ARCTIC Liquid Freezer III Pro 360

Lab ID ACCLR00091

Type Liquid

Testing Dates: Apr 4, 2025 to Apr 10, 2025

Scheme: THETA

AMD AM5

Intel LGA1851

Aristeidis Bitziopoulos, Certification Body General Manager

THETA Cooler Performance

THETA is a Cybenetics performance rating. It is not part of our ISO/IEC 17065 certification schemes and is outside our accreditation.

Overall Performance (OP) = W × F / T, where W is the average CPU power at the EPS connectors (W), F the average CPU frequency (MHz) and T the average CPU temperature (°C). A cooler is rated on its measured OP at 30 dB(A) normalized noise output; a cooler that cannot reach 30 dB(A) is rated on its own measured 25 dB(A) point. Air and AIO coolers have separate ladders on each test platform.

Evaluated before Revision 2.0 of the Cooling Solutions Test Protocol: the THETA level was assigned from the published results measured under Revision 1.8 (20 minutes per noise level, 10-minute cool-down). The cooler was not measured again, and the earlier procedure is not identical to the procedure of Revision 2.0.

Platform	THETA level	Test CPU	Mount	Rated at	Overall Performance (OP)
AMD AM5	**THETA Platinum · AIO · AMD AM5**	AMD Ryzen 9 7900X (AM5)	Default	30 dB(A)	11,775
Intel LGA1851	**THETA Platinum · AIO · Intel LGA1851**	Intel Core Ultra 9 285K (LGA1851)	Default	30 dB(A)	15,644

General Information

Test Equipment

Noise Test Environment	Hemi Anechoic Chamber with 6dB(A) noise floor
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Temperature Logger	Picoscope TC-08
Climate Chamber	Giant Force GTH-800-20-CP-AR
Testing Methodology	Cybenetics Cooling Solutions Test Protocol

DUT Information

Brand	ARCTIC
Model	Liquid Freezer III Pro 360
Lab ID	ACCLR00091
Testing Dates	Apr 4, 2025 to Apr 10, 2025
Engineer	Aris Bitziopoulos

Climate Chamber

Noise Test Environment	Hemi Anechoic Chamber with 6dB(A) noise floor
Manufacturer	Giant Force
Model Number	GTH-800-20-CP-AR
Temperature Range	-20℃ ~ +100℃

Humidity Range	20% ~ 98% RH
Temperature/Humidity Constancy	±0.2℃; ±2.5%RH
Temperature/Humidity Uniformity at center	±0.5℃; ±4%RH
Internal Dimensions (WHD)	100 x 100 x 80 cm
External Dimensions (WHD)	145 x 190 x 135 cm
Net Weight (approximately)	450 Kg
Heat-up Time (No load, no linear)	(from 20°C to +100°C) 30min
Pull-down Time (No load, no linear)	(from 20°C to -20°C) 50min
Cooling System	Airtight compressor + evaporator fins + air-cooling condenser
Power Source	3Φ AC 380V ±5%, 50Hz±1% 10KW
Based on Standards	ISO 5801-2007, AMCA 210-0, ASHRAE 51-2007, IEC 61591-2005, GB/T 1236-200

AMD Test System

Mainboard	Asus TUF GAMING X670E-PLUS
CPU	AMD Ryzen 9 7900x
GPU	Embedded
NVMe	XPG GAMMIX S50 Lite 1TB
RAM	XPG Lancer DDR5 (2 x 16GB) 6000MHz
Power Supply	Seasonic Vertex 1200W (Cybenetics Platinum)
CPU Cooler	Device Under Test
Case	Cooler Master Test Bench

Intel Test System

Mainboard	ASRock Z890 Taichi [BIOS: 2.09.AS01 - Nov 4, 2024]
CPU	Intel Core Ultra 9 285K
GPU	Embedded
NVMe	XPG GAMMIX S50 Lite 1TB
RAM	Gskill Ripjaws S5 DDR5 (2 x 16GB) 6000MHz
Power Supply	Seasonic Vertex 1200W (Cybenetics Platinum)
CPU Cooler	Device Under Test

Case	DimasTech Bench

Technical Specifications

Manufacturer (OEM)	ARCTIC
Model	Liquid Freezer III Pro 360
Number of Fans	3
Fan #1	ARCTIC P12 Pro
Fan #2	ARCTIC P12 Pro
Type	Liquid
Radiator Size	360mm
Radiator Thickness	38mm
Radiator Material	Aluminium
Pump Speed	2800RPM
Tube Length	450mm
Tube Diameter	12.04mm
Cold Plate Dimensions	44.65x40.32mm
Weight	2020g
AMD Processors Support	AM5, AM4
Intel Processors Support	LGA 1851,1700

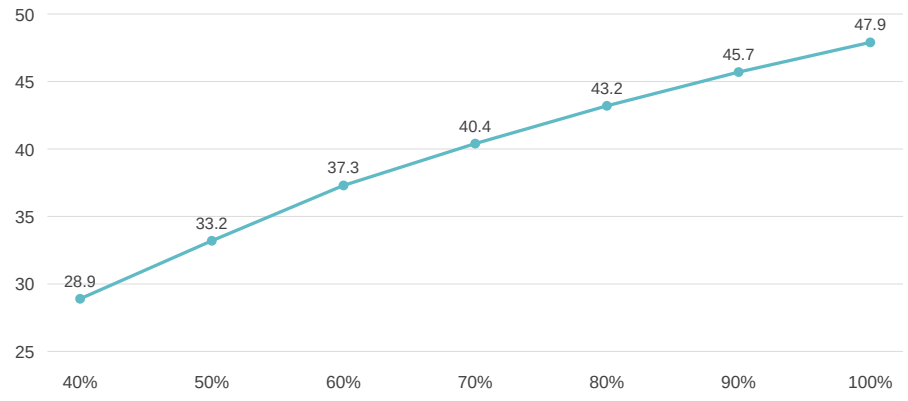
Noise Output and Fan Speed

Table

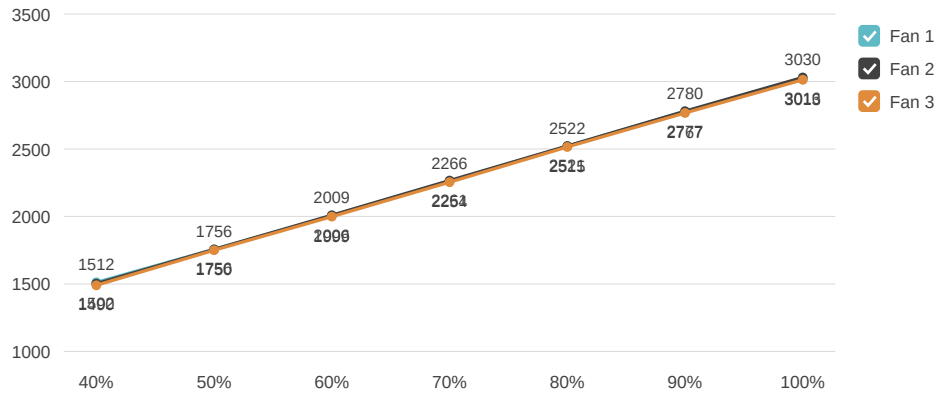
Fan Setting	Noise (dB(A))	Fan 1 (RPM)	Fan 2 (RPM)	Fan 3 (RPM)
40%	28.9	1512	1502	1490
50%	33.2	1756	1756	1750
60%	37.3	2006	2009	1999
70%	40.4	2261	2266	2254
80%	43.2	2521	2522	2515
90%	45.7	2777	2780	2767
100%	47.9	3016	3030	3013

Graphs

Noise



Fan Speed



Fan Speed at Fixed Noise Levels

Noise Level	PWM (%)	Fan 1 (RPM)	Fan 2 (RPM)	Fan 3 (RPM)
15 dB(A)	17	913	914	910
20 dB(A)	24	1091	1092	1087
25 dB(A)	33	1321	1322	1317
30 dB(A)	42	1547	1549	1543
35 dB(A)	53	1835	1838	1829
40 dB(A)	69	2233	2236	2226

