

Air Quality Monitoring Equipment

Date: January 23th, 2023

CALIBRATION CERTIFICATE

Equipment Name : Digital Dust Indicator, Model LD-5R
Code No. : 080000-73
Quantity : 1 unit
Serial No. : 2Y6548
Sensitivity : 0.001 mg/m³
Sensitivity Adjustment : 545 CPM
Scale Setting : November 15th, 2022.

We hereby certify that the above mentioned instrument has been calibrated satisfactory.

Sincerely

(Signature)

Tong Zhang

Tong Zhang
Overseas & New Business Group
Overseas Sales Department



Sibata LD-5R K-Factor Verification Test by Total Suspended Particulates HVS Test Report

Information of Calibrated Equipment

Verification Test Date:	8-Apr-23	to	9-Apr-23	Next Verification Test Date:	8-Apr-24
Unit-under-Test- Model No.:	Sibata LD-5R				
Unit-under-Test Serial No.:	2Y6548				
Our Report Reference No.:	RPT-23-HVS-0045				
Calibration Location:	Emax				

Standard Equipment Information

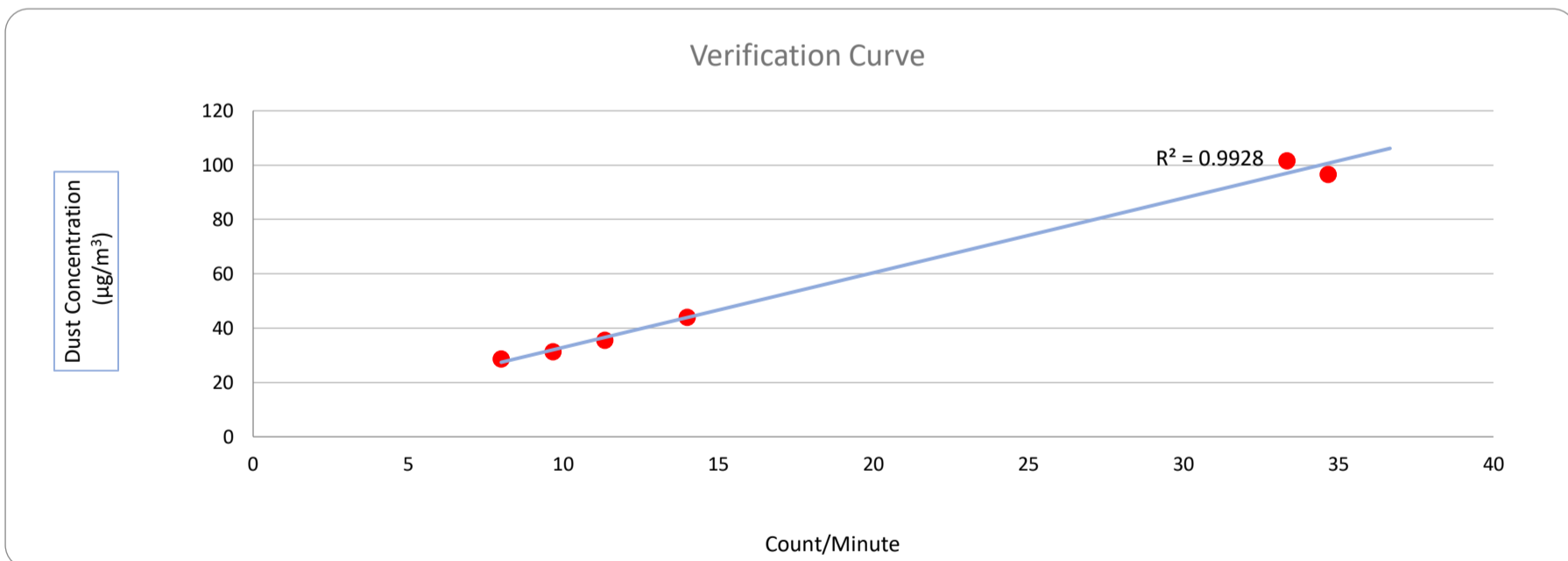
Verification Equipment Type:	Tisch TSP HVS	Tisch HVS Calibrator
Standard Equipment Model No.:	TE-5170X	TE-5028A
Equipment serial no.:	1049	3702
Last Calibration Date:	8-Apr-23	31-Mar-23
Next Calibration Date:	7-Jun-23	30-Mar-24

Equipment Verification Result

Verification Test No.	Date	Duration			Results from Calibrated Equipment		Results from Standard Equipment
		Start-time	End-time	Elapsed Time (in min)	Total Counts	Counts/ Minute x-axis	Dust Concentration ($\mu\text{g}/\text{m}^3$) y-axis
1	8/4/2023	7339.85	7342.85	180.00	2520	14	44
2	8/4/2023	7342.85	7345.85	180.00	2040	11	36
3	8/4/2023	7345.85	7348.85	180.00	6240	35	97
4	9/4/2023	7349.74	7352.74	180.00	1440	8	29
5	9/4/2023	7352.76	7355.76	180.00	1740	10	31
6	9/4/2023	7355.77	7358.77	180.00	6000	33	102

Linear Regression of y on x

Slope, K factor:	2.7466	Intercept:	5.4440	*Correlation Coefficient,R:	0.9964
Verification Test Result: <u>Strong Correlation, Results were accepted.</u>			* If the Correlation Coefficient, R is <0.5. Checking and Re-verification are required.		



Operated By: Andy Li
Project Technician, Environmental

Date: 10-04-2023

Checked By: Tandy Tse
Senior Consultant, Environmental

Date: 10-04-2023

Date: January 23th, 2023

CALIBRATION CERTIFICATE

Equipment Name : Digital Dust Indicator, Model LD-5R
Code No. : 080000-73
Quantity : 1 unit
Serial No. : 2Y6549
Sensitivity : 0.001 mg/m³
Sensitivity Adjustment : 549 CPM
Scale Setting : November 15th, 2022.

We hereby certify that the above mentioned instrument has been calibrated satisfactory.

Sincerely

(Signature)

Tong Zhang

Tong Zhang

Overseas & New Business Group

Overseas Sales Department



Sibata LD-5R K-Factor Verification Test by Total Suspended Particulates HVS Test Report

Information of Calibrated Equipment

Verification Test Date:	8-Apr-23	to	9-Apr-23	Next Verification Test Date:	8-Apr-24
Unit-under-Test- Model No.:	Sibata LD-5R				
Unit-under-Test Serial No.:	2Y6549				
Our Report Reference No.:	RPT-23-HVS-0046				
Calibration Location:	Emax				

