
CALIBRATION OF:

Sound Level Meter 2238-4188-BZ7126 No: 2246375
Microphone: 4188 No: 2231305
Identification:
Date of receipt: 05/03/2012
Certificate No: 19/12

CLIENT:

fakulta, z
xy, 093 00 z

Order No: 319264

CALIBRATION CONDITIONS:

Preconditioning: 12 hours at 23 °C
Environment conditions
Air temperature: 24 °C ± 3°C
Air pressure: 99.8 kPa ± 3 kPa
Relative Humidity: 40 %RH ± 20 %RH

SPECIFICATIONS:

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC 651 and IEC 804 type 1234, and vendor specific procedures.

PROCEDURE:

The measurements have been performed with the assistance of:
Brüel & Kjær Sound Level Meter Calibration System B&K 3630

RESULTS:

The reported expanded uncertainty is based on the 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 EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

Date of Calibration: 5/3/2012

Certificate issued: 5/3/2012

JAROMIR KUPCOK

Calibration Technician

JAROMIR KUPCOK

Approved signatory

Summary

| | |
|--|---------------|
| Absolute Acoustical Sensitivity Level | <i>Passed</i> |
| Frequency Response Measured in Acoustic Coupler, FW A | <i>Passed</i> |
| Frequency Response Measured in Acoustic Coupler, FW C | <i>Passed</i> |
| Frequency Response Measured in Acoustic Coupler, FW Lin | <i>Passed</i> |
| Electrical Inherent Noise Level, FW A | <i>Passed</i> |
| Electrical Inherent Noise Level, FW C | <i>Passed</i> |
| Electrical Inherent Noise Level, FW Lin | <i>Passed</i> |
| Determining Electrical Level for LRef @1kHz | <i>Passed</i> |
| Frequency Response measured with Electrical Signal, FW A | <i>Passed</i> |
| Frequency Response measured with Electrical Signal, FW C | <i>Passed</i> |
| Frequency Response measured with Electrical Signal, FW Lin | <i>Passed</i> |
| Level Range Control, 1000 Hz | <i>Passed</i> |
| Linearity Range, IEC60651, 1000 Hz, SPL 1 dB steps | <i>Passed</i> |
| Linearity Range, IEC60651, 4000 Hz, SPL 10 dB steps | <i>Passed</i> |
| Linearity Range, IEC60804, Leq | <i>Passed</i> |
| Linearity Range, IEC60804, SEL | <i>Passed</i> |
| Time Weighting, Difference in Reference Level Indication | <i>Passed</i> |
| Time Weighting, Response to Single Burst, 200 ms, F | <i>Passed</i> |
| Time Weighting, Response to Single Burst, 500 ms, S | <i>Passed</i> |
| Time Weighting, Response to Single Burst, 20 ms, I | <i>Passed</i> |

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| Time Weighting, Response to Single Burst, 5 ms, I | Passed |
| Time Weighting, Response to Single Burst, 2 ms, I | Passed |
| Time Weighting, Response to a Continuous Sequence of Bursts, 100 Hz | Passed |
| Time Weighting, Response to a Continuous Sequence of Bursts, 20 Hz | Passed |
| Time Weighting, Response to a Continuous Sequence of Bursts, 2 Hz | Passed |
| Time Weighting, Peak | Passed |
| RMS Detector, Sine Burst, CF3 | Passed |
| RMS Detector, Sine Burst, CF5 | Passed |
| RMS Detector, Sine Burst, CF10 | Passed |
| Time Averaging, Leq- SEL | Passed |
| Pulse Range, Leq-SEL | Passed |
| Overload Indication, Sine Signals, Inverse A | Passed |
| Overload Indication, 4kHz Tone burst | Passed |

The verdict “Passed/Failed” does not take the calibration uncertainty into consideration; therefore this certificate is not a conformance statement. “Passed” only means that the measured value is within the limits stated on the certificate (in most cases equal to the IEC tolerance).

Instruments

| <u>Category:</u> | <u>Type:</u> | <u>Manufacturer:</u> | <u>Serial No.:</u> | <u>Last Calibration date:</u> | <u>Traceable to:</u> |
|-------------------|--------------------|----------------------|--------------------|-------------------------------|----------------------|
| Generator | Pulse Generator | Brüel & Kjær | 2273615 | 27/11/2010 | PTB, DFM |
| Burst Generator | 5918 Generator | Brüel & Kjær | 1920181 | 27/11/2010 | PTB, DFM |
| Voltmeter | DMM34970A | Agilent | ? | 16/11/2011 | |
| Calibrator | 4226 | Brüel & Kjær | 2272353 | 26/11/2010 | DPLA & PTB |
| Amplifier/Divider | 3111 Output Module | Brüel & Kjær | | 26/11/2010 | |
| Adaptor | WA0302 A, 13 pF | Brüel & Kjær | | 21/5/2010 | B&K |

Absolute Acoustical Sensitivity Level

The response of the sound level meter to a sinusoidal sound pressure signal at the calibration frequency and at the calibration level of the sound level meter is registered.

| | Coupler Pressure Lc | Mic. Correction C4226 | Body Influence Cbi | Expected | Measured | Accept - Limit | Accept + Limit | Deviation | Uncertainty |
|-----------------|---------------------------|-----------------------------|--------------------------|----------|----------|-------------------|-------------------|-----------|-------------|
| | [dB SPL] | [dB] | [dB] | [dB SPL] | [dB SPL] | [dB] | [dB] | [dB] | [dB] |
| Ref. Conditions | 93.97 | 0.20 | 0.00 | 93.77 | 93.8 | -1.0 | 1.0 | 0.0 | 0.28 |

Frequency Response Measured in Acoustic Coupler, FW A

The response of the sound level meter to sinusoidal sound pressure signals at the calibration level at 1 kHz and at other frequencies is registered. From this the free field frequency response of for the sound level meter is calculated. The frequency response is calculated for other frequencies than 1 kHz relative to the response at 1 kHz. Expected response is calculated as Sound Pressure Level in the Acoustic Calibrator minus Free-Field-Correction and minus Body-Influence-Correction. The results are compared to the nominal frequency weighting.

| | Coupler Pressure Lc | Mic. Correction C4226 | Body Influence Cbi | Expected | Measured | Accept - Limit | Accept + Limit | Deviation | Uncertainty |
|----------|---------------------------|-----------------------------|--------------------------|----------|----------|-------------------|-------------------|-----------|-------------|
| | [dB SPL] | [dB] | [dB] | [dB SPL] | [dB SPL] | [dB] | [dB] | [dB] | [dB] |
| 1000Hz | 93.97 | 0.20 | 0.00 | 93.77 | 93.8 | -1.0 | 1.0 | 0.0 | 0.28 |
| 31.623Hz | 93.35 | 0.00 | 0.00 | 53.98 | 55.2 | -1.5 | 1.5 | 1.2 | 0.25 |
| 63.096Hz | 93.84 | 0.00 | 0.00 | 67.67 | 68.0 | -1.5 | 1.5 | 0.3 | 0.25 |
| 125.89Hz | 93.90 | 0.00 | 0.10 | 77.73 | 77.9 | -1.0 | 1.0 | 0.2 | 0.25 |
| 251.19Hz | 93.95 | 0.00 | 0.20 | 85.18 | 85.3 | -1.0 | 1.0 | 0.1 | 0.25 |
| 501.19Hz | 93.97 | 0.00 | 0.20 | 90.60 | 90.6 | -1.0 | 1.0 | 0.0 | 0.25 |
| 1995.3Hz | 94.00 | 0.35 | 0.00 | 94.88 | 94.8 | -1.0 | 1.0 | -0.1 | 0.30 |
| 3981.1Hz | 93.88 | 1.25 | 0.10 | 93.56 | 93.8 | -1.0 | 1.0 | 0.2 | 0.33 |
| 7943.3Hz | 93.57 | 4.00 | 0.00 | 88.50 | 88.9 | -3.0 | 1.5 | 0.4 | 0.50 |
| 12589Hz | 93.29 | 7.20 | 0.20 | 81.62 | 81.8 | -6.0 | 3.0 | 0.2 | 0.60 |

Frequency Response Measured in Acoustic Coupler, FW C

The response of the sound level meter to sinusoidal sound pressure signals at the calibration level at 1 kHz and at other frequencies is registered. From this the free field frequency response of for the sound level meter is calculated. The frequency response is calculated for other frequencies than 1 kHz relative to the response at 1 kHz. Expected response is calculated as Sound Pressure Level in the Acoustic Calibrator minus Free-Field-Correction and minus Body-Influence-Correction. The results are compared to the nominal frequency weighting.

| | Coupler Pressure Lc | Mic. Correction C4226 | Body Influence Cbi | Expected | Measured | Accept - Limit | Accept + Limit | Deviation | Uncertainty |
|--|---------------------------|-----------------------------|--------------------------|----------|----------|-------------------|-------------------|-----------|-------------|
| | [dB SPL] | [dB] | [dB] | [dB SPL] | [dB SPL] | [dB] | [dB] | [dB] | [dB] |

| | | | | | | | | | |
|----------|-------|------|------|-------|------|------|-----|------|------|
| 1000Hz | 93.97 | 0.20 | 0.00 | 93.77 | 93.8 | -1.0 | 1.0 | 0.0 | 0.28 |
| 31.623Hz | 93.35 | 0.00 | 0.00 | 90.38 | 91.4 | -1.5 | 1.5 | 1.0 | 0.25 |
| 63.096Hz | 93.84 | 0.00 | 0.00 | 93.07 | 93.4 | -1.5 | 1.5 | 0.3 | 0.25 |
| 125.89Hz | 93.90 | 0.00 | 0.10 | 93.63 | 93.9 | -1.0 | 1.0 | 0.3 | 0.25 |
| 251.19Hz | 93.95 | 0.00 | 0.20 | 93.78 | 94.0 | -1.0 | 1.0 | 0.2 | 0.25 |
| 501.19Hz | 93.97 | 0.00 | 0.20 | 93.80 | 93.9 | -1.0 | 1.0 | 0.1 | 0.25 |
| 1995.3Hz | 94.00 | 0.35 | 0.00 | 93.48 | 93.4 | -1.0 | 1.0 | -0.1 | 0.30 |
| 3981.1Hz | 93.88 | 1.25 | 0.10 | 91.76 | 92.0 | -1.0 | 1.0 | 0.2 | 0.33 |
| 7943.3Hz | 93.57 | 4.00 | 0.00 | 86.60 | 87.0 | -3.0 | 1.5 | 0.4 | 0.50 |
| 12589Hz | 93.29 | 7.20 | 0.20 | 79.72 | 80.0 | -6.0 | 3.0 | 0.3 | 0.60 |

