(2)</sup>
8	Baikal	1) Digestion, Flame Atomic Absorption Spectrometric Method <sup>(1)(2)</sup> 2) Digestion, Graphite Furnace Atomic Absorption/ Spectrometric Method <sup>(1)(2)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(1)(2)</sup>
9	Benzaldehyde	Sorichter Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
10	Benzene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
11	Benzothiazolone	Sorichter Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
12	Benzothiazolone	Sorichter Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
13	Benzothiazolone	Sorichter Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
14	Benzothiazolone	Sorichter Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
15	Benzothiazolone	Sorichter Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
16	Benzothiazolone	Sorichter Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
17	Benzothiazolone	Sorichter Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
18	Benzothiazolone	Sorichter Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
19	Benzothiazolone	Sorichter Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
20	Benzothiazolone	Sorichter Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>

2) Digestion

Sl. No.	Compound	Reference
21	Benzothiazolone	Digestion, Graphite Furnace Atomic Absorption/ Spectrometric Method <sup>(1)(2)</sup>
22	Benzothiazolone	Digestion, Inductively Coupled Plasma Method <sup>(1)(2)</sup>
23	Benzothiazolone	Sorichter Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
24	Benzothiazolone	Sorichter Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
25	Benzothiazolone	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
26	Benzothiazolone	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
27	Benzothiazolone	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
28	Benzothiazolone	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
29	Benzothiazolone	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
30	Benzothiazolone	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
31	Benzothiazolone	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
32	Benzothiazolone	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>

2) Digestion

ลำดับที่	สารเคมี	วิธีการตรวจ
33	Chromium III	2) Digestion, Graphite Furnace Atomic Absorption Spectrometric Method <sup>(1)(4)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(1)(5)</sup> 1) Digestion, Flame Atomic Absorption Spectrometric Method, Alkaline Digestion, Colorimetric Method, Calculation <sup>(1)(2)(3)</sup>
34	Chromium VI	2) Digestion, Graphite Furnace Atomic Absorption Spectrometric Method, Alkaline Digestion, Colorimetric Method, Calculation <sup>(1)(4)(5)</sup> 3) Digestion, Inductively Coupled Plasma Method, Alkaline Digestion, Colorimetric Method, Calculation <sup>(1)(5)(6)</sup>
35	Chrysene	Alkaline Digestion, Colorimetric Method <sup>(1)(8)</sup>
36	Cinnole	Soxhlet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(4)(11)</sup>
37	2,4-D	1) Extraction, Soxhlet Extraction, Titrimetric Method <sup>(1)(2)(11)</sup> 2) Extraction, Calculation, Colorimetric Method <sup>(1)(2)(11)(12)</sup>
38	DDD	Soxhlet Extraction, Gas Chromatography Method <sup>(1)(24)</sup>
39	DDF	Soxhlet Extraction, Gas Chromatography Method <sup>(1)(24)</sup>
40	DDT	Soxhlet Extraction, Gas Chromatography Method <sup>(1)(24)</sup>
41	Dibenzahisthiazene	Soxhlet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
42	Dibutyl phthalate	Soxhlet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
43	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(14)</sup>
44	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(14)</sup>
45	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(14)</sup>
46	1,1-Dichloroethane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(14)</sup>
47	1,2-Dichloroethane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(14)</sup>
48	1,1-Dichloroethylene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(14)</sup>

ลำดับที่	สารเคมี	วิธีการตรวจ
49	1,1,2-Dichloroethylene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(14)</sup>
50	trans-1,4-Dichloroethylene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(14)</sup>
51	1,2-Dichloropropane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(14)</sup>
52	1,3-Dichloropropane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(14)</sup>
53	1,3-Dichloropropene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(14)</sup>
54	Dieldrin	Soxhlet Extraction, Gas Chromatography Method <sup>(1)(24)</sup>
55	Dieldrin and DDT	Soxhlet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(24)</sup>
56	2,4-Dimethylphenol	Soxhlet Extraction, Gas Chromatography Method <sup>(1)(24)</sup>
57	2,4-Dinitrophenol	Soxhlet Extraction, Gas Chromatography Method <sup>(1)(24)</sup>
58	2,4-Dinitrochlorobenzene	Soxhlet Extraction, Gas Chromatography Method <sup>(1)(24)</sup>
59	2,5-Dinitrochlorobenzene	Soxhlet Extraction, Gas Chromatography Method <sup>(1)(24)</sup>
60	Dioctyl phthalate	Soxhlet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(2)</sup>
61	Dibutyltin	Soxhlet Extraction, Gas Chromatography Method <sup>(1)(24)</sup>
62	Dieldrin	Soxhlet Extraction, Gas Chromatography Method <sup>(1)(24)</sup>
63	Dihydrobenzofuran	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(14)</sup>
64	Dibenzofuran	Soxhlet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(14)</sup>
65	Dibenzene	Soxhlet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(14)</sup>
66	Dieldrin	Soxhlet Extraction, Gas Chromatography Method <sup>(1)(24)</sup>
67	Dieldrin and DDT	Soxhlet Extraction, Gas Chromatography Method <sup>(1)(24)</sup>
68	1,4-Dichloro-2,3-Dichlorobenzene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(14)</sup>
69	n-Hexane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>(1)(14)</sup>
70	Hexachlorocyclopentadiene	Soxhlet Extraction, Gas Chromatography Method <sup>(1)(24)</sup>
71	β-HCH	Soxhlet Extraction, Gas Chromatography Method <sup>(1)(24)</sup>
72	γ-HCH	Soxhlet Extraction, Gas Chromatography Method <sup>(1)(24)</sup>

