INDUSTRIAL HYGIENE MONITORING REPORT – Accommodation facilities

S1 2025

Baffinland Iron Mines corp.

Mary River Mine and Milne Port inlet (Nunavut)

October 2025

File # : HDS-9128-1

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1 INTRODUCTION

1.1 Mandate and Objectives

The services of Hudon Desbiens St-Germain Environnement inc. (HDS Environnement) were selected by Baffinland Iron Mines Corporation (herein referred to as BIM) to survey various physical contaminants in accommodation facilities at the Mary River Mine and the Milne inlet Port, two sites located in the Qikiqtani Region (Baffin Island; Nunavut).

This study was carried out at the request of Wayne LeDrew, Sr. Health & Security Coordinator of BIM as part of the 2025 industrial hygiene monitoring program.

1.2 Scope and Approach

The scope of the study included the following:

- Mary River Mine site (MRM):
  - Sailivik camp (SC): indoor noise and whole-body vibration levels,
- Milne inlet Port site (MP):
  - Port Site complex (PSC) camp and 380-person camp: indoor noise and whole-body vibration levels.

The present report includes, but is not limited to, a brief description of the implemented strategy, sampling methodology, results, conclusions and relevant recommendations.

1.3 Study Limitations

The conclusions and recommendations included in this report are based upon professional opinions expressed within the context of the mandate given to HDS Environment by Baffinland Iron Mines. HDS Environment accepts no responsibility for any use that is made of this report in any other context or by any other party, unless being expressly informed prior to such use and having explicitly agreed to the use of this report by others.

This study only reflects the observations and measurements made during the sampling campaign. HDS Environnement declines all responsibility for any variation in environmental conditions and the potential impacts on the conclusions of this study (detailed study limitation in Appendix A).

2 SITES DESCRIPTIONS & OPERATING CONDITIONS

2.1 Sites descriptions

BIM operates two (2) sites in the Qikiqtani Region: the MRM site and the MP site. The crushed ore produced throughout the year by the mining operations at MRM is transported to MP by a fleet of Off-Highway Trucks (OHTs), where it is stockpiled until the sea lane is opened for a few weeks, at the end of the summer.

This study was conducted at the two (2) sites, in May 2025.

2.2 Conditions during surveys

SC and PSC are composed of modular prefabricated structures, while the 380-man camp is made of soft-wall structures. Rooms are standardised across each facility. During the study, all facilities were open to guests.

The indoor noise and whole-body vibration levels measured in accommodation facilities include contributions from various indoor sources (HVAC systems, opening/closing doors, cleaning, etc.) as well as outdoor sources (idling vehicles, machinery operations, etc.).

The various surveys in accommodations and offices were overall considered representative of regular operating, ventilation and occupancy conditions (please refer to section 5, *Results* for details).

3 GUIDELINE VALUES

3.1 Indoor noise

Based on information collected during the mandate, the Nunavut Impact Review Board (NIRB) established a 75-dBA threshold for the average noise exposure of workers during rest periods. This limit is based on the 85-dBA exposure threshold established by the Mine Health and Safety Act R-125-95 for an 8-hr work shift (Part IX and Schedule 5).

Additional research allowed to pinpoint the World Health Organization (WHO) *Guidelines for Community Noise*[1] which recommends an 8-hr L_{Aeq}[2] of 30 dBA during night-time, inside a bedroom (continuous noises). This guideline is designed to minimize sleep disturbance for "*sensitive groups* […] *including shift workers* […] *and other individuals who have difficulty sleeping*".

Thus, to take into account the requirements of NIRB as well as the ALARA (As Low As Reasonably Achievable) safety principle, we will therefore consider in this study an 8-hr L_{Aeq} comfort threshold of 30 dBA and an 8-hr L_{Aeq} exposure limit (EL) of 75 dBA to assess workers' exposure to indoor noise levels during rest periods.

3.2 Whole-body vibration

Based on information collected during the mandate, due to the absence of a vibration exposure threshold in the *Mine Health and Safety Act* R-125-95, the NIRB refers to the daily exposure limits defined by the European Physical Agents Vibration Directive 2002/44/EC.

For workers exposed to whole-body vibration, this directive defines an action limit (AL) of 0.5 m/s^2 and an EL of 1.15 m/s^2, both standardized to an 8-hr reference period.

Additional research allowed to pinpoint a 5-part standard from the International Organization for Standardization (ISO) on human exposure to mechanical vibrations. In appendix C of part 1 of the standard[3], it is stated that "*fifty percent of alert, fit persons can just detect a weighted vibration with a peak magnitude of 0.015 m/s^2* […] *with a range of response* [that] *may extend from about 0.01 m/s^2 to 0.02 m/s^2 peak*".

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[1] *Guidelines for community noise*, World Health Organization, Geneva, Switzerland (1999).

[2] 8h-L_{Aeq} is the energy average equivalent level of A-weighted sound over eight (8) hours.

[3] ISO 2631-1:1997 *Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration – Part 1: General requirements*

In part 2[4] of the same standard, it is also stated that "*experience showed in numerous countries that residents expressed complaints linked to vibrations in residential buildings when the magnitude of vibrations are slightly above the perception threshold defined in part 1, appendix C*".[5]

Thus, to take into account the requirements of NIRB as well as the ALARA safety principle, we will therefore consider in this study a comfort threshold of 0.015 m/s^2 (peak exposure), an 8-hr AL of 0.5 m/s^2 and an 8-hr EL of 1.15 m/s^2 to assess workers' exposure to whole-body vibration levels during rest periods.

It should be noted that the AL should be considered as a threshold for increased vigilance in order to prevent reaching the EL.

[4] ISO 2631-2:2003 *Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration — Part 2: Vibration in buildings (1 Hz to 80 Hz)*

[5] Free translation from the French version of ISO 2631-2:2003

4 METHODOLOGY

4.1 Sampling strategy

The sampling strategy was initially established by BIM representatives prior to the industrial hygiene campaign and adjusted on the field by the HDS representative based on availability of vacant or unoccupied rooms. The final sampling strategy is presented in table 1 below.

4.2 Indoor noise

Indoor noise levels were measured with a class 1 sound level meter (SLM) from Larson Davis, Spartan™ 821 (S/N 001009). The SLM was calibrated prior to sampling using an adapted acoustic calibrator (from Larson Davis, model Cal200) and the calibration drift was checked post-sampling with the same calibrator. These instruments were calibrated to manufacturer's specifications less than one (1) year prior to fieldwork (calibration certificates available in Appendix B).

Sound levels were logged at regular intervals (continuous readings integrated with a Q3 bisection factor, no integration threshold, SLOW response and a 40-110 range).

The SLM were set on a tripod in the center of the room.

Average noise levels (L_{avg}) measured in the present study were considered representative of equivalent average noise levels time-weighted over an 8-hr period (8h-L_{Aeq}) and were thus directly compared to the comfort threshold and the 8-hr EL considered in the present study.

4.3 Whole-body vibration

Whole-body vibration levels were measured with a HVM200 from Larson Davis, equipped with a seat pad triaxial accelerometer SEN027. These instruments were calibrated to manufacturer's specifications less than one (1) year prior to fieldwork (calibration certificates available in Appendix B).

The HVM200 was set on “Whole-body Mode” for proper frequency weighting and measurements were logged at 1-min intervals during sampling, unless stated otherwise.

Seat pads were positioned on the floor or on a bedside table, approximately in the center of targeted rooms.

Average accelerations (A_{eq} or A_{rms}) measured during the present study were considered representative of equivalent average accelerations time-weighted on an 8-hr reference period and were thus directly compared to the 8-hr AL and the 8-hr EL considered in the present study.

TABLE 1
SAMPLING STRATEGY - Accommodation facilities
Indoor noise levels and whole-body vibrations - S1 2025
Baffinland Iron Mines - Mary River Mine and Milne Port Sites (Nunavut)

Date	Location	Indoor noise levels	Whole-body vibrations
Mary River Mine			
2025-05-21	Sailiivik Camp Room C2-09	1	1
2025-05-30	Sailiivik Camp Room C2-12	1	1
Milne Port			
2025-05-26	Port site complex Room BC-08	1	1
2025-05-27	380-person camp Room F-35	1	1

5 RESULTS

5.1 Indoor noise

The indoor noise levels collected in accommodation facilities are compiled in table 2 below. The session reports are presented in Appendix C.

The notable facts are as follow:

- all the indoor noise measurements respect the 75-dBA exposure level considered by the NIRB:
  - MRM: average noise level ranged from 33 to 36 dBA.
  - MP: average noise levels ranged from 35 to 37 dBA.
- the comfort threshold of 30 dBA considered in this study was exceeded at each sampling station:
  - MRM, Sailiivik Camp, ~15% (room C2-09) to ~33% (room C2-12) of the measurement is above the comfort threshold; exceedances are evenly spread over the sampling period.
  - MP, PSC, ~70% of measurement is above the comfort threshold; the majority of exceedances occurred between 6 and 12 p.m.
  - MP, 380-person camp, 100% of measurement is above the comfort threshold; the highest exceedances occurred between 6 and 9 p.m.

The maximum level of 55 dBA was measured in the 380-person camp on May 25th, 2025 at 7 p.m. (Room F-35).

TABLE 2
RESULTS - Accommodation facilities
Indoor noise levels - S1 2025
Baffinland Iron Mines - Mary River and Milne Port Sites (Nunavut)

Starting Date	Location	Instrument	Sampling duration	Leq [1] (dBA)	Remarks
Comfort threshold[2] (dBA)				**30**	
Exposure Level[3] (dBA)				**75**	
Mary River Mine					
2025-05-22	Sailiivik Camp - Room C2-09	Spartan 821 S/N 30013	from 5 h 15 to 18 h 33	35,8	Vacant Room Regular conditions
2025-05-30	Sailiivik Camp - Room C2-12	Spartan 821 S/N 30013	from 5 h 01 to 19 h 29	33,4	Vacant Room Regular conditions
Milne Port					
2025-05-26	Port site complex - Room BC-08	Spartan 821 S/N 30013	from 5 h 07 to 17 h 49	36,2	Vacant Room Regular condition
2025-05-27	380-person camp - Room F-35	Spartan 821 S/N 30013	from 6 h 59 to 7 h 35	35,4	Vacant Room Regular conditions Day shift: 35,1 dBA Night shift: 35,6 dBA

General remarks:
Measurements were taken with a Larson Davis SoundExpert 821 sound level meter (Q3 bisection factor, no integration threshold).
Measurements were taken in vacant rooms.

Notes :
[1] Leq: equivalent noise level averaged over sampling time.
[2] Comfort threshold defined in the World Health Organization *Guidelines for Community Noise* and designed to minimize sleep disturbances for shift workers.
[3] Exposure level considered by the Nunavut Impact Review Board (NIRB) for exposure to noise during resting time.

5.2 Whole-body vibration

The vibration levels measured in accommodation facilities are compiled in table 3 below. The session reports are presented in Appendix D.

The notable facts are as follow:

- all the whole-body vibration measurements respect the limits of 0.5 m/s^2 and 1.15 m/s^2 considered by the NIRB:
  - MRM: average vibration levels range from 0,002 to 0,003 m/s^2.
  - MP: average vibration levels range from 0,002 to 0,006 m/s^2.
- the comfort threshold (peak exposure) of 0,015 m/s^2 considered in this study was exceeded at each sampling station:
  - SC: exceedances represent between ~4% (room C2-09) and ~7% (room C2-12) of the sampling time; ~85% of the exceedances are before 9 a.m. and after 6 p.m.
  - PSC: exceedances represent 11% of the sampling time; 80% of the exceedances are before 9 a.m. and after 3 p.m.
  - 380-person camp: exceedances represent ~30% of sampling time (~32% during day shift and ~31% during night shift); 75% of the exceedances are during shift changes, between 3 a.m. and 9 a.m. and between 3 p.m. and 9 p.m.

TABLE 3
RESULTS - Accommodation facilities
Whole-body vibrations - S1 2025
Baffinland Iron Mines - Mary River and Milne Port Sites (Nunavut)

Starting Date	Location	Sampling duration	A_{eq} [1] (m/s^2)	A_{peak} [2] (m/s^2)	Remarks
Comfort threshold (m/s^2) (peak) [3]			**-**	**0,015**	
8-hr action limit (m/s^2) [4]			**0,5**	**-**	
8-hr exposure level (m/s^2) [5]			**1,15**	**-**	
Mary River Mine					
2025-05-22	Sailiivik Camp - Room C2-09	from 5 h 16 to 18 h 33	0,003	**0,060**	Vacant Room Regular conditions Comfort threshold exceeded ~4% of sampling time
2025-05-30	Sailiivik Camp - Room C2-12	from 5 h 01 to 19 h 29	0,002	**0,059**	Vacant Room Regular conditions Comfort threshold exceeded ~7%of sampling time
Milne Port					
2025-05-26	Port site complex - Room BC-08	from 5 h 07 to 17 h 49	0,002	**0,087**	Vacant Room Regular conditions Comfort threshold exceeded for ~11% of sampling time
2025-05-27	380-person camp - Room F-35	from 7 h 00 to 7 h 35 (+ 1 day)	0,006	**0,372**	Vacant Room Regular conditions Comfort threshold exceeded for : ~32% of day shift ~31% of night shift

General remarks:
All samples are taken with Larson Davis HVM200 with triaxial accelerometer in seatpad (Whole Body Vibration mode).

Notes :
[1] A_{eq} or A_{rms}: the frequency-weighted, time-weighted acceleration sum over the sampling period.
[2] A_{peak}: the frequency-weighted, peak acceleration sum measured during the sampling period.
[3] Comfort threshold defined by the 5-part standard ISO 2631 1:1997 (peak measurement)
[4] 8-hr Action limit considered by the Nunavut Impact Review Board (NIRB) for exposure to whole-body vibrations during resting time.
[5] 8-hr Exposure limit considered by the Nunavut Impact Review Board (NIRB) for exposure to whole-body vibrations during resting time.

6 CONCLUSIONS AND RECOMMENDATIONS

The services of HDS Environnement were retained by BIM to survey noise and vibration levels in accommodation facilities of the Mary River Mine and Milne Inlet sites, located in the Qikiqtani Region (Baffin Island; Nunavut).

The surveys took place in May 2025 (see table 1 for sampling strategy). Overall, based on the data collected on site, the survey results were deemed representative of regular operating, ventilation and occupancy conditions expected at this time of year.

Conclusions and recommendations based on the collected data are presented below.

6.1 Noise

All the indoor noise measurements taken in the accommodations respect the exposure limit of 75 dBA considered by the NIRB for exposure to noise during rest.

The comfort threshold of 30 dBA considered in this study was exceeded in all the facilities. Overall, the exceedances are evenly spread during the sampling periods in SC and mostly between 6 and 9 p.m. in MP (PSC and 380-person camp).

Based on elements above, HDS Environnement recommends:

- further documenting indoor noise levels in the accommodation facilities, especially for night shift workers during peak activity.
- identifying stationary sources of constant noise above 30 dBA in accommodation facilities.

6.2 Whole-body vibration

All the whole-body vibration measurements taken in the accommodations respect the limits of 0.5 m/s^2 and 1.15 m/s^2 considered by the NIRB for exposure to whole-body vibration during rest.

The comfort threshold of 0.015 m/s^2 considered in this study was exceeded in all the facilities. More than 75% of the exceedances are during shift changes (3 a.m. to 9 a.m. and 3 p.m. to 9 p.m.).

Based on elements above, HDS Environnement recommends:

- further documenting whole-body vibration levels with a HVM200 in the accommodation facilities, especially during peak activity.
- identifying stationary sources of whole-body vibrations above 0.015 m/s^2 in accommodation facilities.

REFERENCES

- *Mine Health and Safety Act (mine health and safety regulations)* R-125-95.
- *Safety Act (occupational health and safety regulations)* R-003-2016;
- *Canada Occupational Health and Safety Regulations,* SOR/86-304
- American Conference of Governmental Industrial Hygienists, *TLVs and BEIs booklet,* 2025 edition.
- World Health Organization*, Guidelines for community noise,* 1999.
- ISO 2631 1:1997 *Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration – Part 1: General requirements*.
- ISO 2631-2:2003 *Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration — Part 2: Vibration in buildings (1 Hz to 80 Hz).*

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APPENDIX A

Study limitations

LIMITATIONS AND DISCLAIMER OF LIABILITY

This report (hereinafter the “Report”) was prepared by Hudon Desbiens St-Germain Environnement inc. (hereinafter “HDS Environnement”) at the request and for the sole benefit of the client for whom it is directly intended (hereinafter the “Client”).

The use of the Report and its content by a third party is subject to the prior written authorization of HDS Environnement. In the event of use of the Report without the authorization of HDS Environnement, this third party undertakes to use it at its own risk and assumes full responsibility. Likewise, it expressly releases HDS Environnement from any liability resulting, directly or indirectly, from the elements, information, conclusions and/or recommendations contained in the Report. HDS Environnement has no obligation towards this third party and may under no circumstances be held liable for losses, fines, penalties, costs, damages and/or prejudices, of any nature whatsoever, suffered by this third party which would result, directly or indirectly, from the use of the Report, including in particular any decision-making process used by this third party on the basis of the information, recommendations and/or conclusions contained in the Report.

Without limiting the generality of the foregoing or certain specific considerations described later in this Report, the scope of the mandate entrusted to HDS Environnement is defined by the service offer emitted on April 28th, 2025, and its subsequent modifications, as accepted by the Client (hereinafter the "Mandate").

The purpose of the Report is to provide an overview of the premises specifically covered by the Mandate, on the dates indicated in the Report, according to the scope of the Mandate, and of the findings, comments, conclusions and/or recommendations arising of this Mandate. The interpretations provided in the Report consider the laws, regulations, standards, policies, directives and best practices listed in the Report and considered while carrying out the works related to the Mandate. Accordingly, the interpretations provided in the report are of a technical nature only and do not constitute legal advice.

The work described in the Report is based on information expressly brought to the attention of HDS Environnement prior to said work, either by the Client or following diligent and reasonable research. HDS Environnement cannot be held responsible for any erroneous or missing information during the execution of said work.

Similarly, the interpretations provided in the Report are based on the results obtained within the framework of the Mandate, following specific analyzes carried out on samples taken at determined depths and at given locations, while carrying out the works related to the Mandate. These interpretations may not reflect actual variations in concentrations of materials or substances outside the scope of work of the Mandate. HDS Environnement can in no way be held responsible for these possible variations, as well as for any loss, fine, penalty, damage and/or prejudice, of any nature whatsoever, resulting directly or indirectly from them.

APPENDIX B

Calibration certificates

Calibration Certificate

Certificate Number 2024011367
Customer:
HDS Environnement

Model Number	Spartan 821	***Procedure Number***	D0001.8466		
Serial Number	30013	***Technician***	Jacob Cannon		
Test Results	**Pass**	***Calibration Date***	2024-08-07		
Initial Condition	Adjusted	***Calibration Due***	2025-08-07		
Description	Spartan 821 Class 1 Sound Level Meter Firmware Revision: 1.300R17	***Temperature***	23.76	°C	± 0.25 °C
		Humidity	50.7	%RH	± 2.0 %RH
		Static Pressure	86.39	kPa	± 0.13 kPa

Evaluation Method ***Tested with:***

Larson Davis CAL200. S/N 9079
TMS 9917C. S/N 219
PCB 377B02. S/N 348790
Larson Davis PRM821. S/N 001203

Data reported in dB re 20 µPa.

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

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61260:2014 Class 1	ANSI S1.11-2014 Class 1
IEC 61672:2013 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). The results documented in this certificate relate only to the item(s) calibrated or tested. 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.

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

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.

LARSON DAVIS – A PCB DIVISION
1681 West 820 North
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716-684-0001

ACCREDITED CERT #3622.01

LARSON DAVIS A PCB DIVISION

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	2024-07-18	2025-07-18	007027
PCB 377A13 1/2 inch Prepolarized Pressure Microphone	2024-02-12	2025-02-12	007080
Larson Davis Model 831	2024-02-15	2025-02-15	007182
SRS DS360 Ultra Low Distortion Generator	2024-03-26	2025-03-26	007635
TMS 9917C-LD Microphone Comparison Calibrator	2024-03-14	2025-03-14	007649
Larson Davis 1/2" Preamplifier for Model 831 Type 1	2023-09-28	2024-09-28	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

Adjusted Level: 114.00
As Received Level: 115.13

-- End of measurement results--

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	-24.87	-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	-0.23	-0.20	-1.20	0.80	0.60	Pass
1000	0.26	0.00	-0.70	0.70	0.60	Pass
8000	-2.01	-3.00	-5.50	-1.50	0.81	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	27.54

-- End of measurement results--

-- End of Report--

Signatory: *Jacob Cannon*

Calibration Certificate

Certificate Number 2024011345
Customer:
HDS Environnement

Model Number	Spartan 821		***Procedure Number***	D0001.8465	
Serial Number	30013		***Technician***	Jacob Cannon	
Test Results	**Pass**		***Calibration Date***	2024-08-07	
Initial Condition	AS RECEIVED same as shipped		***Calibration Due***	2025-08-07	
Description	Spartan 821 Class 1 Sound Level Meter Firmware Revision: 1.300R17		***Temperature***	23.54 °C	± 0.25 °C
			Humidity	53.5 %RH	± 2.0 %RH
			Static Pressure	86.32 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	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61252:2002	ANSI S1.25 (R2007)
IEC 61672:2013 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). The results documented in this certificate relate only to the item(s) calibrated or tested. 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.

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

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.

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ACCREDITED CERT #3622.01

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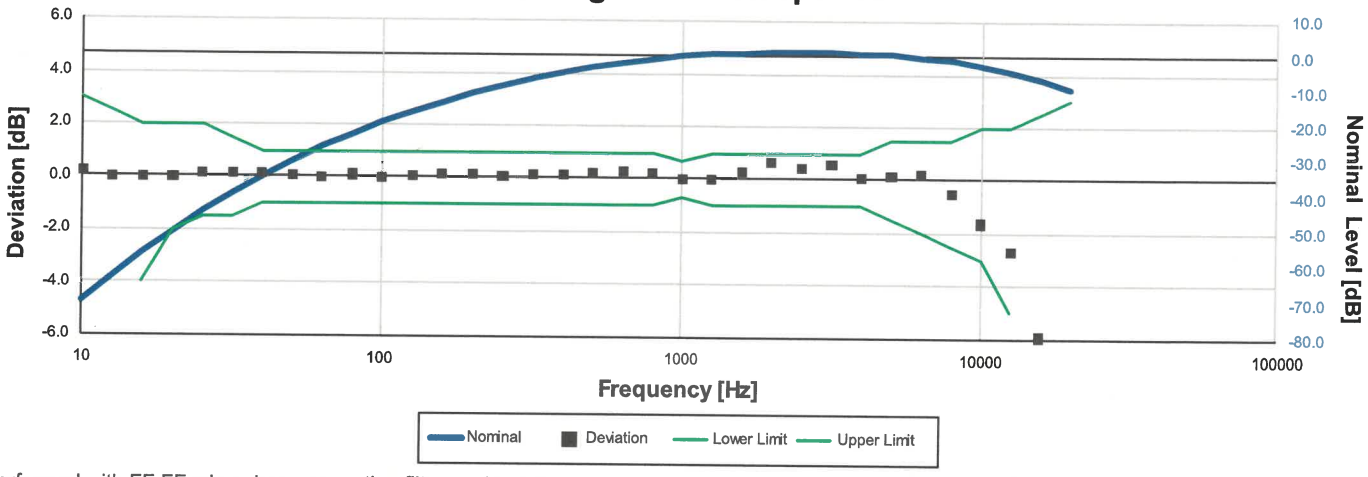
No Pattern approval for IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 available.

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
SRS DS360 Ultra Low Distortion Generator	2023-12-29	2024-12-29	007118

A-weight Filter Response

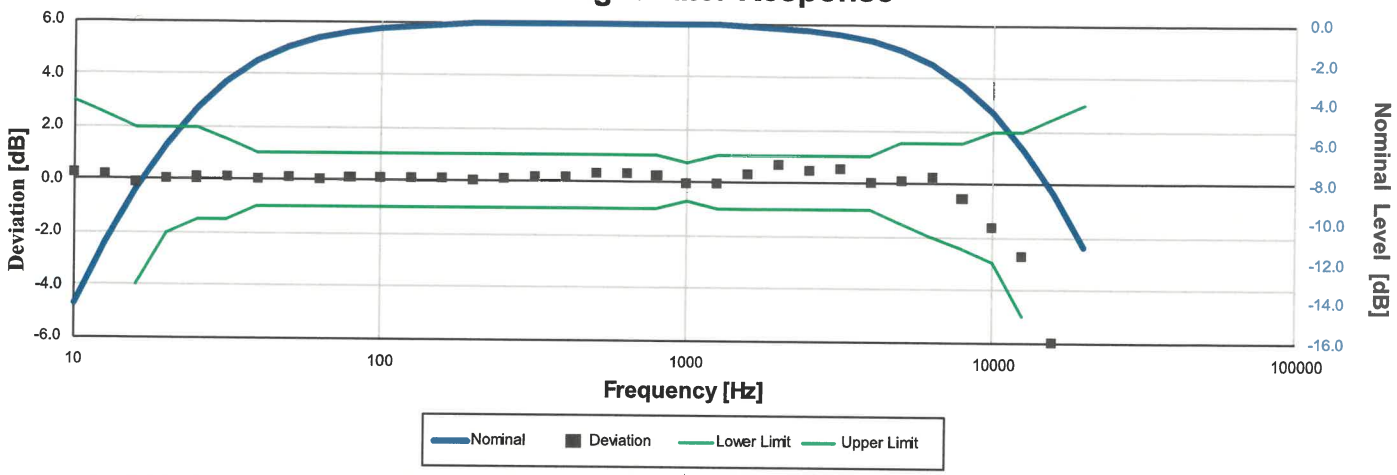


Test performed with FF:FF microphone correction filter enabled. Electrical signal test of frequency weighting performed according to IEC 61672-3:2013 13 and ANSI S1.4-2014 Part 3: 13 for compliance to IEC 61672-1:2013 5.5; IEC 60651:2001 6.1 and 9.2.2; IEC 60804:2000 5; ANSI S1.4:1983 (R2006) 5.1 and 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
10.00	-70.20	0.20	-inf	3.00	0.15	Pass
12.59	-63.39	0.01	-inf	2.50	0.15	Pass
15.85	-56.68	0.02	-4.00	2.00	0.15	Pass
19.95	-50.51	-0.01	-2.00	2.00	0.15	Pass
25.12	-44.54	0.16	-1.50	2.00	0.15	Pass
31.62	-39.24	0.16	-1.50	1.50	0.15	Pass
39.81	-34.46	0.14	-1.00	1.00	0.15	Pass
50.12	-30.13	0.07	-1.00	1.00	0.15	Pass
63.10	-26.18	0.02	-1.00	1.00	0.29	Pass
79.43	-22.39	0.11	-1.00	1.00	0.29	Pass
100.00	-19.07	0.03	-1.00	1.00	0.29	Pass
125.89	-16.04	0.06	-1.00	1.00	0.29	Pass
158.49	-13.27	0.13	-1.00	1.00	0.29	Pass
199.53	-10.78	0.12	-1.00	1.00	0.29	Pass
251.19	-8.53	0.07	-1.00	1.00	0.29	Pass
316.23	-6.47	0.13	-1.00	1.00	0.29	Pass
398.11	-4.67	0.13	-1.00	1.00	0.29	Pass
501.19	-2.96	0.24	-1.00	1.00	0.29	Pass
630.96	-1.62	0.28	-1.00	1.00	0.29	Pass
794.33	-0.59	0.21	-1.00	1.00	0.29	Pass
1,000.00	0.00	0.00	-0.70	0.70	0.29	Pass
1,258.93	0.61	0.01	-1.00	1.00	0.29	Pass
1,584.89	1.31	0.31	-1.00	1.00	0.29	Pass
1,995.26	1.87	0.67	-1.00	1.00	0.29	Pass
2,511.89	1.72	0.42	-1.00	1.00	0.38	Pass
3,162.28	1.77	0.57	-1.00	1.00	0.38	Pass
3,981.07	1.05	0.05	-1.00	1.00	0.38	Pass
5,011.87	0.64	0.14	-1.50	1.50	0.47	Pass
6,309.57	0.14	0.24	-2.00	1.50	0.47	Pass
7,943.28	-1.61	-0.51	-2.50	1.50	0.47	Pass
10,000.00	-4.14	-1.64	-3.00	2.00	0.57	Pass
12,589.25	-7.01	-2.71	-5.00	2.00	0.57	Pass
15,848.93	-12.54	-5.94	-16.00	2.50	1.00	Pass
19,952.62	-24.14	-14.84	-inf	3.00	1.00	Pass

-- End of measurement results--

C-weight Filter Response

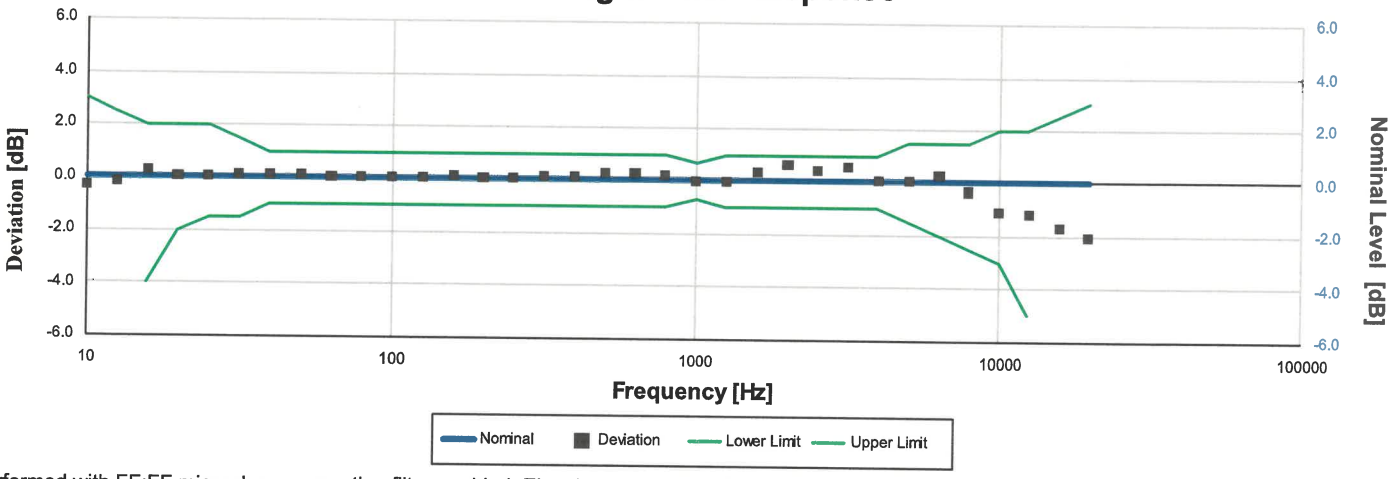


Test performed with FF:FF microphone correction filter enabled. Electrical signal test of frequency weighting performed according to IEC 61672-3:2013 13 and ANSI S1.4-2014 Part 3: 13 for compliance to IEC 61672-1:2013 5.5; IEC 60651:2001 6.1 and 9.2.2; IEC 60804:2000 5; ANSI S1.4:1983 (R2006) 5.1 and 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
10.00	-14.06	0.24	-inf	3.00	0.15	Pass
12.59	-10.98	0.22	-inf	2.50	0.15	Pass
15.85	-8.60	-0.10	-4.00	2.00	0.15	Pass
19.95	-6.15	0.05	-2.00	2.00	0.15	Pass
25.12	-4.32	0.08	-1.50	2.00	0.15	Pass
31.62	-2.89	0.11	-1.50	1.50	0.15	Pass
39.81	-1.94	0.06	-1.00	1.00	0.15	Pass
50.12	-1.17	0.13	-1.00	1.00	0.15	Pass
63.10	-0.75	0.05	-1.00	1.00	0.29	Pass
79.43	-0.38	0.12	-1.00	1.00	0.29	Pass
100.00	-0.21	0.09	-1.00	1.00	0.29	Pass
125.89	-0.10	0.10	-1.00	1.00	0.29	Pass
158.49	-0.01	0.09	-1.00	1.00	0.29	Pass
199.53	0.07	0.07	-1.00	1.00	0.29	Pass
251.19	0.09	0.09	-1.00	1.00	0.29	Pass
316.23	0.17	0.17	-1.00	1.00	0.29	Pass
398.11	0.18	0.18	-1.00	1.00	0.29	Pass
501.19	0.32	0.32	-1.00	1.00	0.29	Pass
630.96	0.31	0.31	-1.00	1.00	0.29	Pass
794.33	0.26	0.26	-1.00	1.00	0.29	Pass
1,000.00	0.00	0.00	-0.70	0.70	0.29	Pass
1,258.93	-0.02	-0.02	-1.00	1.00	0.29	Pass
1,584.89	0.24	0.34	-1.00	1.00	0.29	Pass
1,995.26	0.49	0.69	-1.00	1.00	0.29	Pass
2,511.89	0.15	0.45	-1.00	1.00	0.38	Pass
3,162.28	0.07	0.57	-1.00	1.00	0.38	Pass
3,981.07	-0.74	0.06	-1.00	1.00	0.38	Pass
5,011.87	-1.20	0.10	-1.50	1.50	0.47	Pass
6,309.57	-1.75	0.25	-2.00	1.50	0.47	Pass
7,943.28	-3.51	-0.51	-2.50	1.50	0.47	Pass
10,000.00	-6.05	-1.65	-3.00	2.00	0.57	Pass
12,589.25	-8.94	-2.74	-5.00	2.00	0.57	Pass
15,848.93	-14.47	-5.97	-16.00	2.50	1.00	Pass
19,952.62	-26.07	-14.87	-inf	3.00	1.00	Pass

