ASRock Challenger 360 Digital

Serial Number 2603ACLB360A600532

Lab ID ARCLR00124

Type Liquid

Testing Dates: Jul 13, 2026 to Jul 18, 2026

Scheme: THETA

AMD AM5 

No THETA level 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 Titanium · AIO · AMD AM5**	AMD Ryzen 9 7900X (AM5)	Default	30 dB(A)	12,042
Intel LGA1851	**No THETA level**	Intel Core Ultra 9 285K (LGA1851)	Default	-	-

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	ASRock
Model	Challenger 360 Digital
Serial Number	2603ACLB360A600532
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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

Technical Specifications

Manufacturer (OEM)	ASRock
Model	Challenger 360 Digital
Number of Fans	3
Type	Liquid
Radiator Size	360mm
Radiator Thickness	27mm
Radiator Material	Aluminium
Pump Speed	2986RPM
Tube Length	450mm
Cold Plate Dimensions	57 x 57mm
Weight	1565g

RGB Lighting	Yes
AMD Processors Support	AM5, AM4
Intel Processors Support	LGA1851/1700
Warranty	6 years

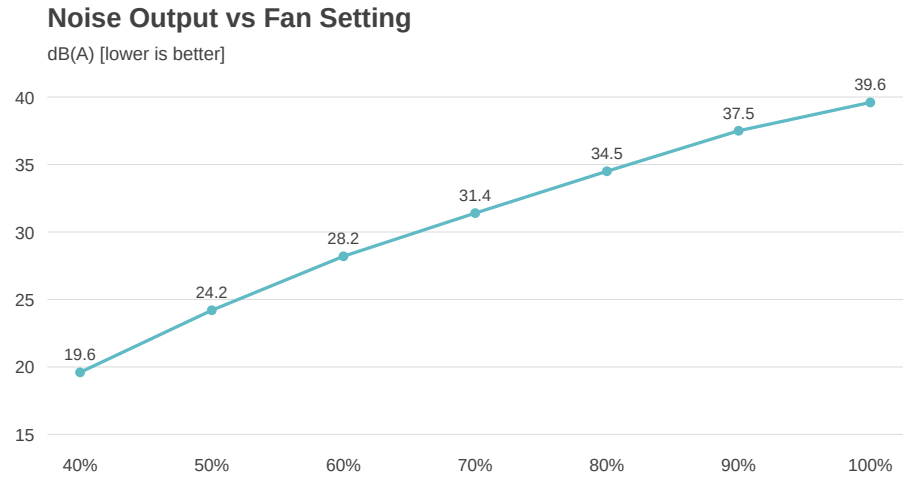
Noise Output and Fan Speed

Table

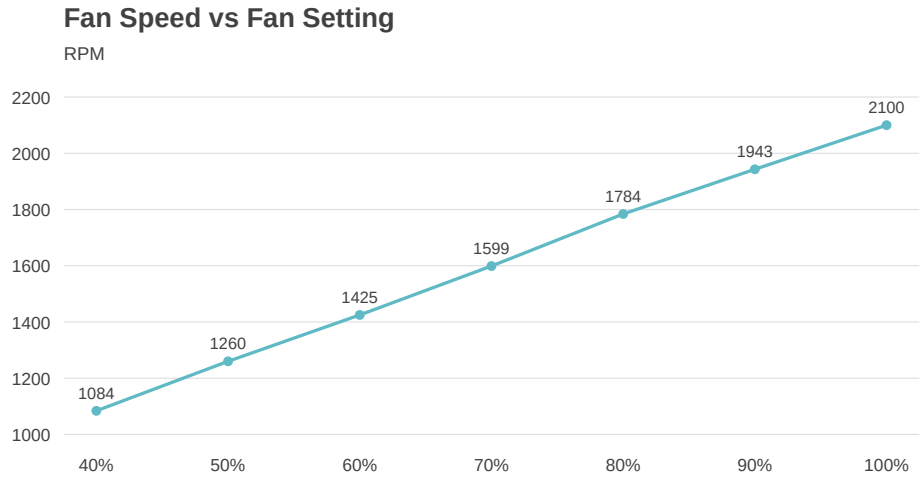
Fan Setting	Noise (dB(A))	Fan 1 (RPM)
40%	19.6	1084
50%	24.2	1260
60%	28.2	1425
70%	31.4	1599
80%	34.5	1784
90%	37.5	1943
100%	39.6	2100