Standard Equipment Information

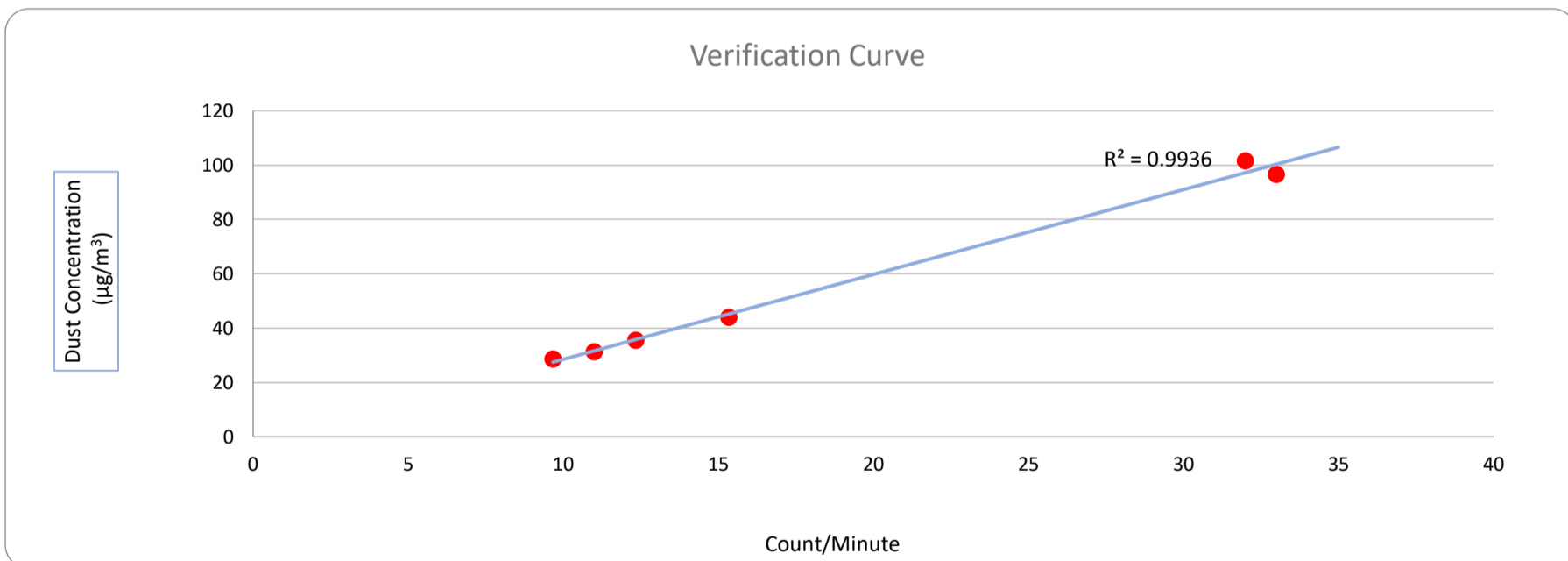
Verification Equipment Type:	Tisch TSP HVS	Tisch HVS Calibrator
Standard Equipment Model No.:	TE-5170X	TE-5028A
Equipment serial no.:	1049	3702
Last Calibration Date:	8-Apr-23	31-Mar-23
Next Calibration Date:	7-Jun-23	30-Mar-24

Equipment Verification Result

Verification Test No.	Date	Duration			Results from Calibrated Equipment		Results from Standard Equipment
		Start-time	End-time	Elapsed Time (in min)	Total Counts	Counts/ Minute x-axis	Dust Concentration ($\mu\text{g}/\text{m}^3$) y-axis
1	8/4/2023	7339.85	7342.85	180.00	2760	15	44
2	8/4/2023	7342.85	7345.85	180.00	2220	12	36
3	8/4/2023	7345.85	7348.85	180.00	5940	33	97
4	9/4/2023	7349.74	7352.74	180.00	1740	10	29
5	9/4/2023	7352.76	7355.76	180.00	1980	11	31
6	9/4/2023	7355.77	7358.77	180.00	5760	32	102

Linear Regression of y on x

Slope, K factor:	3.1227	Intercept:	-2.7291	*Correlation Coefficient,R:	0.9968
Verification Test Result: <u>Strong Correlation, Results were accepted.</u>				* If the Correlation Coefficient, R is <0.5. Checking and Re-verification are required.	



Operated By: Andy Li
Project Technician, Environmental

Date: 10-04-2023

Checked By: Tandy Tse
Senior Consultant, Environmental

Date: 10-04-2023

Report no. : 940891CA222379(7)

Page 1 of 1

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description : Laser Dust Monitor

Manufacturer : SIBATA

Model No. : LD-5R

Serial No. : 155716

Specification Limit : NA

Next Calibration Date : 25-Aug-2023

Laboratory Information

Details of Reference Equipment -

Description : 1.Reference balance 2. TSP high Volume air sampler

Equipment ID / Serial no. : 1.C-065-5 2. 4350

Date of Calibration : 26-Aug-2022 Ambient Temperature : 33 °C

Calibration Location : Calibration Lab. of FTS

Method Used : By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.

Calibration Results :

Reference concentration (mg/m ³)	Total count for 1 hour	CPM (Count per minute)
0.0501	1588	26.47
0.0366	1012	16.87
0.0443	1312	21.87

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m³) = K x UUT reading (CPM) where K = 0.001991
3. Correlation coefficient (r) : 0.9984

 Checked by :  Date : 18/10/2022 Certified by :  Date : 19-10-2022

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

** End of Report **

Report no. : 940891CA222379(8)

Page 1 of 1

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description : Laser Dust Monitor

Manufacturer : SIBATA

Model No. : LD-5R

Serial No. : 155717

Specification Limit : NA

Next Calibration Date : 25-Aug-2023

Laboratory Information

Details of Reference Equipment -

Description : 1. Reference balance 2. TSP high Volume air sampler

Equipment ID / Serial no. : 1.C-065-5 2. 4350

Date of Calibration : 26-Aug-2022 Ambient Temperature : 33 °C

Calibration Location : Calibration Lab. of FTS

Method Used : By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.

Calibration Results :

Reference concentration (mg/m ³)	Total count for 1 hour	CPM (Count per minute)
0.0501	1656	27.60
0.0366	1084	18.07
0.0443	1384	23.07

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m³) = K x UUT reading (CPM) where K = 0.001893
3. Correlation coefficient (r) : 0.9986

Checked by : *Shy*
CA-R-297 (22/07/2009)Date : 18-10-2022Certified by : *R.T. Leung*
Leung Kwok Tai (Assistant Manager)Date : 19-10-2022**** End of Report ****



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : MaWTF, Ma Wan	Date of Calibration: 22-Jul-22
Location ID: A1 Site Boundary	Next Calibration Date: 23-Oct-22
Serial No.: 4350	Technician: Eve Ma

CONDITIONS

Sea Level Pressure (hPa):	1010.8	Corrected Pressure (mm Hg):	758
Temperature (°C):	35.6	Temperature (K):	309

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.11005
Model:	TE-5025A	Qstd Intercept:	-0.01868
Calibration Date:	24-Apr-22	Expiry Date:	24-Apr-23

CALIBRATIONS

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m ³ /min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	-4.70	-14.10	9.400	1.435	49.00	48.09	Slope = 28.6235 Intercept = 7.3938 Corr. coeff.= 0.9911
13	-5.30	-12.40	7.100	1.248	45.00	44.17	
10	-6.80	-11.60	4.800	1.028	36.00	35.33	
7	-7.60	-11.00	3.400	0.867	34.00	33.37	
5	-8.10	-10.40	2.300	0.714	28.00	27.48	

Calculations:

