



ANNEX F1

CALIBRATION CERTIFICATES FOR NOISE

# *Certificate of Calibration*

*for*

*Description:* **Sound Level Calibrator**

*Manufacturer:* **Larson Davis**

*Type No.:* **CAL 200**

*Serial No.:* **15678**

***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**

☐ **Outside**

**the allowable tolerance.**

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

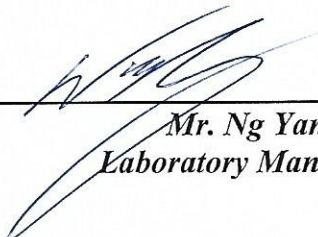
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

**Date of receipt: 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-CC003**



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

**4. Calibration Equipment:**

| Test Equipment           | Type       | Serial No. | Calibration Report Number | Traceable to |
|--------------------------|------------|------------|---------------------------|--------------|
| Multifunction Calibrator | B&K 4226   | 2288467    | AV240081                  | HOKLAS       |
| Sound Level Meter        | RION NA-28 | 30721812   | AV240109                  | HOKLAS       |

**5. Calibration Results****5.1 Sound Pressure Level**

| Nominal value<br>dB | Accept lower level<br>dB | Accept upper level<br>dB | Measured value<br>dB |
|---------------------|--------------------------|--------------------------|----------------------|
| 94.0                | 93.6                     | 94.4                     | 94.1                 |
| 114.0               | 113.6                    | 114.4                    | 114.1                |

**6. Calibration Results Applied**

The results apply to the particular unit-under-test only. All calibration points are within manufacture's specification as IEC 60942 Class 1.

Note:

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

Certificate No.: APJ24-124-CC003



Page 2 of 2

# *Certificate of Calibration*

*for*

*Description:* *Sound Level Meter*  
*Manufacturer:* *RION*  
*Type No.:* *NL-52 (Serial No.: 00175561)*  
*Microphone:* *UC-59 (Serial No.: 16651)*  
*Preamplifier:* *NH-25 (Serial No.: 65663)*

***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.**

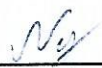
The test equipment used for calibration are traceable to National Standards via:

- 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-CC001**



**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, | IEC 61672 Class 1 |
|----------------------------------|-----------------|----------------|--|---------------|---------------|--------------|-------------------|
| Range, dB                        | Freq. Weighting | Time Weighting |  | Level, dB     | Frequency, Hz | dB           | Specification, dB |
| 30-130                           | dBA SPL         | Fast           |  | 94            | 1000          | 94.0         | ±0.4              |

Linearity

| 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            | 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, | IEC 61672 Class 1 |
|----------------------------------|-----------------|----------------|--|---------------|---------------|--------------|-------------------|
| Range, dB                        | Freq. Weighting | Time Weighting |  | Level, dB     | Frequency, Hz | dB           | Specification, dB |
| 30-130                           | dBA SPL         | Fast           |  | 94            | 1000          | 94.0         | Ref               |
|                                  |                 | Slow           |  |               |               | 94.0         | ±0.3              |

Certificate No.: APJ24-124-CC001



Page 2 of 4

## 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            | 94            | 31.5          | 94.2         | $\pm 2.0$         |
|                                  |                 |                |               | 63            | 94.3         | $\pm 1.5$         |
|                                  |                 |                |               | 125           | 94.2         | $\pm 1.5$         |
|                                  |                 |                |               | 250           | 94.2         | $\pm 1.4$         |
|                                  |                 |                |               | 500           | 94.1         | $\pm 1.4$         |
|                                  |                 |                |               | 1000          | 94.0         | Ref               |
|                                  |                 |                |               | 2000          | 93.7         | $\pm 1.6$         |
|                                  |                 |                |               | 4000          | 93.2         | $\pm 1.6$         |
|                                  |                 |                |               | 8000          | 91.8         | $+2.1; -3.1$      |

## 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            | 94            | 31.5          | 54.8         | $-39.4 \pm 2.0$      |
|                                  |                 |                |               | 63            | 68.1         | $-26.2 \pm 1.5$      |
|                                  |                 |                |               | 125           | 78.1         | $-16.1 \pm 1.5$      |
|                                  |                 |                |               | 250           | 85.5         | $-8.6 \pm 1.4$       |
|                                  |                 |                |               | 500           | 90.9         | $-3.2 \pm 1.4$       |
|                                  |                 |                |               | 1000          | 94.0         | Ref                  |
|                                  |                 |                |               | 2000          | 94.9         | $+1.2 \pm 1.6$       |
|                                  |                 |                |               | 4000          | 94.2         | $+1.0 \pm 1.6$       |
|                                  |                 |                |               | 8000          | 90.8         | $-1.1 \pm 2.1; -3.1$ |

## 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            | 94            | 31.5          | 91.2         | $-3.0 \pm 2.0$       |
|                                  |                 |                |               | 63            | 93.4         | $-0.8 \pm 1.5$       |
|                                  |                 |                |               | 125           | 94.1         | $-0.2 \pm 1.5$       |
|                                  |                 |                |               | 250           | 94.2         | $-0.0 \pm 1.4$       |
|                                  |                 |                |               | 500           | 94.1         | $-0.0 \pm 1.4$       |
|                                  |                 |                |               | 1000          | 94.0         | Ref                  |
|                                  |                 |                |               | 2000          | 93.6         | $-0.2 \pm 1.6$       |
|                                  |                 |                |               | 4000          | 92.4         | $-0.8 \pm 1.6$       |
|                                  |                 |                |               | 8000          | 88.9         | $-3.0 \pm 2.1; -3.1$ |

Certificate No.: APJ24-124-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 | ± 0.15 |
|        | 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.

Certificate No.: APJ24-124-CC001



Page 4 of 4