Frequency Response Measured in Acoustic Coupler, FW Lin

The response of the sound level meter to sinusoidal sound pressure signals at the calibration level at 1 kHz and at other frequencies is registered. From this the free field frequency response of for the sound level meter is calculated. The frequency response is calculated for other frequencies than 1 kHz relative to the response at 1 kHz. Expected response is calculated as Sound Pressure Level in the Acoustic Calibrator minus Free-Field-Correction and minus Body-Influence-Correction. The results are compared to the nominal frequency weighting.

| | Coupler Pressure Lc [dB SPL] | Mic. Correction C4226 [dB] | Body Influence Cbi [dB] | Expected [dB SPL] | Measured [dB SPL] | Accept - Limit [dB] | Accept + Limit [dB] | Deviation [dB] | Uncertainty [dB] |
|----------|---------------------------------------|-------------------------------------|----------------------------------|----------------------|----------------------|---------------------------|---------------------------|-------------------|---------------------|
| 1000Hz | 93.97 | 0.20 | 0.00 | 93.77 | 93.9 | -1.0 | 1.0 | 0.1 | 0.28 |
| 31.623Hz | 93.35 | 0.00 | 0.00 | 93.48 | 94.5 | -1.5 | 1.5 | 1.0 | 0.25 |
| 63.096Hz | 93.84 | 0.00 | 0.00 | 93.97 | 94.4 | -1.5 | 1.5 | 0.4 | 0.25 |
| 125.89Hz | 93.90 | 0.00 | 0.10 | 93.93 | 94.3 | -1.0 | 1.0 | 0.4 | 0.25 |
| 251.19Hz | 93.95 | 0.00 | 0.20 | 93.88 | 94.1 | -1.0 | 1.0 | 0.2 | 0.25 |
| 501.19Hz | 93.97 | 0.00 | 0.20 | 93.90 | 94.1 | -1.0 | 1.0 | 0.2 | 0.25 |
| 1995.3Hz | 94.00 | 0.35 | 0.00 | 93.78 | 93.8 | -1.0 | 1.0 | 0.0 | 0.30 |
| 3981.1Hz | 93.88 | 1.25 | 0.10 | 92.66 | 93.1 | -1.0 | 1.0 | 0.4 | 0.33 |
| 7943.3Hz | 93.57 | 4.00 | 0.00 | 89.70 | 90.5 | -3.0 | 1.5 | 0.8 | 0.50 |
| 12589Hz | 93.29 | 7.20 | 0.20 | 86.02 | 87.0 | -6.0 | 3.0 | 1.0 | 0.60 |

Electrical Inherent Noise Level, FW A

The connection from the electrical input adaptor to the generator is substituted with a short-circuit and the reading of the sound level meter is registered. It is verified that the reading is sufficiently low so as to indicate that the inherent noise do not affect the linearity of the sound level meter.

| | Max [dB SPL] | Measured [dB SPL] | Deviation [dB] | Uncertainty [dB] |
|-------|-----------------|----------------------|-------------------|---------------------|
| Noise | 18.0 | 0.0 | -18.0 | 1.00 |

Electrical Inherent Noise Level, FW C

The connection from the electrical input adaptor to the generator is substituted with a short-circuit and the reading of the sound level meter is registered. It is verified that the reading is sufficiently low so as to indicate that the inherent noise do not affect the linearity of the sound level meter.

| | Max [dB SPL] | Measured [dB SPL] | Deviation [dB] | Uncertainty [dB] |
|-------|-----------------|----------------------|-------------------|---------------------|
| Noise | 20.0 | 0.0 | -20.0 | 1.00 |

Electrical Inherent Noise Level, FW Lin

The connection from the electrical input adaptor to the generator is substituted with a short-circuit and the reading of the sound level meter is registered. It is verified that the reading is sufficiently low so as to indicate that the inherent noise do not affect the linearity of the sound level meter.

| | Max [dB SPL] | Measured [dB SPL] | Deviation [dB] | Uncertainty [dB] |
|-------|-----------------|----------------------|-------------------|---------------------|
| Noise | 25.0 | 21.6 | -3.4 | 1.00 |

Determining Electrical Level for LRef @1kHz

The response to an electrical input signal level corresponding to the expected response at a sound pressure level of 94 dB is registered. All electrical signals are set relative to this response.

| | Expected [dB SPL] | Measured [dB SPL] | Accept - Limit [dB] | Accept + Limit [dB] | Deviation [dB] | Uncertainty [dB] |
|------|----------------------|----------------------|------------------------|---------------------------|-------------------|---------------------|
| Ref. | 94.0 | 94.1 | -2.0 | 2.0 | 0.1 | 0.10 |

Frequency Response measured with Electrical Signal, FW A

The response of the sound level meter to sinusoidal voltage signals at 1 kHz and at other frequencies is registered. The frequency response is calculated for other frequencies than 1 kHz relative to the response at 1 kHz. The results are compared to the nominal frequency weighting.

| | Expected [dB SPL] | Measured [dB SPL] | Accept - Limit [dB] | Accept + Limit [dB] | Deviation [dB] | Uncertainty [dB] |
|----------|----------------------|----------------------|------------------------|---------------------------|-------------------|---------------------|
| 1000Hz | 125.0 | 124.9 | -1.0 | 1.0 | -0.1 | 0.12 |
| 10Hz | 54.5 | 54.3 | -100.0 | 3.0 | -0.2 | 0.12 |
| 12.58Hz | 61.5 | 61.5 | -100.0 | 3.0 | 0.0 | 0.12 |
| 15.84Hz | 68.2 | 68.1 | -100.0 | 3.0 | -0.1 | 0.12 |
| 19.95Hz | 74.4 | 74.4 | -3.0 | 3.0 | 0.0 | 0.12 |
| 25.19Hz | 80.2 | 80.4 | -2.0 | 2.0 | 0.2 | 0.12 |
| 31.623Hz | 85.5 | 85.6 | -1.5 | 1.5 | 0.1 | 0.12 |

| | | | | | | |
|----------|-------|-------|--------|-----|-----|------|
| 39.811Hz | 90.3 | 90.4 | -1.5 | 1.5 | 0.1 | 0.12 |
| 50.119Hz | 94.7 | 94.7 | -1.5 | 1.5 | 0.0 | 0.12 |
| 63.096Hz | 98.7 | 98.8 | -1.5 | 1.5 | 0.1 | 0.12 |
| 79.433Hz | 102.4 | 102.5 | -1.5 | 1.5 | 0.1 | 0.12 |
| 100Hz | 105.8 | 105.8 | -1.0 | 1.0 | 0.0 | 0.12 |
| 125.89Hz | 108.8 | 108.8 | -1.0 | 1.0 | 0.0 | 0.12 |
| 158.49Hz | 111.5 | 111.6 | -1.0 | 1.0 | 0.1 | 0.12 |
| 199.53Hz | 114.0 | 114.1 | -1.0 | 1.0 | 0.1 | 0.12 |
| 251.19Hz | 116.3 | 116.3 | -1.0 | 1.0 | 0.0 | 0.12 |
| 316.23Hz | 118.3 | 118.3 | -1.0 | 1.0 | 0.0 | 0.12 |
| 398.11Hz | 120.1 | 120.1 | -1.0 | 1.0 | 0.0 | 0.12 |
| 501.19Hz | 121.7 | 121.7 | -1.0 | 1.0 | 0.0 | 0.12 |
| 630.96Hz | 123.0 | 123.0 | -1.0 | 1.0 | 0.0 | 0.12 |
| 794.33Hz | 124.1 | 124.1 | -1.0 | 1.0 | 0.0 | 0.12 |
| 1258.9Hz | 125.5 | 125.5 | -1.0 | 1.0 | 0.0 | 0.12 |
| 1584.9Hz | 125.9 | 125.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 1995.3Hz | 126.1 | 126.1 | -1.0 | 1.0 | 0.0 | 0.12 |
| 2511.9Hz | 126.2 | 126.2 | -1.0 | 1.0 | 0.0 | 0.12 |
| 3162.3Hz | 126.1 | 126.1 | -1.0 | 1.0 | 0.0 | 0.12 |
| 3981.1Hz | 125.9 | 125.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 5011.9Hz | 125.4 | 125.4 | -1.5 | 1.5 | 0.0 | 0.12 |
| 6309.6Hz | 124.8 | 124.8 | -2.0 | 1.5 | 0.0 | 0.12 |
| 7943.3Hz | 123.8 | 123.8 | -3.0 | 1.5 | 0.0 | 0.12 |
| 10000Hz | 122.4 | 122.4 | -4.0 | 2.0 | 0.0 | 0.12 |
| 12589Hz | 120.6 | 120.6 | -6.0 | 3.0 | 0.0 | 0.12 |
| 15849Hz | 118.3 | 118.4 | -100.0 | 3.0 | 0.1 | 0.12 |
| 19953Hz | 115.6 | 115.7 | -100.0 | 3.0 | 0.1 | 0.12 |

Frequency Response measured with Electrical Signal, FW C

The response of the sound level meter to sinusoidal voltage signals at 1 kHz and at other frequencies is registered. The frequency response is calculated for other frequencies than 1 kHz relative to the response at 1 kHz. The results are compared to the nominal frequency weighting.