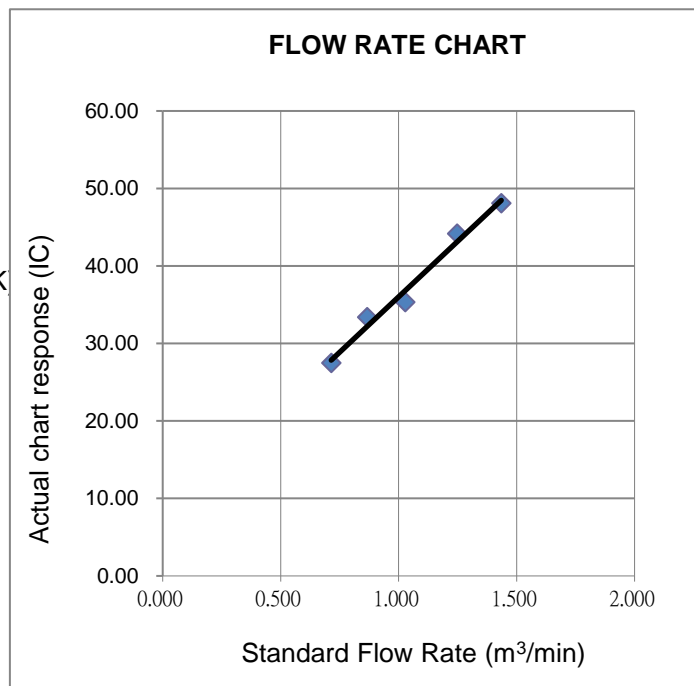
$Qstd = 1/m[\text{sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$
 $IC = I[\text{sqrt}(Pa/Pstd)(Tstd/Ta)]$

- 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:

$1/m((I)[\text{sqrt}(298/Tav)(Pav/760)]-b)$

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



CALIBRATION REPORT OF WIND METER

Project: Contract No. SPW 07/2020 Location: Yuen Long Sewage Treatment Works	Date of Calibration: 23-Mar-2023 Next Calibration Date: 22-Sep-2023 Technician: Sam Fong
Brand: Global Water Model: GL500-7-2	Serial No: 2012000974
Anemometer	
Brand: Benetech Model: GM816	Equipment ID: 08
Procedures:	
<ol style="list-style-type: none"> 1. Wind Still Test: The wind speed sensor was held by hand until stabilized. 2. Wind Speed Test: The wind meter was calibrated in-situ and compared with the Anemometer. 3. Wind Direction Test: The wind meter was calibrated in-situ and compared with a marine compass from four directions. 	

Wind Still Test:

Wind Speed (m/s)
0.00

Wind Speed Test:

Global Water (m/s)	Anemometer (m/s)
1.2	1.1
3.6	3.7
4.0	4.1

Wind Direction Test:

	Marine Compass (o)
95	94
220	222
237	233
181	178



Wan Ka Ho
 Project Consultant

Report Date: 24/3/2023

Noise Quality Monitoring Equipment



Certificate of Calibration

for

Description: *Sound Level Calibrator*
Manufacturer: *RION*
Type No.: *NC-74*
Serial No.: *34615222*

Submitted by:

Customer: *Acuity Sustainability Consulting Limited*
Address: *Unit E, 12/F, Ford Glory Plaza,
Nos. 37-39 Wing Hong Street,
Cheung Sha Wan, Kowloon,
Hong Kong*

Upon receipt for calibration, the instrument was found to be:

- Within**
 Outside

the allowable tolerance.

The test equipments used for calibration are traceable to National Standards via:

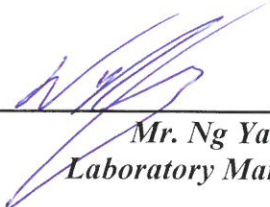
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

Date of receipt: 16 March 2023

Date of calibration: 21 March 2023

Date of NEXT calibration: 20 March 2024

Calibrated by: 
Calibration Technician

Certified by: 
*Mr. Ng Yan Wa
Laboratory Manager*

Date of issue: 21 March 2023

Certificate No.: APJ22-157-CC004



1. Calibration Precautions:

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.

2. Calibration Specifications:

Calibration check

3. Calibration Conditions:

Air Temperature: 22.1 °C
Air Pressure: 1006 hPa
Relative Humidity: 61.7 %

4. Calibration Equipment:

Test Equipment	Type	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	AV220061	HOKLAS
Sound Level Meter	RION NA-28	30721812	AV220120	HOKLAS

5. Calibration Results

5.1 Sound Pressure Level

Nominal value dB	Accept lower level dB	Accept upper level dB	Measured value dB
94.0	93.6	94.4	93.9

Note:

The values given in this certification only related to the values measured at the time of the calibration.



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.: CC0292304

Customer Information

Customer: Acuity Sustainability Consulting Limited

Address: Unit E, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong

Equipment Identification

Equipment Description	Manufacturer	Model No.	Serial No.	Assigned equipment No.
Air Velocity Monitor	RS PRO	RS-90	210722153	ASCL-EQ-110

Certificate Information

Date of Receipt:	24 April 2023	Calibration Condition:	23.3°C, 57%RH, 1002hPa
Date of Calibration:	5 May 2023	Adjustment:	N/A
Due Date of Calibration:	N/A	Appearance:	Good
Calibration Procedure:	SOP-112	Remark:	N/A

Reference Equipment Identification

Equipment Description	Model	Serial No.	Expiration Date
Hot Wire Anemometer	9535	T95351316004	11 August 2024

Result of Calibration

Air flow rate

Reference reading (m/s)	Measured reading (m/s)	Error (%)	Uncertainty (%FS)	Technical Requirement (m/s)	Technical Reference Doc.
1.02	1.03	1.0	3.6	± 0.33	Mfr's Spec.
2.99	2.97	-0.7	3.6	± 0.39	Mfr's Spec.
5.03	4.92	-2.2	3.6	± 0.45	Mfr's Spec.
6.98	6.86	-1.7	3.6	± 0.51	Mfr's Spec.
9.97	9.76	-2.1	3.6	± 0.60	Mfr's Spec.

CT-AFR-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.

Calibrated By:

Wing Cheng

Checked and Approved By:

Warren Yeung

Company Chop:



Certificate Issue Date: 5 May 2023

*** End of Certificate ***

CT-BEG-03

- The certificate shall not be reproduced except in full, without written approval of Cal Lab Calibration
- The certificate is issued subject to the latest Terms and Conditions, available at our web site

CC0292304

Page 1 of 1

Certificate of Calibration

for

Description: *Sound Level Calibrator*
Manufacturer: *SVANTEK*
Type No.: *SV33B*
Serial No.: *83042*

Submitted by:

Customer: *Acuity Sustainability Consulting Limited*
Address: *Unit E, 12/F, Ford Glory Plaza,
Nos. 37-39 Wing Hong Street,
Cheung Sha Wan, Kowloon,
Hong Kong*

Upon receipt for calibration, the instrument was found to be:

- Within**
 Outside

the allowable tolerance.

The test equipments used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

Date of receipt: 2 May 2023

Date of calibration: 9 May 2023

Date of NEXT calibration: 8 May 2024

Calibrated by: _____
Calibration Technician

Certified by: _____
Mr. Ng Yan Wa
Laboratory Manager

Date of issue: 9 May 2023

Certificate No.: APJ22-157-CC005



Page 1 of 2

1. Calibration Precautions:

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.

