# 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<br>(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<br>(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 |

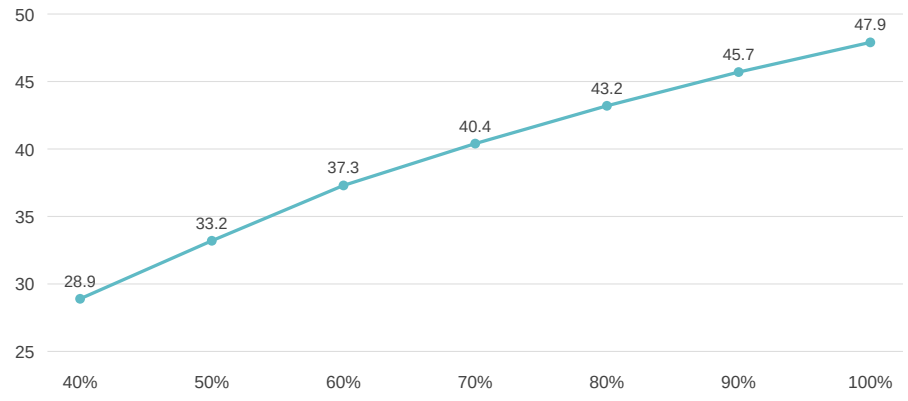
## Noise Output and Fan Speed

### Table

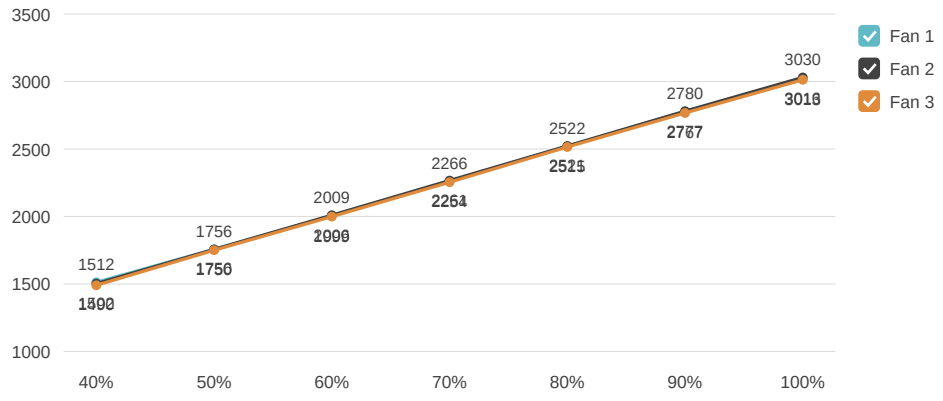
| Fan Setting | Noise (dB(A)) | Fan 1 (RPM) | Fan 2 (RPM) | Fan 3 (RPM) |
|---|---|---|---|---|
| 40% | 28.9 | 1512 | 1502 | 1490 |
| 50% | 33.2 | 1756 | 1756 | 1750 |
| 60% | 37.3 | 2006 | 2009 | 1999 |
| 70% | 40.4 | 2261 | 2266 | 2254 |
| 80% | 43.2 | 2521 | 2522 | 2515 |
| 90% | 45.7 | 2777 | 2780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

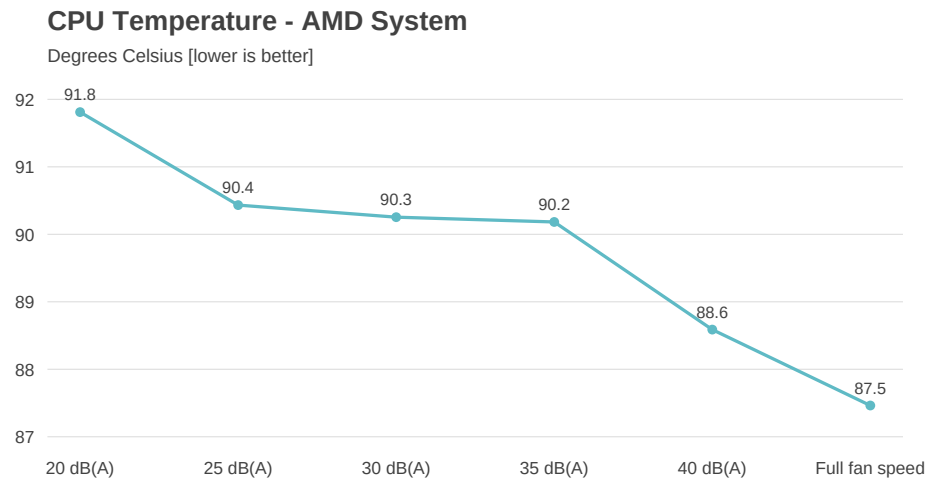
# AMD System Test Results

## Table

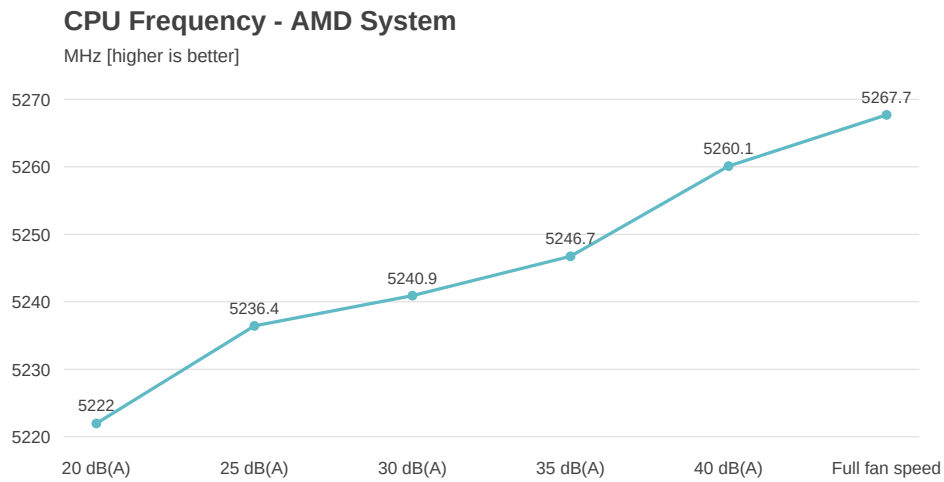
| Condition | CPU Temperature (°C) | CPU Frequency (MHz) | CPU Power (W) | Overall Performance |
|---|---|---|---|---|
| 20 dB(A) | 91.8 | 5222 | 199.6 | 11350 |
| 25 dB(A) | 90.4 | 5236 | 202.0 | 11699 |
| 30 dB(A) | 90.3 | 5241 | 202.8 | 11775 |
| 35 dB(A) | 90.2 | 5247 | 202.7 | 11793 |
| 40 dB(A)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