| | Expected | Measured | Accept - Limit | Accept + Limit | Deviation | Uncertainty |
|----------|----------|----------|----------------|----------------|-----------|-------------|
| | [dB SPL] | [dB SPL] | [dB] | [dB] | [dB] | [dB] |
| 1000Hz | 125.0 | 124.9 | -1.0 | 1.0 | -0.1 | 0.12 |
| 10Hz | 110.6 | 110.2 | -100.0 | 3.0 | -0.4 | 0.12 |
| 12.58Hz | 113.7 | 113.6 | -100.0 | 3.0 | -0.1 | 0.12 |
| 15.84Hz | 116.4 | 116.3 | -100.0 | 3.0 | -0.1 | 0.12 |
| 19.95Hz | 118.7 | 118.7 | -3.0 | 3.0 | 0.0 | 0.12 |
| 25.19Hz | 120.5 | 120.7 | -2.0 | 2.0 | 0.2 | 0.12 |
| 31.623Hz | 121.9 | 122.0 | -1.5 | 1.5 | 0.1 | 0.12 |
| 39.811Hz | 122.9 | 123.0 | -1.5 | 1.5 | 0.1 | 0.12 |
| 50.119Hz | 123.6 | 123.7 | -1.5 | 1.5 | 0.1 | 0.12 |
| 63.096Hz | 124.1 | 124.1 | -1.5 | 1.5 | 0.0 | 0.12 |
| 79.433Hz | 124.4 | 124.5 | -1.5 | 1.5 | 0.1 | 0.12 |
| 100Hz | 124.6 | 124.6 | -1.0 | 1.0 | 0.0 | 0.12 |
| 125.89Hz | 124.7 | 124.7 | -1.0 | 1.0 | 0.0 | 0.12 |
| 158.49Hz | 124.8 | 124.8 | -1.0 | 1.0 | 0.0 | 0.12 |

| | | | | | | |
|----------|-------|-------|--------|-----|-----|------|
| 199.53Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 251.19Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 316.23Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 398.11Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 501.19Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 630.96Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 794.33Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 1258.9Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 1584.9Hz | 124.8 | 124.8 | -1.0 | 1.0 | 0.0 | 0.12 |
| 1995.3Hz | 124.7 | 124.7 | -1.0 | 1.0 | 0.0 | 0.12 |
| 2511.9Hz | 124.6 | 124.6 | -1.0 | 1.0 | 0.0 | 0.12 |
| 3162.3Hz | 124.4 | 124.4 | -1.0 | 1.0 | 0.0 | 0.12 |
| 3981.1Hz | 124.1 | 124.1 | -1.0 | 1.0 | 0.0 | 0.12 |
| 5011.9Hz | 123.6 | 123.6 | -1.5 | 1.5 | 0.0 | 0.12 |
| 6309.6Hz | 122.9 | 122.9 | -2.0 | 1.5 | 0.0 | 0.12 |
| 7943.3Hz | 121.9 | 121.9 | -3.0 | 1.5 | 0.0 | 0.12 |
| 10000Hz | 120.5 | 120.5 | -4.0 | 2.0 | 0.0 | 0.12 |
| 12589Hz | 118.7 | 118.7 | -6.0 | 3.0 | 0.0 | 0.12 |
| 15849Hz | 116.4 | 116.5 | -100.0 | 3.0 | 0.1 | 0.12 |
| 19953Hz | 113.7 | 113.8 | -100.0 | 3.0 | 0.1 | 0.12 |

Frequency Response measured with Electrical Signal, FW Lin

The response of the sound level meter to sinusoidal voltage signals at 1 kHz and at other frequencies is registered. The frequency response is calculated for other frequencies than 1 kHz relative to the response at 1 kHz. The results are compared to the nominal frequency weighting.

| | Expected | Measured | Accept - Limit | Accept + Limit | Deviation | Uncertainty |
|----------|----------|----------|----------------|----------------|-----------|-------------|
| | [dB SPL] | [dB SPL] | [dB] | [dB] | [dB] | [dB] |
| 1000Hz | 125.0 | 124.9 | -1.0 | 1.0 | -0.1 | 0.12 |
| 10Hz | 124.9 | 124.5 | -100.0 | 3.0 | -0.4 | 0.12 |
| 12.58Hz | 124.9 | 124.8 | -100.0 | 3.0 | -0.1 | 0.12 |
| 15.84Hz | 124.9 | 124.9 | -100.0 | 3.0 | 0.0 | 0.12 |
| 19.95Hz | 124.9 | 124.9 | -3.0 | 3.0 | 0.0 | 0.12 |
| 25.19Hz | 124.9 | 125.0 | -2.0 | 2.0 | 0.1 | 0.12 |
| 31.623Hz | 124.9 | 125.0 | -1.5 | 1.5 | 0.1 | 0.12 |
| 39.811Hz | 124.9 | 124.9 | -1.5 | 1.5 | 0.0 | 0.12 |
| 50.119Hz | 124.9 | 124.9 | -1.5 | 1.5 | 0.0 | 0.12 |
| 63.096Hz | 124.9 | 124.9 | -1.5 | 1.5 | 0.0 | 0.12 |
| 79.433Hz | 124.9 | 125.0 | -1.5 | 1.5 | 0.1 | 0.12 |
| 100Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 125.89Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 158.49Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 199.53Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 251.19Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 316.23Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 398.11Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 501.19Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 630.96Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 794.33Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |

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|----------|-------|-------|--------|-----|------|------|
| 1258.9Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 1584.9Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 1995.3Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 2511.9Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 3162.3Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 3981.1Hz | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.12 |
| 5011.9Hz | 124.9 | 125.0 | -1.5 | 1.5 | 0.1 | 0.12 |
| 6309.6Hz | 124.9 | 125.0 | -2.0 | 1.5 | 0.1 | 0.12 |
| 7943.3Hz | 124.9 | 125.1 | -3.0 | 1.5 | 0.2 | 0.12 |
| 10000Hz | 124.9 | 125.2 | -4.0 | 2.0 | 0.3 | 0.12 |
| 12589Hz | 124.9 | 125.2 | -6.0 | 3.0 | 0.3 | 0.12 |
| 15849Hz | 124.9 | 124.8 | -100.0 | 3.0 | -0.1 | 0.12 |
| 19953Hz | 124.9 | 122.8 | -100.0 | 3.0 | -2.1 | 0.12 |

Level Range Control, 1000 Hz

The response of the sound level meter to a sinusoidal voltage signal is registered in each of the level ranges of the sound level meter. The relative response to the response in the reference level range is calculated for each level range, and the relative response is compared to the anticipated relative response.

| | Expected | Measured | Accept - Limit | Accept + Limit | Deviation | Uncertainty |
|--------------------|----------|----------|----------------|----------------|-----------|-------------|
| | [dB SPL] | [dB SPL] | [dB] | [dB] | [dB] | [dB] |
| Ref. | 94.0 | 94.0 | -1.0 | 1.0 | 0.0 | 0.12 |
| Meas. in range 140 | 104.0 | 104.0 | -0.5 | 0.5 | 0.0 | 0.12 |
| Meas. in range 120 | 84.0 | 84.0 | -0.5 | 0.5 | 0.0 | 0.12 |
| Meas. in range 110 | 74.0 | 74.0 | -0.5 | 0.5 | 0.0 | 0.12 |
| Meas. in range 100 | 64.0 | 64.0 | -0.5 | 0.5 | 0.0 | 0.12 |

Linearity Range, IEC60651, 1000 Hz, SPL 1 dB steps

The response of the sound level meter to sinusoidal voltage signals is registered for various levels covering the reference level range, including a level nominally corresponding to L_{ref} at the measurement frequency. From this the response at the other levels is calculated relative to the response at the level corresponding to L_{ref} . The relative response is compared to the anticipated relative response. For each level the difference between the responses at the level and at the previous level is also calculated in order to determine differential level linearity.

| | Expected | Measured | Accept - Limit | Accept + Limit | Deviation | Uncertainty |
|------------------|----------|----------|----------------|----------------|-----------|-------------|
| | [dB SPL] | [dB SPL] | [dB] | [dB] | [dB] | [dB] |
| 94 dB | 94.0 | 94.0 | -1.0 | 1.0 | 0.0 | 0.12 |
| 52 dB. Rel. Ref. | 52.0 | 52.2 | -0.7 | 0.7 | 0.2 | 0.12 |
| 53 dB. Rel. Ref. | 53.0 | 53.2 | -0.7 | 0.7 | 0.2 | 0.12 |
| 53 dB. Diff. | 53.2 | 53.2 | -0.2 | 0.2 | 0.0 | 0.12 |
| 54 dB. Rel. Ref. | 54.0 | 54.2 | -0.7 | 0.7 | 0.2 | 0.12 |
| 54 dB. Diff. | 54.2 | 54.2 | -0.2 | 0.2 | 0.0 | 0.12 |
| 55 dB. Rel. Ref. | 55.0 | 55.2 | -0.7 | 0.7 | 0.2 | 0.12 |

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| | | | | | | |
|------------------|------|------|------|-----|------|------|
| 55 dB. Diff. | 55.2 | 55.2 | -0.2 | 0.2 | 0.0 | 0.12 |
| 56 dB. Rel. Ref. | 56.0 | 56.2 | -0.7 | 0.7 | 0.2 | 0.12 |
| 56 dB. Diff. | 56.2 | 56.2 | -0.2 | 0.2 | 0.0 | 0.12 |
| 57 dB. Rel. Ref. | 57.0 | 57.2 | -0.7 | 0.7 | 0.2 | 0.12 |
| 57 dB. Diff. | 57.2 | 57.2 | -0.2 | 0.2 | 0.0 | 0.12 |
| 58 dB. Rel. Ref. | 58.0 | 58.2 | -0.7 | 0.7 | 0.2 | 0.12 |
| 58 dB. Diff. | 58.2 | 58.2 | -0.2 | 0.2 | 0.0 | 0.12 |
| 59 dB. Rel. Ref. | 59.0 | 59.2 | -0.7 | 0.7 | 0.2 | 0.12 |
| 59 dB. Diff. | 59.2 | 59.2 | -0.2 | 0.2 | 0.0 | 0.12 |
| 60 dB. Rel. Ref. | 60.0 | 60.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 60 dB. Diff. | 60.2 | 60.1 | -0.2 | 0.2 | -0.1 | 0.12 |
| 61 dB. Rel. Ref. | 61.0 | 61.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 61 dB. Diff. | 61.1 | 61.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 62 dB. Rel. Ref. | 62.0 | 62.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 62 dB. Diff. | 62.1 | 62.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 63 dB. Rel. Ref. | 63.0 | 63.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 63 dB. Diff. | 63.1 | 63.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 64 dB. Rel. Ref. | 64.0 | 64.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 64 dB. Diff. | 64.1 | 64.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 65 dB. Rel. Ref. | 65.0 | 65.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 65 dB. Diff. | 65.1 | 65.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 66 dB. Rel. Ref. | 66.0 | 66.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 66 dB. Diff. | 66.1 | 66.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 67 dB. Rel. Ref. | 67.0 | 67.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 67 dB. Diff. | 67.1 | 67.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 68 dB. Rel. Ref. | 68.0 | 68.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 68 dB. Diff. | 68.1 | 68.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 69 dB. Rel. Ref. | 69.0 | 69.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 69 dB. Diff. | 69.1 | 69.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 70 dB. Rel. Ref. | 70.0 | 70.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 70 dB. Diff. | 70.1 | 70.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 71 dB. Rel. Ref. | 71.0 | 71.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 71 dB. Diff. | 71.1 | 71.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 72 dB. Rel. Ref. | 72.0 | 72.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 72 dB. Diff. | 72.1 | 72.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 73 dB. Rel. Ref. | 73.0 | 73.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 73 dB. Diff. | 73.1 | 73.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 74 dB. Rel. Ref. | 74.0 | 74.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 74 dB. Diff. | 74.1 | 74.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 75 dB. Rel. Ref. | 75.0 | 75.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 75 dB. Diff. | 75.1 | 75.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 76 dB. Rel. Ref. | 76.0 | 76.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 76 dB. Diff. | 76.1 | 76.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 77 dB. Rel. Ref. | 77.0 | 77.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 77 dB. Diff. | 77.1 | 77.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 78 dB. Rel. Ref. | 78.0 | 78.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 78 dB. Diff. | 78.1 | 78.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 79 dB. Rel. Ref. | 79.0 | 79.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 79 dB. Diff. | 79.1 | 79.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 80 dB. Rel. Ref. | 80.0 | 80.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 80 dB. Diff. | 80.1 | 80.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 81 dB. Rel. Ref. | 81.0 | 81.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 81 dB. Diff. | 81.1 | 81.1 | -0.2 | 0.2 | 0.0 | 0.12 |

