

**APPENDIX C
COPIES OF CALIBRATION
CERTIFICATES**

Certificate of Calibration

Calibration Certification Information			
Cal. Date: January 15, 2024	Rootsmeter S/N: 438320	Ta: 294	°K
Operator: Jim Tisch		Pa: 755.4	mm Hg
Calibration Model #: TE-5025A	Calibrator S/N: 3864		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4380	3.3	2.00
2	3	4	1	1.0270	6.4	4.00
3	5	6	1	0.9180	8.0	5.00
4	7	8	1	0.8750	8.9	5.50
5	9	10	1	0.7230	12.9	8.00

Data Tabulation						
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H \left(Ta/Pa \right)}$ (y-axis)	
1.0031	0.6975	1.4195	0.9956	0.6924	0.8823	
0.9989	0.9727	2.0075	0.9915	0.9655	1.2477	
0.9968	1.0858	2.2444	0.9894	1.0778	1.3950	
0.9956	1.1378	2.3539	0.9882	1.1294	1.4631	
0.9903	1.3697	2.8390	0.9829	1.3595	1.7645	
QSTD	m=	2.11196	QA	m=	1.32248	
	b=	-0.05043		b=	-0.03134	
	r=	0.99998		r=	0.99998	

Calculations			
Vstd=	$\Delta Vol((Pa-\Delta P)/Pstd)(Tstd/Ta)$	Va=	$\Delta Vol((Pa-\Delta P)/Pa)$
Qstd=	Vstd/ΔTime	Qa=	Va/ΔTime
For subsequent flow rate calculations:			
Qstd=	$1/m \left(\left(\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)} \right) - b \right)$	Qa=	$1/m \left(\left(\sqrt{\Delta H \left(Ta/Pa \right)} \right) - b \right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH: calibrator manometer reading (in H2O)	
ΔP: rootsmeter manometer reading (mm Hg)	
Ta: actual absolute temperature (°K)	
Pa: actual barometric pressure (mm Hg)	
b: intercept	
m: slope	

RECALIBRATION
US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

High Precision Chemical Testing Ltd.

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Report No. : 00655

Issue Date : 22 Apr 2024

Internal Report
Certificate of Calibration

Description : Equipment stated to be High volume air sampler.

Manufacturer: : Tisch Environmental, Inc.

Other information :

Model No.	TE-5170
Serial No.	10379

Test Period : 19 Apr 2024 to 19 Apr 2024

Test Requested : Performance checking for High volume air sampler

Test Method : According to manufacturer instruction manual and internal method.

Test conditions : Environmental temperature: 20-35 degree Celsius
Relative Humidity: 35-85%

Test Result : Refer to the test result(s) on page 2.

Remark : **The result(s) relate only to the items tested or calibrated.**

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED

A handwritten signature in black ink, appearing to be "Lee Wai Kit", is written over a horizontal line.

Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.

