THERMALRIGHT

Thermalright TL-C12C-X28 X3

X0027CXRDJ

Lab ID TR12000220

Certification ID FN25220

Test Result Report ID: 26FN220A

Certificate Issue Date: Oct 2, 2025

Scheme: PHI

Airflow Rating





Static Pressure Rating



Aristeidis Bitziopoulos, Certification Body General Manager

SECTION A: Noise Testing Equipment

□□ Environment	Hemi-Anechoic Chamber with 6 dB(A) noise floor
Conditions	25(±2) degrees Celsius, 40-50% humidity
Sound Analyzer	Bruel & Kjaer 2270-S G4 & 2250-L G4
Microphone	Bruel & Kjaer Type 4955-A
Mic Calibrator	Bruel & Kjaer Type 4231
Data Logger	Picoscope TC-08
□□ ing Methodology	Cybenetics Phi Fan Performance Standard

SECTION B: Fan Testing Instrument Technical Specifications

Manufacturer	Long Win Science & Technology Corporation
□□ l Number	LW-9266
Air Flow Rate	2.4 – 250 CFM
Accuracy of Air Flow Rate	< 3.5% INFS
Repeatability error	< 2%
Static pressure	0-20mmAq (100mmAq with the high static pressure throttle device)
Overall Dimensions	0.7 (W) x 2.2 (L) x 1.6 (H) m
Power Source	220VAC, 5A, Single Phase, 50/60Hz
Based on Standards	ISO 5801-2007, AMCA 210-0, ASHRAE 51-2007, IEC 61591-2005, GB/T 1236-200

SECTION C: PHI Performance Levels

Pressure at 25 dB(A)	P (mmAq)	0.91
Airflow at 25 dB(A)	Q (CFM)	55.56

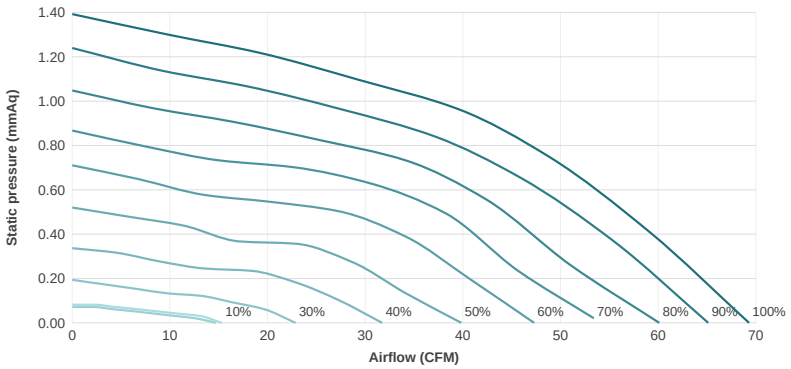
SECTION D: Information about DUT

Product Identification Details	
Brand	Thermalright
□□ l	TL-C12C-X28 X3
Serial Number	X0027CXRDJ
Product Specifications	
Manufacturer-Provided Information	
Bearing	Fluid Dynamic
Connector	PWM
Cable length (mm)	475
Daisy-chain	Cable
RGB Connector	□ ne
RGB Daisy-chain	□ ne
Cybenetics Measurements	
Max Speed (RPM)	1606
Max Airflow (CFM)	69.31
Max Static Pressure (mmAq)	1.39
Max □□□□ Level (dBA)	30.40
Fan Max Current (A)	0.18
Fan Weight (gr)	161
Dimensions (W x H x D)	120mm x 120mm x 28mm
Cybenetics □□ ing Information	
Lab ID	TR12000220
Date of receipt	Sep 26, 2025
□□ ing Date	Oct 2, 2025
Report Issued Date	Oct 2, 2025
Engineer Name	Georgios Theodoros Sarimpalas