สารเคมี	การวิเคราะห์	วิธีการวิเคราะห์
73	Hexachlorocyclopentadiene	Sorblet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
74	Hexachlorobenzene	Sorblet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
75	Heptachlor Epoxide	Sorblet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
76	Heptachlor	Sorblet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
77	Lead	21 Digestion, Flame Atomic Absorption Spectrometric Method <sup>11,12</sup> 21 Digestion, Graphite Furnace Atomic Absorption Spectrometric Method <sup>11,12</sup> 31 Digestion, Inductively Coupled Plasma Method <sup>11,12</sup>
78	Manganese	11 Digestion, Flame Atomic Absorption Spectrometric Method <sup>11,12</sup> 21 Digestion, Graphite Furnace Atomic Absorption Spectrometric Method <sup>11,12</sup> 31 Digestion, Inductively Coupled Plasma Method <sup>11,12</sup>
79	Mercury	Digestion, Cold Vapor Atomic Absorption Spectrometric Method <sup>11,12</sup>
80	Methane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
81	Methoxychlor	Sorblet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
82	Methylcyclopentadiene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
83	Methylcyclohexane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
84	Methylcyclopentadiene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
85	2-Methylcyclopentadiene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
86	Methylcyclohexane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
87	Methylcyclopentadiene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
88	Methylcyclopentadiene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>

สารเคมี	การวิเคราะห์	วิธีการวิเคราะห์
89	Methylcyclopentadiene	Sorblet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
90	Methylcyclopentadiene	Sorblet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
91	N-Nitrosodimethylamine	Sorblet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
92	Polychlorinated Biphenyls	Sorblet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
93	Polychlorinated Biphenyls	Sorblet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
94	Polychlorinated Biphenyls	Sorblet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
95	Polychlorinated Biphenyls	Sorblet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
96	Polychlorinated Biphenyls	Sorblet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
97	Polychlorinated Biphenyls	Sorblet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
98	Polychlorinated Biphenyls	Sorblet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
99	Polychlorinated Biphenyls	Sorblet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>
100	Polychlorinated Biphenyls	Sorblet Extraction, Gas Chromatography/ Mass Spectrometric Method <sup>11,12</sup>

ลำดับที่	สารเคมี	วิธีการตรวจ
100	1,1,2-Trichloroethene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>124</sup>
101	Tetrachloroethylene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>124</sup>
102	Toluene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>124</sup>
103	Toxaphene	Soxhlet Extraction, Gas Chromatography Method <sup>125</sup>
104	Tri-C <sub>6</sub> Cl <sub>3</sub>	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>124</sup>
105	Tri-C <sub>8</sub> Cl <sub>5</sub>	Soxhlet Extraction, Gas Chromatography Method <sup>126</sup>
106	Tri-C <sub>10</sub> Cl <sub>7</sub>	Soxhlet Extraction, Gas Chromatography Method <sup>127</sup>
107	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>124</sup>
108	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>124</sup>
109	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>124</sup>
110	Trichloromethane	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>124</sup>
111	2,4,6-Trichloropheno.	Soxhlet Extraction, Gas Chromatography Method <sup>128</sup>
112	2,4,4-Trichloropheno.	Soxhlet Extraction, Gas Chromatography Method <sup>128</sup>
113	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>124</sup>
114	Vanadium	1) Digestion, Flame Atomic Absorption Spectrometry Method <sup>129</sup> 2) Digestion, Graphite Furnace Atomic Absorption Spectrometry Method <sup>130</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>131</sup>
115	Vanillin	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>124</sup>
116	Vanillinol	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>124</sup>
117	m-Xylene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>124</sup>
118	p-Xylene	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>124</sup>
119	polyare	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>124</sup>

120-Xylene (Total)

ลำดับที่	สารเคมี	วิธีการตรวจ
120	Xylene (Total)	Purge and Trap, Gas Chromatography/ Mass Spectrometric Method <sup>124</sup>
121	Zinc	1) Digestion, Flame Atomic Absorption Spectrometry Method <sup>129</sup> 2) Digestion, Graphite Furnace Atomic Absorption Spectrometry Method <sup>130</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>131</sup>

## เอกสารอ้างอิง

- กระทรวงอุตสาหกรรม กรมควบคุมมลพิษ พ.ศ. 2532, เรื่อง ประกาศใช้ระเบียบวิธีปฏิบัติวิธีเคมีในห้องปฏิบัติการตรวจคุณภาพอากาศ พ.ศ. 2535, หน้า 123 ของฉบับที่ 124
- กรมควบคุมมลพิษ กรมควบคุมสิ่งแวดล้อม พ.ศ. 2540, เรื่อง กำหนดวิธีปฏิบัติวิธีเคมีในห้องปฏิบัติการตรวจคุณภาพอากาศ พ.ศ. 2540, หน้า 123 ของฉบับที่ 124
- กรมควบคุมมลพิษ, กรมควบคุมมลพิษ, กรมควบคุมมลพิษ, เรื่อง วิธีปฏิบัติวิธีเคมีในห้องปฏิบัติการตรวจคุณภาพอากาศ พ.ศ. 2540, หน้า 123 ของฉบับที่ 124
- APHA, AWWA, ACF, Standard Methods for the Examination of Water and Wastewater, 21<sup>st</sup> ed. Washington, DC, APHA, 2001
- United States Environmental Protection Agency, Standards of Performance for New Stationary Sources, 40 CFR 60, Appendix A, 2002
- United States Environmental Protection Agency, Test Methods for Evaluation Solid Waste Physical/Chemical Methods, SW-846, 1997.
- United States Environmental Protection Agency, Test Methods for Evaluation Solid Waste Physical/Chemical Methods, Acid Digestion of Sludges and Sediments and Soils, SW-846 Method 8008, 1996
- United States Environmental Protection Agency, Test Methods for Evaluation Solid Waste Physical/Chemical Methods, Alkaline Digestion for Hexavalent Chromium, SW-846 Method 8060A, 1996.
- United States Environmental Protection Agency, Test Methods for Evaluation Solid Waste Physical/Chemical Methods, Separatory Funnel Organic-Liquid Extraction, SW-846 Method 8510C, 1996.
- United States Environmental Protection Agency, Test Methods for Evaluation Solid Waste Physical/Chemical Methods, Solid Phase Extraction, SW-846 Method 8535A, 2001
- United States Environmental Protection Agency, Test Methods for Evaluation Solid Waste Physical/Chemical Methods, Soxhlet Extraction, SW-846 Method 8500C, 1996

12 United States

13. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Purge-and-Trap for Aqueous Samples. SW-846 Method 8030C, 1993.

14. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples. SW-846 Method 8035a, 1997.

15. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Inductively Coupled Plasma-Optical Emission Spectrometry. SW-846 Method 8010D, 2003.

16. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Flame Atomic Absorption Spectrophotometry. SW-846 Method 7000B, 2007.

17. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Graphite Furnace Atomic Absorption Spectrophotometry. SW-846 Method 7010, 1996.

18. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Arsenic (Atomic Absorption, Gaseous Hydride). SW-846 Method 7061A, 1992.

19. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Chromium, Hexavalent (Colorimetric). SW-846 Method 7166A, 1997.

20. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Mercury in Fluids/Waste (Mercury Cold-Vapor Technique). SW-846 Method 7470C, 1991.

21. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Mercury in Solid or Semisolid Waste (Mercury Cold-Vapor Technique). SW-846 Method 7471A, 1994.

22. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Selenium (Atomic Absorption, Genhydride Reduction). SW-846 Method 7703, 1996.

23. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Nonhalogenated Organics Using GC/FID. SW-846 Method 8015D, 2003.

24. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Phenols by Gas Chromatography. SW-846 Method 8041, 1995.

25. United States

26. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Organochlorine Pesticides by Gas Chromatography. SW-846 Method 8081B, 1997.

27. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Polychlorinated Biphenyls (PCBs) by Gas Chromatography. SW-846 Method 8082A, 2007.

28. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS). SW-846 Method 8210C, 2006.

29. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry. SW-846 Method 8210D, 2014.

30. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Total and Amenable Cyanide. Distillation. SW-846 Method 9000C, 2004.

31. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Cyanide Extraction Procedure for Solids and Oil. SW-846 Method 9013A, 1995.

32. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Cyanide in Waters and Extracts Using Titrimetric and Manual Spectrophotometric Procedures. SW-846 Method 9014, 2014.



ลำดับที่	สารเคมี	วิธีการวิเคราะห์
17	Endosulfan I	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1</sup>
18	Endosulfan II	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1</sup>
19	Endosulfan Sulfate	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1</sup>
20	Endrin	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1</sup>
21	Formaldehyde	Distillation, Colorimetric Method <sup>1</sup>
22	Free Chlorine	DPD Ferrous Thiometric Method <sup>2</sup>
23	Heptachlor	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1</sup>
24	Heptachlor Epoxide	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1</sup>
25	Hexavalent Chromium	Colorimetric Method <sup>3</sup>
26	Lead	1) Digestion, Direct Air-Acetylene Flame Method <sup>1</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>2</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>3</sup>
27	Manganese	1) Digestion, Direct Air-Acetylene Flame Method <sup>1</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>2</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>3</sup>
28	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>1</sup>
29	Nickel	1) Digestion, Direct Air-Acetylene Flame Method <sup>1</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>2</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>3</sup>
30	Oil & Grease	1) Liquid-Liquid Partition Gravimetric Method <sup>1</sup> 2) Soxhlet Extraction Method <sup>2</sup>
31	pH	Electrometric Method <sup>1</sup>
32	Phenols	Distillation, Direct Phenthrelor Method <sup>1</sup>
33	Selenium	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>1</sup>
34	Sulfide	1) Iodometric Method <sup>2</sup> 2) Methylene Blue Method <sup>3</sup>
35	Temperature	Laboratory and Field Methods <sup>1</sup>
36	Total Dissolved Solids	Dried at 180 °C <sup>1</sup>
37	Total Kjeldahl Nitrogen	Macro-Kjeldahl Method <sup>1</sup>
38	Total Suspended Solids	Dried from 103 to 105 °C <sup>1</sup>

ลำดับที่	สารเคมี	วิธีการวิเคราะห์
39	Trivalent Chromium	Calculation <sup>1</sup>
40	Zinc	1) Digestion, Direct Air-Acetylene Flame Method <sup>1</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>2</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>3</sup>

#### ภาคผนวก 322 สารเคมี

ลำดับที่	สารเคมี	วิธีการวิเคราะห์
1	Arenaphthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
2	Acetone	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
3	Ardin	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1</sup>
4	Anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
5	Antimony	1) Digestion, Direct Air-Acetylene Flame Method <sup>1</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>2</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>3</sup>
6	Arsenic	Digestion, Hydride Generator/Atomic Absorption Spectrometric Method <sup>1</sup>
7	Atrazine	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1</sup>
8	Barium	1) Digestion, Direct Nitrous Oxide-Acetylene Flame Method <sup>1</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>2</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>3</sup>
9	Benzobenzofuran	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
10	Benzene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
11	Benzofluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
12	Benzokluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>

ลำดับที่	สารเคมี	วิธีการทดสอบ
13	Benzoic acid	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
14	Benzodioxone	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
15	Benzofuran, perylene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
16	Beryllium	1) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>1</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>1</sup>
17	Bis(2-chloroethyl)ether	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
18	Bis(2-ethylhexyl)phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
19	Bromochloromethane	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
20	Bromofuran	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
21	Butanol	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
22	Buryl benzyl amide	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
23	Cadmium	1) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>1</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>1</sup>
24	Carbazole	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1</sup>
25	Carbon disulfide	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
26	Carbon tetrachloride	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
27	Chloroacetylene	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1</sup>
28	p-Chloroaniline	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1</sup>
29	Chlorobenzene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
30	Chlorobromomethane	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
31	Chloroform	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>