2. Calibration Specifications:

Calibration check

3. Calibration Conditions:

Air Temperature: 22.4 °C
Air Pressure: 1006 hPa
Relative Humidity: 60.9 %

4. Calibration Equipment:

Test Equipment	Type	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	AV220061	HOKLAS
Sound Level Meter	RION NA-28	30721812	AV220120	HOKLAS

5. Calibration Results

5.1 Sound Pressure Level

Nominal value dB	Accept lower level dB	Accept upper level dB	Measured value dB
114.0	113.6	114.4	114.2

Note:

The values given in this certification only related to the values measured at the time of the calibration.



Certificate of Calibration

for

Description: *Sound Level Meter*
Manufacturer: *NTi Audio*
Type No.: *XL2 (Serial No.: A2A-13548-E0)*
Microphone: *ACO 7052 (Serial No.:73912)*
Preamplifier: *NTi Audio M2211 MA220 (Serial No.:5735)*

Submitted by:

Customer: *Acuity Sustainability Consulting Limited*
Address: *Unit E, 12/F, Ford Glory Plaza,
Nos. 37-39 Wing Hong Street,
Cheung Sha Wan, Kowloon, Hong Kong*

Upon receipt for calibration, the instrument was found to be:

- Within (31.5Hz – 8kHz)**
 Outside

the allowable tolerance.

The test equipment used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

Date of receipt: 2 February 2023

Date of calibration: 6 February 2023

Date of NEXT calibration: 5 February 2024

Calibrated by: _____
Calibration Technician

Certified by: _____
*Mr. Ng Yan Wa
Laboratory Manager*

Date of issue: 6 February 2023

Certificate No.: APJ22-124-CC001



Page 1 of 4

1. Calibration Precaution:

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.

2. Calibration Conditions:

Air Temperature: 23.9 °C
 Air Pressure: 1006 hPa
 Relative Humidity: 47.9 %

3. Calibration Equipment:

	Type	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	AV220061	HOKLAS

4. Calibration Results

Sound Pressure Level

Reference Sound Pressure Level

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBA SPL	Fast	94	1000	94.1	±0.4	

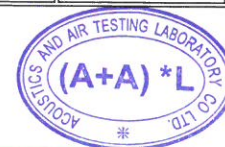
Linearity

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBA SPL	Fast	94	1000	94.1	Ref	
			104		104.1	±0.3	
			114		114.1	±0.3	

Time Weighting

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBA SPL	Fast	94	1000	94.1	Ref	
		Slow			94.1	±0.3	

Certificate No.: APJ22-124-CC001



Page 2 of 4

Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dB	SPL	94	Fast	31.5	94.1	±2.0
					63	94.2	±1.5
					125	94.1	±1.5
					250	94.1	±1.4
					500	94.2	±1.4
					1000	94.1	Ref
					2000	94.5	±1.6
					4000	95.2	±1.6
					8000	94.9	+2.1; -3.1

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBA	SPL	94	Fast	31.5	54.8	-39.4±2.0
					63	68.0	-26.2±1.5
					125	78.0	-16.1±1.5
					250	85.5	-8.6±1.4
					500	91.0	-3.2±1.4
					1000	94.1	Ref
					2000	95.7	+1.2±1.6
					4000	96.2	+1.0±1.6
					8000	93.9	-1.1±2.1; -3.1

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBC	SPL	94	Fast	31.5	91.2	-3.0±2.0
					63	93.4	-0.8±1.5
					125	94.0	-0.2±1.5
					250	94.1	-0.0±1.4
					500	94.2	-0.0±1.4
					1000	94.1	Ref
					2000	94.3	-0.2±1.6
					4000	94.4	-0.8±1.6
					8000	92.0	-3.0 +2.1; -3.1

Certificate No.: APJ22-124-CC001



Page 3 of 4

5. Calibration Results Applied

The results apply to the particular unit-under-test only. All calibration points are within manufacture's specification as IEC 61672 Class 1.

Uncertainties of Applied Value:

94 dB	31.5 Hz	± 0.10
	63 Hz	± 0.10
	125 Hz	± 0.10
	250 Hz	± 0.05
	500 Hz	± 0.10
	1000 Hz	± 0.05
	2000 Hz	± 0.05
	4000 Hz	± 0.05
	8000 Hz	± 0.10
104 dB	1000 Hz	± 0.05
114 dB	1000 Hz	± 0.05

The uncertainties are evaluated for a 95% confidence level.

Note:

The values given in this certification only related to the values measured at the time of the calibration and any uncertainties quoted 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. (A+A)*L shall not be liable for any loss or damage resulting from the use of the equipment.

Certificate of Calibration

for

Description: Sound Level Meter
Manufacturer: NTi Audio
Type No.: XL2 (Serial No.: A2A-13661-E0)
Microphone: ACO 7052 (Serial No.:68914)
Preamplifier: NTi Audio MA220 (M2211) (Serial No.:6282)

Submitted by:

Customer: Acuity Sustainability Consulting Limited
Address: Unit E, 12/F., Ford Glory Plaza,
Nos. 37-39 Wing Hong Street,
Cheung Sha Wan, Kowloon, Hong Kong

Upon receipt for calibration, the instrument was found to be:

- Within (31.5Hz – 8kHz)
 Outside

the allowable tolerance.

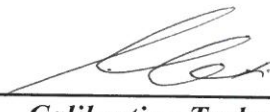
The test equipment used for calibration are traceable to National Standards via:

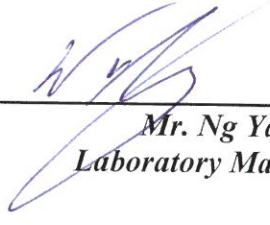
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

Date of receipt: 20 August 2022

Date of calibration: 22 August 2022

Date of NEXT calibration: 21 August 2023

Calibrated by: 
Calibration Technician

Certified by: 
Mr. Ng Yan Wa
Laboratory Manager

Date of issue: 22 August 2022

Certificate No.: APJ22-071-CC001



Page 1 of 4

1. Calibration Precaution:

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.

2. Calibration Conditions:

Air Temperature: 23.4 °C
 Air Pressure: 1005 hPa
 Relative Humidity: 68.5 %

3. Calibration Equipment:

	Type	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	AV220061	HOKLAS

4. Calibration Results

Sound Pressure Level

Reference Sound Pressure Level

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBA SPL	Fast	94	1000	93.8	±0.4	

Linearity

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBA SPL	Fast	94	1000	93.8	Ref	
			104		103.8	±0.3	
			114		114.0	±0.3	

Time Weighting

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBA SPL	Fast	94	1000	93.8	Ref	
		Slow			93.8	±0.3	

Certificate No.: APJ22-071-CC001



Page 2 of 4

Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dB	SPL	Fast	94	31.5	93.9	±2.0
					63	94.0	±1.5
					125	93.9	±1.5
					250	93.8	±1.4
					500	93.8	±1.4
					1000	93.8	Ref
					2000	93.4	±1.6
					4000	93.0	±1.6
				8000	92.2	+2.1; -3.1	

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBA	SPL	Fast	94	31.5	54.6	-39.4 ±2.0
					63	67.7	-26.2 ±1.5
					125	77.8	-16.1 ±1.5
					250	85.2	-8.6 ±1.4
					500	90.6	-3.2 ±1.4
					1000	93.8	Ref
					2000	94.6	+1.2 ±1.6
					4000	94.0	+1.0 ±1.6
				8000	91.2	-1.1 +2.1; -3.1	

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBC	SPL	Fast	94	31.5	90.9	-3.0 ±2.0
					63	93.1	-0.8 ±1.5
					125	93.7	-0.2 ±1.5
					250	93.8	-0.0 ±1.4
					500	93.8	-0.0 ±1.4
					1000	93.8	Ref
					2000	93.3	-0.2 ±1.6
					4000	92.2	-0.8 ±1.6
				8000	89.3	-3.0 +2.1; -3.1	

5. Calibration Results Applied

The results apply to the particular unit-under-test only. All calibration points are within manufacture's specification as IEC 61672 Class 1.