Graphs

Noise



Fan Speed



Fan Speed at Fixed Noise Levels

Noise Level	Fan 1 (RPM)
15 dB(A)	940
20 dB(A)	1100
25 dB(A)	1290
30 dB(A)	1520
35 dB(A)	1805
40 dB(A)	2100

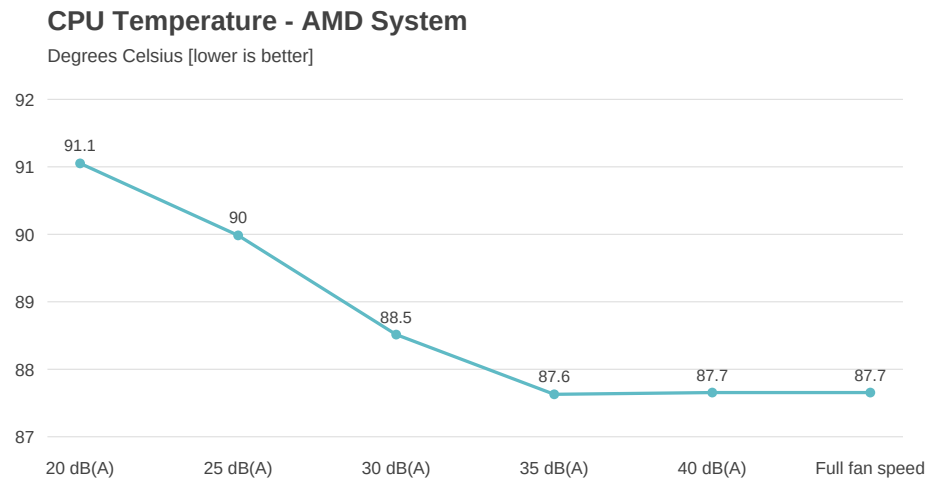
AMD System Test Results

Table

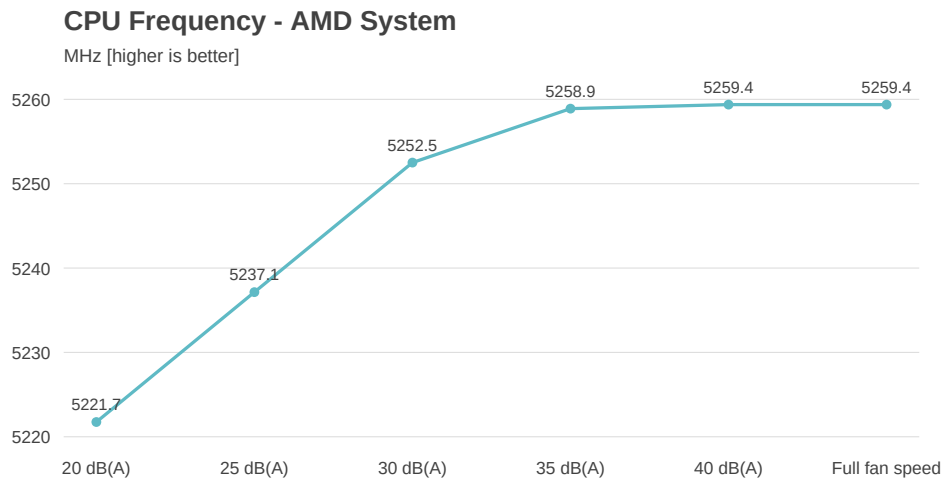
Condition	CPU Temperature (°C)	CPU Frequency (MHz)	CPU Power (W)	Overall Performance
20 dB(A)	91.1	5222	200.1	11474
25 dB(A)	90.0	5237	201.6	11734
30 dB(A)	88.5	5253	202.9	12042
35 dB(A)	87.6	5259	203.0	12180
40 dB(A)	87.7	5259	203.2	12194
Full fan speed	87.7	5259	203.2	12194

