

Calibration Summary of Test Report No.:23452

Norsonic Type: 140 Serial no: 1403983

Customer: Scantek, Inc.
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Instrument software version: 2.0.772
Microphone: Norsonic Type: 1225 Serial no: 118460 Sens:-25.2dB
Preamplifier Norsonic Type: 1209 Serial no: 13429

Measurement Results:

Level Linearity Test - According to ANSI S1.4-1983, Clause 6.9 & 6.10	Passed
Weighting Network Test: A Network - ANSI S1.4-1983 Clause 8.2.1	Passed
Weighting Network Test: C Network - According to ANSI S1.4-1983 Clause 8.2.1	Passed
Weighting Network Test: Linear Network - According to ANSI S1.4-1983 Clause 8.2.1	Passed
Overload Detector Test: A-Network - ANSI S1.4-1983 Clause 8.3.1	Passed
F/S//Peak Test: Steady State Response - According to ANSI S1.4 1983 Clause 6.4	Passed
Fast-Slow Test: Overshoot test - According to ANSI S1.4 1983 Clause 8.4.1	Passed
Fast-Slow Test: Single Sine Wave Burst - ANSI S1.4 1983 Clause 8.4.1 & 8.4.3	Passed
Impulse Test: Continuous Sine Wave Burst - According to ANSI S1.4 1983 Clause 8.4.3	Passed
Impulse Test: Single Sine Wave Burst - According to ANSI S1.4 1983 Clause 8.4.1 & 8.4.3	Passed
Peak Detector Test, single square wave burst - According to ANSI S1.4 1983 Clause 8.4.4	Passed
RMS Detector Test: Crest Factor Test - According to ANSI S1.4-1983 Clause 8.4.2	Passed
RMS Detector Test: Continuous Sine Wave Burst - According to ANSI S1.4-1983 Clause 8.4.2	Passed
Time Averaging Test: Averaging Functions - ANSI S1.43 Clause 9.3.2	Passed
Linearity Test - ANSI S1.43 Clause 9.3.3	Passed
Filter Test 1/1octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3	Passed
Filter Test 1/3octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3	Passed
Summation of acoustic tests - ANSI S1.4 Clause 5 using Actuator	Passed

Environmental conditions:
Pressure: 102.31 kPa Temperature: 23.6 °C Relative humidity: 39 %RH
Date of calibration: 3/3/2011
Date of issue: 5/5/2011
Supervisor: Mariana Buzduga
Measurements performed by:

Valentin Buzduga

Software version: 5.2

Scantek, Inc.

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Supervisor Mariana Buzduga
Engineer Valentin Buzduga
Date: 3/3/2011

Measurement Results:

Level Linearity Test - According to ANSI S1.4-1983, Clause 6.9 & 6.10

The SLM is set to the reference range and the signal generator is adjusted to give a reading equal to the reference level (Normally 94dB.) The test signal is increased to give a reading equal to FSD. The generator is lowered in 1 dB step until the lower limit of the reference range is reached. The Fast SPL value is measured. The error is measured relative to 94 dB, in the last one dB step and the max error in a floating 10 dB window.

