

Sensor Information

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

Calibration Data

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

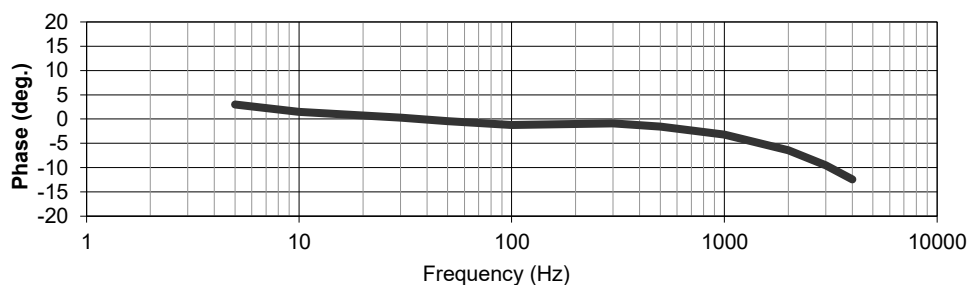
Transducer Specifications

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

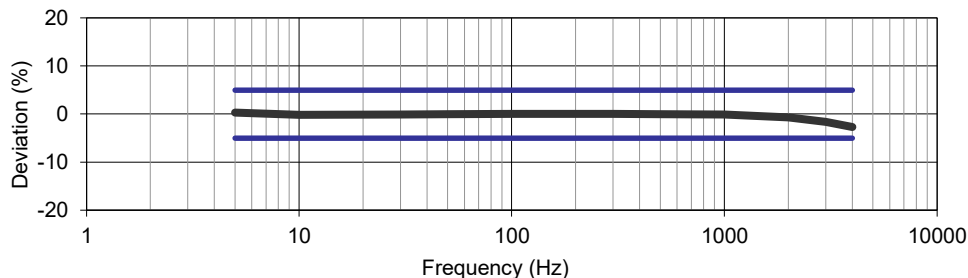
Data Table

[illegible]

Phase Response



Amplitude Response



Notes

Results relate only to the items calibrated.

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

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

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

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

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

Procedure Used: PRD-P220 or PRD-P239

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

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

Unit Condition

As Found: In Tolerance

As Left: In Tolerance

Lab Conditions

Temperature: 72 (22) °F (°C)

Humidity: 24 %

Customer

TMS Rental

Cal Date: 22-Mar-24

Due Date:

Technician Notes

Approval Information

Technician: Ed Devlin

Approval:

Edward A. L. bin

Sensor Information

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

Calibration Data

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

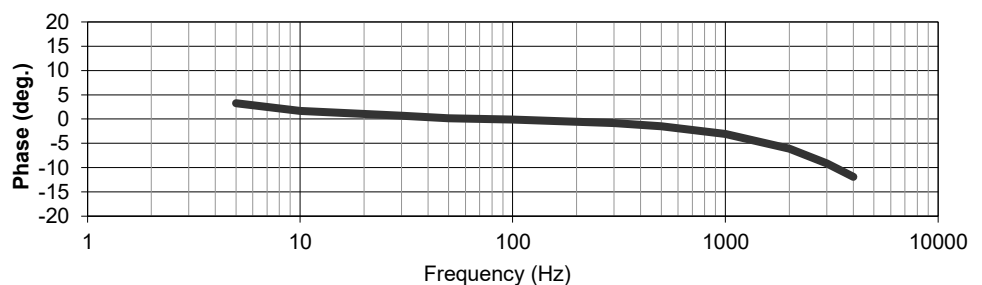
Transducer Specifications

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

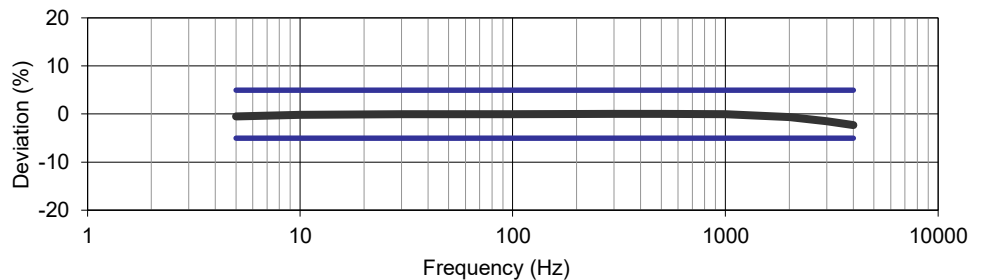
Data Table

[illegible]

