

Calibration Certificate

Issued By: Castle Group Ltd

Date Of Issue : 13/06/17

Certificate No : 00000/00000

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All instruments are tested to check compliance with particular specifications. These specifications may be appropriate British Standards, or if the instrument was not originally designed to meet any British Standard, or when the instrument was originally manufactured a relevant British Standard did not exist, the instrument will be tested to the manufacturer's original specification.

Absolute acoustic calibration of acoustic calibrators and sound level meters is checked at one or more standard frequencies against an independent sound source with calibration directly traceable to the National Physical Laboratory (NPL) in the United Kingdom. The NPL reference applicable for the calibration of the test equipment is shown below.

The performance of the instrument was determined by comparison with the manufacturers' specification as found in the instrument handbook or other technical publication. Any significant uncertainty of the measuring system will also be included.

The instrument was allowed to stabilise for a period of 30 minutes prior to measurements made.

The ambient temperature and relative humidity throughout calibration were 25 ± 2 °C and 50% RH respectively.

Instruments used to carry out this calibration are as follows: -

Multifunction Calibrator 4226 Serial No: 1551589

Applicable Reference: S6645.

Subject of Calibration: GA117

Instrument: Integrating Sound Level Meter

Serial No: 00000

Preamplifier Data

Preamplifier Type: SV18

Preamplifier Serial No: 00000

Microphone Data

Microphone Type: ACO 7052E

Microphone Serial No: 00000

Basis Of Test: Compliance to IEC 61672-1 : 2002 Class 1, & IEC 61260: 1995 Class 1

Calibrated By:

A N Engineer

(Approved Signatory)

Date of Calibration: 13 Jun 2017

Completed Status: Pass

Checked By:

A N O Engineer

(Approved Signatory)

Recalibration Due: 01 Jul 2018

Client: End User Company Name

Address: Place
Street
Location
Town
County
Postcode

Client Reference: If Applicable

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CALIBRATION RESULTS

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ACOUSTICAL RESPONSE TO SUPPLIED CALIBRATOR

The following reading was obtained from the supplied calibrator. Type: Serial Number:

| Frequency | Reference | Indicated SPL | Adjusted SPL |
|-----------|-----------|---------------|--------------|
| 1kHz | 94.0 dBA | dBA | dBA * |

*Includes microphone cavity correction at 1kHz. Calibrate to this level when used with supplied calibrator.

ACOUSTICAL REFERENCE

The method of calibration employed was a direct-coupled acoustic reference source.

| Frequency | Reference | Indicated SPL | Adjusted SPL |
|-----------|-----------|---------------|--------------|
| 1kHz | 94.0 dBA | dBA | 94.0dBA |

ACOUSTICAL SCALING

The method of calibration employed was a direct-coupled acoustic reference source.

| SPL (1KHz) | HIGH RANGE | TOLERANCE |
|-------------|------------|-----------|
| 94 dBA | dBA | ± 0.7dB |
| 104 dBA | dBA | ± 0.7dB |
| 114 dBA | dBA | ± 0.7dB |

ACOUSTICAL RANGE

The method of calibration employed was a direct-coupled acoustic reference source.

| SPL (1KHz) | Low Range | High Range | TOLERANCE |
|------------|-----------|------------|-----------|
| 94 dBA | dBA | dBA | ± 0.5 dB |

FREQUENCY WEIGHTING

The method of calibration employed was a direct-coupled acoustic reference source.

| FREQ (Hz) | 1K | 2K | 4K | 8K | 12.5K | 500 | 250 | 125 | 63 | 31.5 |
|-----------|--------|--------|--------|------------|------------|--------|--------|--------|--------|--------|
| A (dB) | | | | | | | | | | |
| C (dB) | | | | | | | | | | |
| Z (dB) | | | | | | | | | | |
| TOL ± | 1.0 dB | 1.0 dB | 1.0 dB | +1.5, -3dB | +3.0, -6dB | 1.0 dB | 1.0 dB | 1.0 dB | 1.5 dB | 1.5 dB |

TIME WEIGHTING

TONE BURST The method employed was a direct electrical signal injection on the reference range.

