

be quiet!

1 Light Wings 140mm

Serial Number

Lab ID BQ14000042

Certification ID FN25042

Test Result Report ID: 25FN42A

Certificate Issue Date: Sep 28, 2023

Scheme: PHI

Airflow Rating



Static Pressure Rating

A handwritten signature in blue ink, appearing to read "A. Bitziopoulos", written over a faint circular stamp.

Aristeidis Bitziopoulos, Certification Body General Manager

SECTION A: Noise Testing Equipment

Test 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
Testing Methodology	Cybenetics Phi Fan Performance Standard

SECTION B: Fan Testing Instrument Technical Specifications

Manufacturer	Long Win Science & Technology Corporation
Model 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)	1.36
Airflow at 25 dB(A)	Q (CFM)	57.31

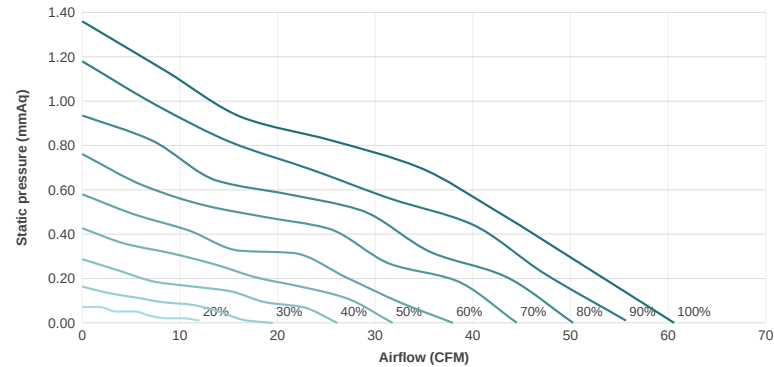
SECTION D: Information about DUT

Product Identification Details	
Brand	1
Model	Light Wings 140mm
Serial Number	-
Product Specifications	
Manufacturer-Provided Information	
Bearing	Rifle
Connector	PWM
Cable length (mm)	500
Daisy-chain	Cable
RGB Connector	None
RGB Daisy-chain	None
Cybernetics Measurements	
Max Speed (RPM)	1530
Max Airflow (CFM)	60.60
Max Static Pressure (mmAq)	1.36
Max Fan Noise Level (dBA)	26.10
Fan Max Current (A)	0.09
Fan Weight (gr)	241
Dimensions (W x H x D)	140mm x 140mm x 25mm
Cybernetics Testing Information	
Lab ID	BQ14000042
Date of receipt	-
Testing Date	-
Report Issued Date	Sep 28, 2023
Engineer Name	Georgios Theodoros Sarimpalas

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

PQ Chart - All Speeds

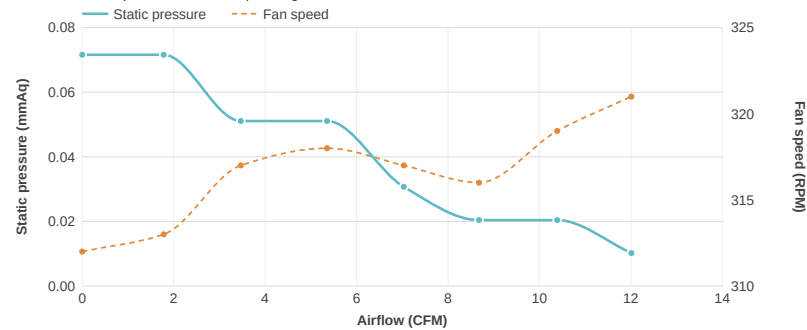
Static pressure against airflow, one curve per speed step