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|-------------------|-------|-------|------|-----|------|------|
| 82 dB. Rel. Ref. | 82.0 | 82.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 82 dB. Diff. | 82.1 | 82.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 83 dB. Rel. Ref. | 83.0 | 83.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 83 dB. Diff. | 83.1 | 83.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 84 dB. Rel. Ref. | 84.0 | 84.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 84 dB. Diff. | 84.1 | 84.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 85 dB. Rel. Ref. | 85.0 | 85.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 85 dB. Diff. | 85.1 | 85.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 86 dB. Rel. Ref. | 86.0 | 86.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 86 dB. Diff. | 86.1 | 86.1 | -0.2 | 0.2 | 0.0 | 0.12 |
| 87 dB. Rel. Ref. | 87.0 | 87.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 87 dB. Diff. | 87.1 | 87.0 | -0.2 | 0.2 | -0.1 | 0.12 |
| 88 dB. Rel. Ref. | 88.0 | 88.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 88 dB. Diff. | 88.0 | 88.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 89 dB. Rel. Ref. | 89.0 | 89.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 89 dB. Diff. | 89.0 | 89.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 90 dB. Rel. Ref. | 90.0 | 90.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 90 dB. Diff. | 90.0 | 90.1 | -0.2 | 0.2 | 0.1 | 0.12 |
| 91 dB. Rel. Ref. | 91.0 | 91.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 91 dB. Diff. | 91.1 | 91.0 | -0.2 | 0.2 | -0.1 | 0.12 |
| 92 dB. Rel. Ref. | 92.0 | 92.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 92 dB. Diff. | 92.0 | 92.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 93 dB. Rel. Ref. | 93.0 | 93.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 93 dB. Diff. | 93.0 | 93.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 95 dB. Rel. Ref. | 95.0 | 95.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 95 dB. Diff. | 95.0 | 95.0 | -0.4 | 0.4 | 0.0 | 0.12 |
| 96 dB. Rel. Ref. | 96.0 | 96.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 96 dB. Diff. | 96.0 | 96.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 97 dB. Rel. Ref. | 97.0 | 97.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 97 dB. Diff. | 97.0 | 97.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 98 dB. Rel. Ref. | 98.0 | 98.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 98 dB. Diff. | 98.0 | 98.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 99 dB. Rel. Ref. | 99.0 | 99.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 99 dB. Diff. | 99.0 | 99.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 100 dB. Rel. Ref. | 100.0 | 100.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 100 dB. Diff. | 100.0 | 100.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 101 dB. Rel. Ref. | 101.0 | 101.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 101 dB. Diff. | 101.0 | 101.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 102 dB. Rel. Ref. | 102.0 | 102.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 102 dB. Diff. | 102.0 | 102.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 103 dB. Rel. Ref. | 103.0 | 103.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 103 dB. Diff. | 103.0 | 103.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 104 dB. Rel. Ref. | 104.0 | 104.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 104 dB. Diff. | 104.0 | 104.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 105 dB. Rel. Ref. | 105.0 | 105.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 105 dB. Diff. | 105.0 | 105.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 106 dB. Rel. Ref. | 106.0 | 106.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 106 dB. Diff. | 106.0 | 106.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 107 dB. Rel. Ref. | 107.0 | 107.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 107 dB. Diff. | 107.0 | 107.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 108 dB. Rel. Ref. | 108.0 | 108.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 108 dB. Diff. | 108.0 | 108.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 109 dB. Rel. Ref. | 109.0 | 109.0 | -0.7 | 0.7 | 0.0 | 0.12 |

| | | | | | | |
|-------------------|-------|-------|------|-----|------|------|
| 109 dB. Diff. | 109.0 | 109.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 110 dB. Rel. Ref. | 110.0 | 110.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 110 dB. Diff. | 110.0 | 110.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 111 dB. Rel. Ref. | 111.0 | 111.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 111 dB. Diff. | 111.0 | 111.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 112 dB. Rel. Ref. | 112.0 | 112.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 112 dB. Diff. | 112.0 | 112.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 113 dB. Rel. Ref. | 113.0 | 113.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 113 dB. Diff. | 113.0 | 113.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 114 dB. Rel. Ref. | 114.0 | 114.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 114 dB. Diff. | 114.0 | 114.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 115 dB. Rel. Ref. | 115.0 | 115.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 115 dB. Diff. | 115.0 | 115.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 116 dB. Rel. Ref. | 116.0 | 116.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 116 dB. Diff. | 116.0 | 116.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 117 dB. Rel. Ref. | 117.0 | 117.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 117 dB. Diff. | 117.0 | 117.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 118 dB. Rel. Ref. | 118.0 | 118.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 118 dB. Diff. | 118.0 | 118.0 | -0.2 | 0.2 | 0.0 | 0.12 |
| 119 dB. Rel. Ref. | 119.0 | 118.9 | -0.7 | 0.7 | -0.1 | 0.12 |
| 119 dB. Diff. | 119.0 | 118.9 | -0.2 | 0.2 | -0.1 | 0.12 |
| 120 dB. Rel. Ref. | 120.0 | 119.9 | -0.7 | 0.7 | -0.1 | 0.12 |
| 120 dB. Diff. | 119.9 | 119.9 | -0.2 | 0.2 | 0.0 | 0.12 |
| 121 dB. Rel. Ref. | 121.0 | 120.9 | -0.7 | 0.7 | -0.1 | 0.12 |
| 121 dB. Diff. | 120.9 | 120.9 | -0.2 | 0.2 | 0.0 | 0.12 |
| 122 dB. Rel. Ref. | 122.0 | 121.9 | -0.7 | 0.7 | -0.1 | 0.12 |
| 122 dB. Diff. | 121.9 | 121.9 | -0.2 | 0.2 | 0.0 | 0.12 |
| 123 dB. Rel. Ref. | 123.0 | 122.9 | -0.7 | 0.7 | -0.1 | 0.12 |
| 123 dB. Diff. | 122.9 | 122.9 | -0.2 | 0.2 | 0.0 | 0.12 |
| 124 dB. Rel. Ref. | 124.0 | 123.9 | -0.7 | 0.7 | -0.1 | 0.12 |
| 124 dB. Diff. | 123.9 | 123.9 | -0.2 | 0.2 | 0.0 | 0.12 |
| 125 dB. Rel. Ref. | 125.0 | 124.9 | -0.7 | 0.7 | -0.1 | 0.12 |
| 125 dB. Diff. | 124.9 | 124.9 | -0.2 | 0.2 | 0.0 | 0.12 |
| 126 dB. Rel. Ref. | 126.0 | 125.9 | -0.7 | 0.7 | -0.1 | 0.12 |
| 126 dB. Diff. | 125.9 | 125.9 | -0.2 | 0.2 | 0.0 | 0.12 |
| 127 dB. Rel. Ref. | 127.0 | 126.9 | -0.7 | 0.7 | -0.1 | 0.12 |
| 127 dB. Diff. | 126.9 | 126.9 | -0.2 | 0.2 | 0.0 | 0.12 |
| 128 dB. Rel. Ref. | 128.0 | 127.9 | -0.7 | 0.7 | -0.1 | 0.12 |
| 128 dB. Diff. | 127.9 | 127.9 | -0.2 | 0.2 | 0.0 | 0.12 |
| 129 dB. Rel. Ref. | 129.0 | 128.8 | -0.7 | 0.7 | -0.2 | 0.12 |
| 129 dB. Diff. | 128.9 | 128.8 | -0.2 | 0.2 | -0.1 | 0.12 |
| 130 dB. Rel. Ref. | 130.0 | 129.8 | -0.7 | 0.7 | -0.2 | 0.12 |
| 130 dB. Diff. | 129.8 | 129.8 | -0.2 | 0.2 | 0.0 | 0.12 |

Linearity Range, IEC60651, 4000 Hz, SPL 10 dB steps

The response of the sound level meter to sinusoidal voltage signals is registered for various levels covering the reference level range, including a level nominally corresponding to L_{ref} at the measurement frequency. From this the response at the other levels is calculated relative to the response at the level

corresponding to Lref. The relative response is compared to the anticipated relative response. For each level the difference between the responses at the level and at the previous level is also calculated in order to determine differential level linearity.