Graphs

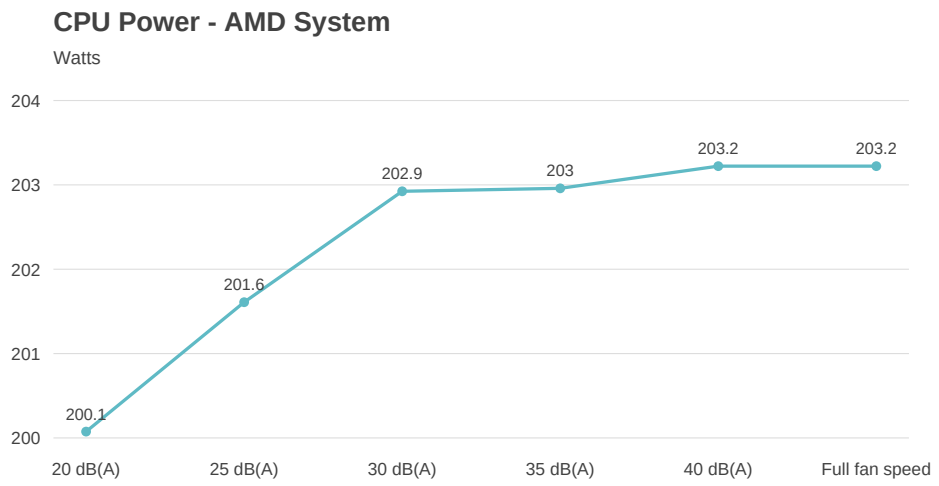
CPU Temperature



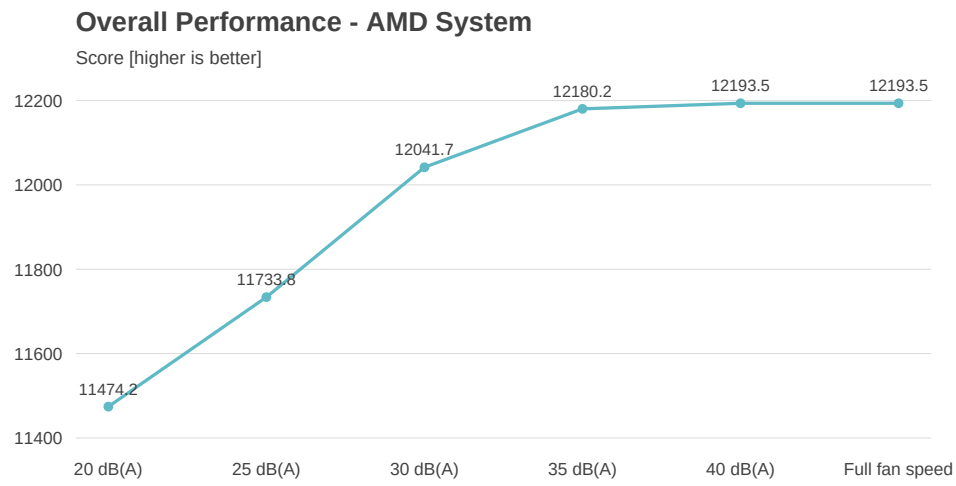
CPU Frequency



CPU Power