Phase Response



Amplitude Response



Notes

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

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

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

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

Procedure Used: PRD-P220 or PRD-P239

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

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

Unit Condition

As Found: In Tolerance

As Left: In Tolerance

Lab Conditions

Temperature: 72 (22) °F (°C)

Humidity: 24 %

Customer

TMS Rental

Cal Date: 22-Mar-24

Due Date:

Technician Notes

Approval Information

Technician: Ed Devlin

Approval:

Edward A. G. bin

Sensor Information

Model Number: 356B41
Serial Number: 357189
Manufacturer: PCB
ID Number: 93225
Description: ICP® Accelerometer

Calibration Data

Sensitivity @ 100 Hz:	95.13	mV/g
	9.700	mV/m/s ²
Phase @ 100 Hz:	-0.5138	deg.
Test Level:	10.00	g
Output Bias Level:	3.2	VDC

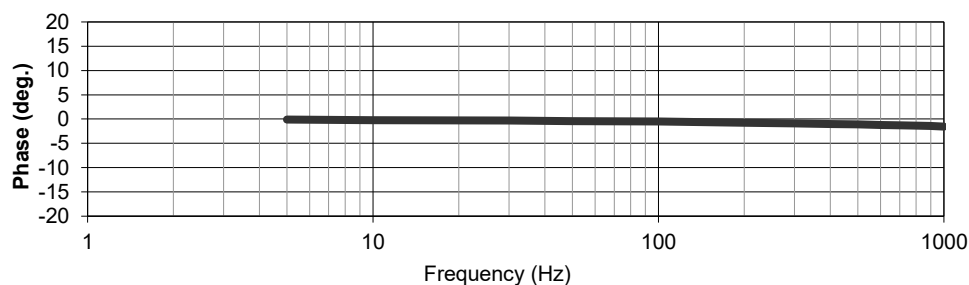
Transducer Specifications

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

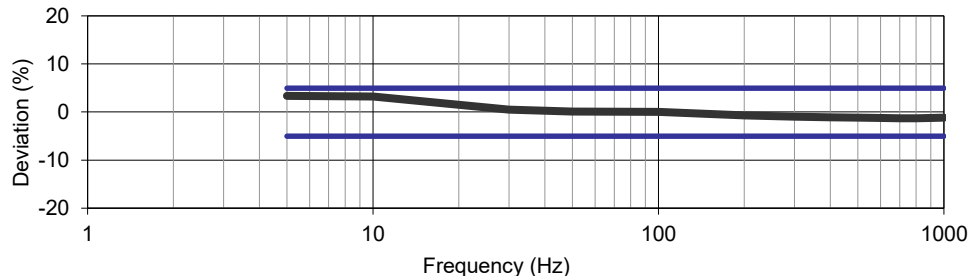
Data Table

[illegible]

Phase Response



Amplitude Response



Notes

Results relate only to the items calibrated.

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

This calibration was performed with TMS 9155 Calibration Workstation 3 version 8.0.4.

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

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

Procedure Used: PRD-P220 or PRD-P239

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

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

Unit Condition

As Found: In Tolerance

As Left: In Tolerance

Lab Conditions

Temperature: 74 (23) °F (°C)

Humidity: 22 %

Customer

TMS Rental

Cal Date: 19-Mar-24

Due Date:

Technician Notes

Approval Information

Technician: Stacey Woo

Approval:

Stanford

Sensor Information

Model Number: 356B41
Serial Number: 357189
Manufacturer: PCB
ID Number: 93225
Description: ICP® Accelerometer

Calibration Data

Sensitivity @ 100 Hz:	103.2	mV/g
	10.52	mV/m/s ²
Phase @ 100 Hz:	-0.4803	deg.
Test Level:	10.00	g
Output Bias Level:	3.2	VDC