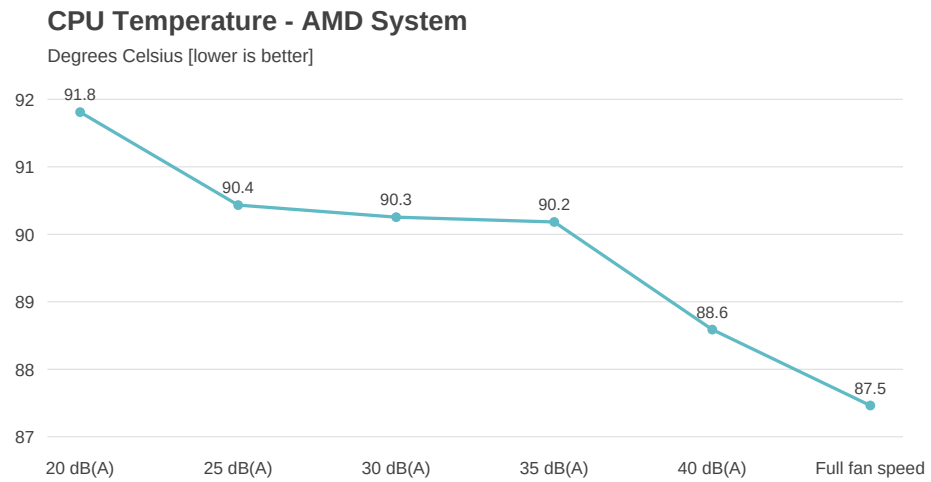
AMD System Test Results

Table

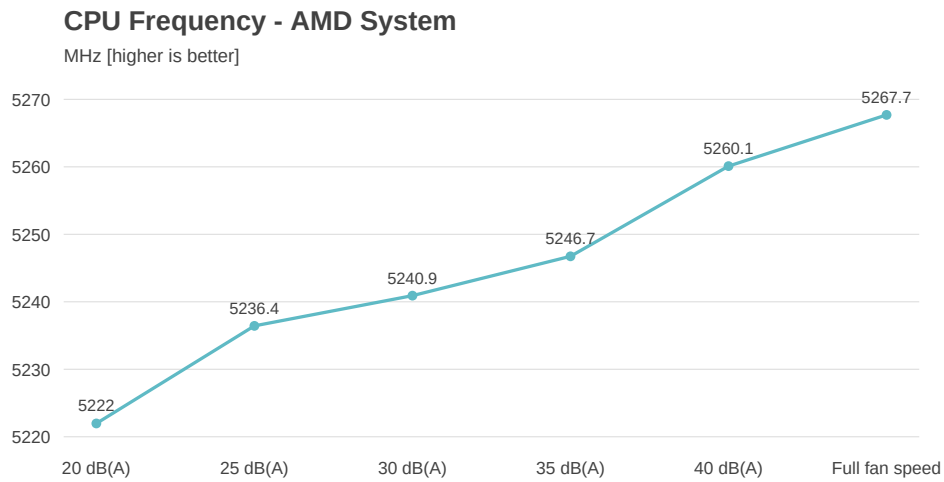
Condition	CPU Temperature (°C)	CPU Frequency (MHz)	CPU Power (W)	Overall Performance
20 dB(A)	91.8	5222	199.6	11350
25 dB(A)	90.4	5236	202.0	11699
30 dB(A)	90.3	5241	202.8	11775
35 dB(A)	90.2	5247	202.7	11793
40 dB(A)	88.6	5260	205.1	12177
Full fan speed	87.5	5268	207.0	12470

Graphs

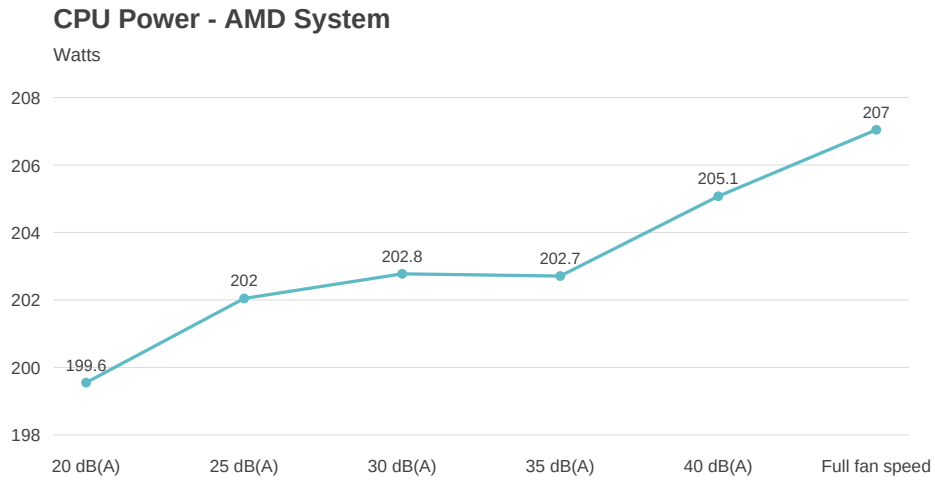
CPU Temperature



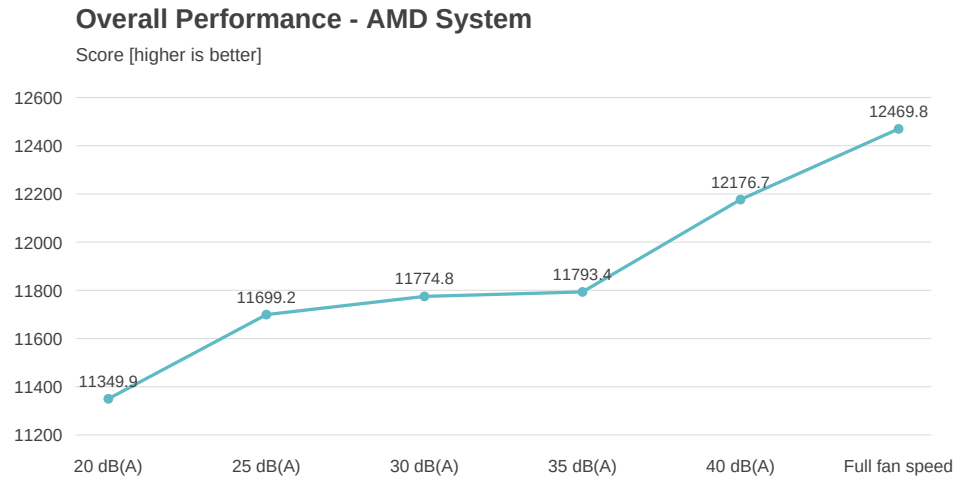
CPU Frequency



CPU Power



Overall Performance



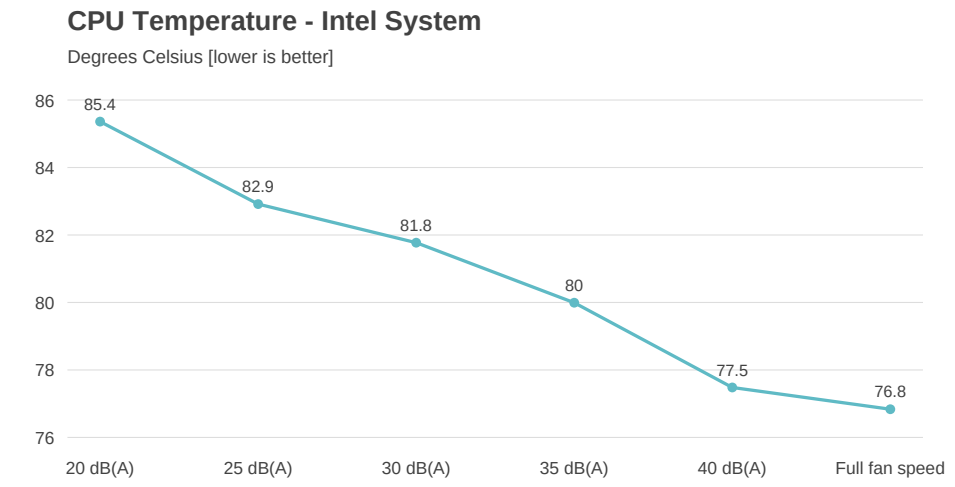
Intel System Test Results

Table

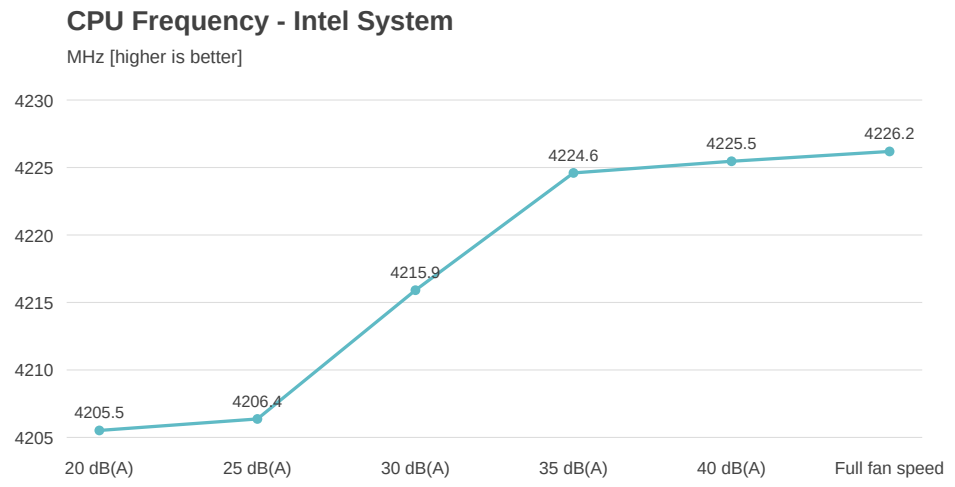
Condition	CPU Temperature (°C)	CPU Frequency (MHz)	CPU Power (W)	Overall Performance
20 dB(A)	85.4	4206	302.7	14915
25 dB(A)	82.9	4206	303.3	15385
30 dB(A)	81.8	4216	303.4	15644
35 dB(A)	80.0	4225	303.7	16038
40 dB(A)	77.5	4225	304.2	16589
Full fan speed	76.8	4226	304.4	16746