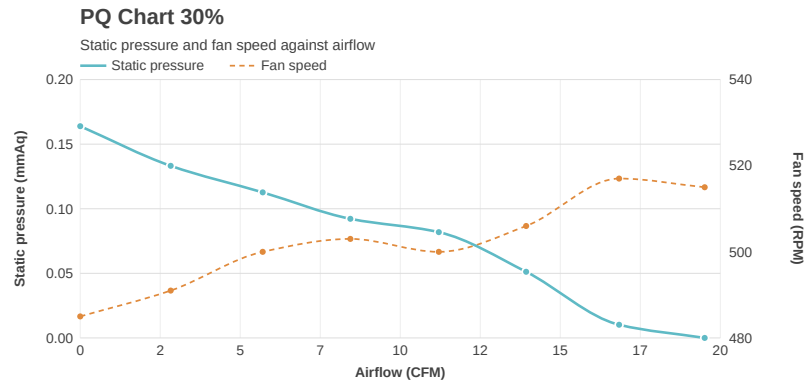
Speed Setting	Max Airflow (CFM)	Max Static Pressure (mmAq)	Fan Speed (RPM)	Max Power (W)
20%	12.01	0.07	312 - 321	0.10
30%	19.51	0.16	485 - 517	0.16
40%	26.13	0.29	639 - 691	0.24
50%	31.78	0.43	774 - 854	0.34
60%	37.96	0.58	913 - 1001	0.46
70%	44.52	0.76	1044 - 1163	0.60
80%	50.28	0.94	1160 - 1300	0.76
90%	55.69	1.18	1264 - 1422	0.92
100%	60.60	1.36	1359 - 1568	1.12

PQ Chart 20%

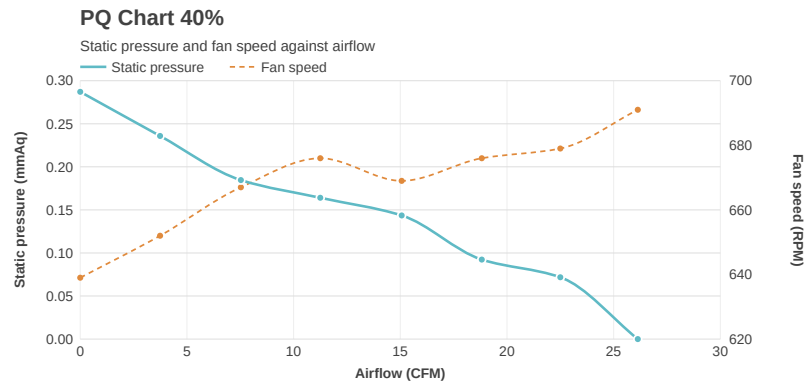
Static pressure and fan speed against airflow



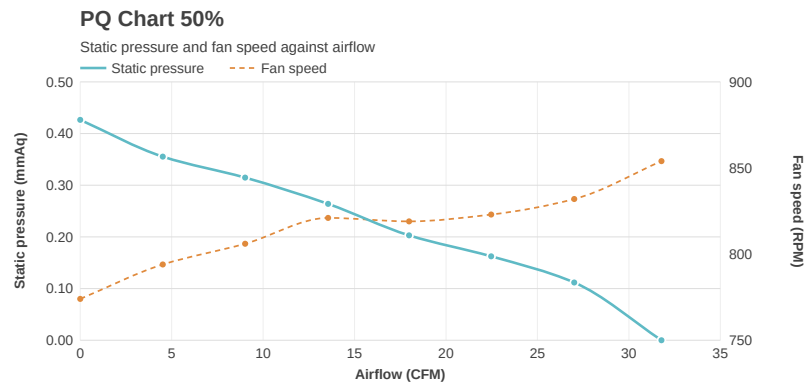
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.07	312	0.008	0.10
1.78	0.07	313	0.008	0.10
3.47	0.05	317	0.008	0.10
5.35	0.05	318	0.007	0.08
7.03	0.03	317	0.007	0.08
8.68	0.02	316	0.007	0.08
10.39	0.02	319	0.007	0.08
12.01	0.01	321	0.007	0.08