| | Expected [dB SPL] | Measured [dB SPL] | Accept - Limit [dB] | Accept + Limit [dB] | Deviation [dB] | Uncertainty [dB] |
|-------------------|----------------------|----------------------|------------------------|---------------------------|-------------------|---------------------|
| 94 dB | 94.0 | 94.0 | -1.0 | 1.0 | 0.0 | 0.12 |
| 52 dB. Rel. Ref. | 52.0 | 52.2 | -0.7 | 0.7 | 0.2 | 0.12 |
| 60 dB. Rel. Ref. | 60.0 | 60.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 60 dB. Diff. | 60.2 | 60.1 | -0.4 | 0.4 | -0.1 | 0.12 |
| 70 dB. Rel. Ref. | 70.0 | 70.1 | -0.7 | 0.7 | 0.1 | 0.12 |
| 70 dB. Diff. | 70.1 | 70.1 | -0.4 | 0.4 | 0.0 | 0.12 |
| 80 dB. Rel. Ref. | 80.0 | 80.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 80 dB. Diff. | 80.1 | 80.0 | -0.4 | 0.4 | -0.1 | 0.12 |
| 90 dB. Rel. Ref. | 90.0 | 90.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 90 dB. Diff. | 90.0 | 90.0 | -0.4 | 0.4 | 0.0 | 0.12 |
| 100 dB. Rel. Ref. | 100.0 | 100.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 100 dB. Diff. | 100.0 | 100.0 | -0.4 | 0.4 | 0.0 | 0.12 |
| 110 dB. Rel. Ref. | 110.0 | 110.0 | -0.7 | 0.7 | 0.0 | 0.12 |
| 110 dB. Diff. | 110.0 | 110.0 | -0.4 | 0.4 | 0.0 | 0.12 |
| 120 dB. Rel. Ref. | 120.0 | 119.9 | -0.7 | 0.7 | -0.1 | 0.12 |
| 120 dB. Diff. | 120.0 | 119.9 | -0.4 | 0.4 | -0.1 | 0.12 |
| 130 dB. Rel. Ref. | 130.0 | 129.8 | -0.7 | 0.7 | -0.2 | 0.12 |
| 130 dB. Diff. | 129.9 | 129.8 | -0.4 | 0.4 | -0.1 | 0.12 |

Linearity Range, IEC60804, Leq

The response of the sound level meter to sinusoidal voltage signals is registered for various levels covering the reference level range, including a level nominally corresponding to Lref at the measurement frequency. From this the response at the other levels is calculated relative to the response at the level corresponding to Lref. The relative response is compared to the anticipated relative response. For each level the difference between the responses at the level and at the previous level is also calculated in order to determine differential level linearity.

| | Expected [dB Leq] | Measured [dB Leq] | Accept - Limit [dB] | Accept + Limit [dB] | Deviation [dB] | Uncertainty [dB] |
|-------------------|----------------------|----------------------|------------------------|---------------------------|-------------------|---------------------|
| 94 dB | 94.0 | 93.9 | -1.0 | 1.0 | -0.1 | 0.12 |
| 52 dB. Rel. Ref. | 51.9 | 52.0 | -0.7 | 0.7 | 0.1 | 0.12 |
| 60 dB. Rel. Ref. | 59.9 | 60.0 | -0.7 | 0.7 | 0.1 | 0.12 |
| 70 dB. Rel. Ref. | 69.9 | 70.0 | -0.7 | 0.7 | 0.1 | 0.12 |
| 80 dB. Rel. Ref. | 79.9 | 80.0 | -0.7 | 0.7 | 0.1 | 0.12 |
| 90 dB. Rel. Ref. | 89.9 | 89.9 | -0.7 | 0.7 | 0.0 | 0.12 |
| 100 dB. Rel. Ref. | 99.9 | 99.9 | -0.7 | 0.7 | 0.0 | 0.12 |
| 110 dB. Rel. Ref. | 109.9 | 109.9 | -0.7 | 0.7 | 0.0 | 0.12 |
| 120 dB. Rel. Ref. | 119.9 | 119.8 | -0.7 | 0.7 | -0.1 | 0.12 |
| 130 dB. Rel. Ref. | 129.9 | 129.7 | -0.7 | 0.7 | -0.2 | 0.12 |

Linearity Range, IEC60804, SEL

The sound exposure level reading of the sound level meter when exposed to single 4 kHz tonebursts of 1 s duration is registered for various levels of the toneburst covering the reference level range and including a burst with a peak level of $V_{ref} + 2$ dB corresponding to a sound exposure level of L_{ref} . From this the response at other sound exposure levels than L_{ref} is calculated relative to the response at L_{ref} . The relative response is compared to the anticipated relative response. The signal levels are defined relative to L_{min} . The measurements are carried out with A frequency weightings.

| | Expected [dB Leq] | Measured [dB Leq] | Accept - Limit [dB] | Accept + Limit [dB] | Deviation [dB] | Uncertainty [dB] |
|-------------------|----------------------|----------------------|------------------------|---------------------------|-------------------|---------------------|
| 94 dB | 94.0 | 93.9 | -1.0 | 1.0 | -0.1 | 0.15 |
| 54 dB. Rel. Ref. | 53.9 | 54.1 | -0.7 | 0.7 | 0.2 | 0.15 |
| 60 dB. Rel. Ref. | 59.9 | 60.1 | -0.7 | 0.7 | 0.2 | 0.15 |
| 70 dB. Rel. Ref. | 69.9 | 70.0 | -0.7 | 0.7 | 0.1 | 0.15 |
| 80 dB. Rel. Ref. | 79.9 | 80.0 | -0.7 | 0.7 | 0.1 | 0.15 |
| 90 dB. Rel. Ref. | 89.9 | 89.9 | -0.7 | 0.7 | 0.0 | 0.15 |
| 100 dB. Rel. Ref. | 99.9 | 99.9 | -0.7 | 0.7 | 0.0 | 0.15 |
| 110 dB. Rel. Ref. | 109.9 | 109.9 | -0.7 | 0.7 | 0.0 | 0.15 |
| 120 dB. Rel. Ref. | 119.9 | 119.8 | -0.7 | 0.7 | -0.1 | 0.15 |
| 130 dB. Rel. Ref. | 129.9 | 129.7 | -0.7 | 0.7 | -0.2 | 0.15 |

Time Weighting, Difference in Reference Level Indication

The response of the sound level meter to a steady 1 kHz sinusoidal voltage signal at the reference level is registered for each timeweighting available in the sound level meter. The differences between the responses are calculated and compared to the maximum allowed differences.

| | Expected [dB SPL] | Measured [dB SPL] | Accept - Limit [dB] | Accept + Limit [dB] | Deviation [dB] | Uncertainty [dB] |
|---------------|----------------------|----------------------|------------------------|---------------------------|-------------------|---------------------|
| Ref. Fast | 94.0 | 94.0 | -1.0 | 1.0 | 0.0 | 0.11 |
| Meas. Slow | 94.0 | 94.0 | -0.1 | 0.1 | 0.0 | 0.11 |
| Meas. Impulse | 94.0 | 94.1 | -0.1 | 0.1 | 0.1 | 0.11 |

Time Weighting, Response to Single Burst, 200 ms, F

The maximum reading of the sound level meter when exposed to single tonebursts is registered for various burst durations. The toneburst response of the sound level meter is calculated as the maximum reading relative to the response of the sound level meter to a steady sinusoidal signal with the same frequency and peak voltage as the tonebursts. The response of the Sound Level Meter to a single burst is tested and compared to the anticipated response.

| | Expected [dB SPL] | Measured [dB SPL] | Accept - Limit [dB] | Accept + Limit [dB] | Deviation [dB] | Uncertainty [dB] |
|--------------------|----------------------|----------------------|------------------------|---------------------------|-------------------|---------------------|
| Ref. 126 dB | 126.0 | 125.9 | -1.0 | 1.0 | -0.1 | 0.20 |
| Burst Meas. 126 dB | 124.9 | 124.9 | -1.0 | 1.0 | 0.0 | 0.20 |

| | | | | | | |
|--------------------|-------|-------|------|-----|------|------|
| Ref. 116 dB | 116.0 | 116.0 | -1.0 | 1.0 | 0.0 | 0.20 |
| Burst Meas. 116 dB | 115.0 | 114.9 | -1.0 | 1.0 | -0.1 | 0.20 |
| Ref. 106 dB | 106.0 | 106.0 | -1.0 | 1.0 | 0.0 | 0.20 |
| Burst Meas. 106 dB | 105.0 | 105.0 | -1.0 | 1.0 | 0.0 | 0.20 |
| Ref. 96 dB | 96.0 | 96.0 | -1.0 | 1.0 | 0.0 | 0.20 |
| Burst Meas. 96 dB | 95.0 | 95.0 | -1.0 | 1.0 | 0.0 | 0.20 |
| Ref. 86 dB | 86.0 | 86.0 | -1.0 | 1.0 | 0.0 | 0.20 |
| Burst Meas. 86 dB | 85.0 | 85.0 | -1.0 | 1.0 | 0.0 | 0.20 |
| Ref. 76 dB | 76.0 | 76.1 | -1.0 | 1.0 | 0.1 | 0.20 |
| Burst Meas. 76 dB | 75.1 | 75.0 | -1.0 | 1.0 | -0.1 | 0.20 |
| Ref. 66 dB | 66.0 | 66.1 | -1.0 | 1.0 | 0.1 | 0.20 |
| Burst Meas. 66 dB | 65.1 | 65.1 | -1.0 | 1.0 | 0.0 | 0.20 |
| Ref. 56 dB | 56.0 | 56.2 | -1.0 | 1.0 | 0.2 | 0.20 |
| Burst Meas. 56 dB | 55.2 | 55.2 | -1.0 | 1.0 | 0.0 | 0.20 |

Time Weighting, Response to Single Burst, 500 ms, S

The maximum reading of the sound level meter when exposed to single tonebursts is registered for various burst durations. The toneburst response of the sound level meter is calculated as the maximum reading relative to the response of the sound level meter to a steady sinusoidal signal with the same frequency and peak voltage as the tonebursts. The response of the Sound Level Meter to a single burst is tested and compared to the anticipated response.

