# 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<br>(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 |

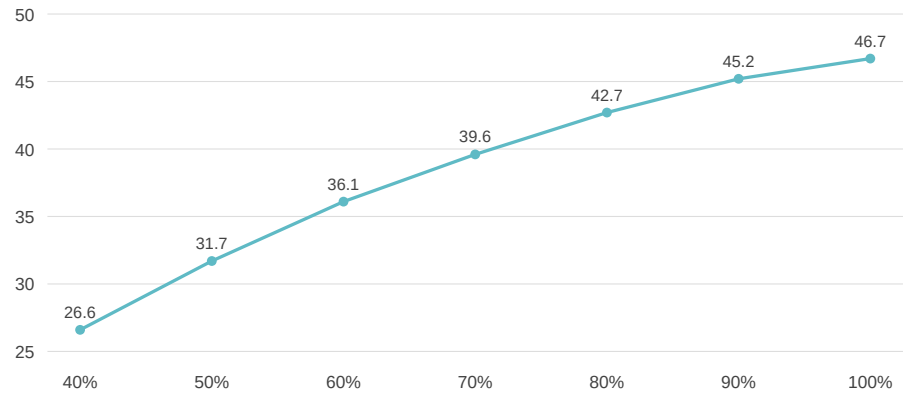
## Noise Output and Fan Speed

### Table

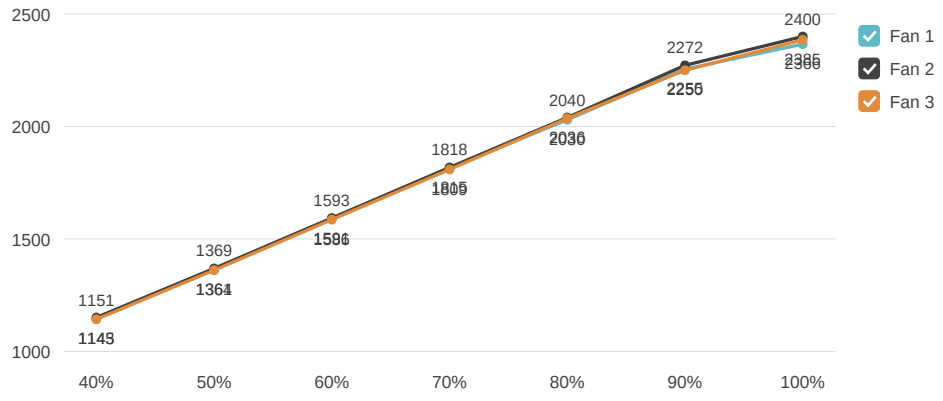
| Fan Setting | Noise (dB(A)) | Fan 1 (RPM) | Fan 2 (RPM) | Fan 3 (RPM) |
|---|---|---|---|---|
| 40% | 26.6 | 1145 | 1151 | 1143 |
| 50% | 31.7 | 1364 | 1369 | 1361 |
| 60% | 36.1 | 1591 | 1593 | 1586 |
| 70% | 39.6 | 1815 | 1818 | 1809 |
| 80% | 42.7 | 2030 | 2040 | 2036 |
| 90% | 45.2 | 2255 | 2272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

