APPENDIX C
COPIES OF CALIBRATION CERTIFCATES

AQuality
東恒測試顧問有限公司
AQUALITY TESTCONSULT LIMITED
香港新界粉嶺坪輋路啟芳園11A&B號
NO.11A&B, KAI FONG GARDEN, PING CHE ROAD, FANLING, N.T., HONG KONG
TEL : 852-2674-0478
FAX : 852-2674-1177
EMAIL : main.aqtl@gmail.com
WEBSITE : www.aqtlgroup.com

CERTIFICATE OF CALIBRATION

Ka Shing Facility Management Ltd. Flat C, 14/F, Jing Ho Industrical Building, 78-84 Wang Lung Street, Tsuen Wan, N.T.	Test Report No.	250512MCA-1P
	Date of Issue	12-May-25
	Date of Testing	11-May-25
	Page	1 of 1

Item for Calibration

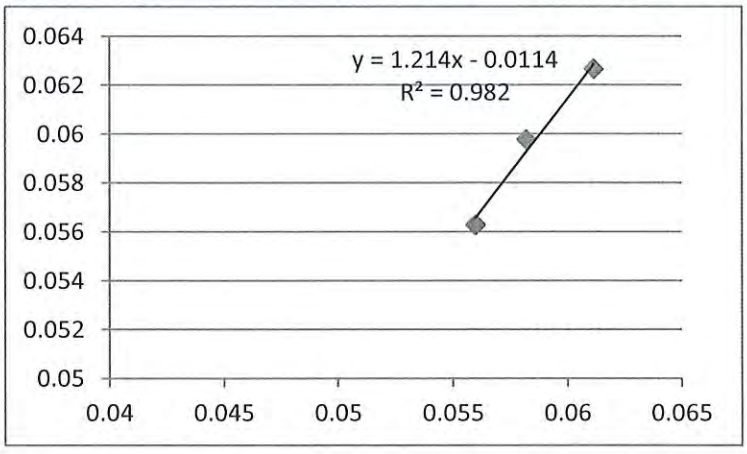
Description : Laser Dust Monitor
Manufacturer : Met One Instruments, Inc.
Model No. : AEROCET-831
Serial No. : D12641

Standard Equipment

Description : High Volume Sampler / Calibration Orifice
Manufacturer : Tisch Environmental, Inc.
Model No. : TE-5170 / TE-5025A
Serial No. 3476 / 4088
Last Calibration : 24-AUG-24 / 15-OCT-24

Date	Time	Mean Temp (°C)	Mean Pressure (hPa)	Concentration Standard Equipment (mg/m3)	Concentration Calibrated Equipment (mg/m3)
11-May-25	19:00	24.8	1010.1	0.0612	0.0627
11-May-25	20:05	24.8	1010.1	0.0560	0.0563
11-May-25	21:10	24.8	1010.1	0.0582	0.0598

By Linear Regression of Y or X
Slope : 1.2140
Correlation Coefficient : 0.9820
K-Factor : 0.9817
Validity of Calibration : 10-May-26



Recorded by : Jessica Liu Signature: Date: 11-May-25

Checked by : S Tang Signature: Date: 11-May-25

TISCH Environmental

RECALIBRATION DUE DATE:
October 15, 2025

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	October 15, 2024	**Rootsmeter S/N:** 438320	**Ta:** 294	°K
Operator:	Jim Tisch		**Pa:** 752.1	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **4088**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4330	3.2	2.00
2	3	4	1	1.0260	6.4	4.00
3	5	6	1	0.9190	7.9	5.00
4	7	8	1	0.8740	8.8	5.50
5	9	10	1	0.7230	12.7	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)
0.9988	0.6970	1.4164	0.9957	0.6949	0.8842
0.9945	0.9693	2.0031	0.9915	0.9664	1.2505
0.9925	1.0800	2.2395	0.9895	1.0767	1.3980
0.9913	1.1342	2.3488	0.9883	1.1308	1.4663
0.9861	1.3639	2.8328	0.9831	1.3598	1.7684
QSTD	**m=**	**2.12356**	**QA**	**m=**	**1.32974**
	b=	**-0.05931**		**b=**	**-0.03702**
	r=	**0.99996**		**r=**	**0.99996**

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/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

Tisch Environmental, Inc.
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Cal Lab Limited 校正實驗室有限公司
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Tsuen Wan, NT, Hong Kong
Tel: +852 25680106 Email: info@callab.com.hk
Fax: +852 30116194 Website: www.callab.com.hk

ACCREDITED
Certificate #3815.01

Calibration Certificate No.: CC0072503

Information provided by customer

Customer: Ka Shing Facility Management Ltd
Address: Unit 2, 13/F, Kai Yue Commercial Building, 2C Argyle St, Mong Kok, Kowloon

Equipment Identification provided by customer

Equipment Description	Manufacturer	Model No.	Serial No.	Assigned equipment No.
Aerosol Mass Monitor	Met One Instrument	AEROCET 831	D12641	N/A

Certificate Information

Date of Receipt:	5 March 2025	Calibration Condition:	22.8°C, 57%RH, 1006hPa
Date of Calibration:	13 March 2025	Adjustment:	N/A
Recommended Next Cal. Date:	N/A	Appearance:	Good
Calibration Procedure:	ISO 21501-4:2018	Remark:	N/A

Reference Equipment Identification

Equipment Description	Model	Serial No.	Expiration Date
Aerosol Monitor	8534	8534182605	6 December 2026

Result of Calibration

Indication

Dust	Reference Setting (mg/m^3)	Measured reading (mg/m^3)	Error (%)	Uncertainty (%FS)	Technical Requirement	Technical Reference Doc.
TSP	0.099	0.0964	-2.6	14.0	± 10%	Mfr's Spec.
TSP	0.202	0.1951	-3.4	14.0	± 10%	Mfr's Spec.
TSP	0.300	0.2923	-2.6	14.0	± 10%	Mfr's Spec.