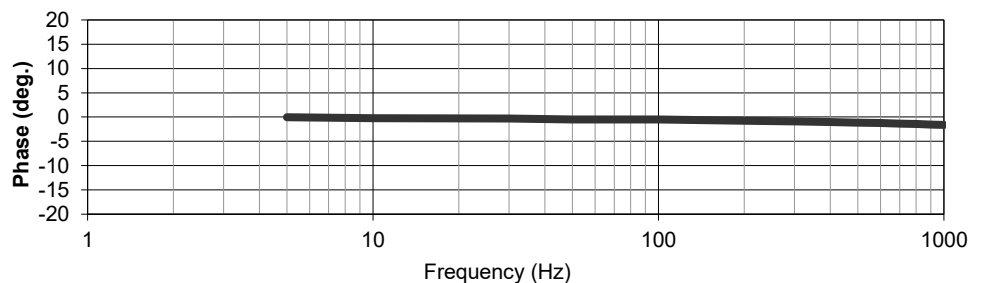
Transducer Specifications

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

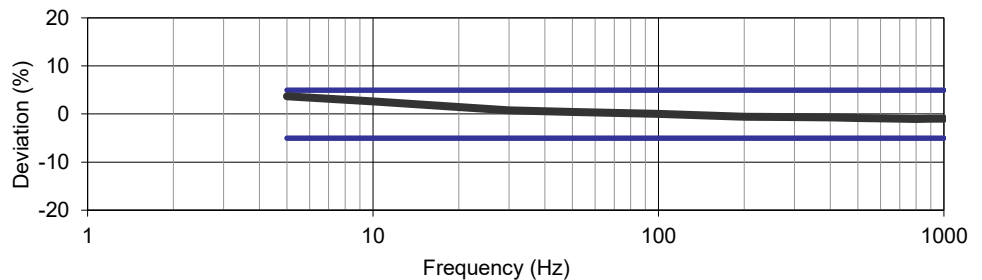
Data Table

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Phase Response



Amplitude Response



Notes

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

This calibration was performed with TMS 9155 Calibration Workstation 3 version 8.0.4.

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

Procedure Used: PRD-P220 or PRD-P239

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

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

Unit Condition

As Found: In Tolerance

As Left: In Tolerance

Lab Conditions

Temperature: 74 (23) °F (°C)

Humidity: 22 %

Customer

TMS Rental

Cal Date: 19-Mar-24

Due Date:

Technician Notes

Approval Information

Technician: Stacey Woo

Approval: 

Sensor Information

Model Number: 356B41
Serial Number: 357189
Manufacturer: PCB
ID Number: 93225
Description: ICP® Accelerometer

Calibration Data

Sensitivity @ 100 Hz:	97.21	mV/g
	9.912	mV/m/s ²
Phase @ 100 Hz:	-0.5173	deg.
Test Level:	10.00	g
Output Bias Level:	3.2	VDC

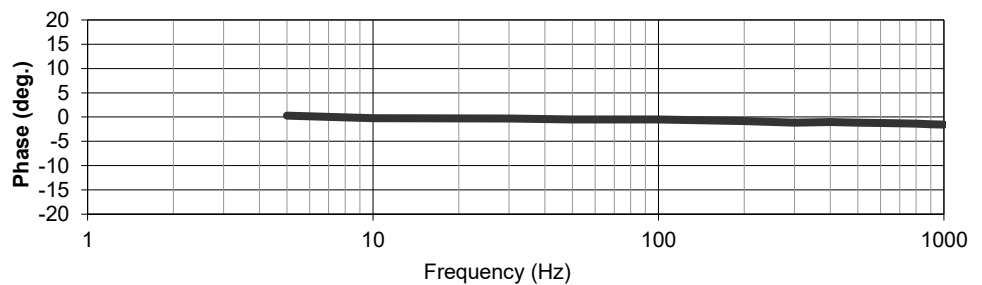
Transducer Specifications

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

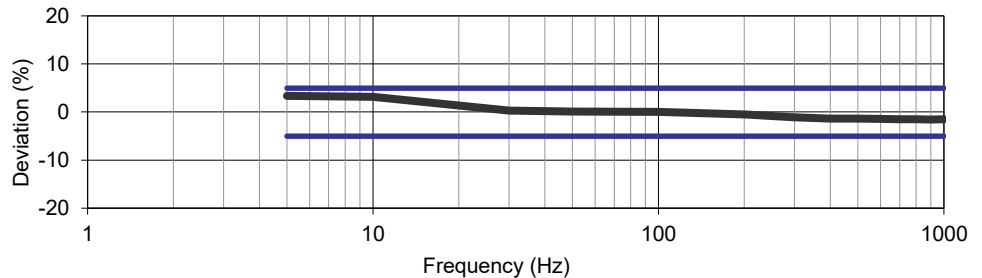
Data Table

[illegible]

Phase Response



Amplitude Response



Notes

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

This calibration was performed with TMS 9155 Calibration Workstation 3 version 8.0.4.