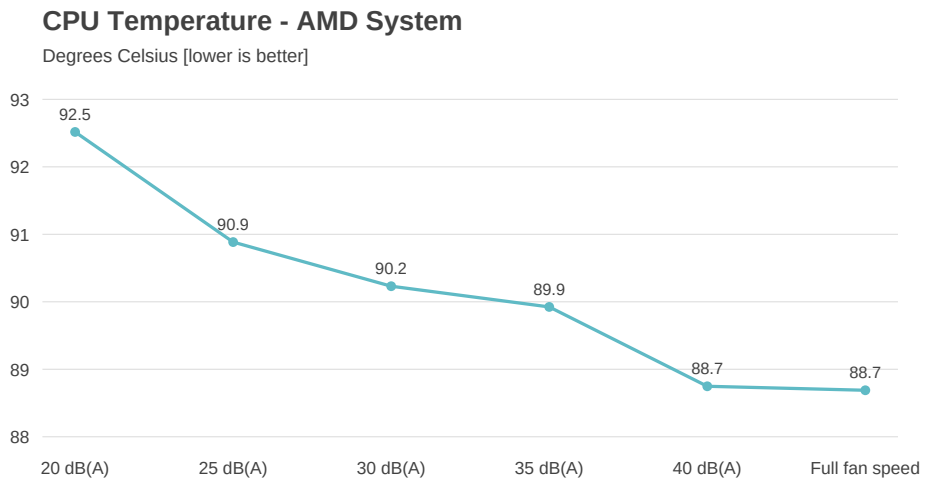
# AMD System Test Results

## Table

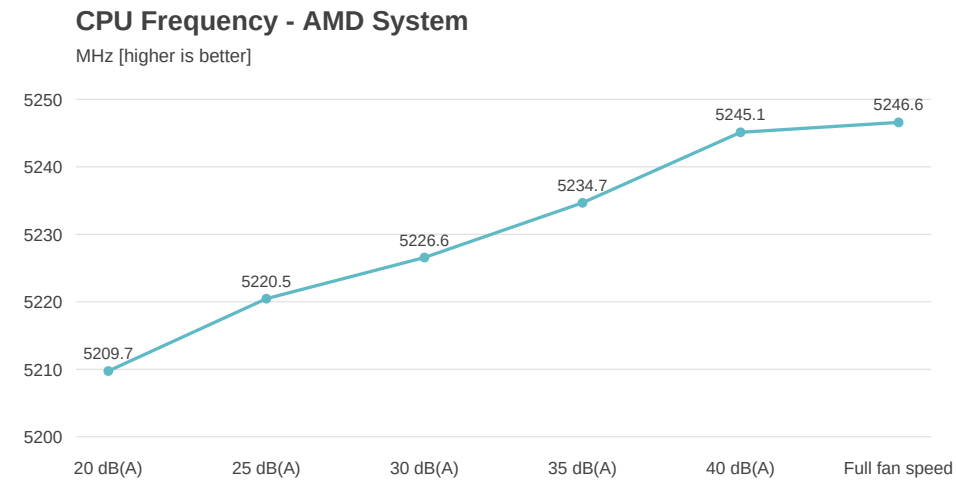
| Condition | CPU Temperature (°C) | CPU Frequency (MHz) | CPU Power (W) | Overall Performance |
|---|---|---|---|---|
| 20 dB(A) | 92.5 | 5210 | 198.9 | 11201 |
| 25 dB(A) | 90.9 | 5220 | 202.1 | 11611 |
| 30 dB(A) | 90.2 | 5227 | 201.5 | 11669 |
| 35 dB(A) | 89.9 | 5235 | 203.4 | 11839 |
| 40 dB(A)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

## Graphs

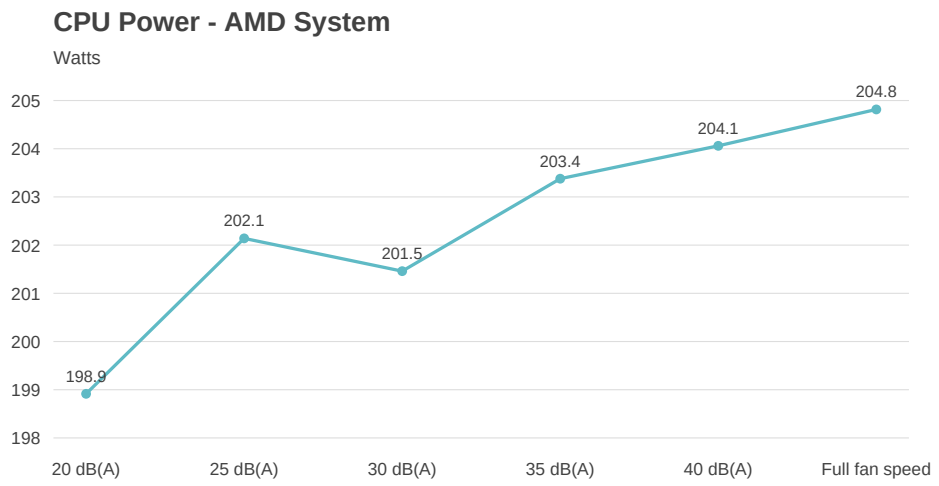
### CPU Temperature



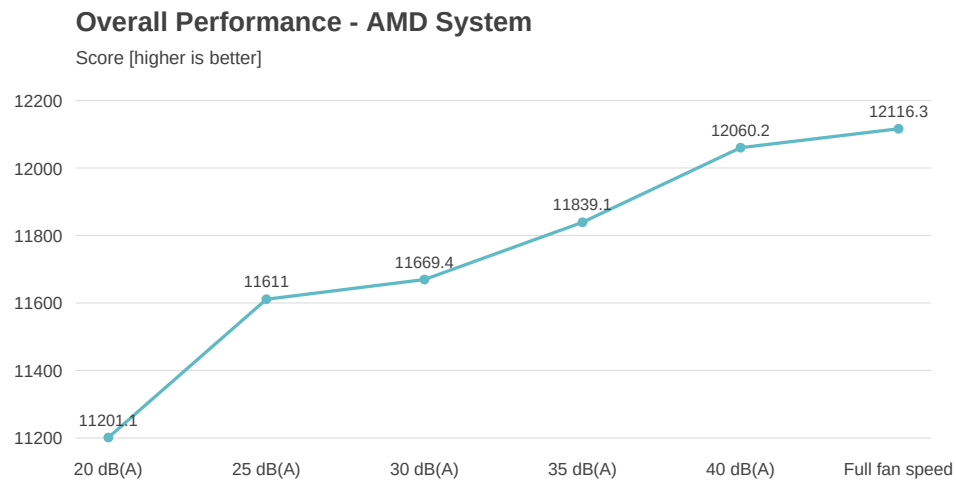

### CPU Frequency



## CPU Power




## Overall Performance



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本测试报告中包含的所有数据和图表均可在以下条件下由任何人使用：使用过程需提及测试结果由 Cybenetics提供。
在任何情况下都应提供原始测试结果文档的网站链接

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