CT-GAS-01

Note1: The estimated expanded uncertainties have been calculated in "Evaluation and expression of uncertainty in measurement" and give an internal estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.
Note2: The standard (s) and instrument used in the calibration are traceable to national or international recognized standard and are calibrated on a schedule to maintain the accuracy and good condition.
Note3: The result reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long term stability of the instrument.
Note4: The result shows in this calibration certificate relate only to the item calibrated, and the result only applies to the calibration item as received.
Note5: Calibration item/ parameter marked with * is out of scope of Cal Lab Limited (A2LA 3815.01).

Calibrated By: Wing Cheng

Checked and Approved By: Warren Yeung

Company Chop: Cal Lab Limited 校正實驗室有限公司

Certificate Issue Date: 19 March 2025

CT-BEG-04

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

Cal Lab Limited 校正實驗室有限公司
Room 2103, Technology Plaza, 29-35 Sha Tsui Road,
Tsuen Wan, NT, Hong Kong
Tel: +852 25680106 Email: info@callab.com.hk
Fax: +852 30116194 Website: www.callab.com.hk

Calibration Certificate No.: CC0782503

Information provided by customer

Customer: Cal Lab Limited
Address: Room 2103, Technology Plaza, 29-35 Sha Tsui Road, Tsuen Wan, NT, Hong Kong

Equipment Identification provided by customer

Equipment Description	Manufacturer	Model No.	Serial No.	Assigned equipment No.
High Volume Sampler	Qingdao Hengyuan	HY-1000E	1406071	N/A

Certificate Information

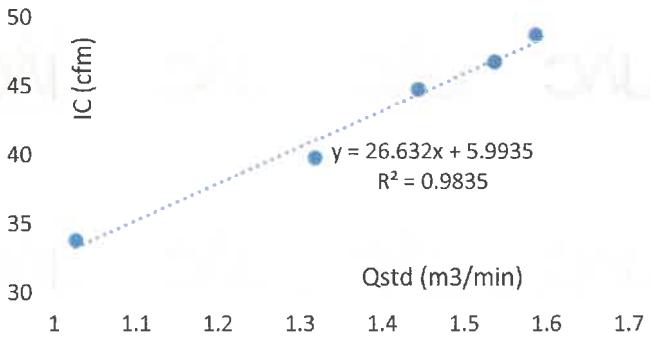
Date of Receipt:	18 March 2025	Calibration Condition:	24.1°C, 52%RH, 1004hPa
Date of Calibration:	18 March 2025	Adjustment:	N/A
Recommended Next Cal. Date:	N/A	Appearance:	Good
Calibration Procedure:	Performance check	Remark:	N/A

Reference Equipment Identification

Equipment Description	Model	Serial No.	Expiration Date
Calibration Orifices	TE-5025	4088	15 October 2025

Result of Calibration

Test	H_2O (in)	Q_{std} (m^3/min)	I (chart)	IC (corrected)
1	5.0	1.586	49.0	48.76
2	4.5	1.536	47.0	46.77
3	4.0	1.443	45.0	44.78
4	3.5	1.318	40.0	39.80
5	2.5	1.025	34.0	33.83



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Calibrated By: Checked and Approved By: Company Chop:

Wing Cheng Warren Yeung

Certificate Issue Date: 19 March 2025

CT-BEG-04

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

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Appendix of CC0782503
Calibration Certificate of Calibration Orifices

TISCH Environmental

RECALIBRATION DUE DATE:
October 15, 2025

Certificate of Calibration

Calibration Certification Information			
Cal. Date: October 15, 2024	Rootsmeter S/N: 438320	Ta: 294	°K
Operator: Jim Tisch		Pa: 752.2	mm Hg
Calibration Model #: TE-5025A	Calibrator S/N: 4088		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4330	3.2	2.00
2	3	4	1	1.0260	6.4	4.00
3	5	6	1	0.9190	7.9	5.00
4	7	8	1	0.8740	8.8	5.50
5	9	10	1	0.7230	12.7	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)
0.9988	0.6970	1.4164	0.9957	0.6949	0.8842
0.9945	0.9693	2.0031	0.9915	0.9664	1.2505
0.9925	1.0800	2.2395	0.9895	1.0767	1.3980
0.9913	1.1342	2.3488	0.9883	1.1308	1.4663
0.9861	1.3639	2.8328	0.9831	1.3598	1.7684
QSTD	m=	2.12356	QA	m=	1.32974
	b=	0.05931		b=	0.03702
	r=	0.99996		r=	0.99996

Calculations

Vstd=	ΔVol[(Pa-ΔP)/Pstd](Tstd/Ta)	Va=	ΔVol[(Pa-ΔP)/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