| | Expected [dB SPL] | Measured [dB SPL] | Accept - Limit [dB] | Accept + Limit [dB] | Deviation [dB] | Uncertainty [dB] |
|--------------------|----------------------|----------------------|------------------------|---------------------------|-------------------|---------------------|
| Ref. 126 dB | 126.0 | 125.9 | -1.0 | 1.0 | -0.1 | 0.25 |
| Burst Meas. 126 dB | 121.8 | 121.7 | -1.0 | 1.0 | -0.1 | 0.25 |
| Ref. 116 dB | 116.0 | 116.0 | -1.0 | 1.0 | 0.0 | 0.25 |
| Burst Meas. 116 dB | 111.9 | 111.9 | -1.0 | 1.0 | 0.0 | 0.25 |
| Ref. 106 dB | 106.0 | 106.0 | -1.0 | 1.0 | 0.0 | 0.25 |
| Burst Meas. 106 dB | 101.9 | 101.9 | -1.0 | 1.0 | 0.0 | 0.25 |
| Ref. 96 dB | 96.0 | 96.0 | -1.0 | 1.0 | 0.0 | 0.25 |
| Burst Meas. 96 dB | 91.9 | 91.8 | -1.0 | 1.0 | -0.1 | 0.25 |
| Ref. 86 dB | 86.0 | 86.0 | -1.0 | 1.0 | 0.0 | 0.25 |
| Burst Meas. 86 dB | 81.9 | 82.0 | -1.0 | 1.0 | 0.1 | 0.25 |
| Ref. 76 dB | 76.0 | 76.1 | -1.0 | 1.0 | 0.1 | 0.25 |
| Burst Meas. 76 dB | 72.0 | 72.0 | -1.0 | 1.0 | 0.0 | 0.25 |
| Ref. 66 dB | 66.0 | 66.1 | -1.0 | 1.0 | 0.1 | 0.25 |
| Burst Meas. 66 dB | 62.0 | 62.0 | -1.0 | 1.0 | 0.0 | 0.25 |
| Ref. 56 dB | 56.0 | 56.2 | -1.0 | 1.0 | 0.2 | 0.25 |
| Burst Meas. 56 dB | 52.1 | 52.2 | -1.0 | 1.0 | 0.1 | 0.25 |

Time Weighting, Response to Single Burst, 20 ms, I

The maximum reading of the sound level meter when exposed to single tonebursts is registered for various burst durations. The toneburst response of the sound level meter is calculated as the maximum

reading relative to the response of the sound level meter to a steady sinusoidal signal with the same frequency and peak voltage as the tonebursts. The response of the Sound Level Meter to a single burst is tested and compared to the anticipated response.

| | Expected [dB SPL] | Measured [dB SPL] | Accept - Limit [dB] | Accept + Limit [dB] | Deviation [dB] | Uncertainty [dB] |
|--------------------|----------------------|----------------------|------------------------|---------------------------|-------------------|---------------------|
| Ref. 130 dB | 130.0 | 129.8 | -1.0 | 1.0 | -0.2 | 0.35 |
| Burst Meas. 130 dB | 126.2 | 125.9 | -1.5 | 1.5 | -0.3 | 0.35 |
| Ref. 120 dB | 120.0 | 120.0 | -1.0 | 1.0 | 0.0 | 0.35 |
| Burst Meas. 120 dB | 116.4 | 116.5 | -1.5 | 1.5 | 0.1 | 0.35 |
| Ref. 110 dB | 110.0 | 110.0 | -1.0 | 1.0 | 0.0 | 0.35 |
| Burst Meas. 110 dB | 106.4 | 106.4 | -1.5 | 1.5 | 0.0 | 0.35 |
| Ref. 100 dB | 100.0 | 100.1 | -1.0 | 1.0 | 0.1 | 0.35 |
| Burst Meas. 100 dB | 96.5 | 96.4 | -1.5 | 1.5 | -0.1 | 0.35 |
| Ref. 90 dB | 90.0 | 90.1 | -1.0 | 1.0 | 0.1 | 0.35 |
| Burst Meas. 90 dB | 86.5 | 86.3 | -1.5 | 1.5 | -0.2 | 0.35 |
| Ref. 80 dB | 80.0 | 80.1 | -1.0 | 1.0 | 0.1 | 0.35 |
| Burst Meas. 80 dB | 76.5 | 76.6 | -1.5 | 1.5 | 0.1 | 0.35 |
| Ref. 70 dB | 70.0 | 70.1 | -1.0 | 1.0 | 0.1 | 0.35 |
| Burst Meas. 70 dB | 66.5 | 66.6 | -1.5 | 1.5 | 0.1 | 0.35 |
| Ref. 60 dB | 60.0 | 60.2 | -1.0 | 1.0 | 0.2 | 0.35 |
| Burst Meas. 60 dB | 56.6 | 56.5 | -1.5 | 1.5 | -0.1 | 0.35 |

Time Weighting, Response to Single Burst, 5 ms, I

The maximum reading of the sound level meter when exposed to single tonebursts is registered for various burst durations. The toneburst response of the sound level meter is calculated as the maximum reading relative to the response of the sound level meter to a steady sinusoidal signal with the same frequency and peak voltage as the tonebursts. The response of the Sound Level Meter to a single burst is tested and compared to the anticipated response.

| | Expected [dB SPL] | Measured [dB SPL] | Accept - Limit [dB] | Accept + Limit [dB] | Deviation [dB] | Uncertainty [dB] |
|--------------------|----------------------|----------------------|------------------------|---------------------------|-------------------|---------------------|
| Ref. 130 dB | 130.0 | 129.9 | -1.0 | 1.0 | -0.1 | 0.60 |
| Burst Meas. 130 dB | 121.1 | 120.5 | -2.0 | 2.0 | -0.6 | 0.60 |
| Ref. 120 dB | 120.0 | 120.0 | -1.0 | 1.0 | 0.0 | 0.60 |
| Burst Meas. 120 dB | 111.2 | 110.8 | -2.0 | 2.0 | -0.4 | 0.60 |
| Ref. 110 dB | 110.0 | 110.1 | -1.0 | 1.0 | 0.1 | 0.60 |
| Burst Meas. 110 dB | 101.3 | 101.5 | -2.0 | 2.0 | 0.2 | 0.60 |
| Ref. 100 dB | 100.0 | 100.1 | -1.0 | 1.0 | 0.1 | 0.60 |
| Burst Meas. 100 dB | 91.3 | 91.5 | -2.0 | 2.0 | 0.2 | 0.60 |
| Ref. 90 dB | 90.0 | 90.1 | -1.0 | 1.0 | 0.1 | 0.60 |
| Burst Meas. 90 dB | 81.3 | 81.0 | -2.0 | 2.0 | -0.3 | 0.60 |
| Ref. 80 dB | 80.0 | 80.1 | -1.0 | 1.0 | 0.1 | 0.60 |
| Burst Meas. 80 dB | 71.3 | 71.4 | -2.0 | 2.0 | 0.1 | 0.60 |
| Ref. 70 dB | 70.0 | 70.1 | -1.0 | 1.0 | 0.1 | 0.60 |
| Burst Meas. 70 dB | 61.3 | 60.9 | -2.0 | 2.0 | -0.4 | 0.60 |
| Ref. 60 dB | 60.0 | 60.2 | -1.0 | 1.0 | 0.2 | 0.60 |
| Burst Meas. 60 dB | 51.4 | 51.5 | -2.0 | 2.0 | 0.1 | 0.60 |

Time Weighting, Response to Single Burst, 2 ms, I

The maximum reading of the sound level meter when exposed to single tonebursts is registered for various burst durations. The toneburst response of the sound level meter is calculated as the maximum reading relative to the response of the sound level meter to a steady sinusoidal signal with the same frequency and peak voltage as the tonebursts. The response of the Sound Level Meter to a single burst is tested and compared to the anticipated response.

| | Expected [dB SPL] | Measured [dB SPL] | Accept - Limit [dB] | Accept + Limit [dB] | Deviation [dB] | Uncertainty [dB] |
|--------------------|----------------------|----------------------|------------------------|---------------------------|-------------------|---------------------|
| Ref. 130 dB | 130.0 | 129.8 | -1.0 | 1.0 | -0.2 | 0.60 |
| Burst Meas. 130 dB | 117.2 | 118.9 | -2.0 | 2.0 | 1.7 | 0.60 |
| Ref. 120 dB | 120.0 | 120.0 | -1.0 | 1.0 | 0.0 | 0.60 |
| Burst Meas. 120 dB | 107.4 | 109.0 | -2.0 | 2.0 | 1.6 | 0.60 |
| Ref. 110 dB | 110.0 | 110.0 | -1.0 | 1.0 | 0.0 | 0.60 |
| Burst Meas. 110 dB | 97.4 | 97.5 | -2.0 | 2.0 | 0.1 | 0.60 |
| Ref. 100 dB | 100.0 | 100.1 | -1.0 | 1.0 | 0.1 | 0.60 |
| Burst Meas. 100 dB | 87.5 | 87.5 | -2.0 | 2.0 | 0.0 | 0.60 |
| Ref. 90 dB | 90.0 | 90.1 | -1.0 | 1.0 | 0.1 | 0.60 |
| Burst Meas. 90 dB | 77.5 | 77.3 | -2.0 | 2.0 | -0.2 | 0.60 |
| Ref. 80 dB | 80.0 | 80.1 | -1.0 | 1.0 | 0.1 | 0.60 |
| Burst Meas. 80 dB | 67.5 | 67.7 | -2.0 | 2.0 | 0.2 | 0.60 |
| Ref. 70 dB | 70.0 | 70.1 | -1.0 | 1.0 | 0.1 | 0.60 |
| Burst Meas. 70 dB | 57.5 | 57.8 | -2.0 | 2.0 | 0.3 | 0.60 |

Time Weighting, Response to a Continuous Sequence of Bursts, 100 Hz

The response of the sound level meter to sequences of repeated tonebursts when measuring time-weighted sound level is registered for various toneburst repetition frequencies. The peak level of the tonebursts is held constant for all the signals, and the toneburst response of the sound level meter is calculated as the maximum reading relative to the response of the sound level meter to a steady sinusoidal signal with the same peak voltage as the tonebursts. The responses are compared to the anticipated responses.

