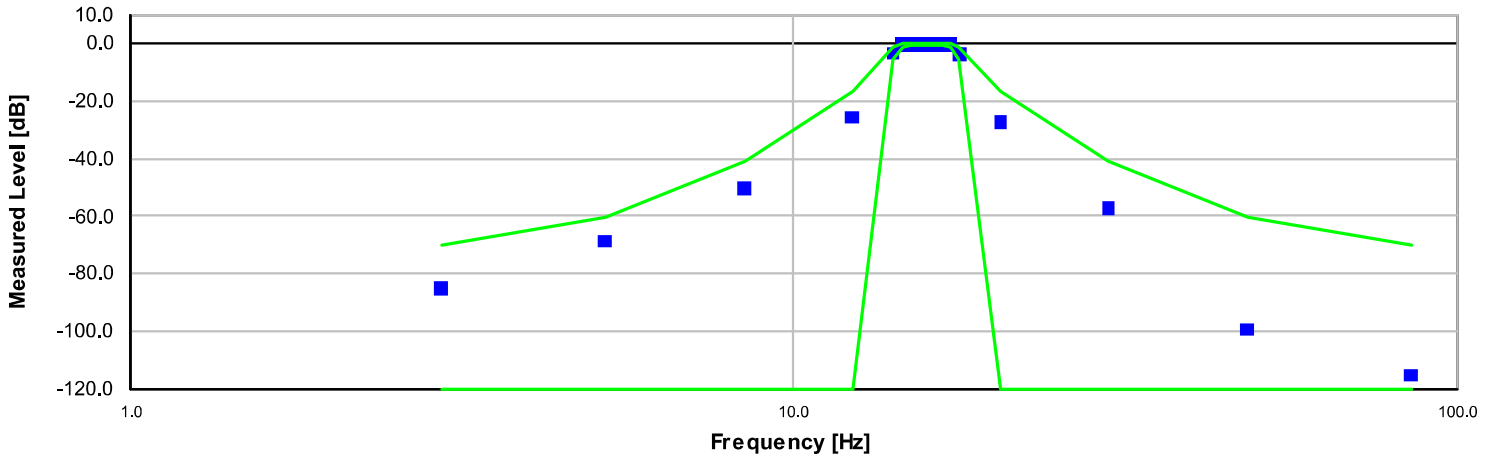
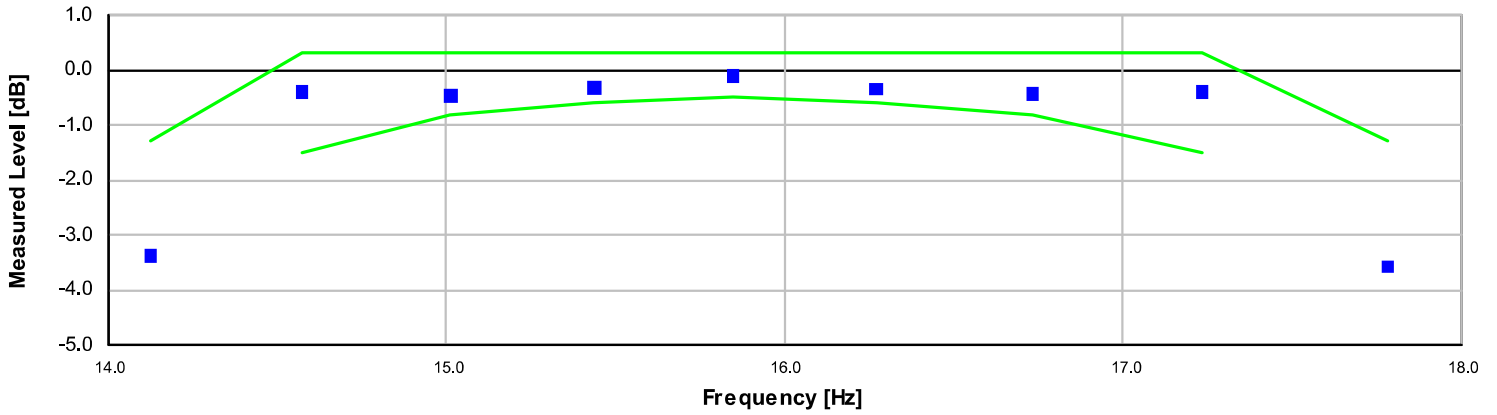


Z-Axis 1/3 Octave Filter: 16.0 Hz

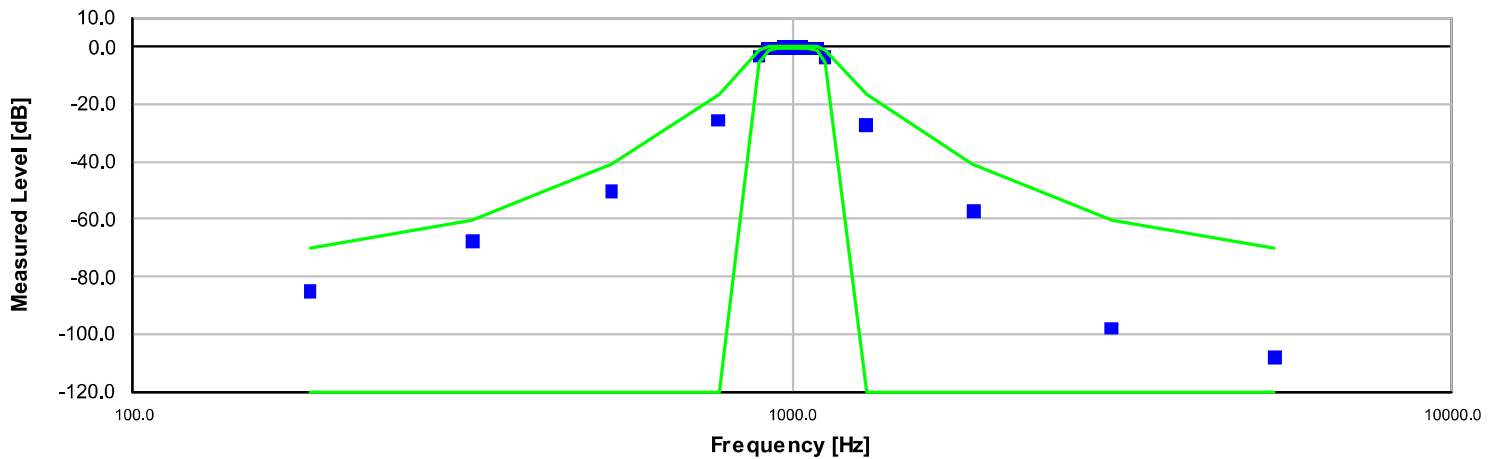
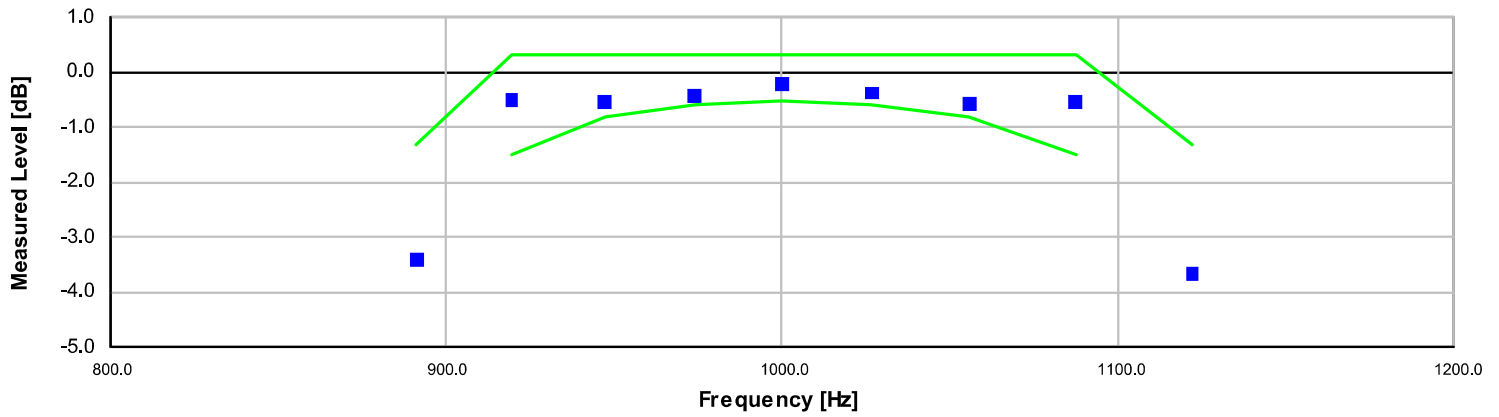


Filter shape measured according to IEC 61260-1:2014 and ANSI S1.11

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
2.94	-85.33	-inf	-70.10	0.15	Pass
5.19	-68.65	-inf	-60.10	0.16	Pass
8.42	-50.51	-inf	-40.60	0.15	Pass
12.24	-25.53	-inf	-16.70	0.15	Pass
14.13	-3.38	-5.40	-1.30	0.15	Pass
14.57	-0.39	-1.50	0.30	0.15	Pass
15.01	-0.47	-0.80	0.30	0.15	Pass
15.44	-0.31	-0.60	0.30	0.15	Pass
15.85	-0.10	-0.50	0.30	0.15	Pass
16.27	-0.34	-0.60	0.30	0.15	Pass
16.73	-0.42	-0.80	0.30	0.15	Pass
17.24	-0.40	-1.50	0.30	0.15	Pass
17.78	-3.58	-5.40	-1.30	0.15	Pass
20.51	-27.39	-inf	-16.70	0.15	Pass
29.82	-57.02	-inf	-40.60	0.15	Pass
48.40	-99.28	-inf	-60.10	1.70	Pass
85.46	-115.27	-inf	-70.10	2.10	Pass

-- End of measurement results--

Z-Axis 1/3 Octave Filter: 1 kHz



Filter shape measured according to IEC 61260-1:2014 and ANSI S1.11

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
185.46	-84.88	-inf	-70.10	0.16	Pass
327.48	-67.66	-inf	-60.10	0.16	Pass
531.43	-50.54	-inf	-40.60	0.16	Pass
772.57	-25.64	-inf	-16.70	0.16	Pass
891.25	-3.40	-5.40	-1.30	0.16	Pass
919.58	-0.49	-1.50	0.30	0.16	Pass
947.19	-0.53	-0.80	0.30	0.16	Pass
974.02	-0.42	-0.60	0.30	0.16	Pass
1,000.00	-0.21	-0.50	0.30	0.16	Pass
1,026.67	-0.38	-0.60	0.30	0.16	Pass
1,055.75	-0.58	-0.80	0.30	0.16	Pass
1,087.46	-0.53	-1.50	0.30	0.16	Pass
1,122.02	-3.67	-5.40	-1.30	0.16	Pass
1,294.37	-27.53	-inf	-16.70	0.16	Pass
1,881.73	-57.09	-inf	-40.60	0.16	Pass
3,053.65	-97.86	-inf	-60.10	0.94	Pass
5,391.95	-108.18	-inf	-70.10	2.00	Pass

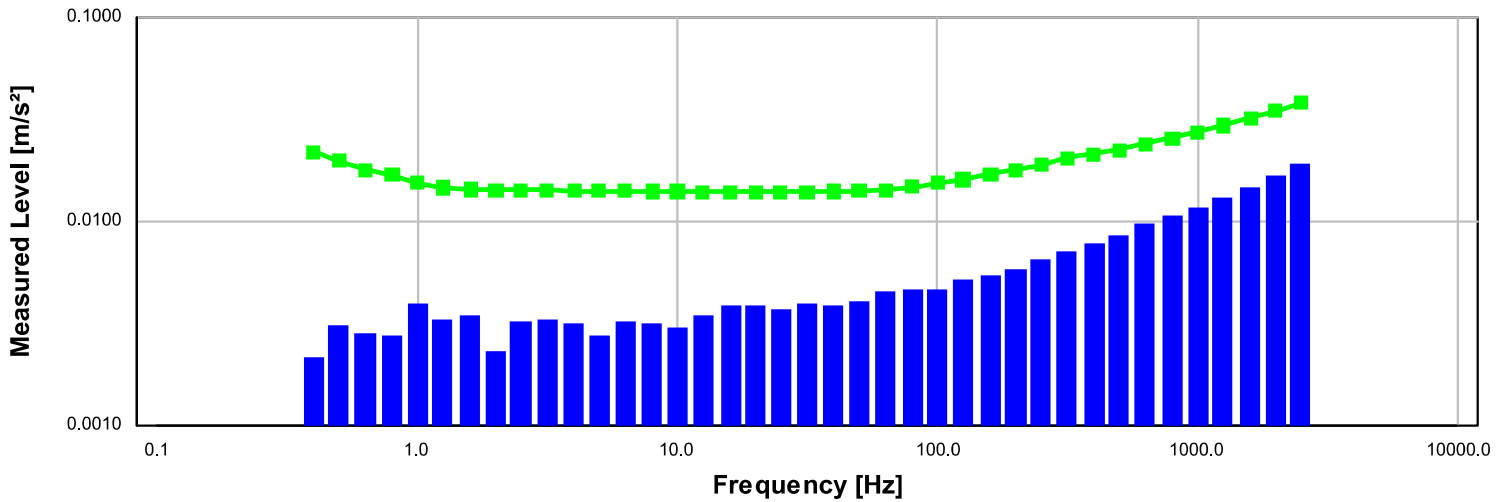
-- End of measurement results--

Frequency-weighted Noise Floor

Self-generated noise measured according to ISO 8041-1:2017 12.12 and ISO 8041-2:2021 12.12

Weighting	Axis	Test Result [m/s ²]	Upper limit [m/s ²]	Result
Fb	X-Axis	0.038551	0.066800	Pass
	Y-Axis	0.040474	0.066800	Pass
	Z-Axis	0.039737	0.066800	Pass
Wh	X-Axis	0.009082	0.019700	Pass
	Y-Axis	0.009142	0.019700	Pass
	Z-Axis	0.011175	0.019700	Pass
Wk	X-Axis	0.011626	0.029300	Pass
	Y-Axis	0.013545	0.029300	Pass
	Z-Axis	0.019056	0.029300	Pass
-- End of measurement results--				