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***** End of Appendix *****

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Tel: +852 25680106 Email: info@callab.com.hk
Fax: +852 30116194 Website: www.callab.com.hk

Calibration Certificate No.: CC0792503

Information provided by customer

Customer: Ka Shing Facility Management Ltd
Address: Unit 2, 13/F, Kai Yue Commercial Building, 2C Argyle St, Mong Kok, Kowloon

Equipment Identification provided by customer

Equipment Description	Manufacturer	Model No.	Serial No.	Assigned equipment No.
Aerosol Mass Monitor	Met One Instrument	AEROCET 831	D12641	N/A

Certificate Information

Date of Receipt:	5 March 2025	Calibration Condition:	23.2°C, 48%RH, 1004hPa
Date of Calibration:	19 March 2025	Adjustment:	N/A
Recommended Next Cal. Date:	N/A	Appearance:	Good
Calibration Procedure:	In-House Method	Remark:	N/A

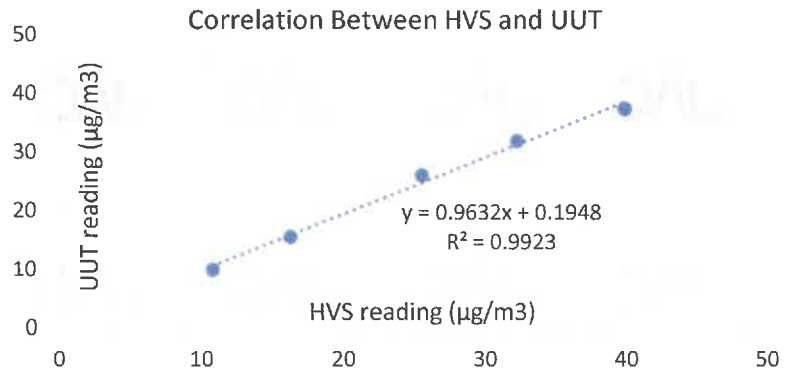
Reference Equipment Identification

Equipment Description	Model	Serial No.	Expiration Date
High Volume Sampler	HY-1000E	1406071	17 March 2026

Result of Calibration

Indication

Trial	1	2	3	4	5
Equipment	Measuremet result (µg/m3)				
High Volume Sampler (HVS)	39.8	32.2	25.4	16.2	10.7
Unit Under Test (UUT)	37.4	31.9	26.0	15.5	9.9



Note1: The estimated expanded uncertainties have been calculated in "Evaluation and expression of uncertainty in measurement" and give an internal estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.
Note2: The standard (s) and instrument used in the calibration are traceable to national or international recognized standard and are calibrated on a schedule to maintain the accuracy and good condition.
Note3: The result reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long term stability of the instrument.
Note4: The result shows in this calibration certificate relate only to the item calibrated, and the result only applies to the calibration item as received.
Note5: Calibration item/ parameter marked with * is out of scope of Cal Lab Limited (A2LA 3815.01).

Calibrated By: Checked and Approved By: Company Chop:

Wing Cheng Warren Yeung Certificate Issue Date: 19 March 2025

CT-BEG-04

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

AQuality
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香港新界粉嶺坪輋路啟芳園11A&B號
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EMAIL : main.aqtl@gmail.com
WEBSITE : www.aqtlgroup.com

CERTIFICATE OF CALIBRATION

Report Number : 250315MCA-1P
Date of Report : 15-Mar-25

Customer * : Ka Shing Facility Management Ltd.
Customer Address* : Flat C, 14/F, Jing Ho Industrical Building, 78-84 Wang Lung Street, Tsuen Wan, N.T.
Customers Ref. * : K194

Item Under Calibration (IUC)*
Equipment No. : 224534
Manufacturer : Met One Instruments, Inc.
Model No. : AEROCET-831
Serial No. : E11304
Scale Division : 0.001 mg/m3
Range : 0.001 to 1 mg/m3
Condition of Item : Normal

Date Item Received : 14-Mar-25
Date Calibrated : 14-Mar-25
Calibration Location : AQuality Calibration Lab.
Date of Next Calibration : 13-Mar-26
Calibrated By : Jessica Liu

Test Environment
Ambient Temperature : 20.1 °C to 23.5 °C
Relative Humidity : 70 % to 75 %

Calibration Results

Reference True Reading (mg/m^3)	Average IUC Reading (mg/m^3)	Correction (mg/m^3)	Error of IUC Reading (%)	Coverage Factor K
0.215	0.226	0.011	4.9%	2.0
0.481	0.491	0.010	2.1%	2.0
0.830	0.837	0.007	0.9%	2.0

Remarks :
1. * Denotes information supplied by customer.
2. The results relate only to the items calibrated.
3. The results apply to the items as received.
4. Correction = Average of (Ref reading - IUC reading)
5. The technical requirement of laser dust meter. +/- 20% error for the particles concentration.

Approved by: _____
LEE Mei Yee, Julia
Managing Director

東恒測試顧問有限公司
AQUALITY TESTCONSULT LIMITED
香港新界粉嶺坪輋路啟芳園11A&B號
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WEBSITE : www.aqtlgroup.com

CERTIFICATE OF CALIBRATION

Report Number : 250315MCA-1P
Date of Report : 15-Mar-25

Customer * : Ka Shing Facility Management Ltd.
Customers Ref. * : K194

Details of Calibration

1. The calibration was performed in accordance with AQuality Testconsult Procedure Number ENV-L-003 (in-house method), by comparison with the laboratory's reference equipment which have traceable international standards of measurement.