Uncertainties of Applied Value:

94 dB	31.5 Hz	± 0.10
	63 Hz	± 0.10
	125 Hz	± 0.05
	250 Hz	± 0.05
	500 Hz	± 0.05
	1000 Hz	± 0.05
	2000 Hz	± 0.05
	4000 Hz	± 0.05
	8000 Hz	± 0.10
104 dB	1000 Hz	± 0.05
114 dB	1000 Hz	± 0.05

The uncertainties are evaluated for a 95% confidence level.

Note:

The values given in this certification only related to the values measured at the time of the calibration and any uncertainties quoted 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. (A+A)*L shall not be liable for any loss or damage resulting from the use of the equipment.

Manufacturer Calibration Certificate

The following instrument has been tested and calibrated to the manufacturer specifications.
The calibration is traceable in accordance with ISO/IEC 17025 covering all instrument functions.

- Device Type: **XL2 Audio and Acoustic Analyzer**
- Serial Number: **A2A-13663-F0**

- Certificate Issued: **15 February 2023**
- Certificate Number: **44972-A2A-13663-F0**
- Results: **PASSED**
(for detailed report see next page)

Tested by:

M. Frick

Signature:

Stamp:



NTi Audio AG
Im alten Riet 102
LI - 0494 Schaan
www.nti-audio.com

Calibration of: XL2 Audio and Acoustic Analyzer
 Serial Number: A2A-13663-F0
 Date: 15 February 2023

• Detailed Calibration Test Results:

	reference	actual	unit	actual error	XL2 tolerance	calibration uncertainty ²
RMS Level @ 1kHz, XLR Input	0.1	0.100	V	≤0.1%	±0.5%	±0.10%
	1	0.999	V	-0.1%	±0.5%	±0.09%
	10	9.982	V	-0.2%	±0.5%	±0.09%
Flatness, XLR Input ¹	20 Hz	0.995	V	-0.5%	±1.1%	±0.09%
	20 kHz	1.003	V	0.3%	±1.1%	±0.09%
Frequency	1000	1000.00	Hz	≤0.003%	±0.003%	±0.01%
Residual Noise	XLR	< 2 uV			<2 uV	±0.50%
THD+N @ 0 dBu, 1 kHz, XLR Input		-100.5	dB		typ. -100 dB	±0.50%

- Test Conditions: Temperature: **24.9** °C
 Relative Humidity: **19.8** %

• Calibration Equipment Used:

- Agilent Multimeter, Typ 34401A, Serial No. MY 5300 4607
 Last calibration: 15.09.2022, Next calibration: 15.09.2023
 Calibrated by ELCAL to the national standards maintained at Swiss Federal Office of Metrology. SCS 0002
- FX100 Audio Analyzer, Serial No. 10408
 Last Calibration: 11.10.2022, Next Calibration: 11.10.2023
 Manufacturer calibration based on Agilent 34410, Serial No. MY47014254,
 Last Calibration: 26.05.2022, Next Calibration: 26.05.2023
 which is calibrated by ELCAL to national standards maintained at Swiss Federal Office of Metrology. SCS 002

¹ The specified tolerance +/-0.1 dB @ 1V = +/- 1.1%

² 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%. The uncertainty evaluation has been carried out in accordance with the regulations of the GUM.

Certificate of Calibration

for

Description: *Sound Level Meter*
Manufacturer: *NTi Audio*
Type No.: *XL2 (Serial No.: A2A-17638-E0)*
Microphone: *ACO 7052 (Serial No.:84413)*
Preamplifier: *NTi Audio M2211 MA220 (Serial No.:7014)*

Submitted by:

Customer: *Acuity Sustainability Consulting Limited*
Address: *Unit E, 12/F, Ford Glory Plaza,
Nos. 37-39 Wing Hong Street,
Cheung Sha Wan, Kowloon, Hong Kong*

Upon receipt for calibration, the instrument was found to be:

- Within (31.5Hz – 8kHz)**
 Outside

the allowable tolerance.

The test equipment used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

Date of receipt: 30 March 2023

Date of calibration: 04 April 2023

Date of NEXT calibration: 03 April 2024

Calibrated by: _____
Calibration Technician

Certified by: _____
*Mr. Ng Yan Wa
Laboratory Manager*

Date of issue: 04 April 2023

Certificate No.: APJ22-164-CC001



Page 1 of 4

1. Calibration Precaution:

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.

2. Calibration Conditions:

Air Temperature: 21.6 °C
 Air Pressure: 1005 hPa
 Relative Humidity: 71.6 %

3. Calibration Equipment:

	Type	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	AV220061	HOKLAS

4. Calibration Results

Sound Pressure Level

Reference Sound Pressure Level

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBA SPL	Fast	94	1000	94.1	±0.4	

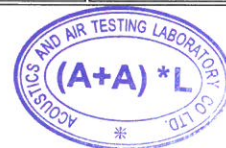
Linearity

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBA SPL	Fast	94	1000	94.1	Ref	
			104		104.1	±0.3	
			114		114.1	±0.3	

Time Weighting

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBA SPL	Fast	94	1000	94.1	Ref	
		Slow			94.1	±0.3	

Certificate No.: APJ22-164-CC001



Page 2 of 4

Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dB	SPL	Fast	94	31.5	94.1	±2.0
					63	94.1	±1.5
					125	94.1	±1.5
					250	94.0	±1.4
					500	94.1	±1.4
					1000	94.1	Ref
					2000	94.3	±1.6
					4000	94.9	±1.6
					8000	93.9	+2.1; -3.1

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBA	SPL	Fast	94	31.5	54.7	-39.4±2.0
					63	67.9	-26.2±1.5
					125	78.0	-16.1±1.5
					250	85.4	-8.6±1.4
					500	90.9	-3.2±1.4
					1000	94.1	Ref
					2000	95.5	+1.2±1.6
					4000	95.9	+1.0±1.6
					8000	92.8	-1.1+2.1; -3.1

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBC	SPL	Fast	94	31.5	91.0	-3.0±2.0
					63	93.3	-0.8±1.5
					125	93.9	-0.2±1.5
					250	94.1	-0.0±1.4
					500	94.2	-0.0±1.4
					1000	94.1	Ref
					2000	94.2	-0.2±1.6
					4000	94.1	-0.8±1.6
					8000	90.9	-3.0 +2.1; -3.1

Certificate No.: APJ22-164-CC001



Page 3 of 4

5. Calibration Results Applied

The results apply to the particular unit-under-test only. All calibration points are within manufacture's specification as IEC 61672 Class 1.