| | Expected [dB SPL] | Measured [dB SPL] | Accept - Limit [dB] | Accept + Limit [dB] | Deviation [dB] | Uncertainty [dB] |
|--------------------|----------------------|----------------------|------------------------|---------------------------|-------------------|---------------------|
| Ref. 130 dB | 130.0 | 129.8 | -1.0 | 1.0 | -0.2 | 0.25 |
| Burst Meas. 130 dB | 127.1 | 127.1 | -1.0 | 1.0 | 0.0 | 0.25 |
| Ref. 120 dB | 120.0 | 120.0 | -1.0 | 1.0 | 0.0 | 0.25 |
| Burst Meas. 120 dB | 117.3 | 117.3 | -1.0 | 1.0 | 0.0 | 0.25 |
| Ref. 110 dB | 110.0 | 110.1 | -1.0 | 1.0 | 0.1 | 0.25 |
| Burst Meas. 110 dB | 107.4 | 107.3 | -1.0 | 1.0 | -0.1 | 0.25 |
| Ref. 100 dB | 100.0 | 100.1 | -1.0 | 1.0 | 0.1 | 0.25 |
| Burst Meas. 100 dB | 97.4 | 97.3 | -1.0 | 1.0 | -0.1 | 0.25 |
| Ref. 90 dB | 90.0 | 90.1 | -1.0 | 1.0 | 0.1 | 0.25 |

| | | | | | | |
|-------------------|------|------|------|-----|------|------|
| Burst Meas. 90 dB | 87.4 | 87.4 | -1.0 | 1.0 | 0.0 | 0.25 |
| Ref. 80 dB | 80.0 | 80.1 | -1.0 | 1.0 | 0.1 | 0.25 |
| Burst Meas. 80 dB | 77.4 | 77.3 | -1.0 | 1.0 | -0.1 | 0.25 |
| Ref. 70 dB | 70.0 | 70.1 | -1.0 | 1.0 | 0.1 | 0.25 |
| Burst Meas. 70 dB | 67.4 | 67.4 | -1.0 | 1.0 | 0.0 | 0.25 |
| Ref. 60 dB | 60.0 | 60.2 | -1.0 | 1.0 | 0.2 | 0.25 |
| Burst Meas. 60 dB | 57.5 | 57.5 | -1.0 | 1.0 | 0.0 | 0.25 |

Time Weighting, Response to a Continuous Sequence of Bursts, 20 Hz

The response of the sound level meter to sequences of repeated tonebursts when measuring time-weighted sound level is registered for various toneburst repetition frequencies. The peak level of the tonebursts is held constant for all the signals, and the toneburst response of the sound level meter is calculated as the maximum reading relative to the response of the sound level meter to a steady sinusoidal signal with the same peak voltage as the tonebursts. The responses are compared to the anticipated responses.

| | Expected [dB SPL] | Measured [dB SPL] | Accept - Limit [dB] | Accept + Limit [dB] | Deviation [dB] | Uncertainty [dB] |
|--------------------|----------------------|----------------------|------------------------|---------------------------|-------------------|---------------------|
| Ref. 130 dB | 130.0 | 129.9 | -1.0 | 1.0 | -0.1 | 0.45 |
| Burst Meas. 130 dB | 122.3 | 122.2 | -2.0 | 2.0 | -0.1 | 0.45 |
| Ref. 120 dB | 120.0 | 120.0 | -1.0 | 1.0 | 0.0 | 0.45 |
| Burst Meas. 120 dB | 112.4 | 112.2 | -2.0 | 2.0 | -0.2 | 0.45 |
| Ref. 110 dB | 110.0 | 110.0 | -1.0 | 1.0 | 0.0 | 0.45 |
| Burst Meas. 110 dB | 102.4 | 102.2 | -2.0 | 2.0 | -0.2 | 0.45 |
| Ref. 100 dB | 100.0 | 100.1 | -1.0 | 1.0 | 0.1 | 0.45 |
| Burst Meas. 100 dB | 92.5 | 92.5 | -2.0 | 2.0 | 0.0 | 0.45 |
| Ref. 90 dB | 90.0 | 90.1 | -1.0 | 1.0 | 0.1 | 0.45 |
| Burst Meas. 90 dB | 82.5 | 82.5 | -2.0 | 2.0 | 0.0 | 0.45 |
| Ref. 80 dB | 80.0 | 80.1 | -1.0 | 1.0 | 0.1 | 0.45 |
| Burst Meas. 80 dB | 72.5 | 72.6 | -2.0 | 2.0 | 0.1 | 0.45 |
| Ref. 70 dB | 70.0 | 70.1 | -1.0 | 1.0 | 0.1 | 0.45 |
| Burst Meas. 70 dB | 62.5 | 62.7 | -2.0 | 2.0 | 0.2 | 0.45 |
| Ref. 60 dB | 60.0 | 60.2 | -1.0 | 1.0 | 0.2 | 0.45 |
| Burst Meas. 60 dB | 52.6 | 52.4 | -2.0 | 2.0 | -0.2 | 0.45 |

Time Weighting, Response to a Continuous Sequence of Bursts, 2 Hz

The response of the sound level meter to sequences of repeated tonebursts when measuring time-weighted sound level is registered for various toneburst repetition frequencies. The peak level of the tonebursts is held constant for all the signals, and the toneburst response of the sound level meter is calculated as the maximum reading relative to the response of the sound level meter to a steady sinusoidal signal with the same peak voltage as the tonebursts. The responses are compared to the anticipated responses.

| Expected | Measured | Accept - Limit | Accept + Limit | Deviation | Uncertainty |
|----------|----------|----------------|-------------------|-----------|-------------|
|----------|----------|----------------|-------------------|-----------|-------------|

| | [dB SPL] | [dB SPL] | [dB] | [dB] | [dB] | [dB] |
|--------------------|----------|----------|------|------|------|------|
| Ref. 130 dB | 130.0 | 129.8 | -1.0 | 1.0 | -0.2 | 0.45 |
| Burst Meas. 130 dB | 121.0 | 121.2 | -2.0 | 2.0 | 0.2 | 0.45 |
| Ref. 120 dB | 120.0 | 120.0 | -1.0 | 1.0 | 0.0 | 0.45 |
| Burst Meas. 120 dB | 111.2 | 111.0 | -2.0 | 2.0 | -0.2 | 0.45 |
| Ref. 110 dB | 110.0 | 110.0 | -1.0 | 1.0 | 0.0 | 0.45 |
| Burst Meas. 110 dB | 101.2 | 100.9 | -2.0 | 2.0 | -0.3 | 0.45 |
| Ref. 100 dB | 100.0 | 100.1 | -1.0 | 1.0 | 0.1 | 0.45 |
| Burst Meas. 100 dB | 91.3 | 91.3 | -2.0 | 2.0 | 0.0 | 0.45 |
| Ref. 90 dB | 90.0 | 90.1 | -1.0 | 1.0 | 0.1 | 0.45 |
| Burst Meas. 90 dB | 81.3 | 81.0 | -2.0 | 2.0 | -0.3 | 0.45 |
| Ref. 80 dB | 80.0 | 80.1 | -1.0 | 1.0 | 0.1 | 0.45 |
| Burst Meas. 80 dB | 71.3 | 71.2 | -2.0 | 2.0 | -0.1 | 0.45 |
| Ref. 70 dB | 70.0 | 70.1 | -1.0 | 1.0 | 0.1 | 0.45 |
| Burst Meas. 70 dB | 61.3 | 61.4 | -2.0 | 2.0 | 0.1 | 0.45 |
| Ref. 60 dB | 60.0 | 60.2 | -1.0 | 1.0 | 0.2 | 0.45 |
| Burst Meas. 60 dB | 51.4 | 51.7 | -2.0 | 2.0 | 0.3 | 0.45 |

Time Weighting, Peak

The peak level indication of the sound level meter when exposed to rectangular pulses of different duration is registered. The peak level indicated for a rectangular pulse of short duration is compared to the peak level indicated for a rectangular pulse of duration 10 ms. The measurements are carried out with both positive and negative going pulses. The peak level of the signal is 1 dB below the upper limit of the reference range.

| | Expected | Measured | Accept - Limit | Accept + Limit | Deviation | Uncertainty |
|-----------|----------|----------|----------------|----------------|-----------|-------------|
| | [dB SPL] | [dB SPL] | [dB] | [dB] | [dB] | [dB] |
| Ref. POS | 129.0 | 129.7 | -2.0 | 2.0 | 0.7 | 0.09 |
| Meas. POS | 129.7 | 129.7 | -2.0 | 2.0 | 0.0 | 0.09 |
| Ref. NEG | 129.0 | 129.7 | -2.0 | 2.0 | 0.7 | 0.09 |
| Meas. NEG | 129.7 | 129.7 | -2.0 | 2.0 | 0.0 | 0.09 |

RMS Detector, Sine Burst, CF3

The response of the sound level meter to sequences of repeated tonebursts when measuring time-weighted sound level is registered for various toneburst durations of the individual tonebursts. The peak level is held constant for all the signals and the repetition frequency is 40 Hz i.e. different crest factors. The responses are compared to the anticipated responses.

| | Expected | Measured | Accept - Limit | Accept + Limit | Deviation | Uncertainty |
|--------------------|----------|----------|----------------|----------------|-----------|-------------|
| | [dB SPL] | [dB SPL] | [dB] | [dB] | [dB] | [dB] |
| Ref. 128 dB | 128.0 | 127.8 | -1.0 | 1.0 | -0.2 | 0.25 |
| Burst Meas. 128 dB | 121.3 | 121.3 | -0.5 | 0.5 | 0.0 | 0.25 |
| Ref. 118 dB | 118.0 | 118.0 | -1.0 | 1.0 | 0.0 | 0.25 |
| Burst Meas. 118 dB | 111.5 | 111.5 | -0.5 | 0.5 | 0.0 | 0.25 |

| | | | | | | |
|--------------------|-------|-------|------|-----|------|------|
| Ref. 108 dB | 108.0 | 108.0 | -1.0 | 1.0 | 0.0 | 0.25 |
| Burst Meas. 108 dB | 101.5 | 101.5 | -0.5 | 0.5 | 0.0 | 0.25 |
| Ref. 98 dB | 98.0 | 98.1 | -1.0 | 1.0 | 0.1 | 0.25 |
| Burst Meas. 98 dB | 91.6 | 91.5 | -0.5 | 0.5 | -0.1 | 0.25 |
| Ref. 88 dB | 88.0 | 88.1 | -1.0 | 1.0 | 0.1 | 0.25 |
| Burst Meas. 88 dB | 81.6 | 81.5 | -0.5 | 0.5 | -0.1 | 0.25 |
| Ref. 78 dB | 78.0 | 78.1 | -1.0 | 1.0 | 0.1 | 0.25 |
| Burst Meas. 78 dB | 71.6 | 71.6 | -0.5 | 0.5 | 0.0 | 0.25 |
| Ref. 68 dB | 68.0 | 68.1 | -1.0 | 1.0 | 0.1 | 0.25 |
| Burst Meas. 68 dB | 61.6 | 61.6 | -0.5 | 0.5 | 0.0 | 0.25 |

RMS Detector, Sine Burst, CF5

The response of the sound level meter to sequences of repeated tonebursts when measuring time-weighted sound level is registered for various toneburst durations of the individual tonebursts. The peak level is held constant for all the signals and the repetition frequency is 40 Hz i.e. different crest factors. The responses are compared to the anticipated responses.