## Graphs

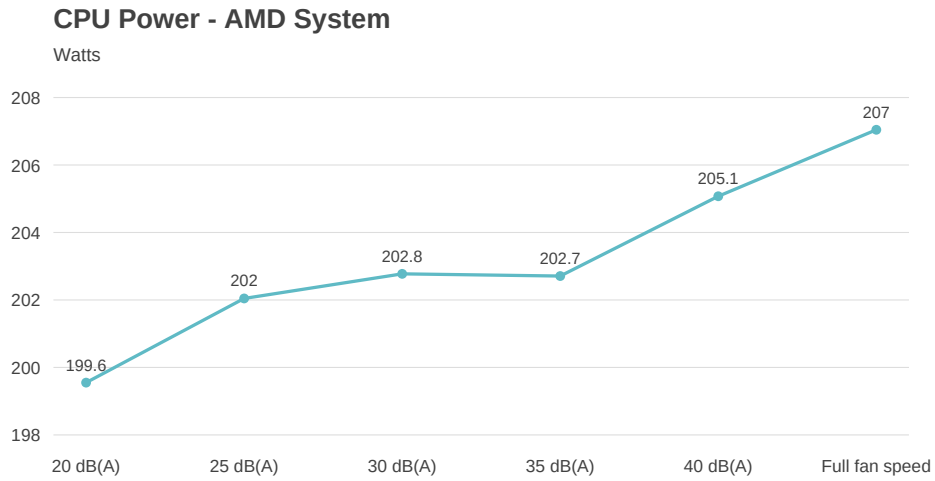
### CPU Temperature



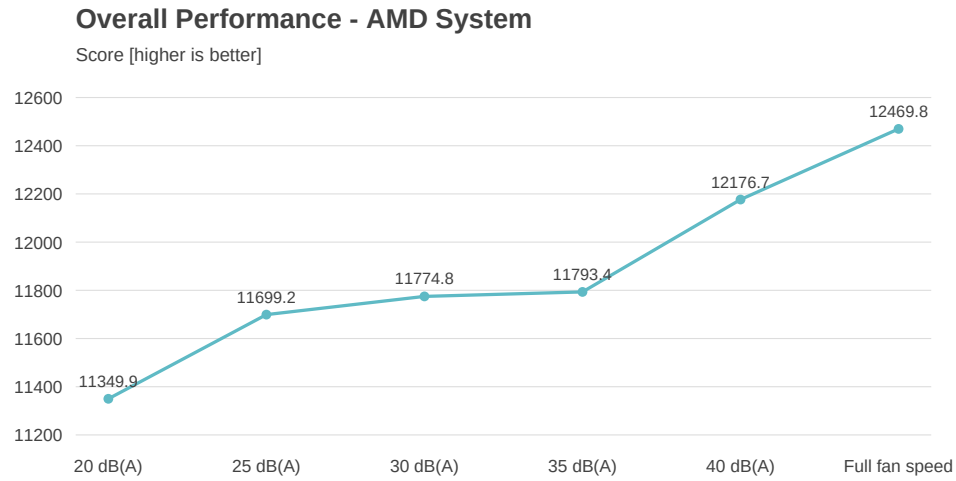

### CPU Frequency



**CPU Power**




**Overall Performance**



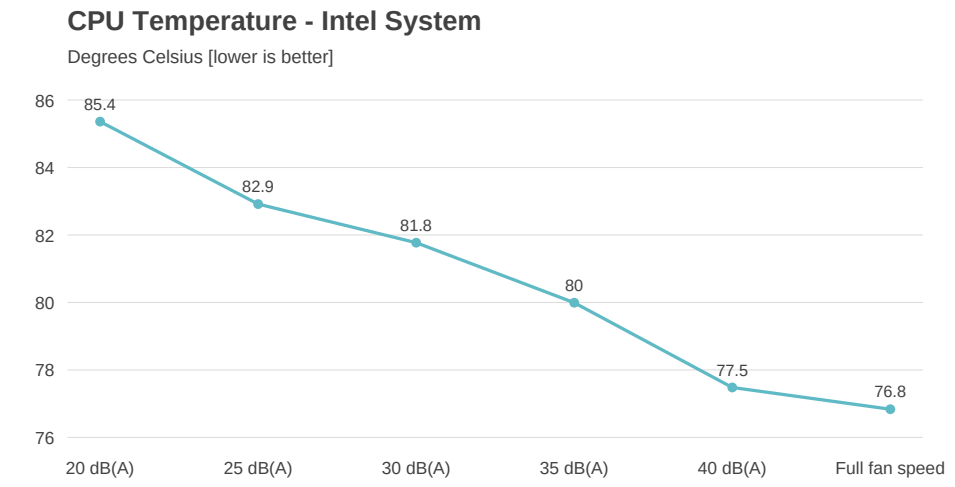

## Intel System Test Results

### Table

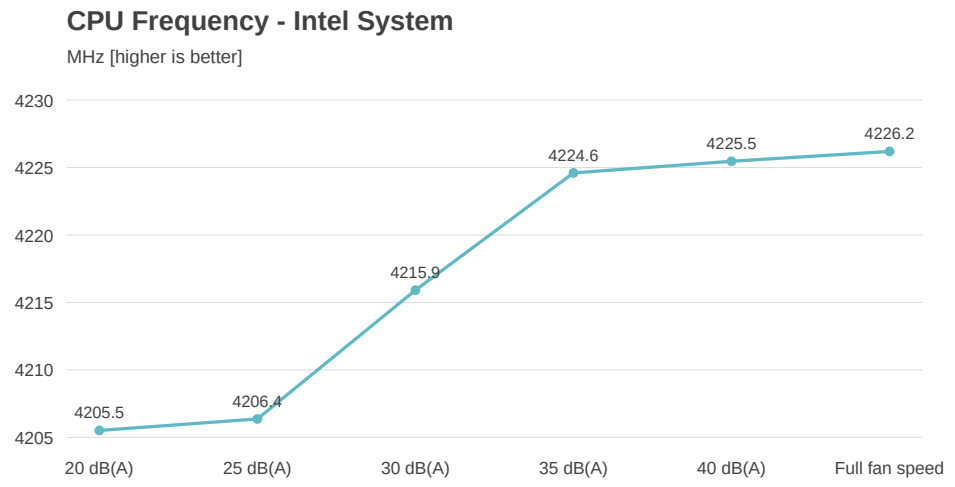
| Condition | CPU Temperature (°C) | CPU Frequency (MHz) | CPU Power (W) | Overall Performance |
|---|---|---|---|---|
| 20 dB(A) | 85.4 | 4206 | 302.7 | 14915 |
| 25 dB(A) | 82.9 | 4206 | 303.3 | 15385 |
| 30 dB(A) | 81.8 | 4216 | 303.4 | 15644 |
| 35 dB(A) | 80.0 | 4225 | 303.7 | 16038 |
| 40 dB(A)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