Uncertainties of Applied Value:

94 dB	31.5 Hz	± 0.10
	63 Hz	± 0.10
	125 Hz	± 0.05
	250 Hz	± 0.05
	500 Hz	± 0.05
	1000 Hz	± 0.05
	2000 Hz	± 0.05
	4000 Hz	± 0.05
	8000 Hz	± 0.10
104 dB	1000 Hz	± 0.05
114 dB	1000 Hz	± 0.05

The uncertainties are evaluated for a 95% confidence level.

Note:

The values given in this certification only related to the values measured at the time of the calibration and any uncertainties quoted 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. (A+A)*L shall not be liable for any loss or damage resulting from the use of the equipment.

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT -

 Description : Sound Level Meter
 Manufacturer : Casella

	Meter	Microphone	Preamplifier
Model No.	CEL-63X	CE-251	CEL-495
Serial No.	1488303	05248	004910
Equipment ID	N/A		
Next Calibration Date	26-Sep-2023		
Specification Limit	EN 61672-1: 2003 Class 1		

Laboratory Information

Details of Reference Equipment -

 Description : B & K Acoustic Multifunction Calibrator 4226 (Traditional free field setting)
 Equipment ID. : R-108-1

Date of Receipt UUT : 23-Sep-2022

Date of Calibration : 27-Sep-2022

Calibration Location : Calibration Laboratory of FTS Ambient Temperature : 20±2 °C

Method Used : By direct comparison Relative Humidity : <80% R.H.

Calibration Results :

Parameters		Mean Value (dB)	Specification Limit(dB)
A-weighting frequency response	4000Hz	1.3	2.6 to -0.6
	2000Hz	1.3	2.8 to -0.4
	1000Hz	0.0	1.1 to -1.1
	500Hz	-3.4	-1.8 to -4.6
	250Hz	-8.8	-7.2 to -10.0
	125Hz	-16.2	-14.6 to -17.6
	63Hz	-26.3	-24.7 to -27.7
Differential level linearity	94dB-104dB	0.0	± 0.6
	104dB-114dB	0.0	± 0.6

Remarks :

- The equipment used in this calibration is traceable to recognized National Standards.
- The mean value is the average of four measurements.
- For calibration: Reference SPL are 94, 104 & 114dB, range setting is 20-140dB & time weighting is fast
- The UUT does comply with EN 61672-1: 2003 Class 1 sound level meter for the above measurement.
- The values given in this Calibration Certificate only relate to unit under test and the values measured at the time of the test. Any uncertainties will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling or the capability of any other laboratory to repeat the measurement.
- The decision rule is based on binary statement for simple acceptance rule (w = 0).

 Checked by :  Date : 29-9-2022 Certified by : K.T. Young Date : 29-9-2022
 CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

**** End of Report ****

Report no.: 212769CA222278

Page 1 of 1

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT -

Description : Sound Level Meter

Manufacturer : Casella

	Meter	Microphone	Preamplifier
Model No.	CEL-63X	CE-251	CEL-495
Serial No.	1488306	03876	002752

Equipment ID : N/A

Next Calibration Date : 26-Sep-2023

Specification Limit : EN 61672-1: 2003 Class 1

Laboratory Information

Details of Reference Equipment -

Description : B & K Acoustic Multifunction Calibrator 4226 (Traditional free field setting)

Equipment ID. : R-108-1

Date of Receipt UUT : 23-Sep-2022

Date of Calibration : 27-Sep-2022

Calibration Location : Calibration Laboratory of FTS Ambient Temperature : 20±2 °C

Method Used : By direct comparison Relative Humidity : <80% R.H.

Calibration Results :

Parameters		Mean Value (dB)	Specification Limit(dB)
A-weighting frequency response	4000Hz	1.7	2.6 to -0.6
	2000Hz	1.4	2.8 to -0.4
	1000Hz	0.0	1.1 to -1.1
	500Hz	-3.3	-1.8 to -4.6
	250Hz	-8.8	-7.2 to -10.0
	125Hz	-16.2	-14.6 to -17.6
	63Hz	-26.3	-24.7 to -27.7
Differential level linearity	94dB-104dB	0.1	± 0.6
	104dB-114dB	0.0	± 0.6

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. For calibration: Reference SPL are 94, 104 & 114dB, range setting is 20-140dB & time weighting is fast
4. The UUT does comply with EN 61672-1: 2003 Class 1 sound level meter for the above measurement.
5. The values given in this Calibration Certificate only relate to unit under test and the values measured at the time of the test. Any uncertainties will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling or the capability of any other laboratory to repeat the measurement.
6. The decision rule is based on binary statement for simple acceptance rule (w = 0).

 Checked by :  Date : 29-9-2022 Certified by :  Date : 29-9-2022
 CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

**** End of Report ****

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client Supplied Information

Client : Materialab Consultants Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Sound Calibrator

Manufacturer : Casella (Model CEL-120/1)

Serial No. : 2383707

Equipment ID : N/A

Next Calibration Date : 25-Aug-2023

Specification Limit : EN 60942: 2003 Class 1

Laboratory Information

Details of Calibration Equipment

Description : Reference Sound level meter

Equipment ID. : R-119-2

Date Receipt of UUT : 22-Aug-2022

Date of Calibration : 26-Aug-2022

Calibration Location : Calibration Laboratory of FTS Ambient Temperature : 20±2 °C

Method Used : By direct comparison Relative Humidity : <80% R.H.

Calibration Results :

Parameters (Setting of UUT)	Mean Value (error of measurement)	Specification Limit(dB)
94dB	-0.3 dB	±0.4dB
114dB	-0.1 dB	

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. The equipment under test does comply with the specification limit.
4. The values given in this Calibration Certificate only relate to the unit-under-test and the values measured at the time of the test. Any uncertainties quoted will not include allowances for the environmental changes, variation and shock during transportation, or the capability of any other laboratory to repeat the measurement.

 Checked by :  Date : 8-9-2022 Certified by :  Date : 10-9-2022
 CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

** End of Report **

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT -

Description : Sound Calibrator

Manufacturer : Casella (Model CEL-120/1)

Serial No. : 5230950

Equipment ID : N/A

Next Calibration Date : 26-Sep-2023

Specification Limit : EN 60942: 2003 Class 1

Laboratory Information

Details of Calibration Equipment

Description : Reference Sound level meter

Equipment ID. : R-119-2

Date of Receipt UUT : 23-Sep-2022

Date of Calibration : 27-Sep-2022

Calibration Location : Calibration Laboratory of FTS Ambient Temperature : 20±2 °C

Method Used : By direct comparison Relative Humidity : <80% R.H.

Calibration Results :

Parameters (Setting of UUT)	Mean Value (error of measurement)	Specification Limit(dB)
94dB	-0.3 dB	±0.4dB
114dB	-0.4 dB	

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. The equipment under test does comply with the specification limit.
4. The values given in this Calibration Certificate only relate to the unit-under-test and the values measured at the time of the test. Any uncertainties quoted will not include allowances for the environmental changes, variation and shock during transportation, or the capability of any other laboratory to repeat the measurement.
5. The decision rule is based on binary statement for simple acceptance rule (w = 0).

