

## List of Instruments Certification for Air & Noise Quality Analysis

No.	Instrument/Equipment	Parameter	Manufacturer	Model/Serial No.	Calibrator	Certification No.	Date of Calibration	Due date of Calibration	Remark
<b>Ambient</b>									
1	Orifice Transfer Standard Calibrator	Total Suspended Particulate (TSP) Particulate Matter < 10 µm (PM <sub>10</sub> )	Thermo Scientific	G25A 158M	Tisch Environmental,Inc.	05072022	5 Jul 22	4 Jul 24	-
2	U-Tube Manometer	Total Suspended Particulate (TSP) Particulate Matter < 10 µm (PM <sub>10</sub> )	Dwyer	1221-36-W/M -	Technology Promotion Association (Thailand-Japan)	22P801	12 Mar 22	11 Mar 23	-
3	Flow Meter	Particular Matter (PM <sub>2.5</sub> )	Mesa Labs	DeltaCal DC1 158850	Innovative Instrument Co.,Ltd.	22-AFM-116	16 Aug 22	15 Aug 23	-
4	Aneroid Barometer	Total Suspended Particulate (TSP) Particulate Matter < 10 µm (PM <sub>10</sub> ) Particular Matter (PM <sub>2.5</sub> )	Barigo, Germany	-	Technology Promotion Association (Thailand-Japan)	22P2728	22 Jul 22	21 Jul 23	-
5	Dial Thermo-Hygrometer	Total Suspended Particulate (TSP) Particulate Matter < 10 µm (PM <sub>10</sub> ) Particular Matter (PM <sub>2.5</sub> )	Barigo, Germany	-	Technology Promotion Association (Thailand-Japan)	22H1587	27 Jul 22	26 Jul 23	-
6	High Volume Air Sampler	Total Suspended Particulate (TSP)	Thremo Scientific	GS2312-10105-1 2010-06	Tisch Environmental,Inc.	Ref. No.158M	5 Jul 22	4 Jul 24	-
7	High Volume Air Sampler	Total Suspended Particulate (TSP)	Thremo Scientific	GS2312-10105-1 2010-07	Tisch Environmental,Inc.	Ref. No.158M	5 Jul 22	4 Jul 24	-
8	High Volume Air Sampler	Total Suspended Particulate (TSP)	Thremo Scientific	GS2312-10105-1 2010-08	Tisch Environmental,Inc.	Ref. No.158M	5 Jul 22	4 Jul 24	-
9	High Volume Air Sampler	Total Suspended Particulate (TSP)	Thremo Scientific	GS2312-10105-1 2010-09	Tisch Environmental,Inc.	Ref. No.158M	5 Jul 22	4 Jul 24	-
10	High Volume Air Sampler	Total Suspended Particulate (TSP)	Thremo Scientific	GS2312-10105-1 2010-10	Tisch Environmental,Inc.	Ref. No.158M	5 Jul 22	4 Jul 24	-
11	High Volume Air Sampler	Total Suspended Particulate (TSP)	Thremo Scientific	GS2312-10105-1 2010-16	Tisch Environmental,Inc.	Ref. No.158M	5 Jul 22	4 Jul 24	-

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12	High Volume Air Sample	Particulate Matter < 10 µm (PM <sub>10</sub> )	Thremo Scientific	IP10-1 2010-01	Tisch Environmental,Inc.	Ref. No.158M	5 Jul 22	4 Jul 24	-
13	High Volume Air Sample	Particulate Matter < 10 µm (PM <sub>10</sub> )	Thremo Scientific	IP10-1 2010-02	Tisch Environmental,Inc.	Ref. No.158M	5 Jul 22	4 Jul 24	-
14	High Volume Air Sample	Particulate Matter < 10 µm (PM <sub>10</sub> )	Thremo Scientific	IP10-1 2010-03	Tisch Environmental,Inc.	Ref. No.158M	5 Jul 22	4 Jul 24	-
15	High Volume Air Sample	Particulate Matter < 10 µm (PM <sub>10</sub> )	Thremo Scientific	IP10-1 2010-04	Tisch Environmental,Inc.	Ref. No.158M	5 Jul 22	4 Jul 24	-
16	High Volume Air Sample	Particulate Matter < 10 µm (PM <sub>10</sub> )	Thremo Scientific	IP10-1 2010-05	Tisch Environmental,Inc.	Ref. No.158M	5 Jul 22	4 Jul 24	-
17	High Volume Air Sample	Particulate Matter < 10 µm (PM <sub>10</sub> )	Thremo Scientific	IP10-1 2010-06	Tisch Environmental,Inc.	Ref. No.158M	5 Jul 22	4 Jul 24	-