-- End of measurement results--

Z-weight Filter Response



Test performed with FF:FF microphone correction filter enabled. 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
10.00	-0.28	-0.28	-inf	3.00	0.15	Pass
12.59	-0.15	-0.15	-inf	2.50	0.15	Pass
15.85	0.27	0.27	-4.00	2.00	0.15	Pass
19.95	0.10	0.10	-2.00	2.00	0.15	Pass
25.12	0.04	0.04	-1.50	2.00	0.15	Pass
31.62	0.11	0.11	-1.50	1.50	0.15	Pass
39.81	0.15	0.15	-1.00	1.00	0.15	Pass
50.12	0.14	0.14	-1.00	1.00	0.15	Pass
63.10	0.04	0.04	-1.00	1.00	0.29	Pass
79.43	0.10	0.10	-1.00	1.00	0.29	Pass
100.00	0.09	0.09	-1.00	1.00	0.29	Pass
125.89	0.07	0.07	-1.00	1.00	0.29	Pass
158.49	0.12	0.12	-1.00	1.00	0.29	Pass
199.53	0.10	0.10	-1.00	1.00	0.29	Pass
251.19	0.09	0.09	-1.00	1.00	0.29	Pass
316.23	0.16	0.16	-1.00	1.00	0.29	Pass
398.11	0.15	0.15	-1.00	1.00	0.29	Pass
501.19	0.29	0.29	-1.00	1.00	0.29	Pass
630.96	0.28	0.28	-1.00	1.00	0.29	Pass
794.33	0.24	0.24	-1.00	1.00	0.29	Pass
1,000.00	0.00	0.00	-0.70	0.70	0.29	Pass
1,258.93	0.02	0.02	-1.00	1.00	0.29	Pass
1,584.89	0.33	0.33	-1.00	1.00	0.29	Pass
1,995.26	0.66	0.66	-1.00	1.00	0.29	Pass
2,511.89	0.44	0.44	-1.00	1.00	0.38	Pass
3,162.28	0.56	0.56	-1.00	1.00	0.38	Pass
3,981.07	0.07	0.07	-1.00	1.00	0.38	Pass
5,011.87	0.08	0.09	-1.50	1.50	0.47	Pass
6,309.57	0.29	0.29	-2.00	1.50	0.47	Pass
7,943.28	-0.33	-0.33	-2.50	1.50	0.47	Pass
10,000.00	-1.09	-1.09	-3.00	2.00	0.57	Pass
12,589.25	-1.15	-1.15	-5.00	2.00	0.57	Pass
15,848.93	-1.70	-1.70	-16.00	2.50	1.00	Pass
19,952.62	-2.02	-2.02	-inf	3.00	1.00	Pass

-- End of measurement results--

High Level Stability

Electrical signal test of high level stability performed according to IEC 61672-3:2013 21 and ANSI S1.4-2014 Part 3: 21 for compliance to IEC 61672-1:2013 5.15 and ANSI S1.4-2014 Part 1: 5.15

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
High Level Stability	0.00	-0.10	0.10	0.01 ‡	Pass

-- End of measurement results--

Long-Term Stability

Electrical signal test of long term stability performed according to IEC 61672-3:2013 15 and ANSI S1.4-2014 Part 3: 15 for compliance to ISC 61672-1:2013 5.14 and ANSI S1.4-2014 Part 1: 5.14

Test Duration [min]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
29	0.00	-0.10	0.10	0.01 ‡	Pass

-- End of measurement results--

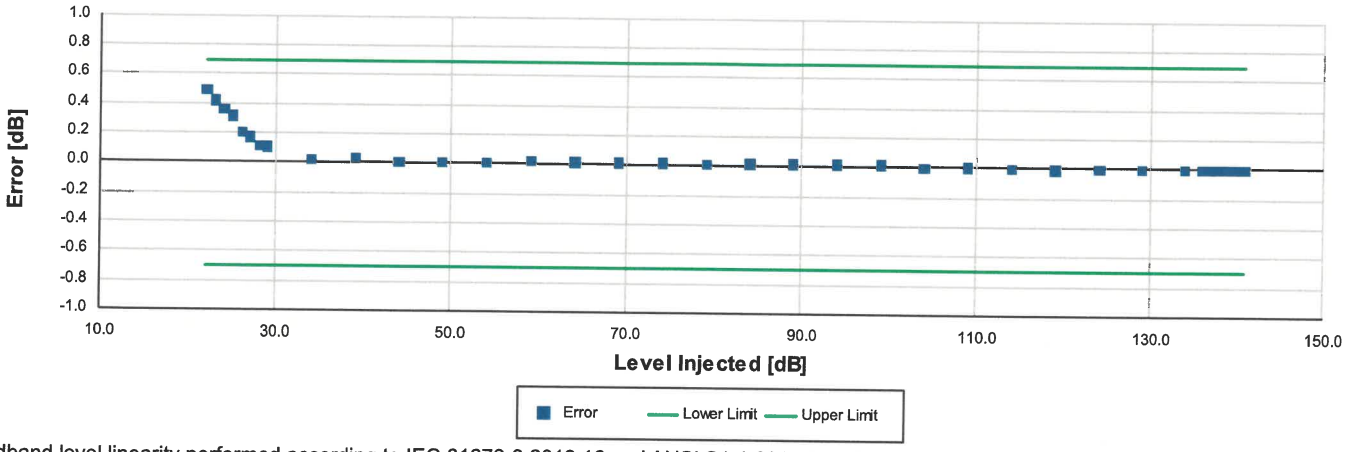
1 kHz Reference Levels

Frequency weightings and time weightings at 1 kHz (reference is A weighted Fast) performed according to IEC 61672-3:2013 14 and ANSI S1.4-2014 Part 3: 14 for compliance to IEC 61672-1:2013 5.5.9 and 5.8.3 and ANSI S1.4-2014 Part 1: 5.5.9 and 5.8.3

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
peak C weight	0.01	-0.20	0.20	0.15	Pass
peak Z weight	0.01	-0.20	0.20	0.15	Pass
C weight	0.01	-0.20	0.20	0.15	Pass
Z weight	0.01	-0.20	0.20	0.15	Pass
Slow	0.00	-0.10	0.10	0.15	Pass
Impulse	0.00	-0.10	0.10	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	0.50	-0.70	0.70	0.16	Pass
23.00	0.42	-0.70	0.70	0.16	Pass
24.00	0.36	-0.70	0.70	0.16	Pass
25.00	0.32	-0.70	0.70	0.16	Pass
26.00	0.21	-0.70	0.70	0.16	Pass
27.00	0.17	-0.70	0.70	0.16	Pass
28.00	0.12	-0.70	0.70	0.16	Pass
29.00	0.11	-0.70	0.70	0.16	Pass
34.00	0.03	-0.70	0.70	0.16	Pass
39.00	0.04	-0.70	0.70	0.16	Pass
44.00	0.02	-0.70	0.70	0.16	Pass
49.00	0.02	-0.70	0.70	0.16	Pass
54.00	0.01	-0.70	0.70	0.16	Pass
59.00	0.02	-0.70	0.70	0.16	Pass
64.00	0.02	-0.70	0.70	0.16	Pass
69.00	0.02	-0.70	0.70	0.16	Pass
74.00	0.02	-0.70	0.70	0.16	Pass
79.00	0.01	-0.70	0.70	0.16	Pass
84.00	0.02	-0.70	0.70	0.16	Pass
89.00	0.02	-0.70	0.70	0.16	Pass
94.00	0.02	-0.70	0.70	0.16	Pass
99.00	0.02	-0.70	0.70	0.16	Pass
104.00	0.00	-0.70	0.70	0.15	Pass
109.00	0.00	-0.70	0.70	0.15	Pass
114.00	0.00	-0.70	0.70	0.15	Pass
119.00	-0.01	-0.70	0.70	0.15	Pass
124.00	0.00	-0.70	0.70	0.15	Pass
129.00	0.00	-0.70	0.70	0.15	Pass
134.00	0.00	-0.70	0.70	0.15	Pass
136.00	0.00	-0.70	0.70	0.15	Pass
137.00	0.00	-0.70	0.70	0.15	Pass
138.00	0.00	-0.70	0.70	0.15	Pass
139.00	0.00	-0.70	0.70	0.15	Pass
140.00	-0.01	-0.70	0.70	0.15	Pass
141.00	0.00	-0.70	0.70	0.15	Pass

-- End of measurement results--

Slow Detector

Toneburst response performed according to IEC 61672-3:2013 18 and ANSI S1.4-2014 Part 3: 18 for compliance to IEC 61672-1:2013 5.9, IEC 60651:2001 9.4.2, ANSI S1.4:1983 (R2006) 8.4.2 and ANSI S1.4-2014 Part 1: 5.9

Amplitude [dB]	Duration [ms]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
137.00	200	-7.44	-7.92	-6.92	0.15	Pass
	2	-27.01	-29.99	-25.99	0.15	Pass

-- End of measurement results--

Fast Detector

Toneburst response performed according to IEC 61672-3:2013 18 and ANSI S1.4-2014 Part 3: 18 for compliance to IEC 61672-1:2013 5.9, IEC 60651:2001 9.4.2, ANSI S1.4:1983 (R2006) 8.4.2 and ANSI S1.4-2014 Part 1: 5.9

Amplitude [dB]	Duration [ms]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
137.00	200.00	-0.97	-1.48	-0.48	0.15	Pass
	2.00	-18.09	-19.49	-16.99	0.15	Pass
	0.25	-27.03	-29.99	-25.99	0.15	Pass

-- End of measurement results--

Sound Exposure Level

Toneburst response performed according to IEC 61672-3:2013 18 and ANSI S1.4-2014 Part 3: 18 for compliance to IEC 61672-1:2013 5.9, IEC 60651:2001 9.4.2, ANSI S1.4:1983 (R2006) 8.4.2 and ANSI S1.4-2014 Part 1: 5.9

Amplitude [dB]	Duration [ms]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
137.00	200.00	-7.02	-7.49	-6.49	0.15	Pass
	2.00	-27.04	-28.49	-25.99	0.15	Pass
	0.25	-36.15	-39.02	-35.02	0.15	Pass

-- End of measurement results--

Peak C-weight

C-weighted peak sound level performed according to IEC 61672-3:2013 19 and ANSI S1.4-2014 Part 3: 19 for compliance to IEC 61672-1:2013 5.13 and ANSI S1.4-2014 Part 1: 5.13

Level [dB]	Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
135.00	31.50	137.78	135.50	139.50	0.15	Pass
135.00	500.00	138.51	137.50	139.50	0.15	Pass
135.00	8,000.00	137.61	136.40	140.40	0.15	Pass
135.00, Negative	500.00	137.24	136.40	138.40	0.15	Pass
135.00, Positive	500.00	137.24	136.40	138.40	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	141.91	140.50	142.50	0.15	Pass
Negative	141.81	140.50	142.50	0.15	Pass
Comparison	0.10	-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	119.90	106.00	0.15	Pass
Dynamic Range	129.93	118.00	0.15	Pass

-- End of measurement results--

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	93.95	93.20	94.80	0.15	Pass
0 dB Gain, Linearity	27.08	26.25	27.65	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	11.97	14.50	Pass
C-weight Noise Floor	14.23	16.70	Pass
Z-weight Noise Floor	22.03	25.00	Pass

-- End of measurement results--

-- End of Report--

Signatory: *Jacob Cannon*

LARSON DAVIS – A PCB DIVISION
1681 West 820 North
Provo,UT 84601 United States
716-684-0001

ACCREDITED CERT #3622.01

LARSON DAVIS A PCB DIVISION

Calibration Certificate

Certificate Number 2024011411

Customer:
HDS Environment

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Model Number	CAL200		***Procedure Number***	D0001.8386	
Serial Number	21489		***Technician***	Scott Montgomery	
Test Results	**Pass**		***Calibration Date***	2024-08-08	
Initial Condition	AS RECEIVED same as shipped		***Calibration Due***	2025-08-08	
Description	Larson Davis CAL200 Acoustic Calibrator		***Temperature***	23 °C	± 0.3 °C
			Humidity	32 %RH	± 3 %RH
			Static Pressure	101.2 kPa	± 1 kPa

Evaluation Method The data is aquired 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). The results documented in this certificate relate only to the item(s) calibrated or tested. 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.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Agilent 34401A DMM	2024-06-20	2025-06-20	001021
Larson Davis Model 2900 Real Time Analyzer	2024-04-01	2025-04-01	001051
Microphone Calibration System	2024-02-22	2025-02-22	005446
1/2" Preamplifier	2023-08-16	2024-08-16	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	2024-07-26	2025-07-26	006507
1/2 inch Microphone - Random Incidence - 200V	2024-02-12	2025-02-12	006510
Pressure Sensor	2024-02-28	2025-02-28	007825

LARSON DAVIS – A PCB DIVISION
1681 West 820 North
Provo, UT 84601 United States
716-684-0001

ACCREDITED CERT #3622.01

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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	101.1	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	1,000.43	993.00	1,007.00	0.20	Pass
114	101.1	1,000.43	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	0.47	0.00	2.00	0.25 ‡	Pass
114	101.1	0.33	0.00	2.00	0.25 ‡	Pass

-- End of measurement results--

Level Change Over Pressure

Tested at: 114 dB, 24 °C, 33 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
108.0	107.9	-0.02	-0.25	0.25	0.04 ‡	Pass
101.3	101.2	0.00	-0.25	0.25	0.04 ‡	Pass
92.0	92.0	0.02	-0.25	0.25	0.04 ‡	Pass
83.0	83.0	0.01	-0.25	0.25	0.04 ‡	Pass
74.0	74.0	-0.03	-0.25	0.25	0.04 ‡	Pass
65.0	65.1	-0.11	-0.25	0.25	0.04 ‡	Pass

-- End of measurement results--

Frequency Change Over Pressure

Tested at: 114 dB, 24 °C, 33 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [Hz]	Lower limit [Hz]	Upper limit [Hz]	Expanded Uncertainty [Hz]	Result
108.0	107.9	0.00	-7.00	7.00	0.20 ‡	Pass
101.3	101.2	0.00	-7.00	7.00	0.20 ‡	Pass
92.0	92.0	0.00	-7.00	7.00	0.20 ‡	Pass
83.0	83.0	0.00	-7.00	7.00	0.20 ‡	Pass
74.0	74.0	0.00	-7.00	7.00	0.20 ‡	Pass
65.0	65.1	0.00	-7.00	7.00	0.20 ‡	Pass

-- End of measurement results--

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

Tested at: 114 dB, 24 °C, 33 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
108.0	107.9	0.34	0.00	2.00	0.25 ‡	Pass
101.3	101.2	0.34	0.00	2.00	0.25 ‡	Pass
92.0	92.0	0.33	0.00	2.00	0.25 ‡	Pass
83.0	83.0	0.33	0.00	2.00	0.25 ‡	Pass
74.0	74.0	0.33	0.00	2.00	0.25 ‡	Pass
65.0	65.1	0.34	0.00	2.00	0.25 ‡	Pass

-- End of measurement results--

Signatory: *Scott Montgomery*

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1681 West 820 North
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Calibration Certificate

Certificate Number 2025004402

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

Model Number	HVM200	***Procedure Number***	D0001.8391		
Serial Number	0001786	***Technician***	Tina Brezinski		
Test Results	**Pass**	***Calibration Date***	2025-03-21		
Initial Condition	Found / Left	***Calibration Due***	2026-03-21		
Description	Larson Davis Model HVM200	***Temperature***	22.6	°C	± 0.01 °C
		Humidity	24.9	%RH	± 0.5 %RH
		Static Pressure	99.49	kPa	± 0.03 kPa

Evaluation Method Tested electrically using ADSIT.99 test fixture. Data reported in m/s² with equivalent sensor sensivity of 1 mV/m/s².

Compliance Standards Compliant to Manufacturer Specifications and the following standards:

ISO 8041-1:2017
ISO 8041-2:2021
ANSI S2.70
IEC 61260:2014
ANSI S1.11

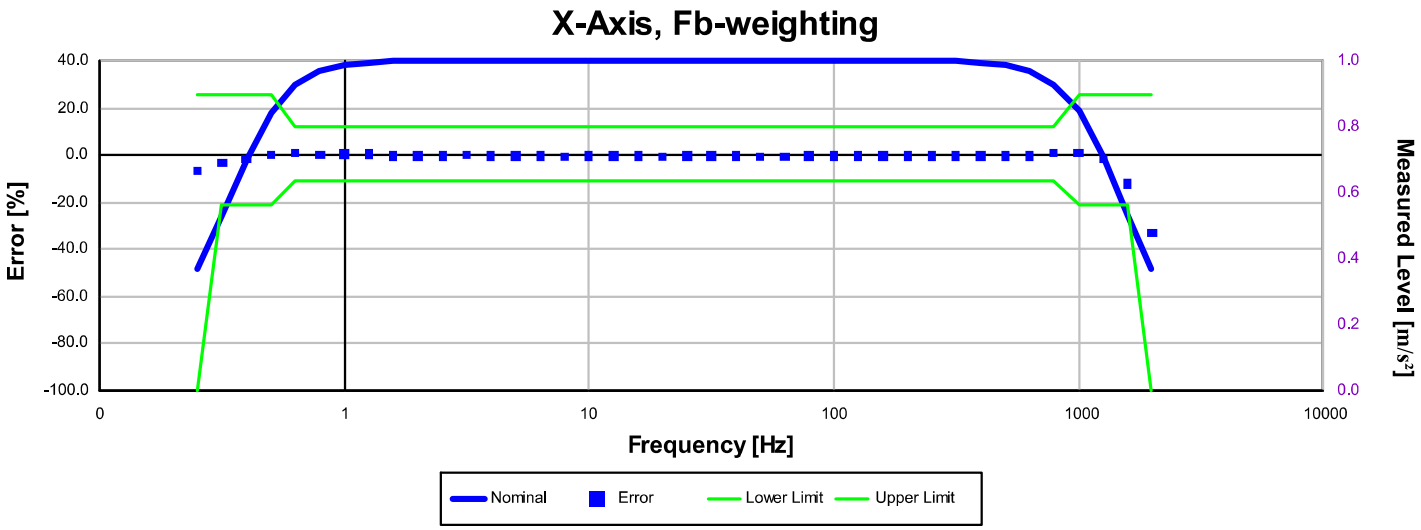
The Modal Shop certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). The results documented in this certificate relate only to the item(s) calibrated or tested. It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes.

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 will 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.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
SRS DS360 Ultra Low Distortion Generator	2024-04-25	2025-04-25	TMS123270

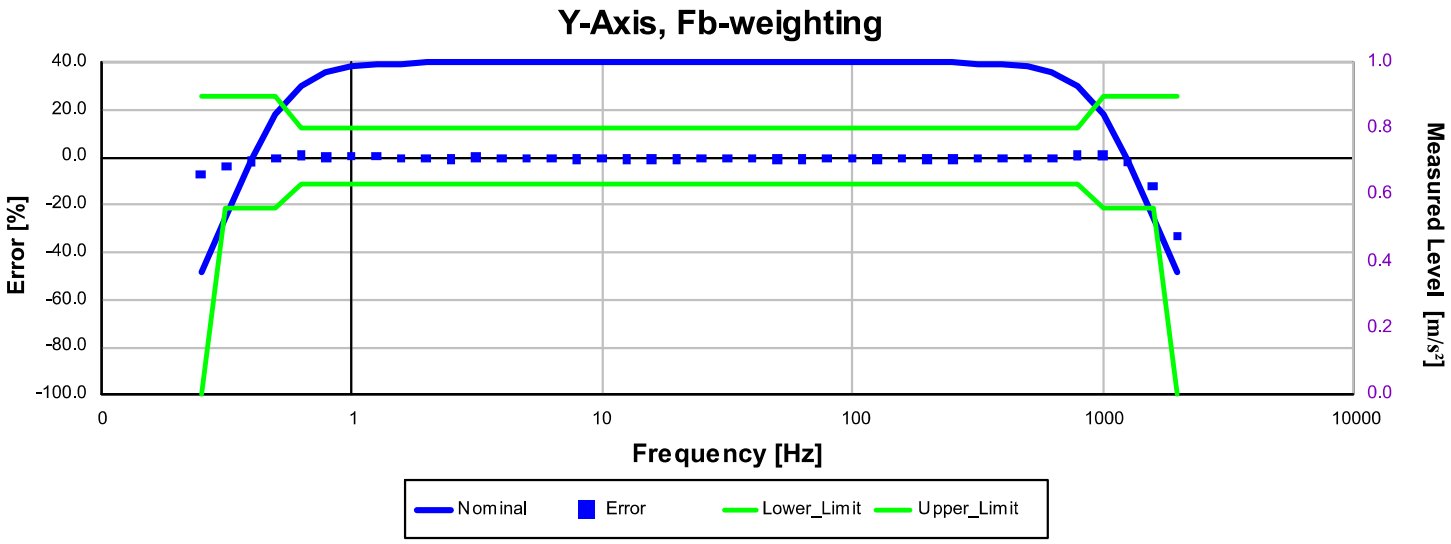


Electrical signal test of frequency weighting performed according to ISO 8041-1:2017 12.11.3 and ISO 8042-1:2021 12.11.3

Frequency [Hz]	Test Result [m/s²]	Error [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
0.25	0.3420	-6.8	-100.0	26.0	1.7	Pass
0.32	0.5120	-3.4	-21.0	26.0	1.7	Pass
0.40	0.6927	-1.6	-21.0	26.0	1.7	Pass
0.50	0.8427	-0.1	-21.0	26.0	1.7	Pass
0.63	0.9355	0.8	-11.0	12.0	1.7	Pass
0.79	0.9719	0.3	-11.0	12.0	1.7	Pass
1.00	0.9928	0.5	-11.0	12.0	1.7	Pass
1.26	0.9997	0.5	-11.0	12.0	1.7	Pass
1.58	0.9954	-0.3	-11.0	12.0	1.7	Pass
2.00	0.9969	-0.2	-11.0	12.0	1.7	Pass
2.51	0.9950	-0.5	-11.0	12.0	1.7	Pass
3.16	1.0002	0.0	-11.0	12.0	1.7	Pass
3.98	0.9981	-0.2	-11.0	12.0	1.7	Pass
5.01	0.9961	-0.4	-11.0	12.0	1.7	Pass
6.31	0.9969	-0.3	-11.0	12.0	1.7	Pass
7.94	0.9927	-0.7	-11.0	12.0	1.7	Pass
10.00	0.9975	-0.2	-11.0	12.0	1.7	Pass
12.59	0.9957	-0.4	-11.0	12.0	1.7	Pass
15.85	0.9952	-0.5	-11.0	12.0	1.7	Pass
19.95	0.9950	-0.5	-11.0	12.0	1.7	Pass
25.12	0.9968	-0.3	-11.0	12.0	1.7	Pass
31.62	0.9972	-0.3	-11.0	12.0	1.7	Pass
39.81	0.9971	-0.3	-11.0	12.0	1.7	Pass
50.12	0.9951	-0.5	-11.0	12.0	1.7	Pass
63.10	0.9947	-0.5	-11.0	12.0	1.7	Pass
79.43	0.9981	-0.2	-11.0	12.0	1.7	Pass
100.00	0.9984	-0.2	-11.0	12.0	1.7	Pass
125.89	0.9952	-0.5	-11.0	12.0	1.7	Pass
158.49	0.9977	-0.2	-11.0	12.0	1.7	Pass
199.53	0.9953	-0.4	-11.0	12.0	1.7	Pass
251.19	0.9943	-0.5	-11.0	12.0	1.7	Pass
316.23	0.9961	-0.2	-11.0	12.0	1.7	Pass
398.11	0.9912	-0.4	-11.0	12.0	1.7	Pass
501.19	0.9848	-0.3	-11.0	12.0	1.7	Pass
630.96	0.9686	-0.1	-11.0	12.0	1.7	Pass
794.33	0.9374	0.9	-11.0	12.0	1.7	Pass

Frequency [Hz]	Test Result [m/s²]	Error [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
1,000.00	0.8551	1.1	-21.0	26.0	1.7	Pass
1,258.90	0.6946	-1.8	-21.0	26.0	1.7	Pass
1,584.90	0.4690	-12.1	-21.0	26.0	1.7	Pass
1,995.30	0.2472	-33.2	-100.0	26.0	1.7	Pass

-- End of measurement results--

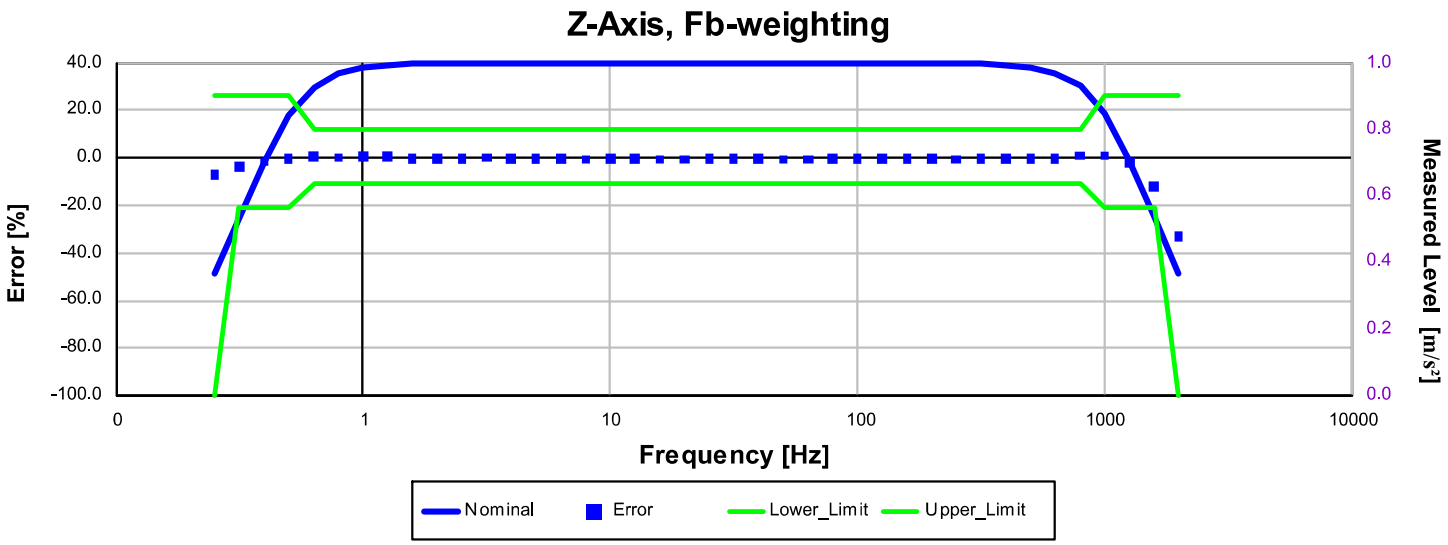


Electrical signal test of frequency weighting performed according to ISO 8041-1:2017 12.11.3 and ISO 8042-1:2021 12.11.3

Frequency [Hz]	Test Result [m/s²]	Error [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
0.25	0.3418	-6.8	-100.0	26.0	1.7	Pass
0.32	0.5118	-3.4	-21.0	26.0	1.7	Pass
0.40	0.6926	-1.6	-21.0	26.0	1.7	Pass
0.50	0.8425	-0.1	-21.0	26.0	1.7	Pass
0.63	0.9354	0.8	-11.0	12.0	1.7	Pass
0.79	0.9718	0.3	-11.0	12.0	1.7	Pass
1.00	0.9927	0.5	-11.0	12.0	1.7	Pass
1.26	0.9996	0.5	-11.0	12.0	1.7	Pass
1.58	0.9954	-0.3	-11.0	12.0	1.7	Pass
2.00	0.9969	-0.2	-11.0	12.0	1.7	Pass
2.51	0.9951	-0.5	-11.0	12.0	1.7	Pass
3.16	1.0002	0.0	-11.0	12.0	1.7	Pass
3.98	0.9981	-0.2	-11.0	12.0	1.7	Pass
5.01	0.9961	-0.4	-11.0	12.0	1.7	Pass
6.31	0.9970	-0.3	-11.0	12.0	1.7	Pass
7.94	0.9928	-0.7	-11.0	12.0	1.7	Pass
10.00	0.9976	-0.2	-11.0	12.0	1.7	Pass
12.59	0.9957	-0.4	-11.0	12.0	1.7	Pass
15.85	0.9952	-0.5	-11.0	12.0	1.7	Pass
19.95	0.9950	-0.5	-11.0	12.0	1.7	Pass
25.12	0.9969	-0.3	-11.0	12.0	1.7	Pass
31.62	0.9973	-0.3	-11.0	12.0	1.7	Pass
39.81	0.9972	-0.3	-11.0	12.0	1.7	Pass
50.12	0.9951	-0.5	-11.0	12.0	1.7	Pass
63.10	0.9947	-0.5	-11.0	12.0	1.7	Pass
79.43	0.9981	-0.2	-11.0	12.0	1.7	Pass
100.00	0.9984	-0.2	-11.0	12.0	1.7	Pass
125.89	0.9953	-0.5	-11.0	12.0	1.7	Pass
158.49	0.9978	-0.2	-11.0	12.0	1.7	Pass
199.53	0.9953	-0.4	-11.0	12.0	1.7	Pass
251.19	0.9944	-0.5	-11.0	12.0	1.7	Pass
316.23	0.9961	-0.2	-11.0	12.0	1.7	Pass
398.11	0.9913	-0.4	-11.0	12.0	1.7	Pass
501.19	0.9849	-0.3	-11.0	12.0	1.7	Pass
630.96	0.9686	-0.1	-11.0	12.0	1.7	Pass
794.33	0.9374	0.9	-11.0	12.0	1.7	Pass

Frequency [Hz]	Test Result [m/s²]	Error [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
1,000.00	0.8550	1.1	-21.0	26.0	1.7	Pass
1,258.90	0.6945	-1.8	-21.0	26.0	1.7	Pass
1,584.90	0.4689	-12.1	-21.0	26.0	1.7	Pass
1,995.30	0.2471	-33.2	-100.0	26.0	1.7	Pass

-- End of measurement results--

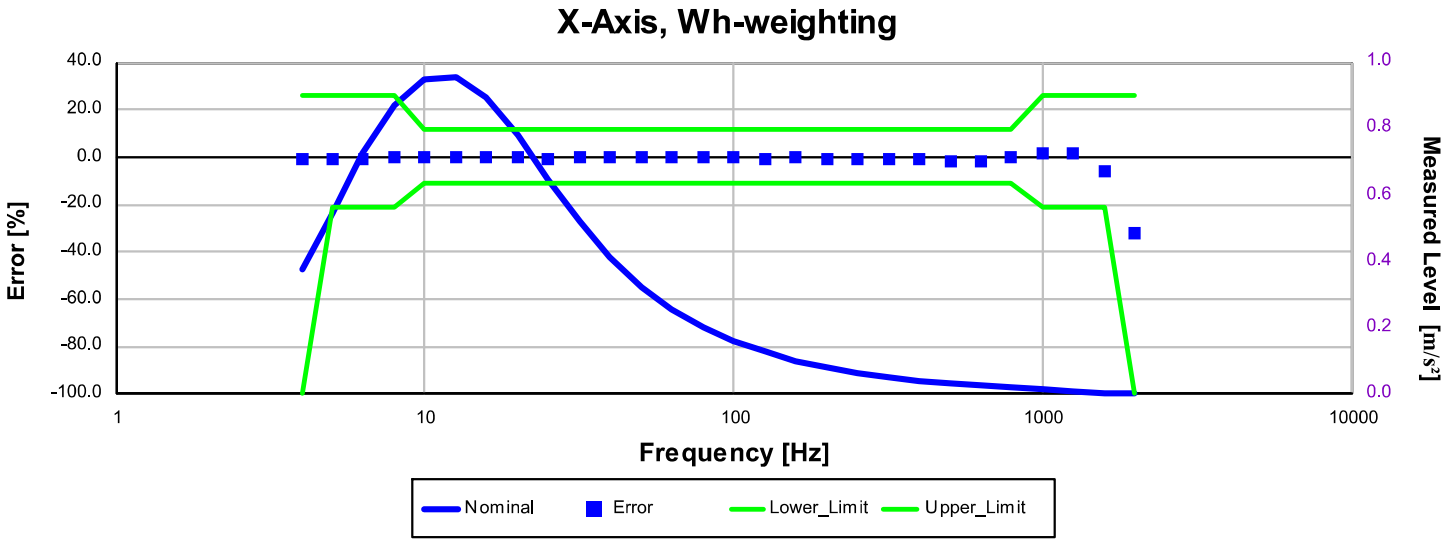


Electrical signal test of frequency weighting performed according to ISO 8041-1:2017 12.11.3 and ISO 8042-1:2021 12.11.3

