ARCTIC Liquid Freezer III Pro 420 A-RGB

Lab ID ACCLR00097

Type Liquid

Testing Dates: Sep 19, 2025 to Oct 4, 2025

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 Platinum · AIO · AMD AM5**	AMD Ryzen 9 7900X (AM5)	Default	30 dB(A)	11,669
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	ARCTIC
Model	Liquid Freezer III Pro 420 A-RGB
Lab ID	ACCLR00097
Testing Dates	Sep 19, 2025 to Oct 4, 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

Technical Specifications

Manufacturer (OEM)	ARCTIC
Model	Liquid Freezer III Pro 420 A-RGB
Number of Fans	3
Fan #1	ARCTIC P14 Pro A-RGB
Fan #2	ARCTIC P14 Pro A-RGB
Fan #3	ARCTIC P14 Pro A-RGB
Type	Liquid
Radiator Size	420mm
Radiator Thickness	38mm
Radiator Material	Aluminium
Pump Speed	2818RPM
Tube Length	500mm

Tube Diameter	12mm
Cold Plate Dimensions	32 x 28.5 mmmm
Weight	2360g
RGB Lighting	Yes
AMD Processors Support	AM5, AM4
Intel Processors Support	LGA1851,1700,1200,115x
Warranty	6 years

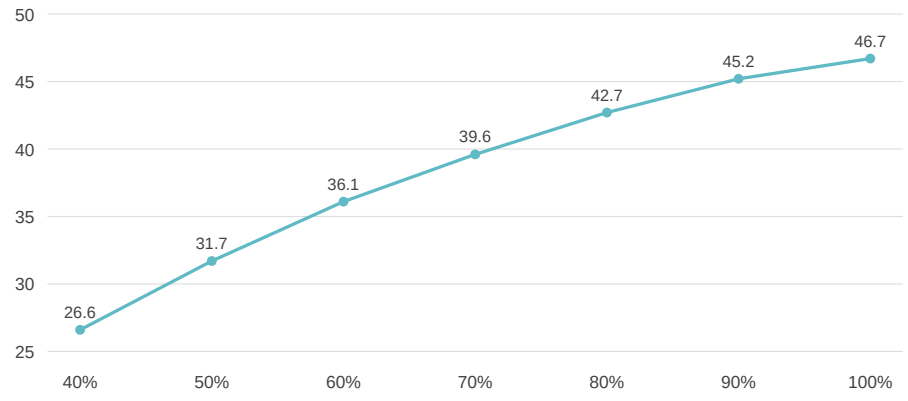
Noise Output and Fan Speed

Table

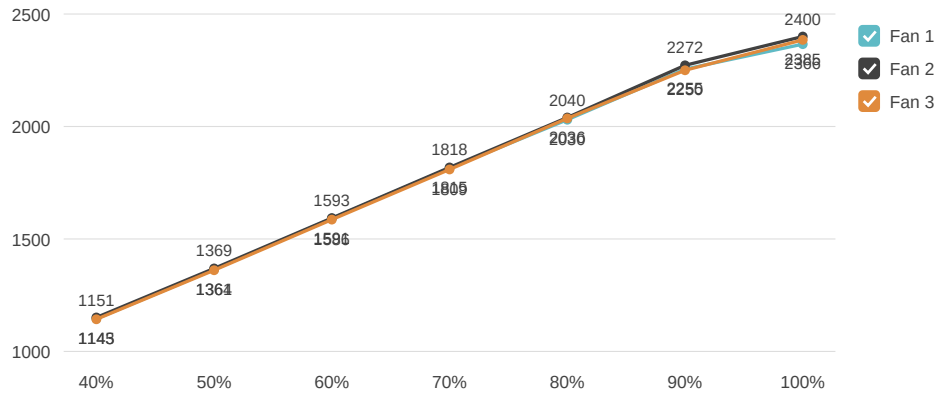
Fan Setting	Noise (dB(A))	Fan 1 (RPM)	Fan 2 (RPM)	Fan 3 (RPM)
40%	26.6	1145	1151	1143
50%	31.7	1364	1369	1361
60%	36.1	1591	1593	1586
70%	39.6	1815	1818	1809
80%	42.7	2030	2040	2036
90%	45.2	2255	2272	2250
100%	46.7	2366	2400	2385

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)	23	765	768	764
20 dB(A)	29	897	901	895
25 dB(A)	37	1078	1081	1077
30 dB(A)	46	1277	1280	1276
35 dB(A)	57	1522	1524	1818
40 dB(A)	71	1831	1840	1834