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Report No. : 00655

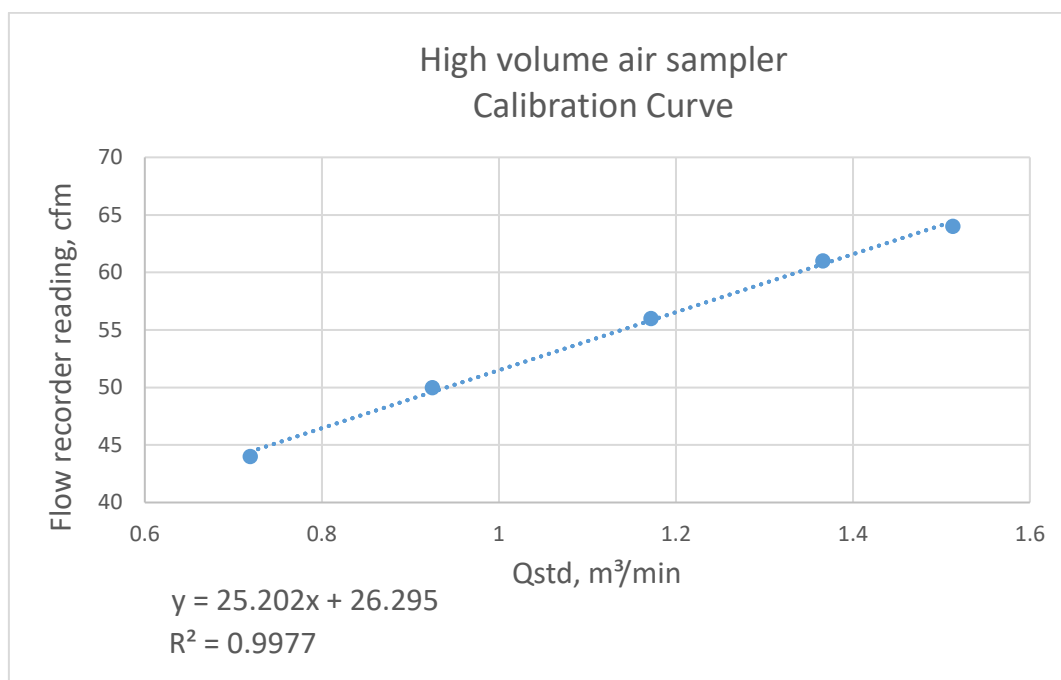
Issue Date : 22 Apr 2024

Internal Report Certificate of Calibration

Measuring equipment :	Description	Calibration Orifice
	Manufacturer	Tisch Environmental, Inc.
	Model No.	TE-5025A
	Serial No.	3864

Test Result :

Qstd, Actual flow rate, m ³ /min	1.513	1.366	1.172	0.925	0.719
Flow recorder reading, cfm	64	61	56	50	44
Pressure, mm Hg	757				
Temperature, K	303				



Note : The coefficient of determination (R^2) of the calibration curve greater than 0.99 after a 5-point calibration, the high volume air sampler complies with the specified requirements and deemed acceptable for use.

- End of report -

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Report No. : 00799
Application No. : HP00669

Issue Date : 19 Aug 2024

Certificate of Calibration

Applicant : Ka Shing Facility Management Limited
Flat C, 14/ F, Jing Ho Industrial Building,
78-84 Wang Lung Street,
Tsuen Wan, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Dust Meter.

Manufacturer: : Met One Instruments

Other information :

Model No.	Aerocet 831
Serial No.	D12641

Date Received : 09 Aug 2024

Test Period : 13 Aug 2024 to 19 Aug 2024

Test Requested : Performance checking for Dust Meter

Test Method : According to manufacturer instruction manual and internal method.

Test conditions : Environmental temperature: 20-35 degree Celsius
Relative Humidity: 35-85%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED

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Lee Wai Kit
Laboratory Manager

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Report No. : 00799
Application No. : HP00669

Issue Date : 19 Aug 2024

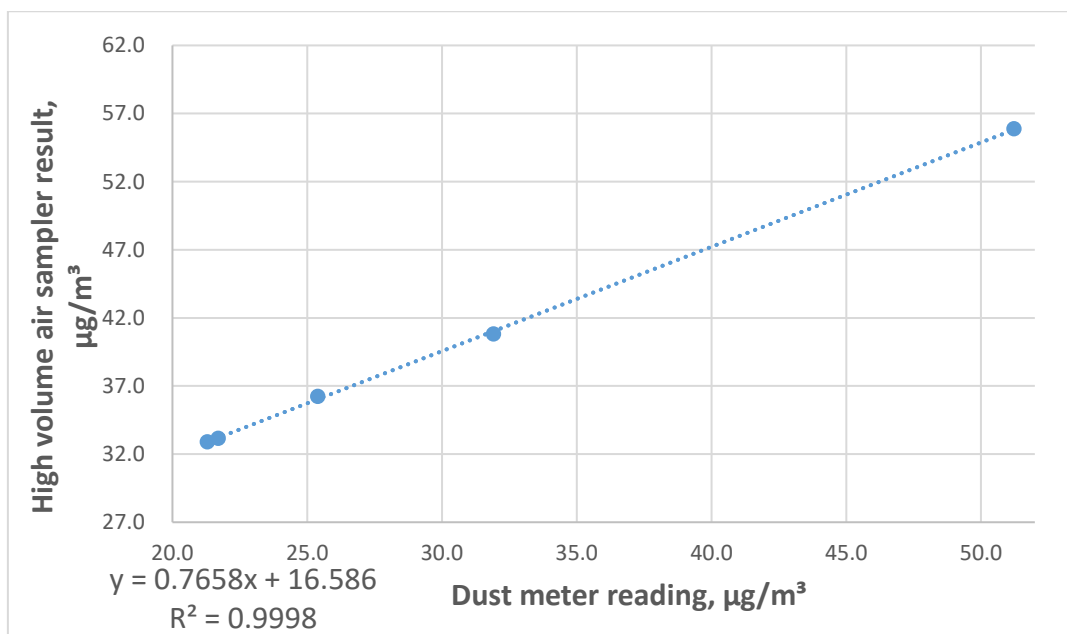
Certificate of Calibration

Measuring equipment :	Description	High volume air sampler
	Manufacturer	Tisch Environmental, Inc.
	Model No.	TE-5170
	Serial No.	10379