ลำดับที่	สารเคมี	วิธีการทดสอบ
32	Chromium	1) Digestion, Direct Air-Acetylene Flame Method <sup>1</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>1</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>1</sup>
33	Chromium (III)	Calculation <sup>1</sup>
34	Chromium (VI)	Colorimetric Method <sup>1</sup>
35	Chrysene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
36	Cyanide	Distillation, Colorimetric Method <sup>1</sup>
37	2,4-D	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1</sup>
38	DOD	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1</sup>
39	DOE	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1</sup>
40	DOF	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>1</sup>
41	Dibenzofluoranthrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
42	Di-n-butyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
43	1,2-Dichlorobenzene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
44	1,3-Dichlorobenzene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
45	1,4-Dichlorobenzene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
46	1,1-Dichloroethane	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
47	1,2-Dichloroethane	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
48	1,1-Dichloroethylene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
49	o-1,3-Dichloroethylene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
50	trans-1,2-Dichloroethylene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
51	1,2-Dichloropropane	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>
52	1,3-Dichloropropane	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>1</sup>



ลำดับที่	สารเคมี	วิธีการวิเคราะห์
53	1,3-Dichloropropene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>21</sup>
54	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>21</sup>
55	Diethyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>21</sup>
56	2,4-Dimethylphenol	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>21</sup>
57	2,4-Dinitrophenol	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>21</sup>
58	2,4-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>21</sup>
59	2,6-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>21</sup>
60	D-n-Octyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>21</sup>
61	Endosulfan	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>21</sup>
62	Endrin	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>21</sup>
63	Ethylbenzene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>21</sup>
64	Fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>21</sup>
65	Fluorene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>21</sup>
66	Heptachlor	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>21</sup>
67	Heptachlor epoxide	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>21</sup>
68	Hexachlor-1,3-butadiene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>21</sup>
69	n-Hexane	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>21</sup>
70	$\alpha$ -HCH	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>21</sup>
71	$\beta$ -HCH	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>21</sup>
72	$\gamma$ -HCH	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>21</sup>
73	Hexachlorocyclopentadiene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>21</sup>
74	Hexachloroethane	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>21</sup>
75	Heptachlor-1,2,3-dichloro	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>21</sup>
76	Isophthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>21</sup>

77 Lead..

ลำดับที่	สารเคมี	วิธีการวิเคราะห์
77	Lead	1) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>21</sup>
78	Manganese	2) Digestion, Inductively Coupled Plasma Method <sup>21</sup>
79	Mercury	1) Digestion, Direct Air-Acetylene Flame Method <sup>21</sup>
80	Methanol	2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>21</sup>
81	Methoxychlor	3) Digestion, Inductively Coupled Plasma Method <sup>21</sup>
82	Methyl bromide	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>21</sup>
83	Methylene chloride	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>21</sup>
84	2-Methylphenol	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>21</sup>
85	2-Methylnaphthalene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>21</sup>
86	Methyl tert-butyl ether	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>21</sup>
87	Naphthalene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>21</sup>
88	Nickel	1) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>21</sup>
89	Nitrobenzene	2) Digestion, Inductively Coupled Plasma Method <sup>21</sup>
90	N-nitrosodiphenylamine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>21</sup>
91	N-nitrosodipropylamine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>21</sup>

92 Polychlorinated..

ลำดับที่	สารเคมี	วิธีการตรวจ
92	Polychlorinated Biphenyls PCB-5016 PCB-1221 PCB-1232 PCB-1242 PCB-1249 PCB-1251 PCB-1260	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>21</sup>
93	Pentachlorophenol	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>21</sup>
94	pH	Electrometric Method <sup>22</sup>
95	Phenanthrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>23</sup>
96	Phenol	1) Distillation, Direct Photometric Method <sup>24</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>21</sup>
97	Petene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>23</sup>
98	Selenium	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>25</sup>
99	Silver	1) Digestion, Direct Air-Acetylene Flame Method <sup>26</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>27</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>28</sup>
100	Styrene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>29</sup>
101	1,1,2,2-Tetrachloroethane	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>29</sup>
102	Tetrachloroethylene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>29</sup>
103	Toluene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>29</sup>
104	Xenaphene	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>21</sup>
105	TPH (C <sub>9</sub> -C <sub>10</sub> )	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>29</sup>

145 TPH (C<sub>9</sub>-C<sub>10</sub>)

ลำดับที่	สารเคมี	วิธีการตรวจ
106	TFH (C <sub>9</sub> -C <sub>10</sub> )	Separatory Funnel, Liquid-Liquid Extraction Gas Chromatographic Method <sup>21</sup>
107	TPH (C <sub>9</sub> -C <sub>10</sub> )	Separatory Funnel, Liquid-Liquid Extraction, Gas Chromatographic Method <sup>21</sup>
108	1,2,4-Trichlorobenzene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>29</sup>
109	1,1,1-Trichloroethane	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>29</sup>
110	1,1,2-Trichloroethane	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>29</sup>
111	Trichloroethylene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>29</sup>
112	2,4,5-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>21</sup>
113	2,4,6-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>21</sup>
114	1,2,5-Trimethylbenzene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>29</sup>
115	Vanadium	1) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>27</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>28</sup>
116	Vinyl acetate	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>29</sup>
117	Vinyl chloride	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>29</sup>
118	m-Xylene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>29</sup>
119	o-Xylene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>29</sup>
120	p-Xylene	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>29</sup>
121	Xylene (Total)	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>29</sup>
122	Zinc	1) Digestion, Direct Air-Acetylene Flame Method <sup>26</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>28</sup>

146

การปฏิบัติงานในห้องปฏิบัติการ

ลำดับที่	สารเคมี	วิธีการวิเคราะห์
1	Fluoride	Ion Selective Electrode Method <sup>๑</sup>

เอกสารอ้างอิง

1. กรมควบคุมมลพิษ. แนวทางการตรวจวัดมลพิษทางอากาศ. คู่มือการตรวจวัดมลพิษ. กรมควบคุมมลพิษ. 25๕๓.
2. APHA, AWWA, WEF. Standard Methods for the Examination of Water and Wastewater. 24<sup>th</sup> ed. Washington, DC: APHA. 2023.
3. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Separatory Funnel Liquid-Liquid Extraction. SW-846 Method 3510C. 1996.
4. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Purge-and-Trap for Aqueous Samples. SW-846 Method 8030C. 2003.
5. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Nontotalized Organics Using GC/FID. SW-846 Method 8015B. 2003.
6. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Potentiometric Determination of Fluoride in Aqueous Samples with Ion-Selective Electrode. SW-846 Method 9214. 1996.