## Graphs

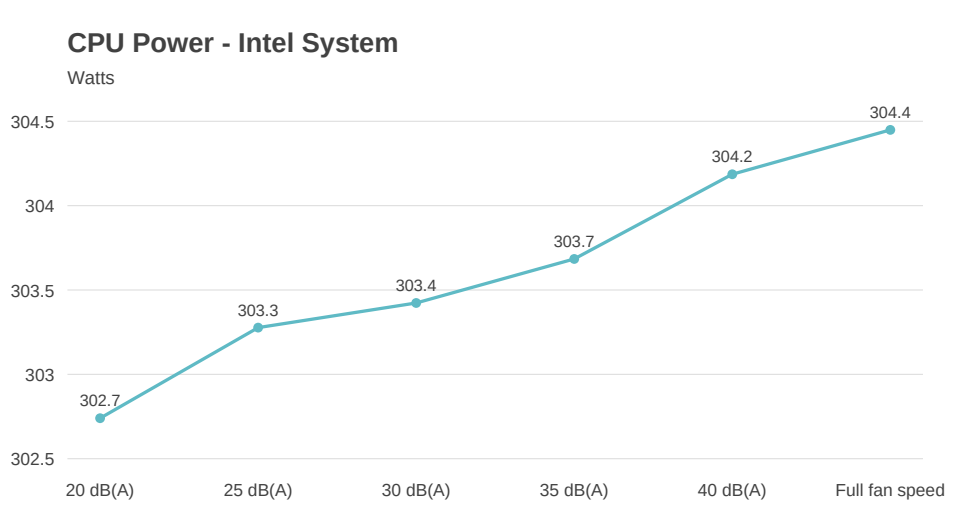
### CPU Temperature



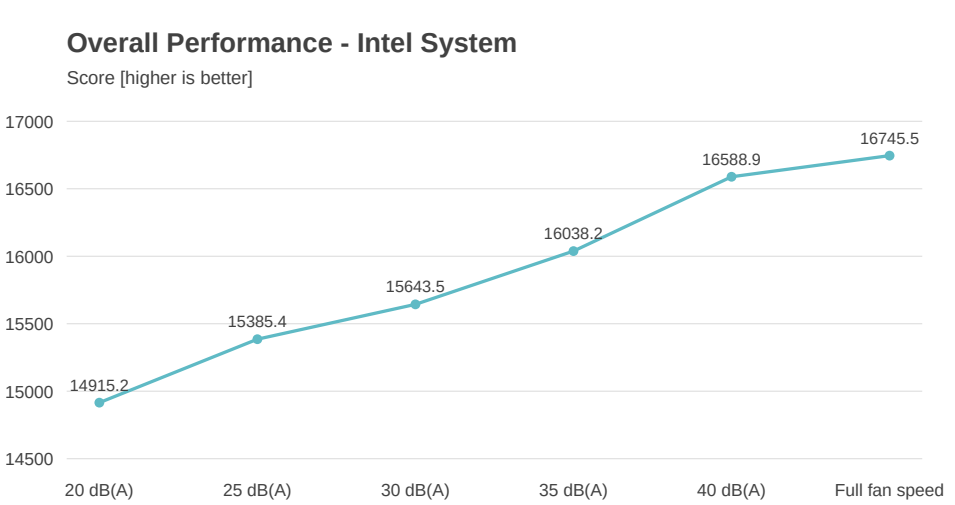

### CPU Frequency




### CPU Power

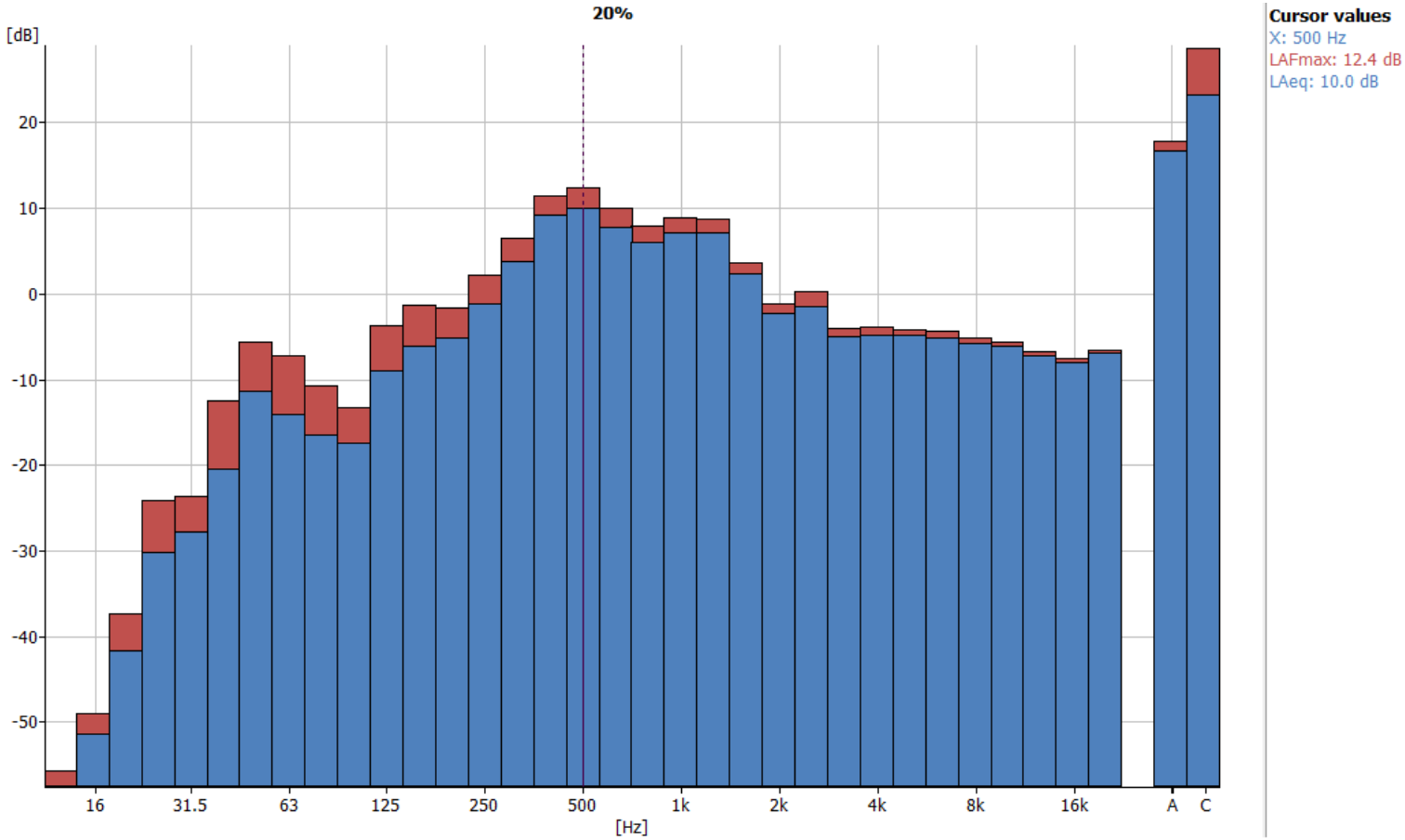



### Overall Performance

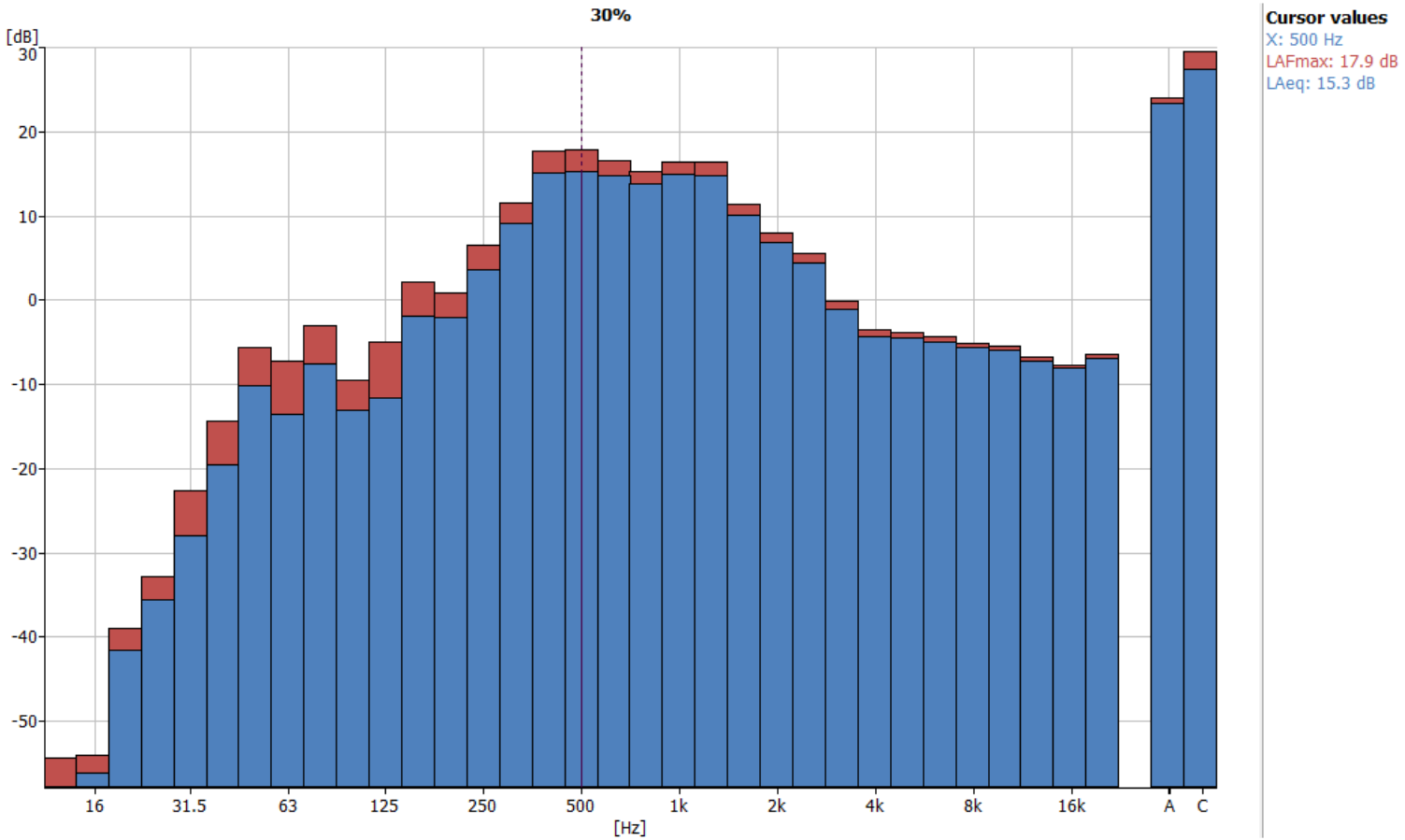