Frequency [Hz]	Test Result [m/s²]	Error [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
0.25	0.3420	-6.8	-100.0	26.0	1.7	Pass
0.32	0.5120	-3.4	-21.0	26.0	1.7	Pass
0.40	0.6927	-1.6	-21.0	26.0	1.7	Pass
0.50	0.8427	-0.1	-21.0	26.0	1.7	Pass
0.63	0.9355	0.8	-11.0	12.0	1.7	Pass
0.79	0.9718	0.3	-11.0	12.0	1.7	Pass
1.00	0.9928	0.5	-11.0	12.0	1.7	Pass
1.26	0.9997	0.5	-11.0	12.0	1.7	Pass
1.58	0.9954	-0.3	-11.0	12.0	1.7	Pass
2.00	0.9969	-0.2	-11.0	12.0	1.7	Pass
2.51	0.9950	-0.5	-11.0	12.0	1.7	Pass
3.16	1.0001	0.0	-11.0	12.0	1.7	Pass
3.98	0.9981	-0.2	-11.0	12.0	1.7	Pass
5.01	0.9961	-0.4	-11.0	12.0	1.7	Pass
6.31	0.9969	-0.3	-11.0	12.0	1.7	Pass
7.94	0.9927	-0.7	-11.0	12.0	1.7	Pass
10.00	0.9975	-0.2	-11.0	12.0	1.7	Pass
12.59	0.9957	-0.4	-11.0	12.0	1.7	Pass
15.85	0.9952	-0.5	-11.0	12.0	1.7	Pass
19.95	0.9950	-0.5	-11.0	12.0	1.7	Pass
25.12	0.9968	-0.3	-11.0	12.0	1.7	Pass
31.62	0.9972	-0.3	-11.0	12.0	1.7	Pass
39.81	0.9971	-0.3	-11.0	12.0	1.7	Pass
50.12	0.9951	-0.5	-11.0	12.0	1.7	Pass
63.10	0.9947	-0.5	-11.0	12.0	1.7	Pass
79.43	0.9981	-0.2	-11.0	12.0	1.7	Pass
100.00	0.9984	-0.2	-11.0	12.0	1.7	Pass
125.89	0.9952	-0.5	-11.0	12.0	1.7	Pass
158.49	0.9977	-0.2	-11.0	12.0	1.7	Pass
199.53	0.9953	-0.4	-11.0	12.0	1.7	Pass
251.19	0.9943	-0.5	-11.0	12.0	1.7	Pass
316.23	0.9961	-0.2	-11.0	12.0	1.7	Pass
398.11	0.9913	-0.4	-11.0	12.0	1.7	Pass
501.19	0.9849	-0.3	-11.0	12.0	1.7	Pass
630.96	0.9687	-0.1	-11.0	12.0	1.7	Pass
794.33	0.9376	0.9	-11.0	12.0	1.7	Pass
1,000.00	0.8553	1.1	-21.0	26.0	1.7	Pass

Frequency [Hz]	Test Result [m/s²]	Error [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
1,258.90	0.6949	-1.7	-21.0	26.0	1.7	Pass
1,584.90	0.4693	-12.0	-21.0	26.0	1.7	Pass
1,995.30	0.2474	-33.1	-100.0	26.0	1.7	Pass

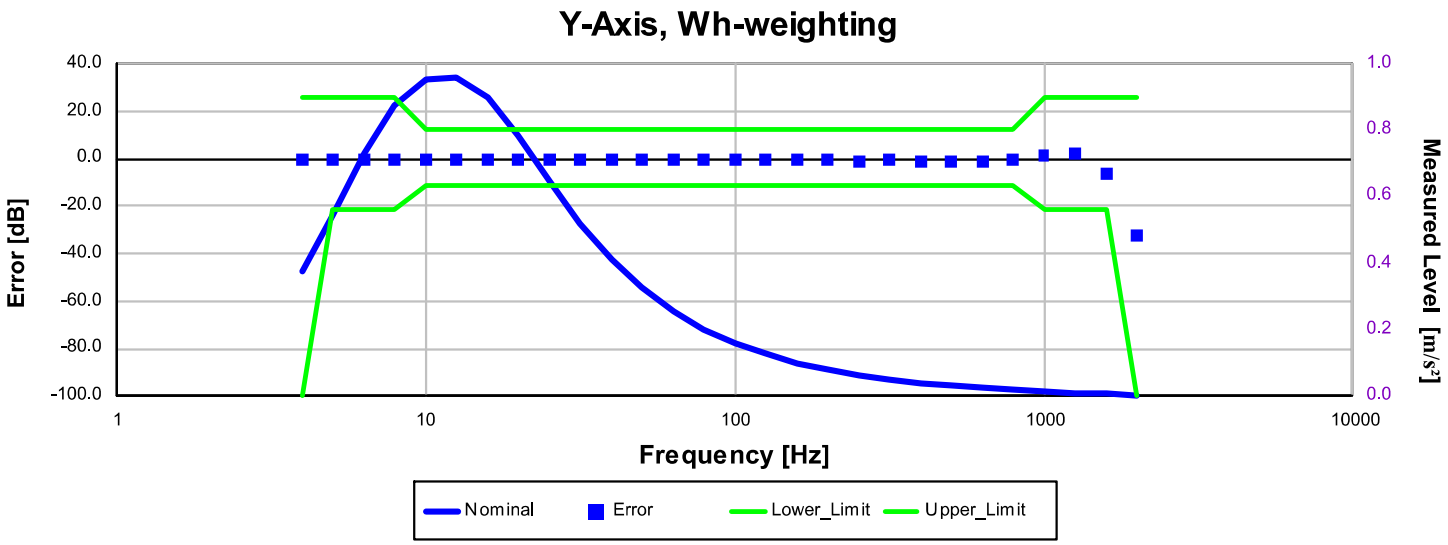
-- End of measurement results--



Electrical signal test of frequency weighting performed according to ISO 8041-1:2017 12.11.3 and ISO 8042-1:2021 12.11.3

Frequency [Hz]	Test Result [m/s²]	Error [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
3.98	0.3734	-0.5	-100.0	26.0	1.7	Pass
5.01	0.5423	-0.5	-21.0	26.0	1.7	Pass
6.31	0.7221	-0.7	-21.0	26.0	1.7	Pass
7.94	0.8702	-0.3	-21.0	26.0	1.7	Pass
10.00	0.9491	-0.2	-11.0	12.0	1.7	Pass
12.59	0.9552	-0.2	-11.0	12.0	1.7	Pass
15.85	0.8946	-0.1	-11.0	12.0	1.7	Pass
19.95	0.7793	-0.3	-11.0	12.0	1.7	Pass
25.12	0.6429	-0.7	-11.0	12.0	1.7	Pass
31.62	0.5191	0.0	-11.0	12.0	1.7	Pass
39.81	0.4107	-0.1	-11.0	12.0	1.7	Pass
50.12	0.3237	-0.2	-11.0	12.0	1.7	Pass
63.10	0.2551	-0.3	-11.0	12.0	1.7	Pass
79.43	0.2020	-0.2	-11.0	12.0	1.7	Pass
100.00	0.1600	-0.1	-11.0	12.0	1.7	Pass
125.89	0.1264	-0.5	-11.0	12.0	1.7	Pass
158.49	0.1005	-0.2	-11.0	12.0	1.7	Pass
199.53	0.0794	-0.6	-11.0	12.0	1.7	Pass
251.19	0.0629	-0.8	-11.0	12.0	1.7	Pass
316.23	0.0499	-0.7	-11.0	12.0	1.7	Pass
398.11	0.0394	-1.1	-11.0	12.0	1.7	Pass
501.19	0.0309	-1.4	-11.0	12.0	1.7	Pass
630.96	0.0241	-1.4	-11.0	12.0	1.7	Pass
794.33	0.0186	-0.4	-11.0	12.0	1.7	Pass
1,000.00	0.0136	1.4	-21.0	26.0	1.7	Pass
1,258.90	0.0091	2.1	-21.0	26.0	1.7	Pass
1,584.90	0.0050	-5.8	-21.0	26.0	1.7	Pass
1,995.30	0.0020	-32.3	-100.0	26.0	1.7	Pass

-- End of measurement results--

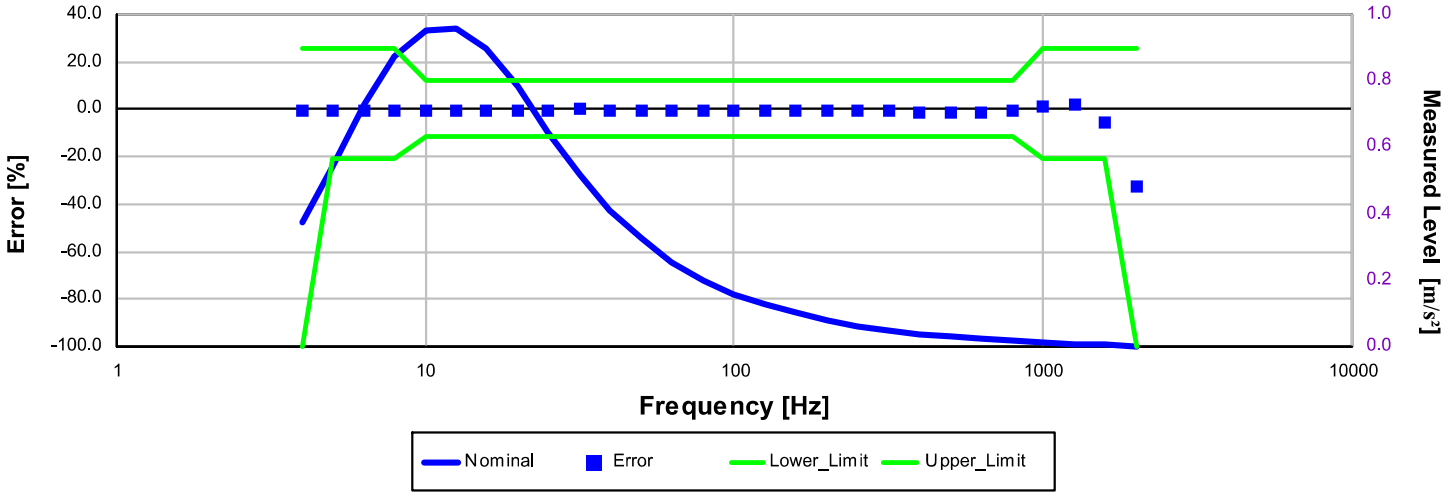


Electrical signal test of frequency weighting performed according to ISO 8041-1:2017 12.11.3 and ISO 8042-1:2021 12.11.3

Frequency [Hz]	Test Result [m/s²]	Error [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
3.98	0.3734	-0.5	-100.0	26.0	1.7	Pass
5.01	0.5423	-0.5	-21.0	26.0	1.7	Pass
6.31	0.7221	-0.7	-21.0	26.0	1.7	Pass
7.94	0.8702	-0.3	-21.0	26.0	1.7	Pass
10.00	0.9491	-0.2	-11.0	12.0	1.7	Pass
12.59	0.9552	-0.2	-11.0	12.0	1.7	Pass
15.85	0.8946	-0.1	-11.0	12.0	1.7	Pass
19.95	0.7793	-0.3	-11.0	12.0	1.7	Pass
25.12	0.6429	-0.7	-11.0	12.0	1.7	Pass
31.62	0.5191	0.0	-11.0	12.0	1.7	Pass
39.81	0.4107	-0.1	-11.0	12.0	1.7	Pass
50.12	0.3237	-0.2	-11.0	12.0	1.7	Pass
63.10	0.2551	-0.3	-11.0	12.0	1.7	Pass
79.43	0.2020	-0.2	-11.0	12.0	1.7	Pass
100.00	0.1600	-0.1	-11.0	12.0	1.7	Pass
125.89	0.1264	-0.5	-11.0	12.0	1.7	Pass
158.49	0.1005	-0.2	-11.0	12.0	1.7	Pass
199.53	0.0794	-0.6	-11.0	12.0	1.7	Pass
251.19	0.0629	-0.8	-11.0	12.0	1.7	Pass
316.23	0.0499	-0.7	-11.0	12.0	1.7	Pass
398.11	0.0394	-1.1	-11.0	12.0	1.7	Pass
501.19	0.0309	-1.4	-11.0	12.0	1.7	Pass
630.96	0.0241	-1.4	-11.0	12.0	1.7	Pass
794.33	0.0186	-0.4	-11.0	12.0	1.7	Pass
1,000.00	0.0136	1.4	-21.0	26.0	1.7	Pass
1,258.90	0.0091	2.1	-21.0	26.0	1.7	Pass
1,584.90	0.0050	-5.8	-21.0	26.0	1.7	Pass
1,995.30	0.0020	-32.3	-100.0	26.0	1.7	Pass

-- End of measurement results--

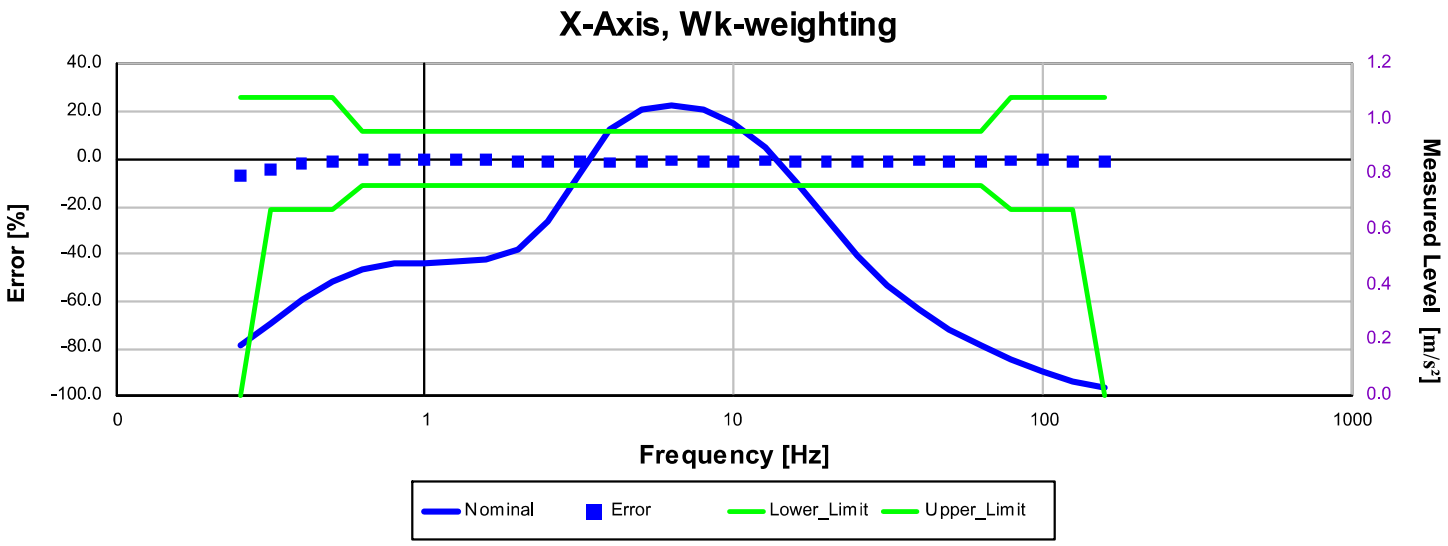
Z-Axis, Wh-weighting



Electrical signal test of frequency weighting performed according to ISO 8041-1:2017 12.11.3 and ISO 8042-1:2021 12.11.3

Frequency [Hz]	Test Result [m/s²]	Error [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
3.98	0.3734	-0.5	-100.0	26.0	1.7	Pass
5.01	0.5423	-0.5	-21.0	26.0	1.7	Pass
6.31	0.7221	-0.7	-21.0	26.0	1.7	Pass
7.94	0.8702	-0.3	-21.0	26.0	1.7	Pass
10.00	0.9491	-0.2	-11.0	12.0	1.7	Pass
12.59	0.9552	-0.2	-11.0	12.0	1.7	Pass
15.85	0.8946	-0.1	-11.0	12.0	1.7	Pass
19.95	0.7793	-0.3	-11.0	12.0	1.7	Pass
25.12	0.6429	-0.7	-11.0	12.0	1.7	Pass
31.62	0.5191	0.0	-11.0	12.0	1.7	Pass
39.81	0.4107	-0.1	-11.0	12.0	1.7	Pass
50.12	0.3237	-0.2	-11.0	12.0	1.7	Pass
63.10	0.2551	-0.3	-11.0	12.0	1.7	Pass
79.43	0.2020	-0.2	-11.0	12.0	1.7	Pass
100.00	0.1600	-0.1	-11.0	12.0	1.7	Pass
125.89	0.1264	-0.5	-11.0	12.0	1.7	Pass
158.49	0.1005	-0.2	-11.0	12.0	1.7	Pass
199.53	0.0794	-0.6	-11.0	12.0	1.7	Pass
251.19	0.0629	-0.8	-11.0	12.0	1.7	Pass
316.23	0.0499	-0.7	-11.0	12.0	1.7	Pass
398.11	0.0394	-1.1	-11.0	12.0	1.7	Pass
501.19	0.0309	-1.4	-11.0	12.0	1.7	Pass
630.96	0.0241	-1.4	-11.0	12.0	1.7	Pass
794.33	0.0186	-0.3	-11.0	12.0	1.7	Pass
1,000.00	0.0137	1.4	-21.0	26.0	1.7	Pass
1,258.90	0.0091	2.2	-21.0	26.0	1.7	Pass
1,584.90	0.0051	-5.7	-21.0	26.0	1.7	Pass
1,995.30	0.0020	-32.2	-100.0	26.0	1.7	Pass

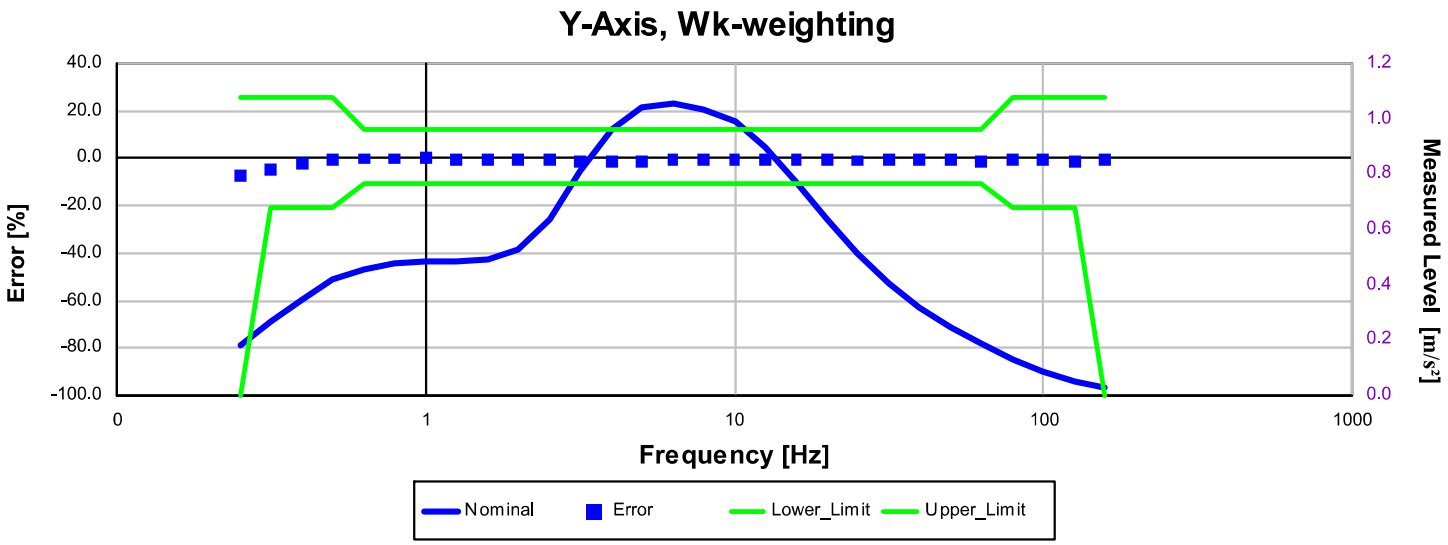
-- End of measurement results--



Electrical signal test of frequency weighting performed according to ISO 8041-1:2017 12.11.3 and ISO 8042-1:2021 12.11.3

Frequency [Hz]	Test Result [m/s²]	Error [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
0.25	0.1704	-7.0	-100.0	26.0	1.7	Pass
0.32	0.2521	-4.7	-21.0	26.0	1.7	Pass
0.40	0.3437	-1.9	-21.0	26.0	1.7	Pass
0.50	0.4156	-0.8	-21.0	26.0	1.7	Pass
0.63	0.4586	0.0	-11.0	12.0	1.7	Pass
0.79	0.4766	0.0	-11.0	12.0	1.7	Pass
1.00	0.4836	0.2	-11.0	12.0	1.7	Pass
1.26	0.4835	-0.2	-11.0	12.0	1.7	Pass
1.58	0.4916	-0.4	-11.0	12.0	1.7	Pass
2.00	0.5273	-0.7	-11.0	12.0	1.7	Pass
2.51	0.6291	-0.7	-11.0	12.0	1.7	Pass
3.16	0.7982	-1.1	-11.0	12.0	1.7	Pass
3.98	0.9520	-1.3	-11.0	12.0	1.7	Pass
5.01	1.0284	-1.0	-11.0	12.0	1.7	Pass
6.31	1.0488	-0.5	-11.0	12.0	1.7	Pass
7.94	1.0304	-0.6	-11.0	12.0	1.7	Pass
10.00	0.9817	-0.7	-11.0	12.0	1.7	Pass
12.59	0.8939	-0.6	-11.0	12.0	1.7	Pass
15.85	0.7692	-0.7	-11.0	12.0	1.7	Pass
19.95	0.6329	-0.7	-11.0	12.0	1.7	Pass
25.12	0.5058	-0.9	-11.0	12.0	1.7	Pass
31.62	0.4008	-0.6	-11.0	12.0	1.7	Pass
39.81	0.3145	-0.5	-11.0	12.0	1.7	Pass
50.12	0.2434	-0.7	-11.0	12.0	1.7	Pass
63.10	0.1839	-1.0	-11.0	12.0	1.7	Pass
79.43	0.1333	-0.5	-21.0	26.0	1.7	Pass
100.00	0.0883	-0.4	-21.0	26.0	1.7	Pass
125.89	0.0525	-1.1	-21.0	26.0	1.7	Pass
158.49	0.0290	-0.8	-100.0	26.0	1.7	Pass

-- End of measurement results--

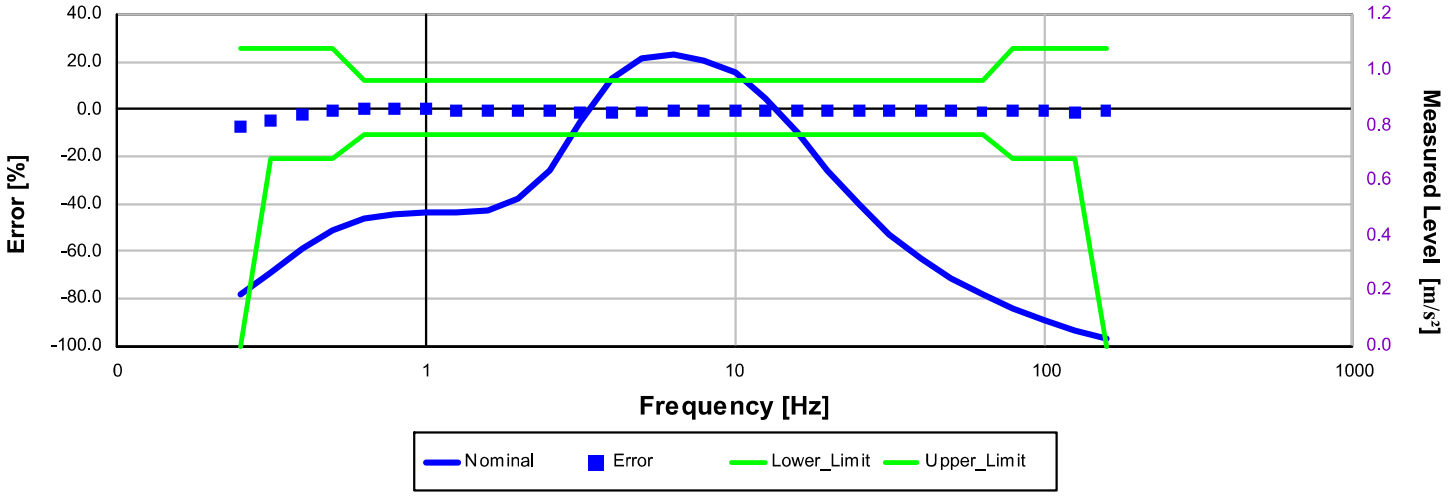


Electrical signal test of frequency weighting performed according to ISO 8041-1:2017 12.11.3 and ISO 8042-1:2021 12.11.3

Frequency [Hz]	Test Result [m/s²]	Error [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
0.25	0.1704	-7.0	-100.0	26.0	1.7	Pass
0.32	0.2520	-4.7	-21.0	26.0	1.7	Pass
0.40	0.3437	-1.9	-21.0	26.0	1.7	Pass
0.50	0.4155	-0.8	-21.0	26.0	1.7	Pass
0.63	0.4586	-0.1	-11.0	12.0	1.7	Pass
0.79	0.4765	0.0	-11.0	12.0	1.7	Pass
1.00	0.4836	0.2	-11.0	12.0	1.7	Pass
1.26	0.4834	-0.2	-11.0	12.0	1.7	Pass
1.58	0.4916	-0.4	-11.0	12.0	1.7	Pass
2.00	0.5273	-0.7	-11.0	12.0	1.7	Pass
2.51	0.6291	-0.7	-11.0	12.0	1.7	Pass
3.16	0.7982	-1.1	-11.0	12.0	1.7	Pass
3.98	0.9520	-1.3	-11.0	12.0	1.7	Pass
5.01	1.0284	-1.0	-11.0	12.0	1.7	Pass
6.31	1.0488	-0.5	-11.0	12.0	1.7	Pass
7.94	1.0304	-0.6	-11.0	12.0	1.7	Pass
10.00	0.9817	-0.7	-11.0	12.0	1.7	Pass
12.59	0.8939	-0.6	-11.0	12.0	1.7	Pass
15.85	0.7692	-0.7	-11.0	12.0	1.7	Pass
19.95	0.6329	-0.7	-11.0	12.0	1.7	Pass
25.12	0.5058	-0.9	-11.0	12.0	1.7	Pass
31.62	0.4008	-0.6	-11.0	12.0	1.7	Pass
39.81	0.3145	-0.5	-11.0	12.0	1.7	Pass
50.12	0.2434	-0.7	-11.0	12.0	1.7	Pass
63.10	0.1839	-1.0	-11.0	12.0	1.7	Pass
79.43	0.1333	-0.5	-21.0	26.0	1.7	Pass
100.00	0.0883	-0.4	-21.0	26.0	1.7	Pass
125.89	0.0525	-1.1	-21.0	26.0	1.7	Pass
158.49	0.0290	-0.8	-100.0	26.0	1.7	Pass

-- End of measurement results--

Z-Axis, Wk-weighting

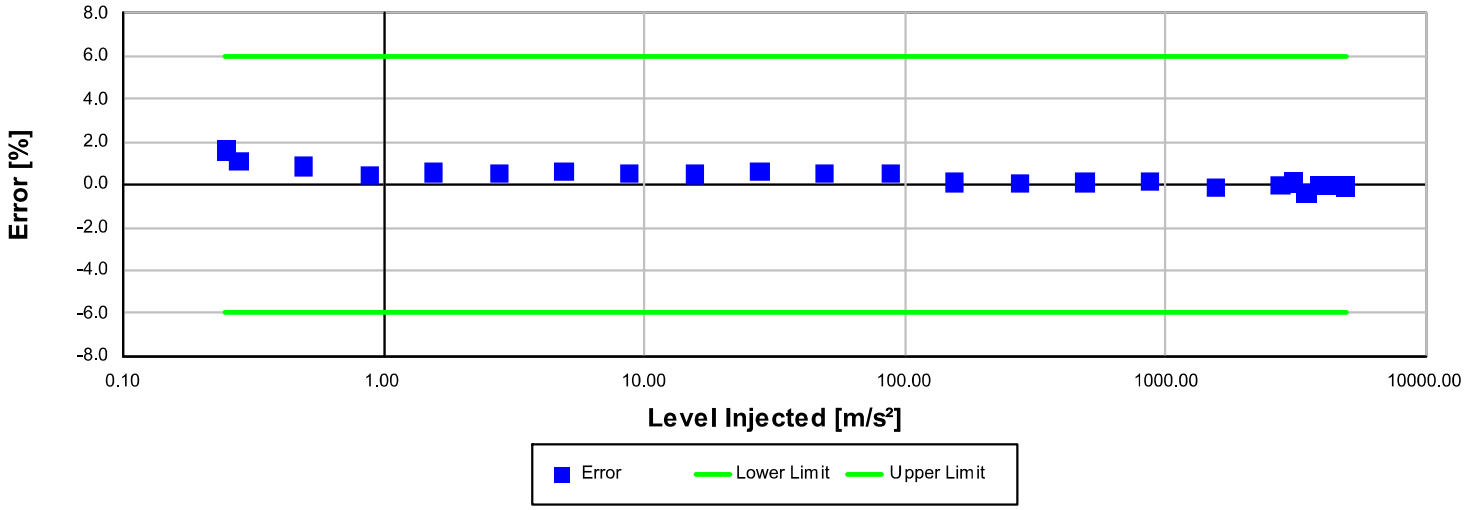


Electrical signal test of frequency weighting performed according to ISO 8041-1:2017 12.11.3 and ISO 8042-1:2021 12.11.3

Frequency [Hz]	Test Result [m/s²]	Error [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
0.25	0.1704	-7.0	-100.0	26.0	1.7	Pass
0.32	0.2521	-4.7	-21.0	26.0	1.7	Pass
0.40	0.3437	-1.9	-21.0	26.0	1.7	Pass
0.50	0.4156	-0.8	-21.0	26.0	1.7	Pass
0.63	0.4586	0.0	-11.0	12.0	1.7	Pass
0.79	0.4766	0.0	-11.0	12.0	1.7	Pass
1.00	0.4836	0.2	-11.0	12.0	1.7	Pass
1.26	0.4835	-0.2	-11.0	12.0	1.7	Pass
1.58	0.4916	-0.4	-11.0	12.0	1.7	Pass
2.00	0.5273	-0.7	-11.0	12.0	1.7	Pass
2.51	0.6291	-0.7	-11.0	12.0	1.7	Pass
3.16	0.7982	-1.1	-11.0	12.0	1.7	Pass
3.98	0.9520	-1.3	-11.0	12.0	1.7	Pass
5.01	1.0284	-1.0	-11.0	12.0	1.7	Pass
6.31	1.0488	-0.5	-11.0	12.0	1.7	Pass
7.94	1.0304	-0.6	-11.0	12.0	1.7	Pass
10.00	0.9817	-0.7	-11.0	12.0	1.7	Pass
12.59	0.8939	-0.6	-11.0	12.0	1.7	Pass
15.85	0.7692	-0.7	-11.0	12.0	1.7	Pass
19.95	0.6329	-0.7	-11.0	12.0	1.7	Pass
25.12	0.5058	-0.9	-11.0	12.0	1.7	Pass
31.62	0.4008	-0.6	-11.0	12.0	1.7	Pass
39.81	0.3145	-0.5	-11.0	12.0	1.7	Pass
50.12	0.2434	-0.7	-11.0	12.0	1.7	Pass
63.10	0.1839	-1.0	-11.0	12.0	1.7	Pass
79.43	0.1333	-0.5	-21.0	26.0	1.7	Pass
100.00	0.0883	-0.4	-21.0	26.0	1.7	Pass
125.89	0.0525	-1.1	-21.0	26.0	1.7	Pass
158.49	0.0290	-0.8	-100.0	26.0	1.7	Pass