| Time Weighting Tone Burst | Reference Level (dBA) -3dB WRT FSD | Response | Tolerance |
|------------------------------|---------------------------------------|----------|---------------|
| Fast (200 ms) | 131.0dBA (Ref -1dB) | dBA | ± 0.8dB |
| Fast (2 ms) | 114.0dBA (Ref -18 dB) | dBA | +1.3, -1.8 dB |
| Fast (0.25 ms) | 105.0dBA (Ref - 27 dB) | dBA | +1.3, -3.3 dB |
| Slow (200 ms) | 124.6dBA (Ref -7.4 dB) | dBA | ± 0.8dB |
| Slow (2 ms) | 105.0dBA (Ref -27 dB) | dBA | +1.3, -3.3 dB |

Uncertainties of the measurement

The uncertainties in the table of results correspond to an estimated confidence probability of not less than 95%.

* Notes

CALIBRATION RESULTS

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LINEARITY RESPONSE The method employed was a direct electrical signal injection on the reference range.

| SPL (8KHz) 10 dB Steps WRT scale | | SPL (8KHz) 10 dB Steps WRT scale +5 | | SPL (8KHz) 1 dB Steps WRT MSD for 10dB | | SPL (8KHz) 1 dB Steps WRT FSD for 10dB | |
|-------------------------------------|---------|--|---------|---|---------|---|---------|
| Target | Reading | Target | Reading | Target | Reading | Target | Reading |
| 35.0 | | 40.0 | | 36.0 | | 126.0 | |
| 45.0 | | 50.0 | | 37.0 | | 127.0 | |
| 55.0 | | 60.0 | | 38.0 | | 128.0 | |
| 65.0 | | 70.0 | | 39.0 | | 129.0 | |
| 75.0 | | 80.0 | | 40.0 | | 130.0 | |
| 85.0 | | 90.0 | | 41.0 | | 131.0 | |
| 95.0 | | 100.0 | | 42.0 | | 132.0 | |
| 105.0 | | 110.0 | | 43.0 | | 133.0 | |
| 115.0 | | 120.0 | | 44.0 | | 134.0 | |
| 125.0 | | 130.0 | | | | | |
| 135.0 | | | | | | | |

LINEARITY RESPONSE The method employed was a direct electrical signal injection on the reference range.

| LEQ (8KHz) 10 dB Steps WRT scale | | LEQ (8KHz) 10 dB Steps WRT scale +5 | | LEQ (8KHz) 1 dB Steps WRT MSD for 10dB | | LEQ (8KHz) 1 dB Steps WRT FSD for 10dB | |
|-------------------------------------|---------|--|---------|---|---------|---|---------|
| Target | Reading | Target | Reading | Target | Reading | Target | Reading |
| 35.0 | | 40.0 | | 36.0 | | 126.0 | |
| 45.0 | | 50.0 | | 37.0 | | 127.0 | |
| 55.0 | | 60.0 | | 38.0 | | 128.0 | |
| 65.0 | | 70.0 | | 39.0 | | 129.0 | |
| 75.0 | | 80.0 | | 40.0 | | 130.0 | |
| 85.0 | | 90.0 | | 41.0 | | 131.0 | |
| 95.0 | | 100.0 | | 42.0 | | 132.0 | |
| 105.0 | | 110.0 | | 43.0 | | 133.0 | |
| 115.0 | | 120.0 | | 44.0 | | 134.0 | |
| 125.0 | | 130.0 | | | | | |
| 135.0 | | | | | | | |

TIME AVERAGING

TONE BURST The method employed was a direct electrical signal injection on the reference range.

| Tone Burst Duty Factor | Target Level (dBA) | Response | Tolerance |
|------------------------|--------------------|----------|-----------|
| 1/1000 (60 Seconds) | 105.0dBA (FSD-30) | dBA | ± 1.0dB |
| 1/10,000 (6 Minutes) | 95.0dBA (FSD-40) | dBA | ± 1.0dB |

Uncertainties of the measurement

The uncertainties in the table of results correspond to an estimated confidence probability of not less than 95%.

* Notes