SECTION E: Long Win LW-9266 - Pressure and Airflow

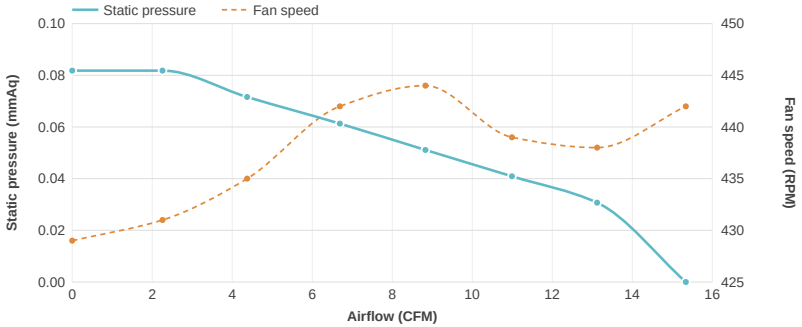
PQ Chart - All Speeds

Static pressure against airflow, one curve per speed step



PQ Chart 10%

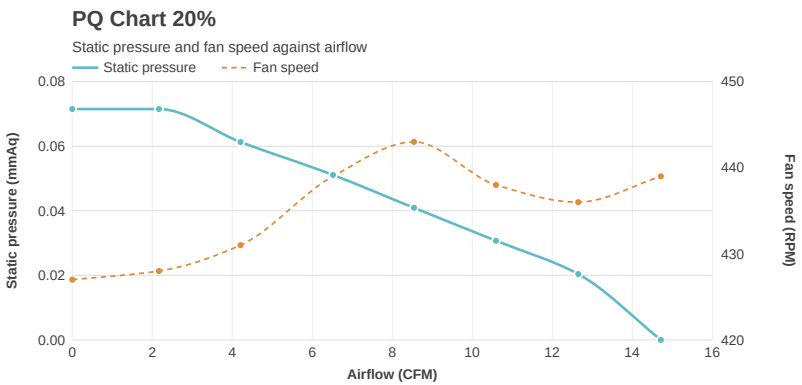
Static pressure and fan speed against airflow



Speed Setting	Max Airflow (CFM)	Max Static Pressure (mmAq)	Fan Speed (RPM)	Max Power (W)
10%	15.34	0.08	429 - 444	0.20
20%	14.71	0.07	427 - 443	0.23
30%	22.87	0.19	589 - 613	0.32
40%	31.74	0.34	756 - 801	0.48
50%	39.84	0.52	913 - 971	0.67
60%	47.30	0.71	1052 - 1119	0.90
70%	53.41	0.87	1169 - 1239	1.14
80%	60.12	1.05	1283 - 1381	1.44
90%	65.13	1.24	1387 - 1501	1.76
100%	69.31	1.39	1476 - 1590	2.11

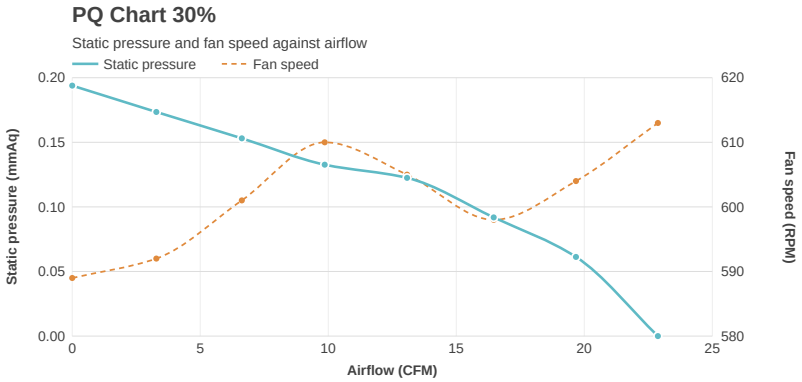
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.08	429	0.017	0.20
2.26	0.08	431	0.017	0.20
4.37	0.07	435	0.017	0.20
6.69	0.06	442	0.017	0.20
8.83	0.05	444	0.017	0.20
10.99	0.04	439	0.017	0.20
13.12	0.03	438	0.017	0.20
15.34	0.00	442	0.016	0.19