๑๖๖

## ภาคผนวก ช

ใบอนุญาตเป็นผู้ตรวจวัดและวิเคราะห์สภาวะการทำงาน  
เกี่ยวกับความร้อน แสงสว่าง เสียงและสารเคมีอันตราย  
ในบรรยากาศ



[illegible]

ឈ្មោះ ហ៊ុន សែន ភេទ ប្រុស កំណើត ២៦ ខែ ១១ ឆ្នាំ ១៩៤៨

ស្ថាប័ន។

เป้าหมายหลักของปฏิสัมพันธ์ระหว่างองค์กรระหว่างกันและกันคือการเพิ่มประสิทธิภาพการดำเนินงาน  
ในกระบวนการทางธุรกิจและเพิ่มขีดความสามารถในการแข่งขันขององค์กร

ရက်စွဲ: ၂၀၁၇ ခုနှစ်၊ ဇူလိုင်လ ၁၀ ရက်

24. 1995 年 1 月 1 日起, 凡在我国境内销售货物的单位和个人, 均应按销售额的一定比例缴纳增值税。

[illegible]

ហ្នឹង ឥឡូវប្រាក់ ៥៥ ពាន់រៀល ៤៥០ ទំព័រ ២០ ម៉ឺន ៣០ ៥៥០

1975 to 1994. *Journal of Management*, 1, 1-20.

26-104

លោកស្រីស្រី ឧបាស

എല്ലാ കുട്ടികൾക്കും പഠനത്തിൽ തുല്യ അവസരം ഉണ്ടാകണം.

အိမ်ထောင်ရေး၊ နိမိတ်တရားနှင့် အကျဉ်းချုပ်။

การปรับปรุงระบบการให้บริการลูกค้า  
เป็นไปตามแผนปฏิบัติการประจำปี ๒๕๖๑ ซึ่งได้กำหนดให้มีการปรับปรุงระบบการให้บริการลูกค้า  
โดยเน้นการให้บริการที่รวดเร็วและถูกต้อง  
รวมทั้งมีการฝึกอบรมพนักงานให้บริการ  
ให้มีความรู้และทักษะในการให้บริการ  
ให้ดียิ่งขึ้นต่อไป

၁။	ပြည်သူ့အသံ	ပြည်သူ့
၂။	ပြည်သူ့အသံ	ပြည်သူ့
၃။	ပြည်သူ့အသံ	ပြည်သူ့
၄။	ပြည်သူ့အသံ	ပြည်သူ့
၅။	ပြည်သူ့အသံ	ပြည်သူ့
၆။	ပြည်သူ့အသံ	ပြည်သူ့
၇။	ပြည်သူ့အသံ	ပြည်သူ့
၈။	ပြည်သူ့အသံ	ပြည်သူ့
၉။	ပြည်သူ့အသံ	ပြည်သူ့
၁၀။	ပြည်သူ့အသံ	ပြည်သူ့
၁၁။	ပြည်သူ့အသံ	ပြည်သူ့
၁၂။	ပြည်သူ့အသံ	ပြည်သူ့
၁၃။	ပြည်သူ့အသံ	ပြည်သူ့
၁၄။	ပြည်သူ့အသံ	ပြည်သူ့
၁၅။	ပြည်သူ့အသံ	ပြည်သူ့
၁၆။	ပြည်သူ့အသံ	ပြည်သူ့
၁၇။	ပြည်သူ့အသံ	ပြည်သူ့
၁၈။	ပြည်သူ့အသံ	ပြည်သူ့
၁၉။	ပြည်သူ့အသံ	ပြည်သူ့
၂၀။	ပြည်သူ့အသံ	ပြည်သူ့

<sup>1</sup> 2007年12月26日，中国外交部发言人姜瑜在例行记者会上表示，中国对日本在钓鱼岛问题上采取的任何单方面行动都持反对态度，中国主张通过对话和谈判解决中日之间的领土争议。

1925 年 4 月 20 日 星期四

شيء فاضل

សំណុំរឿង ០០២/២០០៧

[illegible]

ရက်စွဲ: ၁၉၉၆ ခုနှစ်၊ ဇူလိုင်လ ၁၆ ရက်



အမှတ်	အမည် (အင်္ဂလိပ်)	အမည် (မြန်မာ)	အမှတ်
၁	အိတ်အိတ်အိတ်အိတ်အိတ်အိတ်	အိတ်အိတ်အိတ်အိတ်အိတ်အိတ်	၁
	Personal Air Sampling Pump		
	Unit		
		2013050011	
		2013050020	
		2013050071	
		2013050072	
		2013050073	
		2013050074	
		2013050075	
		2013050110	
		2013050013	
		2013050019	
		2013050021	
		2013050022	
		2013050010	
		2013050014	
		2013050015	
		2013050016	
		2013050017	
		2013050018	
		2013050026	
		2013050053	
		2013050054	
		2013050055	
		2013050057	
		2013050059	
		2013050060	
		2013050061	
		2013050062	
		2013050063	
		2013050064	
		2013050065	
		2013050066	
		2013050067	
		2013050068	
		2013050069	
		2013050070	
		2013050071	
		2013050072	
		2013050073	
		2013050074	
		2013050075	
		2013050076	
		2013050077	
		2013050078	
		2013050079	
		2013050080	
		2013050081	
		2013050082	
		2013050083	
		2013050084	
		2013050085	
		2013050086	
		2013050087	
		2013050088	
		2013050089	
		2013050090	
		2013050091	
		2013050092	
		2013050093	
		2013050094	
		2013050095	
		2013050096	
		2013050097	
		2013050098	
		2013050099	
		2013050100	