Nom. Value (dB)	Meas. Value (dB)	Tolerance limits (dB)	Error in the last 1dB (dB)	Max Error in the last 10dB (dB)	Error Rel. to ref. level (dB)
Measured at 31.5 Hz					
114.0	114.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0 P
115.0	115.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0 P
120.0	120.0	0.3/1.0/1.0	0.0 P	0.0 P	0.0 P
125.0	125.0	0.3/1.0/1.0	0.0 P	0.0 P	0.0 P
130.0	130.0	0.3/1.0/1.0	0.0 P	0.0 P	0.0 P
133.0	133.0	0.3/1.0/1.0	0.0 P	0.0 P	0.0 P
134.0	134.0	0.3/1.0/1.0	0.0 P	0.0 P	0.0 P
135.0	135.0	0.3/1.0/1.0	0.0 P	0.0 P	0.0 P
136.0	136.0	0.3/1.0/1.0	0.0 P	0.0 P	0.0 P
114.0	114.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0 P
110.0	110.1	0.2/0.4/0.7	0.1 P	0.1 P	0.1 P
105.0	105.0	0.2/0.4/0.7	-0.1 P	0.1 P	0.0 P
100.0	100.1	0.2/0.4/0.7	0.1 P	0.1 P	0.1 P
95.0	95.0	0.2/0.4/0.7	-0.1 P	0.1 P	0.0 P
90.0	90.0	0.2/0.4/0.7	0.0 P	0.1 P	0.0 P
85.0	85.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0 P
80.0	80.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0 P
75.0	75.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0 P
70.0	70.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0 P
65.0	65.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0 P
60.0	60.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0 P
55.0	55.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0 P
50.0	50.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0 P
45.0	45.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0 P
40.0	40.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0 P
35.0	35.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0 P
34.0	34.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0 P
33.0	33.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0 P
32.0	32.2	0.2/0.4/0.7	0.2 P	0.2 P	0.2 P
31.0	31.2	0.2/0.4/0.7	0.0 P	0.2 P	0.2 P
Measured at 1000 Hz					
114.0	114.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0 P
115.0	115.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0 P
120.0	120.0	0.3/1.0/1.0	0.0 P	0.0 P	0.0 P
125.0	125.0	0.3/1.0/1.0	0.0 P	0.0 P	0.0 P
130.0	130.0	0.3/1.0/1.0	0.0 P	0.0 P	0.0 P
133.0	133.0	0.3/1.0/1.0	0.0 P	0.0 P	0.0 P
134.0	134.0	0.3/1.0/1.0	0.0 P	0.0 P	0.0 P
135.0	135.0	0.3/1.0/1.0	0.0 P	0.0 P	0.0 P
136.0	136.0	0.3/1.0/1.0	0.0 P	0.0 P	0.0 P
114.0	114.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0 P

Level Linearity Test - According to ANSI S1.4-1983, Clause 6.9 & 6.10						
Nom. Value	Meas. Value	Tolerance limits	Error in the last 1dB	Max Error in the last 10dB	Error Rel. to ref. level	
(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)
110.0	110.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0	P
105.0	105.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0	P
100.0	100.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0	P
95.0	95.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0	P
90.0	90.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0	P
85.0	84.9	0.2/0.4/0.7	-0.1 P	0.1 P	-0.1	P
80.0	80.0	0.2/0.4/0.7	0.1 P	0.1 P	0.0	P
75.0	74.9	0.2/0.4/0.7	-0.1 P	0.1 P	-0.1	P
70.0	69.9	0.2/0.4/0.7	0.0 P	0.1 P	-0.1	P
65.0	64.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
60.0	59.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
55.0	54.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
50.0	49.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
45.0	44.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
40.0	40.0	0.2/0.4/0.7	0.1 P	0.1 P	0.0	P
35.0	35.0	0.2/0.4/0.7	0.0 P	0.1 P	0.0	P
34.0	34.0	0.2/0.4/0.7	0.0 P	0.1 P	0.0	P
33.0	33.1	0.2/0.4/0.7	0.1 P	0.2 P	0.1	P
32.0	32.1	0.2/0.4/0.7	0.0 P	0.1 P	0.1	P
31.0	31.1	0.2/0.4/0.7	0.0 P	0.1 P	0.1	P
Measured at 8000 Hz						
114.0	114.0	0.2/0.4/0.7	0.0 P	0.0 P	0.0	P
115.0	114.9	0.2/0.4/0.7	-0.1 P	0.1 P	-0.1	P
120.0	119.9	0.3/1.0/1.0	0.0 P	0.1 P	-0.1	P
125.0	125.0	0.3/1.0/1.0	0.1 P	0.1 P	0.0	P
130.0	130.0	0.3/1.0/1.0	0.0 P	0.1 P	0.0	P
133.0	133.0	0.3/1.0/1.0	0.0 P	0.1 P	0.0	P
134.0	133.9	0.3/1.0/1.0	-0.1 P	0.1 P	-0.1	P
135.0	134.9	0.3/1.0/1.0	0.0 P	0.1 P	-0.1	P
136.0	135.9	0.3/1.0/1.0	0.0 P	0.1 P	-0.1	P
114.0	113.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
110.0	109.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
105.0	104.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
100.0	99.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
95.0	94.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
90.0	89.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
85.0	84.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
80.0	79.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
75.0	74.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
70.0	69.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
65.0	64.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
60.0	59.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
55.0	54.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
50.0	49.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
45.0	44.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
40.0	39.9	0.2/0.4/0.7	0.0 P	0.0 P	-0.1	P
35.0	35.0	0.2/0.4/0.7	0.1 P	0.1 P	0.0	P
34.0	34.0	0.2/0.4/0.7	0.0 P	0.1 P	0.0	P
33.0	33.1	0.2/0.4/0.7	0.1 P	0.2 P	0.1	P
32.0	32.0	0.2/0.4/0.7	-0.1 P	0.2 P	0.0	P
31.0	31.0	0.2/0.4/0.7	0.0 P	0.2 P	0.0	P