PQ Chart 20%



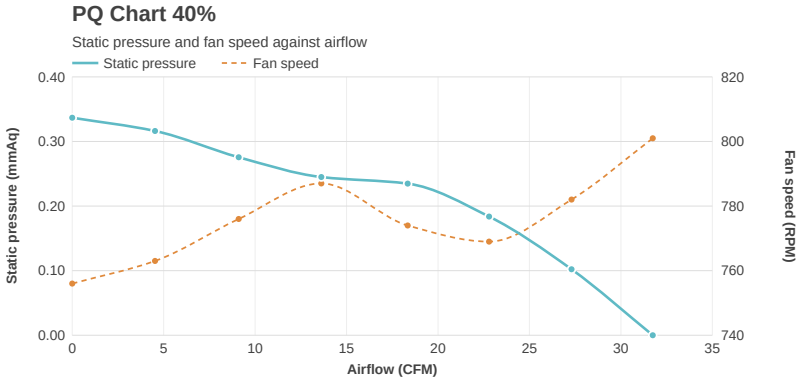
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.07	427	0.019	0.23
2.17	0.07	428	0.019	0.23
4.21	0.06	431	0.019	0.23
6.52	0.05	439	0.018	0.22
8.54	0.04	443	0.018	0.22
10.59	0.03	438	0.018	0.22
12.65	0.02	436	0.018	0.22
14.71	0.00	439	0.018	0.22

PQ Chart 30%



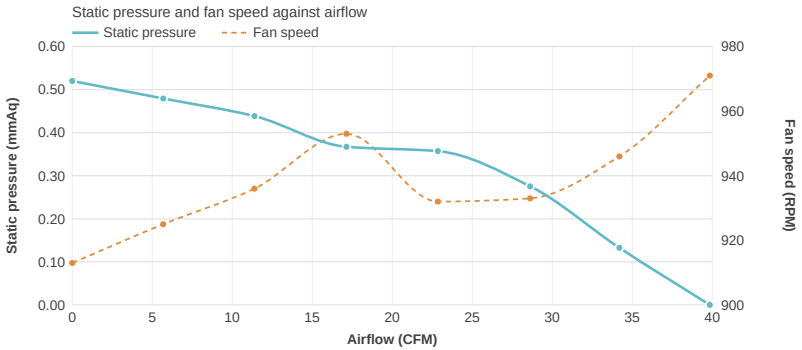
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.19	589	0.027	0.32
3.29	0.17	592	0.027	0.32
6.62	0.15	601	0.027	0.32
9.86	0.13	610	0.026	0.31
13.08	0.12	605	0.026	0.31
16.46	0.09	598	0.026	0.31
19.68	0.06	604	0.026	0.31
22.87	0.00	613	0.026	0.31

PQ Chart 40%



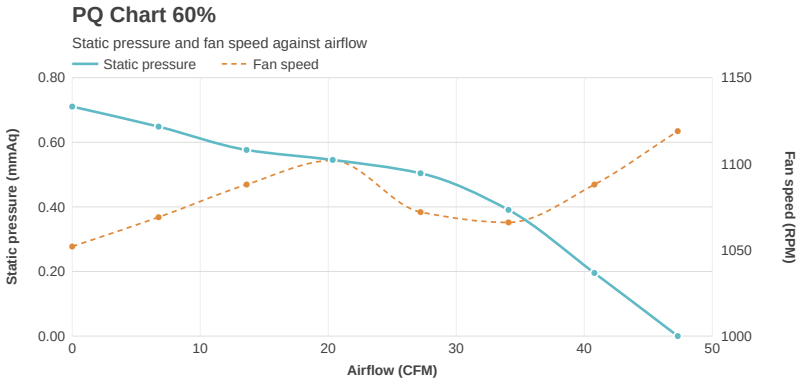
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.34	756	0.040	0.48
4.53	0.32	763	0.040	0.48
9.10	0.28	776	0.039	0.47
13.62	0.24	787	0.039	0.47
18.34	0.23	774	0.039	0.47
22.79	0.18	769	0.039	0.47
27.30	0.10	782	0.039	0.47
31.74	0.00	801	0.038	0.46