## Frequency Plots

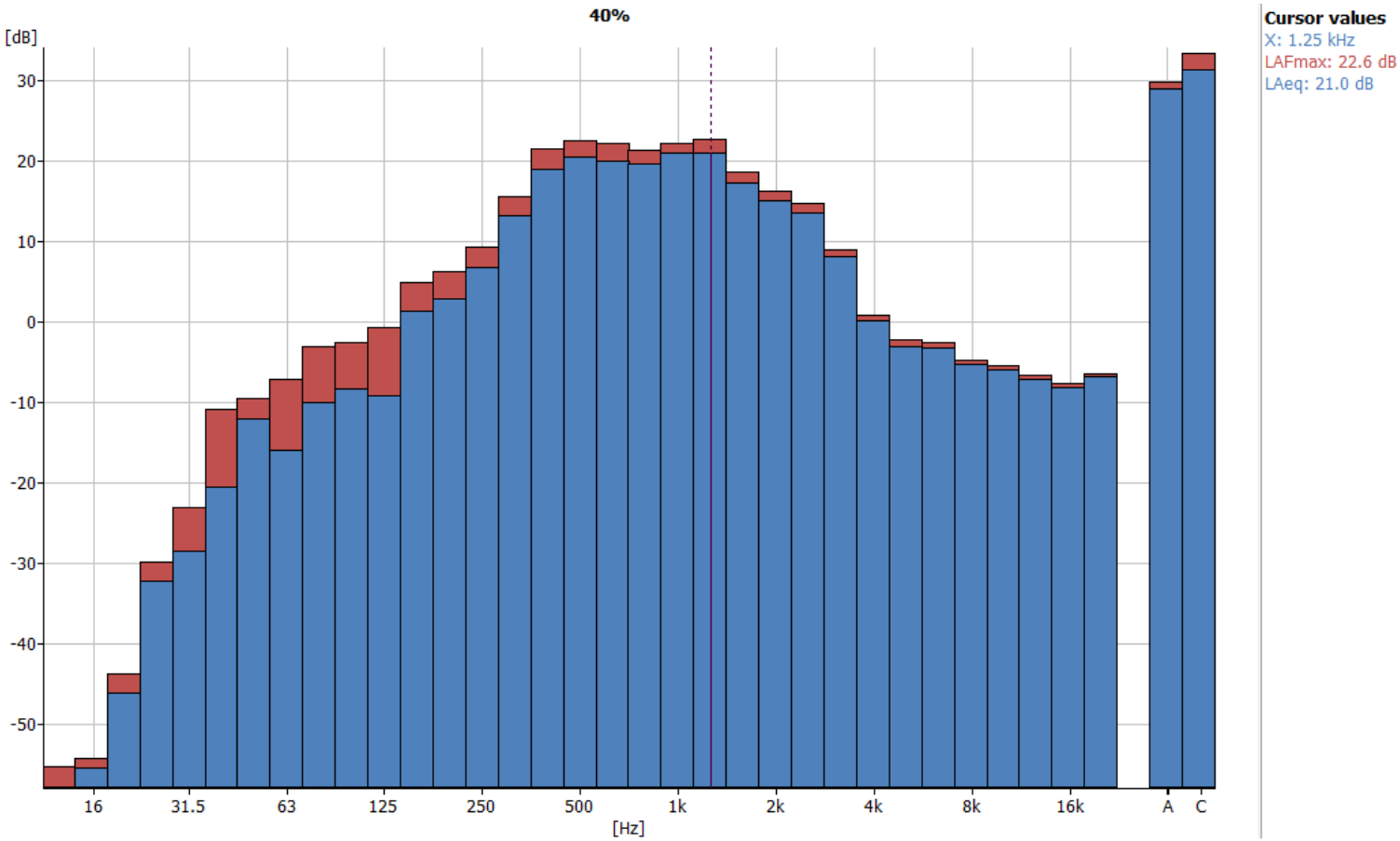
### PWM 20%



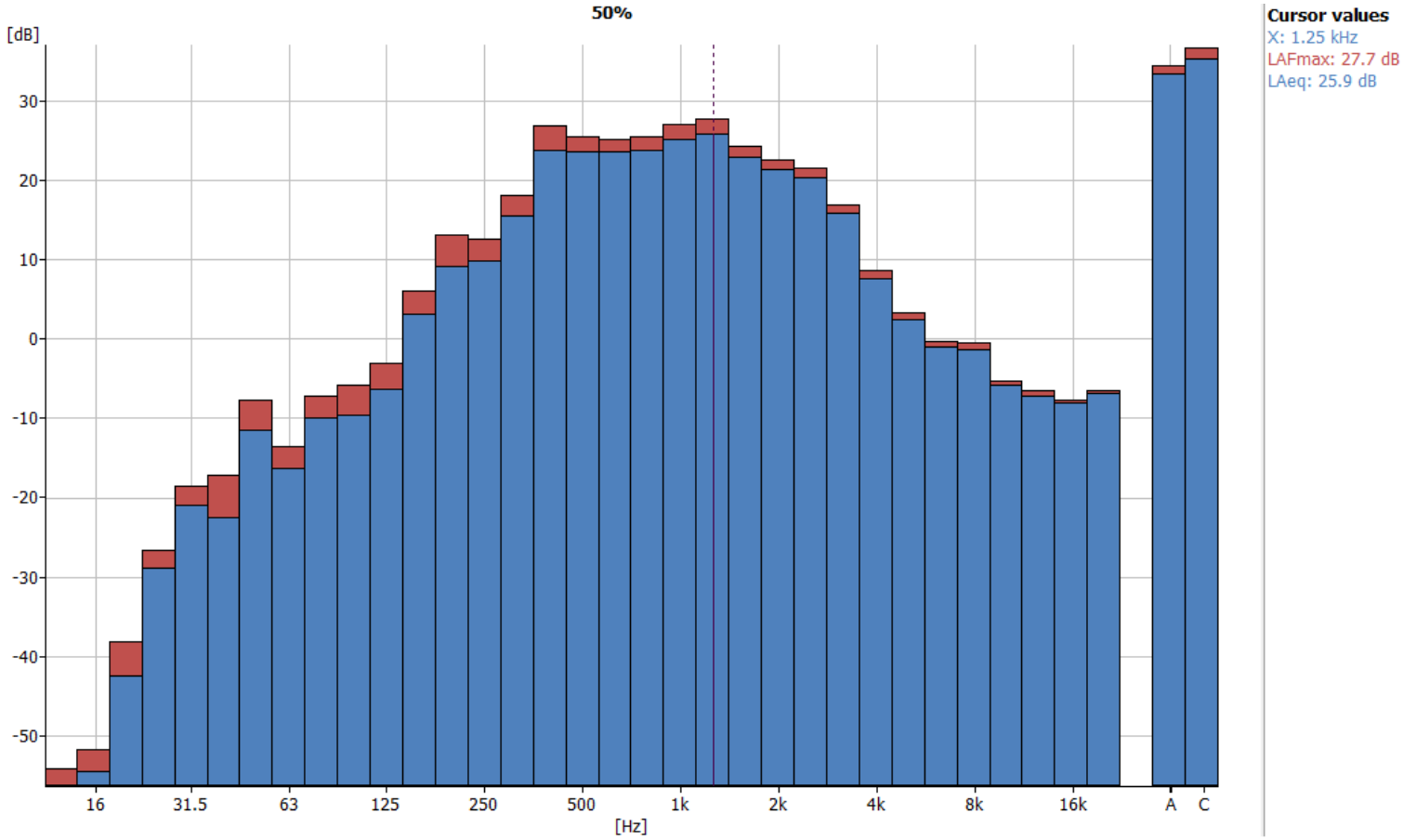

### PWM 30%


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

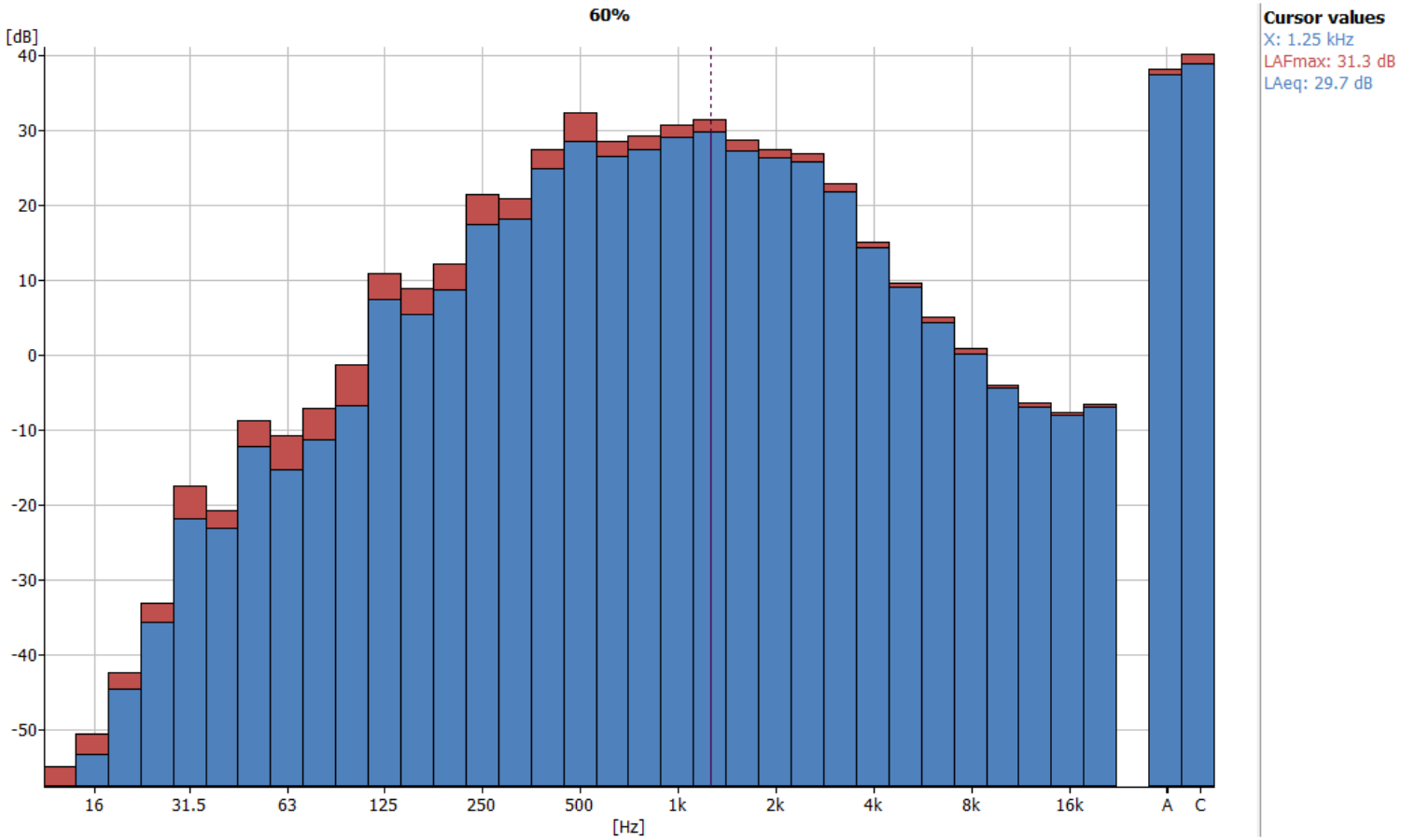
**PWM 40%**


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

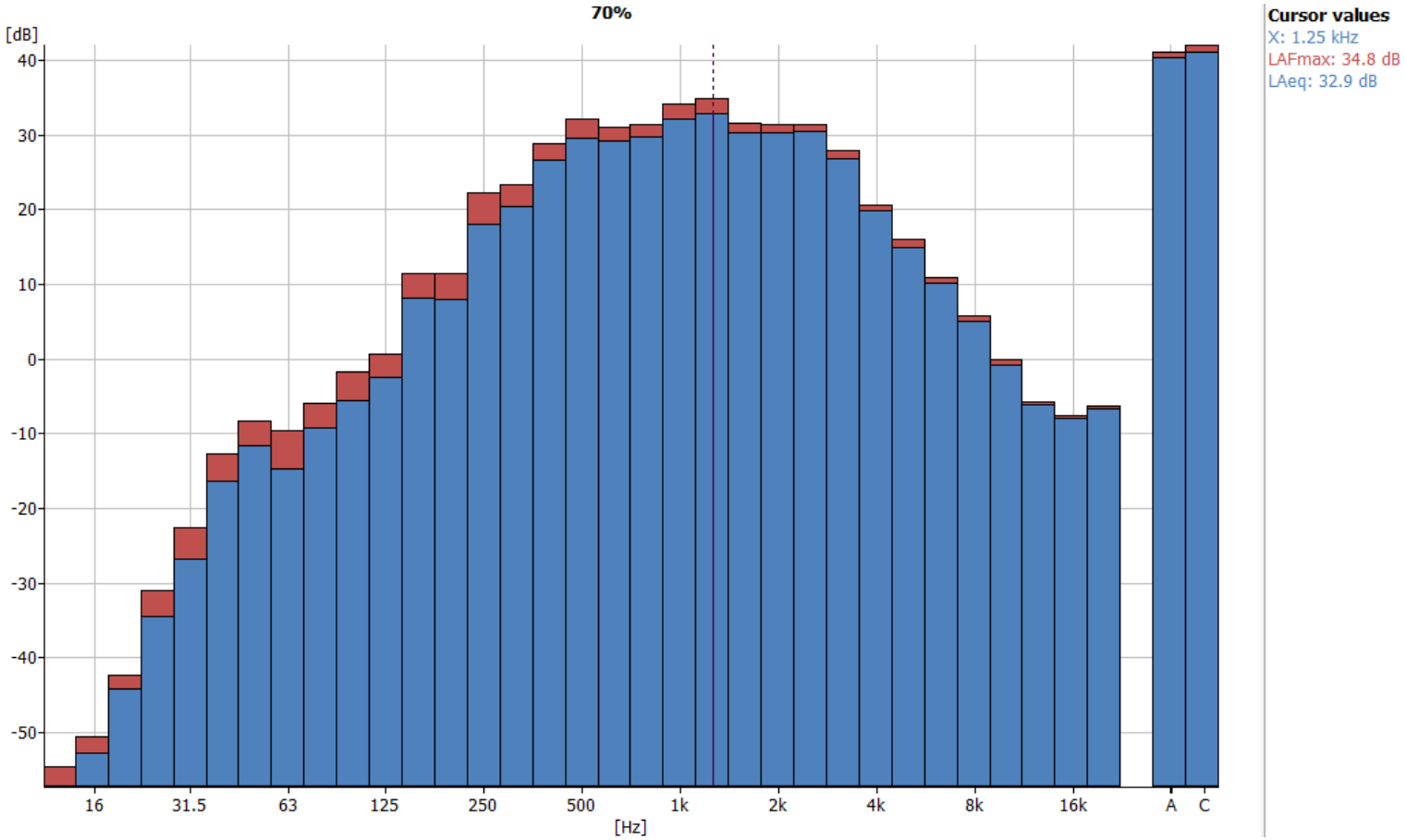