Graphs

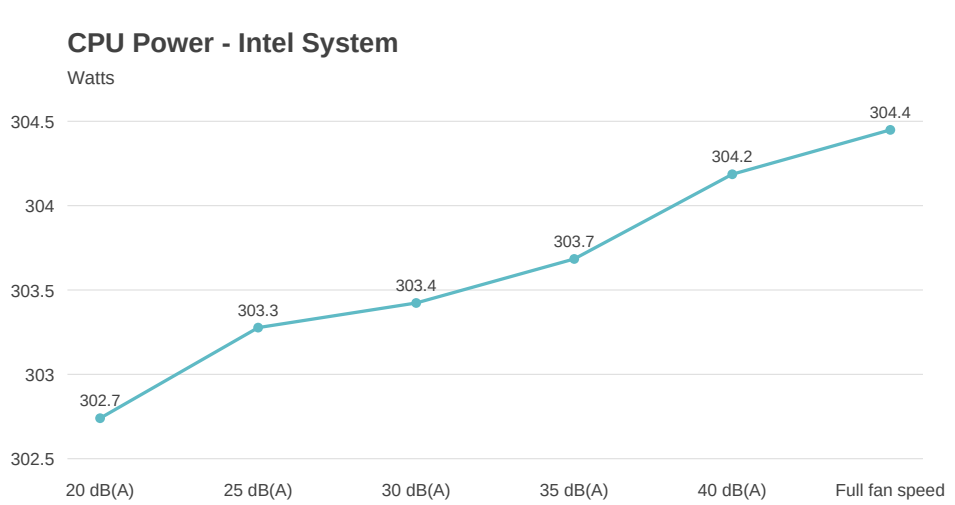
CPU Temperature



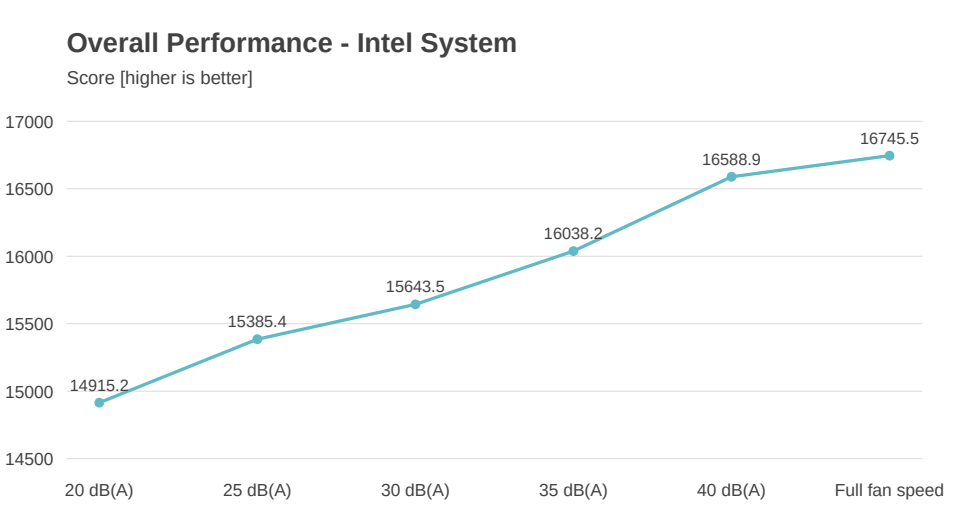
CPU Frequency



CPU Power

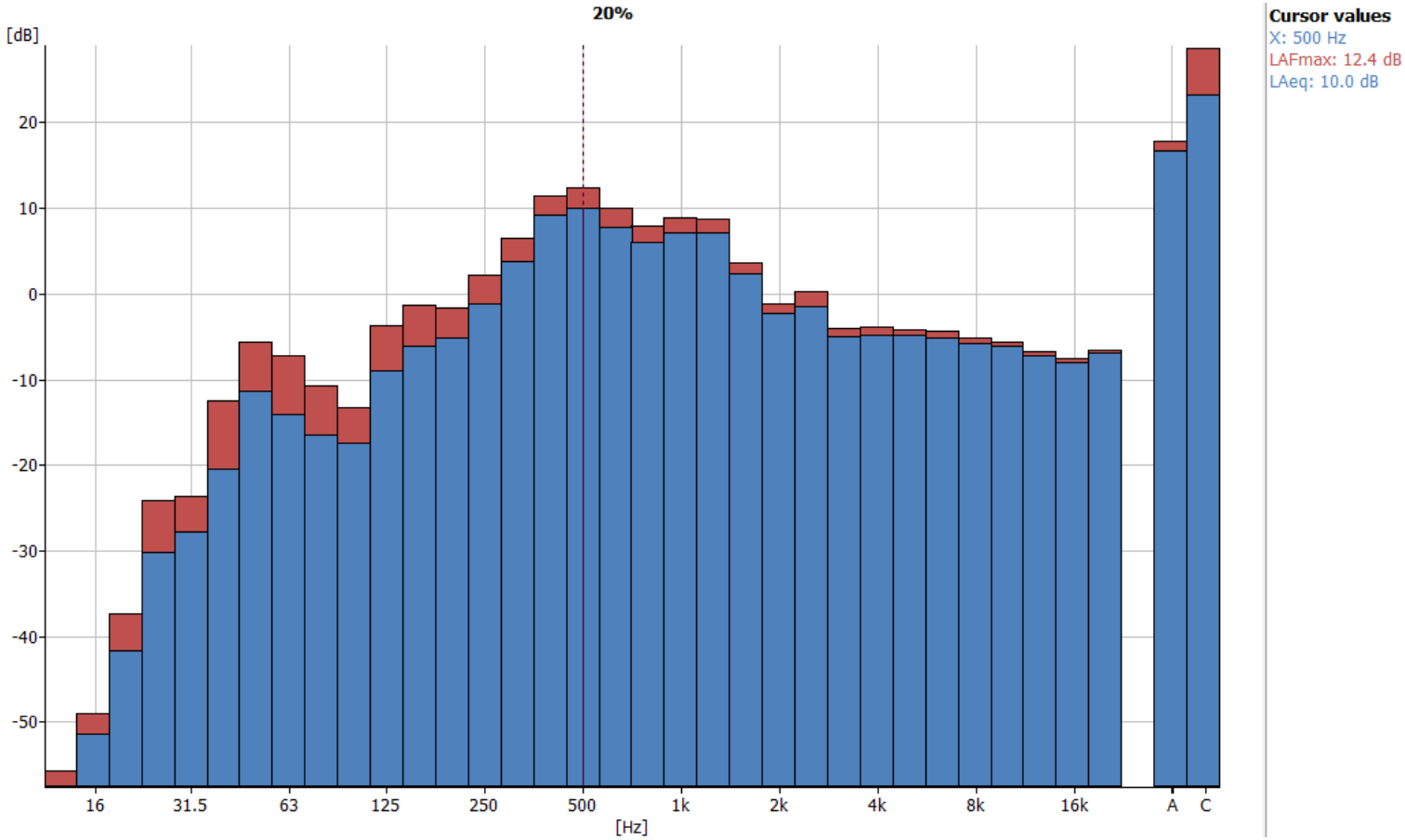


Overall Performance

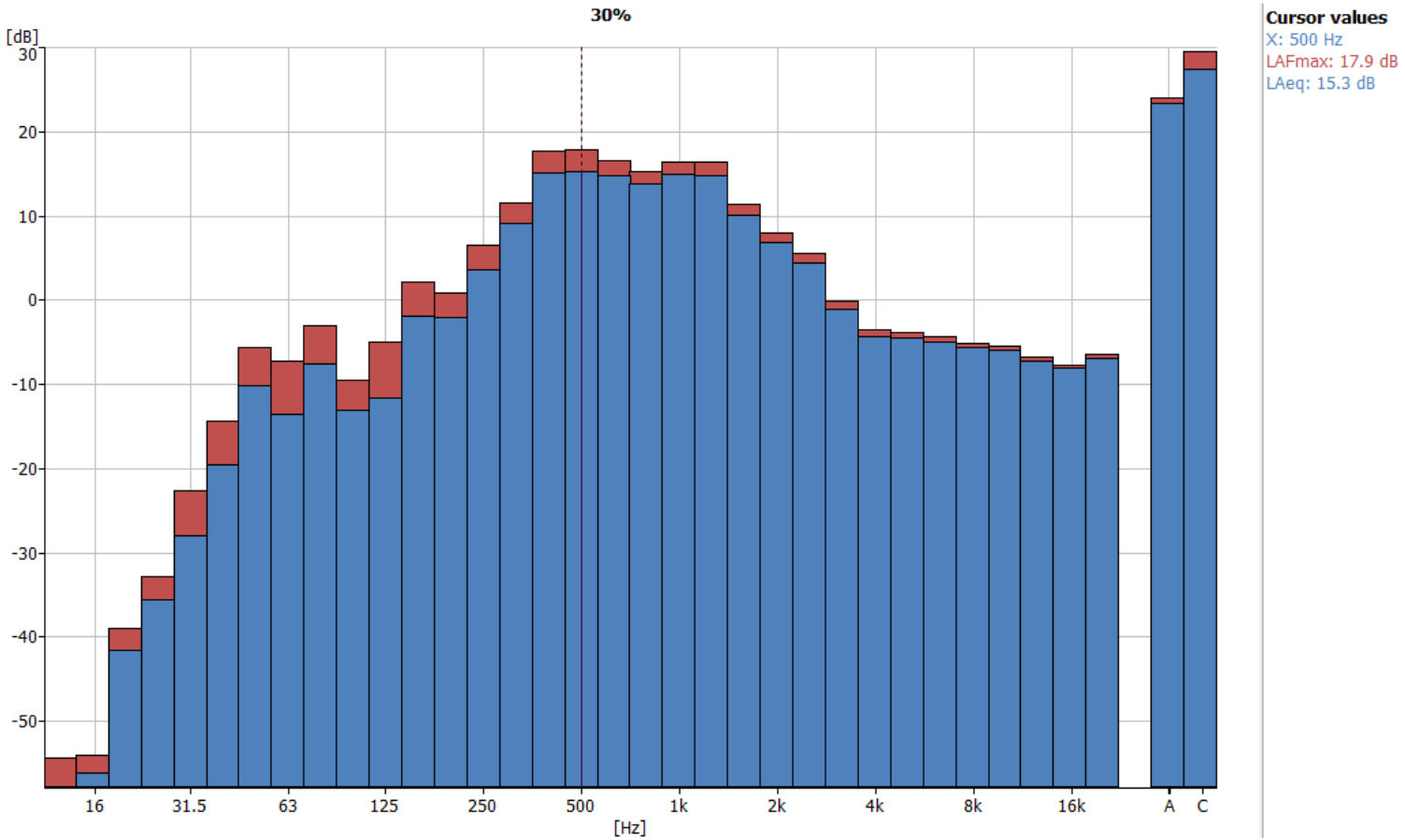


Frequency Plots