Test Passed

Weighting Network Test: A Network - ANSI S1.4-1983 Clause 8.2.1

The frequency weighting networks test is performed with the SLM set to reference range. Reference frequency is 1000 Hz. The test signal is adjusted to give a full scale indication at 1000 Hz. The frequency of the test signal is increased in 1/3 octave steps from 10 Hz to 20 kHz. All applicable networks can be tested (I.E. A, B and C).

Freq (Hz)	Ref. (dB)	Measured value (dB)	Tolerance norm		Error Value (dB)	Result
			Upp. (dB)	Low. (dB)		
31.6	88.6	88.4	1.5	-1.5	-0.2	P
63.1	101.8	101.7	1.0	-1.0	-0.1	P
125.9	111.9	111.8	1.0	-1.0	-0.1	P
251.2	119.4	119.3	1.0	-1.0	-0.1	P
501.2	124.8	124.7	1.0	-1.0	-0.1	P
1000.0	128.0	128.0	1.0	-1.0	0.0	P
1995.3	129.2	129.1	1.0	-1.0	-0.1	P
3981.1	129.0	128.9	1.0	-1.0	-0.1	P
7943.3	126.9	126.8	1.5	-3.0	-0.1	P
12589.3	123.7	123.7	3.0	-6.0	0.0	P

Test Passed

Weighting Network Test: C Network - According to ANSI S1.4-1983 Clause 8.2.1

The frequency weighting networks test is performed with the SLM set to reference range. Reference frequency is 1000 Hz. The test signal is adjusted to give a full scale indication at 1000 Hz. The frequency of the test signal is increased in 1/3 octave steps from 10 Hz to 20 kHz. All applicable networks can be tested (I.E. A, B and C).

Freq (Hz)	Ref. (dB)	Measured value (dB)	Tolerance norm		Error Value (dB)	Result
			Upp. (dB)	Low. (dB)		
31.6	125.0	124.8	1.5	-1.5	-0.2	P
63.1	127.2	127.1	1.0	-1.0	-0.1	P
125.9	127.8	127.8	1.0	-1.0	0.0	P
251.2	128.0	127.9	1.0	-1.0	-0.1	P
501.2	128.0	128.0	1.0	-1.0	0.0	P
1000.0	128.0	128.0	1.0	-1.0	0.0	P
1995.3	127.8	127.8	1.0	-1.0	0.0	P
3981.1	127.2	127.1	1.0	-1.0	-0.1	P
7943.3	125.0	124.9	1.5	-3.0	-0.1	P
12589.3	121.8	121.7	3.0	-6.0	-0.1	P

Test Passed

Weighting Network Test: Linear Network - According to ANSI S1.4-1983 Clause 8.2.1

The frequency weighting networks test is performed with the SLM set to reference range. Reference frequency is 1000 Hz. The test signal is adjusted to give a full scale indication at 1000 Hz. The frequency of the test signal is increased in 1/3 octave steps from 10 Hz to 20 kHz. All applicable networks can be tested (I.E. A, B and C).