**PWM 50%**


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

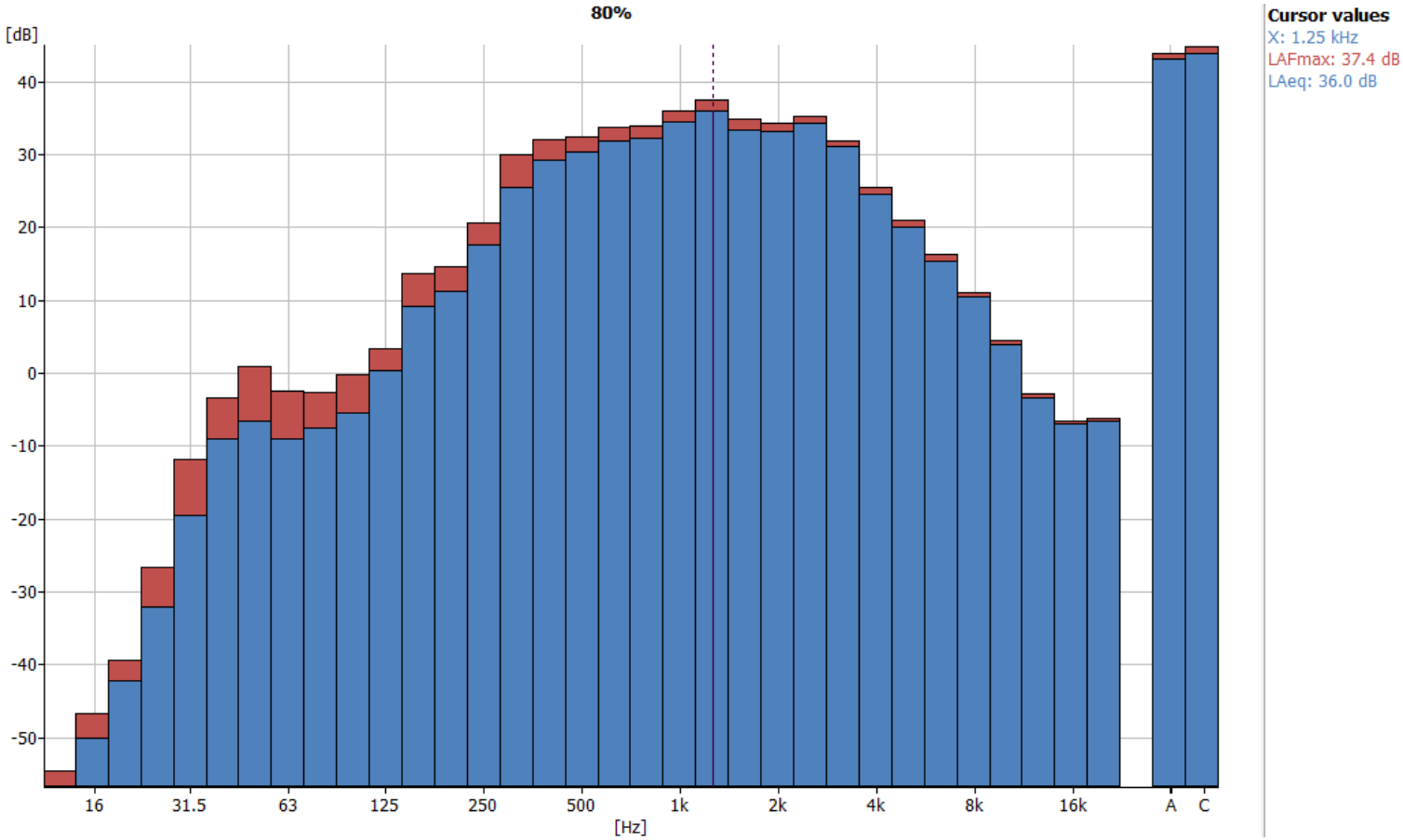
**PWM 60%**


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

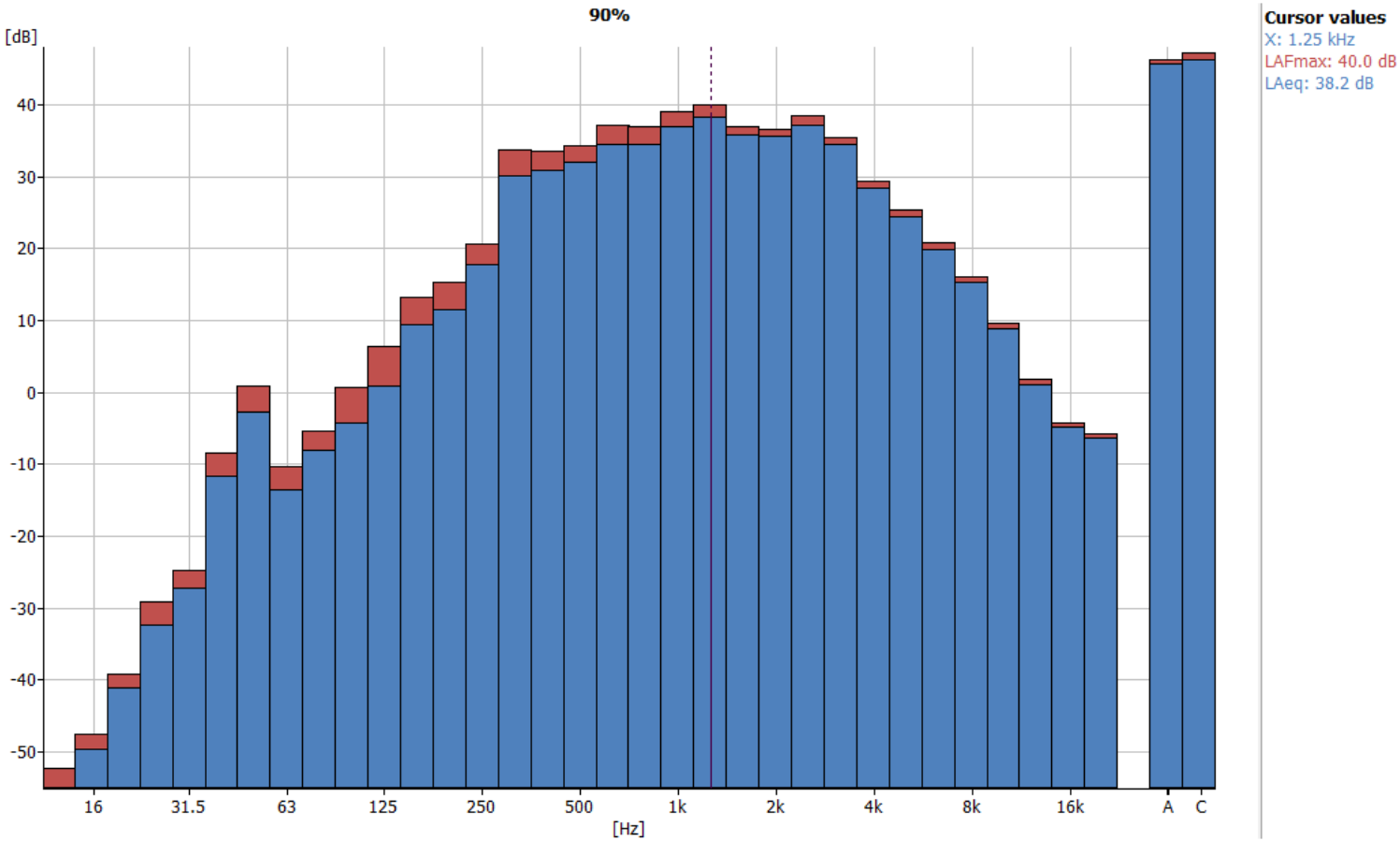
**PWM 70%**


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