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

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

Procedure Used: PRD-P220 or PRD-P239

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

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

Unit Condition

As Found: In Tolerance

As Left: In Tolerance

Lab Conditions

Temperature: 74 (23) °F (°C)

Humidity: 22 %

Customer

TMS Rental

Cal Date: 19-Mar-24

Due Date:

Technician Notes

Approval Information

Technician: Stacey Woo

Approval: 



APPENDIX C

Session reports indoor noise levels

Spartan 821 Summary

Meter General Information		
Meter	Model	Serial
Preamp	Spartan 821	30013
Microphone	PRM821	
	377B02	

Measurement Notes	
User	
Location	380-person camp
Job Description	
Note	

Overall Measurement		
Start Time	2024-04-01 17:15:56	
Stop Time	2024-04-02 06:48:19	
Run Time	13:32:23	
Pre-Calibration Deviation (Cal Lvl)	0.15 dB (114.0 dB)	2024-04-01 16:52:52
Pre-Sensitivity	-27.7 dB	
Post-Calibration Deviation (Cal Lvl)	-0.04 dB (114.0 dB)	2024-04-02 07:06:50
Post-Sensitivity	-27.7 dB	

	A	C	Z
L _ω eq	43.0 dB	60.7 dB	67.8 dB
L _ω pk	85.8 dB	87.7 dB	94.3 dB
	2024-04-01 17:16:53	2024-04-02 04:37:30	2024-04-02 04:37:30
L _ω Smin	41.9 dB	58.3 dB	64.0 dB
	2024-04-01 21:31:54	2024-04-01 21:32:48	2024-04-01 17:31:27
L _ω Smax	66.5 dB	72.4 dB	82.1 dB
	2024-04-02 04:37:30	2024-04-02 04:37:30	2024-04-02 04:37:30
L _ω Fmin	40.6 dB	56.1 dB	60.3 dB
	2024-04-02 03:16:27	2024-04-01 20:24:04	2024-04-02 00:19:20
L _ω Fmax	71.3 dB	77.7 dB	87.9 dB
	2024-04-02 04:37:30	2024-04-02 04:37:30	2024-04-02 04:37:30
L _ω Imin	43.2 dB	60.3 dB	67.4 dB
	2024-04-01 21:31:54	2024-04-01 23:02:52	2024-04-02 00:20:02
L _ω Imax	72.3 dB	80.4 dB	90.7 dB
	2024-04-02 04:37:30	2024-04-02 04:37:30	2024-04-02 04:37:30

ω = frequency weighting (A, C or Z)

LCeq - LAeq	17.7 dB		
Overload Count	0		
Overload Duration	00:00:00		
	A	C	Z
Under Range Peak	50,0	50,0	62,0 dB
Under Range Limit	24,0	27,0	37,0 dB
Noise Floor	17,0	18,0	25,0 dB

Statistics	
LAS5	43.3 dB
LAS10	43.2 dB
LAS33.3	43.0 dB
LAS50	42.9 dB
LAS66.6	42.8 dB
LAS90	42.6 dB

Spartan 821 Summary

Meter General Information

	Model	Serial
Meter	Spartan 821	30013
Preamp	PRM821	
Microphone	377B02	

Measurement Notes

User	Baffinland Iron Mines
Location	PS camp - Room BC-12
Job Description	Indoor noise level assessment - accomodations facilities
Note	

Overall Measurement

Start Time	2024-04-02 16:12:36	
Stop Time	2024-04-03 07:05:01	
Run Time	14:52:25	
Pre-Calibration Deviation (Cal Lvl)	0.10 dB (114.0 dB)	2024-04-02 15:44:01
Pre-Sensitivity	-27.6 dB	
Post-Calibration Deviation (Cal Lvl)	-0.03 dB (114.0 dB)	2024-04-03 07:09:01
Post-Sensitivity	-27.6 dB	