Freq (Hz)	Ref. (dB)	Measured value (dB)	Tolerance norm		Error Value (dB)	Result
			Upp. (dB)	Low. (dB)		
31.6	128.0	127.9	1.5	-1.5	-0.1	P
63.1	128.0	127.9	1.0	-1.0	-0.1	P
125.9	128.0	127.9	1.0	-1.0	-0.1	P
251.2	128.0	127.9	1.0	-1.0	-0.1	P
501.2	128.0	128.0	1.0	-1.0	0.0	P
1000.0	128.0	128.0	1.0	-1.0	0.0	P
1995.3	128.0	127.9	1.0	-1.0	-0.1	P
3981.1	128.0	127.9	1.0	-1.0	-0.1	P
7943.3	128.0	127.9	1.5	-3.0	-0.1	P
12589.3	128.0	127.9	3.0	-6.0	-0.1	P

Test Passed

Overload Detector Test: A-Network - ANSI S1.4-1983 Clause 8.3.1

The SLM is set to A-weighted and the least sensitive range setting. A sine wave of 1000 Hz is applied to the SLM with an amplitude that gives a reading 5 dB less than the maximum level the SLM is designed to measure. The test signal is lowered in 1/3 octave frequency steps until 20 Hz is reached. The amplitude of the test signal is simultaneously increased corresponding to the inverse of the A-weighting curve. The overload indication shall be turned on before the measured Slow SPL value is deviating more than one dB from the initial value measured at 1000 Hz.

Freq. (Hz)	Level Increase (dB)	Meas. Value (dB)	Tol. (dB)		Error Value (dB)	Error Code	
			Upp.	Low.		P	
1000.0	0.0	125.0	-1.0	1.0	0.0	P	No overload
251.2	8.6	124.9	-1.0	1.0	-0.1	P	No overload
199.5	10.9	125.0	-1.0	1.0	0.0	P	No overload
158.5	13.4	124.5	-1.0	1.0	-0.5	P	Overload

Test Passed

F/S//Peak Test: Steady State Response - According to ANSI S1.4 1983 Clause 6.4

A continuous sine wave is applied and adjusted to give an indication of 94.0 dB with time constant F(ast). The instrument is set to S(low) and I(mpulse), if applicable. The indication shall not differ more than 0.1 dB for type 0,1,2 instruments and 0.2 for type 3 instruments.

Freq.	Norm	Measured	Tol.	Error
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Fast	114.0	114.0	0.1	0.0	P
Slow	114.0	113.9	0.1	-0.1	P
Imp.	114.0	114.0	0.1	0.0	P
Test	Passed				

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Fast-Slow Test: Overshoot test - According to ANSI S1.4 1983 Clause 8.4.1

The overshoot is tested by applying a sine wave that step (sudden increase) in amplitude by 20 dB. The steady end response shall give a signal 4 dB below the upper limit of primary indicator range. The difference between the maximum value and the end value tells the overshoot. Both F(ast) and S(low) time constants are tested.

Time Const.	Ref. Value (dB)	Measured Value (dB)	Tolerance norm (dB)	Overshoot (dB)	Error
Fast	113.0	113.0	1.1	0.0	P
Slow	113.0	112.9	1.6	-0.1	P
Fast	93.0	93.0	1.1	0.0	P
Slow	93.0	93.0	1.6	0.0	P
Fast	53.0	53.0	1.1	0.0	P
Slow	53.0	53.0	1.6	0.0	P

Test Passed

Fast-Slow Test: Single Sine Wave Burst - ANSI S1.4 1983 Clause 8.4.1 & 8.4.3

A continuous sine wave is applied to the SLM and adjusted to give an indication 4 dB below upper limit of the primary indicator range. Then onset transient characteristics are tested using a single sine wave burst with an amplitude equal to the continuous signal and a duration of T(ms). The test is repeated at a level 24 dB below the upper limit of the primary indicator range.

