Noctua NH-D15 G2 HBC

Lab ID NCCLR00020

Type Air

Testing Dates: Jul 7, 2024 to Dec 14, 2024

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	**No THETA level**	AMD Ryzen 9 7900X (AM5)	Default	-	-
Intel LGA1851	**THETA Platinum · Air · Intel LGA1851**	Intel Core Ultra 9 285K (LGA1851)	Default	30 dB(A)	13,976

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	Noctua
Model	NH-D15 G2 HBC
Lab ID	NCCLR00020
Testing Dates	Jul 7, 2024 to Dec 14, 2024
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

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)	Noctua
Model	NH-D15 G2 HBC
Number of Fans	2
Fan #1	Noctua NF-A14x25r G2 (PPB)
Fan #2	Noctua NF-A14x25r G2 (PPB)
Type	Air
Heatpipes	8
Length	152mm
Width	150mm
Height	168mm
Block Material	Copper
Weight	1525g

AMD Processors Support	AM5, AM4
Intel Processors Support	LGA1851/1700/1200/1156/1155/1151/1150

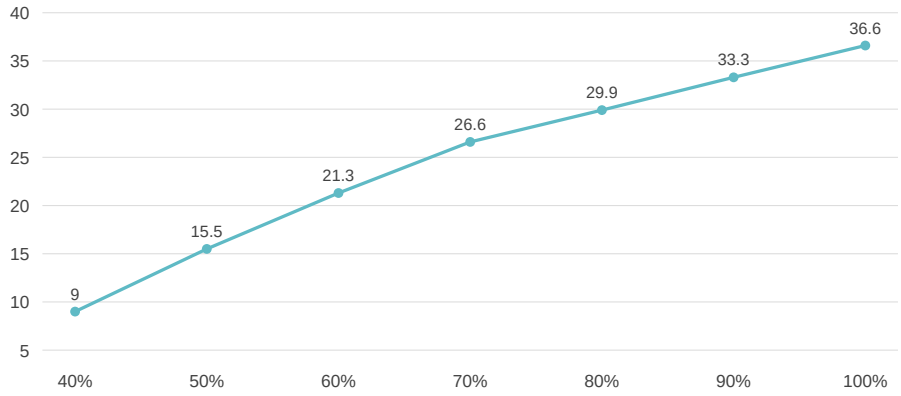
Noise Output and Fan Speed

Table

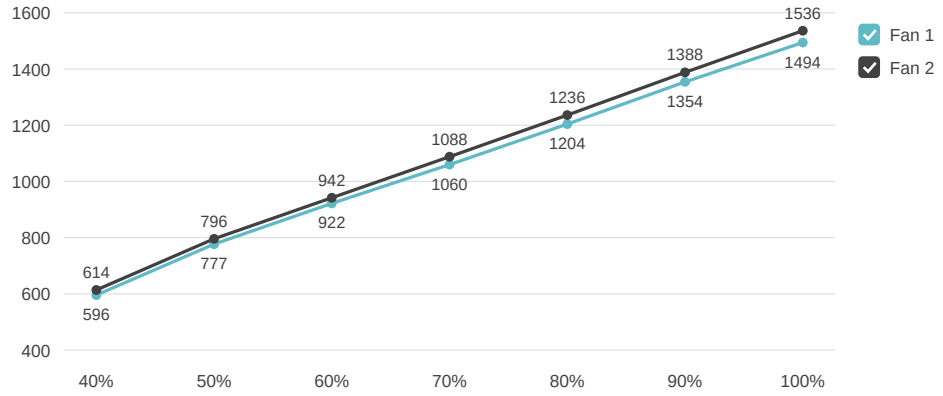
Fan Setting	Noise (dB(A))	Fan 1 (RPM)	Fan 2 (RPM)
40%	9.0	596	614
50%	15.5	777	796
60%	21.3	922	942
70%	26.6	1060	1088
80%	29.9	1204	1236
90%	33.3	1354	1388
100%	36.6	1494	1536

Graphs

Noise



Fan Speed



Fan Speed at Fixed Noise Levels

Noise Level	PWM (%)	Fan 1 (RPM)	Fan 2 (RPM)
15 dB(A)	49	735	753
20 dB(A)	59	884	912
25 dB(A)	69	1031	1069
30 dB(A)	81	1217	1256
35 dB(A)	96	1449	1490