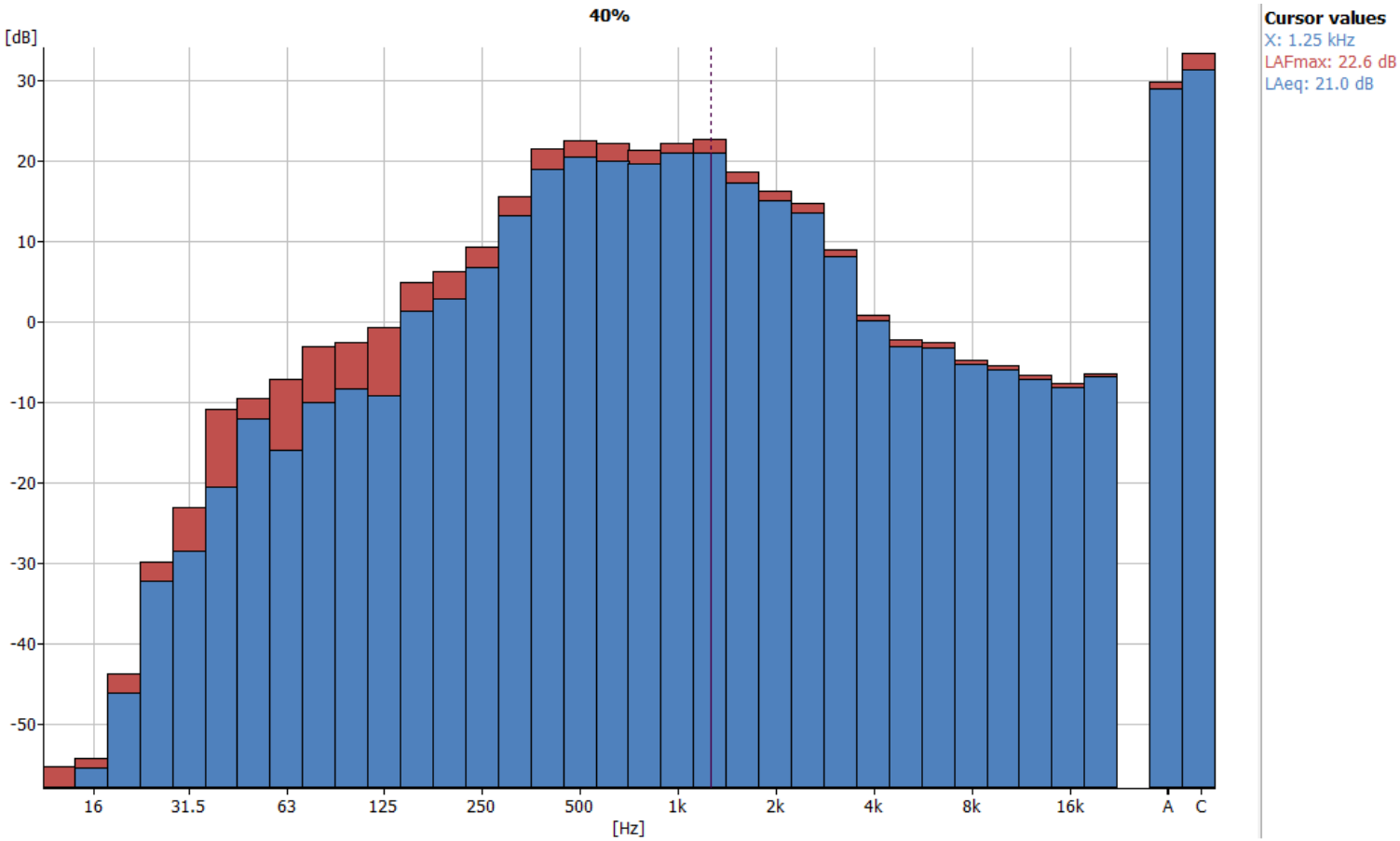
PWM 20%



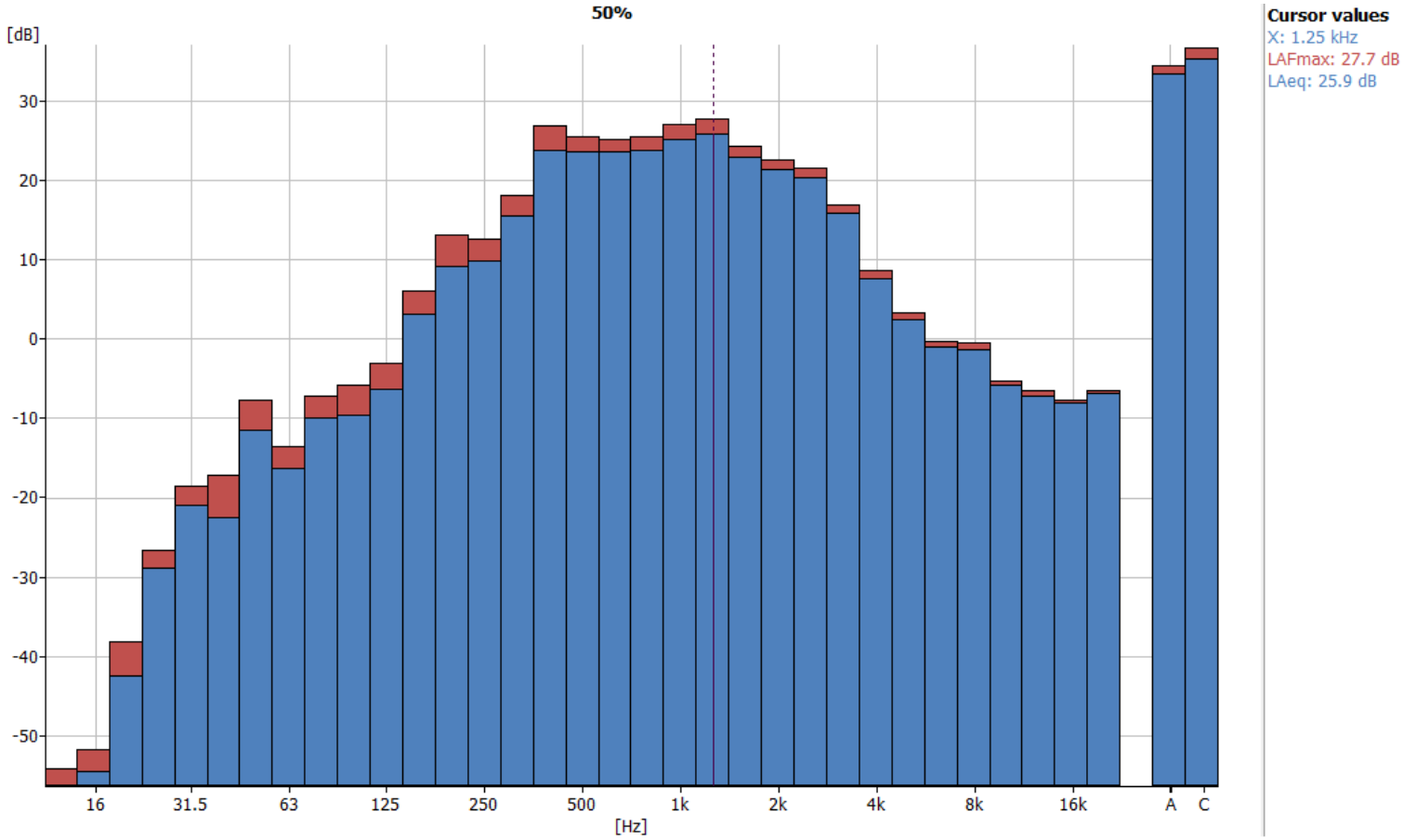
PWM 30%


30%
[dB]
30
20
10
0
-10
-20
-30
-40
-50
16
31.5
63
125
250
500
1k
2k
4k
8k
16k
A
C
[Hz]
Cursor values
X: 500 Hz
LAFmax: 17.9 dB
LAeq: 15.3 dB