Time Constant	Burst Duration (ms)	Ref. Value (dB)	Measured Value (dB)	Tolerance Value (dB)	Error Value (dB)	
Fast	200.0	112.0	111.9	1.0 -1.0	-0.1	P
Slow	500.0	108.9	108.9	1.0 -1.0	0.0	P
Fast	200.0	92.0	91.9	1.0 -1.0	-0.1	P
Slow	500.0	88.9	88.9	1.0 -1.0	0.0	P
Fast	200.0	52.0	51.9	1.0 -1.0	-0.1	P
Slow	500.0	48.9	48.9	1.0 -1.0	0.0	P

Test Passed

Impulse Test: Continuous Sine Wave Burst - According to ANSI S1.4 1983 Clause 8.4.3

A continuous sine wave signal is adjusted to give a FSD indication at the reference range. A continuous sine wave burst with the same amplitude as the continuous signal is used as a test signal. The repetition rate of the burst is 100 Hz, 20 Hz, and 2 Hz. The I(impulse) indication is measured at various repetition rates of the burst signal (100 Hz, 20 Hz, and 2 Hz). At a repetition rate of 2 Hz the signal amplitude is increased by 5dB. The indication shall increase respectively with a tolerance of ± 1.0 dB. The test is repeated 20 dB below FSD. The flattest weighting network available is used for this test.

Repetition Frequency (Hz)	Ref. Value (dB)	Measured Value (dB)	Tolerance norm (dB)	Error Value (dB)	
100	114.3	114.0	1.0	-0.3	P
20	109.4	108.3	2.0	-1.1	P
2	108.2	107.3	2.0	-0.9	P
2 +5dB	112.3	112.4	1.0	0.1	P
100	94.3	94.0	1.0	-0.3	P
20	89.4	89.1	2.0	-0.3	P

Impulse Test: Continuous Sine Wave Burst - According to ANSI S1.4 1983 Clause 8.4.3

Repetition Frequency (Hz)	Ref. Value (dB)	Measured Value (dB)	Tolerance norm (dB)	Error Value (dB)	
2	88.2	87.2	2.0	-1.0	P
2 +5dB	92.2	92.1	1.0	-0.1	P
100	54.3	54.0	1.0	-0.3	P
20	49.4	49.1	2.0	-0.3	P
2	48.2	47.9	2.0	-0.3	P
2 +5dB	52.9	52.9	1.0	0.0	P

Test Passed

Impulse Test: Single Sine Wave Burst - According to ANSI S1.4 1983 Clause 8.4.1 & 8.4.3

Burst Duration (ms)	Ref. Value (dB)	Measured Value (dB)	Tolerance norm (dB)	Error Value (dB)	
20.0	113.4	112.6	1.5	-0.8	P
5.0	108.2	107.6	2.0	-0.6	P
2.0	104.4	103.9	2.0	-0.5	P
2.0 +10dB	113.9	113.9	1.0	0.0	P
20.0	93.4	93.2	1.5	-0.2	P
5.0	88.2	87.9	2.0	-0.3	P
2.0	84.4	83.9	2.0	-0.5	P
2.0 +10dB	93.9	93.9	1.0	0.0	P
20.0	53.4	53.3	1.5	-0.1	P
5.0	48.2	47.9	2.0	-0.3	P
2.0	44.4	43.9	2.0	-0.5	P
2.0 +10dB	53.9	53.9	1.0	0.0	P

Test Passed

Peak Detector Test, single square wave burst - According to ANSI S1.4 1983 Clause 8.4.4

Pulse Duration	Pulse Polarity	Ref. Value (dB)	Measured Value (dB)	Tolerance Value (dB)	Error (dB)	
10ms	+	116.0	116.3	2.0	0.3	P
0.1ms	+	116.0	115.1	2.0	-0.9	P
10ms	-	116.0	116.3	2.0	0.3	P
0.1ms	-	116.0	115.0	2.0	-1.0	P
10ms	+	96.0	96.3	2.0	0.3	P
0.1ms	+	96.0	95.6	2.0	-0.4	P
10ms	-	96.0	96.3	2.0	0.3	P
0.1ms	-	96.0	95.7	2.0	-0.3	P