 Checked by :  Date : 29-9-2022 Certified by : K.T. Leung Date : 29-9-2022
 CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

**** End of Report ****

Report No. : 212769CA233072

Page 1 of 1

CALIBRATION CERTIFICATE OF ANEMOMETER**Client Supplied Information**

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Anemometer

Manufacturer : Smart Sensor

Model No. : AR816

Serial No. : NA

Equipment ID.: AM-001

Next Calibration Date : 23-Apr-2024

Laboratory Information

Details of Reference Equipment –

Description : Reference Anemometer

Equipment ID.: R-101-4

Date of Calibration : 24-Apr-2023 Ambient Temperature : 22 °C

Calibration Location : Calibration Laboratory of FTS

Method Used : In-house method R-C-279

Calibration Results :

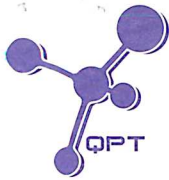
Reference Reading (m/s)	UUT Reading (m/s)	Error (m/s)
2.00	2.0	0.0
4.00	4.0	0.0
6.00	6.0	0.0
8.00	8.2	0.2
10.02	10.3	0.3

Remark :

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The reported readings in this calibration are an average from 10 trials.

Checked by :  Date : 27-4-2023 Certified by : K.T. Leung Date : 27-4-2023
CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)**** End of Report ****

Water Quality Monitoring Equipment



專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED

Unit 10, 5/F, Wah Wai Centre, 38-40 Au Pui Wan St., Fotan, Hong Kong
Email: info@qualityprotest.com; Website: www.qualityprotest.com
Tel: (852) 3956 8717; Fax: (852) 3956 3928

REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Test Report No. : R-BC060078
Date of Issue : 21 June 2023
Page No. : 1 of 2

PART A - CUSTOMER INFORMATION

Acuity Sustainability Consulting Limited
Unit E, 12/F, Ford Glory Plaza 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong

PART B - SAMPLE INFORMATION

Name of Equipment : YSI ProDSS (Multi-Parameters)
Manufacturer : YSI (a xylem brand)
Serial Number : 22D100436
Date of Received : 19 June 2023
Date of Calibration : 19 June 2023
Date of Next Calibration : 18 September 2023
Request No. : D-BC060078

PART C - REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Test Parameter	Reference Method
pH value	APHA 21e 4500 H ⁺
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure
Salinity	APHA 21e 2520 B
Dissolved oxygen	APHA 21e 4500 O
Turbidity	APHA 21e 2130 B

PART D - CALIBRATION RESULT

(1) pH value

Target (pH unit)	Display Reading (pH unit)	Tolerance	Result
4.00	4.11	0.11	Satisfactory
7.42	7.43	0.01	Satisfactory
10.01	9.99	-0.02	Satisfactory

Tolerance of pH value should be less than ± 0.2 (pH unit)

(2) Temperature

Reading of Ref. thermometer (°C)	Display Reading (°C)	Tolerance	Result
36	35.8	-0.2	Satisfactory
26	25.1	-0.9	Satisfactory
17	16.8	-0.2	Satisfactory

Tolerance of Temperature should be less than ± 2.0 (°C)

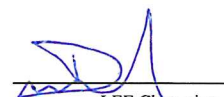
(3) Salinity

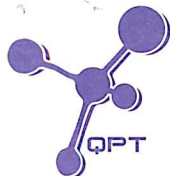
Expected Reading (g/L)	Display Reading (g/L)	Tolerance (%)	Result
10	9.36	-6.40	Satisfactory
20	19.09	-4.55	Satisfactory
30	29.55	-1.50	Satisfactory

Tolerance of Salinity should be less than ± 10.0 (%)

--- CONTINUED ON NEXT PAGE ---

AUTHORIZED
SIGNATORY:


LEE Chun-ning
Assistant Manager (Chemical Testing)



REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Test Report No. : R-BC060078
Date of Issue : 21 June 2023
Page No. : 2 of 2

(4) Dissolved oxygen

Expected Reading (mg/L)	Display Reading (mg/L)	Tolerance	Result
7.84	8.11	0.27	Satisfactory
6.87	6.71	-0.16	Satisfactory
4.89	4.36	-0.53	Satisfactory
1.00	0.96	-0.04	Satisfactory

Tolerance of Dissolved oxygen should be less than ± 0.5 (mg/L)

(5) Turbidity

Expected Reading (NTU)	Display Reading (NTU)	Tolerance (%)	Result
0	0.10	--	Satisfactory
10	9.91	-0.90	Satisfactory
20	20.09	0.40	Satisfactory
100	105.37	5.40	Satisfactory
800	799.11	-0.10	Satisfactory

Tolerance of Turbidity should be less than ± 10.0 (%)

Remark(s)

- The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted form relevant international standards.
- The results relate only to the calibrated equipment as received
- The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
- "Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.
- The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted form relevant international standards.

--- END OF REPORT ---

Report No. : 142626WA230866(1)



Page 1 of 3

Report on Calibration of YSI EXO-3 Multi-parameter Water Quality Meter**Information Supplied by Client**

Client : Fugro Technical Services Limited (MCL)

Client's address : 13/F, Fugro House – KCC2, No. 1 Kwai On Road, Kwai Chung, N.T., H.K.

Sample description : One YSI EXO-3 Multi-parameter Water Quality Meter

Client sample ID : Serial No. 22M102330

Test required : Calibration of the YSI EXO-1s Multi-parameter Water Quality Meter

Laboratory Information

Lab. sample ID : WA230866/2

Date sample received : 01/03/2023

Date of calibration : 03/05/2023

Next calibration date : 02/08/2023

Test method used : In-house comparison method

Note : This report refers only to the sample(s) tested and the result(s) applied to the sample(s) as received.

Report No. : 142626WA230866(1)

Page 2 of 3

Results :
A. pH calibration

pH reading at 25°C for Q.C. solution(6.86) and at 25°C for Q.C. solution(9.18)		
Theoretical	Measured	Deviation
9.18	9.12	-0.06
6.86	6.89	+0.03


B. Salinity calibration

Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1	0.9	-0.10	± 0.1
10	9.80	-0.20	± 0.5
20	19.20	-0.80	± 1.0
30	28.86	-1.14	± 1.5
40	39.51	-0.49	± 2.0

C. Dissolved Oxygen calibration

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	8.34	8.50
2	8.21	8.15
3	8.07	8.10
Average	8.21	8.25

Differences of D.O. Content between Wrinkler Titration and D.O. meter should be less than 0.2 mg/L.

Certified by : 
 Approved Signatory : CHAN Hoi Yan, Winnie
 Assistant Manager

Date : 5-5-2013

Note : This report refers only to the sample(s) tested and the result(s) applied to the sample(s) as received.

Report No. : 142626WA230866(1)

Page 3 of 3

Results :
D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
25.0	25.0

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
4	4.19	+0.19	± 0.6
8	8.62	+0.62	± 0.8
40	37.53	-2.47	± 3.0
80	79.40	-0.60	± 4.0

F. Conductivity calibration

Conductivity, µS/cm			
Theoretical	Measured	Deviation (%)	Maximum acceptable Deviation (%)
147	142	-3.4	±10.0
1408	1410	+0.14	
6668	6632	-0.54	
12860	12360	-3.9	
24820	24612	-0.84	

 Certified by : Chan Hoi Yan
 Approved Signatory : CHAN Hoi Yan, Winnie
 Assistant Manager

 Date : 5-5-2023

** End of Report **

Note : This report refers only to the sample(s) tested and the result(s) applied to the sample(s) as received.