2. The item under calibration (IUC) was allowed to stabilize in the laboratory for 0.25 hour before commencement of calibration.

3. A set of readings were made at each calibration concentration. The values quoted in the results are the average of each set of readings.

4. The values given in this calibration certificate only relate to the values measured at the time of calibration. Any uncertainties quoted do not include allowance for the capabiliy of any other laboratory to repeat the measurement. The uncertainty quoted relate only to item at time of calibration. AQuality Testconsult Limited is not liable for any loss or damage resulting from the use of this equipment.

5. The identification, calibration certificate numbers for the reference equipment used were as follows :

Equipment Number	Certificate Number	Description
CH-LDM-1	CC1592412	粉尘测试仪

6. Copies of the Calibration certificates of the reference equipment used in this calibration may be obtained from AQuality Testconsult Limited, if necessary.

- End of Report -

東恒測試顧問有限公司
AQUALITY TESTCONSULT LIMITED
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EMAIL : cal.aqtl@gmail.com
WEBSITE: www.aqtlgroup.com

CERTIFICATE OF CALIBRATION

Ka Shing Facility Management Ltd. Flat C, 14/F, Jing Ho Industrical Building, 78-84 Wang Lung Street, Tsuen Wan, N.T.	Test Report No.	250315MCA-1P
	Date of Issue	15-Mar-25
	Date of Testing	14-Mar-25
	Page	1 of 1

Item for Calibration

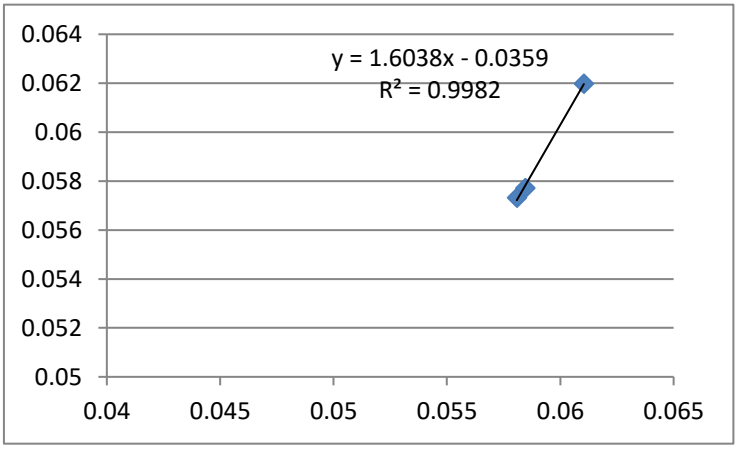
Description : Laser Dust Monitor
Manufacturer : Met One Instruments, Inc.
Model No. : AEROCET-831
Serial No. : E11304

Standard Equipment

Description : High Volume Sampler / Calibration Orifice
Manufacturer : Tisch Environmental, Inc.
Model No. : TE-5170 / TE-5025A
Serial No. 3476 / 4088
Last Calibration : 24-AUG-24 / 15-OCT-24

Date	Time	Mean Temp (°C)	Mean Pressure (hPa)	Concentration Standard Equipment (mg/m3)	Concentration Calibrated Equipment (mg/m3)
14-Mar-25	19:00	20.5	1014.4	0.0610	0.0620
14-Mar-25	20:05	20.5	1014.4	0.0581	0.0573
14-Mar-25	21:10	20.5	1014.4	0.0585	0.0577

By Linear Regression of Y or X
Slope : 1.6038
Correlation Coefficient : 0.9982
K-Factor : 1.0037
Validity of Calibration : 13-Mar-26



Recorded by : Jessica Liu Signature: Jessica Date: 14-Mar-25

Checked by : S Tang Signature: Tang Date: 14-Mar-25

TISCH Environmental

RECALIBRATION DUE DATE:
October 15, 2025

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	October 15, 2024	**Rootsmeter S/N:** 438320	**Ta:** 294	°K
Operator:	Jim Tisch		**Pa:** 752.1	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **4088**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4330	3.2	2.00
2	3	4	1	1.0260	6.4	4.00
3	5	6	1	0.9190	7.9	5.00
4	7	8	1	0.8740	8.8	5.50
5	9	10	1	0.7230	12.7	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)
0.9988	0.6970	1.4164	0.9957	0.6949	0.8842
0.9945	0.9693	2.0031	0.9915	0.9664	1.2505
0.9925	1.0800	2.2395	0.9895	1.0767	1.3980
0.9913	1.1342	2.3488	0.9883	1.1308	1.4663
0.9861	1.3639	2.8328	0.9831	1.3598	1.7684
QSTD	**m=**	**2.12356**	**QA**	**m=**	**1.32974**
	b=	**-0.05931**		**b=**	**-0.03702**
	r=	**0.99996**		**r=**	**0.99996**

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/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

Tisch Environmental, Inc.
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TOLL FREE: (877)263-7610
FAX: (513)467-9009

FAQ / Information

Mutual Recognition Arrangements (MRA) / Multilateral Recognition Arrangements (MLA)

Mutual Recognition Arrangement (MRA) Partners for HOKLAS

Every effort is made to promote acceptance of test data from accredited laboratories, both internationally and locally. HKAS has concluded mutual recognition arrangements with accreditation bodies listed below by being one of the signatories of the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement (ILAC MRA) and the Asia Pacific Accreditation Cooperation Mutual Recognition Arrangement (APAC MRA) for testing, calibration, medical testing, Proficiency Testing Providers (PTP) and Reference Material Producers (RMP). Click here to view the up-to-date signatories of ILAC and here to access the up-to-date signatories of APAC.