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<b>Ambient</b>									
18	Wind Speed/Wind Direction	WS/WD	LSI LASTEM	E-LOG305 19040405	Thai Meteorological Department	148/22	7 Apr 22	6 Apr 23	-
19	Wind Speed/Wind Direction	WS/WD	LSI LASTEM	E-LOG305 20040002	Thai Meteorological Department	275/21	2 Aug 22	1 Aug 23	-
20	Wind Speed/Wind Direction	WS/WD	LSI LASTEM	E-LOG305 20040005	Thai Meteorological Department	259/22	12 Jul 22	11 Jul 23	-
21	Wind Speed/Wind Direction	WS/WD	LSI LASTEM	E-LOG305 20080022	Thai Meteorological Department	262/22	12 Jul 22	11 Jul 23	-
22	Wind Speed/Wind Direction	WS/WD	LSI LASTEM	E-LOG305 20040026	Thai Meteorological Department	261/22	12 Jul 22	11 Jul 23	-
23	Wind Speed/Wind Direction	WS/WD	LSI LASTEM	E-LOG305 20040039	Thai Meteorological Department	260/22	12 Jul 22	11 Jul 23	-

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No.	Instrument/Equipment	Parameter	Manufacturer	Model/Serial No.	Calibrator	Certification No.	Date of Calibration	Due date of Calibration	Remark
<b>Ambient</b>									
24	Vibration Meter	Vibration Level Acceleration Level	Instantel Inc.	Micromate UM12392	Calibration Laboratory Co.Ltd	Q22017950	21 Feb 22	20 Feb 23	-
25	Vibration Meter	Vibration Level Acceleration Level	Instantel Inc.	Micromate UM12393	Calibration Laboratory Co.Ltd	Q22012260	10 Feb 22	9 Feb 23	-
26	Vibration Meter	Vibration Level Acceleration Level	Instantel Inc.	Micromate UM12394	Calibration Laboratory Co.Ltd	Q22005355	18 Jan 22	19 Jan 23	-
27	Vibration Meter	Vibration Level Acceleration Level	Instantel Inc.	Micromate UM12395	Calibration Laboratory Co.Ltd	Q22012258	7 Feb 22	6 Feb 23	-
28	Vibration Meter	Vibration Level Acceleration Level	Instantel Inc.	Micromate UM14468	Calibration Laboratory Co.Ltd	Q22005358	19 Jan 22	18 Jan 23	-

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<b>Ambient</b>									
29	Sound Level Calibrator (Acoustic Calibrator)	Calibrate Sound Level Meter	Larson Davis	CAL150 6307	Innovative Instrument Co.,Ltd.	22-ACT-373	8 Jun 22	7 Jun 23	-
30	Sound Level Meter	$L_{Aeq}$ 24 hours, $L_{Amax}$ , $L_{A90}$ , $L_{Adn}$	Larson Davis	LxT2 0005289	Sithiporn Associates Co., Ltd.	ACL22082	25 May 22	24 May 23	-
31	Sound Level Meter	$L_{Aeq}$ 24 hours, $L_{Amax}$ , $L_{A90}$ , $L_{Adn}$	Larson Davis	LxT2 0005304	Innovative Instrument Co.,Ltd.	22-ACT-249	1 Apr 22	31 Mar 23	-
32	Sound Level Meter	$L_{Aeq}$ 24 hours, $L_{Amax}$ , $L_{A90}$ , $L_{Adn}$	Larson Davis	LxT2 0005344	Innovative Instrument Co.,Ltd.	22-ACT-248	1 Apr 22	31 Mar 23	-
33	Sound Level Meter	$L_{Aeq}$ 24 hours, $L_{Amax}$ , $L_{A90}$ , $L_{Adn}$	Larson Davis	LxT2 0005394	Innovative Instrument Co.,Ltd.	22-ACT-034	21 Jan 22	20 Jan 23	-
34	Sound Level Meter	$L_{Aeq}$ 24 hours, $L_{Amax}$ , $L_{A90}$ , $L_{Adn}$	Larson Davis	LxT2 0005395	Innovative Instrument Co.,Ltd.	22-ACT-247	1 Apr 22	31 Mar 23	-
35	Sound Level Meter	$L_{Aeq}$ 24 hours, $L_{Amax}$ , $L_{A90}$ , $L_{Adn}$	Larson Davis	LxT2 0005396	Innovative Instrument Co.,Ltd.	22-ACT-105	11 Feb 22	10 Feb 23	-

Certificate Laboratory Instrument/Equipment for Air Quality Analysis.