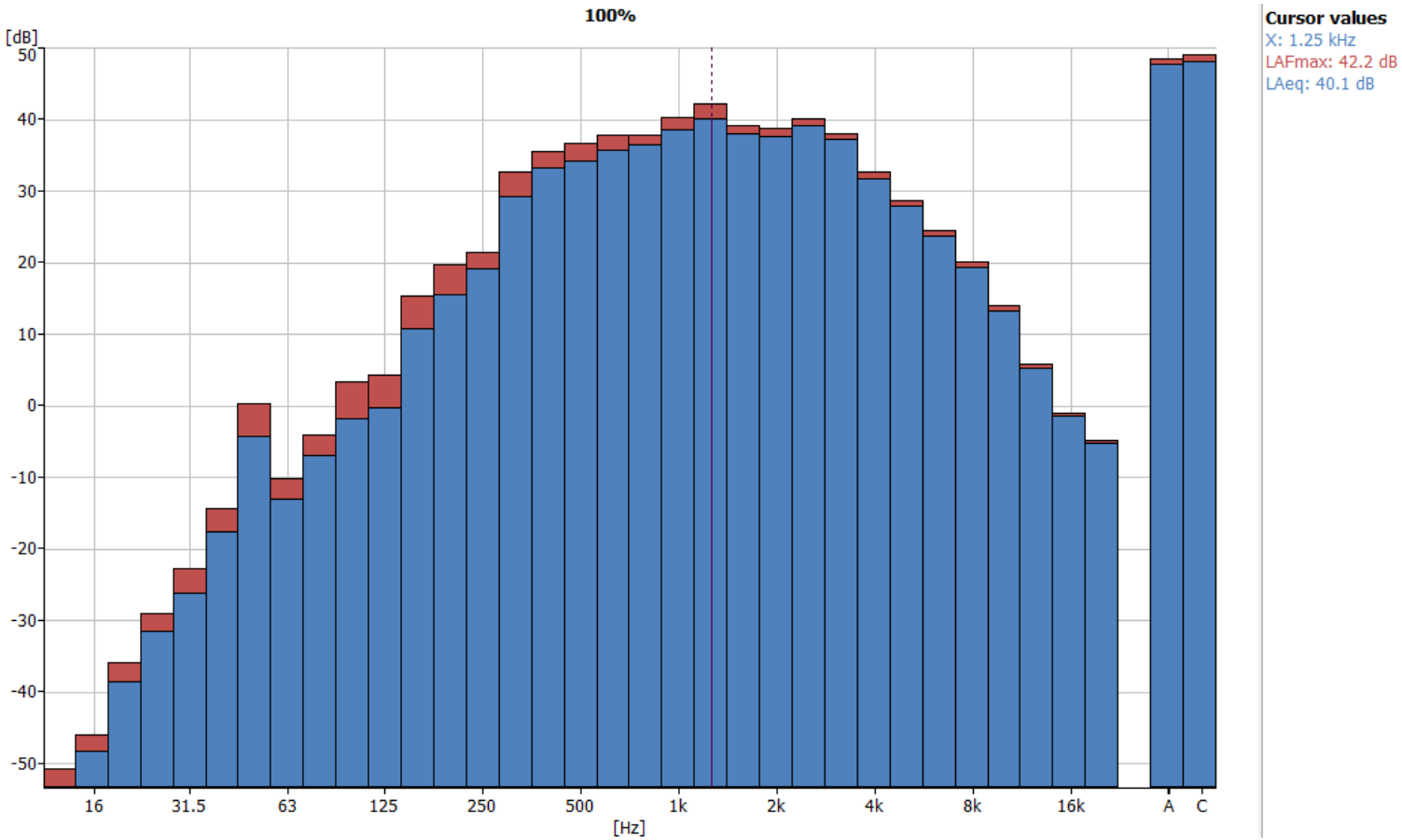
**PWM 80%**


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

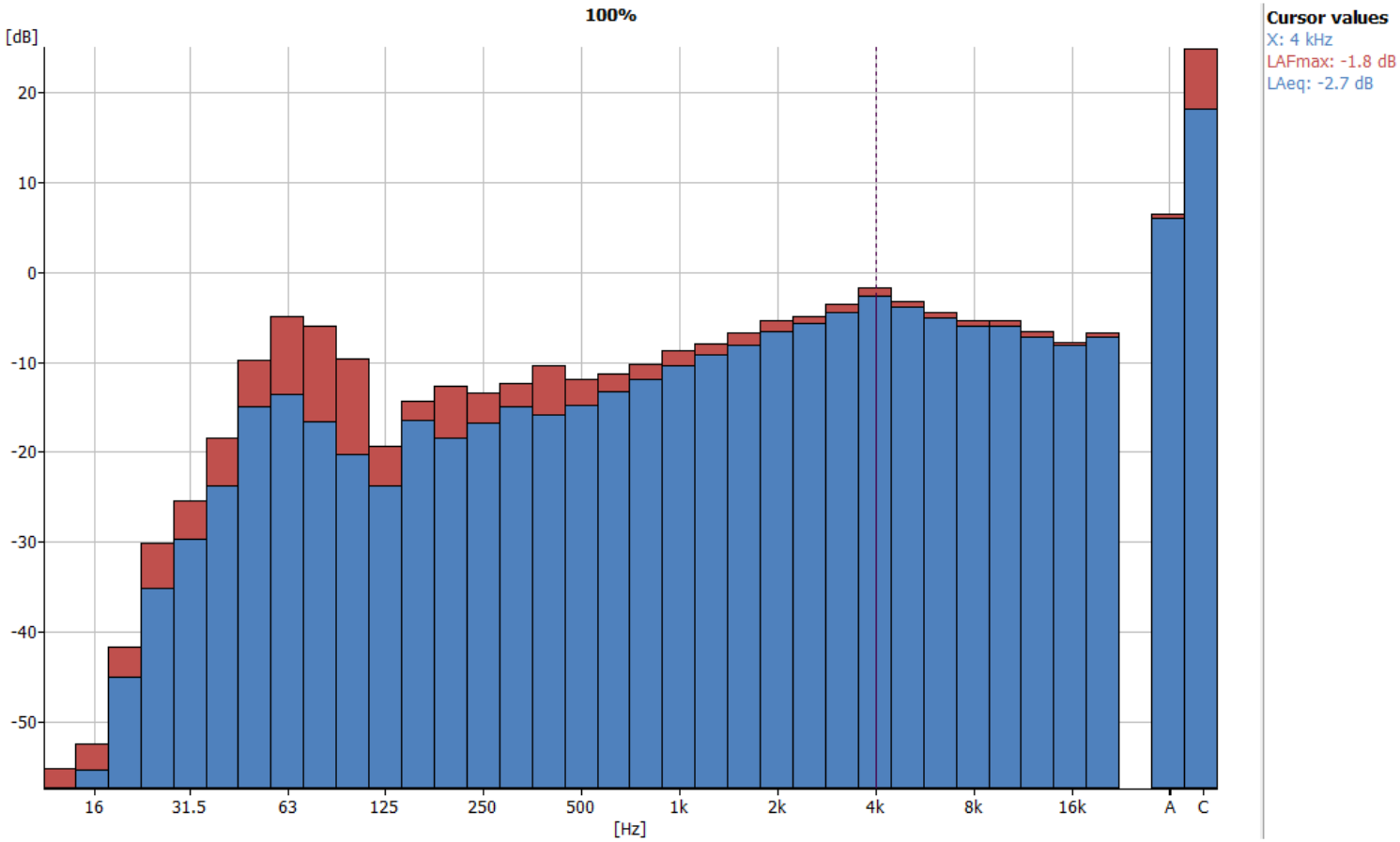
**PWM 90%**


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

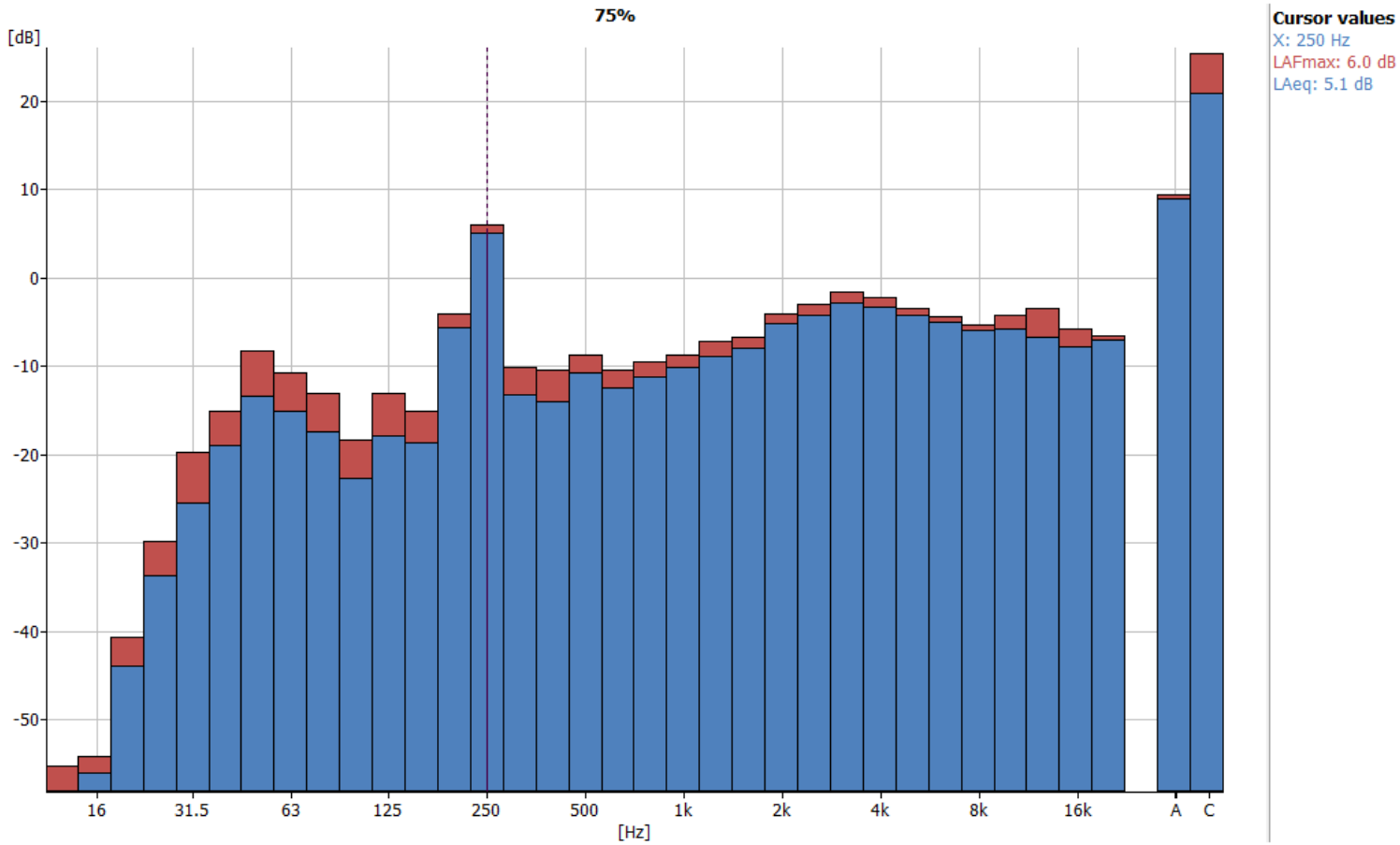