အမှတ်	အမည် (အင်္ဂလိပ်)	အမည် (မြန်မာ)	အမှတ်
၁	အိတ်အိတ်အိတ်အိတ်အိတ်အိတ်	အိတ်အိတ်အိတ်အိတ်အိတ်အိတ်	၁
	Personal Air Sampling Pump		
	Unit		
		2013050080	
		2013050081	
		2013050082	
		2013050083	
		2013050084	
		2013050085	
		2013050086	
		2013050087	
		2013050088	
		2013050089	
		2013050090	
		2013050091	
		2013050092	
		2013050093	
		2013050094	
		2013050095	
		2013050096	
		2013050097	
		2013050098	
		2013050099	
		2013050100	
		2013050101	
		2013050102	
		2013050103	
		2013050104	
		2013050105	
		2013050106	
		2013050107	
		2013050108	
		2013050109	
		2013050110	
		2013050111	
		2013050112	
		2013050113	
		2013050114	
		2013050115	
		2013050116	
		2013050117	
		2013050118	
		2013050119	
		2013050120	
		2013050121	
		2013050122	
		2013050123	
		2013050124	
		2013050125	
		2013050126	
		2013050127	
		2013050128	
		2013050129	
		2013050130	
		2013050131	
		2013050132	
		2013050133	
		2013050134	
		2013050135	
		2013050136	
		2013050137	
		2013050138	
		2013050139	
		2013050140	
		2013050141	
		2013050142	
		2013050143	
		2013050144	
		2013050145	
		2013050146	
		2013050147	
		2013050148	
		2013050149	
		2013050150	
		2013050151	
		2013050152	
		2013050153	
		2013050154	
		2013050155	
		2013050156	
		2013050157	
		2013050158	
		2013050159	
		2013050160	
		2013050161	
		2013050162	
		2013050163	
		2013050164	
		2013050165	
		2013050166	
		2013050167	
		2013050168	
		2013050169	
		2013050170	
		2013050171	
		2013050172	
		2013050173	
		2013050174	
		2013050175	
		2013050176	
		2013050177	
		2013050178	
		2013050179	
		2013050180	
		2013050181	
		2013050182	
		2013050183	
		2013050184	
		2013050185	
		2013050186	
		2013050187	
		2013050188	
		2013050189	
		2013050190	
		2013050191	
		2013050192	
		2013050193	
		2013050194	
		2013050195	
		2013050196	
		2013050197	
		2013050198	
		2013050199	
		2013050200	







U.S. Air Mail  
12¢

အသံသယရှိသူများကိုကူညီရန်အတွက်  
ဆွဲငင်မှုများ

เป็นบันทึกผลที่ได้จากการวิเคราะห์ข้อมูลด้วยโปรแกรมคอมพิวเตอร์และตารางสถิติและกราฟ

↑ [ໂປຼແກຼມ ກົດໝາຍ](#) ອຸດສາຫະກຳມະນູນຊີວິດ 2018

သတင်းအချက်အလက်များကို အသုံးပြုနိုင်ရန် အသုံးပြုနိုင်ပါသည်။

๑. วัตถุประสงค์ของการจัดทำบัญชี คือ เพื่อแสดงฐานะทางการเงินของกิจการอย่างถูกต้องและสมบูรณ์ เพื่อให้ทราบถึงผลกำไรหรือขาดทุนของกิจการ และเพื่อให้ทราบถึงฐานะทางการเงินของกิจการอย่างถูกต้องและสมบูรณ์ เพื่อให้ทราบถึงผลกำไรหรือขาดทุนของกิจการ และเพื่อให้ทราบถึงฐานะทางการเงินของกิจการอย่างถูกต้องและสมบูรณ์

$\frac{d}{dt} \int_{\mathbb{R}^n} \rho \, dx = 0$  and  $\frac{d}{dt} \int_{\mathbb{R}^n} \rho \log \rho \, dx = 0$  for all  $t \geq 0$ .

© 2000 Blackwell Science Ltd *Journal of Internal Medicine* 247: 361–368

جنگل، پھل، پھل

ကျွန်ုပ်တို့၏အဖွဲ့သည် အောက်ဖော်ပြပါ

सुभाषचंद्र बोस (१९०७-१९४५)  
 डॉ. राजकुमार प्रसाद (१९०१-१९३६)

សេចក្តីសន្និដ្ឋានរបស់អង្គការសហប្រជាជាតិ

๑. วัตถุประสงค์ในการจัดทำโครงการนี้ขึ้นมี ๓ ประการด้วยกัน คือ ๑. เพื่อส่งเสริมให้บุคลากรในหน่วยงานได้มีโอกาสเรียนรู้และแลกเปลี่ยนประสบการณ์การทำงานที่ดีจากหน่วยงานอื่น ๒. เพื่อส่งเสริมให้บุคลากรในหน่วยงานได้มีโอกาสเรียนรู้และแลกเปลี่ยนประสบการณ์การทำงานที่ดีจากหน่วยงานอื่น ๓. เพื่อส่งเสริมให้บุคลากรในหน่วยงานได้มีโอกาสเรียนรู้และแลกเปลี่ยนประสบการณ์การทำงานที่ดีจากหน่วยงานอื่น

លេខ: ២២៧/២០១៩ អនក្រ.បក

આગાધિનિત લાભગ્રસ્તોના સહયોગ સાથે

ဟုမ္မာယုဂါနိဂီတံ ဝေဝေ ဟု နတ်တို့ ခံစား

क्र.सं.	वस्तुविवरण	मार्क	मॉडल/नं.	प्रतिफल
१	Atomic Absorption Spectrophotometer (AAS)	PerkinElmer	PerkinElmer AAS-100 Serial No. 01055114603	१
२	Inductively Coupled Plasma (ICP)	PerkinElmer	PerkinElmer Optima 8000 Serial No. 075513150290	२
३	UV-Vis Spectrophotometer	PerkinElmer	PerkinElmer Lambda 35 Serial No. 30650047508	३
४	Gas Chromatography (GC-MS, ECD)	PerkinElmer	PerkinElmer GC-1630 Serial No. 105529	४
		PerkinElmer	PerkinElmer GC-1630 Serial No. 105529	५
५	Chromatography (GC)	PerkinElmer	PerkinElmer GC-1630 Serial No. 105529	६
६	Chromatography (GC)	PerkinElmer	PerkinElmer GC-1630 Serial No. 105529	७
७	Chromatography (GC)	PerkinElmer	PerkinElmer GC-1630 Serial No. 105529	८
८	Chromatography (GC)	PerkinElmer	PerkinElmer GC-1630 Serial No. 105529	९
९	Chromatography (GC)	PerkinElmer	PerkinElmer GC-1630 Serial No. 105529	१०

