ANNEX E1 CALIBRATION CERTIFICATES (SOUND LEVEL METERS AND ACOUSTIC CALIBRATORS)

Annex E1

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. ATS25-066-CC002

Customer:	**Envirotech Services Company** Room 712, 7/F, My Loft, 9 Hoi Wing Road, Tuen Mun N.T., Hong Kong
Unit-under-test (UUT):	
Description:	Precision Acoustic Calibrator
Manufacturer:	Larson Davis
Type No.:	CAL 200
Serial No.:	11333
Conditions during calibration:	
Temperature:	26°C
Relative Humidity:	59%
Test Specifications:	Calibration Check
Date of calibration:	15 July 2025
Test Results:	All calibration points are within manufacturer's specification.

Certified by: _____

Mr. Y. T. LEUNG / Technical Manager
MIOA, MHKIOA, MHKIQEP

Issue Date: 15 July 2025

聲學測試服務有限公司
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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:	11 March 2025	11 March 2025
Certificate No.:	AV250047	AV250047

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	93.84	± 0.25	PASS	0.20
114.0	113.75	± 0.25	PASS	0.20

All calibration points are within manufacturer's specification.

Certificate of Calibration

for

Description:	***Sound Level Meter***
Manufacturer:	***RION***
Type No.:	***NL-52 (Serial No.: 00331806)***
Microphone:	***UC-53A (Serial No.: 316987)***
Preamplifier:	***NH-25 (Serial No.:21571)***

Submitted by:

Customer:	*Envirotech Services Co.*
Address:	*Rm.712, 7/F., My Loft, 9 Hoi Wing Road, Tuen Mun, 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: 19 November 2024

Date of calibration: 22 November 2024

Date of NEXT calibration: 21 November 2025

Calibrated by: _____
Calibration Technician

Certified by: _____
Mr. Ng Yan Wa
Laboratory Manager

Date of issue: 22 November 2024

ACOUSTICS AND AIR TESTING LABORATORY CO. LTD. (A+A) *L

Certificate No.: APJ24-100-CC001

Room 422,Leader Industrial Centre,57-59 Au Pui Wan Street ,Fo Tan, Shatin,N.T.,Hong Kong
Tel: (852) 2668 3423 Fax:(852) 2668 6946
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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: 24.9 °C
Air Pressure: 1006 hPa
Relative Humidity: 44.0 %

3. *Calibration Equipment:*

	Type	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	AV240081	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	94.0	±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	94.0	Ref
			104		104.0	±0.3
			114		114.2	±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	94.0	Ref
		Slow			94.0	±0.3

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Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dB SPL	Fast	94	31.5	94.1	±2.0
				63	94.1	±1.5
				125	94.0	±1.5
				250	94.0	±1.4
				500	94.0	±1.4
				1000	94.0	Ref
				2000	93.9	±1.6
				4000	93.6	±1.6
				8000	91.4	+2.1; -3.1

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBA SPL	Fast	94	31.5	54.8	-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	90.8	-3.2±1.4
				1000	94.0	Ref
				2000	95.1	+1.2±1.6
				4000	94.6	+1.0±1.6
				8000	90.4	-1.1+2.1; -3.1

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBC SPL	Fast	94	31.5	91.1	-3.0±2.0
				63	93.3	-0.8±1.5
				125	93.9	-0.2±1.5
				250	94.0	-0.0±1.4
				500	94.0	-0.0±1.4
				1000	94.0	Ref
				2000	93.7	-0.2±1.6
				4000	92.9	-0.8±1.6
				8000	88.5	–3.0 +2.1: –3.1

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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	± 0.05
	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.

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Acoustic Testing Services Limited
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Certificate of Calibration

Certificate No. ATS25-066-CC004

Customer:	**Envirotech Services Company** Room 712, 7/F, My Loft, 9 Hoi Wing Road, Tuen Mun N.T., Hong Kong
Unit-under-test (UUT):	
Description:	Sound Level Meter , Microphone , Pre-amplifier
Manufacturer:	RION
Type No.:	NL-52 , UC-59 , NH-25
Serial No.:	00542913 , 06829 , 76317
Conditions during calibration:	
Temperature:	26°C
Relative Humidity:	56%
Test Specifications:	Calibration Check
Date of calibration:	22 August 2025
Test Results:	All calibration points are within manufacturer's specification.

Certified by: _____

Mr. Y. T. LEUNG / Technical Manager
MIOA, MHKIOA, MHKIQEP

Issue Date: 22 August 2025

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:	Acoustical Calibrator
Manufacturer & Type:	Brüel & Kjær 4231
Serial No.:	2478237
Last Calibration Date:	18 February 2025
Certificate No.:	AV250027

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	94.1	± 0.7	PASS
			S			94.1	± 0.7	PASS
		C	F			94.1	± 0.7	PASS
			S			94.1	± 0.7	PASS
		L	F			94.1	± 0.7	PASS
			S			94.1	± 0.7	PASS
		A	F	114.00	1000	114.1	± 0.7	PASS
			S			114.1	± 0.7	PASS

All calibration points are within manufacturer's specification.

Certificate of Calibration

for

Description:	***Sound Level Meter***
Manufacturer:	***RION***
Type No.:	***NL-52 (Serial No.: 01010406)***
Microphone:	***UC-59 (Serial No.: 13748)***
Preamplifier:	***NH-25 (Serial No.:21756)***

Submitted by:

Customer:	*Envirotech Services Co.*
Address:	*Rm.712, 7/F., My Loft, 9 Hoi Wing Road,*
	Tuen Mun, 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: 03 January 2025

Date of calibration: 06 January 2025

Date of NEXT calibration: 05 January 2026

Calibrated by: _____
Calibration Technician

Certified by: _____
Mr. Ng Yan Wa
Laboratory Manager

Date of issue: **06 January 2025**

Certificate No.: APJ24-124-CC002

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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:	22.9 **°C**
Air Pressure:	1019 **hPa**
Relative Humidity:	33.2 **%**

3. *Calibration Equipment:*

	Type	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	AV240081	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	94.0	±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	94.0	Ref
			104		104.0	±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	94.0	Ref
		Slow			94.0	±0.3

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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	94.0	±2.0
				63	94.1	±1.5
				125	94.1	±1.5
				250	94.1	±1.4
				500	94.0	±1.4
				1000	94.0	Ref
				2000	93.7	±1.6
				4000	92.9	±1.6
				8000	91.2	+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	54.7	-39.4±2.0
				63	68.0	-26.2±1.5
				125	78.0	-16.1±1.5
				250	85.4	-8.6±1.4
				500	90.8	-3.2±1.4
				1000	94.0	Ref
				2000	94.9	+1.2±1.6
				4000	93.9	+1.0±1.6
				8000	90.2	-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	91.1	-3.0±2.0
				63	93.3	-0.8±1.5
				125	94.0	-0.2±1.5
				250	94.1	-0.0±1.4
				500	94.0	-0.0±1.4
				1000	94.0	Ref
				2000	93.5	-0.2±1.6
				4000	92.1	-0.8±1.6
				8000	88.3	–3.0 +2.1: –3.1

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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.

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