Visitors checking the names, logos and accreditation symbols shown on an endorsed certificate or report should note that some of our MRA partners may have their names, logos or accreditation symbols changed recently and test reports or certificates endorsed by displaying their old accreditation symbols may still be valid during the change-over period. For details, please visit their websites or contact them directly.

» Mutual Recognition Arrangement (MRA) Partners for HOKLAS

HKAS MRA partners will recognise HOKLAS endorsed test certificates as having the same technical validity as certificates endorsed by their respective schemes.

Multilateral Recognition Arrangements (MLA) for HKCAS

Mutual Recognition Arrangement (MRA) Partners for HKIAS

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Hong Kong Laboratory Accreditation Scheme (HOKLAS) - Mutual Recognition Arrangement (MRA) Partners

Economy	Logo	Name of Partner	URL	Test Area
United Kingdom of Great Britain and Northern Ireland		United Kingdom Accreditation Service (UKAS)	http://www.ukas.com	Calibration, Medical Testing, Non-medical Testing, Proficiency Testing Provider, Reference Material Producer
United States of America		AIHA Laboratory Accreditation Programs, LLC (AIHA-LAP, LLC)	http://www.aihaaccreditedlabs.org/	Non-medical Testing
United States of America		American Association for Laboratory Accreditation (A2LA)	http://www.a2la.org	Calibration, Medical Testing, Non-medical Testing, Proficiency Testing Provider, Reference Material Producer
United States of America		ANSI National Accreditation Board (ANAB)	http://www.anab.org/	Calibration, Medical Testing, Non-medical Testing, Proficiency Testing Provider, Reference Material Producer
United States of America		International Accreditation Service Inc. (IAS)	http://www.iasonline.org/	Calibration, Medical Testing, Non-medical Testing
United States of America		National Accreditation Center LLC (NAC)		Calibration, Non-medical Testing
United States of America		National Voluntary Laboratory Accreditation Program (NVLAP)	http://www.nist.gov/nvlap	Calibration, Non-medical Testing

CERTIFICATE OF ACCREDITATION

This is to attest that

AQUALITY TESTCONSULT LIMITED

11A&B, KAI FONG GARDEN, PING CHE ROAD
FANLING, HONG KONG

Calibration Laboratory CL-207

has met the requirements of AC204, *IAS Accreditation Criteria for Calibration Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2017, *General requirements for the competence of testing and calibration laboratories.* This organization is accredited to provide the services specified in the scope of accreditation.

Effective Date February 19, 2024

President

Visit www.iasonline.org for current accreditation information.

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION PROCEDURE AND/OR STANDARD EQUIPMENT USED
			dimensional requirements as specified in BS 1881- Part 105: 1984)
Test Sieve[3]	4 mm to 50 mm	50 µm	Reference Caliper by direct measurement as per BS 410 : 1986
Elongation Gauge[3]	Gap between Pins of Gauge 10 mm to 100 mm	0.29 mm	Reference Caliper by direct measurement (Verification in accordance with in-house method for the dimensional requirements as specified in BS 812- Part 1:1975; BS 812- Part 105.2: 1990)
Flakiness Gauge[3]	Length of Slot of Gauge 4.9 mm to 33.9 mm	0.06 mm	Reference Caliper by direct measurement ((Verification in accordance with in-house method for the dimensional requirements as specified in BS 812- Part 1:1975; BS 812- Part105.1:1985; BS 812- Part105.1:1989)
Riffle Box[3]	Width 6 mm to 100 mm	0.06 mm	Reference Caliper by direct measurement (Verification in accordance with in-house method for the dimensional requirements as specified in BS 812- Part 1:1975)
Mechanical			
Force Measuring Machine[3] (Compression Mode)	1 kN to 3000 kN	0.4 %	Reference Load cell by direct measurement (Based on BS 1610: Part 1:1985; BS 1610: Part 1:1992; BS EN ISO 12390-4:2000 Annex B; BS EN 12390-4: 2019; BS EN ISO 7500-1:2004, BS EN ISO 7500-1: 2015, BS EN ISO 7500-1: 2018)
Laser Dust Meter[3]	Dust particles 0.1 mg/m^3 to 3 mg/m^3 3 mg/m^3 to 8 mg/m^3	0.006 mg/m^3 0.39 mg/m^3	By comparison method by using reference laser dust meter (Based on ISO 12103-1:2016)
Rebound Hammer[3]	80 unit (hardness)	1.6 rebound count	Reference Rebound count by comparison method (Based on BS1881: Part 202:1986; BS EN 12504-2:2001; BS EN

CERTIFICATE OF CALIBRATION

Class 1

京制01020122号

TYPE: BSWA 308 S/N: 630148

1. APPEARANCE Pass

2. CALIBRATION (sound)

Calibrator BK4231 Sound Level 93.8 dB Frequency 1000 Hz

Microphone Model / SN MP231 /S10759

Filter	Nominal[dB]	Indication[dB]	Error[dB]
A	93.8	93.8	0.0
C	93.8	93.8	0.0
Z	93.8	93.8	0.0