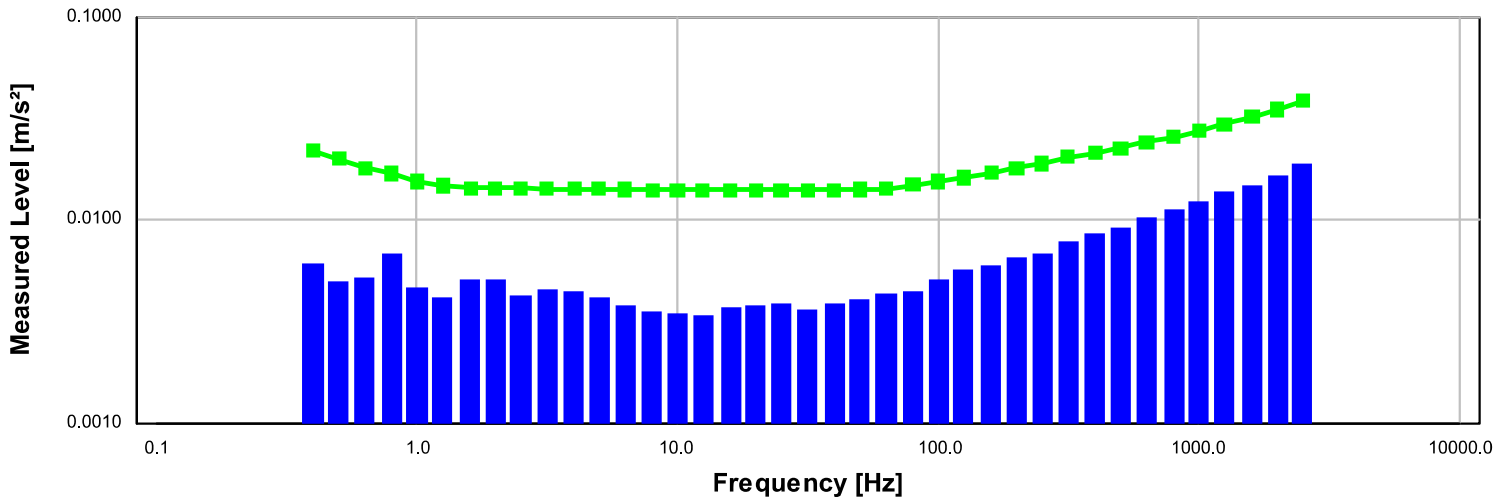
X-Axis 1/3-Octave Self-Generated Noise



Frequency [Hz]	Test Result [m/s²]	Upper limit [m/s²]	Result
0.40	0.002149	0.022000	Pass
0.50	0.003118	0.020000	Pass
0.63	0.002846	0.018000	Pass
0.80	0.002790	0.017000	Pass
1.00	0.003974	0.015500	Pass
1.25	0.003348	0.014800	Pass
1.60	0.003454	0.014400	Pass
2.00	0.002305	0.014350	Pass
2.50	0.003238	0.014320	Pass
3.15	0.003303	0.014300	Pass
4.00	0.003171	0.014250	Pass
5.00	0.002746	0.014200	Pass
6.30	0.003272	0.014150	Pass
8.00	0.003154	0.014100	Pass
10.00	0.003045	0.014070	Pass
12.50	0.003448	0.014050	Pass
16.00	0.003893	0.014030	Pass
20.00	0.003873	0.014010	Pass
25.00	0.003743	0.014000	Pass
31.50	0.003969	0.014010	Pass
40.00	0.003899	0.014080	Pass
50.00	0.004042	0.014180	Pass
63.00	0.004519	0.014300	Pass
80.00	0.004689	0.014900	Pass
100.00	0.004639	0.015500	Pass
125.00	0.005167	0.016200	Pass
160.00	0.005484	0.017100	Pass
200.00	0.005887	0.018000	Pass
250.00	0.006542	0.019000	Pass
315.00	0.007102	0.020500	Pass
400.00	0.007896	0.021500	Pass
500.00	0.008655	0.022580	Pass
630.00	0.009720	0.024170	Pass
800.00	0.010712	0.025740	Pass
1,000.00	0.011755	0.027530	Pass
1,250.00	0.013212	0.029730	Pass
1,600.00	0.014827	0.032310	Pass
2,000.00	0.016809	0.035000	Pass

Frequency [Hz]	Test Result [m/s²]	Upper limit [m/s²]	Result
2,500.00	0.019510	0.038500	Pass
-- End of measurement results--			

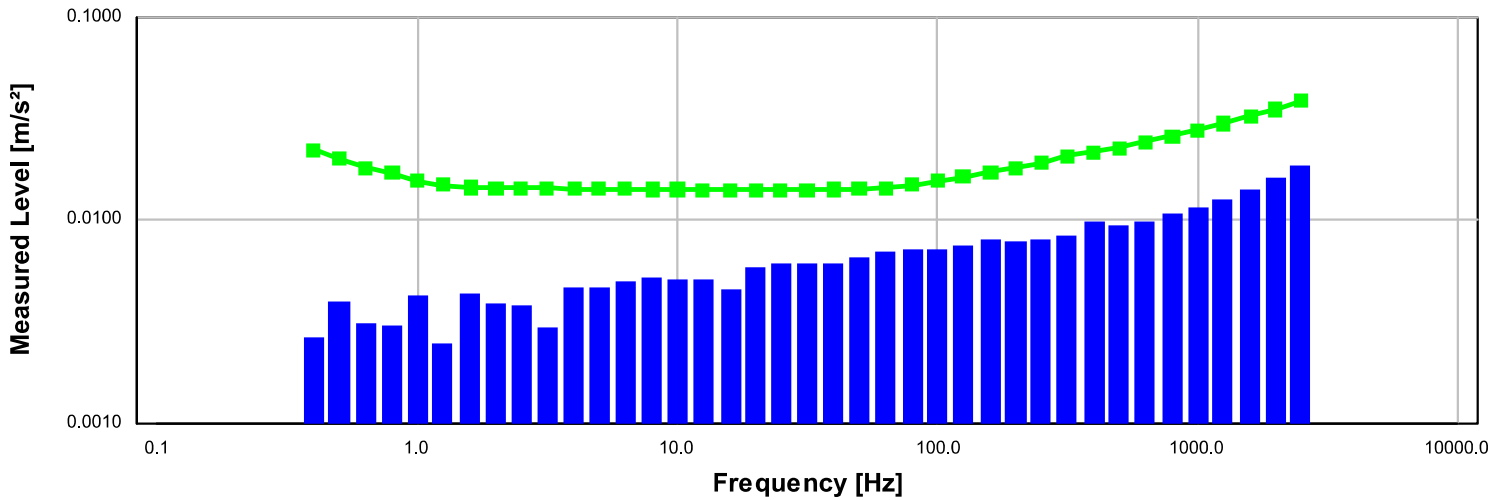
Y-Axis 1/3-Octave Self-Generated Noise



Frequency [Hz]	Test Result [m/s²]	Upper limit [m/s²]	Result
0.40	0.006059	0.022000	Pass
0.50	0.004965	0.020000	Pass
0.63	0.005232	0.018000	Pass
0.80	0.006876	0.017000	Pass
1.00	0.004615	0.015500	Pass
1.25	0.004119	0.014800	Pass
1.60	0.005128	0.014400	Pass
2.00	0.005078	0.014350	Pass
2.50	0.004267	0.014320	Pass
3.15	0.004580	0.014300	Pass
4.00	0.004434	0.014250	Pass
5.00	0.004187	0.014200	Pass
6.30	0.003763	0.014150	Pass
8.00	0.003528	0.014100	Pass
10.00	0.003480	0.014070	Pass
12.50	0.003360	0.014050	Pass
16.00	0.003679	0.014030	Pass
20.00	0.003807	0.014010	Pass
25.00	0.003919	0.014000	Pass
31.50	0.003638	0.014010	Pass
40.00	0.003859	0.014080	Pass
50.00	0.004039	0.014180	Pass
63.00	0.004320	0.014300	Pass
80.00	0.004489	0.014900	Pass
100.00	0.005123	0.015500	Pass
125.00	0.005738	0.016200	Pass
160.00	0.005998	0.017100	Pass
200.00	0.006575	0.018000	Pass
250.00	0.006923	0.019000	Pass
315.00	0.007906	0.020500	Pass
400.00	0.008591	0.021500	Pass
500.00	0.009279	0.022580	Pass
630.00	0.010328	0.024170	Pass
800.00	0.011266	0.025740	Pass
1,000.00	0.012407	0.027530	Pass
1,250.00	0.013727	0.029730	Pass
1,600.00	0.014976	0.032310	Pass
2,000.00	0.016565	0.035000	Pass

Frequency [Hz]	Test Result [m/s²]	Upper limit [m/s²]	Result
2,500.00	0.018993	0.038500	Pass
-- End of measurement results--			

Z-Axis 1/3-Octave Self-Generated Noise



Frequency [Hz]	Test Result [m/s²]	Upper limit [m/s²]	Result
0.40	0.002631	0.022000	Pass
0.50	0.003969	0.020000	Pass
0.63	0.003099	0.018000	Pass
0.80	0.003004	0.017000	Pass
1.00	0.004245	0.015500	Pass
1.25	0.002484	0.014800	Pass
1.60	0.004336	0.014400	Pass
2.00	0.003895	0.014350	Pass
2.50	0.003823	0.014320	Pass
3.15	0.002963	0.014300	Pass
4.00	0.004617	0.014250	Pass
5.00	0.004664	0.014200	Pass
6.30	0.004920	0.014150	Pass
8.00	0.005168	0.014100	Pass
10.00	0.005114	0.014070	Pass
12.50	0.005047	0.014050	Pass
16.00	0.004547	0.014030	Pass
20.00	0.005774	0.014010	Pass
25.00	0.006088	0.014000	Pass
31.50	0.006032	0.014010	Pass
40.00	0.006039	0.014080	Pass
50.00	0.006538	0.014180	Pass
63.00	0.006933	0.014300	Pass
80.00	0.007201	0.014900	Pass
100.00	0.007179	0.015500	Pass
125.00	0.007528	0.016200	Pass
160.00	0.007954	0.017100	Pass
200.00	0.007784	0.018000	Pass
250.00	0.007948	0.019000	Pass
315.00	0.008355	0.020500	Pass
400.00	0.009903	0.021500	Pass
500.00	0.009304	0.022580	Pass
630.00	0.009824	0.024170	Pass
800.00	0.010674	0.025740	Pass
1,000.00	0.011422	0.027530	Pass
1,250.00	0.012725	0.029730	Pass
1,600.00	0.014139	0.032310	Pass
2,000.00	0.015978	0.035000	Pass

Frequency [Hz]	Test Result [m/s²]	Upper limit [m/s²]	Result
2,500.00	0.018455	0.038500	Pass
-- End of measurement results--			

-- End of Report--

Signatory: Jeff Kamperman

The Modal Shop
10310 AeroHub Boulevard
Cincinnati, OH 45215, United States



Sensor Information

Model Number: SEN027
Serial Number: P341683
Manufacturer: Larson Davis
ID Number: 89383
Description: ICP® Accelerometer

Calibration Data

Sensitivity @ 100 Hz:	101.7	mV/g
	10.37	mV/m/s ²
Phase @ 100 Hz:	-0.5058	deg.
Test Level:	10.00	g
Output Bias Level:	3.5	VDC

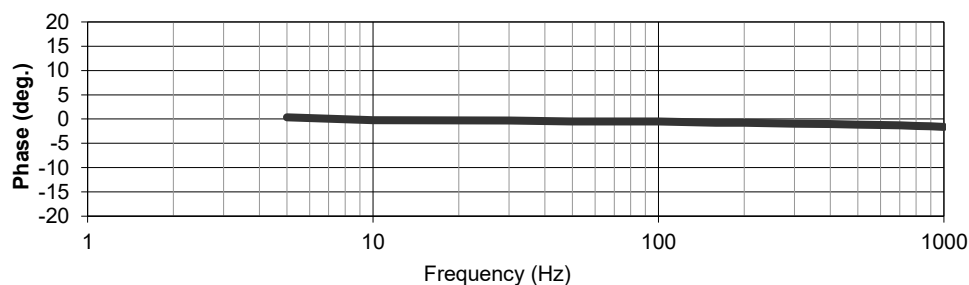
Transducer Specifications

Amp. Range:	± 10	g
Resolution:	0.0002	g
Resonant Freq:	≥ 27000	Hz
Temp. Range:	-10 to 50	°C
	14 to 122	°F
Axis:	X - Axis	

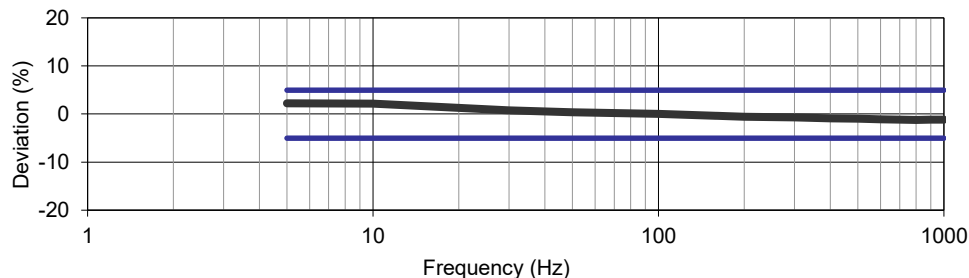
Data Table

[illegible]

Phase Response



Amplitude Response



Notes

Results relate only to the items calibrated.

This certificate may not be reproduced except in full, without written permission.

Method: Back-to-Back Comparison Calibration per ISO 16063 Part 21.

This calibration was performed with TMS 9155 Calibration Workstation 3 version 7.0.2.

Proficiency in calibration traceable to PTB (17014/17004) and NIST (683/287323).

Back-to-Back Comparison Calibration per ISO 16063-21

Procedure Used: PRD-P220 or PRD-P239

Measurement uncertainty (95% confidence level with coverage factor 2) for frequency ranges tested during calibration are as follows: 5-9 Hz; $\pm 1.7\%$, 10-99 Hz; $\pm 1.2\%$, 100 Hz; $\pm 0.75\%$, 101-920 Hz; $\pm 1.0\%$, 921-5000 Hz; $\pm 1.4\%$, 5001-10,000 Hz; $\pm 1.9\%$, 10,001-15,000 Hz; $\pm 2.2\%$, 15,001-20,000 Hz; $\pm 2.8\%$.

