

Appendix E Noise Monitoring Equipment Calibration Certificate

Certificate of Calibration

for

Description: *Sound Level Meter*
Manufacturer: *SVANTEK*
Type No.: *SVAN 971 (Serial No.: C132269)*
Microphone: *ACO 7052E (Serial No.: 90332)*
Preamplifier: *SV-18 (Serial No.: 103808)*

Submitted by:

Customer: *Aurecon Hong Kong Limited*
Address: *Unit 1608, 16/F, Tower B, Manulife Financial Centre,
223-231 Wai Yip Street,
Kwun Tong, Kowloon, Hong Kong*

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

- Within (31.5Hz – 4kHz)**
 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: 22 July 2024

Date of calibration: 24 July 2024

Date of NEXT calibration: 23 July 2025

Calibrated by: 
Calibration Technician

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

Date of issue: 24 July 2024



Certificate No.: APJ23-155-CC003

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: 56.7 %

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 | | |
| 35-138.8 | 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 | | |
| 35-138.8 | dBA SPL | Fast | 94 | 1000 | 94.0 | Ref |
| | | | 104 | | 104.0 | ±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 | | |
| 35-138.8 | dBA SPL | Fast | 94 | 1000 | 94.0 | Ref |
| | | Slow | | | 94.0 | ±0.3 |



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 | | | |
| 35-138.8 | dB | SPL | Fast | 94 | 31.5 | 94.5 | ±2.0 |
| | | | | | 63 | 94.4 | ±1.5 |
| | | | | | 125 | 94.3 | ±1.5 |
| | | | | | 250 | 94.4 | ±1.4 |
| | | | | | 500 | 94.2 | ±1.4 |
| | | | | | 1000 | 94.0 | Ref |
| | | | | | 2000 | 93.5 | ±1.6 |
| 4000 | 93.3 | ±1.6 | | | | | |

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 | | | |
| 35-138.8 | dBA | SPL | Fast | 94 | 31.5 | 55.2 | -39.4±2.0 |
| | | | | | 63 | 68.2 | -26.2±1.5 |
| | | | | | 125 | 78.2 | -16.1±1.5 |
| | | | | | 250 | 85.6 | -8.6±1.4 |
| | | | | | 500 | 91.0 | -3.2±1.4 |
| | | | | | 1000 | 94.0 | Ref |
| | | | | | 2000 | 94.7 | +1.2±1.6 |
| 4000 | 94.4 | +1.0±1.6 | | | | | |

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 | | | |
| 35-138.8 | dBC | SPL | Fast | 94 | 31.5 | 91.5 | -3.0±2.0 |
| | | | | | 63 | 93.6 | -0.8±1.5 |
| | | | | | 125 | 94.1 | -0.2±1.5 |
| | | | | | 250 | 94.2 | -0.0±1.4 |
| | | | | | 500 | 94.2 | -0.0±1.4 |
| | | | | | 1000 | 94.0 | Ref |
| | | | | | 2000 | 93.3 | -0.2±1.6 |
| 4000 | 92.6 | -0.8±1.6 | | | | | |



Certificate No.: APJ23-155-CC003

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 | ± 0.05 |
| | 63 Hz | ± 0.05 |
| | 125 Hz | ± 0.05 |
| | 250 Hz | ± 0.05 |
| | 500 Hz | ± 0.05 |
| | 1000 Hz | ± 0.05 |
| | 2000 Hz | ± 0.05 |
| | 4000 Hz | ± 0.05 |
| 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: *SVANTEK*
Type No.: *971 (Serial No.: C132261)*
Microphone: *ACO 7052E (Serial No.: 79778)*
Preamplifier: *SV 18 (Serial No.:97276)*

Submitted by:

Customer: *Aurecon Hong Kong Limited*
Address: *Unit 1608, 16/F, Tower B, Manulife Financial Centre,
223-231 Wai Yip Street,
Kwun Tong, 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: 23 October 2024

Date of calibration: 24 October 2024


Date of NEXT calibration: 23 October 2025

Calibrated by:



Calibration Technician

Certified by:



Mr. Ng Yan Wa
Laboratory Manager

Date of issue: 24 October 2024

Certificate No.: APJ23-155-CC005



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: 24.8 °C
 Air Pressure: 1007 hPa
 Relative Humidity: 54.9 %

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 | |
| 35-137 | 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 | |
| 35-137 | dBA SPL | Fast | 94 | 1000 | 94.0 | Ref | |
| | | | 104 | | 104.0 | ±0.3 | |
| | | | 114 | | 114.0 | ±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 | |
| 35-137 | dBA SPL | Fast | 94 | 1000 | 94.0 | Ref | |
| | | Slow | | | 94.0 | ±0.3 | |