	A	C	Z
LWeq	35.3 dB	54.6 dB	68.1 dB
LWpk	91.6 dB	97.2 dB	109.8 dB
	2024-04-03 07:04:54	2024-04-03 03:11:47	2024-04-02 17:35:38
LWSmin	33.7 dB	45.5 dB	50.6 dB
	2024-04-03 00:11:02	2024-04-03 01:33:56	2024-04-02 16:36:52
LWSmax	67.6 dB	76.3 dB	99.3 dB
	2024-04-03 07:04:54	2024-04-02 18:07:52	2024-04-02 17:35:38
LWFmin	32.5 dB	43.6 dB	48.2 dB
	2024-04-02 18:42:47	2024-04-02 22:59:27	2024-04-03 05:52:30
LWFmax	75.3 dB	82.9 dB	105.9 dB
	2024-04-03 07:04:54	2024-04-03 03:11:47	2024-04-02 17:35:38
LWLmin	34.6 dB	47.5 dB	53.7 dB
	2024-04-03 00:14:38	2024-04-03 01:33:56	2024-04-02 16:26:34
LWLmax	78.8 dB	86.3 dB	108.5 dB
	2024-04-03 07:04:54	2024-04-03 03:11:47	2024-04-02 17:35:38

ω = frequency weighting (A, C or Z)

LCeq - LAeq	19.3 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

Statistics

LAS5	35.7 dB
LAS10	35.3 dB
LAS33.3	34.7 dB
LAS50	34.5 dB
LAS66.6	34.4 dB
LAS90	34.2 dB

Spartan 821 Summary

Meter General Information		
Meter	Model	Serial
Preamp	Spartan 821	30013
Microphone	PRM821	
	377B02	

Measurement Notes	
User	Baffinland Iron Mines
Location	Sailivik camp - Room C2-23
Job Description	Indoor noise level assessment - accomodations facilities
Note	

Overall Measurement		
Start Time	2024-04-07 04:08:20	
Stop Time	2024-04-07 18:39:24	
Run Time	14:31:04	
Pre-Calibration Deviation (Cal Lvl)	0.01 dB (114.0 dB)	2024-04-07 04:04:37
Pre-Sensitivity	-27.5 dB	
Post-Calibration Deviation (Cal Lvl)	0.02 dB (114.0 dB)	2024-04-07 18:41:58
Post-Sensitivity	-27.5 dB	

	A	C	Z
Lweq	28.1 dB	48.9 dB	60.9 dB
Lwpk	89.1 dB	93.4 dB	98.8 dB
	2024-04-07 04:08:30	2024-04-07 05:37:59	2024-04-07 17:53:11
LwSmin	20.8 dB	37.3 dB	45.7 dB
	2024-04-07 16:24:39	2024-04-07 16:24:14	2024-04-07 04:50:44
LwSmax	65.3 dB	76.6 dB	88.7 dB
	2024-04-07 04:08:57	2024-04-07 05:45:42	2024-04-07 18:39:17
LwFmin	20.4 dB	33.3 dB	41.1 dB
	2024-04-07 16:25:37	2024-04-07 16:23:14	2024-04-07 04:46:17
LwFmax	72.7 dB	83.5 dB	94.0 dB
	2024-04-07 04:08:57	2024-04-07 05:45:42	2024-04-07 18:18:07
Lwlmin	21.7 dB	40.7 dB	50.0 dB
	2024-04-07 16:24:51	2024-04-07 16:24:14	2024-04-07 04:50:09
Lwlmax	75.9 dB	86.9 dB	96.6 dB
	2024-04-07 04:08:57	2024-04-07 05:45:42	2024-04-07 18:18:06

ω = frequency weighting (A, C or Z)

LCeq - LAeq	20.8 dB		
Overload Count	0		
Overload Duration	00:00:00		
	A	C	Z
Under Range Peak	50,0	50,0	62,0 dB
Under Range Limit	24,0	27,0	37,0 dB
Noise Floor	17,0	18,0	25,0 dB

Statistics	
LAS5	30.4 dB
LAS10	27.6 dB
LAS33.3	25.2 dB
LAS50	24.2 dB
LAS66.6	23.3 dB
LAS90	22.2 dB



APPENDIX D

Session reports whole-body vibration levels

HVM General Information

Serial Number	0001930
Model	HVM200
Firmware Version	4.8.1R0
HVM File Name	BIM_240401_171538.hvm2
User	Baffinland Iron Mines
Location	380 person Camp - Room H-31
Job Description	WB Vibrations monitoring in accomodations
Note	4/2/2024 6:48:36 AM: Partial Interval. Length: 58 seconds.