-- End of measurement results--

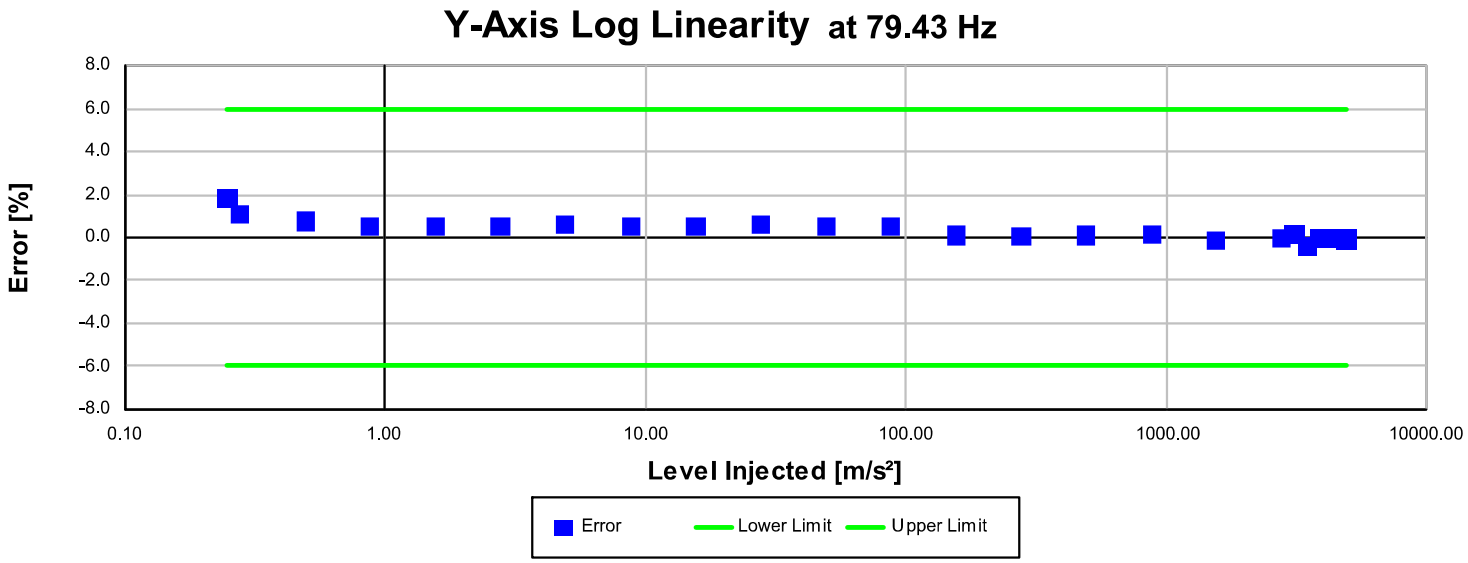
X-Axis Log Linearity at 79.43 Hz



Broadband level linearity performed according to ISO 8041-1:2017 12.10.1 and ISO 8042-1:2021 12.10.1 with Fb-weighting

Level [m/s²]	Measured [m/s²]	Error [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
0.2463	0.2503	1.6	-6.0	6.0	2.0	Pass
0.2764	0.2794	1.1	-6.0	6.0	1.9	Pass
0.4915	0.4957	0.8	-6.0	6.0	1.7	Pass
0.8741	0.8780	0.5	-6.0	6.0	1.7	Pass
1.5543	1.5631	0.6	-6.0	6.0	1.7	Pass
2.7641	2.7787	0.5	-6.0	6.0	1.7	Pass
4.9153	4.9445	0.6	-6.0	6.0	1.7	Pass
8.7407	8.7879	0.5	-6.0	6.0	1.7	Pass
15.5435	15.6184	0.5	-6.0	6.0	1.7	Pass
27.6406	27.8172	0.6	-6.0	6.0	1.7	Pass
49.1528	49.4156	0.5	-6.0	6.0	1.7	Pass
87.4073	87.8856	0.5	-6.0	6.0	1.7	Pass
155.4347	155.5958	0.1	-6.0	6.0	1.7	Pass
276.4062	276.5339	0.0	-6.0	6.0	1.7	Pass
491.5275	492.0081	0.1	-6.0	6.0	1.7	Pass
874.0733	875.4318	0.2	-6.0	6.0	1.7	Pass
1,554.3466	1,552.3973	-0.1	-6.0	6.0	1.7	Pass
2,764.0625	2,763.3232	0.0	-6.0	6.0	1.7	Pass
3,101.3291	3,104.7807	0.1	-6.0	6.0	1.7	Pass
3,479.7485	3,466.2992	-0.4	-6.0	6.0	1.7	Pass
3,904.3420	3,902.1586	-0.1	-6.0	6.0	1.7	Pass
4,380.7438	4,379.7125	0.0	-6.0	6.0	1.7	Pass
4,915.2754	4,910.6680	-0.1	-6.0	6.0	1.7	Pass

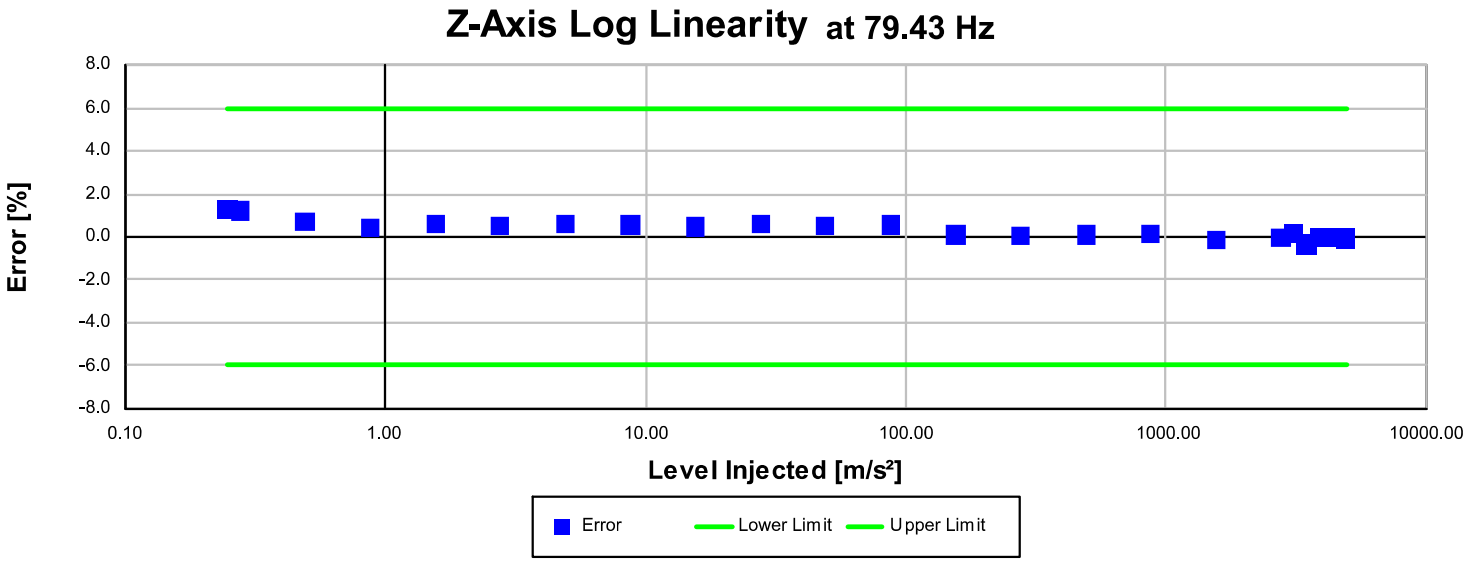
-- End of measurement results--



Broadband level linearity performed according to ISO 8041-1:2017 12.10.1 and ISO 8042-1:2021 12.10.1 with Fb-weighting

Level [m/s²]	Measured [m/s²]	Error [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
0.2463	0.2508	1.8	-6.0	6.0	2.0	Pass
0.2764	0.2793	1.1	-6.0	6.0	1.9	Pass
0.4915	0.4951	0.7	-6.0	6.0	1.7	Pass
0.8740	0.8784	0.5	-6.0	6.0	1.7	Pass
1.5542	1.5624	0.5	-6.0	6.0	1.7	Pass
2.7638	2.7783	0.5	-6.0	6.0	1.7	Pass
4.9148	4.9432	0.6	-6.0	6.0	1.7	Pass
8.7398	8.7872	0.5	-6.0	6.0	1.7	Pass
15.5419	15.6168	0.5	-6.0	6.0	1.7	Pass
27.6378	27.8136	0.6	-6.0	6.0	1.7	Pass
49.1477	49.4090	0.5	-6.0	6.0	1.7	Pass
87.3984	87.8763	0.5	-6.0	6.0	1.7	Pass
155.4187	155.5802	0.1	-6.0	6.0	1.7	Pass
276.3779	276.5088	0.0	-6.0	6.0	1.7	Pass
491.4771	491.9596	0.1	-6.0	6.0	1.7	Pass
873.9836	875.3430	0.2	-6.0	6.0	1.7	Pass
1,554.1871	1,552.2351	-0.1	-6.0	6.0	1.7	Pass
2,763.7788	2,763.0449	0.0	-6.0	6.0	1.7	Pass
3,101.0109	3,104.4365	0.1	-6.0	6.0	1.7	Pass
3,479.3914	3,465.9297	-0.4	-6.0	6.0	1.7	Pass
3,903.9414	3,901.7184	-0.1	-6.0	6.0	1.7	Pass
4,380.2943	4,379.2215	0.0	-6.0	6.0	1.7	Pass
4,914.7710	4,910.0957	-0.1	-6.0	6.0	1.7	Pass

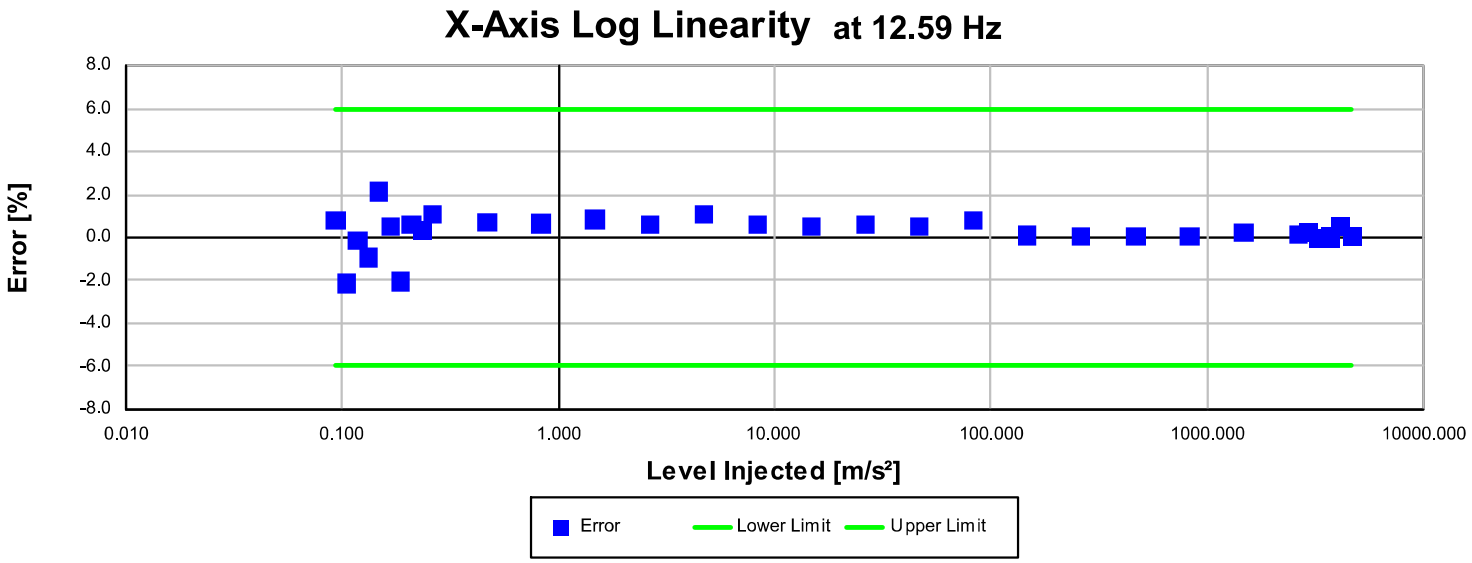
-- End of measurement results--



Broadband level linearity performed according to ISO 8041-1:2017 12.10.1 and ISO 8042-1:2021 12.10.1 with Fb-weighting

Level [m/s²]	Measured [m/s²]	Error [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
0.2463	0.2494	1.2	-6.0	6.0	2.0	Pass
0.2764	0.2797	1.2	-6.0	6.0	1.9	Pass
0.4915	0.4950	0.7	-6.0	6.0	1.7	Pass
0.8740	0.8775	0.4	-6.0	6.0	1.7	Pass
1.5542	1.5631	0.6	-6.0	6.0	1.7	Pass
2.7637	2.7775	0.5	-6.0	6.0	1.7	Pass
4.9147	4.9430	0.6	-6.0	6.0	1.7	Pass
8.7397	8.7875	0.5	-6.0	6.0	1.7	Pass
15.5417	15.6154	0.5	-6.0	6.0	1.7	Pass
27.6375	27.8138	0.6	-6.0	6.0	1.7	Pass
49.1471	49.4070	0.5	-6.0	6.0	1.7	Pass
87.3973	87.8759	0.5	-6.0	6.0	1.7	Pass
155.4169	155.5765	0.1	-6.0	6.0	1.7	Pass
276.3746	276.5035	0.0	-6.0	6.0	1.7	Pass
491.4713	491.9534	0.1	-6.0	6.0	1.7	Pass
873.9734	875.3398	0.2	-6.0	6.0	1.7	Pass
1,554.1688	1,552.2240	-0.1	-6.0	6.0	1.7	Pass
2,763.7464	2,763.0465	0.0	-6.0	6.0	1.7	Pass
3,100.9745	3,104.4561	0.1	-6.0	6.0	1.7	Pass
3,479.3506	3,465.9660	-0.4	-6.0	6.0	1.7	Pass
3,903.8956	3,901.7426	-0.1	-6.0	6.0	1.7	Pass
4,380.2429	4,379.2820	0.0	-6.0	6.0	1.7	Pass
4,914.7134	4,910.1762	-0.1	-6.0	6.0	1.7	Pass

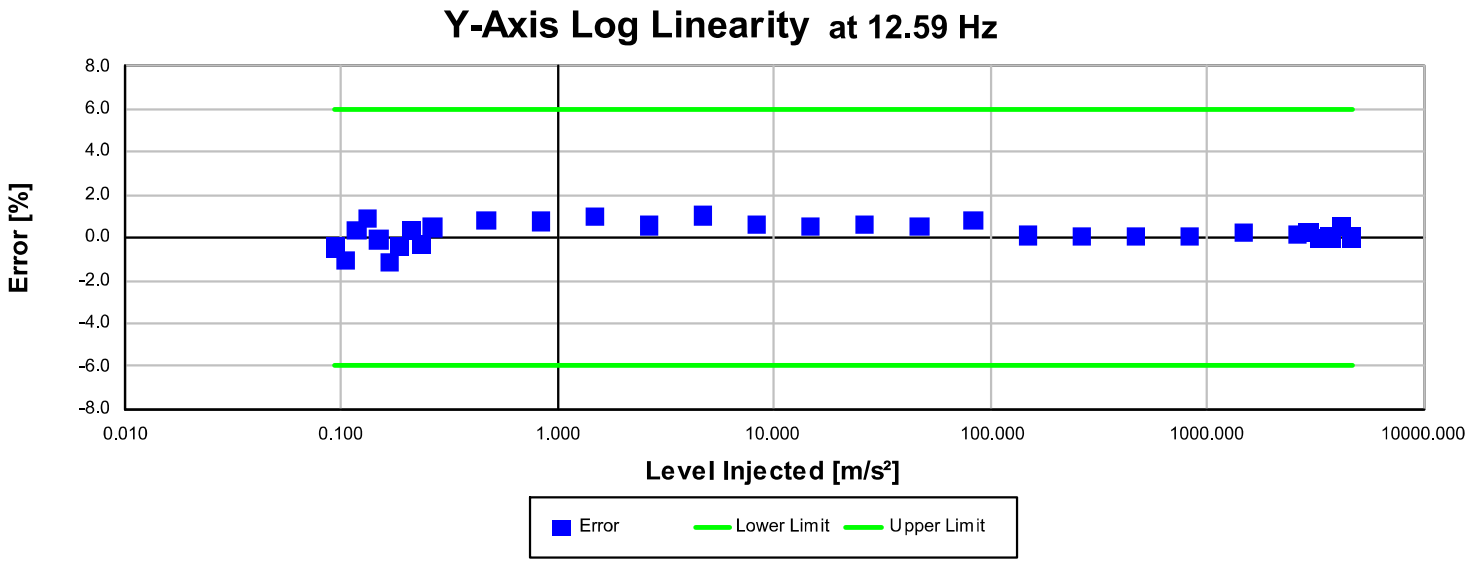
-- End of measurement results--



Broadband level linearity with Wh-weighting

Level [m/s²]	Measured [m/s²]	Error [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
0.0934	0.0941	0.8	-6.0	6.0	2.7	Pass
0.1048	0.1025	-2.1	-6.0	6.0	2.5	Pass
0.1176	0.1174	-0.2	-6.0	6.0	2.3	Pass
0.1319	0.1307	-0.9	-6.0	6.0	2.0	Pass
0.1480	0.1512	2.1	-6.0	6.0	2.1	Pass
0.1660	0.1669	0.5	-6.0	6.0	2.1	Pass
0.1863	0.1825	-2.0	-6.0	6.0	2.1	Pass
0.2090	0.2103	0.6	-6.0	6.0	2.0	Pass
0.2345	0.2352	0.3	-6.0	6.0	1.9	Pass
0.2632	0.2659	1.0	-6.0	6.0	1.9	Pass
0.4680	0.4713	0.7	-6.0	6.0	1.7	Pass
0.8322	0.8377	0.7	-6.0	6.0	1.8	Pass
1.4799	1.4923	0.8	-6.0	6.0	1.7	Pass
2.6317	2.6470	0.6	-6.0	6.0	1.7	Pass
4.6799	4.7292	1.1	-6.0	6.0	1.7	Pass
8.3221	8.3717	0.6	-6.0	6.0	1.7	Pass
14.7991	14.8713	0.5	-6.0	6.0	1.7	Pass
26.3169	26.4819	0.6	-6.0	6.0	1.7	Pass
46.7988	47.0282	0.5	-6.0	6.0	1.8	Pass
83.2213	83.9069	0.8	-6.0	6.0	1.8	Pass
147.9907	148.1355	0.1	-6.0	6.0	1.7	Pass
263.1688	263.2600	0.0	-6.0	6.0	1.7	Pass
467.9876	468.2275	0.1	-6.0	6.0	1.7	Pass
832.2127	832.5950	0.0	-6.0	6.0	1.7	Pass
1,479.9067	1,483.3448	0.2	-6.0	6.0	1.8	Pass
2,631.6877	2,635.0920	0.1	-6.0	6.0	1.7	Pass
2,952.8021	2,960.5463	0.3	-6.0	6.0	1.7	Pass
3,313.0985	3,312.2754	0.0	-6.0	6.0	1.7	Pass
3,717.3576	3,717.5379	0.0	-6.0	6.0	1.7	Pass
4,170.9439	4,192.6027	0.5	-6.0	6.0	1.7	Pass
4,679.8760	4,681.2242	0.0	-6.0	6.0	1.7	Pass

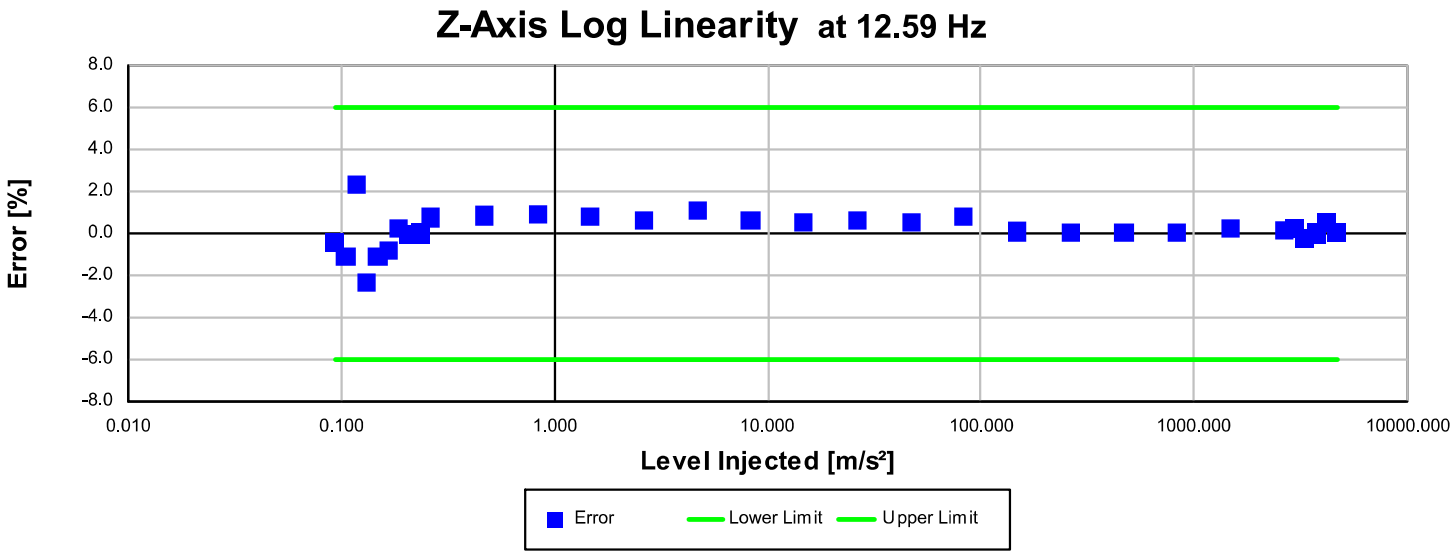
-- End of measurement results--



Broadband level linearity with Wh-weighting

Level [m/s²]	Measured [m/s²]	Error [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
0.0934	0.0929	-0.4	-6.0	6.0	2.7	Pass
0.1048	0.1037	-1.1	-6.0	6.0	2.5	Pass
0.1175	0.1179	0.3	-6.0	6.0	2.3	Pass
0.1319	0.1330	0.9	-6.0	6.0	2.0	Pass
0.1480	0.1479	-0.1	-6.0	6.0	2.1	Pass
0.1660	0.1641	-1.2	-6.0	6.0	2.1	Pass
0.1863	0.1856	-0.4	-6.0	6.0	2.1	Pass
0.2090	0.2097	0.3	-6.0	6.0	2.0	Pass
0.2345	0.2338	-0.3	-6.0	6.0	1.9	Pass
0.2631	0.2644	0.5	-6.0	6.0	1.9	Pass
0.4679	0.4717	0.8	-6.0	6.0	1.7	Pass
0.8321	0.8384	0.8	-6.0	6.0	1.8	Pass
1.4798	1.4940	1.0	-6.0	6.0	1.7	Pass
2.6314	2.6464	0.6	-6.0	6.0	1.7	Pass
4.6794	4.7278	1.0	-6.0	6.0	1.7	Pass
8.3213	8.3722	0.6	-6.0	6.0	1.7	Pass
14.7976	14.8717	0.5	-6.0	6.0	1.7	Pass
26.3143	26.4791	0.6	-6.0	6.0	1.7	Pass
46.7941	47.0252	0.5	-6.0	6.0	1.8	Pass
83.2130	83.8956	0.8	-6.0	6.0	1.8	Pass
147.9759	148.1195	0.1	-6.0	6.0	1.7	Pass
263.1425	263.2297	0.0	-6.0	6.0	1.7	Pass
467.9409	468.1761	0.1	-6.0	6.0	1.7	Pass
832.1297	832.5048	0.0	-6.0	6.0	1.7	Pass
1,479.7591	1,483.1955	0.2	-6.0	6.0	1.8	Pass
2,631.4252	2,634.7855	0.1	-6.0	6.0	1.7	Pass
2,952.5076	2,960.1914	0.3	-6.0	6.0	1.7	Pass
3,312.7680	3,311.8855	0.0	-6.0	6.0	1.7	Pass
3,716.9868	3,717.0652	0.0	-6.0	6.0	1.7	Pass
4,170.5278	4,192.0625	0.5	-6.0	6.0	1.7	Pass
4,679.4092	4,680.6078	0.0	-6.0	6.0	1.7	Pass

-- End of measurement results--



Broadband level linearity with Wh-weighting

Level [m/s²]	Measured [m/s²]	Error [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
0.0934	0.0929	-0.5	-6.0	6.0	2.7	Pass
0.1048	0.1036	-1.1	-6.0	6.0	2.5	Pass
0.1175	0.1203	2.3	-6.0	6.0	2.3	Pass
0.1319	0.1288	-2.3	-6.0	6.0	2.0	Pass
0.1480	0.1464	-1.0	-6.0	6.0	2.1	Pass
0.1660	0.1647	-0.8	-6.0	6.0	2.1	Pass
0.1863	0.1867	0.2	-6.0	6.0	2.1	Pass
0.2090	0.2090	0.0	-6.0	6.0	2.0	Pass
0.2345	0.2346	0.0	-6.0	6.0	1.9	Pass
0.2631	0.2652	0.8	-6.0	6.0	1.9	Pass
0.4679	0.4720	0.9	-6.0	6.0	1.7	Pass
0.8321	0.8395	0.9	-6.0	6.0	1.8	Pass
1.4797	1.4917	0.8	-6.0	6.0	1.7	Pass
2.6314	2.6483	0.6	-6.0	6.0	1.7	Pass
4.6794	4.7296	1.1	-6.0	6.0	1.7	Pass
8.3212	8.3721	0.6	-6.0	6.0	1.7	Pass
14.7974	14.8720	0.5	-6.0	6.0	1.7	Pass
26.3139	26.4825	0.6	-6.0	6.0	1.7	Pass
46.7935	47.0237	0.5	-6.0	6.0	1.8	Pass
83.2120	83.8958	0.8	-6.0	6.0	1.8	Pass
147.9742	148.1229	0.1	-6.0	6.0	1.7	Pass
263.1394	263.2294	0.0	-6.0	6.0	1.7	Pass
467.9354	468.1741	0.1	-6.0	6.0	1.7	Pass
832.1198	832.5017	0.0	-6.0	6.0	1.7	Pass
1,479.7415	1,483.1834	0.2	-6.0	6.0	1.8	Pass
2,631.3939	2,634.8012	0.1	-6.0	6.0	1.7	Pass
2,952.4725	2,960.2209	0.3	-6.0	6.0	1.7	Pass
3,312.7286	3,304.0051	-0.3	-6.0	6.0	1.7	Pass
3,716.9426	3,717.1402	0.0	-6.0	6.0	1.7	Pass
4,170.4782	4,192.1906	0.5	-6.0	6.0	1.7	Pass
4,679.3535	4,680.7301	0.0	-6.0	6.0	1.7	Pass

-- End of measurement results--

Overload Detector

Overload indication performed according to ISO 8041-1:2017 12.14 and ISO 8042-1:2021 12.14 with Fb-weighting

Measurement	Nominal [m/s²]	Test Result [m/s²]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
X-Axis: Negative	4,931.68	4,988.79	-15.0	15.0	2.0	Pass
X-Axis: Positive	4,931.68	5,046.56	-15.0	15.0	2.0	Pass
Y-Axis: Negative	4,931.68	5,046.56	-15.0	15.0	2.0	Pass
Y-Axis: Positive	4,931.68	4,931.68	-15.0	15.0	2.0	Pass
Z-Axis: Negative	4,931.68	5,046.56	-15.0	15.0	2.0	Pass
Z-Axis: Positive	4,931.68	4,988.79	-15.0	15.0	2.0	Pass

-- End of measurement results--

Overload Comparison

Overload indication performed according to ISO 8041-1:2017 12.14 and ISO 8041-2:2021 12.16 with Fb-weighting

Measurement	Test Result [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
X-Axis	-1.1	-15.0	15.0	2.3	Pass
Y-Axis	2.3	-15.0	15.0	2.3	Pass
Z-Axis	1.2	-15.0	15.0	2.3	Pass

-- End of measurement results--

Cross-talk (Fb-weighting)

Cross-talk performed according to ISO 8041-1:2017 12.8 and ISO 8041-2:2021 12.8

Injected : Read	Test Result [%]	Upper Limit [%]	Expanded Uncertainty [%]	Result
X-Axis : Y-Axis	0.0	0.5	1.7	Pass
X-Axis : Z-Axis	0.0	0.5	1.7	Pass
Y-Axis : X-Axis	0.0	0.5	1.7	Pass
Y-Axis : Z-Axis	0.0	0.5	1.7	Pass
Z-Axis : X-Axis	0.0	0.5	1.7	Pass
Z-Axis : Y-Axis	0.0	0.5	1.7	Pass

-- End of measurement results--

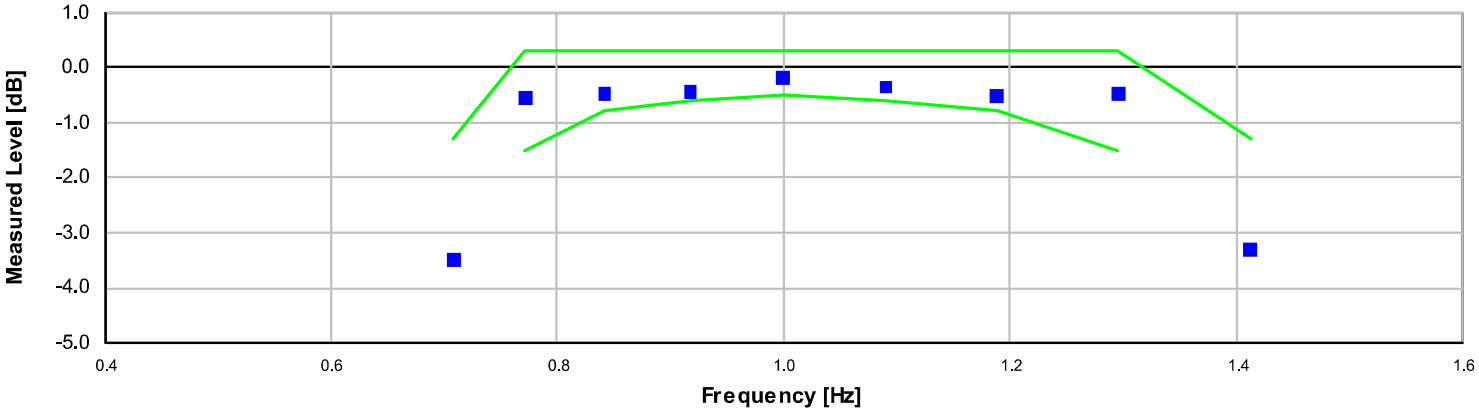
Combined Output (Fb-weighting)

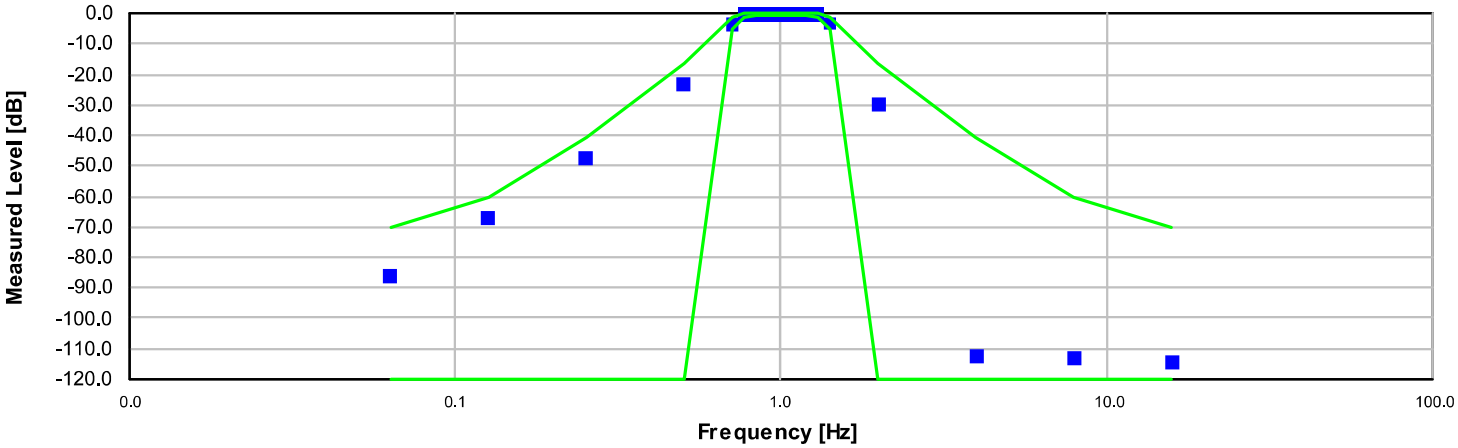
Combined Output performed according to ISO 8041-1:2017 12.16 and ISO 8041-2:2021 12.16

Measurement	Test Result [m/s²]	Lower Limit [m/s²]	Upper Limit [m/s²]	Expanded Uncertainty [m/s²]	Result
Calculated	1,701	1,653	1,755	25	Pass
Inverted, X-Axis	1,702	1,667	1,735	25	Pass
Inverted, Y-Axis	1,700	1,667	1,735	25	Pass
Inverted, Z-Axis	1,699	1,667	1,735	25	Pass