Phase uncertainty: 5-99 Hz: 1.5°, 100-4999 Hz: 1.3°, 5000-20,000 Hz: 2.8°

Unit Condition

As Found: In Tolerance

As Left: In Tolerance

Lab Conditions

Temperature: 73 (23) °F (°C)

Humidity: 18 %

Customer

TMS Rental

Cal Date: 22-Jan-24

Due Date:

Technician Notes

Approval Information

Technician: Stacey Woo

Approval:

Stanley Wood

Sensor Information

Model Number: SEN027
Serial Number: P341683
Manufacturer: Larson Davis
ID Number: 89383
Description: ICP® Accelerometer

Calibration Data

Sensitivity @ 100 Hz:	101.3	mV/g
	10.33	mV/m/s ²
Phase @ 100 Hz:	-0.4609	deg.
Test Level:	10.00	g
Output Bias Level:	3.5	VDC

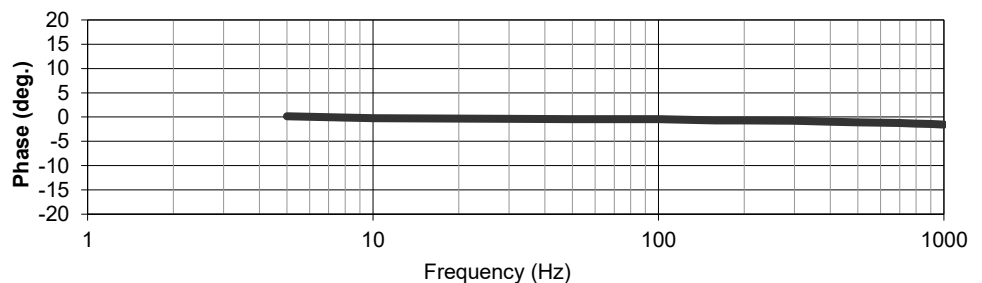
Transducer Specifications

Amp. Range:	± 10	g
Resolution:	0.0002	g
Resonant Freq:	≥ 27000	Hz
Temp. Range:	-10 to 50	°C
	14 to 122	°F
Axis:	Y - Axis	

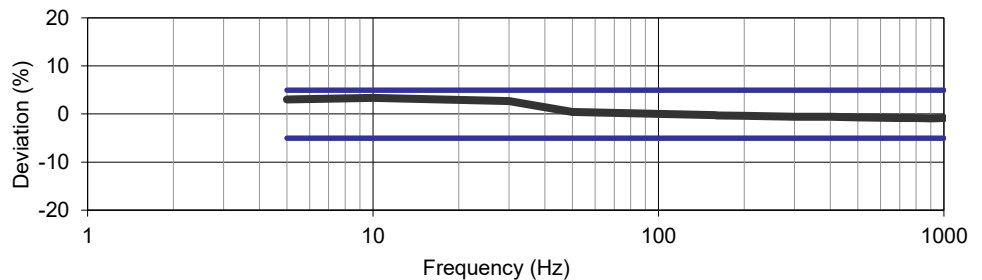
Data Table

[illegible]

Phase Response



Amplitude Response



Notes

Results relate only to the items calibrated.

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Method: Back-to-Back Comparison Calibration per ISO 16063 Part 21.

This calibration was performed with TMS 9155 Calibration Workstation 3 version 7.0.2.

Proficiency in calibration traceable to PTB (17014/17004) and NIST (683/287323).

Back-to-Back Comparison Calibration per ISO 16063-21

Procedure Used: PRD-P220 or PRD-P239

Measurement uncertainty (95% confidence level with coverage factor 2) for frequency ranges tested during calibration are as follows: 5-9 Hz; $\pm 1.7\%$, 10-99 Hz; $\pm 1.2\%$, 100 Hz; $\pm 0.75\%$, 101-920 Hz; $\pm 1.0\%$, 921-5000 Hz; $\pm 1.4\%$, 5001-10,000 Hz; $\pm 1.9\%$, 10,001-15,000 Hz; $\pm 2.2\%$, 15,001-20,000 Hz; $\pm 2.8\%$.

Phase uncertainty: 5-99 Hz; 1.5°, 100-4999 Hz; 1.3°, 5000-20,000 Hz; 2.8°

Unit Condition

As Found: In Tolerance

As Left: In Tolerance

Lab Conditions

Temperature: 73 (23) °F (°C)

Humidity: 18 %

Customer

TMS Rental

Cal Date: 22-Jan-24

Due Date:

Technician Notes

Approval Information

Technician: Stacey Woo

Approval:

Stanford

Sensor Information

Model Number: SEN027
Serial Number: P341683
Manufacturer: Larson Davis
ID Number: 89383
Description: ICP® Accelerometer

Calibration Data

Sensitivity @ 100 Hz:	103.3	mV/g
	10.53	mV/m/s ²
Phase @ 100 Hz:	-0.4727	deg.
Test Level:	10.00	g
Output Bias Level:	3.5	VDC

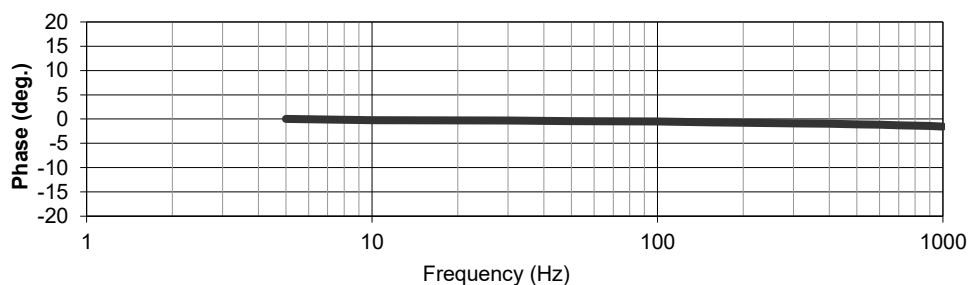
Transducer Specifications

Amp. Range:	± 10	g
Resolution:	0.0002	g
Resonant Freq:	≥ 27000	Hz
Temp. Range:	-10 to 50	°C
	14 to 122	°F
Axis:	Z - Axis	

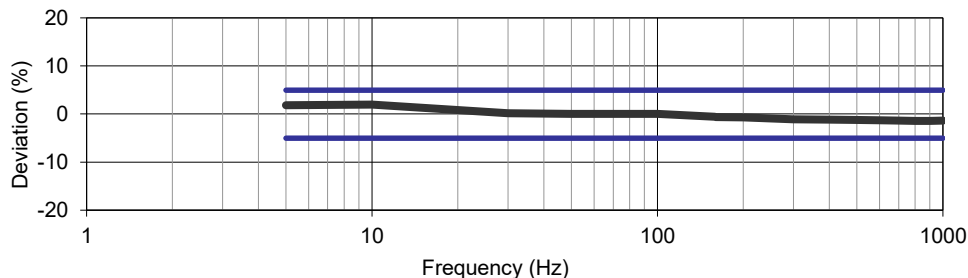
Data Table

[illegible]

Phase Response



Amplitude Response



Notes

Results relate only to the items calibrated.

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Method: Back-to-Back Comparison Calibration per ISO 16063 Part 21.

This calibration was performed with TMS 9155 Calibration Workstation 3 version 7.0.2.

Proficiency in calibration traceable to PTB (17014/17004) and NIST (683/287323).

Back-to-Back Comparison Calibration per ISO 16063-21

Procedure Used: PRD-P220 or PRD-P239

Measurement uncertainty (95% confidence level with coverage factor 2) for frequency ranges tested during calibration are as follows: 5-9 Hz; $\pm 1.7\%$, 10-99 Hz; $\pm 1.2\%$, 100 Hz; $\pm 0.75\%$, 101-920 Hz; $\pm 1.0\%$, 921-5000 Hz; $\pm 1.4\%$, 5001-10,000 Hz; $\pm 1.9\%$, 10,001-15,000 Hz; $\pm 2.2\%$, 15,001-20,000 Hz; $\pm 2.8\%$.

Phase uncertainty: 5-99 Hz: 1.5°, 100-4999 Hz: 1.3°, 5000-20,000 Hz: 2.8°

Unit Condition

As Found: In Tolerance

As Left: In Tolerance

Lab Conditions

Temperature: 73 (23) °F (°C)

Humidity: 18 %

Customer

TMS Rental

Cal Date: 22-Jan-24

Due Date:

Technician Notes

Approval Information

Technician: Stacey Woo

Approval:

Stanford

Sensor Information

Model Number: SEN041F
Serial Number: P321102
Manufacturer: Larson Davis
ID Number: 83850
Description: ICP® Accelerometer

Calibration Data

Sensitivity @ 100 Hz:	9.590	mV/g
	0.9779	mV/m/s ²
Phase @ 100 Hz:	-0.16	deg.
Test Level:	10.00	g

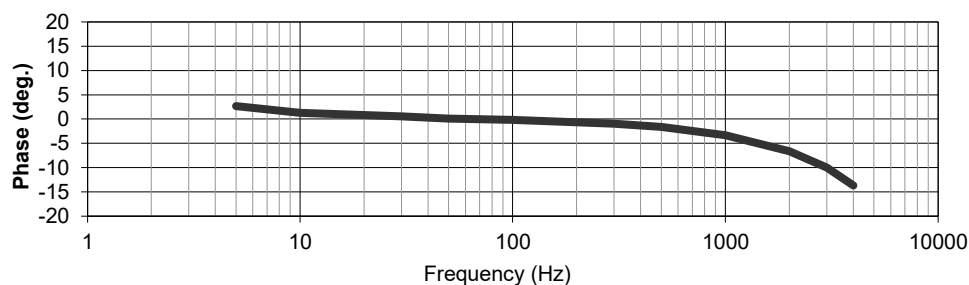
Transducer Specifications

Amp. Range:	± 500	g
Resolution:	0.008	g
Resonant Freq:	≥ 55000	Hz
Temp. Range:	-54 to 121	°C
	-65 to 250	°F
Axis:	X - Axis	

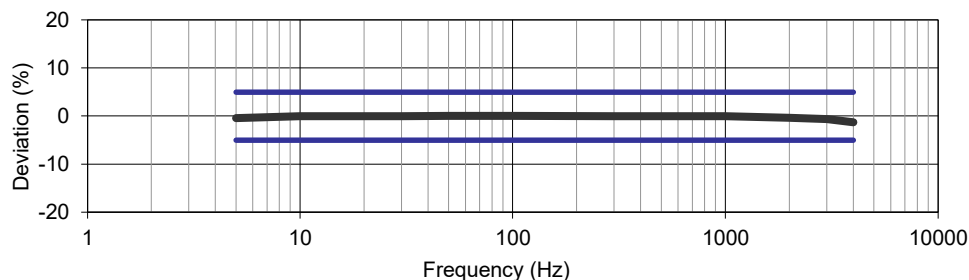
Data Table

[illegible]

Phase Response



Amplitude Response



Notes

Results relate only to the items calibrated.

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Method: Back-to-Back Comparison Calibration per ISO 16063 Part 21.

This calibration was performed with TMS 9155 Calibration Workstation 1 version 8.0.3.

Proficiency in calibration traceable to PTB (17014/17004) and NIST (683/287323).

Back-to-Back Comparison Calibration per ISO 16063-21

Procedure Used: PRD-P220 or PRD-P239

Measurement uncertainty (95% confidence level with coverage factor 2) for frequency ranges tested during calibration are as follows: 5-9 Hz; $\pm 1.7\%$, 10-99 Hz; $\pm 1.2\%$, 100 Hz; $\pm 0.75\%$, 101-920 Hz; $\pm 1.0\%$, 921-5000 Hz; $\pm 1.4\%$, 5001-10,000 Hz; $\pm 1.9\%$, 10,001-15,000 Hz; $\pm 2.2\%$, 15,001-20,000 Hz; $\pm 2.8\%$.

Phase uncertainty: 5-99 Hz: 1.5°, 100-4999 Hz: 1.3°, 5000-20,000 Hz: 2.8°

Unit Condition

As Found: In Tolerance

As Left: In Tolerance

Lab Conditions

Temperature: 72 (22) °F (°C)

Humidity: 24 %

Customer

TMS Rental

Cal Date: 22-Mar-24

Due Date:

Technician Notes

Approval Information

Technician: Ed Devlin

Approval:

Edward A. G. bin

Sensor Information

Model Number: SEN041F
Serial Number: P321102
Manufacturer: Larson Davis
ID Number: 83850
Description: ICP® Accelerometer

Calibration Data

Sensitivity @ 100 Hz:	9.922	mV/g
	1.012	mV/m/s ²
Phase @ 100 Hz:	-1.24	deg.
Test Level:	10.00	g

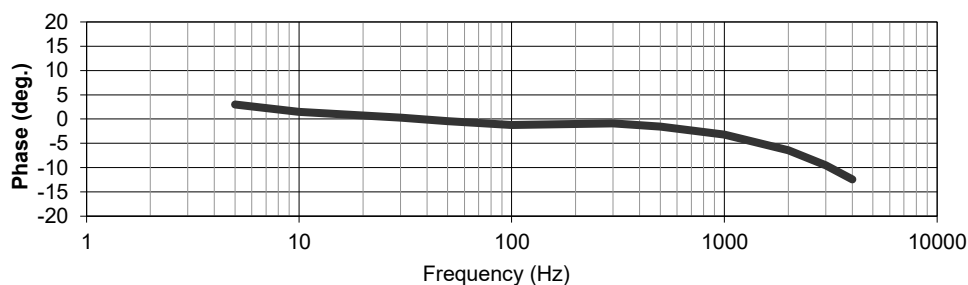
Transducer Specifications

Amp. Range:	± 500	g
Resolution:	0.008	g
Resonant Freq:	≥ 55000	Hz
Temp. Range:	-54 to 121	°C
	-65 to 250	°F
Axis:	Y - Axis	

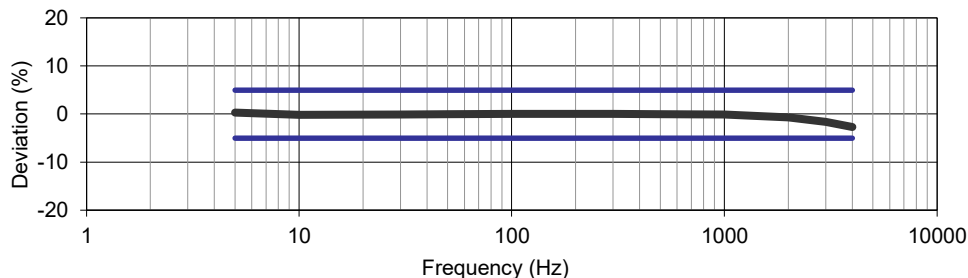
Data Table

[illegible]

Phase Response



Amplitude Response



Notes

Results relate only to the items calibrated.