3. FREQUENCY WEIGHTINGS (sound & electrical)

Z-weighting (sound & electrical), A/C-weighting (electrical, plus Z-weighting error)

Frequency [Hz]	Attenuation[dB]		
	A	C	Z
10	-69.0	-14.3	0.0
20	-50.3	-6.2	0.0
31.5	-39.6	-3.1	0.0
63	-26.2	-0.8	0.0
125	-16.2	-0.2	0.0
250	-8.7	0.0	0.0
500	-3.3	0.0	0.0
1000	0.1	0.1	0.1
2000	1.3	-0.1	0.1
4000	0.7	-1.1	-0.2
8000	-1.1	-3.0	0.5
16000	-13.5	-15.5	-0.6
20000	-28.0	-30.0	-3.1

4. LEVEL LINEARITY (electrical)

Filter=A, Fsin=1kHz

Nominal[dB]	20	21	22	23	24	25	30	40	50	60	70	80	89
Indication[dB]	20.1	21.2	22.2	23.2	24.2	25.2	30.1	39.9	49.9	59.9	70.0	80.0	89.0
Error[dB]	0.1	0.2	0.2	0.2	0.2	0.2	0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0
Nominal[dB]	90	91	92	93	94	95	96	97	98	99	100	110	120
Indication[dB]	90.0	91.0	92.0	93.0	94.0	95.0	96.0	97.0	98.0	99.0	100.0	110.0	120.0
Error[dB]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nominal[dB]	129	130	131	132	133	134							
Indication[dB]	129.0	130.0	131.0	132.0	133.0	134.0							
Error[dB]	0.0	0.0	0.0	0.0	0.0	0.0							

5. SELF-GENERATED NOISE LEVEL (sound)

Measured in anechoic chamber with microphone, Backlight Off, Electrical noise please refer user manual)

Filter	A	C	Z
Indication[dB]	-18	-23	-31

6. TIME WEIGHTINGS (electrical)

Filter=A, Fsin=4kHz, Steady Level=132dBA

Detector	F	S
Rate of Decay[dB/s]	34.7	4.4
Delta of F/S[dB]	0.0	

7. TONEBURST RESPONSE (electrical)

Filter=A, Fsin=4kHz

Steady Level L_A = 132.0 dB

Tone Burst Duration [ms]	Response[dB]		
	$L_{Amax}-L_A$	$L_{Aburst}-L_A$	$L_{Aeq}-L_A$
500	-0.1	-4.1	-3.1
200	-1.0	-7.5	-7.1
50	-4.9	-13.2	-13.1
10	-11.2	-20.1	-20.1

8. REPEATED TONEBURST RESPONSE (electrical)

Filter=A, Fsin=4kHz

Steady Level L_A = 132.0 dB

Tone Burst Duration [ms]	Tone Burst Interval [ms]	Response[dB] $L_{Aeq}-L_A$
500	2000	-7.0
200	800	-7.1
50	200	-7.1
10	40	-7.1

9. OVERLOAD INDICATION (electrical)

Filter=A, Fsin=1000Hz

Nominal[dB]	Error[dB]			Delta of Positive and Negative[dB]
	Steady	Positive Half Cycle	Negative Half Cycle	
134.1	0.0	0.1	0.1	0.0

10. C-WEIGHTED PEAK SOUND LEVEL (electrical)

Filter=C, Peak, Fsin=500Hz

Steady Signal Level	$(L_{C,max}-L_C)$[dB]		
	Single Cycle	Positive Half Cycle	Negative Half Cycle
4dB Below Top	3.5	2.3	2.3
Middle	3.6	2.3	2.3
1dB Above Floor	3.6	2.4	2.4

CONDITIONS		
Temperature	18	℃
Relative Humidity	36	%
Static Pressure	101.4	kPa

TEST EQUIPMENT

Item	Manufacturer	Model	S/N	Description
1	B&K	4231	3008422	Sound Calibrator
2	Agilent	33220A	MY44038043	Signal Generator
3	Agilent	34401A	SG47000236	Digital Multimeter
4	NJZY	ZYS142D	0425	Step Attenuator
5	B&K	4180	2412674	Standard Microphone

TEST PROCEDURES IN ACCORDANCE WITH IEC 61672-3:2013

Class 1 Performance Verified. Test Qualified.

DATE: 2025.05.13 TEST (sig.): LZH APVD (sig.):

聲學測試服務有限公司
Acoustic Testing Services Limited
Unit E, 2/F., Century Industrial Centre, 33-35 Au Pui Wan Street, Fo Tan, Shatin, New Territories, Hong Kong
Tel: (852) 2690 9126 Fax: (852) 2690 9125 E-mail: info@ATSL.com.hk http://www.ATSL.com.hk

Certificate of Calibration

Certificate No. ATS24-112-CC001

Customer:	**Ka Shing Facilities Management Limited** Flat C, 14/F., Jing Ho Industrial Building, 78-84 Wing Lung Street, Tsuen Wan, N.T., Hong Kong
Unit-under-test (UUT):	
Description:	Sound Calibrator
Manufacturer:	SoundTEK
Type No.:	ST-120
Serial No.:	210102628
Conditions during calibration:	
Temperature:	25°C
Relative Humidity:	50%
Test Specifications:	Calibration Check
Date of Calibration:	11 November 2024
Test Results:	All calibration points are within manufacturer's specification.