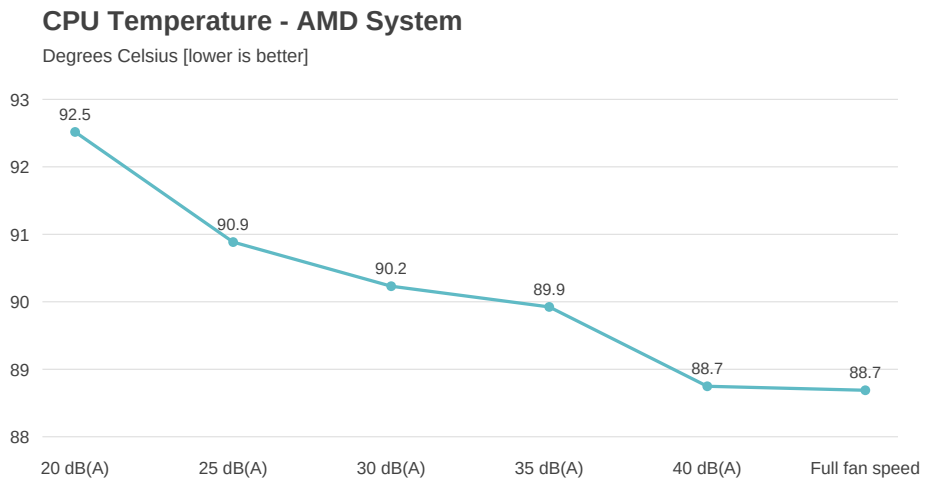
AMD System Test Results

Table

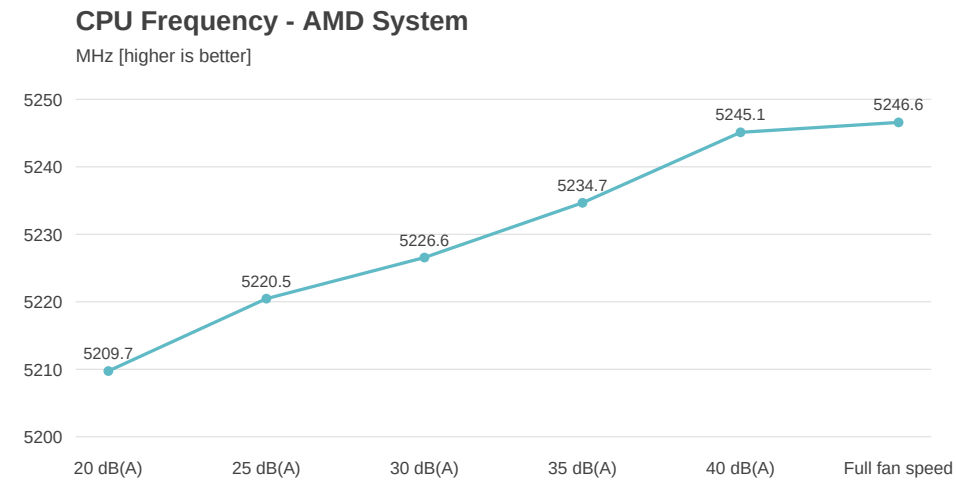
Condition	CPU Temperature (°C)	CPU Frequency (MHz)	CPU Power (W)	Overall Performance
20 dB(A)	92.5	5210	198.9	11201
25 dB(A)	90.9	5220	202.1	11611
30 dB(A)	90.2	5227	201.5	11669
35 dB(A)	89.9	5235	203.4	11839
40 dB(A)	88.7	5245	204.1	12060
Full fan speed	88.7	5247	204.8	12116

Graphs

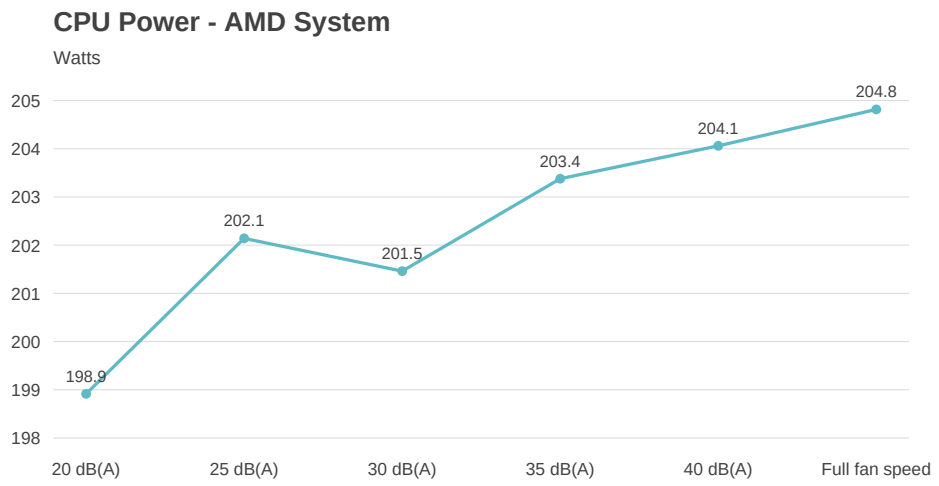
CPU Temperature



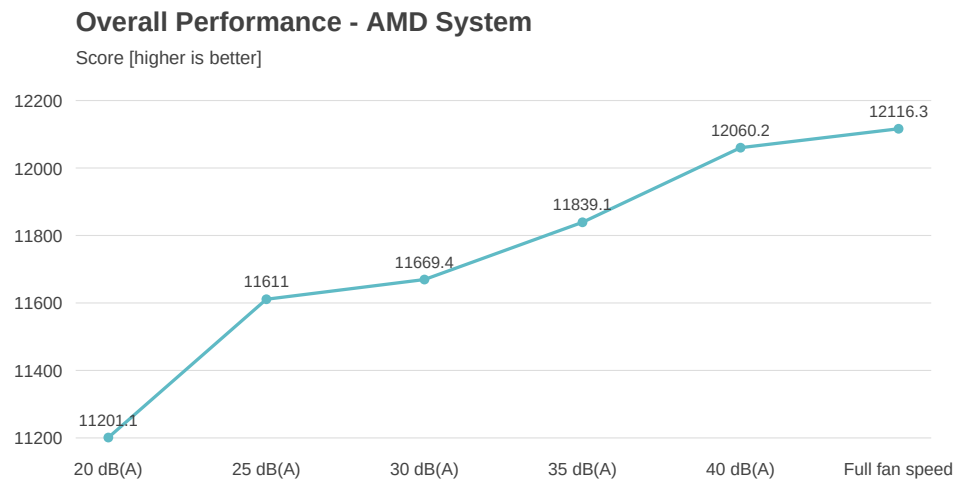
CPU Frequency



CPU Power



Overall Performance



ARCTIC Liquid Freezer III Pro 420 A-RGB