PQ Chart 50%



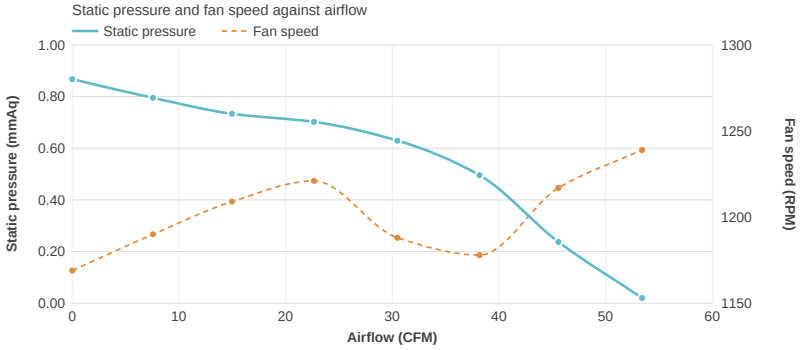
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.52	913	0.056	0.67
5.69	0.48	925	0.055	0.66
11.39	0.44	936	0.055	0.66
17.14	0.37	953	0.054	0.65
22.85	0.36	932	0.055	0.66
28.62	0.28	933	0.055	0.66
34.19	0.13	946	0.054	0.65
39.84	-0.01	971	0.053	0.64

PQ Chart 60%



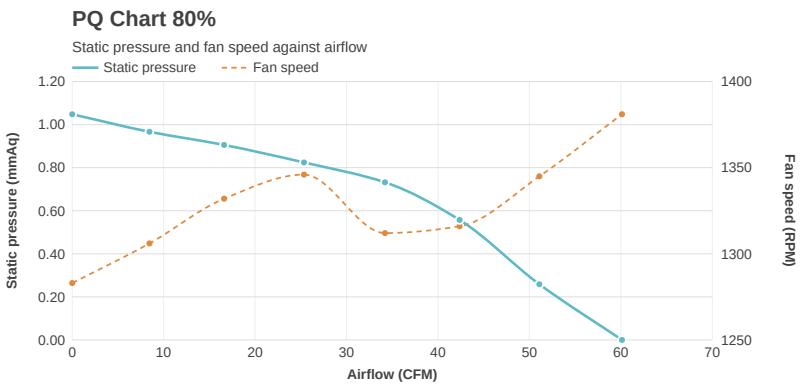
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.71	1052	0.075	0.90
6.74	0.65	1069	0.074	0.89
13.62	0.58	1088	0.073	0.88
20.35	0.55	1102	0.072	0.86
27.21	0.50	1072	0.073	0.88
34.08	0.39	1066	0.074	0.89
40.79	0.20	1088	0.073	0.88
47.30	-0.02	1119	0.071	0.85

PQ Chart 70%



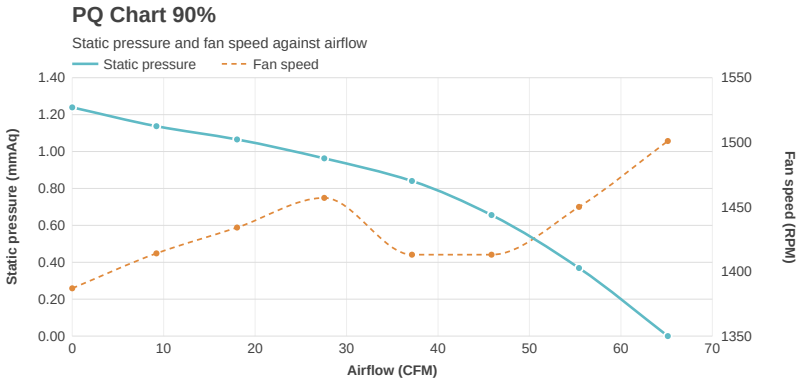
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.87	1169	0.095	1.14
7.56	0.80	1190	0.093	1.12
14.97	0.73	1209	0.092	1.10
22.66	0.70	1221	0.092	1.10
30.49	0.63	1188	0.094	1.13
38.18	0.50	1178	0.094	1.13
45.57	0.24	1217	0.092	1.10
53.41	0.02	1239	0.091	1.09