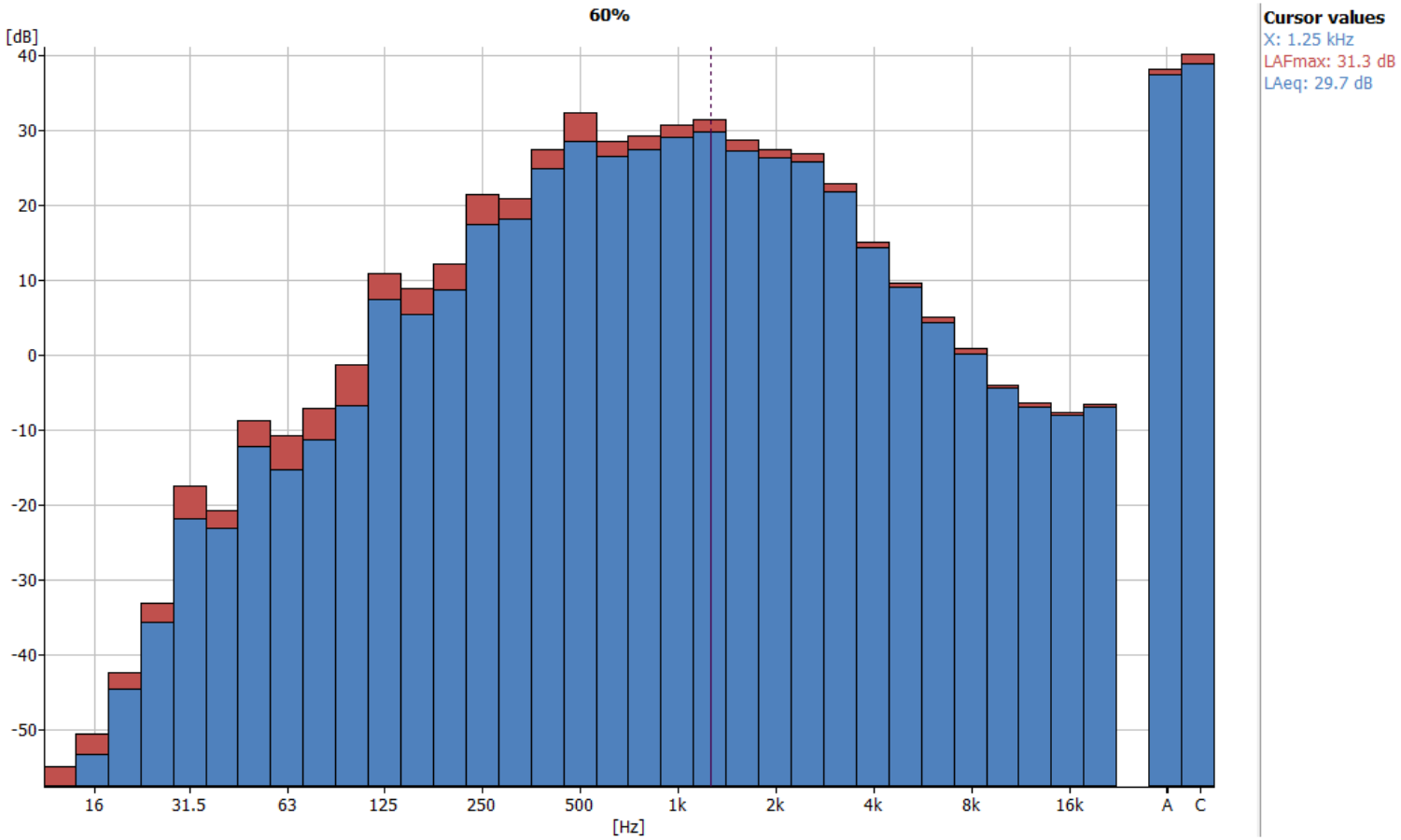
PWM 40%


40%
[dB]
30
20
10
0
-10
-20
-30
-40
-50
16
31.5
63
125
250
500
1k
2k
4k
8k
16k
A
C
[Hz]
Cursor values
X: 1.25 kHz
LAFmax: 22.6 dB
LAeq: 21.0 dB

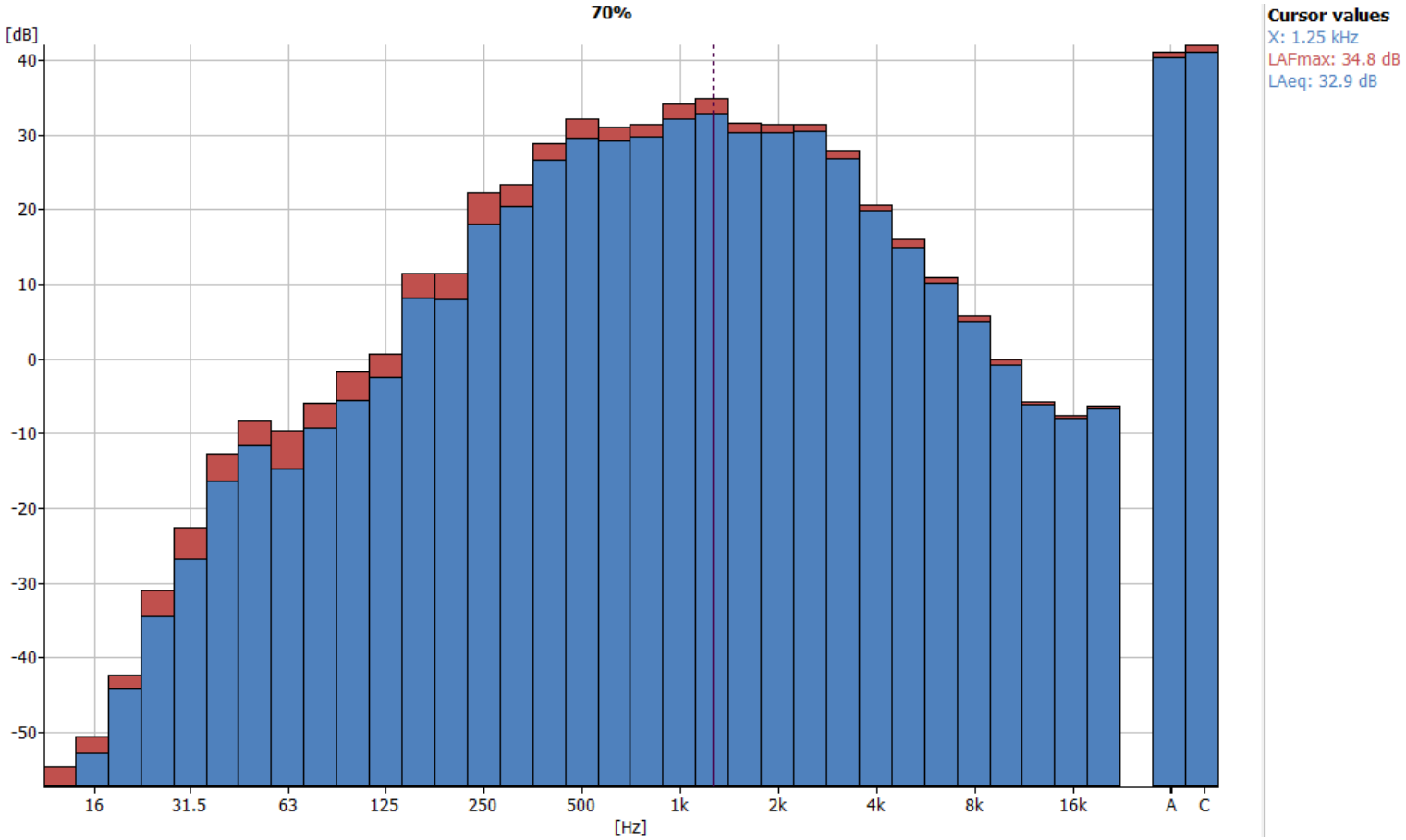
PWM 50%


50%
[dB]
30
20
10
0
-10
-20
-30
-40
-50
16
31.5
63
125
250
500
1k
2k
4k
8k
16k
A
C
[Hz]
Cursor values
X: 1.25 kHz
LAFmax: 27.7 dB
LAeq: 25.9 dB