| | Expected | Measured | Accept - Limit | Accept + Limit | Deviation | Uncertainty |
|--------------------|----------|----------|----------------|----------------|-----------|-------------|
| | [dB SPL] | [dB SPL] | [dB] | [dB] | [dB] | [dB] |
| Ref. 128 dB | 128.0 | 127.8 | -1.0 | 1.0 | -0.2 | 0.25 |
| Burst Meas. 128 dB | 116.9 | 116.8 | -1.0 | 1.0 | -0.1 | 0.25 |
| Ref. 118 dB | 118.0 | 117.9 | -1.0 | 1.0 | -0.1 | 0.25 |
| Burst Meas. 118 dB | 107.0 | 106.9 | -1.0 | 1.0 | -0.1 | 0.25 |
| Ref. 108 dB | 108.0 | 108.0 | -1.0 | 1.0 | 0.0 | 0.25 |
| Burst Meas. 108 dB | 97.1 | 97.3 | -1.0 | 1.0 | 0.2 | 0.25 |
| Ref. 98 dB | 98.0 | 98.0 | -1.0 | 1.0 | 0.0 | 0.25 |
| Burst Meas. 98 dB | 87.1 | 87.2 | -1.0 | 1.0 | 0.1 | 0.25 |
| Ref. 88 dB | 88.0 | 88.0 | -1.0 | 1.0 | 0.0 | 0.25 |
| Burst Meas. 88 dB | 77.1 | 77.4 | -1.0 | 1.0 | 0.3 | 0.25 |
| Ref. 78 dB | 78.0 | 78.1 | -1.0 | 1.0 | 0.1 | 0.25 |
| Burst Meas. 78 dB | 67.2 | 67.3 | -1.0 | 1.0 | 0.1 | 0.25 |
| Ref. 68 dB | 68.0 | 68.1 | -1.0 | 1.0 | 0.1 | 0.25 |
| Burst Meas. 68 dB | 57.2 | 57.2 | -1.0 | 1.0 | 0.0 | 0.25 |

RMS Detector, Sine Burst, CF10

The response of the sound level meter to sequences of repeated tonebursts when measuring time-weighted sound level is registered for various toneburst durations of the individual tonebursts. The peak level is held constant for all the signals and the repetition frequency is 40 Hz i.e. different crest factors. The responses are compared to the anticipated responses.

| | Expected | Measured | Accept - Limit | Accept + Limit | Deviation | Uncertainty |
|--------------------|----------|----------|----------------|----------------|-----------|-------------|
| | [dB SPL] | [dB SPL] | [dB] | [dB] | [dB] | [dB] |
| Ref. 128 dB | 128.0 | 127.8 | -1.0 | 1.0 | -0.2 | 0.25 |
| Burst Meas. 128 dB | 110.9 | 110.9 | -1.5 | 1.5 | 0.0 | 0.25 |

| | | | | | | |
|--------------------|-------|-------|------|-----|------|------|
| Ref. 118 dB | 118.0 | 117.9 | -1.0 | 1.0 | -0.1 | 0.25 |
| Burst Meas. 118 dB | 101.0 | 101.1 | -1.5 | 1.5 | 0.1 | 0.25 |
| Ref. 108 dB | 108.0 | 108.0 | -1.0 | 1.0 | 0.0 | 0.25 |
| Burst Meas. 108 dB | 91.1 | 91.4 | -1.5 | 1.5 | 0.3 | 0.25 |
| Ref. 98 dB | 98.0 | 98.0 | -1.0 | 1.0 | 0.0 | 0.25 |
| Burst Meas. 98 dB | 81.1 | 81.4 | -1.5 | 1.5 | 0.3 | 0.25 |
| Ref. 88 dB | 88.0 | 88.0 | -1.0 | 1.0 | 0.0 | 0.25 |
| Burst Meas. 88 dB | 71.1 | 71.2 | -1.5 | 1.5 | 0.1 | 0.25 |
| Ref. 78 dB | 78.0 | 78.1 | -1.0 | 1.0 | 0.1 | 0.25 |
| Burst Meas. 78 dB | 61.2 | 61.0 | -1.5 | 1.5 | -0.2 | 0.25 |

Time Averaging, Leq-SEL

The response of the sound level meter to sequences of repeated 4 kHz tonebursts when measuring time-average sound level or sound exposure level is registered for various toneburst repetition frequencies and durations of the individual tonebursts. The peak level of the tonebursts is adjusted so that the time-average level is constant for all the signals. The responses are compared to the anticipated responses.

| | Expected | Measured | Accept - Limit | Accept + Limit | Deviation | Uncertainty |
|-------------|----------|----------|----------------|----------------|-----------|-------------|
| | [dB Leq] | [dB Leq] | [dB] | [dB] | [dB] | [dB] |
| Ref. Cont. | 70.0 | 70.0 | -1.0 | 1.0 | 0.0 | 0.20 |
| Leq 1/10 | 70.0 | 69.9 | -0.5 | 0.5 | -0.1 | 0.20 |
| SEL 1/10 | 87.8 | 87.7 | -0.5 | 0.5 | -0.1 | 0.20 |
| Leq 1/100 | 70.0 | 70.2 | -0.5 | 0.5 | 0.2 | 0.20 |
| SEL 1/100 | 87.8 | 87.9 | -0.5 | 0.5 | 0.1 | 0.20 |
| Leq 1/1000 | 70.0 | 69.6 | -1.0 | 1.0 | -0.4 | 0.20 |
| SEL 1/1000 | 87.8 | 87.3 | -1.0 | 1.0 | -0.5 | 0.20 |
| Leq 1/10000 | 70.0 | 69.8 | -1.0 | 1.0 | -0.2 | 0.20 |
| SEL 1/10000 | 94.8 | 94.6 | -1.0 | 1.0 | -0.2 | 0.20 |

Pulse Range, Leq-SEL

The sound exposure level or time-average sound level reading of the sound level meter when exposed to single 4 kHz tonebursts superimposed on a low level steady 4 kHz signal is registered for various toneburst durations. The level of the low level signal is the minimum level of the reference range of the sound level meter, and the tonebursts are in phase with the low level signal. The toneburst responses are compared to their theoretical values calculated with the integration time used.

| | Expected | Measured | Accept - Limit | Accept + Limit | Deviation | Uncertainty |
|------------|----------|----------|----------------|----------------|-----------|-------------|
| | [dB Leq] | [dB Leq] | [dB] | [dB] | [dB] | [dB] |
| Ref. Cont. | 110.0 | 109.9 | -1.0 | 1.0 | -0.1 | 0.25 |
| Leq 1mS | 62.4 | 62.4 | -2.2 | 2.2 | 0.0 | 0.25 |
| SEL 1mS | 80.2 | 80.3 | -2.2 | 2.2 | 0.1 | 0.25 |
| Leq 10mS | 72.1 | 72.1 | -1.7 | 1.7 | 0.0 | 0.25 |
| SEL 10mS | 89.9 | 89.8 | -1.7 | 1.7 | -0.1 | 0.25 |
| Leq 100mS | 82.1 | 82.1 | -1.7 | 1.7 | 0.0 | 0.25 |

| | | | | | | |
|-----------|-------|-------|------|-----|-----|------|
| SEL 100mS | 99.9 | 99.9 | -1.7 | 1.7 | 0.0 | 0.25 |
| Leq 1S | 92.1 | 92.1 | -1.7 | 1.7 | 0.0 | 0.25 |
| SEL 1S | 109.9 | 109.9 | -1.7 | 1.7 | 0.0 | 0.25 |

Overload Indication, Sine Signals, Inverse A

The function of the overload detector of the sound level meter is verified with different voltage signals at levels around the limit of overload indication. A signal at a level corresponding to 5 dB below the maximum level of the sound level meter is applied starting at 1 kHz. The frequency of the signal is then lowered in 1/3-octave steps, and at the same time the level of the signal is increased so as to keep the same A-frequency-weighted level, until an overload is detected or the acceptance limits of the routine are exceeded.

| | Expected [dB SPL] | Measured [dB SPL] | Accept - Limit [dB] | Accept + Limit [dB] | Deviation [dB] | Uncertainty [dB] |
|----------|----------------------|----------------------|------------------------|---------------------------|-------------------|---------------------|
| 1000Hz | 135.0 | 134.9 | -1.0 | 1.0 | -0.1 | 0.31 |
| 794.33Hz | 134.9 | 134.9 | -1.0 | 1.0 | 0.0 | 0.31 |
| 630.96Hz | 134.9 | 134.9 | -1.0 | 1.0 | 0.0 | 0.31 |
| 501.19Hz | 134.9 | 134.8 | -1.0 | 1.0 | -0.1 | 0.31 |
| 398.11Hz | 134.9 | 134.9 | -1.0 | 1.0 | 0.0 | 0.31 |
| 316.23Hz | 134.9 | 134.9 | -1.0 | 1.0 | 0.0 | 0.31 |

Overload Indication, 4kHz Tone burst

The function of the overload detector of the sound level meter is verified with different voltage signals at levels around the limit of overload indication. The applied signal is a 4-period 4 kHz tonebursts starting 5 dB below Lmax, the signal level is increased until an overload is detected or the acceptance limits of the routine are exceeded.

| | Expected [dB SEL] | Measured [dB SEL] | Accept - Limit [dB] | Accept + Limit [dB] | Deviation [dB] | Uncertainty [dB] |
|-------------|----------------------|----------------------|------------------------|---------------------------|-------------------|---------------------|
| Ref. 135 dB | 105.0 | 105.4 | -1.0 | 1.0 | 0.4 | 0.31 |
| 136dB. | 106.4 | 106.7 | -1.0 | 1.0 | 0.3 | 0.31 |
| 137dB. | 107.4 | 107.8 | -1.0 | 1.0 | 0.4 | 0.31 |
| 138dB. | 108.4 | 108.1 | -1.0 | 1.0 | -0.3 | 0.31 |
| 139dB. | 109.4 | 109.3 | -1.0 | 1.0 | -0.1 | 0.31 |
| 140dB. | 110.4 | 110.8 | -1.0 | 1.0 | 0.4 | 0.31 |
| 141dB. | 111.4 | 111.7 | -1.0 | 1.0 | 0.3 | 0.31 |

CERTIFICATE OF CALIBRATION

DRAFT Certificate No: 19/

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