Certificate No.: APJ23-155-CC005

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 | | | |
| 35-137 | dB | SPL | Fast | 94 | 31.5 | 94.6 | ±2.0 |
| | | | | | 63 | 94.5 | ±1.5 |
| | | | | | 125 | 94.4 | ±1.5 |
| | | | | | 250 | 94.3 | ±1.4 |
| | | | | | 500 | 94.2 | ±1.4 |
| | | | | | 1000 | 94.0 | Ref |
| | | | | | 2000 | 93.9 | ±1.6 |
| | | | | | 4000 | 95.5 | ±1.6 |
| | | | | 8000 | 92.3 | +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 | | | |
| 35-137 | dBA | SPL | Fast | 94 | 31.5 | 55.3 | -39.4±2.0 |
| | | | | | 63 | 68.4 | -26.2±1.5 |
| | | | | | 125 | 78.3 | -16.1±1.5 |
| | | | | | 250 | 85.7 | -8.6±1.4 |
| | | | | | 500 | 91.0 | -3.2±1.4 |
| | | | | | 1000 | 94.0 | Ref |
| | | | | | 2000 | 95.2 | +1.2±1.6 |
| | | | | | 4000 | 96.5 | +1.0±1.6 |
| | | | | 8000 | 91.4 | -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 | | | |
| 35-137 | dBC | SPL | Fast | 94 | 31.5 | 91.6 | -3.0±2.0 |
| | | | | | 63 | 93.7 | -0.8±1.5 |
| | | | | | 125 | 94.3 | -0.2±1.5 |
| | | | | | 250 | 94.3 | -0.0±1.4 |
| | | | | | 500 | 94.3 | -0.0±1.4 |
| | | | | | 1000 | 94.0 | Ref |
| | | | | | 2000 | 93.8 | -0.2±1.6 |
| | | | | | 4000 | 94.7 | -0.8±1.6 |
| | | | | 8000 | 89.5 | -3.0+2.1; -3.1 | |



Certificate No.: APJ23-155-CC005

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 | ± 0.10 |
| | 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 of Calibration

for

Description: *Sound Level Meter*
Manufacturer: *SVANTEK*
Type No.: *SVAN 971 (Serial No.: 103482)*
Microphone: *ACO 7052E (Serial No.: 90365)*
Preamplifier: *SV-18 (Serial No.: 149618)*

Submitted by:

Customer: *Aurecon Hong Kong Limited*
Address: *Unit 1608, 16/F, Tower B, Manulife Financial Centre,
223-231 Wai Yip Street,
Kwun Tong, Kowloon, Hong Kong*

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

- Within (31.5Hz – 4kHz)**
 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: 22 July 2024

Date of calibration: 24 July 2024

Date of NEXT calibration: 23 July 2025

Calibrated by: 
Calibration Technician

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

Date of issue: 24 July 2024



Certificate No.: APJ24-043-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: 56.7 %

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 | | |
| 35-137.2 | 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 | | |
| 35-137.2 | dBA SPL | Fast | 94 | 1000 | 94.0 | Ref |
| | | | 104 | | 104.0 | ±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 | | |
| 35-137.2 | dBA SPL | Fast | 94 | 1000 | 94.0 | Ref |
| | | Slow | | | 94.0 | ±0.3 |

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 | | | |
| 35-137.2 | dB | SPL | Fast | 94 | 31.5 | 94.6 | ±2.0 |
| | | | | | 63 | 94.5 | ±1.5 |
| | | | | | 125 | 94.4 | ±1.5 |
| | | | | | 250 | 94.3 | ±1.4 |
| | | | | | 500 | 94.2 | ±1.4 |
| | | | | | 1000 | 94.0 | Ref |
| | | | | | 2000 | 93.4 | ±1.6 |
| | | | | | 4000 | 93.0 | ±1.6 |

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 | | | |
| 35-137.2 | dBA | SPL | Fast | 94 | 31.5 | 55.3 | -39.4±2.0 |
| | | | | | 63 | 68.3 | -26.2±1.5 |
| | | | | | 125 | 78.3 | -16.1±1.5 |
| | | | | | 250 | 85.7 | -8.6±1.4 |
| | | | | | 500 | 91.0 | -3.2±1.4 |
| | | | | | 1000 | 94.0 | Ref |
| | | | | | 2000 | 94.6 | +1.2±1.6 |
| | | | | | 4000 | 94.0 | +1.0±1.6 |

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 | | | |
| 35-137.2 | dBC | SPL | Fast | 94 | 31.5 | 91.6 | -3.0±2.0 |
| | | | | | 63 | 93.6 | -0.8±1.5 |
| | | | | | 125 | 94.2 | -0.2±1.5 |
| | | | | | 250 | 94.3 | -0.0±1.4 |
| | | | | | 500 | 94.2 | -0.0±1.4 |
| | | | | | 1000 | 94.0 | Ref |
| | | | | | 2000 | 93.3 | -0.2±1.6 |
| | | | | | 4000 | 92.2 | -0.8±1.6 |



Certificate No.: APJ24-043-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 | ± 0.05 |
| | 125 Hz | ± 0.05 |
| | 250 Hz | ± 0.05 |
| | 500 Hz | ± 0.05 |
| | 1000 Hz | ± 0.05 |
| | 2000 Hz | ± 0.05 |
| | 4000 Hz | ± 0.05 |
| 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 Calibrator*
Manufacturer: *RION*
Type No.: *NC-75*
Serial No.: *34524163*

Submitted by:

Customer: *Aurecon Hong Kong Limited*
Address: *Unit 1608, 16/F, Tower B, Manulife Financial Centre,
223-231 Wai Yip Street, Kwun Tong,
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: 22 July 2024

Date of calibration: 24 July 2024

Date of NEXT calibration: 23 July 2025

Calibrated by: _____

Calibration Technician

Certified by: _____

Mr. Ng Yan Wa
Laboratory Manager

Date of issue: 24 July 2024



Certificate No.: APJ24-010-CC001

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: 23.4 °C
Air Pressure: 1005 hPa
Relative Humidity: 56.7 %

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 | AV230128 | 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.