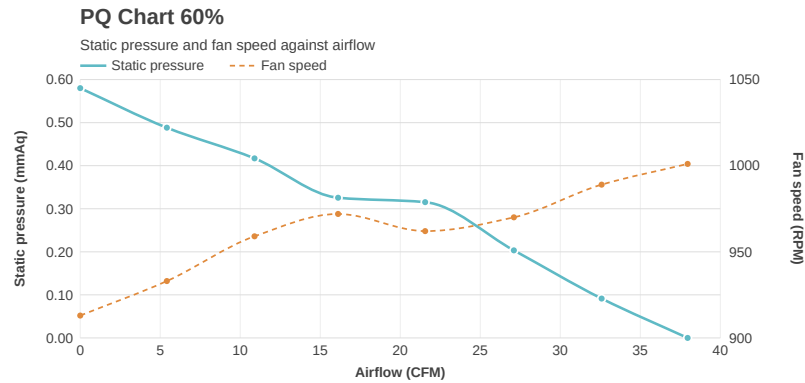
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.16	485	0.013	0.16
2.83	0.13	491	0.013	0.16
5.70	0.11	500	0.013	0.16
8.44	0.09	503	0.013	0.16
11.21	0.08	500	0.013	0.16
13.93	0.05	506	0.012	0.14
16.84	0.01	517	0.012	0.14
19.51	-0.01	515	0.012	0.14



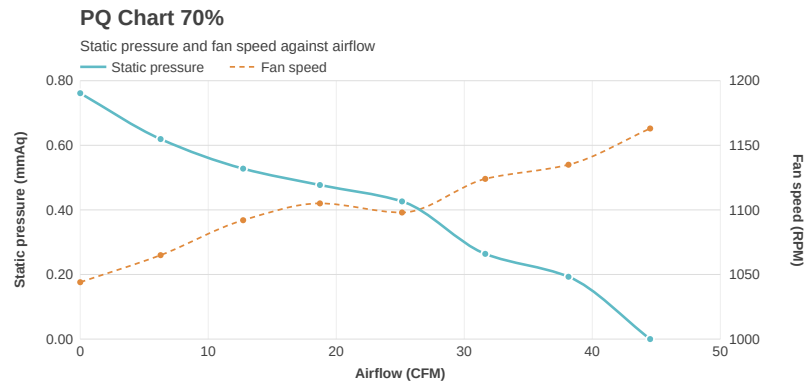
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.29	639	0.020	0.24
3.74	0.24	652	0.020	0.24
7.53	0.18	667	0.019	0.23
11.25	0.16	676	0.019	0.23
15.07	0.14	669	0.019	0.23
18.82	0.09	676	0.019	0.23
22.50	0.07	679	0.019	0.23
26.13	0.00	691	0.018	0.22



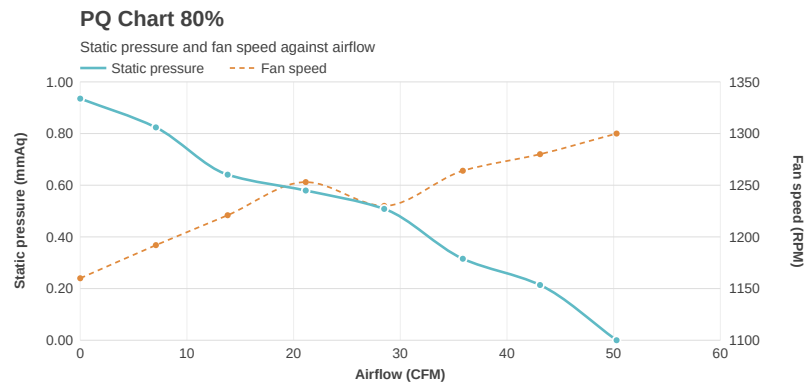
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.43	774	0.028	0.34
4.51	0.36	794	0.028	0.34
9.02	0.31	806	0.027	0.32
13.56	0.26	821	0.027	0.32
17.98	0.20	819	0.027	0.32
22.47	0.16	823	0.026	0.31
27.01	0.11	832	0.026	0.31
31.78	-0.02	854	0.026	0.31