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Method: Back-to-Back Comparison Calibration per ISO 16063 Part 21.

This calibration was performed with TMS 9155 Calibration Workstation 1 version 8.0.3.

Proficiency in calibration traceable to PTB (17014/17004) and NIST (683/287323).

Back-to-Back Comparison Calibration per ISO 16063-21

Procedure Used: PRD-P220 or PRD-P239

Measurement uncertainty (95% confidence level with coverage factor 2) for frequency ranges tested during calibration are as follows: 5-9 Hz; $\pm 1.7\%$, 10-99 Hz; $\pm 1.2\%$, 100 Hz; $\pm 0.75\%$, 101-920 Hz; $\pm 1.0\%$, 921-5000 Hz; $\pm 1.4\%$, 5001-10,000 Hz; $\pm 1.9\%$, 10,001-15,000 Hz; $\pm 2.2\%$, 15,001-20,000 Hz; $\pm 2.8\%$.

Phase uncertainty: 5-99 Hz: 1.5°, 100-4999 Hz: 1.3°, 5000-20,000 Hz: 2.8°

Unit Condition

As Found: In Tolerance

As Left: In Tolerance

Lab Conditions

Temperature: 72 (22) °F (°C)

Humidity: 24 %

Customer

TMS Rental

Cal Date: 22-Mar-24

Due Date:

Technician Notes

Approval Information

Technician: Ed Devlin

Approval:

Edward A. Linn

Sensor Information

Model Number: SEN041F
Serial Number: P321102
Manufacturer: Larson Davis
ID Number: 83850
Description: ICP® Accelerometer

Calibration Data

Sensitivity @ 100 Hz:	10.03	mV/g
	1.023	mV/m/s ²
Phase @ 100 Hz:	-0.08	deg.
Test Level:	10.00	g

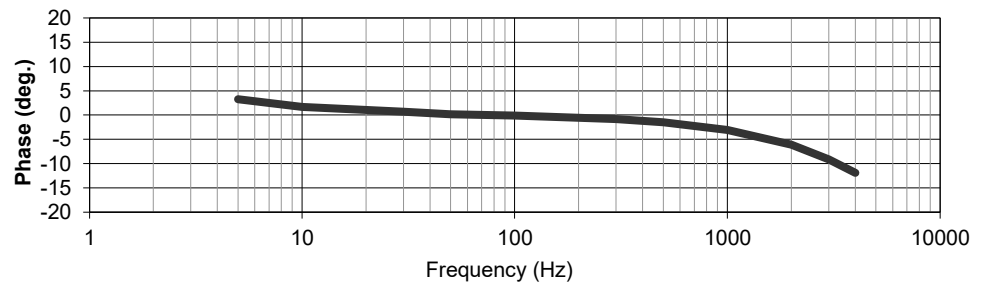
Transducer Specifications

Amp. Range:	± 500	g
Resolution:	0.008	g
Resonant Freq:	≥ 55000	Hz
Temp. Range:	-54 to 121	°C
	-65 to 250	°F
Axis:	Z - Axis	

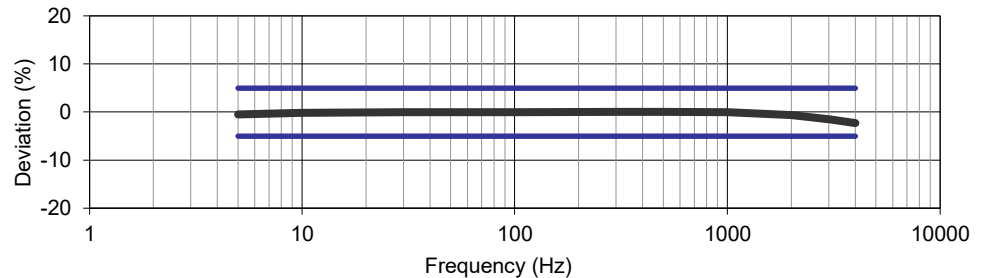
Data Table

[illegible]

Phase Response



Amplitude Response



Notes

Results relate only to the items calibrated.

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Method: Back-to-Back Comparison Calibration per ISO 16063 Part 21.

This calibration was performed with TMS 9155 Calibration Workstation 1 version 8.0.3.

Proficiency in calibration traceable to PTB (17014/17004) and NIST (683/287323).

Back-to-Back Comparison Calibration per ISO 16063-21

Procedure Used: PRD-P220 or PRD-P239

Measurement uncertainty (95% confidence level with coverage factor 2) for frequency ranges tested during calibration are as follows: 5-9 Hz; $\pm 1.7\%$, 10-99 Hz; $\pm 1.2\%$, 100 Hz; $\pm 0.75\%$, 101-920 Hz; $\pm 1.0\%$, 921-5000 Hz; $\pm 1.4\%$, 5001-10,000 Hz; $\pm 1.9\%$, 10,001-15,000 Hz; $\pm 2.2\%$, 15,001-20,000 Hz; $\pm 2.8\%$.

Phase uncertainty: 5-99 Hz; 1.5°, 100-4999 Hz; 1.3°, 5000-20,000 Hz; 2.8°

Unit Condition

As Found: In Tolerance

As Left: In Tolerance

Lab Conditions

Temperature: 72 (22) °F (°C)

Humidity: 24 %

Customer

TMS Rental

Cal Date: 22-Mar-24

Due Date:

Technician Notes

Approval Information

Technician: Ed Devlin

Approval: 

~ *Certificate of Calibration and Compliance* ~

Model : 377B02 Manufacturer : PCB
Serial : 348790 Description : 1/2" Free-Field Microphone

Calibration Environmental Conditions

Environmental test conditions as printed on microphone calibration chart.

Reference Equipment

Manufacturer	Model #	Serial #	Control #	Cal Date	Due Date
National Instruments	PC1e-6351	01896F08	CA1918	04/20/2023	04/20/2024
Larson Davis	PRM915	0143	CA2000	02/07/2023	02/07/2024
Larson Davis	PRM902	4701	CA1450	12/07/2022	12/07/2023
Larson Davis	PRM916	129	CA1084	06/23/2022	06/23/2023
Larson Davis	CAL250	5569	CA2284	10/07/2022	10/06/2023
Larson Davis	2201	146	CA1686	12/20/2022	12/20/2023
Larson Davis	GPRM902	4163	CA1089	08/23/2022	08/23/2023
Larson Davis	PRM915	147	CA2179	08/15/2022	08/15/2023
Larson Davis	PRA951-4	0241	CA1449	06/23/2022	06/23/2023
Bruel & Kjaer	4192	3259547	CA3214	01/23/2023	01/23/2024
Newport	iTHX-SD/N	1080002	CA1511	02/07/2023	02/07/2024
PCB	68510-02	N/A	CA2672	02/08/2023	02/08/2024

Frequency sweep performed with B&K UA0033 electrostatic actuator.

Condition of Unit

As Found : n/a

As Left : New Unit, In Tolerance

Notes

1. Calibration of reference equipment is traceable to one or more of the following National Labs; NIST, PTB or DFM.
2. This certificate shall not be reproduced, except in full, without written approval from PCB Piezotronics, Inc.
3. Calibration is performed in compliance with ISO 10012-1, ANSI/NCISL Z540.3 and ISO 17025.
4. Measurement results relate only to the items tested. Refer to Manufacturer's Specification Sheet for performance details.
5. Open Circuit Sensitivity is measured using the voltage insertion method following procedure AT603-5.
6. Measurement uncertainty (95% confidence level with coverage factor of 2) for sensitivity is +/-0.20 dB.
7. Unit calibrated per ACS-20.
8. Product is compliant with specification if measured value is within or equal to the specification tolerance. Product is not compliant with specification if measured value falls outside of the specification tolerance.

Technician: Leonard Lukasik Date: 06/13/2023



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AN AMPHENOL COMPANY
3425 WALDEN AVENUE - DEPEW, NY 14043
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~ Calibration Report ~

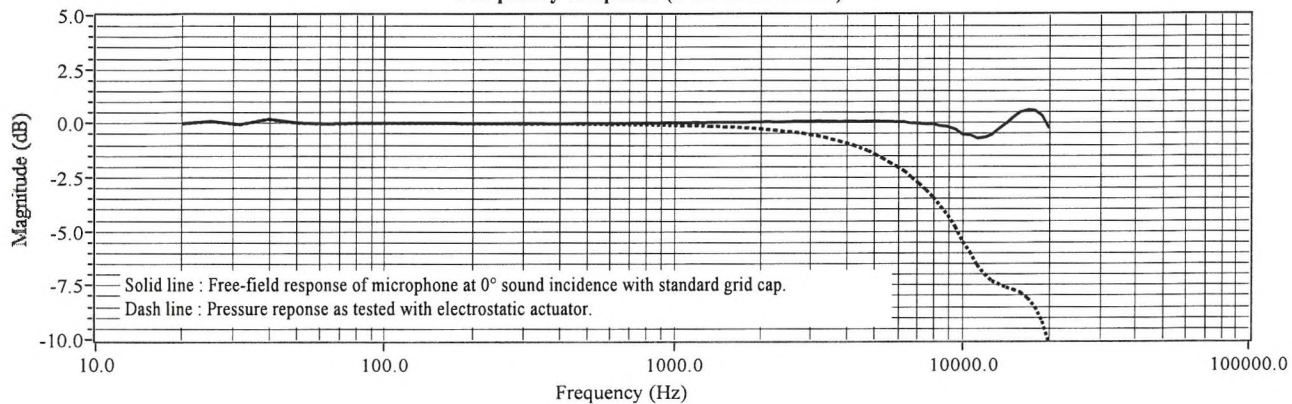
Model : 377B02 Manufacturer : PCB
Serial : 348790 Description : 1/2" Free-Field Microphone

Calibration Data

Open Circuit Sensitivity at 251.2 Hz : 56.68 mV/Pa Polarization Voltage, External : 0 V
-24.93 dB re 1 V/Pa Capacitance : 12.98 pF

Temperature: 68 °F (20 °C) Ambient Pressure: 979 mbar Relative Humidity: 42 %

Frequency Response (0 dB at 251.2 Hz)



Frequency (Hz)	Pressure (dB)	Free-Field (dB)	Frequency (Hz)	Pressure (dB)	Free-Field (dB)	Frequency (Hz)	Pressure (dB)	Free-Field (dB)
20.00	0.00	0.00	1584.90	-0.17	0.04	6683.40	-2.52	0.00
25.10	0.10	0.10	1678.80	-0.19	0.04	7079.50	-2.80	-0.02
31.60	-0.04	-0.04	1778.30	-0.21	0.04	7498.90	-3.11	-0.04
39.80	0.21	0.21	1883.60	-0.23	0.05	7943.30	-3.44	-0.05
50.10	0.03	0.03	1995.30	-0.26	0.05	8414.00	-3.86	-0.13
63.10	-0.03	-0.03	2113.50	-0.27	0.07	8912.50	-4.27	-0.16
79.40	0.02	0.02	2238.70	-0.31	0.06	9440.60	-4.79	-0.27
100.00	0.02	0.02	2371.40	-0.35	0.06	10000.00	-5.49	-0.54
125.90	0.01	0.01	2511.90	-0.38	0.08	10592.50	-5.95	-0.55
158.50	0.01	0.01	2660.70	-0.42	0.09	11220.20	-6.56	-0.70
199.50	0.00	0.00	2818.40	-0.46	0.10	11885.00	-6.99	-0.67
251.20	0.00	0.00	2985.40	-0.53	0.09	12589.30	-7.31	-0.54
316.20	-0.01	-0.00	3162.30	-0.58	0.10	13335.20	-7.46	-0.27
398.10	-0.02	-0.02	3349.70	-0.66	0.08	14125.40	-7.61	-0.02
501.20	-0.03	0.01	3548.10	-0.73	0.09	14962.40	-7.71	0.26
631.00	-0.05	-0.01	3758.40	-0.83	0.07	15848.90	-7.84	0.51
794.30	-0.07	0.02	3981.10	-0.92	0.08	16788.00	-8.12	0.60
1000.00	-0.09	0.03	4217.00	-1.02	0.09	17782.80	-8.52	0.59
1059.30	-0.09	0.04	4466.80	-1.15	0.08	18836.50	-9.19	0.32
1122.00	-0.11	0.03	4731.50	-1.28	0.09	19952.60	-10.19	-0.26
1188.50	-0.11	0.04	5011.90	-1.44	0.09			
1258.90	-0.12	0.04	5308.80	-1.62	0.08			
1333.50	-0.14	0.04	5623.40	-1.81	0.07			
1412.50	-0.14	0.05	5956.60	-2.02	0.05			
1496.20	-0.16	0.04	6309.60	-2.23	0.06			

Technician: Leonard Lukasik Date: 06/13/2023



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Calibration Certificate

Certificate Number 2023009282

Customer:

HDS Environment
640 Rue Saint Paul O,Bur 100
Montreal,QC H3C 1L9,Canada

Model Number	PRM821	Procedure Number	D0001.8383
Serial Number	001203	Technician	Jacob Cannon
Test Results	Pass	Calibration Date	24 Jul 2023
Initial Condition	As Manufactured	Calibration Due	
Description	Larson Davis 1/2" Preamplifier for 821 Class 1	Temperature	23.69 °C ± 0.01 °C
		Humidity	48.6 %RH ± 0.5 %RH
		Static Pressure	86.5 kPa ± 0.03 kPa

Evaluation Method Tested electrically using a 12.0 pF capacitor to simulate microphone capacitance.
Data reported in dB re 20 µPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level. Tests are considered to pass when the measured value is within the acceptance limits, which are derived from industry standards.