The results have been compensated for the impulse response of the C-weighting network.
Test Passed

RMS Detector Test: Crest Factor Test - According to ANSI S1.4-1983 Clause 8.4.2

The SLM is set to reference range. A continuous square wave with CF=1 is applied and adjusted to give an indication 2 dB below upper limit of primary indicator range. The duration of the square wave pulses is kept constant at 200 μ s and rise time less than 10 μ s. The RMS value of the signal is kept constant while the crest factor (CF) is increased from 1 to 10. The test is performed both for positive and negative going test signals.

Crest Factor	Ref. Value (dB)	Meas. Value (dB)	Tol. norm (dB)	Error Value (dB)	
Positive Pulses					
3.0	115.0	114.9	0.5	-0.1	P
5.0	115.0	114.9	1.5	-0.1	P
10.0	115.0	114.9	1.5	-0.1	P
Negative Pulses					
3.0	115.0	114.8	0.5	-0.2	P
5.0	115.0	114.9	1.5	-0.1	P
10.0	115.0	114.6	1.5	-0.4	P
Positive Pulses					
3.0	95.0	94.9	0.5	-0.1	P
5.0	95.0	94.9	1.5	-0.1	P
10.0	95.0	94.9	1.5	-0.1	P
Negative Pulses					
3.0	95.0	94.9	0.5	-0.1	P
5.0	95.0	94.9	1.5	-0.1	P
10.0	95.0	94.9	1.5	-0.1	P
Positive Pulses					
3.0	55.0	54.8	0.5	-0.2	P
5.0	55.0	54.9	1.5	-0.1	P
10.0	55.0	54.9	1.5	-0.1	P
Negative Pulses					
3.0	55.0	54.9	0.5	-0.1	P
5.0	55.0	54.9	1.5	-0.1	P
10.0	55.0	54.9	1.5	-0.1	P

Test Passed

RMS Detector Test: Continuous Sine Wave Burst - According to ANSI S1.4-1983 Clause 8.4.2

The instrument is set to time constant Slow. A continuous sine wave (2kHz) is applied to the SLM and adjusted to give an indication 2 dB below upper limit of the primary indicator range. The signal is replaced by a sequence of tone bursts with a repetition rate of 40Hz. The RMS level of the signal is kept constant while the crest factor is increased from 1 to 10.

Test signal: Continuous sine wave burst with repetition rate of 40Hz

Crest Factor	Ref. Value (dB)	Meas. Value (dB)	Tolerance norm (dB)	Error Value (dB)	
3	115.0	115.0	0.5	0.0	P
5	115.0	115.0	1.5	0.0	P
10	115.0	114.9	1.5	-0.1	P
3	95.0	95.0	0.5	0.0	P
5	95.0	95.0	1.5	0.0	P
10	95.0	95.0	1.5	0.0	P
3	55.0	55.0	0.5	0.0	P
5	55.0	55.0	1.5	0.0	P
10	55.0	54.9	1.5	-0.1	P

Test Passed

RMS Detector Test: Continuous Sine Wave Burst - According to ANSI S1.4-1983 Clause 8.4.2

Crest Factor	Ref. Value (dB)	Meas. Value (dB)	Tolerance norm (dB)	Error Value (dB)
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Time Averaging Test: Averaging Functions - ANSI S1.43 Clause 9.3.2

The SLM is set to the reference range. The signal generator is adjusted to give a 4 kHz sine wave with an rms level equal to 20dB above the bottom end of the Linearity range. The sine wave is replaced by a sequence of tone burst with the same frequency. The burst duty factor (the distance between each burst) is increased, while the amplitude is increased to keep the same equivalent rms level. The measurement time is 100 sec for type 0 (and manually controlled) instruments and 10 sec for all other instruments.