-- End of measurement results--

X-Axis 1/1 Octave Filter: 1.0 Hz



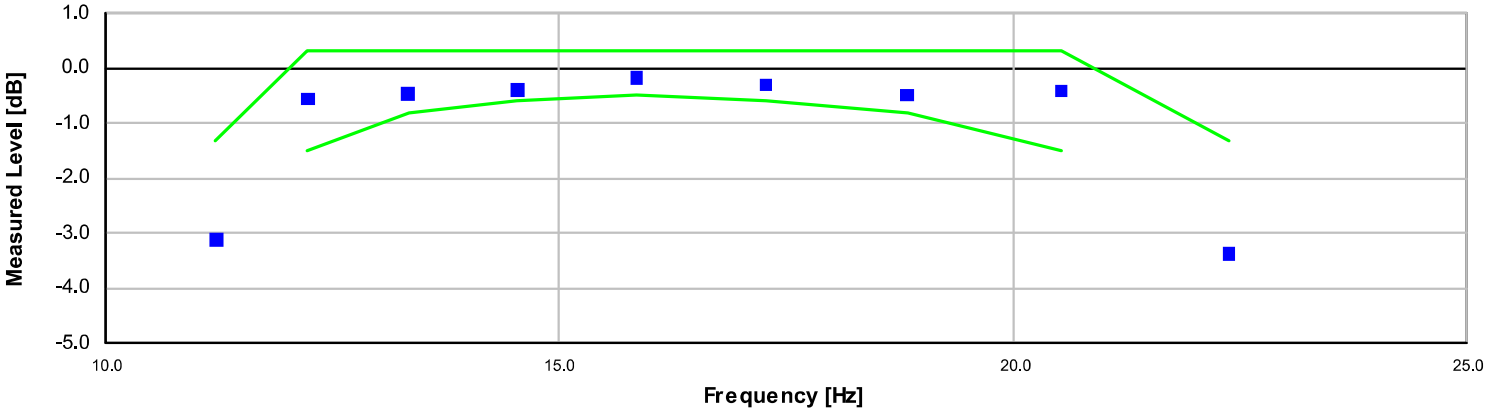


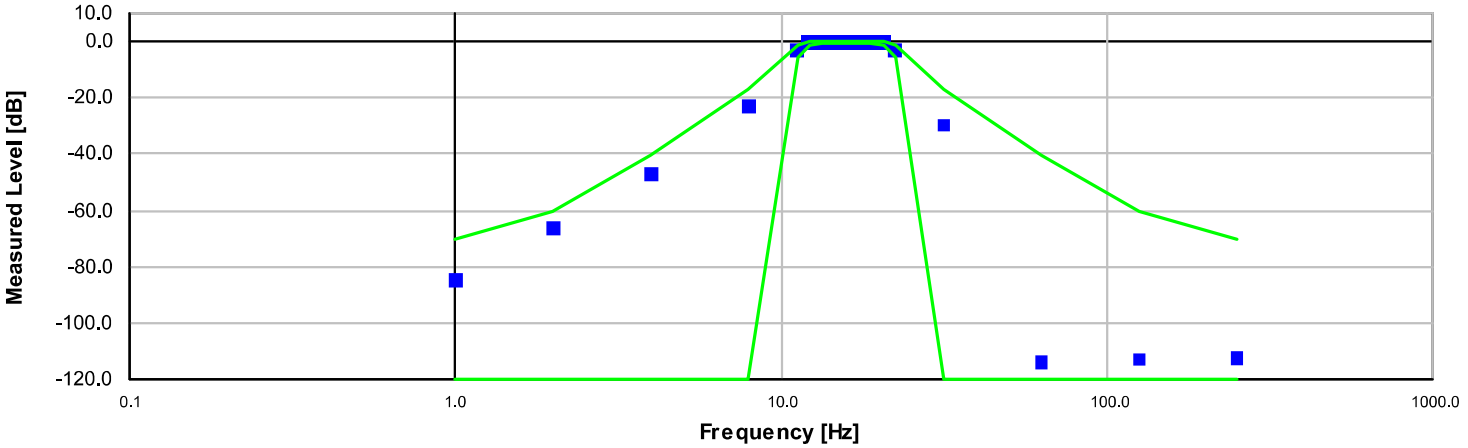
Filter shape measured according to IEC 61260-1:2014 and ANSI S1.11

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
0.06	-86.11	-inf	-70.10	0.25	Pass
0.13	-66.99	-inf	-60.10	0.20	Pass
0.25	-47.50	-inf	-40.60	0.18	Pass
0.50	-23.31	-inf	-16.70	0.18	Pass
0.71	-3.50	-5.40	-1.30	0.16	Pass
0.77	-0.54	-1.50	0.30	0.17	Pass
0.84	-0.48	-0.80	0.30	0.17	Pass
0.92	-0.43	-0.60	0.30	0.15	Pass
1.00	-0.19	-0.50	0.30	0.15	Pass
1.09	-0.35	-0.60	0.30	0.15	Pass
1.19	-0.51	-0.80	0.30	0.15	Pass
1.30	-0.47	-1.50	0.30	0.15	Pass
1.41	-3.32	-5.40	-1.30	0.20	Pass
2.00	-29.81	-inf	-16.70	0.23	Pass
3.98	-112.2	-inf	-40.6	3.4	Pass
7.94	-113.0	-inf	-60.1	4.1	Pass
15.85	-114.4	-inf	-70.1	3.4	Pass

-- End of measurement results--

X-Axis 1/1 Octave Filter: 16.0 Hz



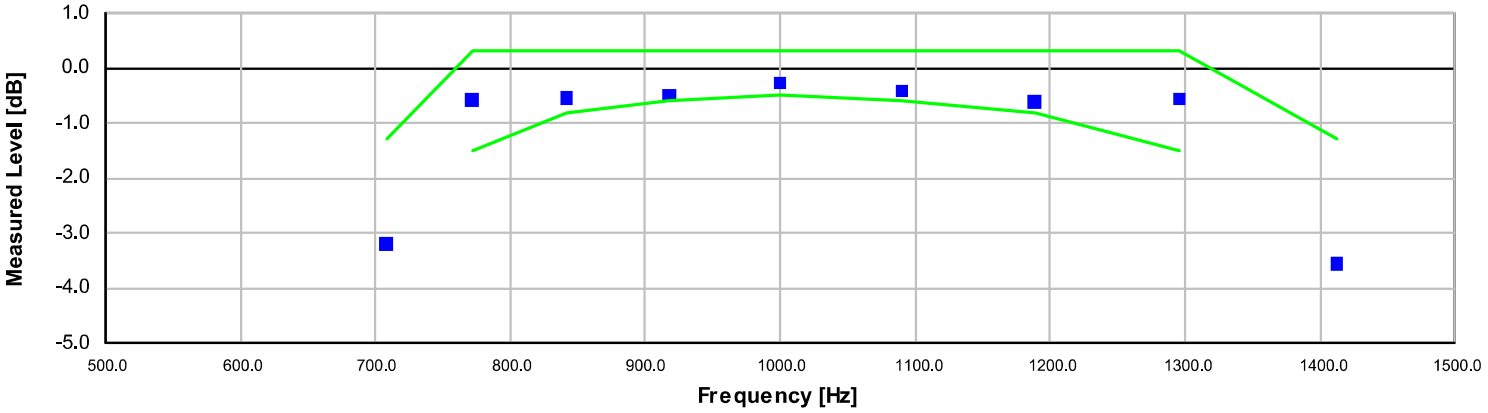


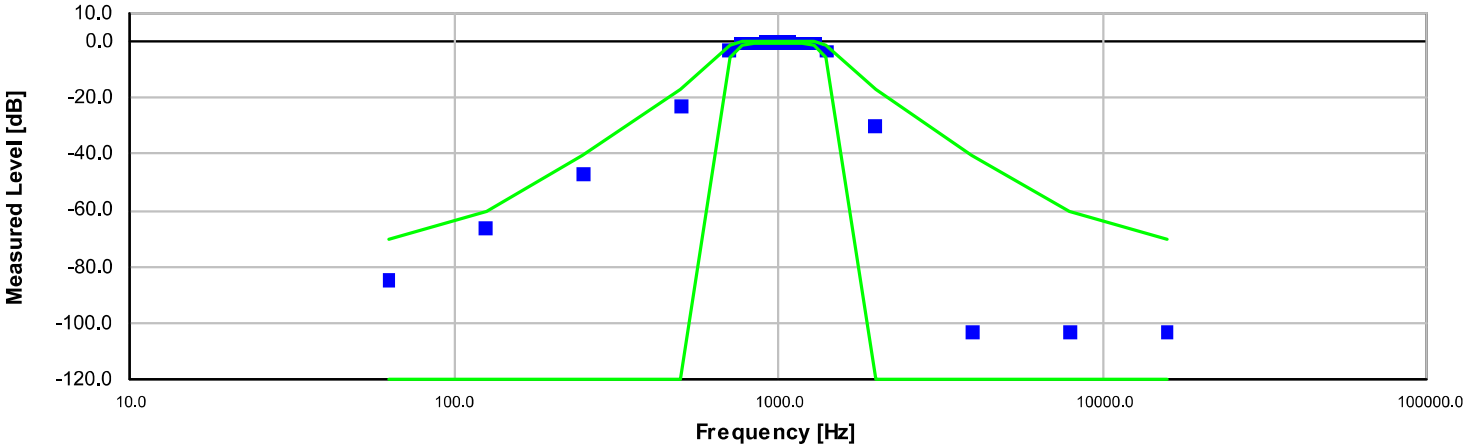
Filter shape measured according to IEC 61260-1:2014 and ANSI S1.11

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
1.00	-84.87	-inf	-70.10	0.19	Pass
2.00	-66.56	-inf	-60.10	0.18	Pass
3.98	-47.22	-inf	-40.60	0.18	Pass
7.94	-23.06	-inf	-16.70	0.18	Pass
11.22	-3.12	-5.40	-1.30	0.16	Pass
12.23	-0.56	-1.50	0.30	0.15	Pass
13.34	-0.47	-0.80	0.30	0.15	Pass
14.54	-0.41	-0.60	0.30	0.15	Pass
15.85	-0.17	-0.50	0.30	0.15	Pass
17.28	-0.30	-0.60	0.30	0.15	Pass
18.84	-0.48	-0.80	0.30	0.15	Pass
20.54	-0.41	-1.50	0.30	0.15	Pass
22.39	-3.36	-5.40	-1.30	0.21	Pass
31.62	-29.72	-inf	-16.70	0.23	Pass
63.10	-114.0	-inf	-40.6	2.6	Pass
125.89	-112.9	-inf	-60.1	1.9	Pass
251.19	-112.7	-inf	-70.1	1.9	Pass

-- End of measurement results--

X-Axis 1/1 Octave Filter: 1 kHz



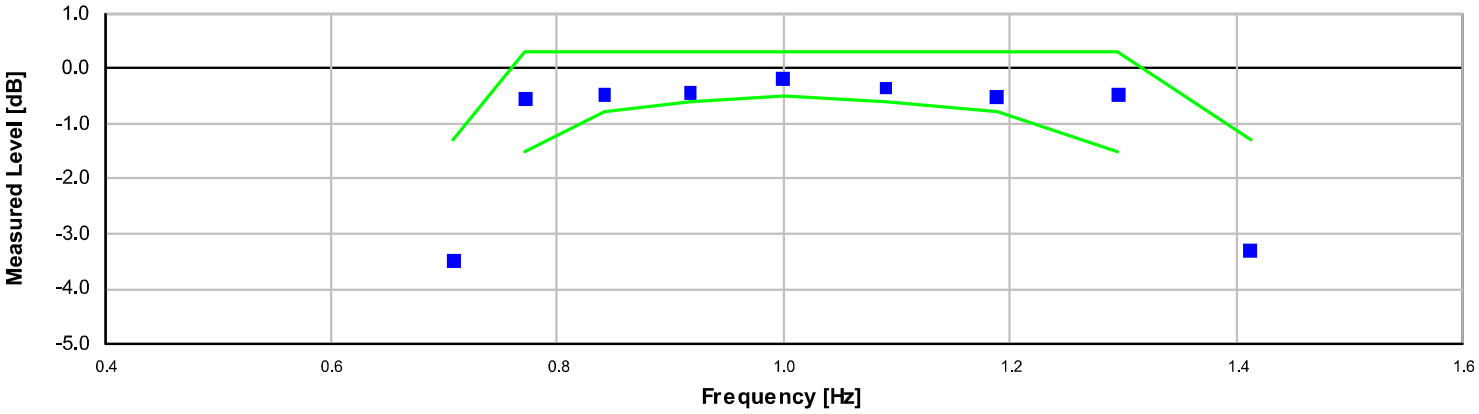


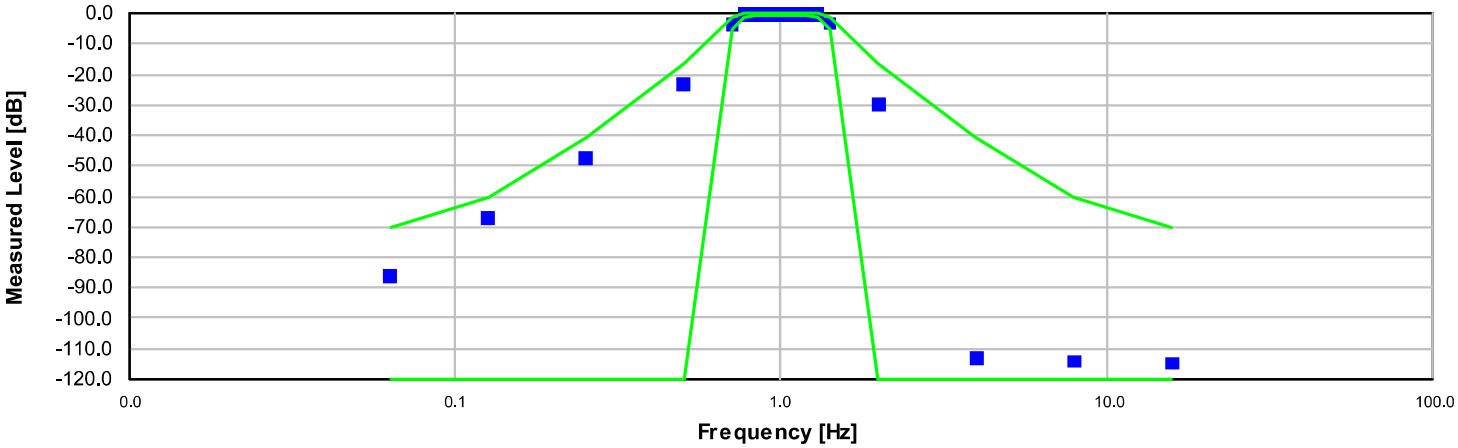
Filter shape measured according to IEC 61260-1:2014 and ANSI S1.11

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
63.10	-84.80	-inf	-70.10	0.28	Pass
125.89	-66.55	-inf	-60.10	0.18	Pass
251.19	-47.26	-inf	-40.60	0.18	Pass
501.19	-23.07	-inf	-16.70	0.18	Pass
707.95	-3.21	-5.40	-1.30	0.16	Pass
771.79	-0.57	-1.50	0.30	0.15	Pass
841.40	-0.55	-0.80	0.30	0.15	Pass
917.28	-0.48	-0.60	0.30	0.15	Pass
1,000.00	-0.27	-0.50	0.30	0.15	Pass
1,090.18	-0.42	-0.60	0.30	0.16	Pass
1,188.50	-0.63	-0.80	0.30	0.15	Pass
1,295.69	-0.56	-1.50	0.30	0.16	Pass
1,412.54	-3.55	-5.40	-1.30	0.21	Pass
1,995.26	-29.88	-inf	-16.70	0.23	Pass
3,981.07	-103.2	-inf	-40.6	1.4	Pass
7,943.28	-103.4	-inf	-60.1	2.7	Pass
15,848.93	-103.2	-inf	-70.1	2.1	Pass

-- End of measurement results--

Y-Axis 1/1 Octave Filter: 1.0 Hz



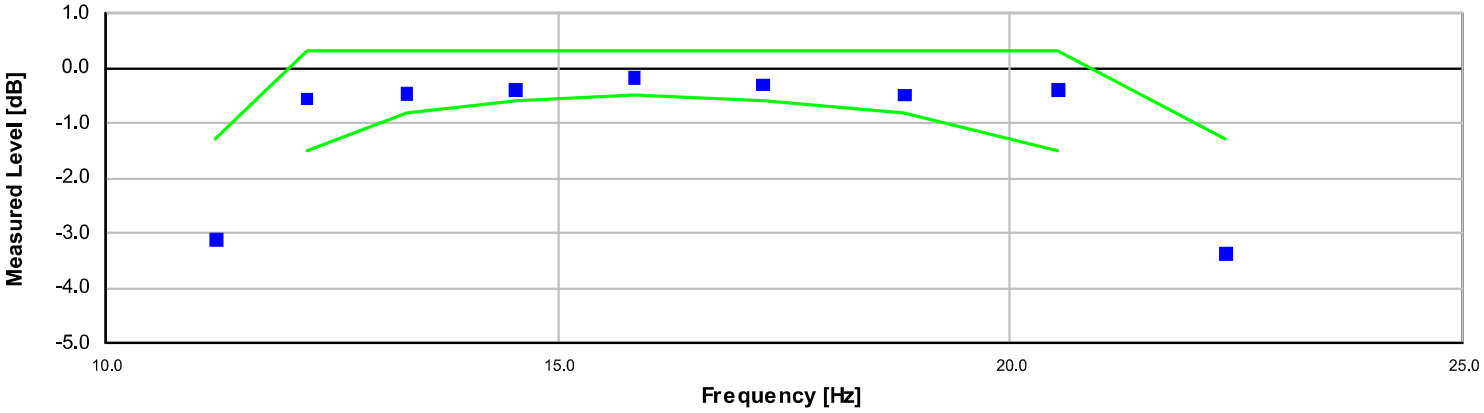


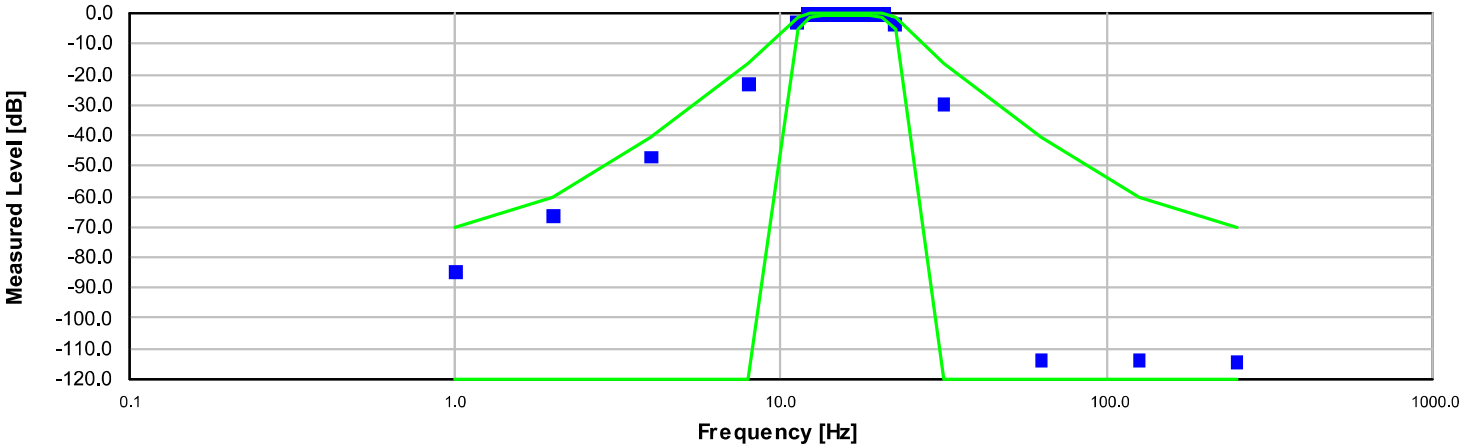
Filter shape measured according to IEC 61260-1:2014 and ANSI S1.11

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
0.06	-86.11	-inf	-70.10	0.25	Pass
0.13	-66.99	-inf	-60.10	0.20	Pass
0.25	-47.50	-inf	-40.60	0.18	Pass
0.50	-23.31	-inf	-16.70	0.18	Pass
0.71	-3.50	-5.40	-1.30	0.16	Pass
0.77	-0.54	-1.50	0.30	0.17	Pass
0.84	-0.48	-0.80	0.30	0.17	Pass
0.92	-0.44	-0.60	0.30	0.15	Pass
1.00	-0.19	-0.50	0.30	0.15	Pass
1.09	-0.35	-0.60	0.30	0.15	Pass
1.19	-0.51	-0.80	0.30	0.15	Pass
1.30	-0.47	-1.50	0.30	0.15	Pass
1.41	-3.32	-5.40	-1.30	0.20	Pass
2.00	-29.81	-inf	-16.70	0.23	Pass
3.98	-112.9	-inf	-40.6	3.4	Pass
7.94	-114.1	-inf	-60.1	4.1	Pass
15.85	-114.8	-inf	-70.1	3.4	Pass

-- End of measurement results--

Y-Axis 1/1 Octave Filter: 16.0 Hz

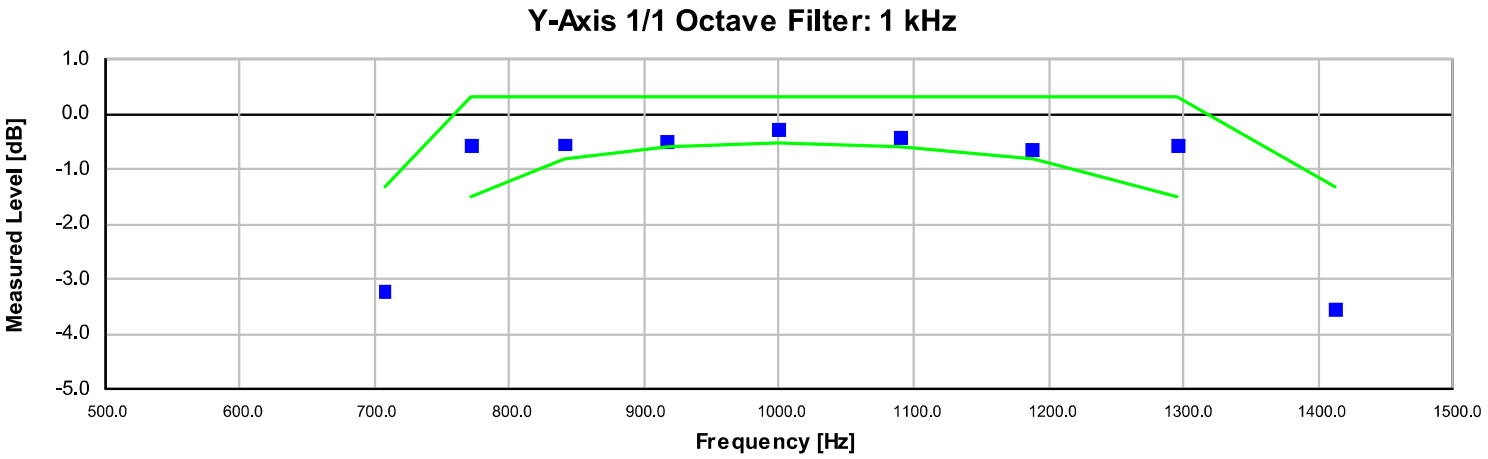


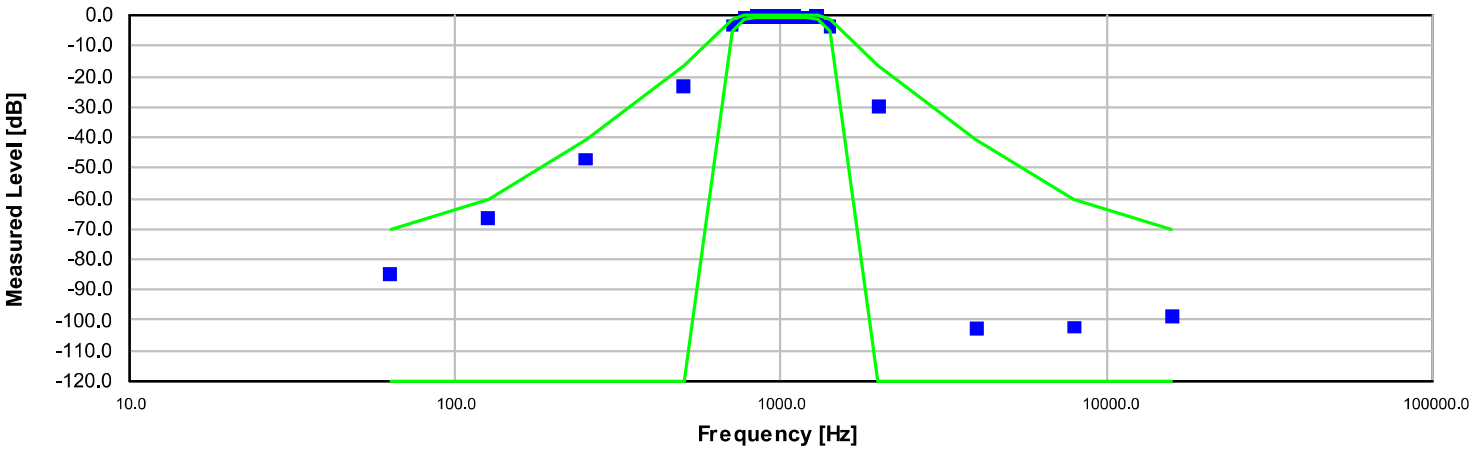


Filter shape measured according to IEC 61260-1:2014 and ANSI S1.11

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
1.00	-84.87	-inf	-70.10	0.19	Pass
2.00	-66.56	-inf	-60.10	0.18	Pass
3.98	-47.22	-inf	-40.60	0.18	Pass
7.94	-23.06	-inf	-16.70	0.18	Pass
11.22	-3.12	-5.40	-1.30	0.16	Pass
12.23	-0.56	-1.50	0.30	0.15	Pass
13.34	-0.47	-0.80	0.30	0.15	Pass
14.54	-0.40	-0.60	0.30	0.15	Pass
15.85	-0.17	-0.50	0.30	0.15	Pass
17.28	-0.30	-0.60	0.30	0.15	Pass
18.84	-0.48	-0.80	0.30	0.15	Pass
20.54	-0.41	-1.50	0.30	0.15	Pass
22.39	-3.36	-5.40	-1.30	0.21	Pass
31.62	-29.72	-inf	-16.70	0.23	Pass
63.10	-113.8	-inf	-40.6	2.6	Pass
125.89	-113.7	-inf	-60.1	1.9	Pass
251.19	-114.6	-inf	-70.1	1.9	Pass

-- End of measurement results--



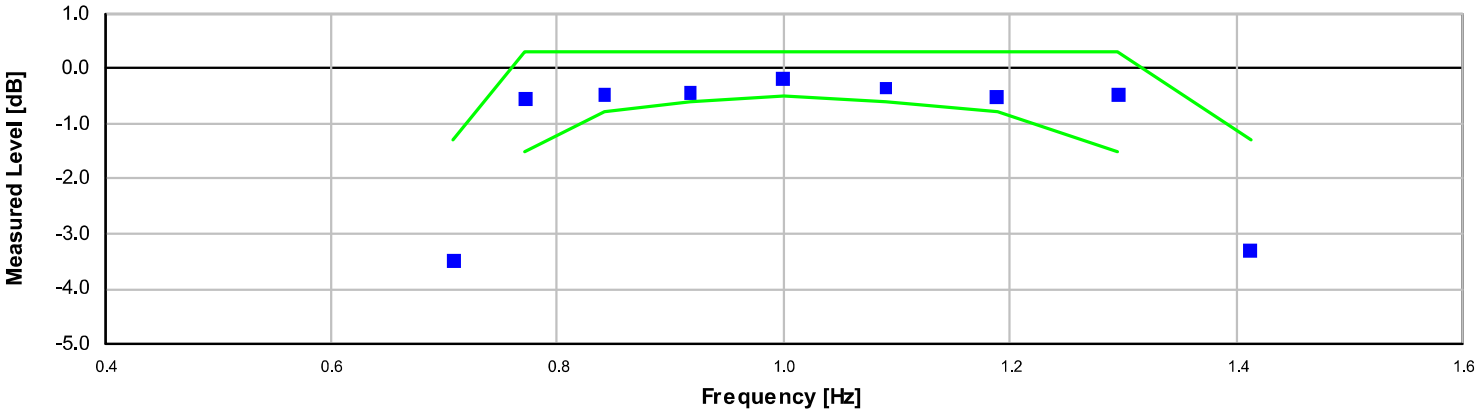


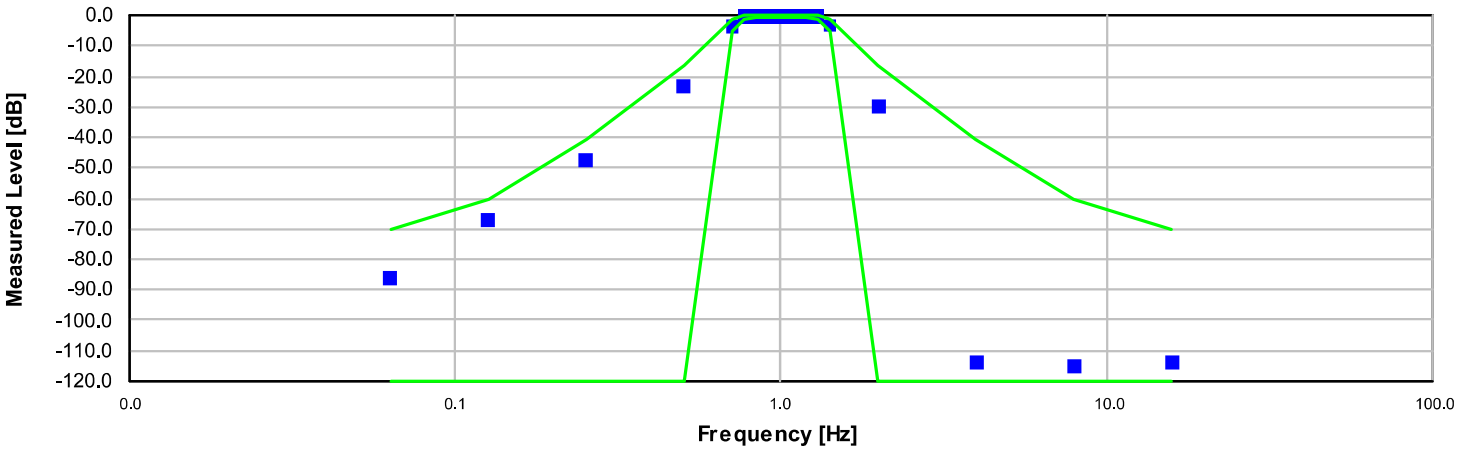
Filter shape measured according to IEC 61260-1:2014 and ANSI S1.11

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
63.10	-84.79	-inf	-70.10	0.28	Pass
125.89	-66.55	-inf	-60.10	0.18	Pass
251.19	-47.26	-inf	-40.60	0.18	Pass
501.19	-23.07	-inf	-16.70	0.18	Pass
707.95	-3.21	-5.40	-1.30	0.16	Pass
771.79	-0.57	-1.50	0.30	0.15	Pass
841.40	-0.55	-0.80	0.30	0.15	Pass
917.28	-0.49	-0.60	0.30	0.15	Pass
1,000.00	-0.27	-0.50	0.30	0.15	Pass
1,090.18	-0.42	-0.60	0.30	0.16	Pass
1,188.50	-0.63	-0.80	0.30	0.15	Pass
1,295.69	-0.57	-1.50	0.30	0.16	Pass
1,412.54	-3.56	-5.40	-1.30	0.21	Pass
1,995.26	-29.89	-inf	-16.70	0.23	Pass
3,981.07	-102.4	-inf	-40.6	1.4	Pass
7,943.28	-102.3	-inf	-60.1	2.7	Pass
15,848.93	-98.7	-inf	-70.1	2.1	Pass