Simple acceptance criteria is used with an expanded uncertainty not to exceed 0.20 dB for all measurements below 100 kHz and 0.50 dB for measurements above 100 kHz.

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Standards Used

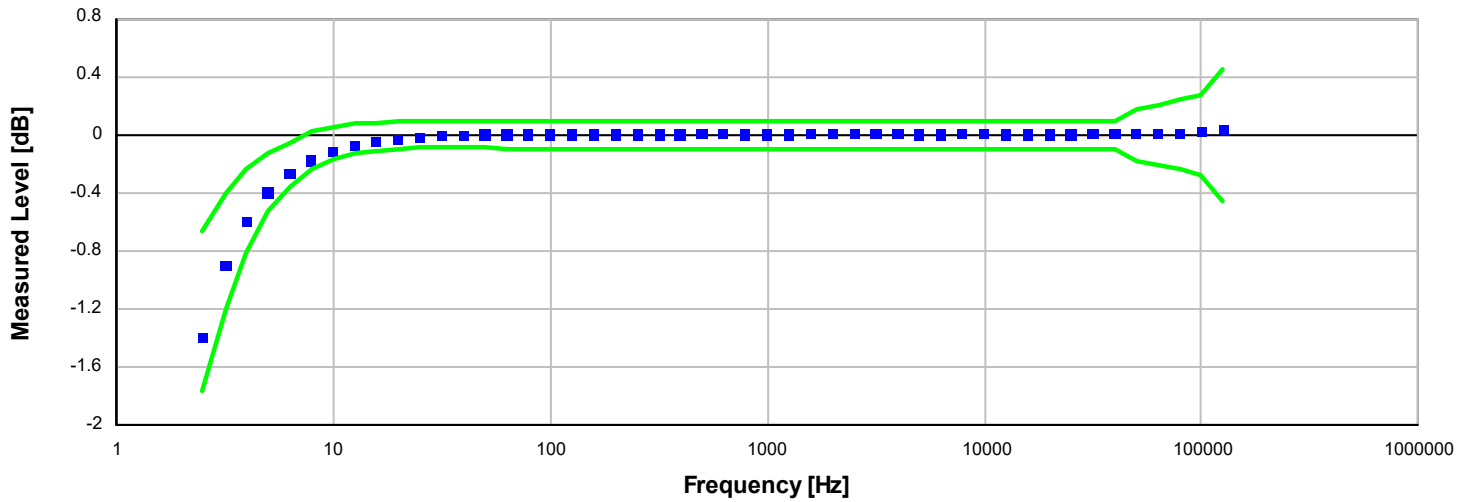
Description	Cal Date	Cal Due	Cal Standard
Larson Davis Model 2900 Real Time Analyzer	10/31/2022	10/31/2023	001150
Hart Scientific 2626-S Humidity/Temperature Sensor	02/20/2023	08/20/2024	006946
Keysight 34401A DMM	06/14/2023	06/14/2024	007485
SRS DS360 Ultra Low Distortion Generator	03/30/2023	03/30/2024	007635

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Frequency Response

Frequency response electrically tested at 120.0 dB re 1 μ V

Frequency [Hz]	Test Result [dB re 1 kHz]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
2.50	-1.40	-1.76	-0.66	0.12	Pass
3.20	-0.90	-1.20	-0.40	0.12	Pass
4.00	-0.60	-0.81	-0.23	0.12	Pass
5.00	-0.40	-0.53	-0.13	0.10	Pass
6.30	-0.27	-0.36	-0.05	0.07	Pass
7.90	-0.18	-0.24	0.03	0.07	Pass
10.00	-0.12	-0.17	0.06	0.07	Pass
12.60	-0.08	-0.13	0.08	0.04	Pass
15.80	-0.05	-0.11	0.09	0.04	Pass
20.00	-0.03	-0.10	0.10	0.04	Pass
25.10	-0.02	-0.08	0.10	0.04	Pass
31.60	-0.01	-0.08	0.10	0.04	Pass
39.80	-0.01	-0.09	0.10	0.04	Pass
50.10	0.00	-0.09	0.10	0.04	Pass
63.10	0.00	-0.10	0.10	0.04	Pass
79.40	0.00	-0.10	0.10	0.04	Pass
100.00	0.00	-0.10	0.10	0.04	Pass
125.90	0.00	-0.10	0.10	0.04	Pass
158.50	0.00	-0.10	0.10	0.04	Pass
199.50	0.00	-0.10	0.10	0.04	Pass
251.20	0.00	-0.10	0.10	0.04	Pass
316.20	0.00	-0.10	0.10	0.04	Pass
398.10	0.00	-0.10	0.10	0.04	Pass
501.20	0.01	-0.10	0.10	0.04	Pass
631.00	0.01	-0.10	0.10	0.04	Pass
794.30	0.00	-0.10	0.10	0.04	Pass
1,000.00	0.00	-0.10	0.10	0.04	Pass
1,258.90	0.00	-0.10	0.10	0.04	Pass
1,584.90	0.01	-0.10	0.10	0.04	Pass
1,995.30	0.01	-0.10	0.10	0.04	Pass
2,511.90	0.01	-0.10	0.10	0.04	Pass
3,162.30	0.01	-0.10	0.10	0.04	Pass

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Frequency [Hz]	Test Result [dB re 1 kHz]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
3,981.10	0.01	-0.10	0.10	0.04	Pass
5,011.90	0.00	-0.10	0.10	0.04	Pass
6,309.60	0.00	-0.10	0.10	0.04	Pass
7,943.30	0.01	-0.10	0.10	0.04	Pass
10,000.00	0.01	-0.10	0.10	0.04	Pass
12,589.30	0.00	-0.10	0.10	0.04	Pass
15,848.90	0.00	-0.10	0.10	0.04	Pass
19,952.60	0.00	-0.10	0.10	0.04	Pass
25,118.90	0.00	-0.10	0.10	0.05	Pass
31,622.80	0.01	-0.10	0.10	0.05	Pass
39,810.70	0.01	-0.10	0.10	0.05	Pass
50,118.70	0.01	-0.18	0.18	0.09	Pass
63,095.70	0.01	-0.21	0.21	0.09	Pass
79,432.80	0.01	-0.24	0.24	0.09	Pass
100,000.00	0.02	-0.27	0.27	0.09	Pass
125,892.50	0.03	-0.45	0.45	0.45	Pass

Gain Measurement

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
Output Gain @ 1 kHz	-0.14	-0.45	-0.03	0.04	Pass

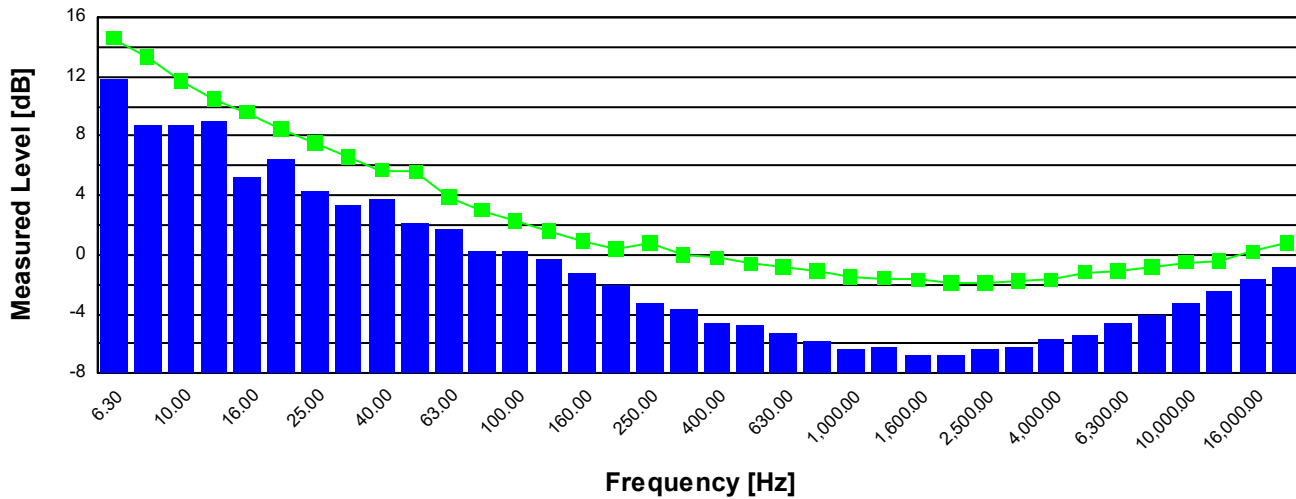
-- End of measurement results--

DC Bias Measurement

Measurement	Test Result [V]	Lower limit [V]	Upper limit [V]	Expanded Uncertainty [V]	Result
DC Voltage	18.15	15.50	19.50	0.04	Pass

-- End of measurement results--

1/3-Octave Self-Generated Noise



Frequency [Hz]	Test Result [dB re 1 μ V]	Upper limit [dB re 1 μ V]	Result
6.30	11.90	14.60	Pass
8.00	8.70	13.30	Pass
10.00	8.80	11.70	Pass
12.50	9.00	10.50	Pass
16.00	5.30	9.60	Pass
20.00	6.50	8.50	Pass
25.00	4.30	7.50	Pass
31.50	3.30	6.60	Pass
40.00	3.70	5.70	Pass
50.00	2.20	5.60	Pass
63.00	1.70	3.90	Pass
80.00	0.30	3.00	Pass
100.00	0.20	2.30	Pass
125.00	-0.30	1.60	Pass
160.00	-1.30	0.90	Pass
200.00	-2.00	0.40	Pass
250.00	-3.20	0.80	Pass
315.00	-3.60	0.00	Pass
400.00	-4.60	-0.20	Pass
500.00	-4.70	-0.60	Pass
630.00	-5.30	-0.80	Pass
800.00	-5.80	-1.10	Pass
1,000.00	-6.30	-1.50	Pass
1,250.00	-6.20	-1.60	Pass
1,600.00	-6.70	-1.70	Pass
2,000.00	-6.70	-1.90	Pass
2,500.00	-6.40	-1.90	Pass
3,150.00	-6.20	-1.80	Pass
4,000.00	-5.70	-1.70	Pass
5,000.00	-5.40	-1.20	Pass
6,300.00	-4.60	-1.10	Pass
8,000.00	-4.10	-0.80	Pass
10,000.00	-3.30	-0.50	Pass
12,500.00	-2.50	-0.40	Pass
16,000.00	-1.60	0.20	Pass
20,000.00	-0.80	0.80	Pass

-- End of measurement results--

Self-generated Noise

Bandwidth	Test Result [μV]	Test Result [dB re 1 μV]	Upper limit [dB re 1 μV]	Result
Broadband (20 Hz - 20 kHz)	4.68	13.40	15.50	Pass
A-weighted (20 Hz - 20 kHz)	2.16	6.70	9.00	Pass
-- End of measurement results--				

Signatory: Jacob Cannon

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Calibration Certificate

Certificate Number 2023009836

Customer:

HDS Environment
640 Rue Saint Paul O,Bur 100
Montreal,QC H3C 1L9,Canada

Model Number CAL200

Serial Number 21489

Test Results Pass

Initial Condition As Manufactured

Description Larson Davis CAL200 Acoustic Calibrator

Procedure Number D0001.8386

Technician Scott Montgomery

Calibration Date 2 Aug 2023

Calibration Due

Temperature 25 °C ± 0.3 °C

Humidity 38 %RH ± 3 %RH

Static Pressure 101.2 kPa ± 1 kPa

Evaluation Method The data is acquired by the insert voltage calibration method using the reference microphone's open circuit sensitivity. Data reported in dB re 20 µPa.

Compliance Standards Compliant to Manufacturer Specifications per D0001.8190 and the following standards:
IEC 60942:2017 ANSI S1.40-2006

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.

Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Standards Used			
Description	Cal Date	Cal Due	Cal Standard
Agilent 34401A DMM	06/21/2023	06/21/2024	001021
Larson Davis Model 2900 Real Time Analyzer	03/31/2023	03/31/2024	001051
Microphone Calibration System	02/22/2023	02/22/2024	005446
1/2" Preamplifier	08/23/2022	08/23/2023	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/08/2022	08/08/2023	006507
1/2 inch Microphone - RI - 200V	10/05/2022	10/05/2023	006510
Hart Scientific 2626-S Humidity/Temperature Sensor	11/14/2022	05/14/2024	006943
Pressure Sensor	11/02/2022	11/02/2023	007827

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Output Level

Nominal Level [dB]	Pressure [kPa]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
94	101.2	93.98	93.80	94.20	0.15	Pass
114	101.2	114.00	113.80	114.20	0.14	Pass

-- End of measurement results--

Frequency

Nominal Level [dB]	Pressure [kPa]	Test Result [Hz]	Lower limit [Hz]	Upper limit [Hz]	Expanded Uncertainty [Hz]	Result
94	101.2	1,000.34	993.00	1,007.00	0.20	Pass
114	101.2	1,000.34	993.00	1,007.00	0.20	Pass

-- End of measurement results--

Total Harmonic Distortion + Noise (THD+N)

Nominal Level [dB]	Pressure [kPa]	Test Result [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
94	101.2	0.46	0.00	2.00	0.25 ‡	Pass
114	101.2	0.33	0.00	2.00	0.25 ‡	Pass

-- End of measurement results--

Level Change Over Pressure

Tested at: 114 dB, 25 °C, 32 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
108.0	108.0	-0.03	-0.25	0.25	0.04 ‡	Pass
101.3	101.3	0.00	-0.25	0.25	0.04 ‡	Pass
92.0	91.9	0.02	-0.25	0.25	0.04 ‡	Pass
83.0	82.8	0.01	-0.25	0.25	0.04 ‡	Pass
74.0	73.9	-0.03	-0.25	0.25	0.04 ‡	Pass
65.0	65.0	-0.12	-0.25	0.25	0.04 ‡	Pass

-- End of measurement results--

Frequency Change Over Pressure

Tested at: 114 dB, 25 °C, 32 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [Hz]	Lower limit [Hz]	Upper limit [Hz]	Expanded Uncertainty [Hz]	Result
108.0	108.0	0.00	-7.00	7.00	0.20 ‡	Pass
101.3	101.3	0.00	-7.00	7.00	0.20 ‡	Pass
92.0	91.9	0.00	-7.00	7.00	0.20 ‡	Pass
83.0	82.8	-0.01	-7.00	7.00	0.20 ‡	Pass
74.0	73.9	-0.01	-7.00	7.00	0.20 ‡	Pass
65.0	65.0	-0.02	-7.00	7.00	0.20 ‡	Pass