PQ Chart 80%



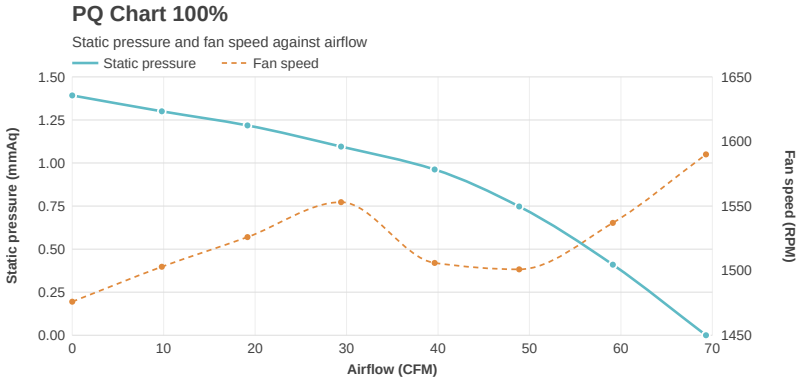
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	1.05	1283	0.120	1.44
8.45	0.97	1306	0.118	1.42
16.60	0.91	1332	0.117	1.40
25.34	0.82	1346	0.115	1.38
34.20	0.73	1312	0.118	1.42
42.36	0.56	1316	0.118	1.42
51.08	0.26	1345	0.116	1.39
60.12	0.00	1381	0.114	1.37

PQ Chart 90%



Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	1.24	1387	0.147	1.76
9.21	1.14	1414	0.145	1.74
18.03	1.07	1434	0.144	1.73
27.56	0.96	1457	0.143	1.72
37.15	0.84	1413	0.146	1.75
45.86	0.66	1413	0.146	1.75
55.42	0.37	1450	0.143	1.72
65.13	-0.01	1501	0.140	1.68

PQ Chart 100%



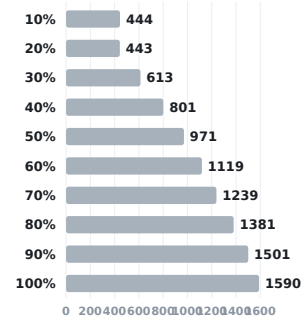
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	1.39	1476	0.176	2.11
9.80	1.30	1503	0.174	2.09
19.16	1.22	1526	0.172	2.06
29.40	1.10	1553	0.170	2.04
39.63	0.96	1506	0.174	2.09
48.88	0.75	1501	0.175	2.10
59.12	0.41	1537	0.172	2.06
69.31	0.00	1590	0.168	2.02

SECTION F: General Performance

RPM

Fan Speed

Thermalright TL-C12C-X28 X3

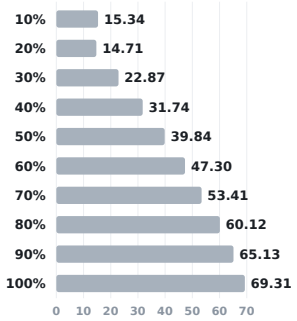


RPM · cybenetics.com

CFM Higher is better

Airflow

Thermalright TL-C12C-X28 X3

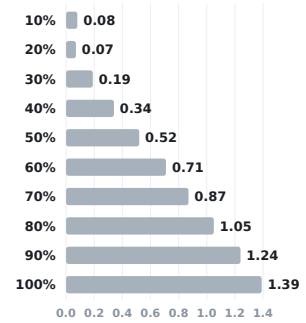


CFM · cybenetics.com

mmAq Higher is better

Static Pressure

Thermalright TL-C12C-X28 X3

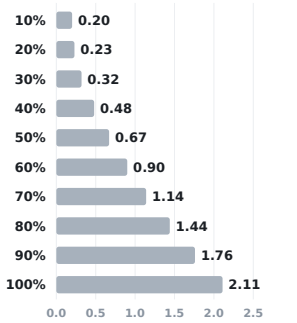


mmAq · cybenetics.com

W Lower is better

Power Consumption

Thermalright TL-C12C-X28 X3



W · cybenetics.com

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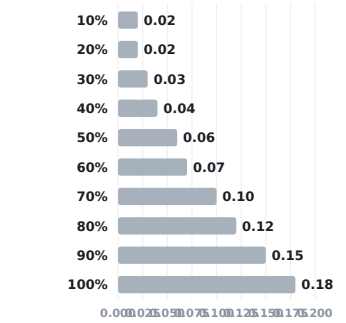
A Lower is better