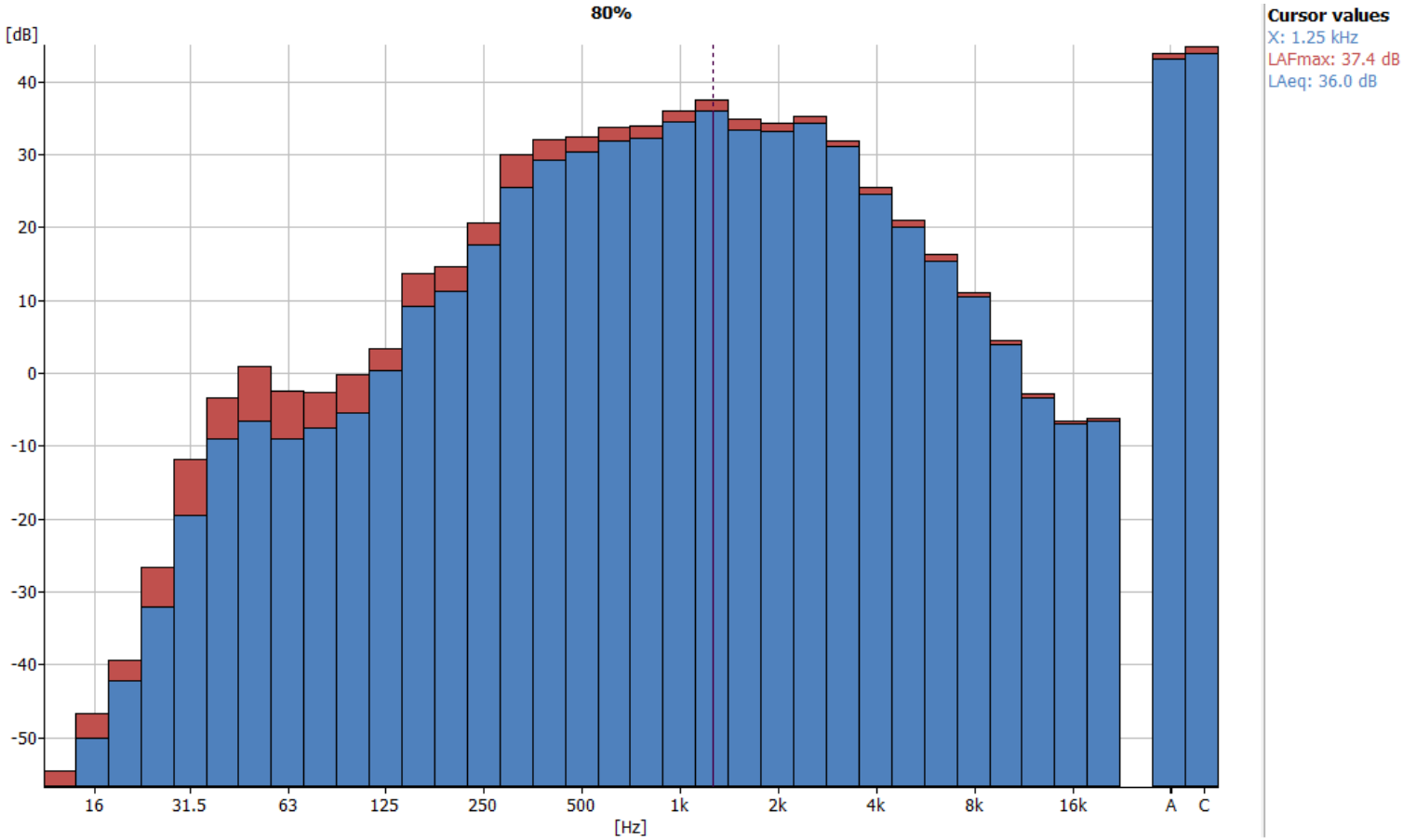
PWM 60%


60%
[dB]
40
30
20
10
0
-10
-20
-30
-40
-50
16
31.5
63
125
250
500
1k
2k
4k
8k
16k
A
C
[Hz]
Cursor values
X: 1.25 kHz
LAFmax: 31.3 dB
LAeq: 29.7 dB

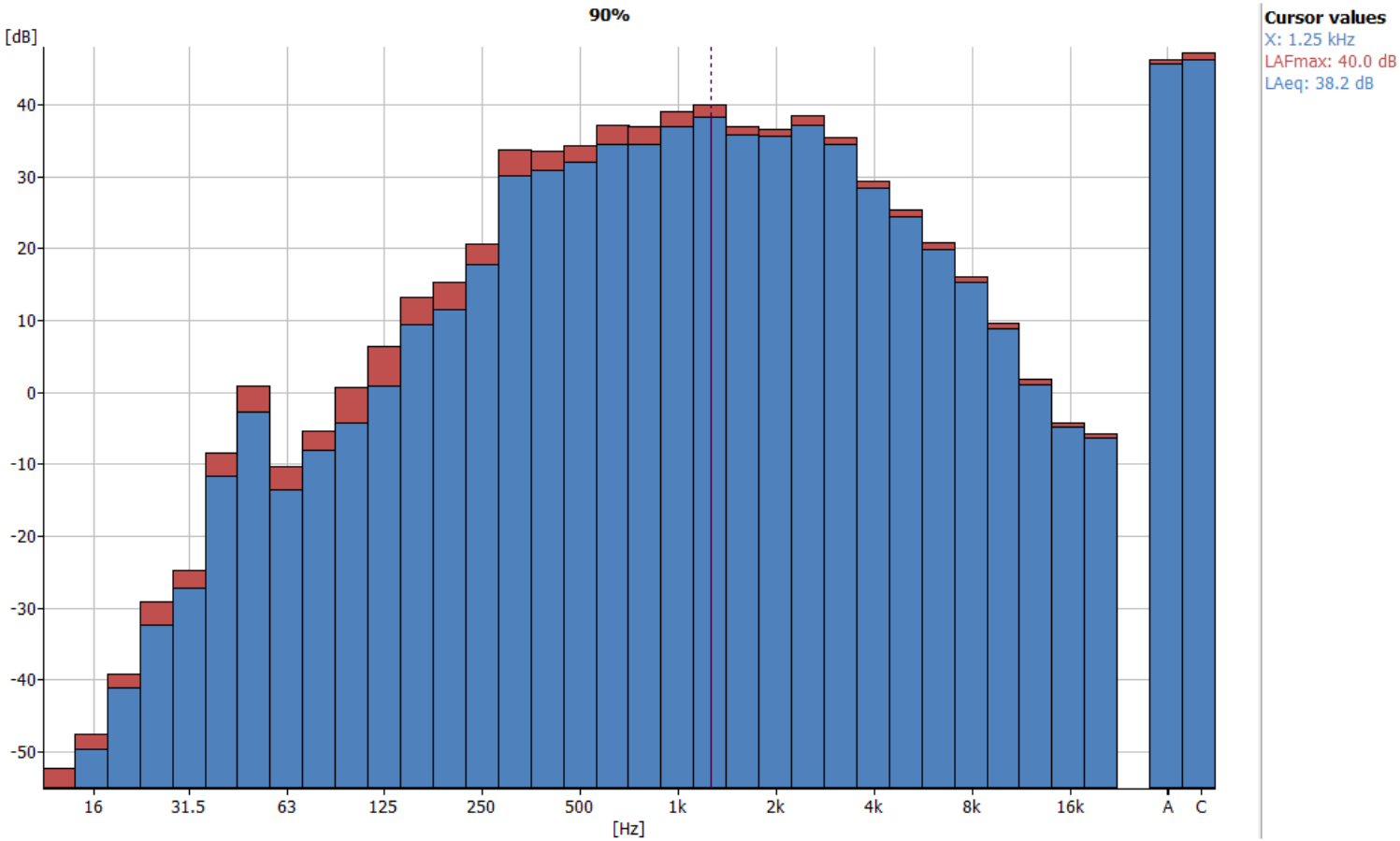
PWM 70%


70%
[dB]
40
30
20
10
0
-10
-20
-30
-40
-50
16
31.5
63
125
250
500
1k
2k
4k
8k
16k
A
C
[Hz]
Cursor values
X: 1.25 kHz
LAFmax: 34.8 dB
LAeq: 32.9 dB