-- End of measurement results--

Total Harmonic Distortion + Noise (THD+N) Over Pressure

Tested at: 114 dB, 25 °C, 32 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
108.0	108.0	0.32	0.00	2.00	0.25 ‡	Pass
101.3	101.3	0.32	0.00	2.00	0.25 ‡	Pass
92.0	91.9	0.32	0.00	2.00	0.25 ‡	Pass
83.0	82.8	0.32	0.00	2.00	0.25 ‡	Pass
74.0	73.9	0.33	0.00	2.00	0.25 ‡	Pass
65.0	65.0	0.34	0.00	2.00	0.25 ‡	Pass

-- End of measurement results--

Signatory: Scott Montgomery

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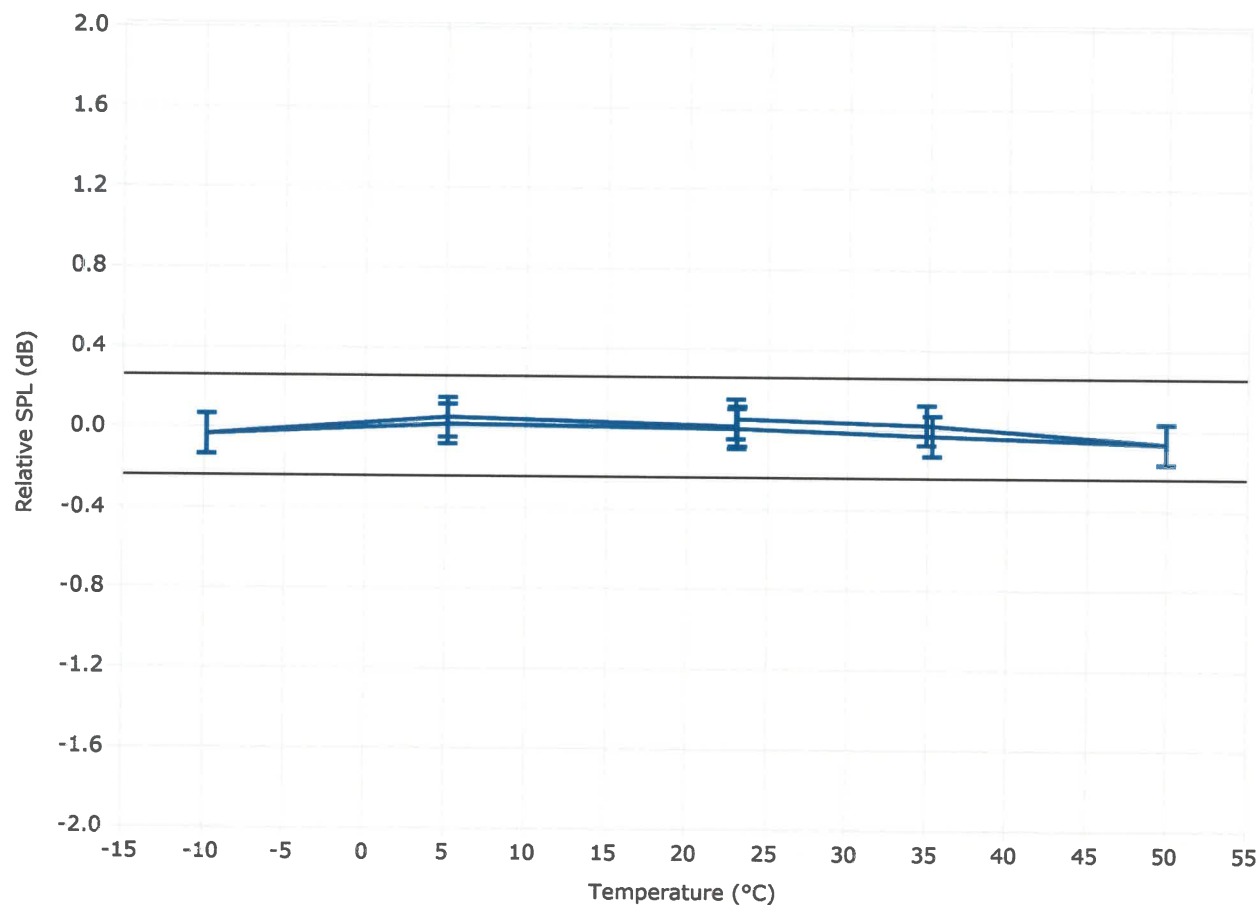


Model CAL200 Relative SPL vs. Temperature

Larson Davis Model CAL200 Serial Number: 21489

Model CAL200 Relative SPL vs. Temperature at 50% RH.
A 2559 Mic (SN: 2992) with a PRM901 Preamp (SN: 0175), station 16 was used to check the levels.

Test Date: 09 Jun 2023 11:26:09 AM



0.1dB expanded uncertainty at ~95% confidence level (k=2)

Sequence File: CAL250w200s.SEQ

Test Location: Larson Davis – A PCB Division
1681 West 820 North, Provo, Utah 84601
Tel: 716 684-0001 www.LarsonDavis.com

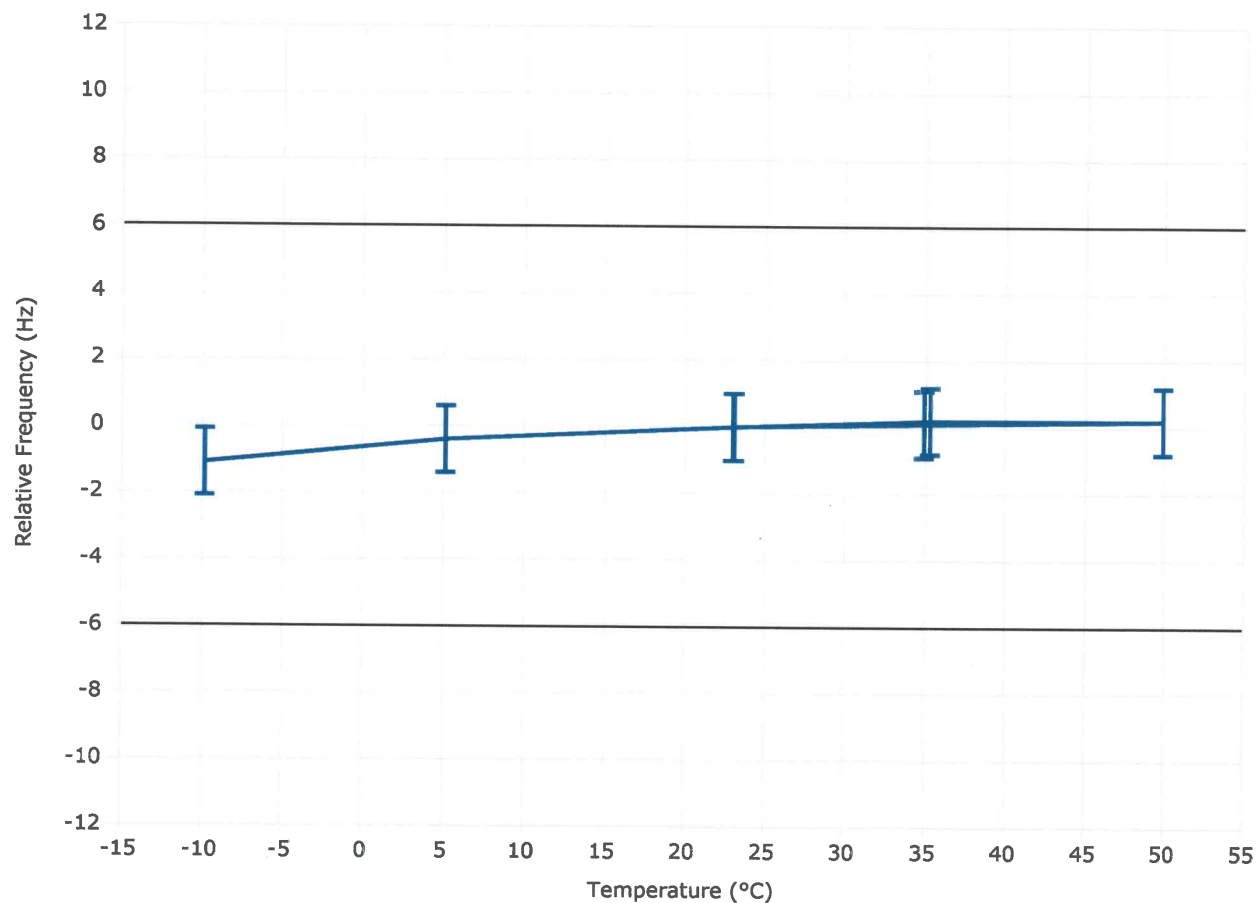


Model CAL200 Relative Frequency vs. Temperature

Larson Davis Model CAL200 Serial Number: 21489

Model CAL200 Relative Frequency vs. Temperature at 50% RH.
A 2559 Mic (SN: 2992) with a PRM901 Preamp (SN: 0175), station 16 was used to check the levels.

Test Date: 09 Jun 2023 11:26:09 AM



1.0 Hz expanded uncertainty at ~95% confidence level (k=2)

Sequence File: CAL250w200s.SEQ

Test Location: Larson Davis – A PCB Division
1681 West 820 North, Provo, Utah 84601
Tel: 716 684-0001 www.LarsonDavis.com

Calibration Certificate

Certificate Number 2023010140

Customer:

HDS Environment

640 Rue Saint Paul O, Bur 100

Montreal, QC H3C 1L9, Canada

Model Number Spartan 821

Serial Number 30013

Test Results Pass

Initial Condition As Manufactured

Description Spartan 821
Class 1 Sound Level Meter
Firmware Revision: 1.002R02

Procedure Number

Technician Jacob Cannon

Calibration Date 8 Aug 2023

Calibration Due

Temperature 23.88 °C ± 0.25 °C

Humidity 49.8 %RH ± 2.0 %RH

Static Pressure 86.27 kPa ± 0.13 kPa

Evaluation Method

Tested with:

Data reported in dB re 20 µPa.

Larson Davis CAL200. S/N 9079

TMS 9917C. S/N 219

Larson Davis PRM821. S/N 001203

PCB 377B02. S/N 348790

Compliance Standards

Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8467:

IEC 60651:2001 Type 1

IEC 60804:2000 Type 1

IEC 61260:2014 Class 1

IEC 61672:2013 Class 1

ANSI S1.4-2014 Class 1

ANSI S1.4 (R2006) Type 1

ANSI S1.11-2014 Class 1

ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.

Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Correction data from Larson Davis Spartan 721/821 Manual, I821.03 Rev A

For 1/4" microphones, the Larson Davis ADP024 1/4" to 1/2" adaptor is used with the calibrators and the Larson Davis ADP043 1/4" to 1/2" adaptor is used with the preamplifier.

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Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 µPa

Periodic tests were performed in accordance with procedures from IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part3.

No Pattern approval for IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 available.

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3, for the environmental conditions under which the tests were performed. However, no general statement or conclusion can be made about conformance of the sound level meter to the full specifications of IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 because (a) evidence was not publicly available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 or correction data for acoustical test of frequency weighting were not provided in the Instruction Manual and (b) because the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3 cover only a limited subset of the specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1.

Standards Used			
Description	Cal Date	Cal Due	Cal Standard
Hart Scientific 2626-S Humidity/Temperature Sensor	2023-02-20	2024-08-20	006946
Larson Davis CAL200 Acoustic Calibrator	2023-07-17	2024-07-17	007027
Larson Davis Model 831	2023-02-22	2024-02-22	007182
PCB 377A13 1/2 inch Prepolarized Pressure Microphone	2023-03-06	2024-03-06	007185
SRS DS360 Ultra Low Distortion Generator	2023-03-30	2024-03-30	007635
TMS 9917C-LD Microphone Comparison Calibrator	2023-03-14	2024-03-14	007649
Larson Davis 1/2" Preamplifier for Model 831 Type 1	2022-09-28	2023-09-28	PCB0004783

Acoustic Calibration

Measured according to IEC 61672-3:2013 10 and ANSI S1.4-2014 Part 3: 10

Measurement	Test Result [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
1000 Hz	114.00	113.80	114.20	0.14	Pass

Loaded Circuit Sensitivity

Measurement	Test Result [dB re 1 V / Pa]	Lower Limit [dB re 1 V / Pa]	Upper Limit [dB re 1 V / Pa]	Expanded Uncertainty [dB]	Result
1000 Hz	-24.77	-27.50	-24.50	0.14	Pass

-- End of measurement results--

Acoustic Signal Tests, C-weighting

Measured according to IEC 61672-3:2013 12 and ANSI S1.4-2014 Part 3: 12 using a comparison coupler with Unit Under Test (UUT) and reference SLM using slow time-weighted sound level for compliance to IEC 61672-1:2013 5.5; ANSI S1.4-2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Expected [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
125	-0.20	-0.20	-1.20	0.80	0.40	Pass
1000	0.20	0.00	-0.70	0.70	0.40	Pass
8000	-3.70	-3.00	-5.50	-1.50	0.50	Pass

-- End of measurement results--

Self-generated Noise

Measured according to IEC 61672-3:2013 11.1 and ANSI S1.4-2014 Part 3: 11.1

Measurement	Test Result [dB]
A-weighted	26.12

-- End of measurement results--

-- End of Report--

Signatory: Jacob Cannon

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1681 West 820 North
Provo, UT 84601, United States
716-684-0001



Calibration Certificate

Certificate Number 2023010134

Customer:

HDS Environment

640 Rue Saint Paul O, Bur 100

Montreal, QC H3C 1L9, Canada

Model Number Spartan 821

Serial Number 30013

Test Results **Pass**

Initial Condition As Manufactured

Description Spartan 821
Class 1 Sound Level Meter
Firmware Revision: 1.002R02

Procedure Number D0001.8465

Technician Jacob Cannon

Calibration Date 8 Aug 2023

Calibration Due

Temperature 23.87 °C ± 0.25 °C

Humidity 48.6 %RH ± 2.0 %RH

Static Pressure 86.29 kPa ± 0.13 kPa

Evaluation Method Tested electrically using Larson Davis PRM821 S/N 001203 and a 12.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 µPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8468:

IEC 60651:2001 Type 1

IEC 60804:2000 Type 1

IEC 61252:2002

IEC 61672:2013 Class 1

ANSI S1.4-2014 Class 1

ANSI S1.4 (R2006) Type 1

ANSI S1.25 (R2007)

ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017. **Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Correction data from Larson Davis Spartan 721/821 Manual, I821.03 Rev A

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 µPa

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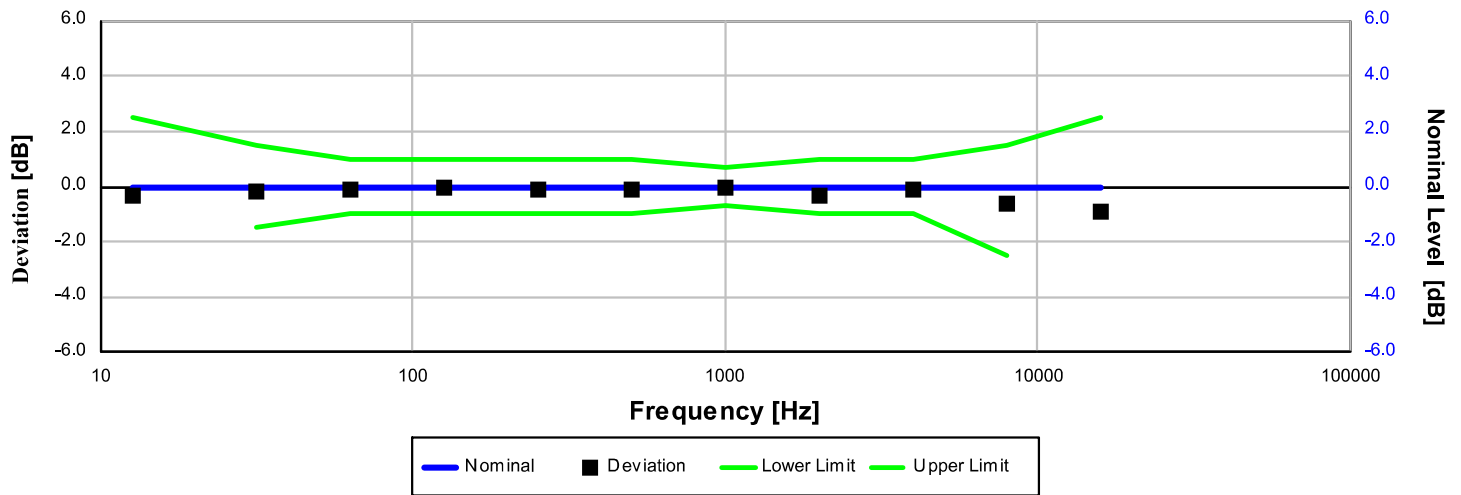


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Description	Standards Used		
	Cal Date	Cal Due	Cal Standard
Hart Scientific 2626-S Humidity/Temperature Sensor	2023-02-20	2024-08-20	006946
SRS DS360 Ultra Low Distortion Generator	2022-09-02	2023-09-02	007167



Z-weight Filter Response

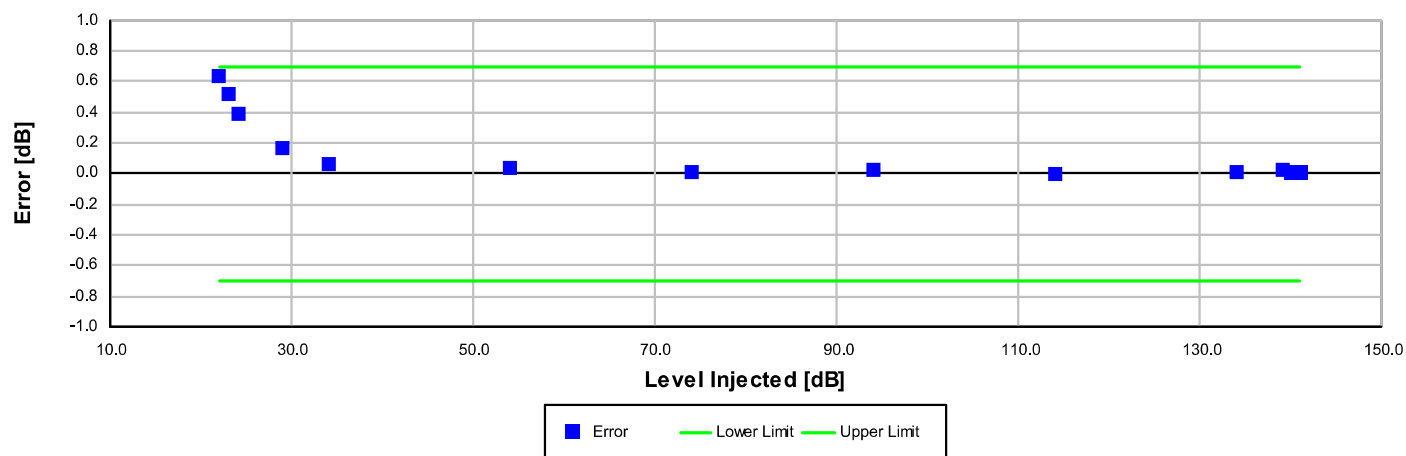


Electrical signal test of frequency weighting performed according to IEC 61672-3:2013 13 and ANSI S1.4-2014 Part 3: 13 for compliance to IEC 61672-1:2013 5.5; IEC 60651:2001 6.1 and 9.2.2; IEC 60804:2000 5; ANSI S1.4:1983 (R2006) 5.1 and 8.2.1; ANSI S1.4-2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Deviation [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
12.59	-0.30	-0.30	-inf	2.50	0.15	Pass
31.62	-0.20	-0.20	-1.50	1.50	0.15	Pass
63.10	-0.10	-0.10	-1.00	1.00	0.15	Pass
125.89	0.00	0.00	-1.00	1.00	0.15	Pass
251.19	-0.10	-0.10	-1.00	1.00	0.15	Pass
501.19	-0.10	-0.10	-1.00	1.00	0.15	Pass
1,000.00	0.00	0.00	-0.70	0.70	0.15	Pass
1,995.26	-0.30	-0.30	-1.00	1.00	0.15	Pass
3,981.07	-0.10	-0.10	-1.00	1.00	0.15	Pass
7,943.28	-0.60	-0.60	-2.50	1.50	0.15	Pass
15,848.93	-0.90	-0.90	-16.00	2.50	0.15	Pass

-- End of measurement results--

A-weighted Broadband Log Linearity: 8,000.00 Hz



Broadband level linearity performed according to IEC 61672-3:2013 16 and ANSI S1.4-2014 Part 3: 16 for compliance to IEC 61672-1:2013 5.6, IEC 60804:2000 6.2, IEC 61252:2002 8, ANSI S1.4 (R2006) 6.9, ANSI S1.4-2014 Part 1: 5.6, ANSI S1.43 (R2007) 6.2

Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
22.00	0.64	-0.70	0.70	0.16	Pass
23.00	0.52	-0.70	0.70	0.16	Pass
24.00	0.39	-0.70	0.70	0.16	Pass
29.00	0.17	-0.70	0.70	0.16	Pass
34.00	0.06	-0.70	0.70	0.16	Pass
54.00	0.04	-0.70	0.70	0.16	Pass
74.00	0.01	-0.70	0.70	0.16	Pass
94.00	0.03	-0.70	0.70	0.16	Pass
114.00	0.00	-0.70	0.70	0.15	Pass
134.00	0.02	-0.70	0.70	0.15	Pass
139.00	0.02	-0.70	0.70	0.15	Pass
140.00	0.01	-0.70	0.70	0.15	Pass
141.00	0.01	-0.70	0.70	0.15	Pass

-- End of measurement results--

Overload Detector

Overload indication performed according to IEC 61672-3:2013 20 and ANSI S1.4-2014 Part 3: 20 for compliance to IEC 61672-1:2013 5.11, IEC 60804:2000 9.3.5, IEC 61252:2002 11, ANSI S1.4 (R2006) 5.8, and ANSI S1.4-2014 Part 1: 5.11, ANSI S1.25 (R2007) 7.6, ANSI S1.43 (R2007) 7

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
Positive	141.90	140.50	142.50	0.15	Pass
Negative	141.90	140.50	142.50	0.15	Pass
Comparison	0.00	-1.50	1.50	0.15	Pass

-- End of measurement results--

Range

Measured in A-weight at 8000 Hz for compliance to IEC 61672-1:2013 5.6.4, IEC 60804:2000 6.2, IEC 61252:2002 8, ANSI S1.4 (R2006) 6.9, ANSI S1.4-2014 Part 1: 5.6.4, ANSI S1.43 (R2007) 6.2

Measurement	Measured Level [dB]	Lower limit [dB]	Expanded Uncertainty [dB]	Result
Primary Indicator Range	120.00	106.00	0.15	Pass
Dynamic Range	129.95	118.00	0.15	Pass

-- End of measurement results--

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Gain

Gain measured according to IEC 61672-3:2013 17.3 and 17.4 and ANSI S1.4-2014 Part 3: 17.3 and 17.4

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
0 dB Gain	93.90	93.20	94.80	0.15	Pass
0 dB Gain, Linearity	27.07	26.20	27.60	0.16	Pass

-- End of measurement results--

Broadband Noise Floor

Self-generated noise measured according to IEC 61672-3:2013 11.2 and ANSI S1.4-2014 Part 3: 11.2

Measurement	Test Result [dB]	Upper limit [dB]	Result
A-weight Noise Floor	12.05	14.50	Pass
Z-weight Noise Floor	22.88	25.00	Pass

-- End of measurement results--

Total Harmonic Distortion

Measured using 1/3-Octave filters

Measurement	Test Result [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
20 Hz Signal	137.85	137.20	138.80	0.15	Pass
THD	-75.63		-60.00	0.01 ‡	Pass
THD+N	-64.94		-60.00	0.01 ‡	Pass

-- End of measurement results--

-- End of Report--

Signatory: Jacob Cannon

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 716-684-0001





APPENDIX C

Session reports indoor noise levels

Spartan 821 Summary

Meter General Information

	Model	Serial
Meter	Spartan 821	30013
Preamp	PRM821	
Microphone	377B02	
Unique File Id	J00753D:66C6A6FA:000001BB	

Measurement Notes

User	
Location	SC Room D1-16
Job Description	
Note	Could not parse section, making sure you have the latest G4 installed may resolve this issue.

Overall Measurement

Start Time	2024-08-22 02:48:26		
Stop Time	2024-08-22 16:56:26		
Run Time	14:08:00		
Pre-Calibration			
Date/Time	2024-08-22 02:16:19		
Calibrator Level	114.0 dB		
Meter Sensitivity	-25.12 dB re 1V/Pa	55.46 mV/Pa	
Post-Calibration			
Date/Time	2024-08-22 16:58:03		
Calibrator Level	114.0 dB		
Meter Sensitivity	-25.06 dB re 1V/Pa	55.85 mV/Pa	
Sensitivity Delta	0.06 dB	0.39 mV/Pa	

	A	C	Z
LW _{eq}	33.9 dB	49.8 dB	61.6 dB
LW _{pk}	101.6 dB	100.5 dB	104.7 dB
LW _{Smin}	24.6 dB	40.9 dB	47.5 dB
LW _{Smax}	75.3 dB	74.5 dB	94.9 dB
LW _{Fmin}	22.8 dB	38.7 dB	44.7 dB
LW _{Fmax}	82.9 dB	82.1 dB	100.8 dB
LW _{Imin}	26.3 dB	43.1 dB	50.4 dB
LW _{Imax}	86.6 dB	85.8 dB	103.4 dB

ω = frequency weighting (A, C or Z)

LCeq - LAeq	16.0 dB		
LAlaq	42.7 dB		
Overload Count	0		
Overload Duration	00:00:00		
	A	C	Z
Under Range Peak	50,0	50,0	62,0 dB
Under Range Limit	24,0	27,0	37,0 dB
Noise Floor	17,0	18,0	25,0 dB

Ln Percentiles

LAS 5.0	34.4 dB
LAS 10.0	34.0 dB
LAS 33.3	32.9 dB
LAS 50.0	31.1 dB
LAS 66.6	30.1 dB
LAS 90.0	28.1 dB

Virtual Dosimeters

	1	2	3	4
	Custom12hr	Qc8	Qc12	Canada
Dose	0.0%	0.0%	0.0%	
Projected Dose	0.0%	0.0%	0.0%	
Lavg	33.9 dB	33.9 dB	33.9 dB	
TWA(8)	36.3 dB	36.3 dB	36.3 dB	
Projected TWA(8)	35.6 dB	33.9 dB	35.6 dB	
Criterion Level	85.0 dB	85.0 dB	83.0 dB	
Threshold Level	--- dB	--- dB	--- dB	
Exchange Rate	3.0 dB	3.0 dB	3.0 dB	
LEP'd/Lex,8h	36.3 dB	36.3 dB	36.3 dB	36.3 dB
Projected LEP'd/Lex,8h	35.6 dB	33.9 dB	35.6 dB	33.9 dB
Shift Time	12.0 hours	8.0 hours	12.0 hours	8.0 hours
Exposure Limit				85.0 dB

Spartan 821 Summary

Meter General Information

	Model	Serial
Meter	Spartan 821	30013
Preamp	PRM821	
Microphone	377B02	
Unique File Id	000753D:66C8A3AE:00000332	

Measurement Notes

User	
Location	MSC Room AC-4
Job Description	
Note	Could not parse section, making sure you have the latest G4 installed may resolve this issue.