Burst Duration (ms)	Ref. Value (dB)	Tolerance norm (dB)	Value (LeqA) (dB)	Error Value (dB)		Value (SEL) (dB)	Error Value (dB)	
1000.0	40.0	0.5	40.0	0.0	P	50.0	0.0	P
100.0	40.0	0.5	40.0	0.0	P	50.0	0.0	P
10.0	40.0	1.0	40.0	0.0	P	50.0	0.0	P
1.0	40.0	1.0	40.0	0.0	P	50.0	0.0	P
2min	40.0	1.0	40.2	0.2	P	60.8	0.0	P

Test Passed

Linearity Test - ANSI S1.43 Clause 9.3.3

Int. Time (sec.)	Ref. Value (dB)	Meas. Value (dB)	Tolerance norm (dB)	Error Value (dB)		Meas. Value (dB)	Tolerance norm (dB)	Error Value (dB)	
10	114.0	114.0	0.4	0.0	P	124.0	0.4	0.0	P
10	137.0	137.0	0.7	0.0	P	147.0	0.7	0.0	P
10	66.0	65.9	0.7	-0.1	P	75.9	0.7	-0.1	P

The lower test level is increased 42.0dB due to self noise in the test system.
Test Passed

Filter Test 1/1octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

Test 1/1 octave filter X= 3 fexact=7943.282Hz class 1

Nominal f [Hz]	Measured L [dB]	LoLim [dB]	HiLim [dB]	Result [P/F]
501.187	47.2	0.0	60.0	P
1000.00	53.5	0.0	69.0	P
1995.26	75.3	0.0	88.0	P
3981.07	105.3	0.0	112.5	P
5623.41	126.3	125.0	128.0	P
6130.56	129.4	128.7	130.3	P
6683.44	129.9	129.4	130.3	P
7286.18	129.9	129.6	130.3	P
7943.28	130.0	129.7	130.3	P
8659.64	129.9	129.6	130.3	P
9440.61	129.9	129.4	130.3	P
10292.0	129.0	128.7	130.3	P

Filter Test 1/octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

11220.2	126.3	125.0	128.0	P
15848.9	107.9	0.0	112.5	P
31622.8	41.3	0.0	88.0	P
63095.7	40.9	0.0	69.0	P
125893	43.7	0.0	60.0	P
Test 1/1 octave filter X= 4 fexact=15848.932Hz class 1				
Nominal	Measured	LoLim	HiLim	Result
f[Hz]	L[dB]	[dB]	[dB]	[P/F]
1000.00	53.3	0.0	60.0	P
1995.26	59.1	0.0	69.0	P
3981.07	80.0	0.0	88.0	P
7943.28	108.7	0.0	112.5	P
11220.2	126.8	125.0	128.0	P
12232.1	129.3	128.7	130.3	P
13335.2	129.9	129.4	130.3	P
14537.8	130.0	129.6	130.3	P
15848.9	130.0	129.7	130.3	P
17278.3	130.0	129.6	130.3	P
18836.5	130.0	129.4	130.3	P
20535.3	130.0	128.7	130.3	P
22387.2	126.8	125.0	128.0	P
31622.8	47.6	0.0	112.5	P
63095.7	44.0	0.0	88.0	P
125893	46.7	0.0	69.0	P
200000	48.4	0.0	60.0	P
Test Passed				