No.	Instrument/Equipment	Parameter	Manufacturer	Model/Serial No.	Calibrator	Certification No.	Date of Calibration	Due date of Calibration*	Remark
Laboratory Instrument/Equipments.									
1	Analytical Balance (Readability 0.1 mg)	TSP PM-10	Mettler-Toledo	AB204-S / 1128312528	Mettler-Toledo (Thailand) Ltd.	TH2058-097-040722- ACC-TH	7 Apr 22	6 Apr 23	-
2	Analytical Balance (Readability 0.1 mg)		Mettler-Toledo	AB204-S/FACT / B108115858	Mettler-Toledo (Thailand) Ltd.	TH2058-098-040722- ACC-TH	7 Apr 22	6 Apr 23	-
3	Analytical Balance (Readability 0.001 mg)	PM 2.5	Mettler-Toledo	XP6 / B322373893	Mettler-Toledo (Thailand) Ltd.	TH2058-099-040722- ACC-TH	7 Apr 22	6 Apr 23	-

Due Date of Calibration\* : Based on the annual calibration plan. At least 1 time per year.

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No.	Instrument/Equipment	Parameter	Manufacturer	Model/Serial No.	Calibrator	Certification No.	Date of Calibration	Due date of Calibration*	Remark
Laboratory Instrument/Equipment.									
1	pH Meter	pH Temperature	Mettler-Toledo	Seven Easy S20 / 1230525212	National Food Institute, Ministry of Industry, Thailand	2202093-001-01	16 Mar 22	15 Mar 23	-
2	pH Meter		Hanna Instrument	HI2020-02 / C0051107	National Food Institute, Ministry of Industry, Thailand	2203135-001-01	8 Jun 22	7 Jun 23	-
3	Conductivity Meter	Electrical Conductivity	SI Analytics	Lab955 / 16300356	SPC Calibration Center Co.,Ltd.	C24220084	22 Mar 22	21 Mar 23	-
4	Analytical Balance (Readability 0.01 mg)	Total Solids Total Dissolved Solids	Mettler-Toledo	XSR205DU / C009071872	Technology Promotion Association (Thailand-Japan)	22MM210	26 Apr 22	25 Apr 23	-
5	Hot Air Oven	Total Suspended Solids	Memmert	UF55 / B216.1666	Technology Promotion Association (Thailand-Japan)	22TM1490	19 Oct 22	18 Oct 23	-
6	BOD Incubator	Biochemical Oxygen Demand	Arco	UC4-1320 / (UAE.LAB.015/2561)	Technology Promotion Association (Thailand-Japan)	22TM90	17 Feb 22	16 Feb 23	-
7	BOD Incubator		Arco	UR-1320 / (UAE.WAO.018/2551)	Technology Promotion Association (Thailand-Japan)	22TM305	7 Apr 22	6 Apr 23	-
8	Analytical Balance (Readability 0.1 mg)	Fat Oil And Grease	Mettler-Toledo	AB-204S/FACT / 1129361010	National Food Institute, Ministry of Industry, Thailand	2203120-001-01	1 Jun 22	31 May 23	-
9	Incubator	Total Coliform Bacteria Faecal Coliform Bacteria	Memmert	IPP 260 / V615.0187	Technology Promotion Association (Thailand-Japan)	22TM563	7 Apr 22	6 Apr 23	-
10	Incubator		Memmert	IPP 260 / V618.0033	Technology Promotion Association (Thailand-Japan)	22TM503	3 May 22	2 May 23	-