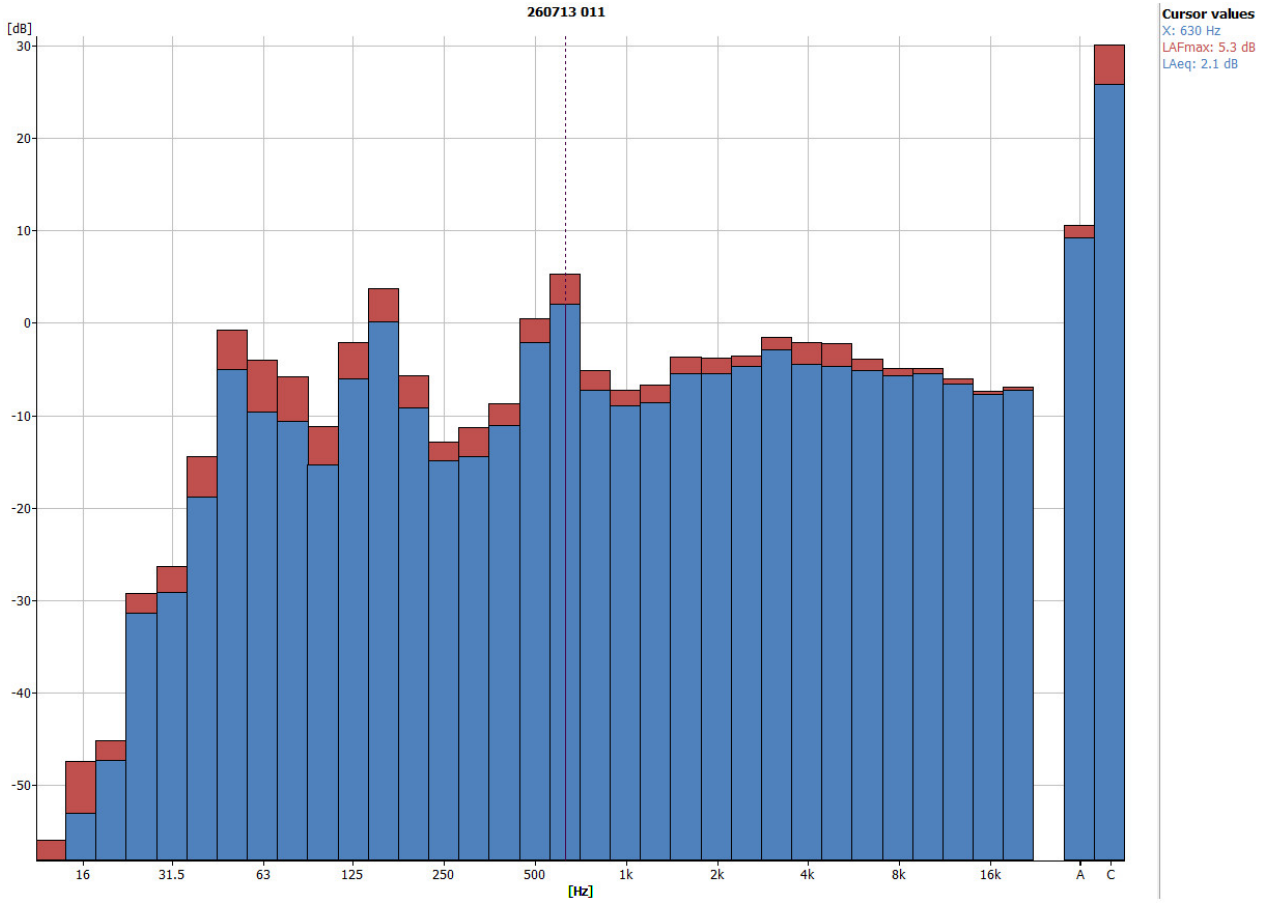


Overall Performance

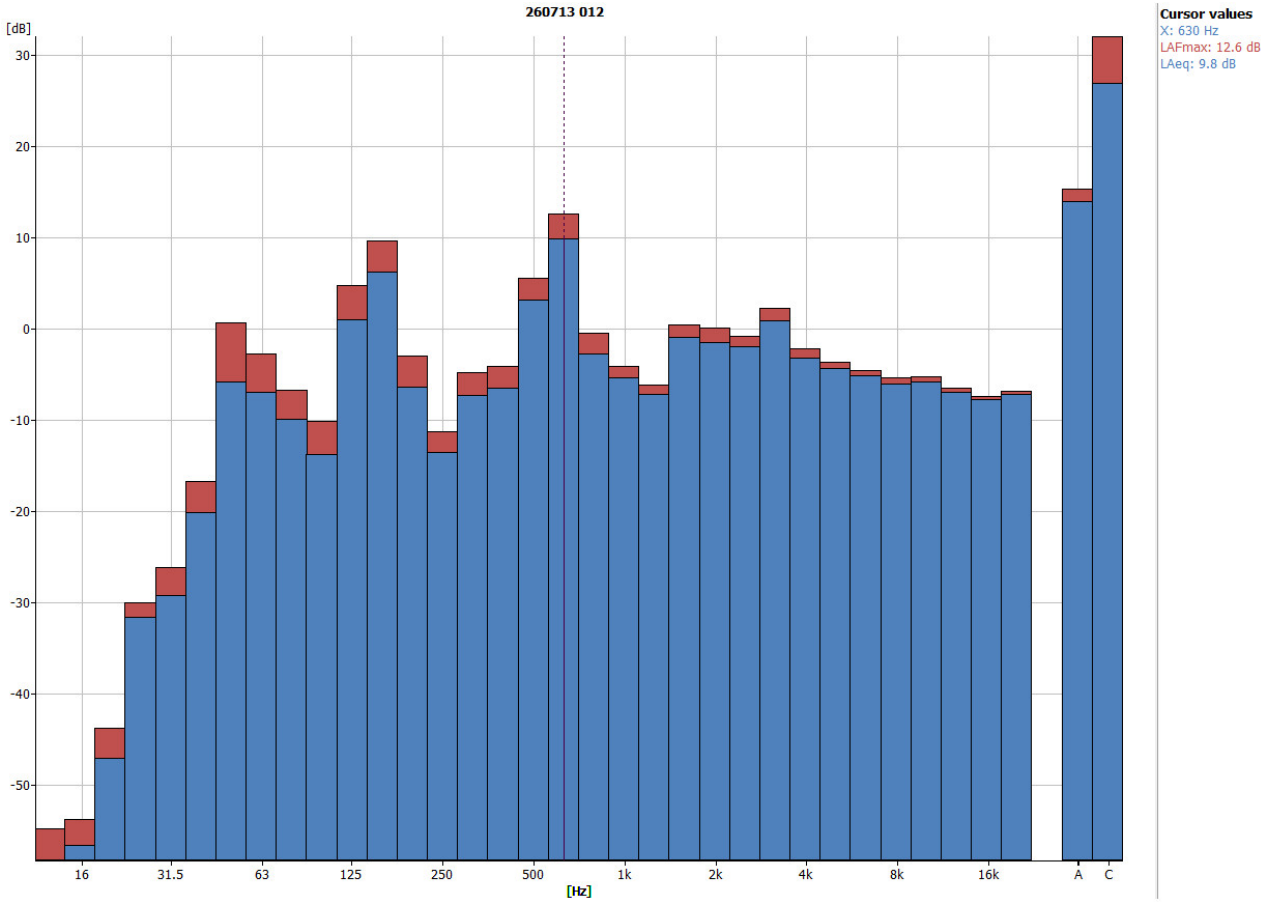


Frequency Plots

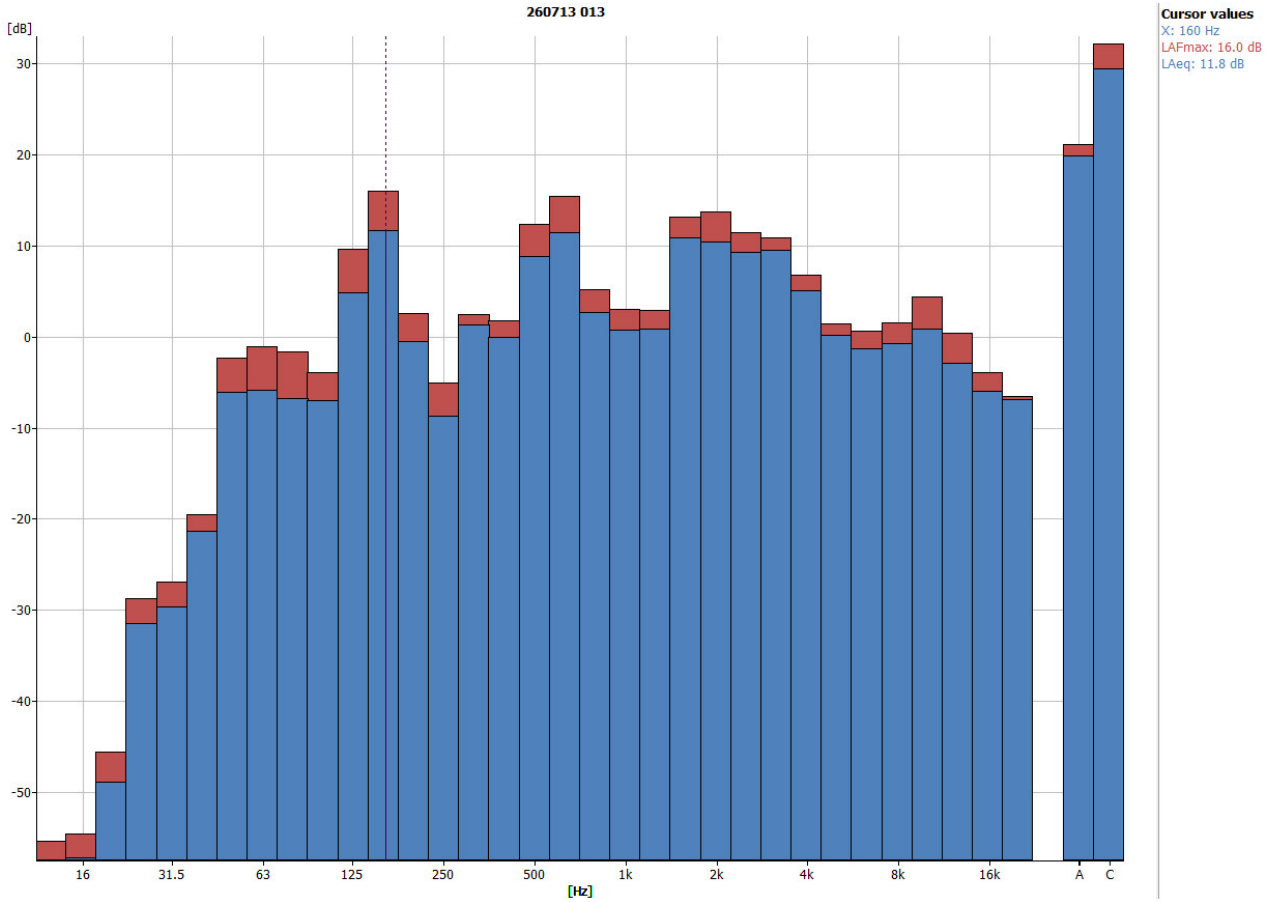
Pump 50%



Pump 75%


260713 012
[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: 630 Hz
LAFmax: 12.6 dB
LAeq: 9.8 dB

Pump 100%


260713 013
[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: 160 Hz
LAFmax: 16.0 dB
LAeq: 11.8 dB

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