-- End of measurement results--

Z-Axis 1/1 Octave Filter: 1.0 Hz



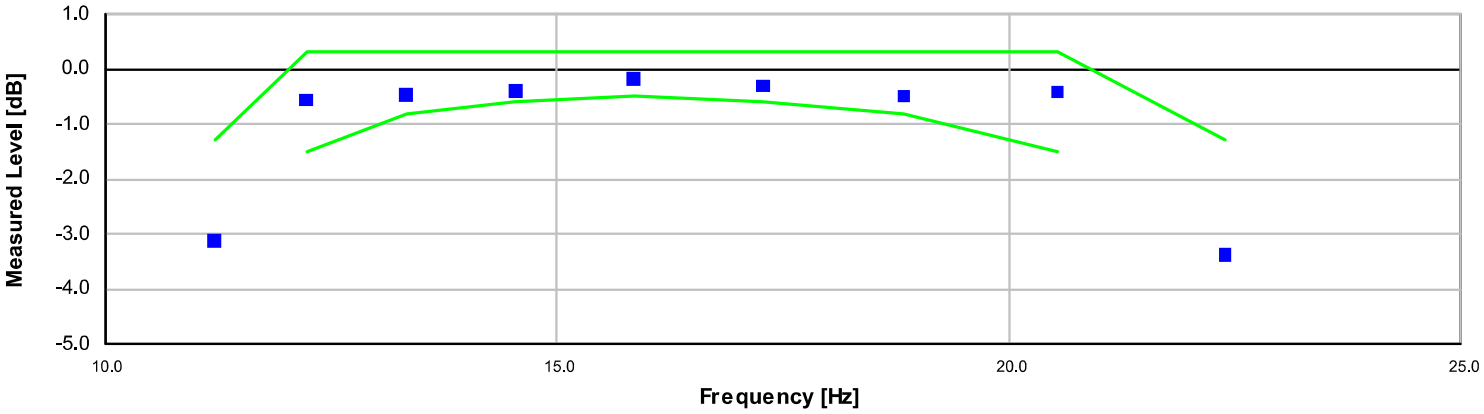


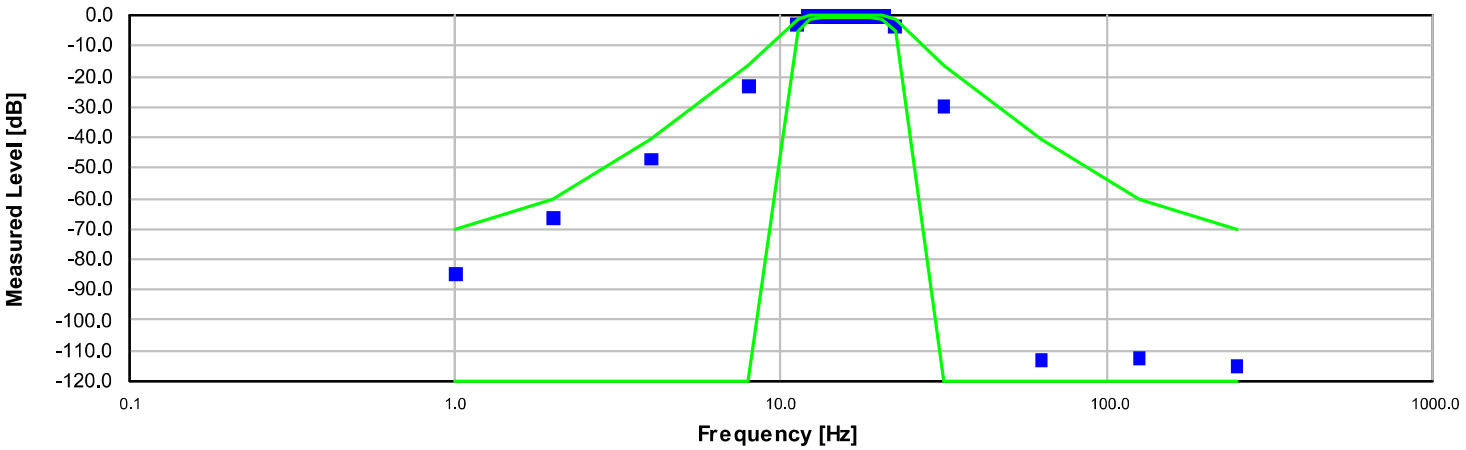
Filter shape measured according to IEC 61260-1:2014 and ANSI S1.11

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
0.06	-86.10	-inf	-70.10	0.25	Pass
0.13	-66.99	-inf	-60.10	0.20	Pass
0.25	-47.50	-inf	-40.60	0.18	Pass
0.50	-23.31	-inf	-16.70	0.18	Pass
0.71	-3.50	-5.40	-1.30	0.16	Pass
0.77	-0.54	-1.50	0.30	0.17	Pass
0.84	-0.48	-0.80	0.30	0.17	Pass
0.92	-0.43	-0.60	0.30	0.15	Pass
1.00	-0.19	-0.50	0.30	0.15	Pass
1.09	-0.35	-0.60	0.30	0.15	Pass
1.19	-0.51	-0.80	0.30	0.15	Pass
1.30	-0.47	-1.50	0.30	0.15	Pass
1.41	-3.32	-5.40	-1.30	0.20	Pass
2.00	-29.81	-inf	-16.70	0.23	Pass
3.98	-113.9	-inf	-40.6	3.4	Pass
7.94	-115.1	-inf	-60.1	4.1	Pass
15.85	-113.6	-inf	-70.1	3.4	Pass

-- End of measurement results--

Z-Axis 1/1 Octave Filter: 16.0 Hz



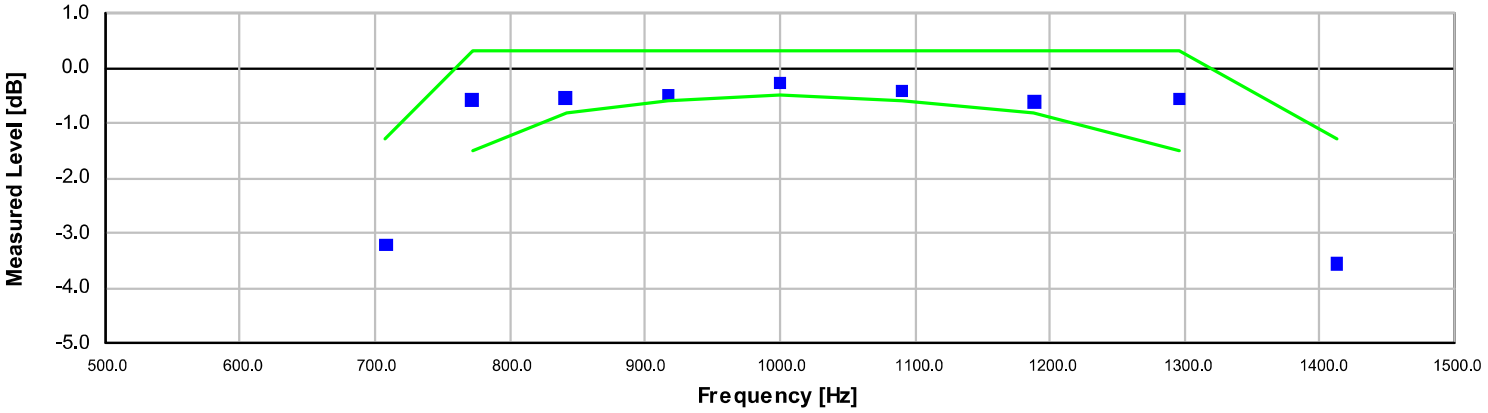


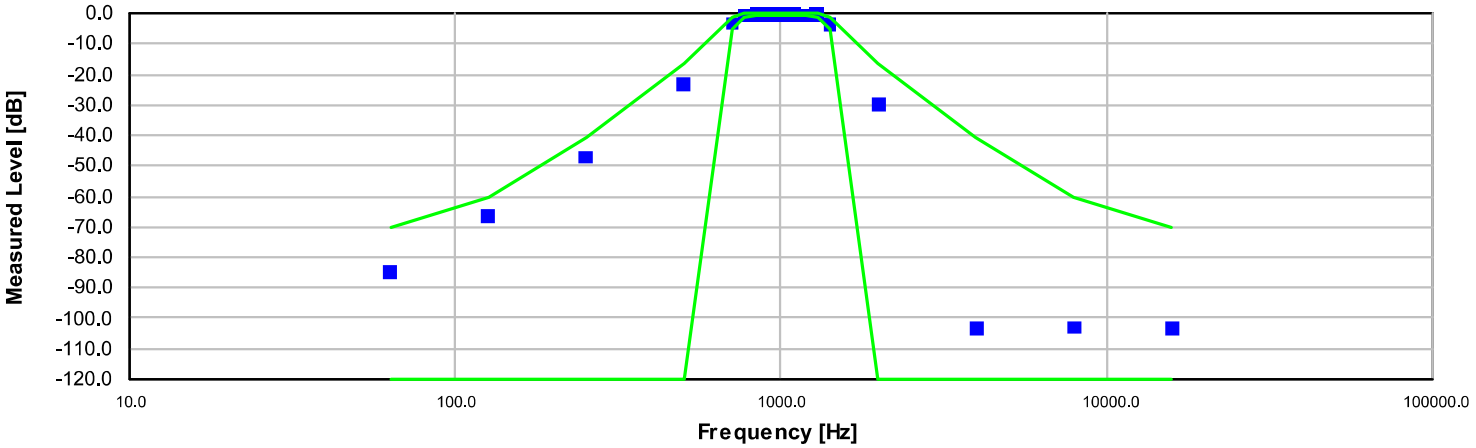
Filter shape measured according to IEC 61260-1:2014 and ANSI S1.11

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
1.00	-84.87	-inf	-70.10	0.19	Pass
2.00	-66.56	-inf	-60.10	0.18	Pass
3.98	-47.22	-inf	-40.60	0.18	Pass
7.94	-23.06	-inf	-16.70	0.18	Pass
11.22	-3.12	-5.40	-1.30	0.16	Pass
12.23	-0.56	-1.50	0.30	0.15	Pass
13.34	-0.47	-0.80	0.30	0.15	Pass
14.54	-0.41	-0.60	0.30	0.15	Pass
15.85	-0.17	-0.50	0.30	0.15	Pass
17.28	-0.30	-0.60	0.30	0.15	Pass
18.84	-0.48	-0.80	0.30	0.15	Pass
20.54	-0.41	-1.50	0.30	0.15	Pass
22.39	-3.36	-5.40	-1.30	0.21	Pass
31.62	-29.72	-inf	-16.70	0.23	Pass
63.10	-113.0	-inf	-40.6	2.6	Pass
125.89	-112.5	-inf	-60.1	1.9	Pass
251.19	-115.3	-inf	-70.1	1.9	Pass

-- End of measurement results--

Z-Axis 1/1 Octave Filter: 1 kHz



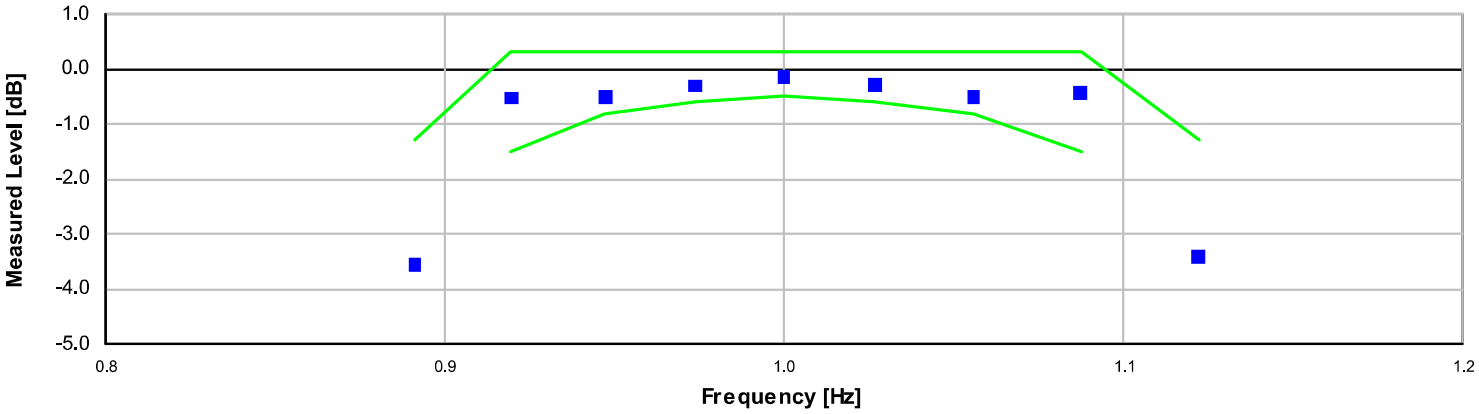


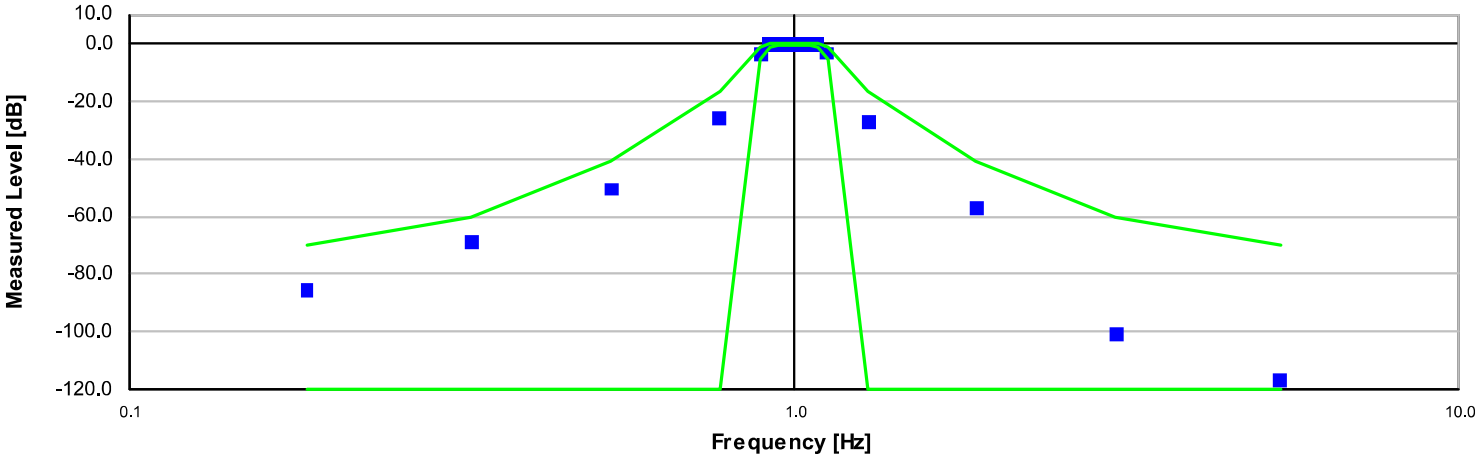
Filter shape measured according to IEC 61260-1:2014 and ANSI S1.11

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
63.10	-84.81	-inf	-70.10	0.28	Pass
125.89	-66.55	-inf	-60.10	0.18	Pass
251.19	-47.26	-inf	-40.60	0.18	Pass
501.19	-23.06	-inf	-16.70	0.18	Pass
707.95	-3.21	-5.40	-1.30	0.16	Pass
771.79	-0.57	-1.50	0.30	0.15	Pass
841.40	-0.55	-0.80	0.30	0.15	Pass
917.28	-0.48	-0.60	0.30	0.15	Pass
1,000.00	-0.26	-0.50	0.30	0.15	Pass
1,090.18	-0.42	-0.60	0.30	0.16	Pass
1,188.50	-0.63	-0.80	0.30	0.15	Pass
1,295.69	-0.56	-1.50	0.30	0.16	Pass
1,412.54	-3.55	-5.40	-1.30	0.21	Pass
1,995.26	-29.87	-inf	-16.70	0.23	Pass
3,981.07	-103.1	-inf	-40.6	1.4	Pass
7,943.28	-103.0	-inf	-60.1	2.7	Pass
15,848.93	-103.1	-inf	-70.1	2.1	Pass

-- End of measurement results--

X-Axis 1/3 Octave Filter: 1.0 Hz



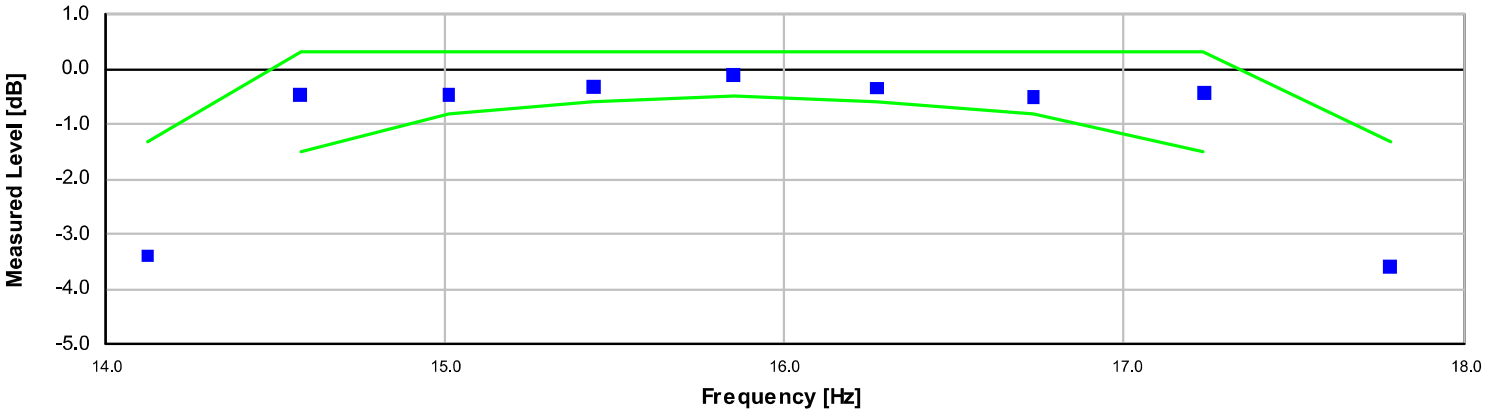


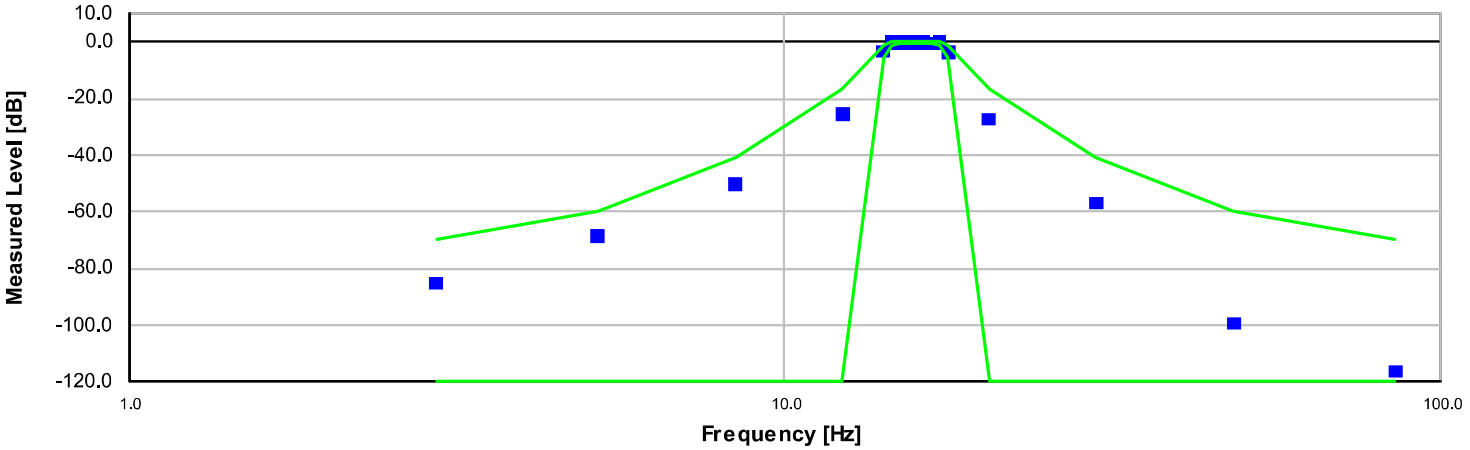
Filter shape measured according to IEC 61260-1:2014 and ANSI S1.11

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
0.19	-85.62	-inf	-70.10	0.18	Pass
0.33	-68.86	-inf	-60.10	0.15	Pass
0.53	-50.62	-inf	-40.60	0.16	Pass
0.77	-25.87	-inf	-16.70	0.18	Pass
0.89	-3.56	-5.40	-1.30	0.15	Pass
0.92	-0.53	-1.50	0.30	0.15	Pass
0.95	-0.52	-0.80	0.30	0.16	Pass
0.97	-0.31	-0.60	0.30	0.16	Pass
1.00	-0.15	-0.50	0.30	0.15	Pass
1.03	-0.28	-0.60	0.30	0.16	Pass
1.06	-0.50	-0.80	0.30	0.16	Pass
1.09	-0.43	-1.50	0.30	0.15	Pass
1.12	-3.41	-5.40	-1.30	0.15	Pass
1.29	-27.19	-inf	-16.70	0.15	Pass
1.88	-57.01	-inf	-40.60	0.23	Pass
3.05	-100.64	-inf	-60.10	0.41	Pass
5.39	-116.7	-inf	-70.1	4.3	Pass

-- End of measurement results--

X-Axis 1/3 Octave Filter: 16.0 Hz



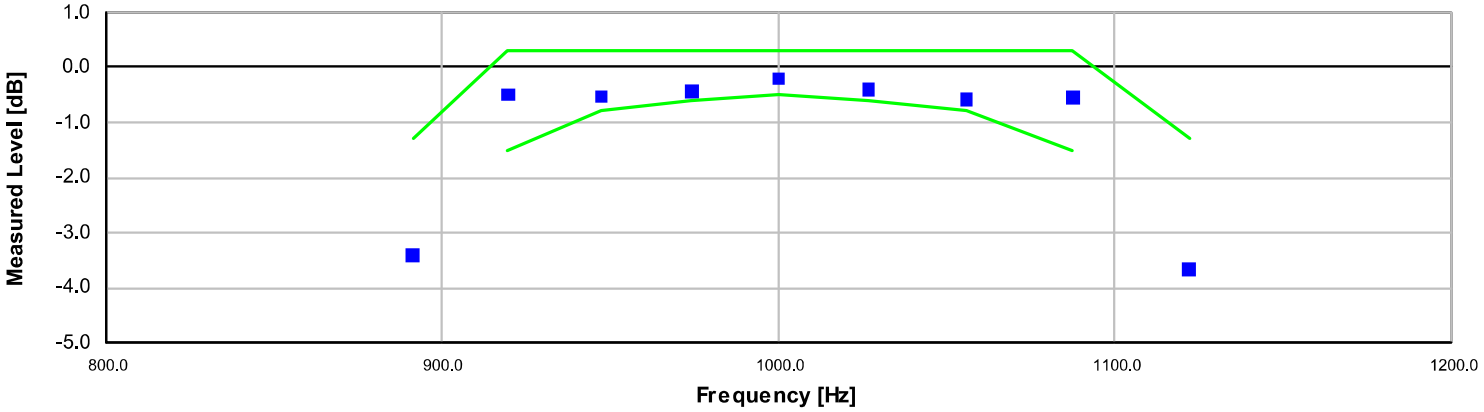


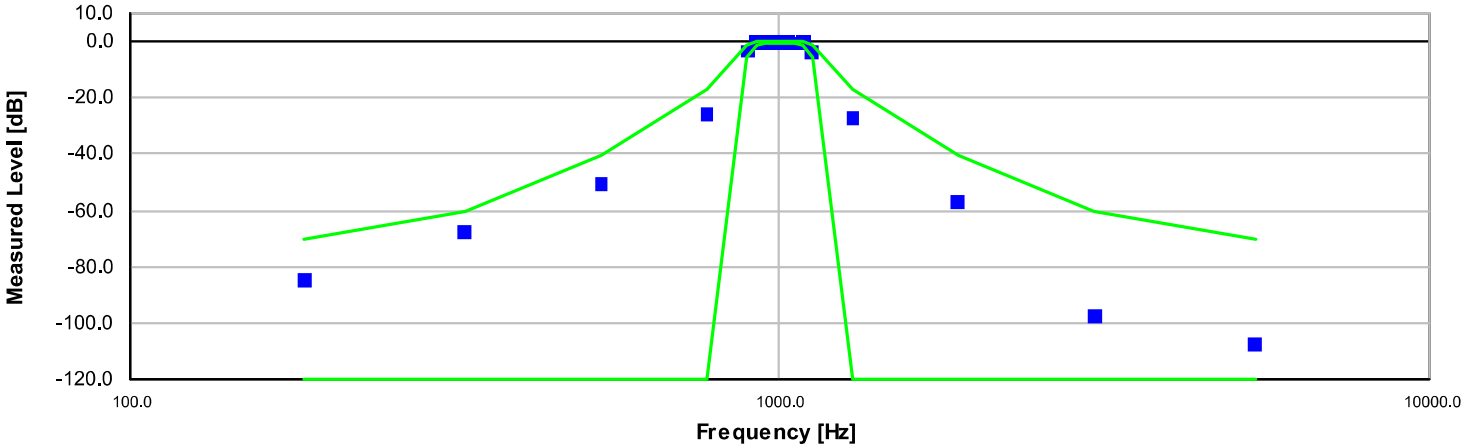
Filter shape measured according to IEC 61260-1:2014 and ANSI S1.11

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
2.94	-85.36	-inf	-70.10	0.15	Pass
5.19	-68.73	-inf	-60.10	0.16	Pass
8.42	-50.50	-inf	-40.60	0.15	Pass
12.24	-25.57	-inf	-16.70	0.15	Pass
14.13	-3.39	-5.40	-1.30	0.15	Pass
14.57	-0.46	-1.50	0.30	0.15	Pass
15.01	-0.47	-0.80	0.30	0.15	Pass
15.44	-0.32	-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	-0.51	-0.80	0.30	0.15	Pass
17.24	-0.43	-1.50	0.30	0.15	Pass
17.78	-3.59	-5.40	-1.30	0.15	Pass
20.51	-27.41	-inf	-16.70	0.15	Pass
29.82	-57.05	-inf	-40.60	0.15	Pass
48.40	-99.4	-inf	-60.1	1.7	Pass
85.46	-116.3	-inf	-70.1	2.1	Pass

-- End of measurement results--

X-Axis 1/3 Octave Filter: 1 kHz



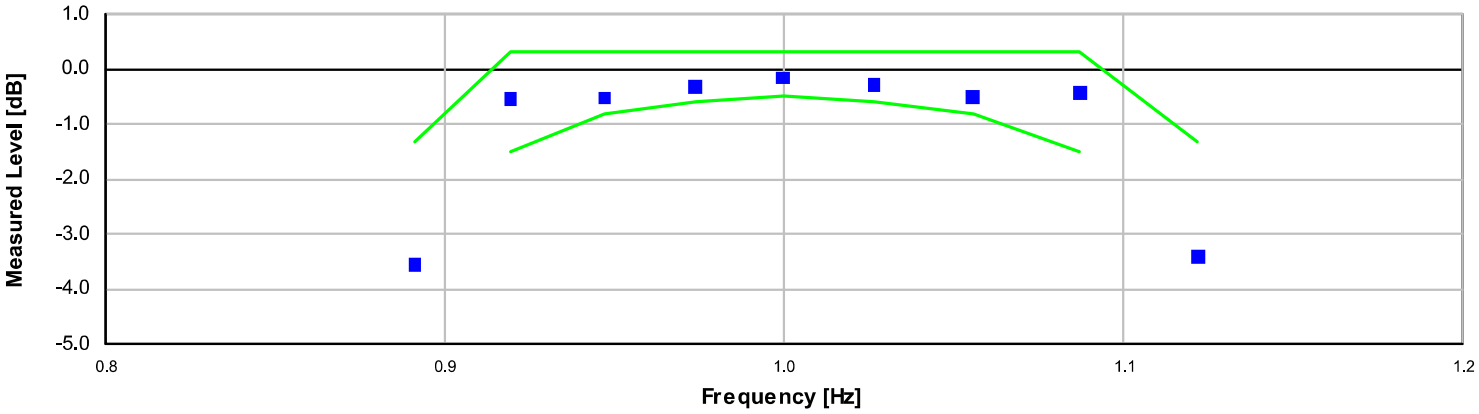


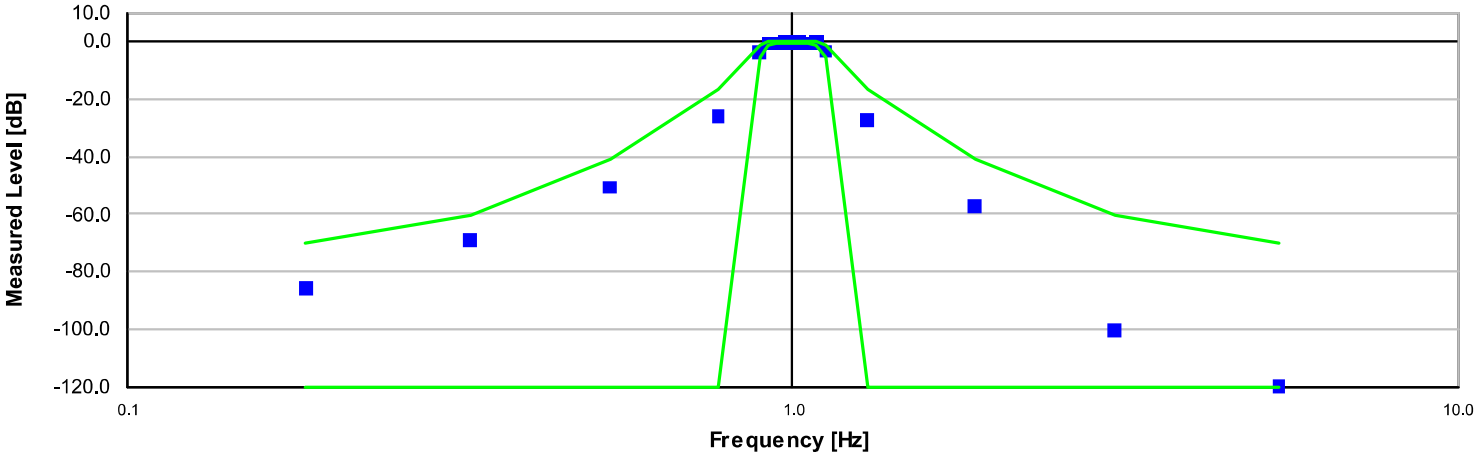
Filter shape measured according to IEC 61260-1:2014 and ANSI S1.11

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
185.46	-84.76	-inf	-70.10	0.16	Pass
327.48	-67.82	-inf	-60.10	0.16	Pass
531.43	-50.55	-inf	-40.60	0.16	Pass
772.57	-25.65	-inf	-16.70	0.16	Pass
891.25	-3.41	-5.40	-1.30	0.16	Pass
919.58	-0.50	-1.50	0.30	0.16	Pass
947.19	-0.53	-0.80	0.30	0.16	Pass
974.02	-0.44	-0.60	0.30	0.16	Pass
1,000.00	-0.21	-0.50	0.30	0.16	Pass
1,026.67	-0.39	-0.60	0.30	0.16	Pass
1,055.75	-0.59	-0.80	0.30	0.16	Pass
1,087.46	-0.54	-1.50	0.30	0.16	Pass
1,122.02	-3.68	-5.40	-1.30	0.16	Pass
1,294.37	-27.54	-inf	-16.70	0.16	Pass
1,881.73	-57.10	-inf	-40.60	0.16	Pass
3,053.65	-97.84	-inf	-60.10	0.94	Pass
5,391.95	-107.7	-inf	-70.1	2.0	Pass

-- End of measurement results--

Y-Axis 1/3 Octave Filter: 1.0 Hz



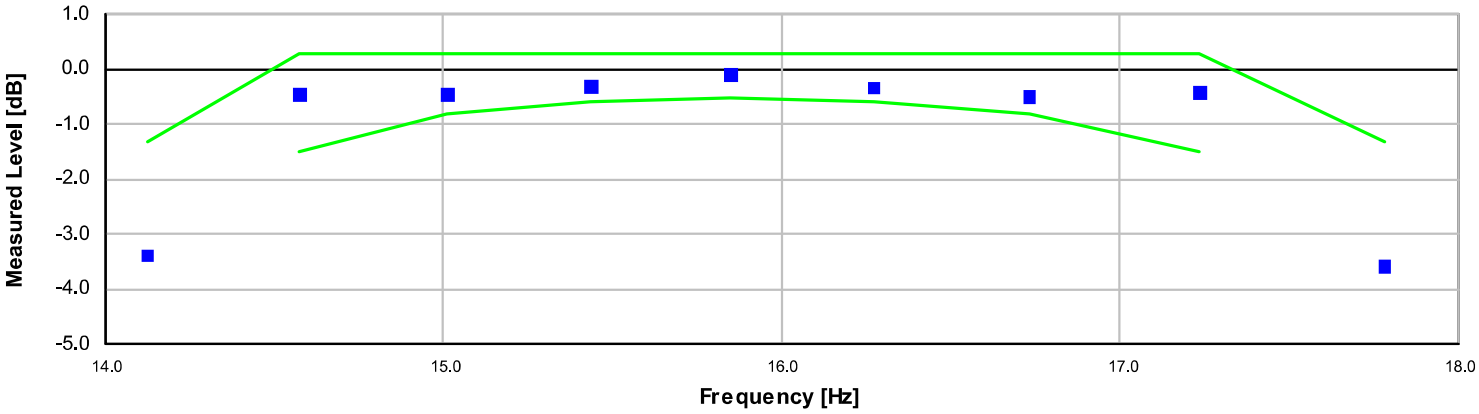


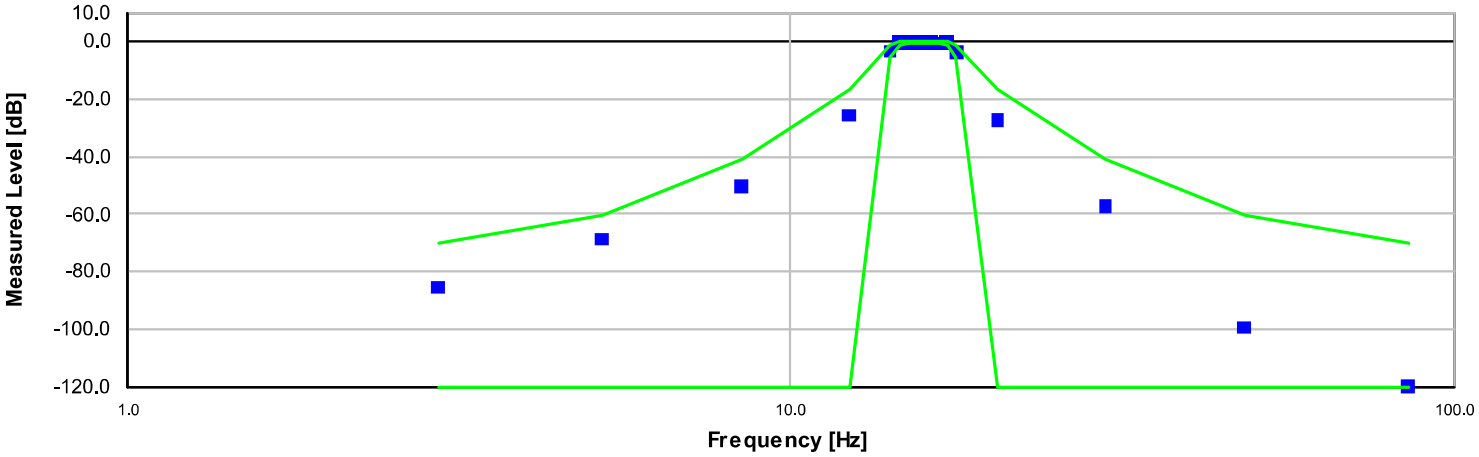
Filter shape measured according to IEC 61260-1:2014 and ANSI S1.11