Current

Thermalright TL-C12C-X28 X3



A · cybenetics.com

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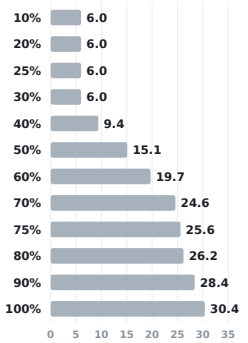
dB(A) Lower is better

Noise Output

Thermalright TL-C12C-X28 X3



dB(A) · cybenetics.com

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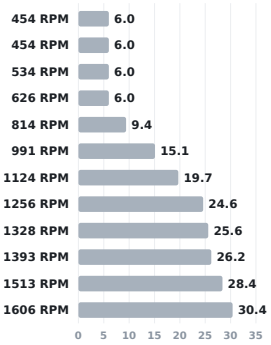
dB(A) Lower is better

Noise at Each Fan Speed

Thermalright TL-C12C-X28 X3



dB(A) · cybenetics.com

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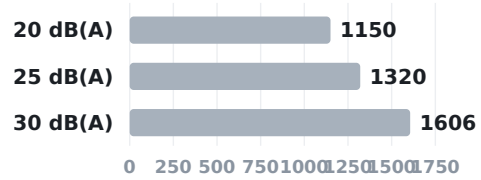
RPM

Fan Speed at Fixed Noise Levels

Thermalright TL-C12C-X28 X3



RPM · cybenetics.com

SECTION G: Uncertainty

Fan Performance Uncertainty Estimation

General Statement

Measurement uncertainty associated with the reported results was evaluated and estimated in accordance with JCGM 100:2008 (Guide to the Expression of Uncertainty in Measurement — GUM) and ISO/IEC 17025:2017, Clauses 7.6 and 7.2.

The uncertainty budget accounts for all significant identified contributors arising from the measurement process, instrumentation, test conditions, and operator interaction.

The reported expanded uncertainty U is obtained by multiplying the combined standard uncertainty uc by a coverage factor k = 2, corresponding to a confidence level of approximately 95 %, assuming a normal probability distribution.

Unless otherwise stated, the reported uncertainty applies only to the specific measurements performed and does not include long-term drift, aging effects, or future environmental changes.

Expanded Measurement Uncertainty by Measurement Type

Measurement	Expanded Uncertainty U (k=2, norm)
Fan Air Flow	±1.23176 % of reading (k=2) — e.g. ±3.69 CFM at 25 CFM, ±4.29 at 92 CFM, ±7.15 at 250 CFM
Fan Static Pressure	±0.6727 Pa

Air flow uncertainty is relative to the reading: $U(Q) = 2 \cdot \sqrt{[(1.8200)^2 + (0.0123176 \cdot Q)^2]}$ CFM, valid over the declared measuring range 2.4 – 250 CFM.

The reported static pressure uncertainty applies over the 0 – 20 mmAq (0 – 196.1 Pa) measuring range of the Long Win LW-9266 apparatus. The apparatus can be extended to 100 mmAq (981 Pa) with the high static pressure throttle device; the uncertainty of that extended range has not been separately verified and the value stated above does not apply to it.





Thermalright TL-C12C-X28 X3

Front

Rear

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

Cybenetics 提供自愿性认证计划：电源方面有 ETA（效率）、 LAMBDA（噪声）与 SAFE（安全与正确运行）；散热产品方面有 DELTA（机箱隔音）与 PHI（风扇风量与静压）

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