Overall Measurement

Start Time	2024-08-23 14:58:54	
Stop Time	2024-08-24 06:21:34	
Run Time	15:22:40	
Pre-Calibration		
Date/Time	2024-08-23 14:52:32	
Calibrator Level	114.0 dB	
Meter Sensitivity	-25.08 dB re 1V/Pa	55.72 mV/Pa
Post-Calibration		
Date/Time	2024-08-24 06:26:16	
Calibrator Level	114.0 dB	
Meter Sensitivity	-25.05 dB re 1V/Pa	55.91 mV/Pa
Sensitivity Delta	0.03 dB	0.19 mV/Pa

	A	C	Z
L _{weq}	27.0 dB	40.4 dB	58.4 dB
L _{wpk}	91.5 dB	91.1 dB	111.0 dB
L _{wSmin}	17.1 dB	33.1 dB	38.5 dB
L _{wSmax}	69.8 dB	72.6 dB	100.2 dB
L _{wFmin}	16.8 dB	29.5 dB	35.0 dB
L _{wFmax}	76.5 dB	79.6 dB	107.1 dB
L _{wlmin}	17.4 dB	35.8 dB	41.8 dB
L _{wlmax}	79.6 dB	82.3 dB	109.6 dB

ω = frequency weighting (A, C or Z)

LC _{eq} - LA _{eq}	13.3 dB		
LA _{eq}	35.8 dB		
Overload Count	0		
Overload Duration	00:00:00		
	A	C	Z
Under Range Peak	50,0	50,0	62,0 dB
Under Range Limit	24,0	27,0	37,0 dB
Noise Floor	17,0	18,0	25,0 dB

Ln Percentiles

LAS 5.0	28.1 dB
LAS 10.0	26.5 dB
LAS 33.3	21.0 dB
LAS 50.0	<20 dB
LAS 66.6	<20 dB
LAS 90.0	<20 dB

Virtual Dosimeters

	1	2	3	4
	Custom12hr	Qc8	Qc12	Canada
Dose	0.0%	0.0%	0.0%	
Projected Dose	0.0%	0.0%	0.0%	
L _{avg}	27.0 dB	27.0 dB	27.0 dB	
TWA(8)	29.9 dB	29.9 dB	29.9 dB	
Projected TWA(8)	28.8 dB	27.0 dB	28.8 dB	
Criterion Level	85.0 dB	85.0 dB	83.0 dB	
Threshold Level	--- dB	--- dB	--- dB	
Exchange Rate	3.0 dB	3.0 dB	3.0 dB	
LEP'd/Lex,8h	29.9 dB	29.9 dB	29.9 dB	29.9 dB
Projected LEP'd/Lex,8h	28.8 dB	27.0 dB	28.8 dB	27.0 dB
Shift Time	12.0 hours	8.0 hours	12.0 hours	8.0 hours
Exposure Limit				85.0 dB

Spartan 821 Summary

Meter General Information

	Model	Serial
Meter	Spartan 821	30013
Preamp	PRM821	
Microphone	377B02	
Unique File Id	000753D:66CC2CA8:0000052E	

Measurement Notes

User	
Location	380-person camp - Room D8
Job Description	
Note	Could not parse section, making sure you have the latest G4 installed may resolve this issue.

Overall Measurement

Start Time	2024-08-26 07:20:08		
Stop Time	2024-08-27 04:29:42		
Run Time	21:09:34		
Pre-Calibration			
Date/Time	2024-08-26 04:22:12		
Calibrator Level	114.0 dB		
Meter Sensitivity	-25.11 dB re 1V/Pa	55.53 mV/Pa	
Post-Calibration			
Date/Time	2024-08-27 07:46:11		
Calibrator Level	114.0 dB		
Meter Sensitivity	-25.11 dB re 1V/Pa	55.53 mV/Pa	
Sensitivity Delta	-0.01 dB	0 mV/Pa	

	A	C	Z
L _{weq}	42.7 dB	61.1 dB	65.5 dB
L _{wpk}	88.1 dB	91.9 dB	97.3 dB
L _{wSmin}	41.2 dB	58.0 dB	62.1 dB
L _{wSmax}	64.1 dB	75.9 dB	82.1 dB
L _{wFmin}	39.9 dB	54.9 dB	58.9 dB
L _{wFmax}	70.3 dB	82.1 dB	87.4 dB
L _{wlmin}	42.7 dB	60.4 dB	64.9 dB
L _{wlmax}	74.8 dB	84.8 dB	90.8 dB

ω = frequency weighting (A, C or Z)

LC _{eq} - LA _{eq}	18.5 dB		
LA _{eq}	45.5 dB		
Overload Count	0		
Overload Duration	00:00:00		
	A	C	Z
Under Range Peak	50,0	50,0	62,0 dB
Under Range Limit	24,0	27,0	37,0 dB
Noise Floor	17,0	18,0	25,0 dB

Ln Percentiles

LAS 5.0	43.3 dB
LAS 10.0	42.9 dB
LAS 33.3	42.5 dB
LAS 50.0	42.4 dB
LAS 66.6	42.3 dB
LAS 90.0	42.0 dB

Virtual Dosimeters

	1	2	3	4
	Custom12hr	Qc8	Qc12	Canada
Dose	0.0%	0.0%	0.0%	
Projected Dose	0.0%	0.0%	0.0%	
L _{avg}	42.7 dB	42.7 dB	42.7 dB	
TWA(8)	46.9 dB	46.9 dB	46.9 dB	
Projected TWA(8)	44.4 dB	42.7 dB	44.4 dB	
Criterion Level	85.0 dB	85.0 dB	83.0 dB	
Threshold Level	--- dB	--- dB	--- dB	
Exchange Rate	3.0 dB	3.0 dB	3.0 dB	
LEP'd/Lex,8h	46.9 dB	46.9 dB	46.9 dB	46.9 dB
Projected LEP'd/Lex,8h	44.4 dB	42.7 dB	44.4 dB	42.7 dB
Shift Time	12.0 hours	8.0 hours	12.0 hours	8.0 hours
Exposure Limit				85.0 dB

Spartan 821 Summary

Meter General Information

	Model	Serial
Meter	Spartan 821	30013
Preamp	PRM821	
Microphone	377B02	
Unique File Id	000753D:66CEB193:00000694	

Measurement Notes

User	
Location	PSC Room BD-16
Job Description	
Note	Could not parse section, making sure you have the latest G4 installed may resolve this issue.

Overall Measurement

Start Time	2024-08-28 05:11:47		
Stop Time	2024-08-28 20:05:22		
Run Time	14:53:35		
Pre-Calibration			
Date/Time	2024-08-28 04:50:44		
Calibrator Level	114.0 dB		
Meter Sensitivity	-25.10 dB re 1V/Pa	55.59 mV/Pa	
Post-Calibration			
Date/Time	2024-08-28 20:09:12		
Calibrator Level	114.0 dB		
Meter Sensitivity	-25.02 dB re 1V/Pa	56.10 mV/Pa	
Sensitivity Delta	0.08 dB	0.51 mV/Pa	

	A	C	Z
L _w eq	32.3 dB	51.3 dB	61.8 dB
L _w pk	90.8 dB	90.8 dB	103.6 dB
L _w S _{min}	22.0 dB	42.3 dB	46.9 dB
L _w S _{max}	68.0 dB	69.3 dB	93.5 dB
L _w F _{min}	21.3 dB	39.9 dB	44.4 dB
L _w F _{max}	75.0 dB	75.7 dB	99.8 dB
L _w I _{min}	22.8 dB	44.8 dB	50.4 dB
L _w I _{max}	78.7 dB	78.8 dB	102.3 dB

ω = frequency weighting (A, C or Z)

LCeq - LAeq	19.1 dB		
LAEq	38.8 dB		
Overload Count	0		
Overload Duration	00:00:00		
	A	C	Z
Under Range Peak	50,0	50,0	62,0 dB
Under Range Limit	24,0	27,0	37,0 dB
Noise Floor	17,0	18,0	25,0 dB

Ln Percentiles

LAS 5.0	36.2 dB
LAS 10.0	35.8 dB
LAS 33.3	29.4 dB
LAS 50.0	27.7 dB
LAS 66.6	26.6 dB
LAS 90.0	25.1 dB

Virtual Dosimeters

	1	2	3	4
	Custom12hr	Qc8	Qc12	Canada
Dose	0.0%	0.0%	0.0%	
Projected Dose	0.0%	0.0%	0.0%	
L _{avg}	32.3 dB	32.3 dB	32.3 dB	
TWA(8)	35.0 dB	35.0 dB	35.0 dB	
Projected TWA(8)	34.0 dB	32.3 dB	34.0 dB	
Criterion Level	85.0 dB	85.0 dB	83.0 dB	
Threshold Level	--- dB	--- dB	--- dB	
Exchange Rate	3.0 dB	3.0 dB	3.0 dB	
LEP'd/Lex,8h	35.0 dB	35.0 dB	35.0 dB	35.0 dB
Projected LEP'd/Lex,8h	34.0 dB	32.3 dB	34.0 dB	32.3 dB
Shift Time	12.0 hours	8.0 hours	12.0 hours	8.0 hours
Exposure Limit				85.0 dB



APPENDIX D

Session reports whole-body vibration levels

HVM General Information

Serial Number	0001785
Model	HVM200
Firmware Version	4.8.1R0
HVM File Name	HVMD_240822_044810.hvm2
User	
Location	SC Room D1-16
Job Description	
Note	

Setup

Operating Mode	WholeBody
Averaging	60 seconds
Exposure Limit	1.20
Exposure Action	0.50
Integration Method	None
Selected Accelerometer	ICP

	x	y	z
Sensitivity mV/(m/s ²)	10,370000	10,330000	10,530000
Weighting	Wd	Wd	Wk
k-Factors	1.0000	1.0000	1.0000

Overall Data

Start Time	2024-Aug-22 04:48:10
Run Time (hh:mm:ss)	13:00:00

	x	y	z	Sum	Units
a_{RMS}	0,0011	0,0010	0,0017	0,0023	m/s ²
MTVV	0,0084	0,0091	0,0120	0,0146	m/s ²
a_{PEAK}	0,0280	0,0314	0,0814	0,0837	m/s ²
Crest Factor	26,2318	30,5021	47,3733	36,8827	
a_{MIN}	0,0004	0,0004	0,0009	0,0013	m/s ²
A(8)	0,0014	0,0013	0,0022	0,0022	m/s ²
A(8) Action	>24	>24	>24	>24	hours
A(8) Exposure	>24	>24	>24	>24	hours
VDV	0,0219	0,0221	0,0401	0,0401	m/s^1.75
Exposure Points				0	Points

HVM General Information

Serial Number	0001785
Model	HVM200
Firmware Version	4.8.1R0
HVM File Name	HVMD_240823_145828.hvm2
User	
Location	MSC Room AC-4
Job Description	
Note	

Setup

Operating Mode	WholeBody
Averaging	60 seconds
Exposure Limit	1.20
Exposure Action	0.50
Integration Method	None
Selected Accelerometer	ICP

	x	y	z
Sensitivity mV/(m/s ²)	10,370000	10,330000	10,530000
Weighting	Wd	Wd	Wk
k-Factors	1.0000	1.0000	1.0000

Overall Data

Start Time	2024-Aug-23 14:58:28
Run Time (hh:mm:ss)	15:23:11

	x	y	z	Sum	Units
a _{RMS}	0,0012	0,0012	0,0015	0,0022	m/s ²
MTVV	0,0518	0,0444	0,0442	0,0789	m/s ²
a _{PEAK}	0,2740	0,1263	0,1682	0,2805	m/s ²
Crest Factor	222,8710	108,1473	115,3993	125,4434	
a _{MIN}	0,0005	0,0005	0,0009	0,0013	m/s ²
A(8)	0,0017	0,0016	0,0020	0,0020	m/s ²
A(8) Action	>24	>24	>24	>24	hours
A(8) Exposure	>24	>24	>24	>24	hours
VDV	0,1141	0,0694	0,0839	0,1141	m/s^1.75
Exposure Points				0	Points

HVM General Information

Serial Number	0001785
Model	HVM200
Firmware Version	4.8.1R0
HVM File Name	HVMD_240826_071957.hvm2
User	
Location	380-person camp Room D-8
Job Description	
Note	

Setup

Operating Mode	WholeBody
Averaging	60 seconds
Exposure Limit	1.20
Exposure Action	0.50
Integration Method	None
Selected Accelerometer	ICP

	x	y	z
Sensitivity mV/(m/s ²)	10,370000	10,330000	10,530000
Weighting	Wd	Wd	Wk
k-Factors	1.0000	1.0000	1.0000

Overall Data

Start Time	2024-Aug-26 07:19:57
Run Time (hh:mm:ss)	1 days 00:07:00

	x	y	z	Sum	Units
a _{RMS}	0,0019	0,0017	0,0026	0,0037	m/s ²
MTVV	0,0106	0,0105	0,0517	0,0519	m/s ²
a _{PEAK}	0,0385	0,0333	0,2106	0,2107	m/s ²
Crest Factor	19,8408	20,0090	80,4742	57,5533	
a _{MIN}	0,0009	0,0007	0,0015	0,0024	m/s ²
A(8)	0,0034	0,0029	0,0045	0,0045	m/s ²
A(8) Action	>24	>24	>24	>24	hours
A(8) Exposure	>24	>24	>24	>24	hours
VDV	0,0453	0,0383	0,1260	0,1260	m/s^1.75
Exposure Points				0	Points

HVM General Information

Serial Number	0001785
Model	HVM200
Firmware Version	4.8.1R0
HVM File Name	HVMD_240828_051149.hvm2
User	
Location	PSC Room BD-16
Job Description	
Note	

Setup

Operating Mode	WholeBody
Averaging	60 seconds
Exposure Limit	1.20
Exposure Action	0.50
Integration Method	None
Selected Accelerometer	ICP

	x	y	z
Sensitivity mV/(m/s ²)	10,370000	10,330000	10,530000
Weighting	Wd	Wd	Wk
k-Factors	1.0000	1.0000	1.0000

Overall Data

Start Time	2024-Aug-28 05:11:49
Run Time (hh:mm:ss)	14:53:49

	x	y	z	Sum	Units
a_{RMS}	0,0020	0,0022	0,0018	0,0035	m/s ²
MTVV	0,0785	0,0849	0,0345	0,1198	m/s ²
a_{PEAK}	0,1551	0,1689	0,1255	0,2304	m/s ²
Crest Factor	75,9443	78,4200	68,3785	66,0258	
a_{MIN}	0,0004	0,0004	0,0008	0,0012	m/s ²
A(8)	0,0028	0,0029	0,0025	0,0029	m/s ²
A(8) Action	>24	>24	>24	>24	hours
A(8) Exposure	>24	>24	>24	>24	hours
VDV	0,2003	0,2169	0,1215	0,2169	m/s^1.75
Exposure Points				0	Points