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No.	Instrument/Equipment	Parameter	Manufacturer	Model/Serial No.	Calibrator	Certification No.	Date of Calibration	Due date of Calibration*	Remark
Laboratory Instrument/Equipment.									
11	Water Bath	Total Coliform Bacteria Faecal Coliform Bacteria	Memmert	WNE 14 / L414.1407	Technology Promotion Association (Thailand-Japan)	22TM565	7 Apr 22	6 Apr 23	-
12	Water Bath		Memmert	WNE 14 / L416.0606	Technology Promotion Association (Thailand-Japan)	22TM333	17 Feb 22	16 Feb 23	-
13	Analytical Balance		Mettler-Toledo	MS603S / B0070110311	Mettler-Toledo (Thailand) Ltd.	H2058-096-040722-ACC-T	7 Apr 22	6 Apr 23	-
14	Auto Clave		ALP	CL-40L / 802664	Technology Promotion Association (Thailand-Japan)	22TM89	17 Feb 22	16 Feb 23	-
15	Atomic Absorption Spectrophotometer (AAS)	Iron, Titanium, Arsenic, Cadmium, Manganese, Chromium, Copper, Barium, Lead, Mercury, Nickel,	Agilent Technologies	System ID:G8432A AA240FS / MY13160001	Thailand Institute Of Science And Technological Research (TISTR)	MTC.ACL. No. 486/65	7 Mar 22	6 Mar 23	-
16	Inductively Coupled Plasma (ICP)	Selenium, Chromium Trivalent, Chromium Hexalent, Zinc Titanium, Chromium	Agilent Technologies	System ID:G8015A G8015AA / MY18030001	Agilent Technologies (Thailand) Co.,Ltd.	Preventive Maintenance Checklist	30 Nov 22	29 Nov 23	-
17	UV-VIS Spectrophotometer	Phosphate, Ammonia-Nitrogen Sulphate, Cyanide	Agilent Technologies	Cary60 G6860A / MY15410009	DQE Services Co.,Ltd.	SP22-016	31 May 22	30 May 23	-
18	UV-VIS Spectrophotometer	Nitrate Nitrogen, Phenols, Colour, Chromium Hexalent,Total Nitrogen	Hitachi	U-1900 / 2021-064	DQE Services Co.,Ltd.	SP22-007	20 Jan 22	19 Jan 23	-
19	UV-VIS Spectrophotometer	Chemical Oxygen Demand Formaldehyde, Cyanide As HCN	Hitachi	U-2900 / 21E22-009	DQE Services Co.,Ltd.	SP22-008	20 Jan 22	19 Jan 23	-



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Laboratory Instrument/Equipment.									
20	COD Reactor (Heating Block)	Chemical Oxygen Demand	Hanna	HI839800-02 / H018500I	Technology Promotion Association (Thailand-Japan)	HIT-2209-0184	1 Mar 22	1 Mar 23	-
21	Digester Unit	Total Kjeldahl Nitrogen (TKN)	FOSS TECATOR	2520auto / 91794469	National Food Institute, Ministry of Industry, Thailand	2202361-001-01	4 Apr 22	3 Apr 23	-
22	Distillation Unit (Kjeldahl Method)	Ammonia-Nitrogen Total Kjeldahl Nitrogen (TKN)	FOSS TECATOR	KT8100 / 91889052	FOSS South East Asia	6623	25 Jul 22	24 Jul 23	-
23	Gas Chromatography (GC)	Organochlorine Pesticides, 2,4-D, Benzo (a) Pyrene,	Agilent Technologies	System ID:CN11021007 7890 / CN11021007	Agilent Technologies (Thailand) Co.,Ltd.	Certificate of System Qualification GC-OQ	11 Feb 22	10 Feb 23	-
24	Gas Chromatography (GC)	PCBs, Pentachlorophenol Atrazine	Agilent Technologies	System ID:CN13113001 7890 / CN13113001	Agilent Technologies (Thailand) Co.,Ltd.	Certificate of System Qualification GC-OQ	22 Apr 22	21 Apr 23	-
25	Gas Chromatography / Mass Spectrometry (GC-MS)	Benzene, Carbon Tetrachloride, 1,2-Dichloroethane, Styrene, 1,1-Dichloroethylene, Toluene, cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene, Dichloromethane, Total Xylenes, Ethylbenzene, Tetrachloroethylene, Trichloroethylene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane	Agilent Technologies	System ID: US2009M037 8890 (G3542A) / CN1945A066 5977B / US2009M037	Agilent Technologies (Thailand) Co.,Ltd.	Preventive Maintenance Checklist	13 Jun 22	12 Jun 23	-

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Laboratory Instrument/Equipment.									
26	Turbidity Meter	Turbidity	Oakton	T100IR / 1120501017	Technology Promotion Association (Thailand-Japan)	22CH1184	5 Sep 22	4 Sep 23	-

Due Date of Calibration\* : Based on the annual calibration plan. At least 1 time per year.