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
0.19	-85.63	-inf	-70.10	0.18	Pass
0.33	-68.86	-inf	-60.10	0.15	Pass
0.53	-50.63	-inf	-40.60	0.16	Pass
0.77	-25.87	-inf	-16.70	0.18	Pass
0.89	-3.56	-5.40	-1.30	0.15	Pass
0.92	-0.53	-1.50	0.30	0.15	Pass
0.95	-0.52	-0.80	0.30	0.16	Pass
0.97	-0.31	-0.60	0.30	0.16	Pass
1.00	-0.16	-0.50	0.30	0.15	Pass
1.03	-0.28	-0.60	0.30	0.16	Pass
1.06	-0.50	-0.80	0.30	0.16	Pass
1.09	-0.43	-1.50	0.30	0.15	Pass
1.12	-3.41	-5.40	-1.30	0.15	Pass
1.29	-27.19	-inf	-16.70	0.15	Pass
1.88	-57.01	-inf	-40.60	0.23	Pass
3.05	-100.57	-inf	-60.10	0.41	Pass
5.39	-119.7	-inf	-70.1	4.3	Pass

-- End of measurement results--

Y-Axis 1/3 Octave Filter: 16.0 Hz



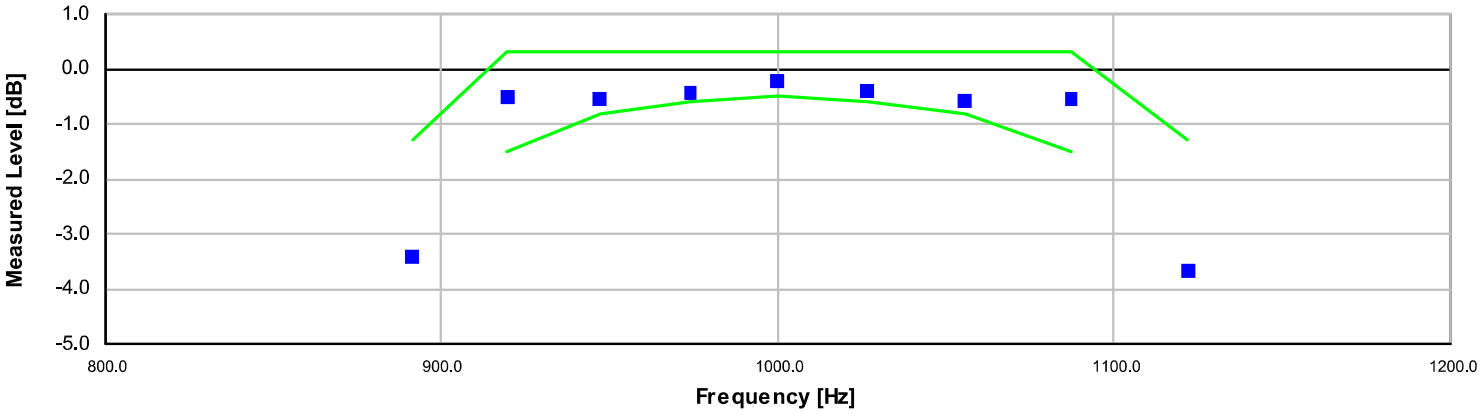


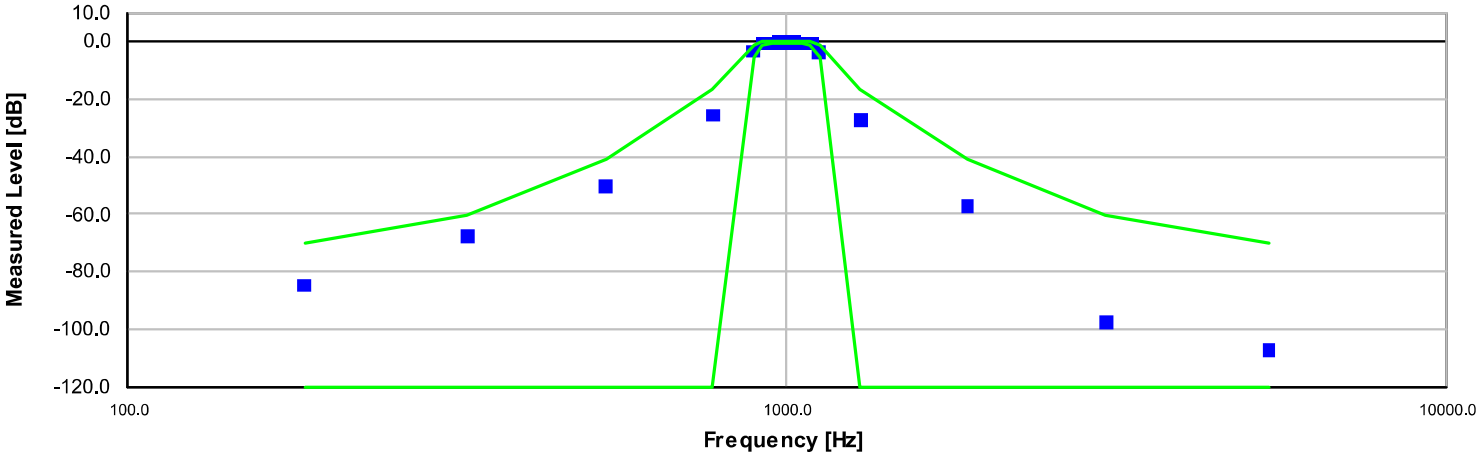
Filter shape measured according to IEC 61260-1:2014 and ANSI S1.11

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
2.94	-85.37	-inf	-70.10	0.15	Pass
5.19	-68.73	-inf	-60.10	0.16	Pass
8.42	-50.49	-inf	-40.60	0.15	Pass
12.24	-25.57	-inf	-16.70	0.15	Pass
14.13	-3.39	-5.40	-1.30	0.15	Pass
14.57	-0.46	-1.50	0.30	0.15	Pass
15.01	-0.47	-0.80	0.30	0.15	Pass
15.44	-0.32	-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	-0.51	-0.80	0.30	0.15	Pass
17.24	-0.43	-1.50	0.30	0.15	Pass
17.78	-3.59	-5.40	-1.30	0.15	Pass
20.51	-27.41	-inf	-16.70	0.15	Pass
29.82	-57.05	-inf	-40.60	0.15	Pass
48.40	-99.3	-inf	-60.1	1.7	Pass
85.46	-119.6	-inf	-70.1	2.1	Pass

-- End of measurement results--

Y-Axis 1/3 Octave Filter: 1 kHz



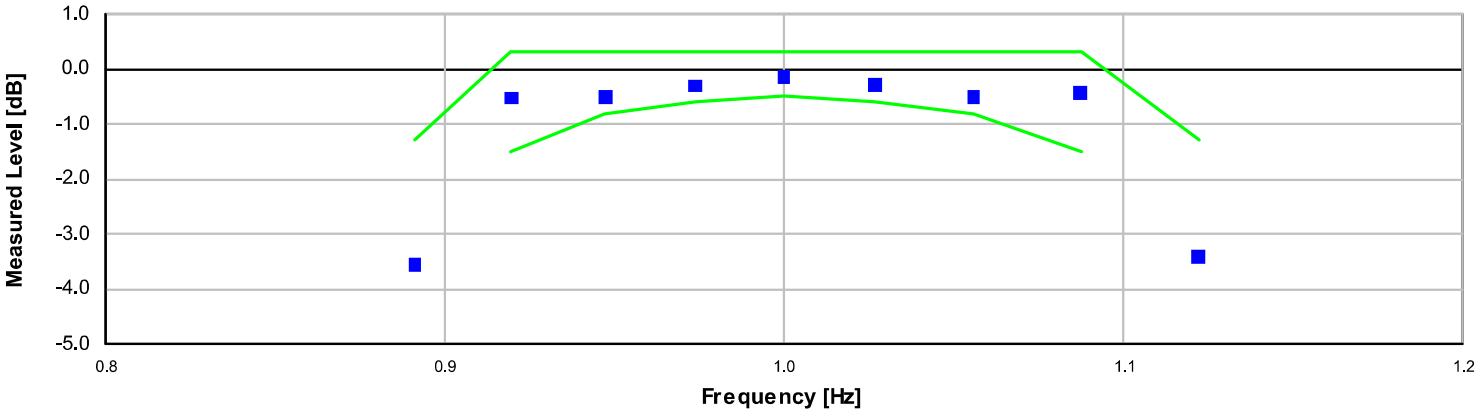


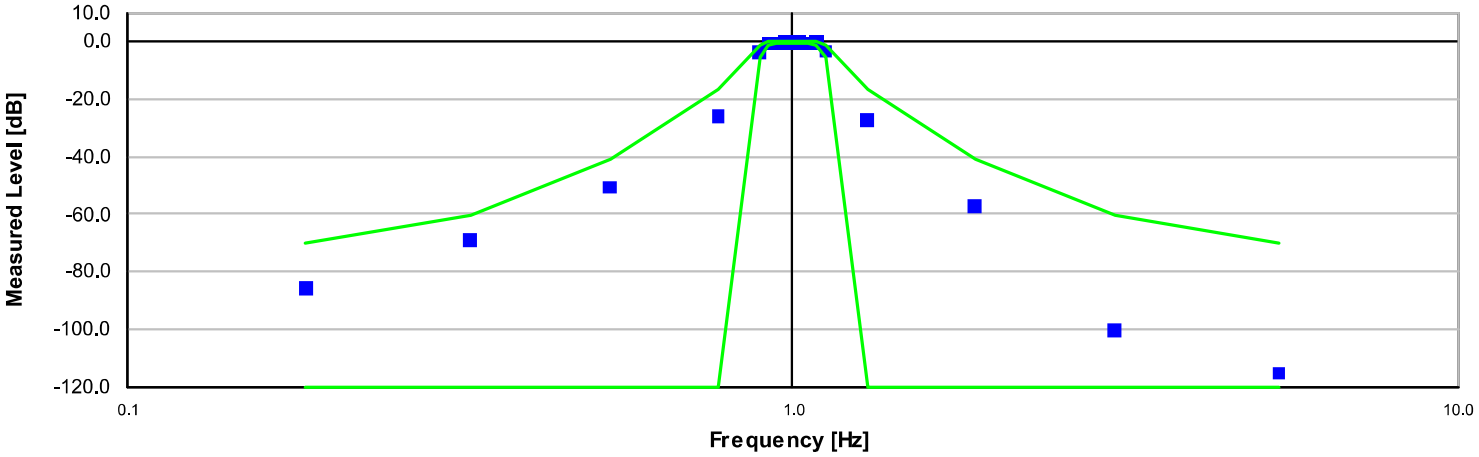
Filter shape measured according to IEC 61260-1:2014 and ANSI S1.11

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
185.46	-84.66	-inf	-70.10	0.16	Pass
327.48	-67.70	-inf	-60.10	0.16	Pass
531.43	-50.55	-inf	-40.60	0.16	Pass
772.57	-25.65	-inf	-16.70	0.16	Pass
891.25	-3.42	-5.40	-1.30	0.16	Pass
919.58	-0.50	-1.50	0.30	0.16	Pass
947.19	-0.53	-0.80	0.30	0.16	Pass
974.02	-0.44	-0.60	0.30	0.16	Pass
1,000.00	-0.21	-0.50	0.30	0.16	Pass
1,026.67	-0.39	-0.60	0.30	0.16	Pass
1,055.75	-0.59	-0.80	0.30	0.16	Pass
1,087.46	-0.54	-1.50	0.30	0.16	Pass
1,122.02	-3.68	-5.40	-1.30	0.16	Pass
1,294.37	-27.54	-inf	-16.70	0.16	Pass
1,881.73	-57.11	-inf	-40.60	0.16	Pass
3,053.65	-97.81	-inf	-60.10	0.94	Pass
5,391.95	-107.2	-inf	-70.1	2.0	Pass

-- End of measurement results--

Z-Axis 1/3 Octave Filter: 1.0 Hz



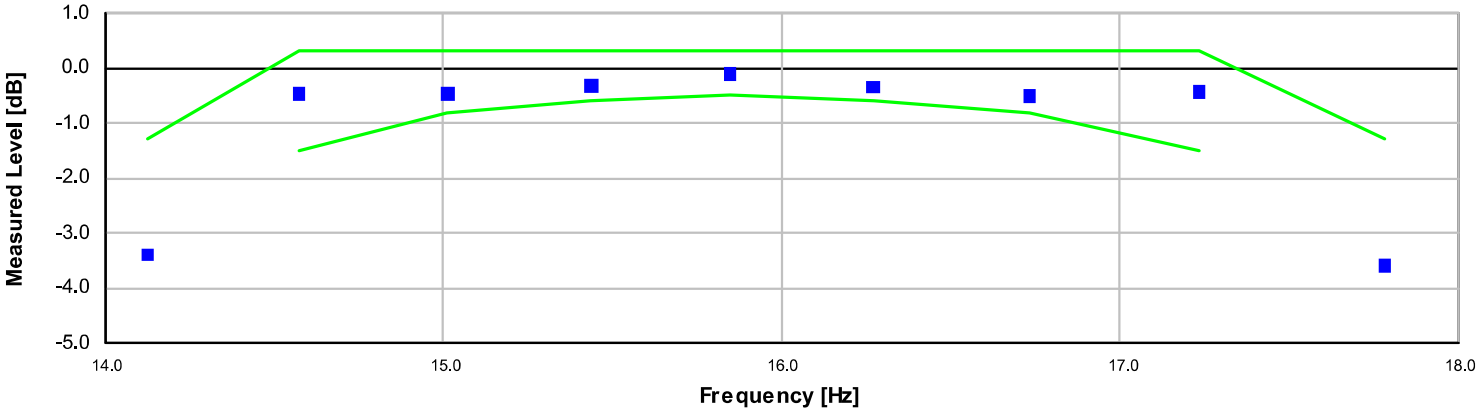


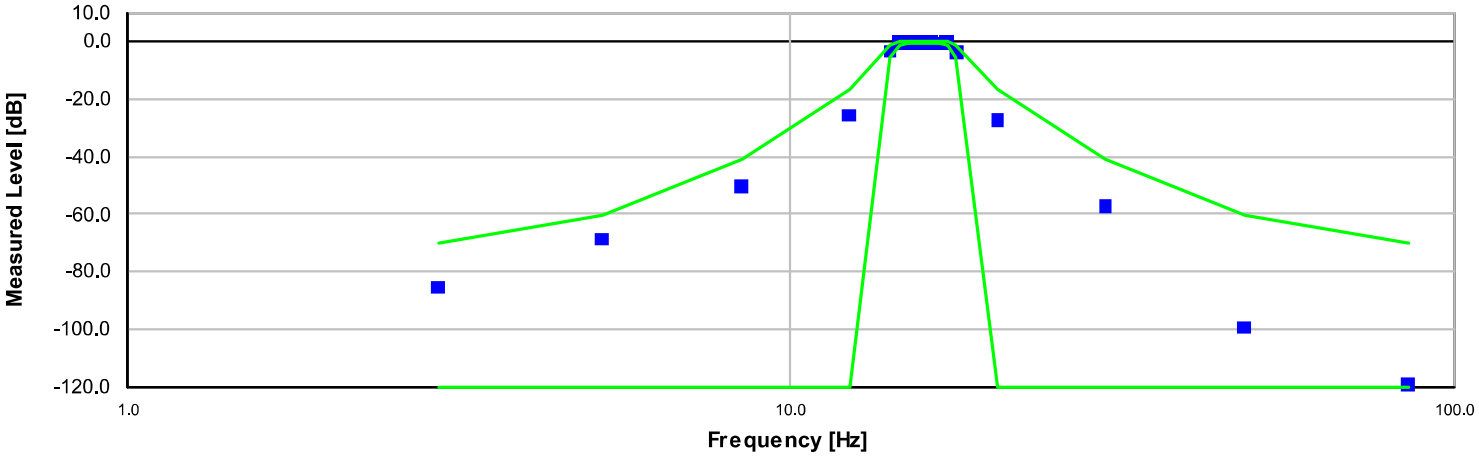
Filter shape measured according to IEC 61260-1:2014 and ANSI S1.11

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
0.19	-85.62	-inf	-70.10	0.18	Pass
0.33	-68.86	-inf	-60.10	0.15	Pass
0.53	-50.62	-inf	-40.60	0.16	Pass
0.77	-25.87	-inf	-16.70	0.18	Pass
0.89	-3.56	-5.40	-1.30	0.15	Pass
0.92	-0.53	-1.50	0.30	0.15	Pass
0.95	-0.52	-0.80	0.30	0.16	Pass
0.97	-0.31	-0.60	0.30	0.16	Pass
1.00	-0.15	-0.50	0.30	0.15	Pass
1.03	-0.28	-0.60	0.30	0.16	Pass
1.06	-0.50	-0.80	0.30	0.16	Pass
1.09	-0.43	-1.50	0.30	0.15	Pass
1.12	-3.41	-5.40	-1.30	0.15	Pass
1.29	-27.19	-inf	-16.70	0.15	Pass
1.88	-57.01	-inf	-40.60	0.23	Pass
3.05	-100.58	-inf	-60.10	0.41	Pass
5.39	-115.4	-inf	-70.1	4.3	Pass

-- End of measurement results--

Z-Axis 1/3 Octave Filter: 16.0 Hz



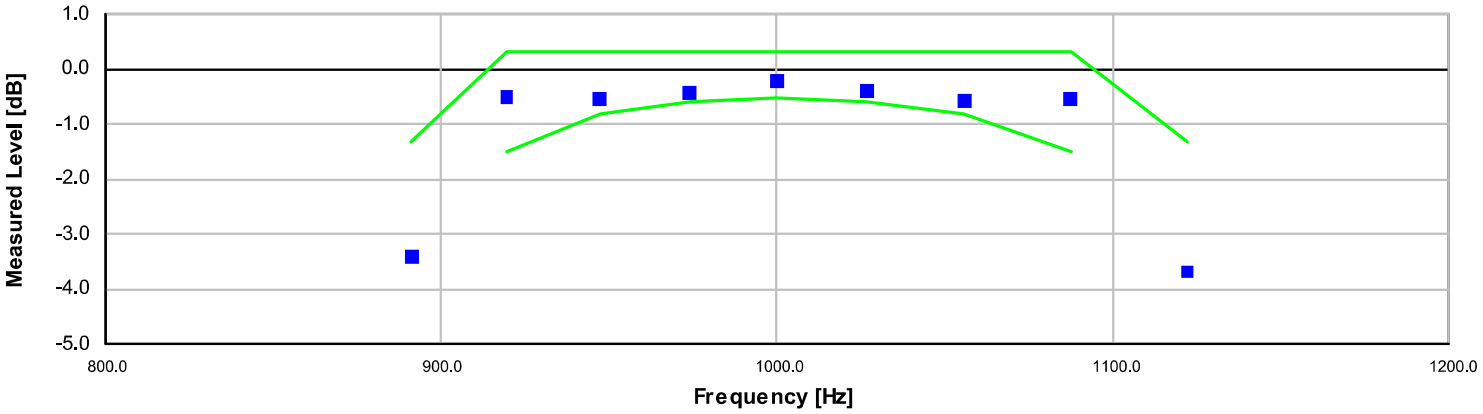


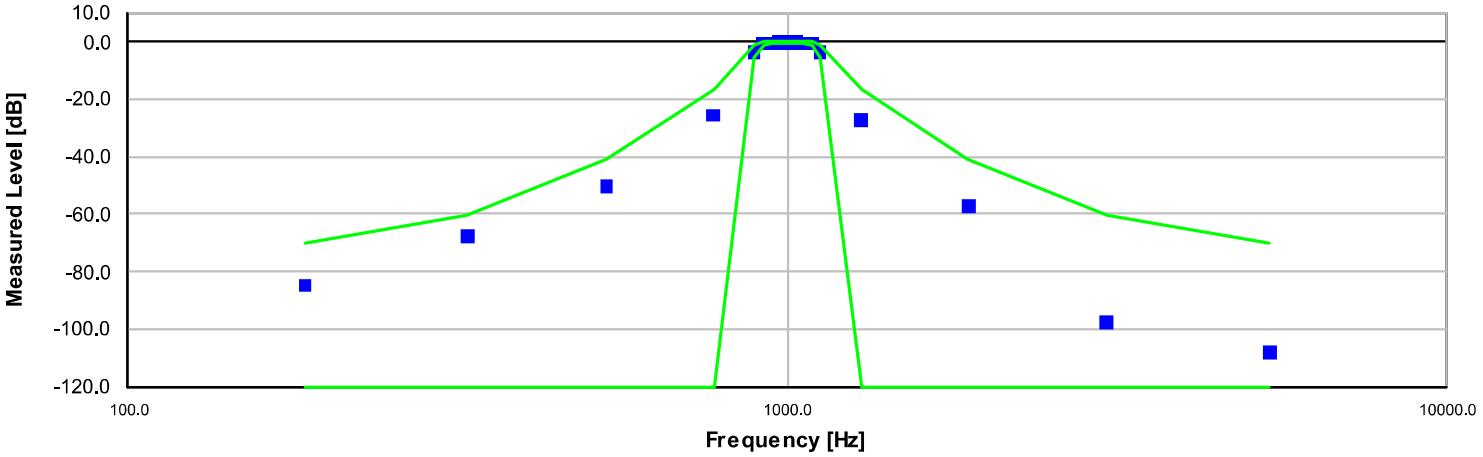
Filter shape measured according to IEC 61260-1:2014 and ANSI S1.11

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
2.94	-85.37	-inf	-70.10	0.15	Pass
5.19	-68.73	-inf	-60.10	0.16	Pass
8.42	-50.49	-inf	-40.60	0.15	Pass
12.24	-25.57	-inf	-16.70	0.15	Pass
14.13	-3.39	-5.40	-1.30	0.15	Pass
14.57	-0.46	-1.50	0.30	0.15	Pass
15.01	-0.47	-0.80	0.30	0.15	Pass
15.44	-0.32	-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	-0.51	-0.80	0.30	0.15	Pass
17.24	-0.43	-1.50	0.30	0.15	Pass
17.78	-3.59	-5.40	-1.30	0.15	Pass
20.51	-27.41	-inf	-16.70	0.15	Pass
29.82	-57.05	-inf	-40.60	0.15	Pass
48.40	-99.4	-inf	-60.1	1.7	Pass
85.46	-119.4	-inf	-70.1	2.1	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	-84.73	-inf	-70.10	0.16	Pass
327.48	-67.75	-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	-3.41	-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	-0.44	-0.60	0.30	0.16	Pass
1,000.00	-0.20	-0.50	0.30	0.16	Pass
1,026.67	-0.39	-0.60	0.30	0.16	Pass
1,055.75	-0.59	-0.80	0.30	0.16	Pass
1,087.46	-0.54	-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	-97.82	-inf	-60.10	0.94	Pass
5,391.95	-107.9	-inf	-70.1	2.0	Pass

-- End of measurement results--

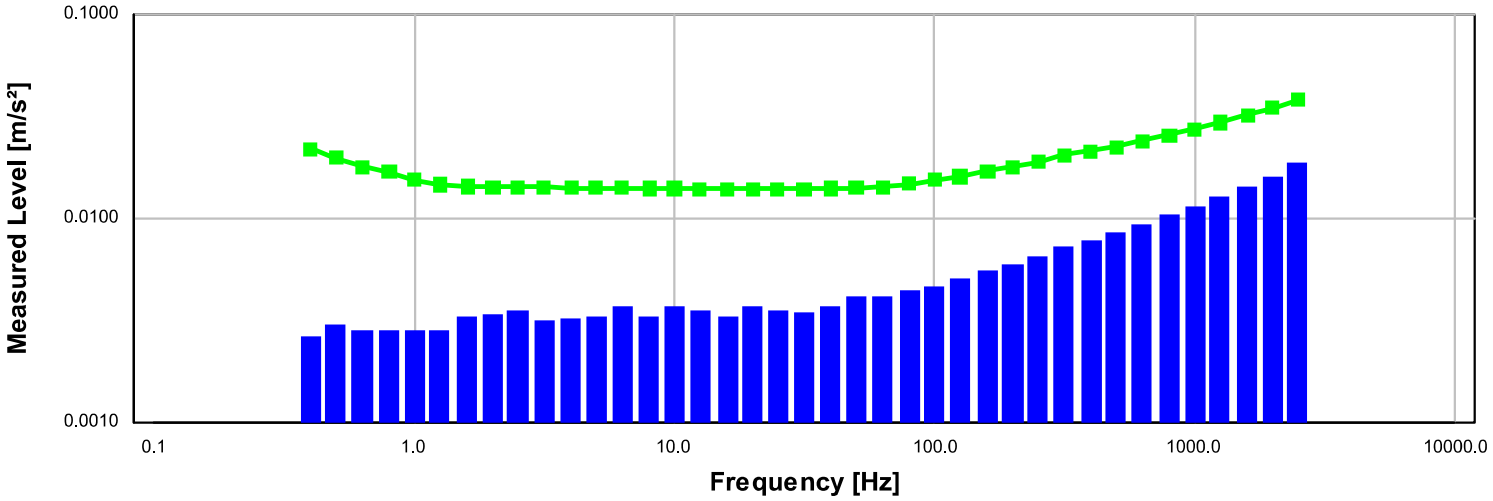
Frequency-weighted Noise Floor

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

Weighting	Axis	Test Result [m/s²]	Upper limit [m/s²]	Result
Fb	X-Axis	0.032658	0.066800	Pass
	Y-Axis	0.030468	0.066800	Pass
	Z-Axis	0.034349	0.066800	Pass
Wh	X-Axis	0.008515	0.019700	Pass
	Y-Axis	0.008002	0.019700	Pass
	Z-Axis	0.009110	0.019700	Pass
Wk	X-Axis	0.011435	0.029300	Pass
	Y-Axis	0.009811	0.029300	Pass
	Z-Axis	0.011160	0.029300	Pass

-- End of measurement results--

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

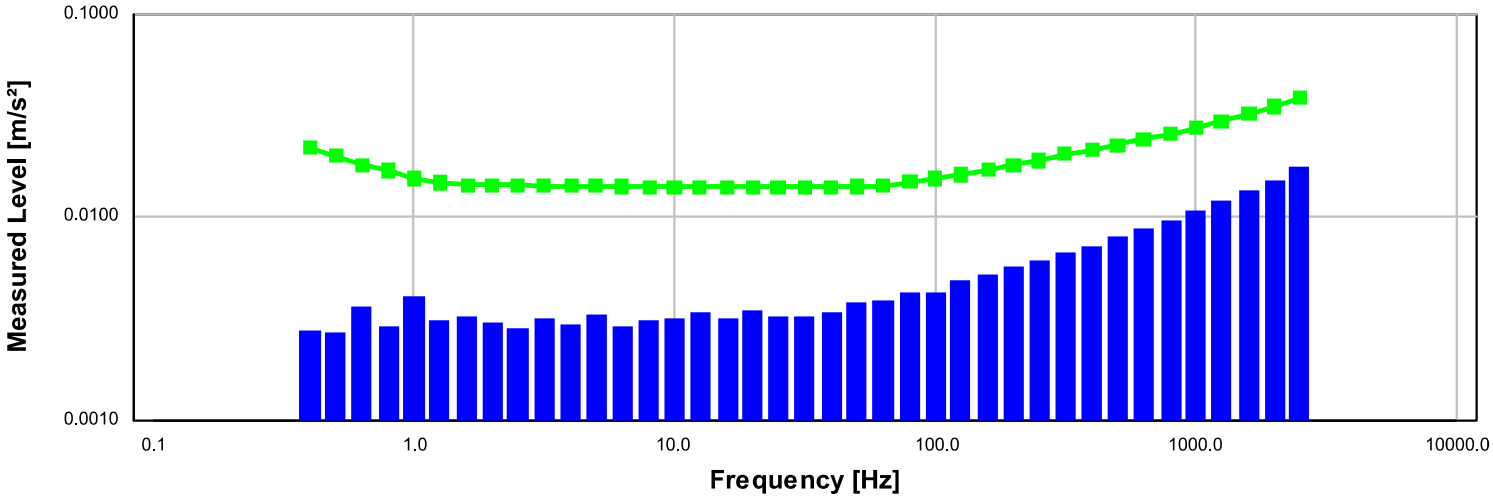


Frequency [Hz]	Test Result [m/s²]	Upper limit [m/s²]	Result
0.40	0.002662	0.022000	Pass
0.50	0.003002	0.020000	Pass
0.63	0.002826	0.018000	Pass
0.80	0.002817	0.017000	Pass
1.00	0.002824	0.015500	Pass
1.25	0.002816	0.014800	Pass
1.60	0.003336	0.014400	Pass
2.00	0.003408	0.014350	Pass
2.50	0.003529	0.014320	Pass
3.15	0.003147	0.014300	Pass
4.00	0.003242	0.014250	Pass
5.00	0.003350	0.014200	Pass
6.30	0.003691	0.014150	Pass
8.00	0.003291	0.014100	Pass
10.00	0.003731	0.014070	Pass
12.50	0.003521	0.014050	Pass
16.00	0.003313	0.014030	Pass
20.00	0.003738	0.014010	Pass
25.00	0.003568	0.014000	Pass
31.50	0.003441	0.014010	Pass
40.00	0.003734	0.014080	Pass
50.00	0.004121	0.014180	Pass
63.00	0.004122	0.014300	Pass
80.00	0.004447	0.014900	Pass
100.00	0.004625	0.015500	Pass
125.00	0.005138	0.016200	Pass
160.00	0.005580	0.017100	Pass
200.00	0.006021	0.018000	Pass
250.00	0.006523	0.019000	Pass
315.00	0.007242	0.020500	Pass
400.00	0.007883	0.021500	Pass
500.00	0.008636	0.022580	Pass
630.00	0.009473	0.024170	Pass
800.00	0.010456	0.025740	Pass
1,000.00	0.011625	0.027530	Pass
1,250.00	0.013002	0.029730	Pass
1,600.00	0.014486	0.032310	Pass
2,000.00	0.016323	0.035000	Pass

Frequency [Hz]	Test Result [m/s²]	Upper limit [m/s²]	Result
2,500.00	0.018921	0.038500	Pass