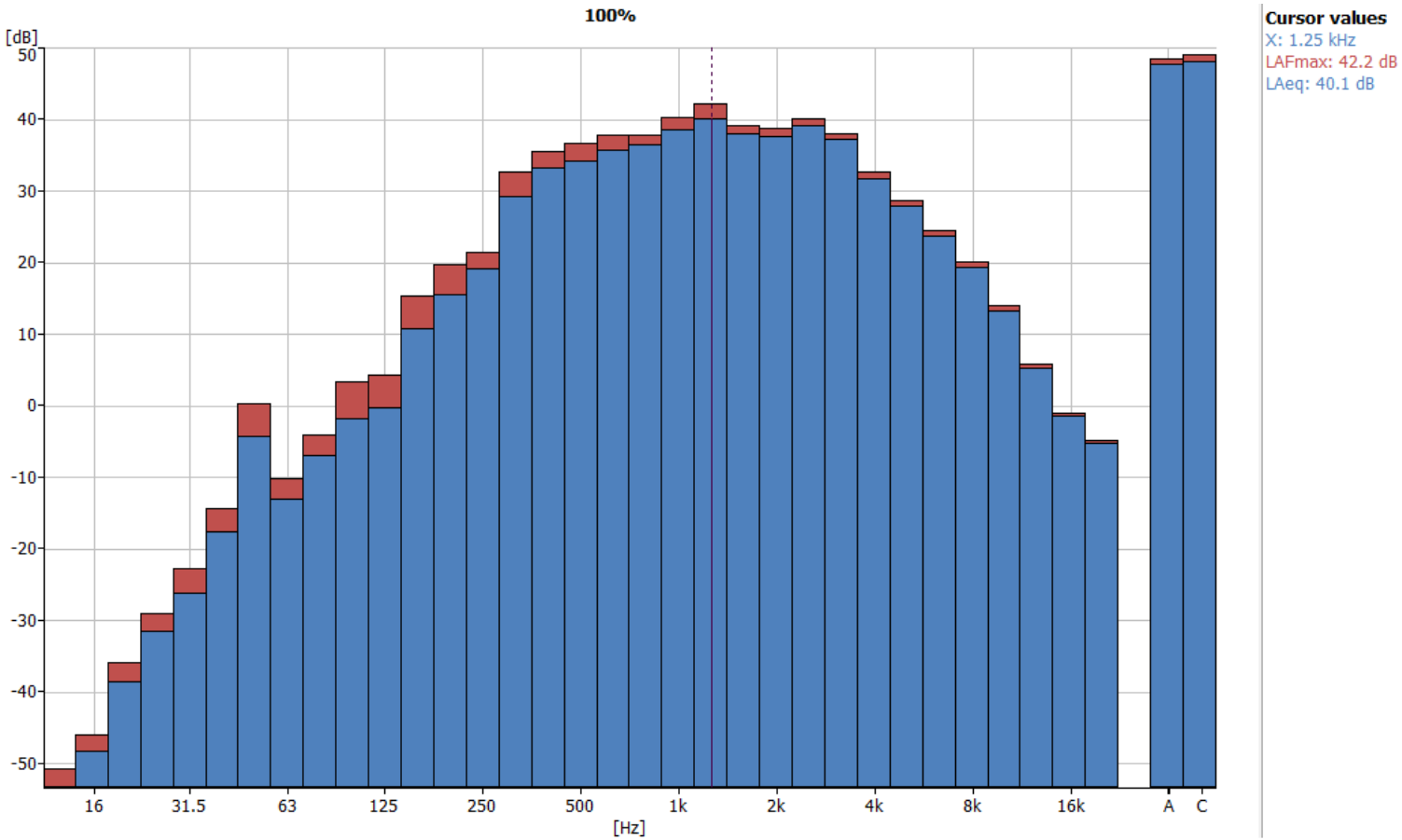
PWM 80%


80%
[dB]
40
30
20
10
0
-10
-20
-30
-40
-50
16
31.5
63
125
250
500
1k
2k
4k
8k
16k
A
C
[Hz]
Cursor values
X: 1.25 kHz
LAFmax: 37.4 dB
LAeq: 36.0 dB

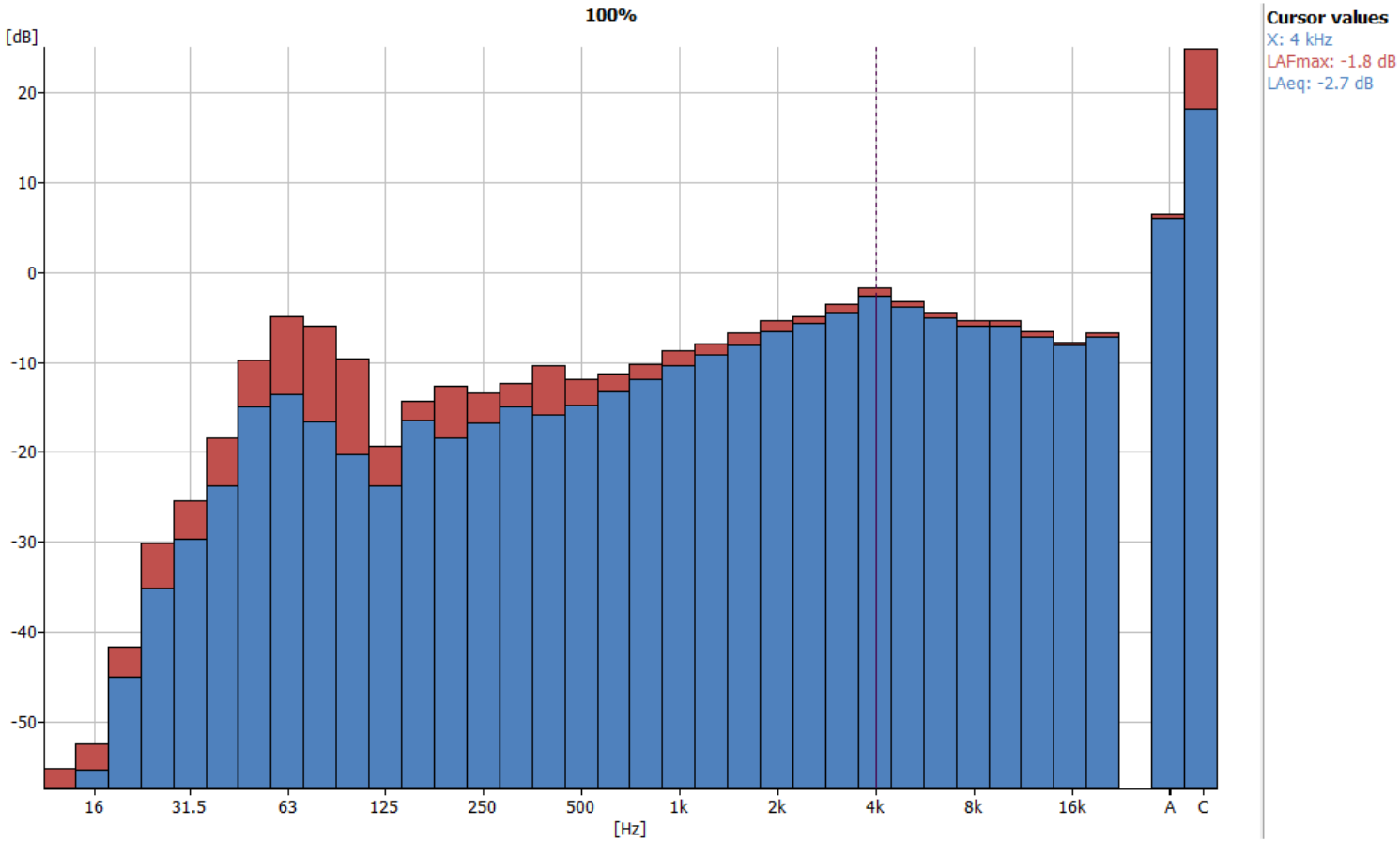
PWM 90%


90%
[dB]
40
30
20
10
0
-10
-20
-30
-40
-50
16
31.5
63
125
250
500
1k
2k
4k
8k
16k
A
C
[Hz]
Cursor values
X: 1.25 kHz
LAFmax: 40.0 dB
LAeq: 38.2 dB

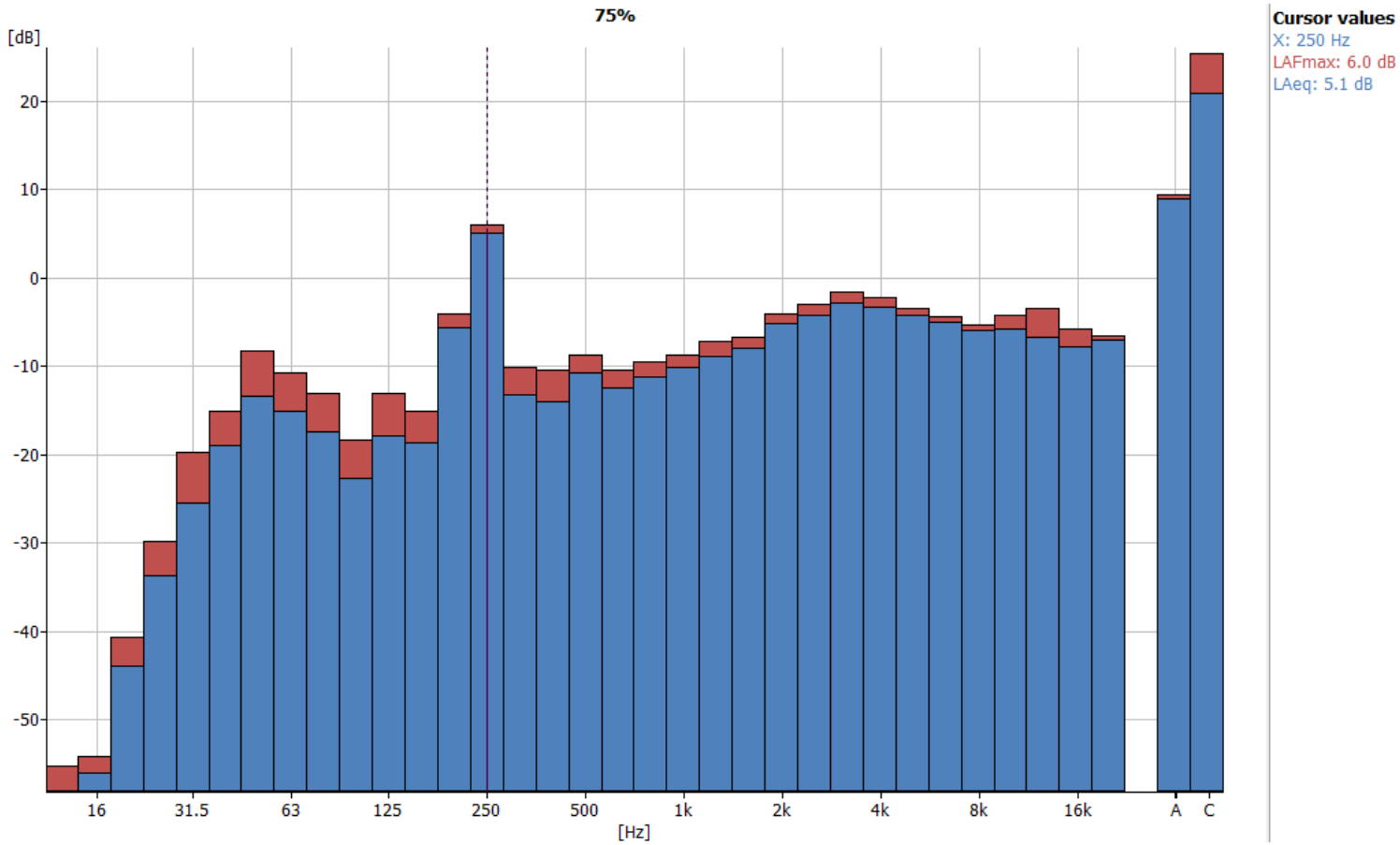
PWM 100%


100%
[dB]
50
40
30
20
10
0
-10
-20
-30
-40
-50
16
31.5
63
125
250
500
1k
2k
4k
8k
16k
A
C
[Hz]
Cursor values
X: 1.25 kHz
LAFmax: 42.2 dB
LAeq: 40.1 dB