Filter Test 1/3octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

Test 1/3 octave filter X= 12 fexact=15848.932Hz class 1				
Nominal	Measured	LoLim	HiLim	Result
f[Hz]	L[dB]	[dB]	[dB]	[P/F]
2939.37	54.4	0.0	60.0	P
5190.16	62.0	0.0	69.0	P
8422.54	81.7	0.0	88.0	P
12244.5	107.7	0.0	112.5	P
14125.4	126.4	125.0	128.0	P
14574.3	129.2	128.7	130.3	P
15012.0	129.9	129.4	130.3	P
15437.2	130.0	129.6	130.3	P
15848.9	130.0	129.7	130.3	P
16271.7	130.0	129.6	130.3	P
16732.6	130.0	129.4	130.3	P
17235.0	129.4	128.7	130.3	P
17782.8	126.4	125.0	128.0	P
20514.4	101.8	0.0	112.5	P
29823.4	35.8	0.0	88.0	P
48397.1	39.2	0.0	69.0	P
85456.6	39.9	0.0	60.0	P
Test 1/3 octave filter X= 13 fexact=19952.623Hz class 1				
Nominal	Measured	LoLim	HiLim	Result
f[Hz]	L[dB]	[dB]	[dB]	[P/F]
3700.45	56.9	0.0	60.0	P
6534.02	64.1	0.0	69.0	P
10603.4	84.1	0.0	88.0	P
15414.9	109.7	0.0	112.5	P

Filter Test 1/3octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

17782.8	126.6	125.0	128.0	P
18348.0	129.1	128.7	130.3	P
18898.9	129.9	129.4	130.3	P
19434.2	130.0	129.6	130.3	P
19952.6	130.0	129.7	130.3	P
20484.8	130.0	129.6	130.3	P
21065.1	130.0	129.4	130.3	P
21697.6	129.8	128.7	130.3	P
22387.2	126.6	125.0	128.0	P
25826.2	71.1	0.0	112.5	P
37545.4	38.8	0.0	88.0	P
60928.4	40.0	0.0	69.0	P
107584	42.2	0.0	60.0	P

Test Passed

Summation of acoustic tests - ANSI S1.4 Clause 5 using Actuator

The microphone data are measured using electrostatic actuator.

SLM: A-Weighted results

Freq. (Hz)	SLM (dB)	Mic. (dB)	CR. (dB)	WS. (dB)	Tol. (dB)	Dev. (dB)
31.5	-39.6	0.0			+-1.5	-0.2
63	-26.3	0.0			+-1.5	-0.1
125	-16.2	0.0			+-1.0	-0.1
250	-8.7	0.0			+-1.0	-0.1
500	-3.3	0.0			+-1.0	-0.1
1 k	0.0	0.1			+-1.0	0.1
2 k	1.1	0.1			+-1.0	0.0
4 k	0.9	0.0			+-1.0	-0.1
8 k	-1.2	0.2			+1.5,-3	0.1
12.5 k	-4.3	0.5			+3,-6	0.5

SLM: C-Weighted results

Freq. (Hz)	SLM (dB)	Mic. (dB)	CR. (dB)	WS. (dB)	Tol. (dB)	Dev. (dB)
31.5	-3.2	0.0			+-1.5	-0.2
63	-0.9	0.0			+-1.5	-0.1
125	-0.2	0.0			+-1.0	0.0
250	-0.1	0.0			+-1.0	-0.1
500	0.0	0.0			+-1.0	0.0
1 k	0.0	0.1			+-1.0	0.1
2 k	-0.2	0.1			+-1.0	0.1
4 k	-0.9	0.0			+-1.0	-0.1
8 k	-3.1	0.2			+1.5,-3	0.1
12.5 k	-6.3	0.5			+3,-6	0.4

SLM: Lin results

Freq. (Hz)	SLM (dB)	Mic. (dB)	CR. (dB)	WS. (dB)	Tol. (dB)	Dev. (dB)
31.5	-0.1	0.0			+-1.5	-0.1
63	-0.1	0.0			+-1.5	-0.1
125	-0.1	0.0			+-1.0	-0.1
250	-0.1	0.0			+-1.0	-0.1
500	0.0	0.0			+-1.0	0.0
1 k	0.0	0.1			+-1.0	0.1
2 k	-0.1	0.1			+-1.0	0.0
4 k	-0.1	0.0			+-1.0	-0.1
8 k	-0.1	0.2			+1.5,-3	0.1

Summation of acoustic tests - ANSI S1.4 Clause 5 using Actuator

12.5 k -0.1 0.5 +3,-6 0.4

Test Passed

The overall frequency response of the sound level meter and microphone has shown to conform with the requirements in §6 of the ANSI S1.4 for a type 1 sound level meter.