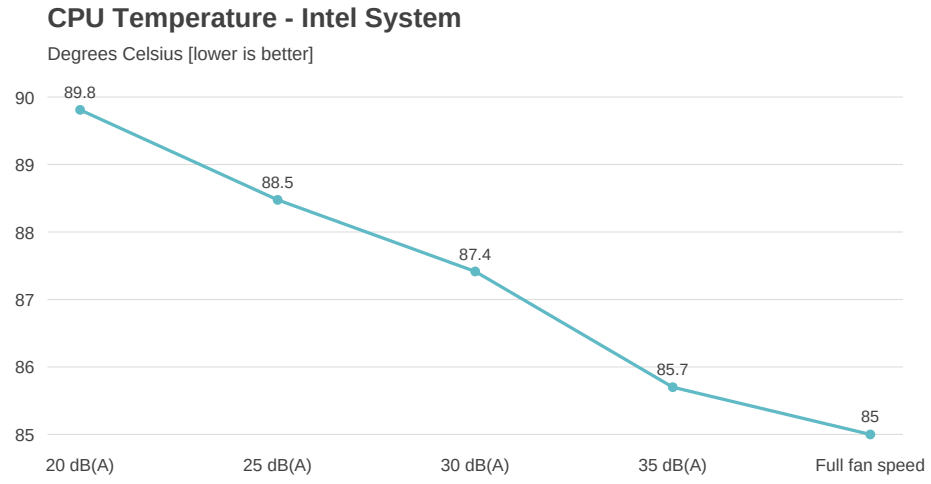
Intel System Test Results

Table

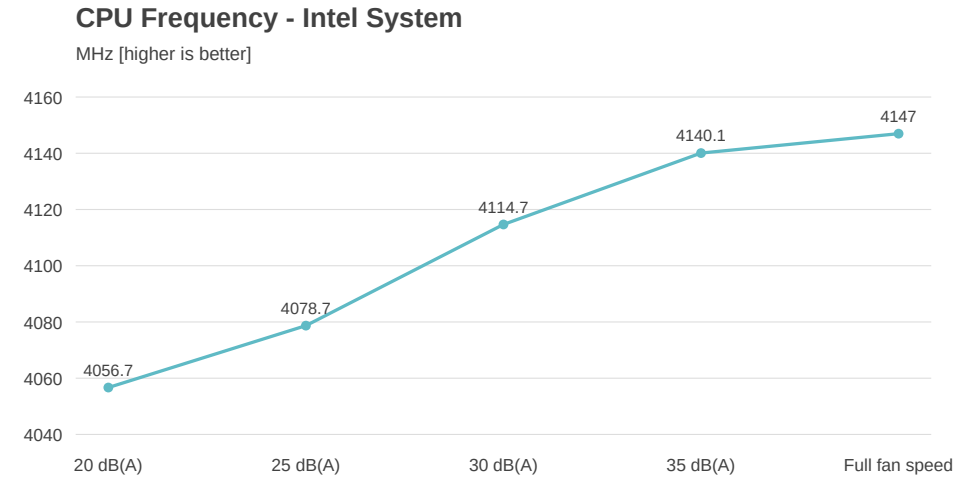
Condition	CPU Temperature (°C)	CPU Frequency (MHz)	CPU Power (W)	Overall Performance
20 dB(A)	89.8	4057	295.9	13365
25 dB(A)	88.5	4079	297.6	13720
30 dB(A)	87.4	4115	296.9	13976
35 dB(A)	85.7	4140	297.1	14354
Full fan speed	85.0	4147	297.3	14507

Graphs

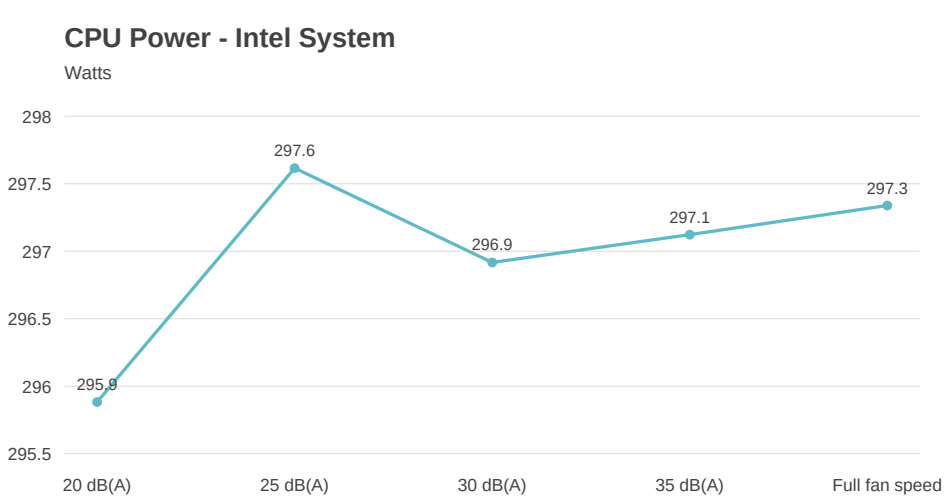
CPU Temperature



CPU Frequency



CPU Power



Overall Performance