**PWM 100%**


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

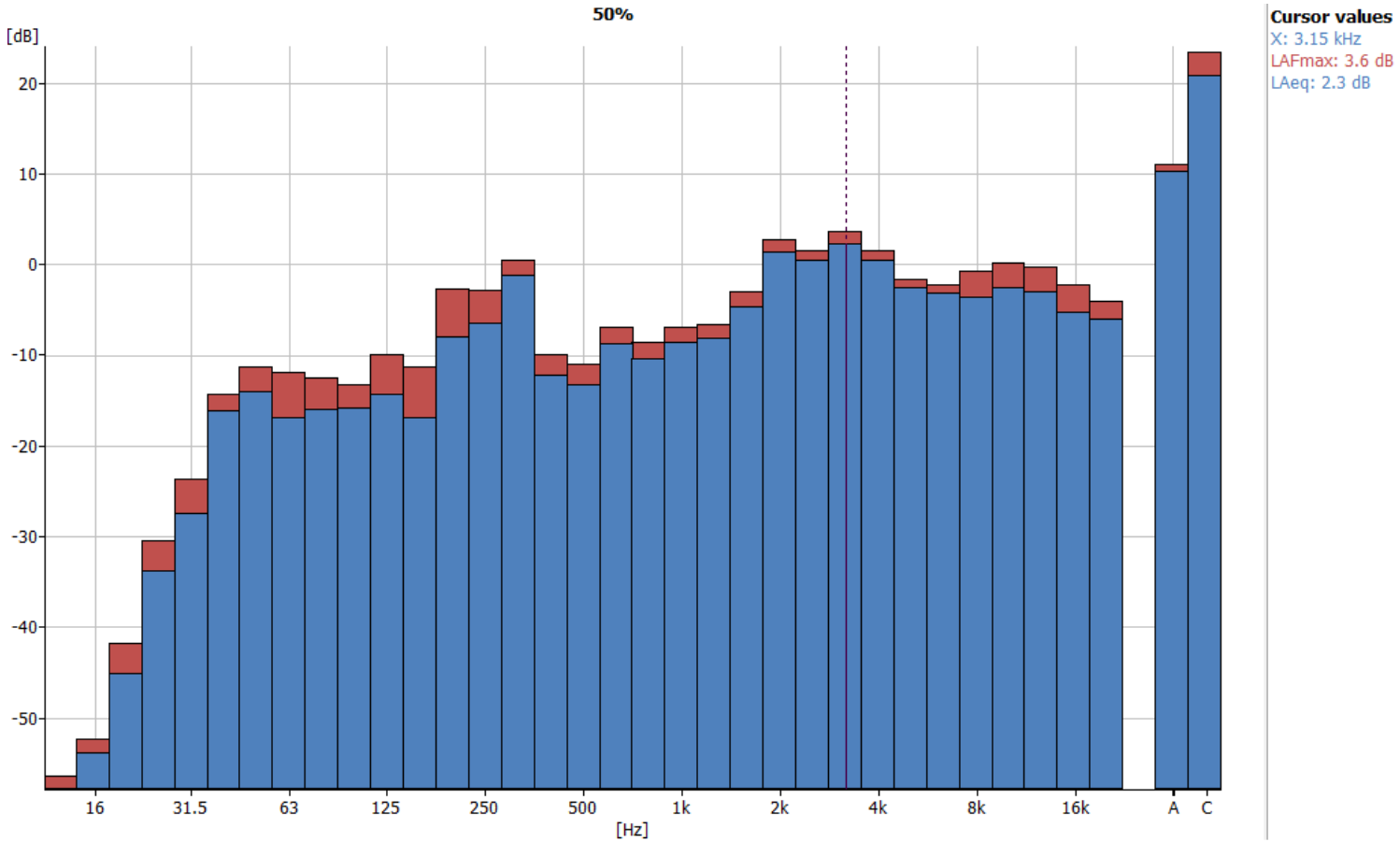
**Pump 25%**


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

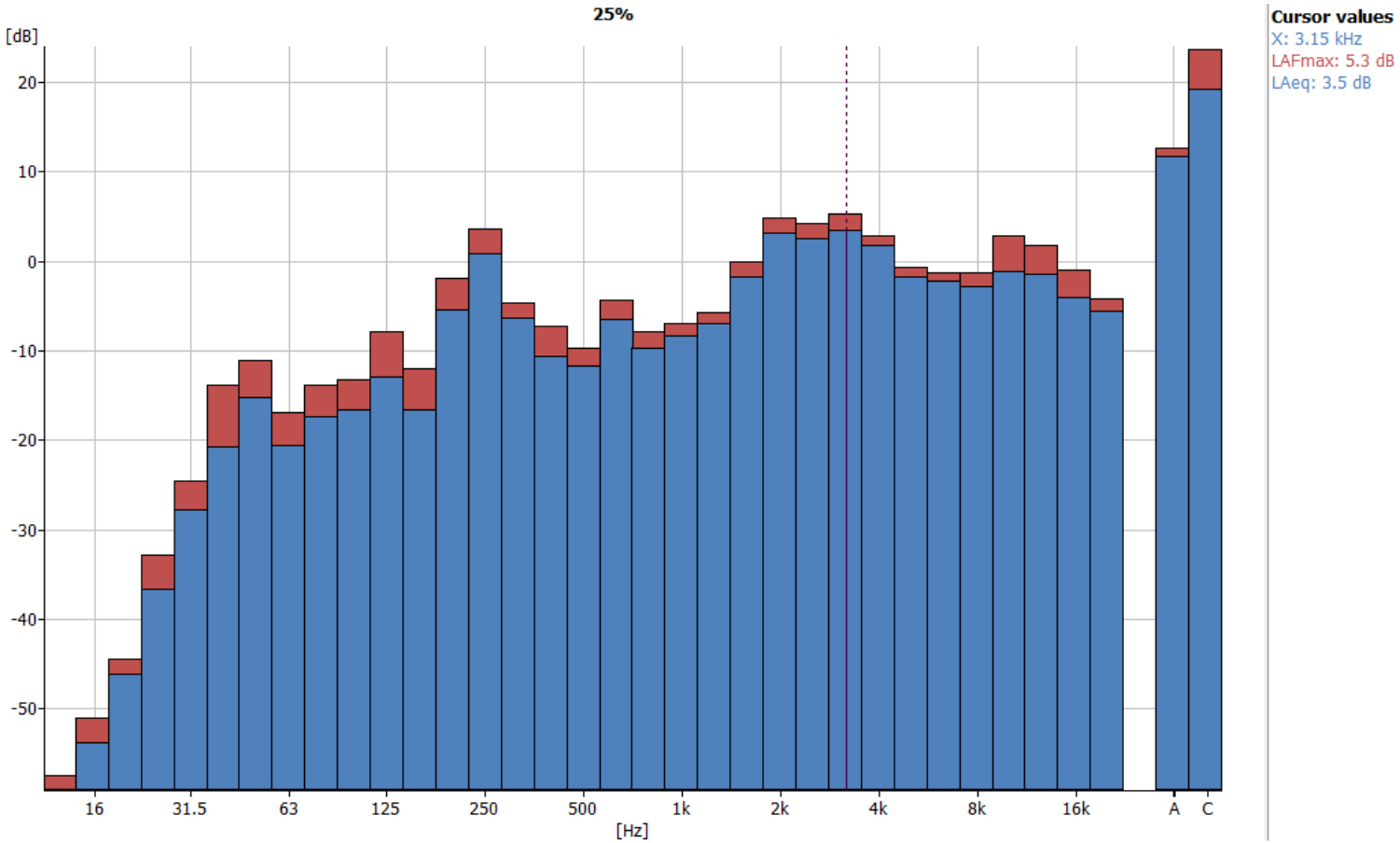
**Pump 50%**


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**



All data and graphs included in this test report can be used by any individual on the following conditions:
› It should be mentioned that the test results are provided by Cybenetics
› The link to the original test results document should be provided in any case

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