အမှတ်	အမည်	အချက်အလက်		မှတ်ချက်
၁	အချက်အလက်	၁၀၀	၁၀၀	၁
	၁၀၀	၁၀၀	၁၀၀	
	၁၀၀	၁၀၀	၁၀၀	

အချက်အလက် အချက်အလက် အချက်အလက် အချက်အလက် အချက်အလက်

အချက်အလက် အချက်အလက် အချက်အလက် အချက်အလက် အချက်အလက်

အချက်အလက်

အချက်အလက်

အချက်အလက် အချက်အလက် အချက်အလက် အချက်အလက် အချက်အလက်

အချက်အလက် အချက်အလက် အချက်အလက် အချက်အလက် အချက်အလက်



† W. A. G. C. 1944. 1945.

[illegible]

46 00.7421 13.9200

ה'תשנ"ח - חג המולד: 15.09.1997

សៀវភៅ ០៧៧១០ រក្សាទុកនៅក្នុងប្រព័ន្ធគណនេយ្យ របស់អង្គការយូណេស្កូ ។ ផ្ទាំងថត៖

កំណែ: បញ្ជីការងារប្រតិបត្តិការក្នុងការអនុវត្តការងារ ឆ្នាំ២០១២ (ក្នុងក្របខណ្ឌការងារ) ។

[illegible][illegible]

๓. วิจัยและพัฒนาผลิตภัณฑ์สมุนไพรจากพืชสมุนไพรพื้นบ้านที่มีประสิทธิภาพสูง เพื่อใช้ในการดูแลสุขภาพของประชาชน และส่งเสริมการค้าขายสมุนไพรพื้นบ้านให้มีมูลค่าเพิ่มขึ้น

ตามมติของสภามหาวิทยาลัย มหาวิทยาลัยราชภัฏวชิรเวศน์บุรีรัมย์ เมื่อวันที่ ๑๖ กรกฎาคม ๒๕๖๓ เรื่อง อนุมัติการขอโอนบุคลากรจากคณะศึกษาศาสตร์ไปปฏิบัติงานในตำแหน่งอาจารย์ผู้ช่วยสอนในสาขาวิชาภาษาอังกฤษ คณะศึกษาศาสตร์ มหาวิทยาลัยราชภัฏวชิรเวศน์บุรีรัมย์ จำนวน ๑ คน โดยมีรายละเอียดการขอโอน ดังนี้

[illegible]

3.4.1.1. **ශ්‍රී ලංකා**

အထူးအားပေးခြင်း

2. *Chlorophyll*

([អ្នកស្តាប់]) ឆ្លាតហ្ន៎  
 តើបងអាចបកប្រែឱ្យយើងបានឬទេ  
 ដល់អ្នកដទៃ ដែលមិនស្គាល់ភាសាខ្មែរទេ។

1.  $\mathcal{L}(\mathbf{y}|\mathbf{x}) = \prod_{i=1}^n p(y_i|\mathbf{x})$

<sup>1</sup>ကုမ္ပဏီ ၁ ဝတ်ပြင် ငါးရာခိုင်နှုန်း - ၁၀ ရာခိုင်နှုန်း

Figure 1. The Ziegler-Natta catalyst.



2015年11月

[illegible]

1:57:00:72

[illegible]

ရက်စွဲ: ၂၀၁၈ ခုနှစ်၊ ဇူလိုင်လ ၁၀ ရက်

ආදායම් බර 50% ක් අඩු කළ හැකි බවට විශ්වාසය

[illegible][illegible]

אברהם אבינו, שמואל הנביא ויהושע הכהן הגדול, נבחרו לייצג את ישראל לפני ה' בלחימה ובשלום.

[illegible]

ក្រុមប្រឹក្សាភិបាលក្រសួងសេដ្ឋកិច្ច និងហិរញ្ញវត្ថុ ក្រសួងសេដ្ឋកិច្ច និងហិរញ្ញវត្ថុ ក្រសួងសេដ្ឋកិច្ច និងហិរញ្ញវត្ថុ

[illegible]

8. การดำเนินการตามแผนปฏิบัติการฯ ของหน่วยงานราชการ รัฐวิสาหกิจ องค์การมหาชน หรือภาคเอกชน

[illegible]
$$L = \sum_{k=0}^{\infty} L_k$$

*Journal of Management Education* 36(7) 809-824

© 2004 Blackwell Publishing Ltd, *Journal of Internal Medicine* 255: 111–118

၂၀၁၆ ခုနှစ် စာရင်းအား အောက်ပါအတိုင်း တွက်ချက်သည်။

2014

၁. ဤစာချုပ်ကို ရက်စွဲ

महाराष्ट्र शासन विज्ञान संशोधन मंडळ, पुणे-४११०२५

ရက်စွဲ: ၁၅ ဇူလိုင် ၂၀၁၆

၁. ကမ္ဘာ့အဆင့်	၁၀ ရာခိုင်နှုန်း
၂. ကမ္ဘာ့အဆင့်	၁၀ ရာခိုင်နှုန်း
၃. ကမ္ဘာ့အဆင့်	၁၀ ရာခိုင်နှုန်း
၄. ကမ္ဘာ့အဆင့်	၁၀ ရာခိုင်နှုန်း