Setup

Operating Mode	WholeBody		
Averaging	60 seconds		
Exposure Limit	1.15		
Exposure Action	0.50		
Integration Method	None		
Selected Accelerometer	ICP		
	x	y	z
Sensitivity mV/(m/s ²)	9,700000	10,520000	9,912000
Weighting	Wd	Wd	Wk
k-Factors	1.0000	1.0000	1.0000

Overall Data

Start Time	2024-Apr-01 17:15:38				
Run Time (hh:mm:ss)	13:32:58				
	x	y	z	Sum	Units
a _{RMS}	0,0019	0,0014	0,0019	0,0030	m/s ²
MTVV	0,0058	0,0028	0,0077	0,0081	m/s ²
a _{PEAK}	0,0119	0,0078	0,0386	0,0386	m/s ²
Crest Factor	6,4425	5,7092	20,5748	13,0041	
a _{MIN}	0,0007	0,0006	0,0014	0,0020	m/s ²
A(8)	0,0024	0,0018	0,0024	0,0024	m/s ²
A(8) Action	>24	>24	>24	>24	hours
A(8) Exposure	>24	>24	>24	>24	hours
VDV	0,0366	0,0265	0,0372	0,0372	m/s^1.75
Exposure Points				0	Points

HVM General Information

Serial Number	0001930
Model	HVM200
Firmware Version	4.8.1R0
HVM File Name	BIM_240402_161108.hvm2
User	Baffinland Iron Mines
Location	Port site Camp - Room BC-12
Job Description	WB Vibrations monitoring in accomodations
Note	

Setup

Operating Mode	WholeBody
Averaging	60 seconds
Exposure Limit	1.15
Exposure Action	0.50
Integration Method	None
Selected Accelerometer	ICP

	x	y	z
Sensitivity mV/(m/s ²)	9,700000	10,520000	9,912000
Weighting	Wd	Wd	Wk
k-Factors	1.0000	1.0000	1.0000

Overall Data

Start Time	2024-Apr-02 16:11:08
Run Time (hh:mm:ss)	14:00:01

	x	y	z	Sum	Units
a _{RMS}	0,0018	0,0014	0,0032	0,0040	m/s ²
MTVV	0,0147	0,0120	0,0293	0,0297	m/s ²
a _{PEAK}	0,0341	0,0315	0,1132	0,1152	m/s ²
Crest Factor	18,6042	22,8285	35,0697	29,0829	
a _{MIN}	0,0006	0,0005	0,0009	0,0016	m/s ²
A(8)	0,0024	0,0018	0,0043	0,0043	m/s ²
A(8) Action	>24	>24	>24	>24	hours
A(8) Exposure	>24	>24	>24	>24	hours
VDV	0,0380	0,0287	0,1128	0,1128	m/s ³ 1.75
Exposure Points				0	Points

HVM General Information	
Serial Number	0001930
Model	HVM200
Firmware Version	4.8.1R0
HVM File Name	BIM_240407_040820.hvm2
User	Baffinland Iron Mines
Location	Saliiviik Camp - Room C2-23
Job Description	WB Vibrations monitoring in accomodations
Note	

Setup	
Operating Mode	WholeBody
Averaging	60 seconds
Exposure Limit	1.15
Exposure Action	0.50
Integration Method	None
Selected Accelerometer	ICP

	x	y	z
Sensitivity mV/(m/s²)	9,700000	10,520000	9,912000
Weighting	Wd	Wd	Wk
k-Factors	1.0000	1.0000	1.0000

Overall Data	
Start Time	2024-Apr-07 04:08:20
Run Time (hh:mm:ss)	14:30:00

	x	y	z	Sum	Units
a_{RMS}	0,0019	0,0014	0,0018	0,0029	m/s²
MTVV	0,0360	0,0330	0,0277	0,0548	m/s²
a_{PEAK}	0,0899	0,0836	0,0942	0,1530	m/s²
Crest Factor	47,4213	60,4823	53,6362	52,2058	
a_{MIN}	0,0006	0,0005	0,0009	0,0017	m/s²
A(8)	0,0026	0,0019	0,0024	0,0026	m/s²
A(8) Action	>24	>24	>24	>24	hours
A(8) Exposure	>24	>24	>24	>24	hours
VDV	0,0555	0,0490	0,0556	0,0556	m/s^1.75
Exposure Points				0	Points