Date of Calibration : 13 Aug 2024 to 19 Aug 2024
Date of Recommended Re-Calibration : 19 Oct 2024

Test Result : 1 hour Total suspended particulate (TSP)

Calibration Point	Average Dust Meter reading, $\mu\text{g}/\text{m}^3$	High volume air sampler results, $\mu\text{g}/\text{m}^3$
1	51.2	55.9
2	25.4	36.2
3	31.9	40.8
4	21.7	33.2
5	21.3	32.9



- Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The coefficient of determination (R^2) of the calibration curve greater than 0.99 after a 5-point calibration, the dust meter complies with the specified requirements and deemed acceptable for use.

- End of report -

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Report No. : 00657
Application No. : HP00516

Issue Date : 24 Apr 2024

Certificate of Calibration

Applicant : Ka Shing Facility Management Limited
Flat C, 14/ F, Jing Ho Industrial Building,
78-84 Wang Lung Street,
Tsuen Wan, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Integrating Sound Level Meter.

Manufacturer: : BSWA Technology

Other information :

Model No.	BSWA 308
Serial No.	610062
Microphone No.	610373

Date Received : 16 Apr 2024

Test Period : 23 Apr 2024 to 23 Apr 2024

Test Requested : Performance checking for Sound Level Meter

Test Method : According to manufacturer instruction manual and internal method.

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED

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Lee Wai Kit
Laboratory Manager

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Report No. : 00657
Application No. : HP00516

Issue Date : 24 Apr 2024

Certificate of Calibration

Measuring equipment :	Description	Sound Calibrator
	Manufacturer	Brüel & Kjær
	Model No.	TYPE 4231
	Serial No.	2326353
	Equipment No.	N-02-01

Date of Calibration : 23 Apr 2024
Date of Recommended Re-Calibration : 23 Apr 2025

Test Result :

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	94.0	± 0.0	± 1.5
114.0	114.1	+ 0.1	± 1.5

Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The indication value was obtained from the average of ten replicated measurement.

- End of report -



Calibration Certificate

0039042

Customer : Ka Shing Facilities Management Ltd. Flat C, 14/ F, Jing Ho Industrial Building, 78-84 Wang Lung Street, Tsuen Wan, N. T. Customer Code : 86254KA301	Object 1 : ST120 Sound Calibrator Serial No. /Ref. No. : 210102628 Object 2 : Serial No. /Ref. No. : Manufacturer : Soundtek
Date of calibration: 04/10/2023 Date of the recommended re-calibration: 04/10/2024	Certificate No.: 0039042 Handle by: E0002

Measuring results

Reference value	Indication value	Deviation	Allowed deviation	Object
94.0dB	94.0dB	0.0dB	+/- 1.5dB	1
114.0dB	114.0dB	0.0dB	+/- 1.5dB	1

Measuring equipment

index	Calibrator / Master	Traceability
1	Master Sound Meter, BSWA308 EN:ACL011	IEC61672
2	Precise Sound Calibrator, ST120, EQT029A	IEC60942

Ambient conditions

Temperature (20...26)°C

Humidity (20...60)%RH

Measuring procedure

Calibrated by Type 1 Sound Calibrator with Master Sound Level Meter under 1kHz Frequency.

Uncertainty

+/- 0.2 dB for probability not less than 95%.

Conformity

<ol style="list-style-type: none">1. The resulted values were those obtained at the time of test and applies only to the item calibrated.2. The measurement uncertainty was calculated according to the regulations of GUM with the coverage factor k=2 and contains the uncertainty of the measuring procedure and the uncertainty of the measuring system.3. The equipment being used in this calibration laboratory are regularly calibrated by laboratory according to ISO/IEC17025.4. The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate.5. The calibrations certificate may not be reproduced.
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Measured value(s) **within** the allowable deviation.

Performed by

Calibration Technician

Mr. H. Y. Siu

Approved by

Quality Manager

Mr. K.L. Ng