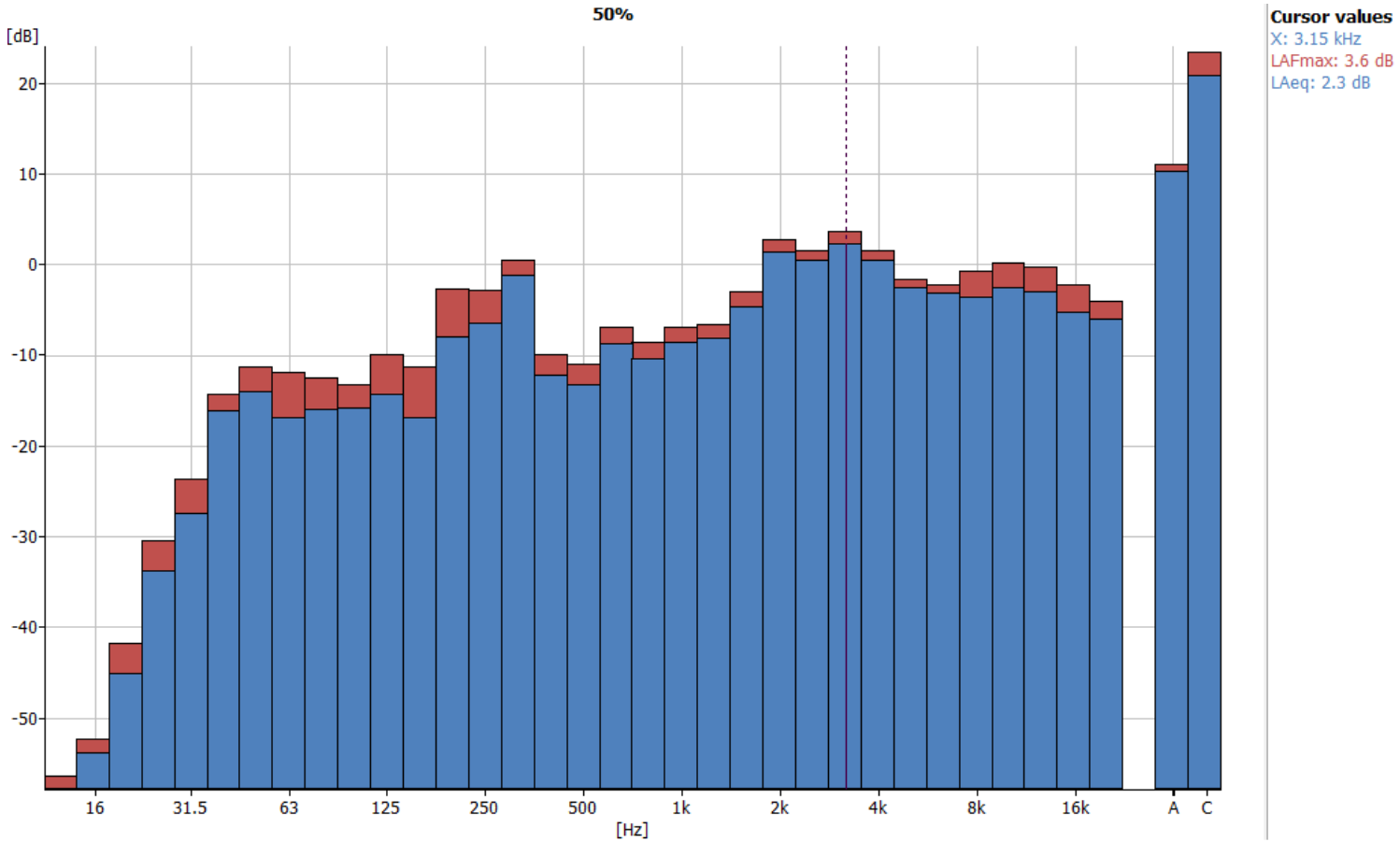
Pump 25%


100%
[dB]
20
10
0
-10
-20
-30
-40
-50
16
31.5
63
125
250
500
1k
2k
4k
8k
16k
A
C
[Hz]
Cursor values
X: 4 kHz
LAFmax: -1.8 dB
LAeq: -2.7 dB

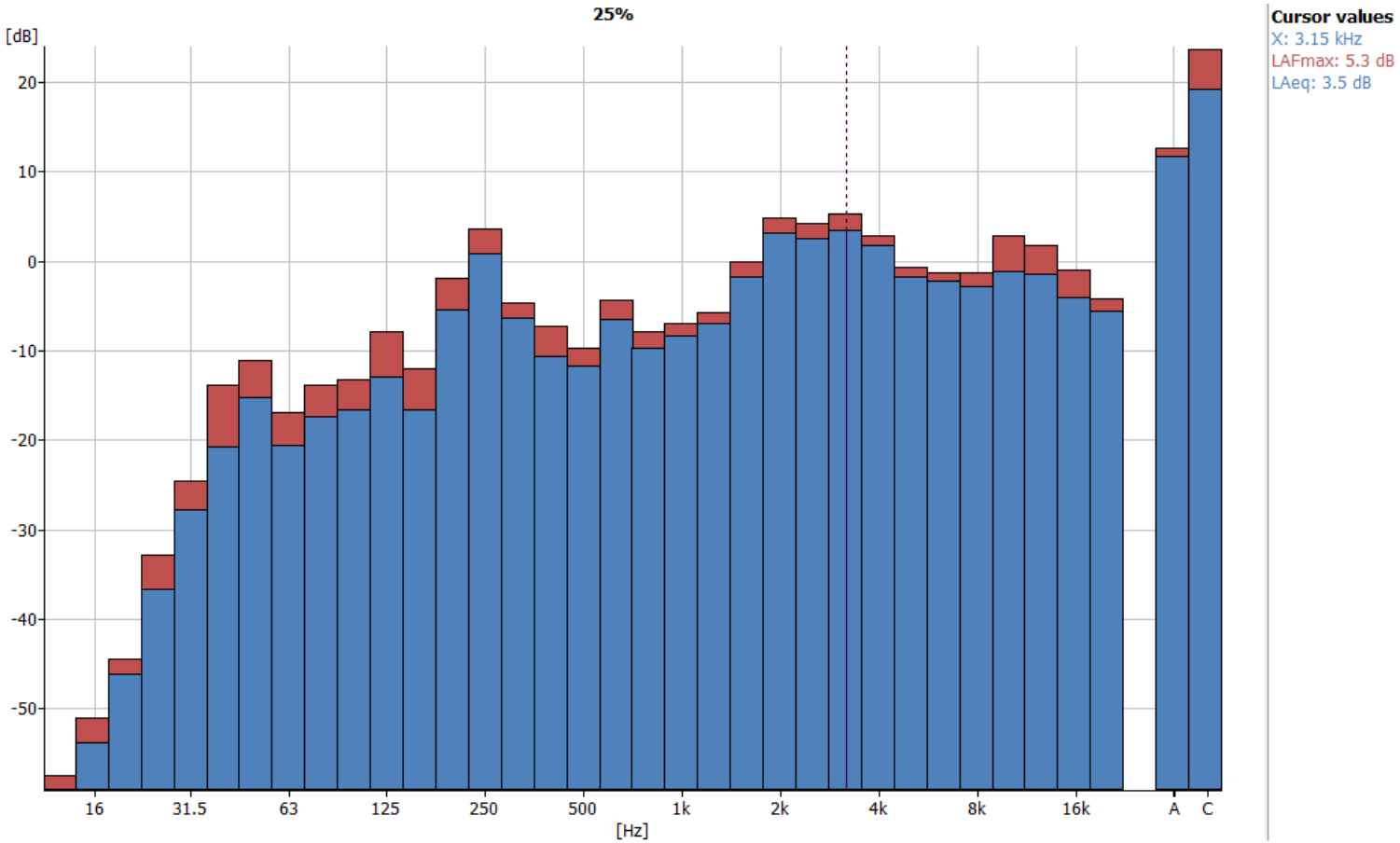
Pump 50%


75%
[dB]
20
10
0
-10
-20
-30
-40
-50
16
31.5
63
125
250
500
1k
2k
4k
8k
16k
A
C
[Hz]
Cursor values
X: 250 Hz
LAFmax: 6.0 dB
LAeq: 5.1 dB

Pump 75%


50%
[dB]
20
10
0
-10
-20
-30
-40
-50
16
31.5
63
125
250
500
1k
2k
4k
8k
16k
A
C
[Hz]
Cursor values
X: 3.15 kHz
LAFmax: 3.6 dB
LAeq: 2.3 dB

Pump 100%


25%
[dB]
20
10
0
-10
-20
-30
-40
-50
16
31.5
63
125
250
500
1k
2k
4k
8k
16k
A
C
[Hz]
Cursor values
X: 3.15 kHz
LAFmax: 5.3 dB
LAeq: 3.5 dB

ARCTIC Liquid Freezer III Pro 360