-- End of measurement results--

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

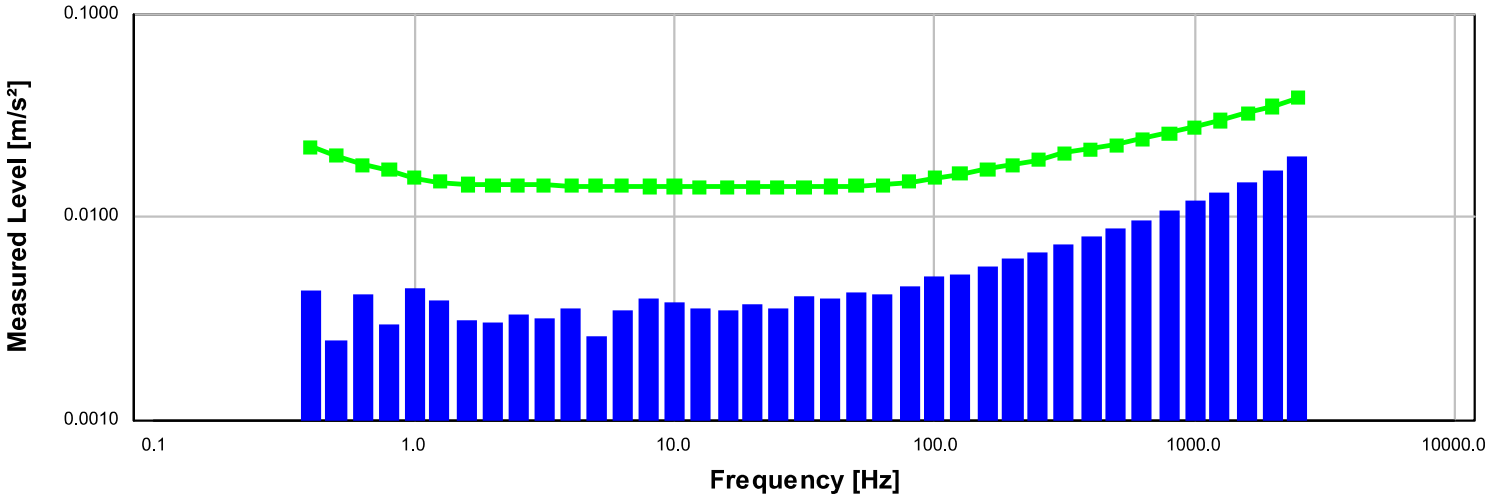


Frequency [Hz]	Test Result [m/s²]	Upper limit [m/s²]	Result
0.40	0.002792	0.022000	Pass
0.50	0.002705	0.020000	Pass
0.63	0.003645	0.018000	Pass
0.80	0.002911	0.017000	Pass
1.00	0.004053	0.015500	Pass
1.25	0.003122	0.014800	Pass
1.60	0.003236	0.014400	Pass
2.00	0.003018	0.014350	Pass
2.50	0.002825	0.014320	Pass
3.15	0.003197	0.014300	Pass
4.00	0.002984	0.014250	Pass
5.00	0.003292	0.014200	Pass
6.30	0.002902	0.014150	Pass
8.00	0.003072	0.014100	Pass
10.00	0.003197	0.014070	Pass
12.50	0.003391	0.014050	Pass
16.00	0.003189	0.014030	Pass
20.00	0.003445	0.014010	Pass
25.00	0.003265	0.014000	Pass
31.50	0.003254	0.014010	Pass
40.00	0.003430	0.014080	Pass
50.00	0.003795	0.014180	Pass
63.00	0.003870	0.014300	Pass
80.00	0.004285	0.014900	Pass
100.00	0.004270	0.015500	Pass
125.00	0.004877	0.016200	Pass
160.00	0.005266	0.017100	Pass
200.00	0.005688	0.018000	Pass
250.00	0.006178	0.019000	Pass
315.00	0.006693	0.020500	Pass
400.00	0.007220	0.021500	Pass
500.00	0.008065	0.022580	Pass
630.00	0.008844	0.024170	Pass
800.00	0.009701	0.025740	Pass
1,000.00	0.010892	0.027530	Pass
1,250.00	0.012056	0.029730	Pass
1,600.00	0.013446	0.032310	Pass
2,000.00	0.015220	0.035000	Pass

Frequency [Hz]	Test Result [m/s²]	Upper limit [m/s²]	Result
2,500.00	0.017629	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	0.004326	0.022000	Pass
0.50	0.002486	0.020000	Pass
0.63	0.004103	0.018000	Pass
0.80	0.002949	0.017000	Pass
1.00	0.004421	0.015500	Pass
1.25	0.003845	0.014800	Pass
1.60	0.003069	0.014400	Pass
2.00	0.003024	0.014350	Pass
2.50	0.003284	0.014320	Pass
3.15	0.003121	0.014300	Pass
4.00	0.003524	0.014250	Pass
5.00	0.002571	0.014200	Pass
6.30	0.003436	0.014150	Pass
8.00	0.003931	0.014100	Pass
10.00	0.003800	0.014070	Pass
12.50	0.003559	0.014050	Pass
16.00	0.003446	0.014030	Pass
20.00	0.003715	0.014010	Pass
25.00	0.003533	0.014000	Pass
31.50	0.004019	0.014010	Pass
40.00	0.003978	0.014080	Pass
50.00	0.004253	0.014180	Pass
63.00	0.004180	0.014300	Pass
80.00	0.004541	0.014900	Pass
100.00	0.005031	0.015500	Pass
125.00	0.005229	0.016200	Pass
160.00	0.005724	0.017100	Pass
200.00	0.006210	0.018000	Pass
250.00	0.006720	0.019000	Pass
315.00	0.007352	0.020500	Pass
400.00	0.007925	0.021500	Pass
500.00	0.008799	0.022580	Pass
630.00	0.009642	0.024170	Pass
800.00	0.010766	0.025740	Pass
1,000.00	0.012020	0.027530	Pass
1,250.00	0.013287	0.029730	Pass
1,600.00	0.014909	0.032310	Pass
2,000.00	0.016922	0.035000	Pass

Frequency [Hz]	Test Result [m/s²]	Upper limit [m/s²]	Result
2,500.00	0.019828	0.038500	Pass

-- End of measurement results--

-- End of Report--

Signatory: Tina Brezinski

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

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~Calibration Certificate~

Sensor Information

Model Number:	SEN027
Serial Number:	P0341685
Manufacturer:	Larson Davis
ID Number:	89438
Description:	ICP® Accelerometer

Calibration Data

Sensitivity @ 100 Hz:	101.7	mV/g
	10.38	mV/m/s²
Phase @ 100 Hz:	-0.5886	deg.
Test Level:	10.00	g

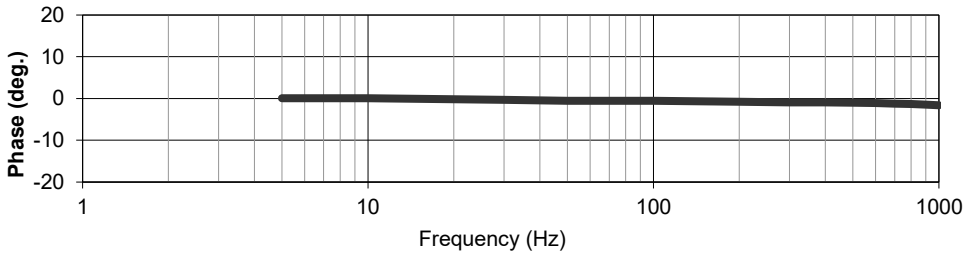
Transducer Specifications

Nom. Sens:	100.0	mV/g
Sens Tolerance:	±10	%
Amp. Range:	± 10	g
Resonant Freq:	≥ 27000	Hz
Temp. Range:	-10 to 50	°C
	14 to 122	°F
Axis:	X - Axis	

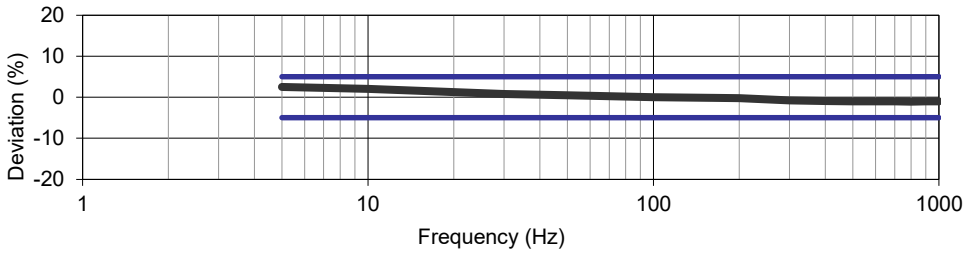
Data Table

Freq. (Hz)	Deviation (%)	Phase (deg)
5	2.510	0.018
10	2.034	0.075
30	0.736	-0.296
50	0.463	-0.569
100	0.000	-0.589
159	-0.158	-0.688
160	-0.187	-0.690
200	-0.250	-0.773
300	-0.768	-0.904
400	-0.928	-0.949
500	-0.993	-1.033
600	-1.054	-1.124
700	-1.055	-1.235
800	-1.069	-1.357
900	-1.045	-1.458
1000	-0.997	-1.572

Phase Response



Amplitude Response



Notes

Results relate only to the items calibrated.

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

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

This calibration was performed with TMS 9155 Calibration Workstation 3 version 8.1.4.

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

This calibration is accredited per ISO17025:2017 and ANSI/NCSL Z540.1.1994.

Procedure Used: PRD-P220 or PRD-P239

Decision Rule: Simple Acceptance with a TUR of 4:1 or greater at reference frequency.

Measurement uncertainty under scope of accreditation (95% confidence level with coverage factor 2) for frequency ranges tested during calibration are as follows: 5-9 Hz; ± 1.7%, 10-99 Hz; ± 1.2%, 100 Hz; ± 0.75%, 101-920 Hz; ± 1.0%, 921-5000 Hz; ± 1.4%, 5001-10,000 Hz; ± 1.9%, 10,001-15,000 Hz; ± 2.2%, 15,001-20,000 Hz; ± 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: 71 (22) °F (°C)
Humidity: 33 %

Cal Date: 9-May-25
Due Date:

Customer

TMS Rental

Technician Notes

Approval Information

Technician: Stacey Woo
Approval: Stacey Woo

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Cincinnati, OH 45215
Ph: 513.351.9919
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Calibration Laboratory

Cal ID: 75174

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~Calibration Certificate~

Sensor Information

Model Number:	SEN027
Serial Number:	P0341685
Manufacturer:	Larson Davis
ID Number:	89438
Description:	ICP® Accelerometer

Calibration Data

Sensitivity @ 100 Hz:	101.8	mV/g
	10.39	mV/m/s²
Phase @ 100 Hz:	-0.5914	deg.
Test Level:	10.00	g

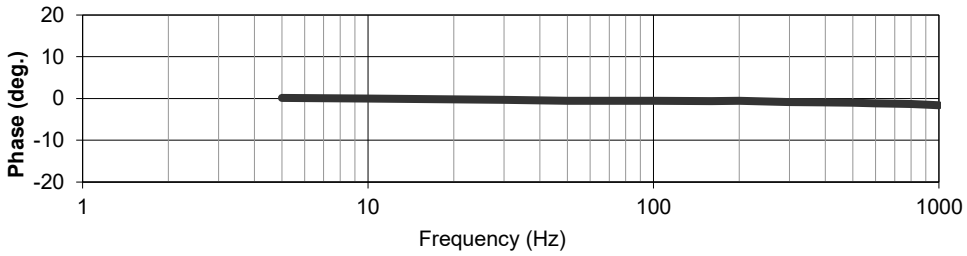
Transducer Specifications

Nom. Sens:	100.0	mV/g
Sens Tolerance:	±10	%
Amp. Range:	± 10	g
Resonant Freq:	≥ 27000	Hz
Temp. Range:	-10 to 50	°C
	14 to 122	°F
Axis:	Y - Axis	

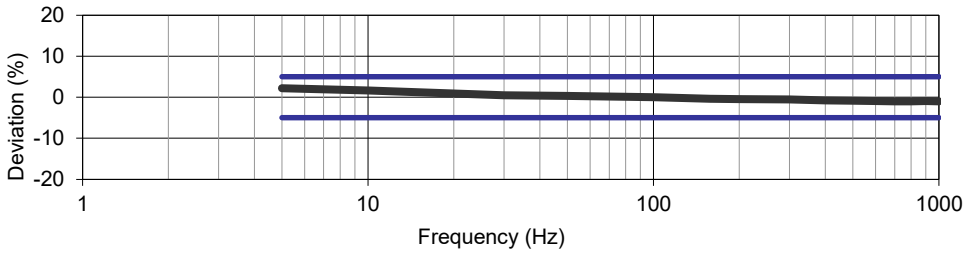
Data Table

Freq. (Hz)	Deviation (%)	Phase (deg)
5	2.192	0.157
10	1.665	-0.048
30	0.467	-0.307
50	0.317	-0.562
100	0.000	-0.591
159	-0.388	-0.649
160	-0.420	-0.648
200	-0.464	-0.595
300	-0.564	-0.837
400	-0.791	-0.962
500	-0.901	-1.021
600	-0.969	-1.136
700	-1.015	-1.241
800	-1.013	-1.360
900	-0.981	-1.481
1000	-1.024	-1.617

Phase Response



Amplitude Response



Notes

Results relate only to the items calibrated.

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

This calibration was performed with TMS 9155 Calibration Workstation 3 version 8.1.4.

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

This calibration is accredited per ISO17025:2017 and ANSI/NCSL Z540.1.1994.

Procedure Used: PRD-P220 or PRD-P239

Decision Rule: Simple Acceptance with a TUR of 4:1 or greater at reference frequency.

Measurement uncertainty under scope of accreditation (95% confidence level with coverage factor 2) for frequency ranges tested during calibration are as follows: 5-9 Hz; ± 1.7%, 10-99 Hz; ± 1.2%, 100 Hz; ± 0.75%, 101-920 Hz; ± 1.0%, 921-5000 Hz; ± 1.4%, 5001-10,000 Hz; ± 1.9%, 10,001-15,000 Hz; ± 2.2%, 15,001-20,000 Hz; ± 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: 71 (22) °F (°C)
Humidity: 33 %

Cal Date: 9-May-25
Due Date:

Customer

TMS Rental

Technician Notes

Approval Information

Technician: Stacey Woo
Approval: Stacey Woo

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Calibration Laboratory

Cal ID: 75174

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~Calibration Certificate~

Sensor Information

Model Number:	SEN027
Serial Number:	P0341685
Manufacturer:	Larson Davis
ID Number:	89438
Description:	ICP® Accelerometer

Calibration Data

Sensitivity @ 100 Hz:	99.51	mV/g
	10.15	mV/m/s²
Phase @ 100 Hz:	-0.5768	deg.
Test Level:	10.00	g

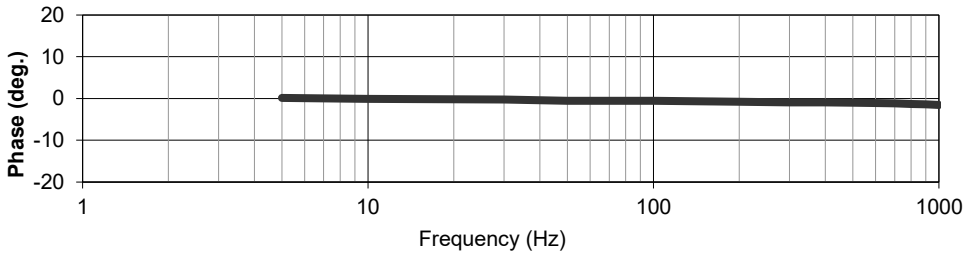
Transducer Specifications

Nom. Sens:	100.00	mV/g
Sens Tolerance:	±10	%
Amp. Range:	± 10	g
Resonant Freq:	≥ 27000	Hz
Temp. Range:	-10 to 50	°C
	14 to 122	°F
Axis:	Z - Axis	

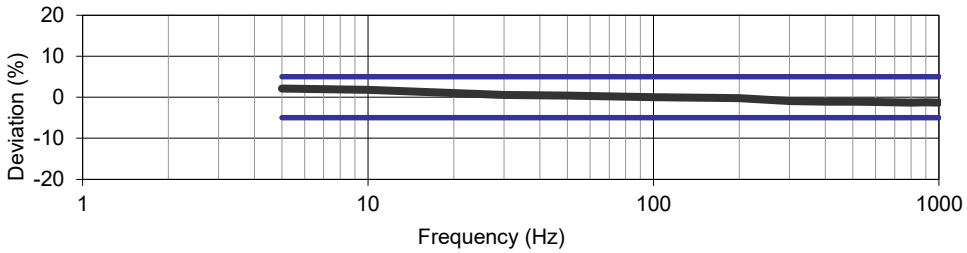
Data Table

Freq. (Hz)	Deviation (%)	Phase (deg)
5	2.106	0.138
10	1.806	-0.128
30	0.504	-0.280
50	0.354	-0.542
100	0.000	-0.577
159	-0.169	-0.686
160	-0.193	-0.689
200	-0.245	-0.788
300	-0.987	-0.909
400	-1.082	-0.908
500	-1.128	-0.997
600	-1.219	-1.086
700	-1.244	-1.198
800	-1.308	-1.313
900	-1.298	-1.415
1000	-1.311	-1.532

Phase Response



Amplitude Response



Notes

Results relate only to the items calibrated.

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

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

This calibration was performed with TMS 9155 Calibration Workstation 3 version 8.1.4.

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

This calibration is accredited per ISO17025:2017 and ANSI/NCSL Z540.1.1994.

Procedure Used: PRD-P220 or PRD-P239

Decision Rule: Simple Acceptance with a TUR of 4:1 or greater at reference frequency.

Measurement uncertainty under scope of accreditation (95% confidence level with coverage factor 2) for frequency ranges tested during calibration are as follows: 5-9 Hz; ± 1.7%, 10-99 Hz; ± 1.2%, 100 Hz; ± 0.75%, 101-920 Hz; ± 1.0%, 921-5000 Hz; ± 1.4%, 5001-10,000 Hz; ± 1.9%, 10,001-15,000 Hz; ± 2.2%, 15,001-20,000 Hz; ± 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:	71 (22) °F (°C)
Humidity:	33 %

Cal Date:	9-May-25
Due Date:	

Customer

TMS Rental

Technician Notes

Approval Information

Technician: Stacey Woo

Approval: Stacey Woo

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Cincinnati, OH 45215
Ph: 513.351.9919
www.modalshop.com

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Calibration Laboratory

Cal ID: 75174

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	000753D:682D6189:00001835	

Measurement Notes

User	
Location	**Sailiviik camp - Room C2-09**
Job Description	
Note	Could not parse section, making sure you have the latest G4 installed may resolve this issue.

Overall Measurement

Start Time	2025-05-21 05:15:53	
Stop Time	2025-05-21 18:33:38	
Run Time	13:17:45	
Pre-Calibration		
Date/Time	2025-05-21 05:04:10	
Calibrator Level	114.0 dB	
Meter Sensitivity	-25.05 dB re 1V/Pa	55.91 mV/Pa
Post-Calibration		
Date/Time	2025-05-21 18:34:18	
Calibrator Level	114.0 dB	
Meter Sensitivity	-25.02 dB re 1V/Pa	56.10 mV/Pa
Sensitivity Delta	0.02 dB	0.19 mV/Pa

	A	C	Z
$L_{\omega eq}$	35.8 dB	61.8 dB	67.9 dB
$L_{\omega pk}$	87.2 dB	86.3 dB	102.2 dB
	2025-05-21 18:33:25	2025-05-21 05:16:07	2025-05-21 18:03:18
$L_{\omega Smin}$	34.7 dB	58.7 dB	64.3 dB
	2025-05-21 10:31:47	2025-05-21 10:59:42	2025-05-21 12:41:13
$L_{\omega Smax}$	64.6 dB	72.4 dB	91.8 dB
	2025-05-21 05:16:08	2025-05-21 05:56:21	2025-05-21 05:16:08
$L_{\omega Fmin}$	33.9 dB	57.7 dB	63.4 dB
	2025-05-21 10:07:05	2025-05-21 13:36:25	2025-05-21 12:41:12
$L_{\omega Fmax}$	72.1 dB	79.2 dB	98.1 dB
	2025-05-21 05:16:08	2025-05-21 05:56:21	2025-05-21 05:16:08
$L_{\omega Imin}$	35.4 dB	60.2 dB	66.4 dB
	2025-05-21 10:50:48	2025-05-21 10:59:42	2025-05-21 12:41:13
$L_{\omega Imax}$	75.6 dB	82.0 dB	100.6 dB
	2025-05-21 05:16:07	2025-05-21 05:56:21	2025-05-21 05:16:08

ω = frequency weighting (A, C or Z)

LC_{eq} - LA_{eq}	26.0 dB		
LA_{Ieq}	39.1 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	35.7 dB
LAS 10.0	35.6 dB
LAS 33.3	35.4 dB
LAS 50.0	35.3 dB
LAS 66.6	35.2 dB
LAS 90.0	35.1 dB

Spartan 821 Summary

Meter General Information

	Model	Serial
Meter	Spartan 821	30013
Preamp	PRM821	
Microphone	377B02	
Unique File Id	753D:6833F772:000018CE	

Measurement Notes

User	
Location	**Port site camp - Room BC-08**
Job Description	
Note	

Overall Measurement

Start Time	2025-05-26 05:09:06		
Stop Time	2025-05-26 17:48:51		
Run Time	12:39:45		
Pre-Calibration			
Date/Time	2025-05-21 18:34:18		
Calibrator Level	114.00	dB	
Meter Sensitivity	-25.02	dB re 1V/Pa	56.10 mV/Pa
Post-Calibration			
Date/Time	---		
Calibrator Level	---	dB	
Meter Sensitivity	---	dB re 1V/Pa	--- mV/Pa
Sensitivity Delta	---	dB re 1V/Pa	--- mV/Pa

	A	C	Z
$L_{\omega eq}$ (dB)	36.2	50.3	69.0
$L_{\omega pk}$ (dB)	90.6	91.2	107.5
	2025-05-26 05:09:31	2025-05-26 05:09:31	2025-05-26 05:50:13
$L_{\omega Smin}$ (dB)	26.3	41.5	53.5
	2025-05-26 12:23:24	2025-05-26 12:30:54	2025-05-26 17:47:14
$L_{\omega Smax}$ (dB)	63.4	70.8	98.9
	2025-05-26 05:09:31	2025-05-26 17:48:47	2025-05-26 05:50:13
$L_{\omega Fmin}$ (dB)	25.2	39.8	47.7
	2025-05-26 12:13:25	2025-05-26 12:32:05	2025-05-26 15:16:52
$L_{\omega Fmax}$ (dB)	71.3	75.9	104.0
	2025-05-26 05:09:31	2025-05-26 05:09:26	2025-05-26 05:50:13
$L_{\omega Imin}$ (dB)	27.4	43.2	57.4
	2025-05-26 12:17:18	2025-05-26 12:30:54	2025-05-26 17:47:14
$L_{\omega Imax}$ (dB)	75.4	79.0	106.3
	2025-05-26 05:09:31	2025-05-26 17:48:46	2025-05-26 05:50:13

ω = frequency weighting (A, C or Z)

LC_{eq} - LA_{eq} (dB)	14.0		
LA_{Ieq} (dB)	41.2		
Overload Count	0		
Overload Duration	00:00:00		
	A	**C**	**Z**
Under Range Peak (dB)	50.0	50.0	62.0
Under Range Limit (dB)	24.0	27.0	37.0
Noise Floor (dB)	17.0	18.0	25.0

Ln Percentiles

LAS 5.0 (dB)	41.0
LAS 10.0 (dB)	40.2
LAS 33.3 (dB)	37.3
LAS 50.0 (dB)	30.8
LAS 66.6 (dB)	30.0
LAS 90.0 (dB)	29.2

Spartan 821 Summary

Meter General Information

	Model	Serial
Meter	Spartan 821	30013
Preamp	PRM821	
Microphone	377B02	
Unique File Id	'53D:683562ED:000019F7	

Measurement Notes

User	
Location	**380 person camp - Room F-35**
Job Description	
Note	

Overall Measurement

Start Time	2025-05-27 06:59:57		
Stop Time	2025-05-28 07:35:02		
Run Time	24:35:05		
Pre-Calibration			
Date/Time	2025-05-27 06:50:52		
Calibrator Level	114.00	dB	
Meter Sensitivity	-25.11	dB re 1V/Pa	55.54 mV/Pa
Post-Calibration			
Date/Time	2025-05-28 08:09:36		
Calibrator Level	114.00	dB	
Meter Sensitivity	-25.11	dB re 1V/Pa	55.50 mV/Pa
Sensitivity Delta	-0.01	dB re 1V/Pa	-0.04 mV/Pa

	A	C	Z
$L\omega eq$ (dB)	35.4	57.7	62.9
$L\omega pk$ (dB)	85.5	92.7	96.1
	2025-05-28 07:34:51	2025-05-27 19:01:15	2025-05-27 19:01:15
$L\omega Smin$ (dB)	32.9	52.8	58.4
	2025-05-28 04:27:50	2025-05-27 23:00:41	2025-05-28 04:23:48
$L\omega Smax$ (dB)	59.8	76.5	80.6
	2025-05-28 07:34:52	2025-05-27 19:01:15	2025-05-28 06:01:49
$L\omega Fmin$ (dB)	31.7	49.3	54.7
	2025-05-27 08:26:11	2025-05-28 03:35:53	2025-05-28 02:44:04
$L\omega Fmax$ (dB)	67.0	83.3	86.3
	2025-05-28 07:34:51	2025-05-27 19:01:15	2025-05-27 19:01:15
$L\omega Imin$ (dB)	34.4	55.4	61.5
	2025-05-27 18:50:24	2025-05-28 02:31:22	2025-05-28 00:01:05
$L\omega Imax$ (dB)	71.2	86.4	89.6
	2025-05-28 07:34:51	2025-05-27 19:01:15	2025-05-28 06:01:49

ω = frequency weighting (A, C or Z)

$LCeq - LAeq$ (dB)	22.3		
$LAIeq$ (dB)	38.3		
Overload Count	0		
Overload Duration	00:00:00		
	A	**C**	**Z**
Under Range Peak (dB)	50.0	50.0	62.0
Under Range Limit (dB)	24.0	27.0	37.0
Noise Floor (dB)	17.0	18.0	25.0

Ln Percentiles

LAS 5.0 (dB)	36.0
LAS 10.0 (dB)	35.1
LAS 33.3 (dB)	34.5
LAS 50.0 (dB)	34.3
LAS 66.6 (dB)	34.1
LAS 90.0 (dB)	33.8

Spartan 821 Summary

Meter General Information

	Model	Serial
Meter	Spartan 821	30013
Preamp	PRM821	
Microphone	377B02	
Unique File Id	53D:68393BB2:00001AA5	

Measurement Notes

User	
Location	**Sailiviik camp - Room C2-12**
Job Description	
Note	

Overall Measurement

Start Time	2025-05-30 05:01:38			
Stop Time	2025-05-30 19:29:19			
Run Time	14:27:41			
Pre-Calibration				
Date/Time	2025-05-30 04:39:56			
Calibrator Level	114.00	dB		
Meter Sensitivity	-25.05	dB re 1V/Pa	55.94	mV/Pa
Post-Calibration				
Date/Time	2025-05-30 19:30:18			
Calibrator Level	114.00	dB		
Meter Sensitivity	-25.00	dB re 1V/Pa	56.27	mV/Pa
Sensitivity Delta	0.05	dB re 1V/Pa	0.33	mV/Pa

	A	C	Z
$L\omega_{eq}$ (dB)	33.4	48.6	61.9
$L\omega_{pk}$ (dB)	95.1	94.1	101.8
	2025-05-30 19:29:12	2025-05-30 19:29:12	2025-05-30 05:01:59
$L\omega S_{min}$ (dB)	24.4	41.1	47.8
	2025-05-30 07:27:35	2025-05-30 07:57:22	2025-05-30 07:53:07
$L\omega S_{max}$ (dB)	70.0	71.4	91.8
	2025-05-30 05:02:10	2025-05-30 06:27:41	2025-05-30 05:02:00
$L\omega F_{min}$ (dB)	23.6	37.3	43.0
	2025-05-30 07:36:09	2025-05-30 07:30:15	2025-05-30 07:27:35
$L\omega F_{max}$ (dB)	77.8	79.0	98.1
	2025-05-30 05:02:10	2025-05-30 06:27:41	2025-05-30 05:01:59
$L\omega I_{min}$ (dB)	25.4	43.5	51.0
	2025-05-30 07:27:35	2025-05-30 08:13:10	2025-05-30 10:58:25
$L\omega I_{max}$ (dB)	81.5	82.6	100.6
	2025-05-30 05:02:10	2025-05-30 06:27:41	2025-05-30 05:01:59

ω = frequency weighting (A, C or Z)

LC_{eq} - LA_{eq} (dB)	15.2
LAI_{eq} (dB)	42.0
Overload Count	0
Overload Duration	00:00:00

	A	C	Z
Under Range Peak (dB)	50.0	50.0	62.0
Under Range Limit (dB)	24.0	27.0	37.0
Noise Floor (dB)	17.0	18.0	25.0

Ln Percentiles

LAS 5.0 (dB)	37.0
LAS 10.0 (dB)	36.2
LAS 33.3 (dB)	31.8
LAS 50.0 (dB)	26.2
LAS 66.6 (dB)	25.8
LAS 90.0 (dB)	25.4

APPENDIX D

Session reports whole-body vibration levels

HVM General Information

Serial Number	0001786
Model	HVM200
Firmware Version	5.1.1R2
HVM File Name	HVMBim_250521_051534.hvm2
User	
Location	**Sailiviik Camp - Room C2-09**
Job Description	
Note	5/21/2025 6:33:48 PM: Partial Interval. Length: 14 seconds.

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/s²)	10,380000	10,390000	10,150000
Weighting	Wd	Wd	Wk
k-Factors	1.0000	1.0000	1.0000

Overall Data

Start Time	2025-May-21 05:15:34
Run Time (hh:mm:ss)	13:18:14

	x	y	z	Sum	Units
a_{RMS}	0,0013	0,0011	0,0022	0,0028	m/s²
MTVV	0,0190	0,0182	0,0145	0,0277	m/s²
a_{PEAK}	0,0443	0,0400	0,0384	0,0597	m/s²
Crest Factor	33,7933	36,3376	17,3160	21,3067	
a_{MIN}	0,0006	0,0005	0,0013	0,0018	m/s²
A(8)	0,0017	0,0014	0,0029	0,0029	m/s²
A(8) Action	>24	>24	>24	>24	hours
A(8) Exposure	>24	>24	>24	>24	hours
VDV	0,0322	0,0290	0,0469	0,0469	m/s^1.75
Exposure Points				0	Points

HVM General Information

Serial Number	0001786
Model	HVM200
Firmware Version	5.1.1R2
HVM File Name	HVMBim_250526_050752.hvm2
User	
Location	**Port Site camp - Room BC-08**
Job Description	
Note	5/26/2025 5:49:00 PM: Partial Interval. Length: 8 seconds.

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/s²)	10,380000	10,390000	10,150000
Weighting	Wd	Wd	Wk
k-Factors	1.0000	1.0000	1.0000

Overall Data

Start Time	2025-May-26 05:07:52
Run Time (hh:mm:ss)	12:41:08

	x	y	z	Sum	Units
a_{RMS}	0,0012	0,0011	0,0017	0,0024	m/s²
MTVV	0,0314	0,0316	0,0178	0,0479	m/s²
a_{PEAK}	0,0597	0,0595	0,0566	0,0868	m/s²
Crest Factor	49,1812	53,2163	32,3510	36,0984	
a_{MIN}	0,0005	0,0004	0,0008	0,0013	m/s²
A(8)	0,0015	0,0014	0,0022	0,0022	m/s²
A(8) Action	>24	>24	>24	>24	hours
A(8) Exposure	>24	>24	>24	>24	hours
VDV	0,0441	0,0445	0,0523	0,0523	m/s^1.75
Exposure Points				0	Points

HVM General Information

Serial Number	0001786
Model	HVM200
Firmware Version	5.1.1R2
HVM File Name	HVMBim_250527_070013.hvm2
User	
Location	**380 person camp - Room F-35**
Job Description	
Note	5/28/2025 7:35:20 AM: Partial Interval. Length: 7 seconds.

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/s²)	10,380000	10,390000	10,150000
Weighting	Wd	Wd	Wk
k-Factors	1.0000	1.0000	1.0000

Overall Data

Start Time	2025-May-27 07:00:13
Run Time (hh:mm:ss)	1 day 00:35:07

	x	y	z	Sum	Units
a_{RMS}	0,0014	0,0011	0,0058	0,0060	m/s²
MTVV	0,0275	0,0272	0,0900	0,0902	m/s²
a_{PEAK}	0,0672	0,0654	0,3713	0,3716	m/s²
Crest Factor	48,7538	58,0468	64,3874	61,5618	
a_{MIN}	0,0007	0,0005	0,0030	0,0032	m/s²
A(8)	0,0024	0,0020	0,0101	0,0101	m/s²
A(8) Action	>24	>24	>24	>24	hours
A(8) Exposure	>24	>24	>24	>24	hours
VDV	0,0457	0,0438	0,1793	0,1793	m/s^1.75
Exposure Points				0	Points

HVM General Information

Serial Number	0001786
Model	HVM200
Firmware Version	5.1.1R2
HVM File Name	HVMBim_250530_050141.hvm2
User	
Location	**Sailiviik camp - Room C2-12**
Job Description	
Note	5/30/2025 7:29:27 PM: Partial Interval. Length: 46 seconds.

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/s²)	10,380000	10,390000	10,150000
Weighting	Wd	Wd	Wk
k-Factors	1.0000	1.0000	1.0000

Overall Data

Start Time	2025-May-30 05:01:41
Run Time (hh:mm:ss)	14:27:46

	x	y	z	Sum	Units
a_{RMS}	0,0012	0,0011	0,0018	0,0024	m/s²
MTVV	0,0082	0,0089	0,0208	0,0209	m/s²
a_{PEAK}	0,0201	0,0223	0,0583	0,0585	m/s²
Crest Factor	17,3543	20,1220	32,5008	24,3009	
a_{MIN}	0,0005	0,0005	0,0009	0,0014	m/s²
A(8)	0,0016	0,0015	0,0024	0,0024	m/s²
A(8) Action	>24	>24	>24	>24	hours
A(8) Exposure	>24	>24	>24	>24	hours
VDV	0,0238	0,0232	0,0569	0,0569	m/s^1.75
Exposure Points				0	Points