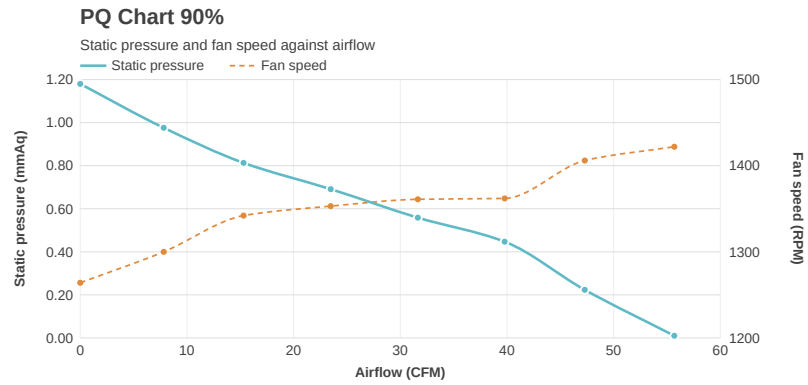
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.58	913	0.038	0.46
5.41	0.49	933	0.038	0.46
10.89	0.42	959	0.037	0.44
16.11	0.33	972	0.036	0.43
21.56	0.32	962	0.036	0.43
27.10	0.20	970	0.036	0.43
32.58	0.09	989	0.035	0.42
37.96	-0.01	1001	0.035	0.42



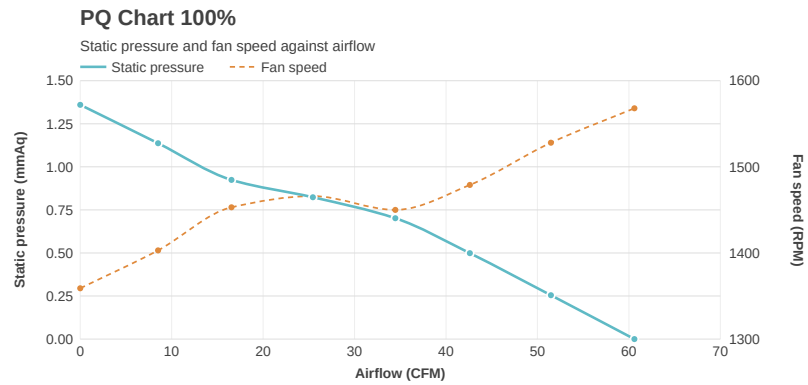
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.76	1044	0.050	0.60
6.28	0.62	1065	0.049	0.59
12.72	0.53	1092	0.047	0.56
18.72	0.48	1105	0.047	0.56
25.14	0.43	1098	0.047	0.56
31.64	0.26	1124	0.046	0.55
38.14	0.19	1135	0.046	0.55
44.52	-0.01	1163	0.044	0.53



Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.94	1160	0.063	0.76
7.09	0.82	1192	0.061	0.73
13.82	0.64	1221	0.060	0.72
21.14	0.58	1253	0.058	0.70
28.49	0.51	1230	0.059	0.71
35.86	0.32	1264	0.058	0.70
43.10	0.21	1280	0.057	0.68
50.28	-0.01	1300	0.055	0.66



Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	1.18	1264	0.077	0.92
7.82	0.98	1300	0.075	0.90
15.31	0.81	1342	0.072	0.86
23.48	0.69	1353	0.072	0.86
31.65	0.56	1361	0.071	0.85
39.79	0.45	1362	0.072	0.86
47.29	0.22	1406	0.069	0.83
55.69	0.01	1422	0.069	0.83



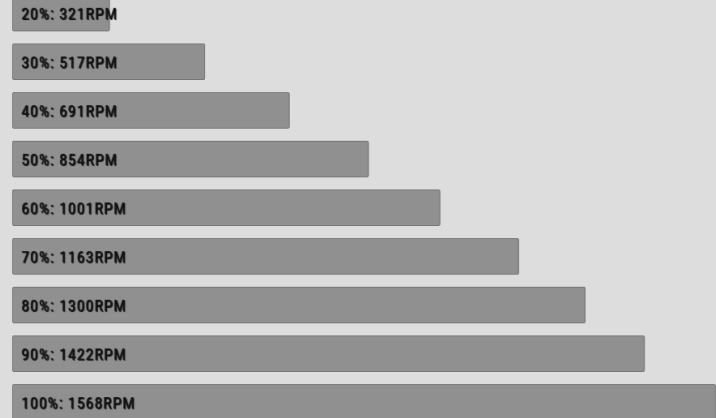
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	1.36	1359	0.093	1.12
8.51	1.14	1403	0.090	1.08
16.54	0.92	1453	0.087	1.04
25.44	0.82	1466	0.086	1.03
34.46	0.70	1450	0.088	1.06
42.61	0.50	1479	0.086	1.03
51.47	0.25	1528	0.083	1.00
60.60	-0.01	1568	0.080	0.96