ကိုယ်တိုင် ဝယ် အိတ် ၁၀၀ လေးကောင်းပါတယ်။

آکسٹین

[illegible]

วันที่	ชื่อ-นามสกุล	ตำแหน่ง	ชื่อ
๑	นายสมชาย ใจดี	หัวหน้างาน	๑๐
๒	นายสมชาย ใจดี	หัวหน้างาน	๑๐
๓	นายสมชาย ใจดี	หัวหน้างาน	๑๐
๔	นายสมชาย ใจดี	หัวหน้างาน	๑๐
๕	นายสมชาย ใจดี	หัวหน้างาน	๑๐
๖	นายสมชาย ใจดี	หัวหน้างาน	๑๐
๗	นายสมชาย ใจดี	หัวหน้างาน	๑๐
๘	นายสมชาย ใจดี	หัวหน้างาน	๑๐
๙	นายสมชาย ใจดี	หัวหน้างาน	๑๐
๑๐	นายสมชาย ใจดี	หัวหน้างาน	๑๐

23

[illegible][illegible]





ALL INFORMATION CONTAINED  
HEREIN IS UNCLASSIFIED

ការបោះឆ្នោតតាមបែបប្រជាធិបតេយ្យ

4. பெரிய : பெரிய : பெரிய :

๘. จากข้อมูลการเปลี่ยนแปลงราคาข้าวเปลือกและข้าวสารใน ๒ ปีที่ผ่านมา (๒๕๕๒-๒๕๕๓) และปีงบประมาณ ๒๕๕๔ พบว่า:

វិស័យសេវា: ២០១២-២០១៣-២០១៤

2019年4月25日 星期三

[illegible]

በሰነድ ያልተገለጸው የጥቅም ስራ ለሰነድ ያልተገለጸው የጥቅም ስራ

UCL is not getting enough of a return

1. *Chlorophyll a*

30154927.001 2000 1 1

በሕገ መንግሥቱ አንቀጽ 100 (1) ላይ የተገለጸው የሥነ ምግባርና የቴክኖሎጂ ሚኒስቴር ሲሆን፣

၁၀၀၂ နတ်တော်တို့၏ နာမည်များကို ဖော်ပြပါသည်။

[illegible]

ស្ថិតិស្រាវជ្រាវស្តីពីការប្រើប្រាស់ប្រព័ន្ធគណនេយ្យក្នុងស្ថាប័នសាធារណៈ ឆ្នាំ ២០១៥ នៅកម្ពុជា

အမည်: ဦးအောင်ကျော်

1. The "9/11" attacks were a tragedy that changed the world.

$$x = 2.40 \times 10^5 \text{ m/s} \quad 4.0 \times 10^5 \text{ m/s}$$
[illegible]

၁။ ပါဠိစာပေ                      ၂။ ဘုရားရှင်

၄. ပါ.သု.၆၁၉: ရံဂ်(၇၅)ဝေ

နိုင်ငံ၊ ကံလွန်၊ အိန္ဒိယ၊ ဟိမဝန္တာတောင်တန်း၊ မာပိုမြို့နယ်၊ ဟိမဝန္တာတောင်တန်း

ហ្នឹង ១ រ៉ាត់ ៥០០ ម៉ែត្រ ប្រាកដ ៥០០ ម៉ែត្រ

کے لئے

၂၀၁၆ ခုနှစ်၊ ဇူလိုင်လ ၁ ရက်နေ့

[illegible]

၁၃။ ရန်ကုန်တိုင်းဒေသကြီး၊ မန္တလေးခရိုင်၊



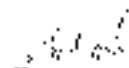


ការបែងចែកការងារសម្រាប់បុគ្គលិក  
 ដែលបំពេញតួនាទីជាមេនាំការងារសម្រាប់បុគ្គលិកដែលបំពេញតួនាទី  
 ក្នុងការងារសម្រាប់បុគ្គលិកដែលបំពេញតួនាទី  
 បែងចែកការងារសម្រាប់បុគ្គលិកដែលបំពេញតួនាទី

- ១. ការងារសម្រាប់បុគ្គលិក
- ២. ការងារសម្រាប់បុគ្គលិក
- ៣. ការងារសម្រាប់បុគ្គលិក
- ៤. ការងារសម្រាប់បុគ្គលិក

ក្នុងករណីដែលមានការបែងចែកការងារសម្រាប់បុគ្គលិកដែលបំពេញតួនាទី

ប្រសិនបើមានការបែងចែកការងារសម្រាប់បុគ្គលិកដែលបំពេញតួនាទី



លោកស្រី/លោក ឈ្មោះ  
 តំណាង ឈ្មោះ ឈ្មោះ ឈ្មោះ  
 តំណាង ឈ្មោះ ឈ្មោះ ឈ្មោះ

ការបែងចែកការងារសម្រាប់បុគ្គលិកដែលបំពេញតួនាទី  
 ដែលបំពេញតួនាទីជាមេនាំការងារសម្រាប់បុគ្គលិកដែលបំពេញតួនាទី  
 ក្នុងការងារសម្រាប់បុគ្គលិកដែលបំពេញតួនាទី  
 បែងចែកការងារសម្រាប់បុគ្គលិកដែលបំពេញតួនាទី

ល.រ	ឈ្មោះបុគ្គលិក	ល.រ.បុគ្គលិក		ថ្ងៃ ខែ ឆ្នាំ
		ល.រ.	ឈ្មោះ	
១	លោកស្រី/លោក ឈ្មោះ	១០	១០	០០
		១១	១១	
		១២	១២	
		១៣	១៣	
		១៤	១៤	
		១៥	១៥	
		១៦	១៦	
		១៧	១៧	
		១៨	១៨	
		១៩	១៩	
២	លោកស្រី/លោក ឈ្មោះ	២០	២០	០០
		២១	២១	
		២២	២២	
		២៣	២៣	
		២៤	២៤	
		២៥	២៥	
		២៦	២៦	
		២៧	២៧	
		២៨	២៨	
		២៩	២៩	