Report No. : 142626WA231121



Page 1 of 3

Report on Calibration of YSI EXO-3 Multi-parameter Water Quality Meter**Information Supplied by Client**

Client : Fugro Technical Services Limited (MCL)

Client's address : 13/F, Fugro House – KCC2, No. 1 Kwai On Road, Kwai Chung, N.T., H.K.

Sample description : One YSI EXO-1 Multi-parameter Water Quality Meter

Client sample ID : Serial No. 19A105807

Test required : Calibration of the YSI EXO-1 Multi-parameter Water Quality Meter

Laboratory Information

Lab. sample ID : WA231121/1

Date sample received : 17/05/2023

Date of calibration : 20/05/2023

Next calibration date : 19/08/2023

Test method used : In-house comparison method

Note : This report refers only to the sample(s) tested and the result(s) applied to the sample(s) as received.

Report No. : 142626WA231121

Page 2 of 3

Results :
A. pH calibration

pH reading at 25°C for Q.C. solution(6.86) and at 25°C for Q.C. solution(9.18)		
Theoretical	Measured	Deviation
9.18	9.16	-0.02
6.86	6.90	+0.04

B. Salinity calibration


Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1	0.99	-0.01	± 0.1
10	9.98	-0.02	± 0.5
20	19.85	-0.15	± 1.0
30	30.05	+0.05	± 1.5
40	41.17	+1.17	± 2.0

C. Dissolved Oxygen calibration

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	7.67	7.83
2	7.75	7.93
3	8.31	8.16
Average	7.91	7.97

Differences of D.O. Content between Wrinkler Titration and D.O. meter should be less than 0.2 mg/L

Certified by :


 Approved Signatory : HO Kin Man, John
 Assistant General Manager – Laboratories

Date :

25/5/2023

Note : This report refers only to the sample(s) tested and the result(s) applied to the sample(s) as received.

Report No. : 142626WA231121

Page 3 of 3

Results :

D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
25.1	25.0

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
4	4.11	+0.11	± 0.6
8	8.31	+0.31	± 0.8
40	40.96	+0.96	± 3.0
80	80.35	+0.35	± 4.0

F. Conductivity calibration

Conductivity, µS/cm			
Theoretical	Measured	Deviation (%)	Maximum acceptable Deviation (%)
147	150	+2.0	±10.0
1408	1438	+2.1	
6668	6946	+4.2	
12860	12854	-0.05	
24820	24705	-0.46	


Certified by : 
 Approved Signatory : HO Kin Man, John
 Assistant General Manager – Laboratories
 Date : 25/5/2023

** End of Report **

Note : This report refers only to the sample(s) tested and the result(s) applied to the sample(s) as received.

CALIBRATION CERTIFICATE

This document certifies that the instrument detailed below has been calibrated according to Valeport Limited's Standard Procedures, using equipment with calibrations traceable to UKAS or National Standards.

Calibration Certificate Number:	61134
Instrument Type:	MODEL 106
Instrument Serial Number:	67738
Calibrated By:	N.PADDON
Date:	11 TH NOVEMBER 2019
Signed:	

Full details of the results from the calibration procedure applied to each fitted sensor are available, on request, via email. This summary certificate should be kept with the instrument.

A large, stylized number '50' in a bold, sans-serif font, with a small square icon above the '0'.

Valeport Limited
St. Peter's Quay, Totnes,
Devon TQ9 5EW UK

+44 (0) 1803 869292
sales@valeport.co.uk
www.valeport.co.uk

VAT No. CB 165 8753 67
Registered in England No. 1950444





a xylem brand

9940 Summers Ridge Road
San Diego, CA 92121
Tel: (858) 546-8327
support@sontek.com

Certificate of Calibration

TEST REPORT

Serial Number	5906
System Type	M9
System Orientation	Down
Compass Type	Sontek
Compass Offset (degrees)	N/A
Communications Output	RS232
Recorder Size (GB)	14.9
Firmware Version	4.02
Date Tested	05/23/2017

POWER TEST

Command Mode (W):	0.17	Range : 0.00 – 0.30
Sleep Mode (W):	N/A	Range : N/A
Ping Mode - 18V (W):	2.67	Range : 1.50 – 3.50
Power Check		PASS

NOISE TEST

Beam 1 – 3.0 MHz (counts)	95
Beam 2 – 1.0 MHz (counts)	96
Beam 3 – 3.0 MHz (counts)	95
Beam 4 – 1.0 MHz (counts)	101
Beam 5 – 3.0 MHz (counts)	93
Beam 6 – 1.0 MHz (counts)	95
Beam 7 – 3.0 MHz (counts)	91
Beam 8 – 1.0 MHz (counts)	100
Beam Vertical – 500KHz (counts)	88
Noise Test	PASS

VERIFICATION

Velocity Check	PASS
Transmit Output	PASS
Sensitivity	PASS
Temperature Sensor	PASS
Compass Heading Check	PASS
Compass Level Check	PASS
Burn-in (24 hrs)	PASS
Load Default Parameters	DONE

OPTIONS

Bottom Track	Installed
SmartPulse HD TM	Enabled
Stationary	Disabled
GPS Compass Integration	Disabled
RiverSurveyor	Enabled
HydroSurveyor	Disabled

Verified by: **ainthasane**

This report was generated on 5/24/2017.

ATTENTION: New Warranty Terms as of March 4, 2013:

This system is covered under a two year limited warranty that extends to all parts and labor for any malfunction due to workmanship or errors in the manufacturing process. The warranty is valid only if you properly maintain and operate this system under normal use as outlined in the User's Manual. The warranty does not cover shortcomings that are due to the design, or any incidental damages as a result of errors in the measurements.

SonTek will repair and/or replace, at its sole option, any product established to be defective with a product of like type. CLAIMS FOR LABOR COSTS AND/OR OTHER CHARGES RESULTING FROM THE USE OF SonTek GOODS AND/OR PRODUCTS ARE NOT COVERED BY THIS LIMITED WARRANTY.

SonTek DISCLAIMS ALL EXPRESS WARRANTIES OTHER THAN THOSE CONTAINED ABOVE AND ALL IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE. SonTek DISCLAIMS AND WILL NOT BE LIABLE, UNDER ANY CIRCUMSTANCE, IN CONTRACT, TORT OR WARRANTY, FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, INCLUDING BUT NOT LIMITED TO LOST PROFITS, BUSINESS INTERRUPTION LOSSES, LOSS OF GOODWILL, OR LOSS OF BUSINESS OR CUSTOMER RELATIONSHIPS.

If your system is not functioning properly, first try to identify the source of the problem. If additional support is required, we encourage you to contact us immediately. We will work to resolve the problem as quickly as possible.

If the system needs to be returned to the factory, please contact SonTek to obtain a Service Request (SR) number. We reserve the right to refuse receipt of shipments without SRs. We require the system to be shipped back in the original shipping container using the original packing material with all delivery costs covered by the customer (including all taxes and duties). If the system is returned without appropriate packing, the customer will be required to cover the cost of a new packaging crate and material.

The warranty for repairs performed at an authorized SonTek Service Center is one year.