Certified by: _____

Mr. Ching Mau LAM / Quality Manager
MIOA, MHKIOA

Issue Date: 11 November 2024

聲學測試服務有限公司
Acoustic Testing Services Limited
Unit E, 2/F., Century Industrial Centre, 33-35 Au Pui Wan Street, Fo Tan, Shatin, New Territories, Hong Kong
Tel: (852) 2690 9126 Fax: (852) 2690 9125 E-mail: info@ATSL.com.hk http://www.ATSL.com.hk

1. The instrument under test was allowed to stabilize in the laboratory for over 24 hours.

2. Calibration equipment:

Description:	Sound Analyzer	Reference Microphone
Manufacturer:	Brüel & Kjær	Brüel & Kjær
Type No.:	2270	4189
Serial No.:	3001883	2662797
Last Calibration Date:	14 March 2024	14 March 2024
Certificate No.:	AV240037	AV240037

The calibration equipment used for calibration is traceable to National Standards via Standards and Calibration Laboratory, the Government of the HKSAR.

3. The values given in this certification only related to the values measured at the time of the calibration and any uncertainties quoted, if any, will not allow for the equipment long-term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the calibration. Acoustic Testing Services Limited shall not be liable for any loss or damage resulting from the use of the equipment.

4. Calibration Results

Nominal value dB	Measured value dB	IEC 60942 Class 1 Tolerance Limits dB	Conclusion	Expanded Measurement Uncertainty of Reference Microphone B&K 4189 at 1000 Hz dB
94.00	93.82	± 0.25	PASS	0.20
114.0	113.76	± 0.25	PASS	0.20

All calibration points are within manufacturer's specification.

聲學測試服務有限公司
Acoustic Testing Services Limited
Unit E, 2/F., Century Industrial Centre, 33-35 Au Pui Wan Street, Fo Tan, Shatin, New Territories, Hong Kong
Tel: (852) 2690 9126 Fax: (852) 2690 9125 E-mail: info@ATSL.com.hk http://www.ATSL.com.hk

Certificate of Calibration

Certificate No. ATS25-008-CC001

Customer:	**Ka Shing Facilities Management Limited** Flat C, 14/F., Jing Ho Industrial Building, 78-84 Wing Lung Street, Tsuen Wan, N.T., Hong Kong
Unit-under-test (UUT):	
Description:	Sound Analyzer , Microphone , Pre-amplifier
Manufacturer:	Rion
Type No.:	NL-53 , UC-59 , NH-25
Serial No.:	01130782 , 24906 , 33673
Conditions during calibration:	
Temperature:	23°C
Relative Humidity:	65%
Test Specifications:	Calibration Check
Date of Calibration:	23 January 2025
Test Results:	All calibration points are within manufacturer's specification.

Certified by: _____

Mr. Ching Mau LAM / Quality Manager
MIOA, MHKIOA

Issue Date: 24 January 2025

聲學測試服務有限公司
Acoustic Testing Services Limited
Unit E, 2/F., Century Industrial Centre, 33-35 Au Pui Wan Street, Fo Tan, Shatin, New Territories, Hong Kong
Tel: (852) 2690 9126 Fax: (852) 2690 9125 E-mail: info@ATSL.com.hk http://www.ATSL.com.hk

1. The instrument under test was allowed to stabilize in the laboratory for over 24 hours.

2. Calibration equipment:

Description:	Sound Calibrator
Manufacturer & Type:	Brüel & Kjær 4231
Serial No.:	2478237
Last Calibration Date:	27 February 2024
Certificate No.:	AV240026

The calibration equipment used for calibration is traceable to National Standards via Standards and Calibration Laboratory, the Government of the HKSAR.

3. The Sound Analyzer has been calibrated in accordance with the requirements as specified in IEC 61672-1 Class 1, and vendor specific procedures.

4. The values given in this certification only related to the values measured at the time of the calibration and any uncertainties quoted, if any, will not allow for the equipment long-term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the calibration. Acoustic Testing Services Limited shall not be liable for any loss or damage resulting from the use of the equipment.

5. Calibration Results

Setting of unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672-1 Class 1 Tolerance Limits, dB	Conclusion
Range, dB	Parameter	Frequency Weighting	Response	Level, dB	Frequency, Hz			
30-130	SPL	A	F	94.00	1000	94.0	± 0.7	PASS
			S			94.0	± 0.7	PASS
			I			94.0	± 0.7	PASS
		C	F			94.0	± 0.7	PASS
			S			94.0	± 0.7	PASS
			I			94.0	± 0.7	PASS
		L	F			94.0	± 0.7	PASS
			S			94.0	± 0.7	PASS
			I			94.0	± 0.7	PASS
		A	F	114.00	1000	114.0	± 0.7	PASS
			S			114.0	± 0.7	PASS
			I			114.0	± 0.7	PASS

All calibration points are within manufacturer's specification.