SECTION F: General Performance

Fan Percentage RPM LongWin

Speed Percentage - Speed RPM - LongWin

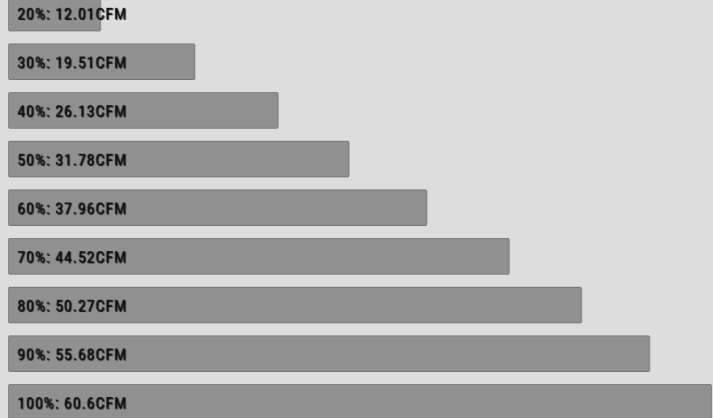
be quiet! Light Wings 140mm PWM



Fan Percentage CFM

CFM

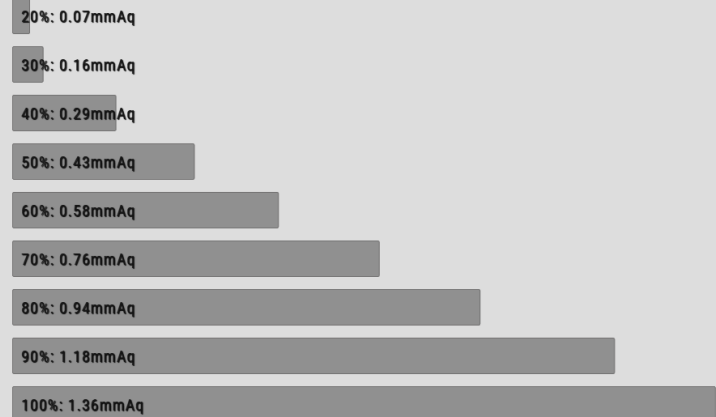
be quiet! Light Wings 140mm PWM



Fan Percentage Pressure

Static Pressure

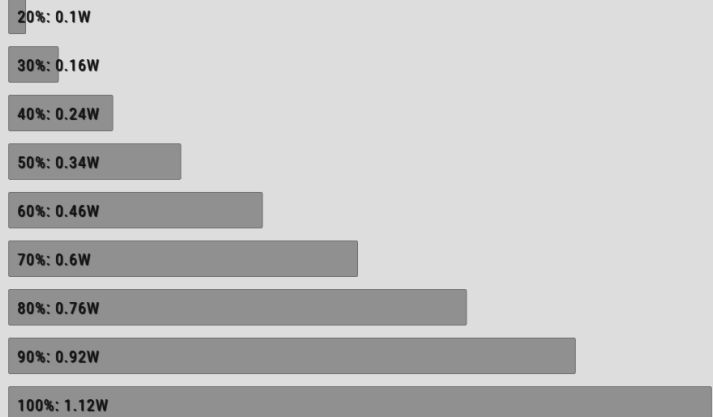
be quiet! Light Wings 140mm PWM



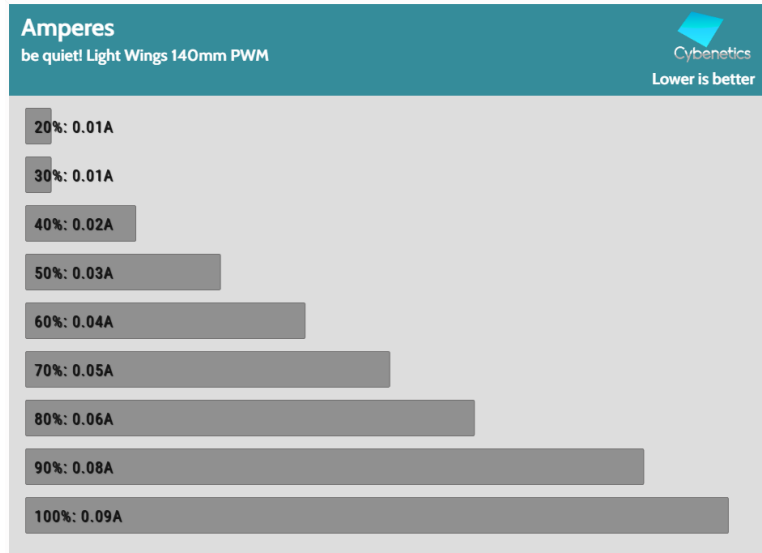
Fan Percentage Power

Power Consumption

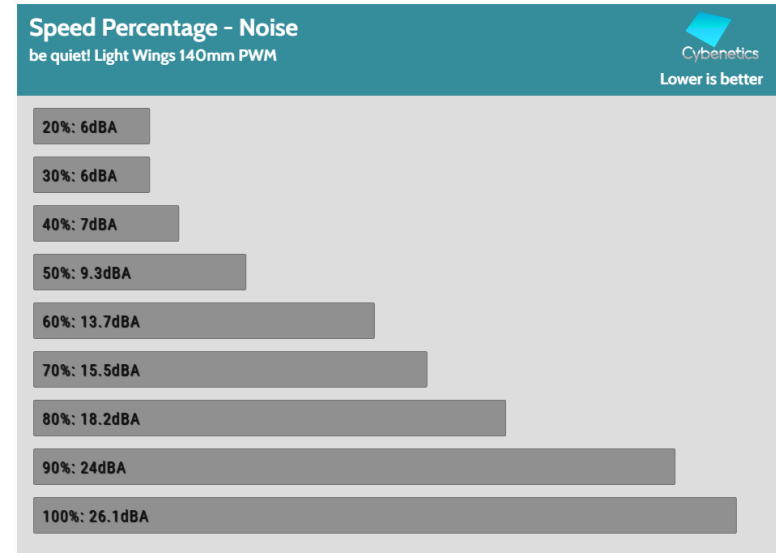
be quiet! Light Wings 140mm PWM



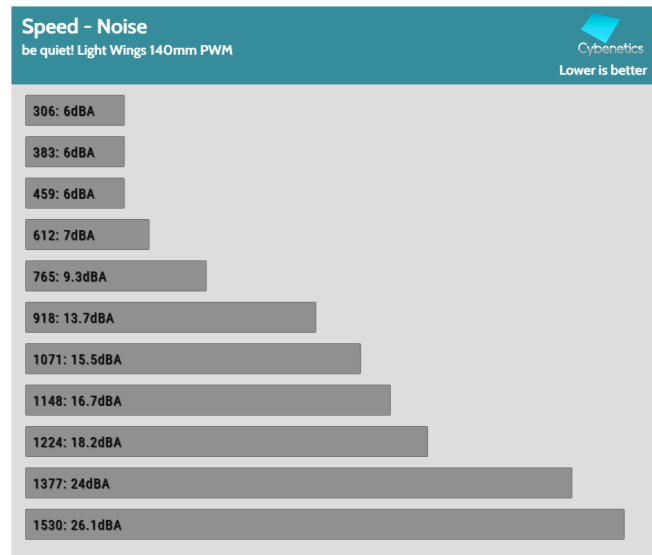
Fan Percentage Amps



Fan Percentage Noise



Fan Speed Noise



Fan Noise Speed



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 u_c 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.

1 Light Wings 140mm



Front

All data and graphs included in this test report can be used by any individual on the following conditions:

- › It should be mentioned that the test results are provided by Cybenetics
- › The link to the original test results document should be provided in any case

CYBENETICS LTD Syrou 6, Latsia, 2231, Nicosia Cyprus



Rear

Cybenetics runs voluntary certification programs for power supplies - ETA for efficiency, LAMBDA for noise and SAFE for safety and correct operation - and for cooling products, with DELTA for chassis soundproofing and PHI for fan airflow and static pressure. THETA rates cooler performance on AMD AM5 and Intel LGA1851 outside ISO 17065 and accreditation scope

www.cybenetics.com - info@cybenetics.com