聲學測試服務有限公司
Acoustic Testing Services Limited
Unit E, 2/F., Century Industrial Centre, 33 –35 Au Pui Wan Street, Fo Tan, Shatin, New Territories, Hong Kong
Tel: (852) 2690 9126 Fax: (852) 2690 9125 E-mail: info@ATSL.com.hk http://www.ATSL.com.hk

Certificate of Calibration

Certificate No. ATS25-008-CC002

Customer:	**Ka Shing Facility Management Limited** Flat C, 14/F., Jing Ho Industrial Building, 78-84 Wing Lung Street, Tsuen Wan, N.T., Hong Kong
Unit-under-test (UUT):	
Description:	Sound Level Meter , Microphone , Pre-amplifier
Manufacturer:	BSWA Technology
Type No.:	BSWA 308 , 231 , MA231T
Serial No.:	610062 , 591574 , 610373
Conditions during calibration:	
Temperature:	26°C
Relative Humidity:	58%
Test Specifications:	Calibration Check
Date of calibration:	24 April 2025
Test Results:	All calibration points are within manufacturer's specification.

Certified by: _____

Mr. Ching Mau LAM / Quality Manager
MIOA, MHKIOA

Issue Date: 24 April 2025

1. The instrument under test was allowed to stabilize in the laboratory for over 24 hours.

2. Calibration equipment:

Description:	Multifunction Acoustical Calibrator
Manufacturer & Type:	Brüel & Kjær 4226
Serial No.:	2919264
Last Calibration Date:	11 September 2024
Certificate No.:	2GB24018355-0001

The calibration equipment used for calibration is traceable to National Standards via China Ceprei Laboratory Calibration & Testing Centre. The Multifunction Acoustical Calibrator Brüel & Kjær 4226 has been accredited calibrated by other laboratory and it is found that it cannot fulfill the tolerance limits for frequency at 2000 Hz only, since the Brüel & Kjær 4226 is designed for old year version of IEC 60942 (or JJG 176), but the tolerance limits for frequency as well as sound pressure level, are updated in the most updated version of standards. However, it can still fulfill the requirements for sound pressure level from 31.5 Hz to 8000 Hz.

3. The Sound Analyzer has been calibrated in accordance with the requirements as specified in IEC 61672-1 Class 1, and vendor specific procedures.

4. The values given in this certification only related to the values measured at the time of the calibration and any uncertainties quoted, if any, will not allow for the equipment long-term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the calibration. Acoustic Testing Services Limited shall not be liable for any loss or damage resulting from the use of the equipment.

5. Calibration Results

5.1 Sound Pressure Level

Reference Sound Pressure Level

Setting of unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672-1 Class 1 Tolerance Limits, dB	Conclusion
Range, dB	Parameter	Time Weighting	Level, dB	Frequency, Hz			
22-136	dBA SPL	Fast	94.0	1000	94.0	± 0.7	PASS

Linearity

Setting of unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672-1 Class 1 Tolerance Limits, dB	Conclusion
Range, dB	Parameter	Time Weighting	Level, dB	Frequency, Hz			
22-136	dBA SPL	Fast	94.0	1000	94.0	± 0.7	PASS
			104.0		104.0	± 0.7	PASS
			114.0		114.0	± 0.7	PASS

Time Weighting

Setting of unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672-1 Class 1 Tolerance Limits, dB	Conclusion
Range, dB	Parameter	Time Weighting	Level, dB	Frequency, Hz			
22-136	dBA SPL	Fast	94.0	1000	94.0	± 0.7	PASS
		Slow			94.0	± 0.7	PASS

Frequency Response

A-weighting:

Setting of unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672-1 Class 1 Tolerance Limits, dB	Conclusion
Range, dB	Parameter	Time Weighting	Level, dB	Frequency, Hz			
22-136	SPL	Fast	54.6	31.5	54.7	± 1.5	PASS
			67.8	63	67.9	± 1.0	PASS
			77.9	125	77.9	± 1.0	PASS
			85.4	250	85.4	± 1.0	PASS
			90.8	500	90.8	± 1.0	PASS
			94.0	1000	94.0	± 0.7	PASS
			95.2	2000	95.0	± 1.0	PASS
			95.0	4000	94.1	± 1.0	PASS
			92.9	8000	90.4	+1.5; -2.5	PASS

C-weighting:

Setting of unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672-1 Class 1 Tolerance Limits, dB	Conclusion
Range, dB	Parameter	Time Weighting	Level, dB	Frequency, Hz			
22-136	SPL	Fast	91.0	31.5	91.1	± 1.5	PASS
			93.2	63	93.3	± 1.0	PASS
			93.8	125	93.9	± 1.0	PASS
			94.0	250	94.0	± 1.0	PASS
			94.0	500	94.0	± 1.0	PASS
			94.0	1000	94.0	± 0.7	PASS
			93.8	2000	93.6	± 1.0	PASS
			93.2	4000	92.4	± 1.0	PASS
			91.0	8000	88.5	+1.5; -2.5	PASS

Linear:

Setting of unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672-1 Class 1 Tolerance Limits, dB	Conclusion
Range, dB	Parameter	Time Weighting	Level, dB	Frequency, Hz			
22-136	SPL	Fast	94.0	31.5	94.2	± 1.5	PASS
				63	94.1	± 1.0	PASS
				125	94.0	± 1.0	PASS
				250	94.0	± 1.0	PASS
				500	94.0	± 1.0	PASS
				1000	94.0	± 0.7	PASS
				2000	93.8	± 1.0	PASS
				4000	93.2	± 1.0	PASS
				8000	91.8	+1.5; -2.5	PASS

All calibration points are within manufacturer's specification.