Super Flower Leadex III Gold ARGB 850W (#2)

S1908199009

Lab ID SF19850136

Certification ID 25890

Test Result Report ID: 19PS890A

Certificate Issue Date: Nov 30, 2019

Scheme: ETA-EMI PSU

115V



230V



115V



230V



Scheme: LAMBDA PSU



Aristeidis Bitziopoulos, Certification Body General Manager

General Information

Test Equipment

Electronic Loads	Chroma 63601-5 x2 Chroma 63600-2 Chroma 63640-80-80 x10 Chroma 63610-80-20
AC Sources	Chroma 6530, APM SP300VAC4000W-P, GW Instek ASR-3500
Power Analyzers	Rohde & Schwarz HMC8015 & NPA701
Oscilloscopes	Picoscope 4444, Siglent SDS2104X PLUS
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Temperature Logger	Picoscope TC-08
Tachometer	UNI-T UT372
Multimeters	Keysight 34465A
EMI Analyzer	TekBox TBMR-110M-EU
Isolation Transformer	4kVA
UPS	FSP Champ Tower 3kVA, CyberPower OLS3000E 3kVA
Testing Methodology	Cybenetics PSU Test Protocol

DUT Information(Non-accredited measurements)

Product Identification Details	
Brand	Super Flower
Model	Leadex III Gold ARGB 850W (#2)
OEM/ODM	Super Flower
Serial Number	S1908199009
Product Specifications	
Manufacturer-Provided Information	
□□□□ (Vrms)	100-240
□□□□ (Arms)	10
□□□□ (Hz)	50-60

□□□□ (W)	850
Operating Temperature (Continuous Full Load) (°C)	
□□	ATX12V
□□□□	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
□□	130mm Fluid Dynamic Bearing Fan (S1302412M)
□□□□□	✓ (selectable)
Cybenetics Testing Information	
Lab ID	SF19850136
Date of receipt	Nov 18, 2019
Testing Date	Nov 22, 2019
Report Issued Date	Nov 30, 2019
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

□□□□□ (Non-accredited measurements)

□□□□□				
□□	□□□□	□□□□□□	Gauge	In Cable Capacitors
ATX □□ 20+4 pin (590mm)	1	1	18-22AWG	□
4+4 pin EPS 12V □□ (690mm)	2	2	18-22AWG	□
6+2pin PCIe□□ (540mm+150mm)	3	6	18-22AWG	□
SATA□□ (550mm+120mm+120mm)	3	9	18AWG	□
4-pin Molex (550mm+100mm+100mm+100mm)	1	4	18AWG	□
ARGB Sync cable (550mm+180mm)	1	2	28AWG	□
AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

□□□□

□		3.3V	5V	12V	5VSB	-12V
□□□□	□□	20	20	70.8	3	0.5
	□	100		849.6	15	6
□□□□□ (W)		850				

Parts Description

General Data	
Manufacturer (OEM)	Super Flower
Platform Model	Leadex III
PCB Type	Single Sided
Primary Side	
Transient Filter	3x Y caps, 3x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	1x
APFC MOSFETS	2x Infineon IPA50R140CP (550V, 15A @ 100°C, 0.14Ohm) & 1x SPN5003 FET (for reduced no-load consumption)
APFC Boost Diode	1x STMicroelectronics STTH8R06D (600V, 8A @ 130°C)
Hold-up Cap(s)	2x Nippon Chemi-Con (400V, 390uF each or 780uF combined, 2,000h @ 105°C, KMR)
Main Switchers	2x Infineon IPA50R140CP (550V, 15A @ 100°C, 0.14Ohm)
APFC Controller	SF29603 & S9602
Resonant Controllers	SF29605
Topology	Primary side: Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	6x Infineon IPP041N04N (40V, 80A @ 100°C, 4.1mOhm)
5V & 3.3V	DC-DC Converters:8x Alpha & Omega AON6516 (30V, 25A @ 100°C, 8mOhm @ 125°C) PWM Controllers: 2x ON Semiconductor NCP1587A
Filtering Capacitors	Electrolytics: 7x Nippon Chemi-Con (105°C, W), 4x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 2x Nippon Chemi-Con (1-5,000h @ 105°C, KZE), 2x Nippon Chemi-Con (1-2,000h @ 105°C, KMG), 7x Nichicon (1,000h @ 105°C, RZ) Polymers: 8x FPCAP, 5x United Chemi-Con, 2x Jamicon
Supervisor IC	SF29603 & LM339A
Fan controller	STMicroelectronics STM8S003F3

Fan Model	Globe Fan S1302412M (130mm, 12V, 0.40A, Fluid Dynamic Bearing Fan)
5VSB Circuit	
Rectifier	1x PFC PFR20L60CT SBR (60V, 20A)
Standby PWM Controller	SF29604

Test Results

Temperature & Compliance Info

□□□□ (°C /°F)	28-32 / 82.4-89.6
□□ ErP Lot3/6□□	✓
□□ (EU) No 617/2013□□	✓

Performance Summary

115V

Accredited	
□□□□ (>1450 load combinations)	88.456%
Average Noise Output (>1450 Load Combinations)	23.62dBA
PF□□□ (>1450 Load Combinations)	0.984
Efficiency With 10W (≤500W) or 2% (>500W) Load	70.920%
□□□□□□	0.0462W
Non-Accredited	
12V Ripple (Full Load)	10.76mV
5V Ripple (Full Load)	13.36mV
3.3V Ripple (Full Load)	13.38mV
5VSB Ripple (Full Load)	13.92mV
12V Load Regulation	0.56%
5V Load Regulation	0.63%
3.3V Load Regulation	0.99%
5VSB Load Regulation	3.07%

Inrush Current	33.299A

230V

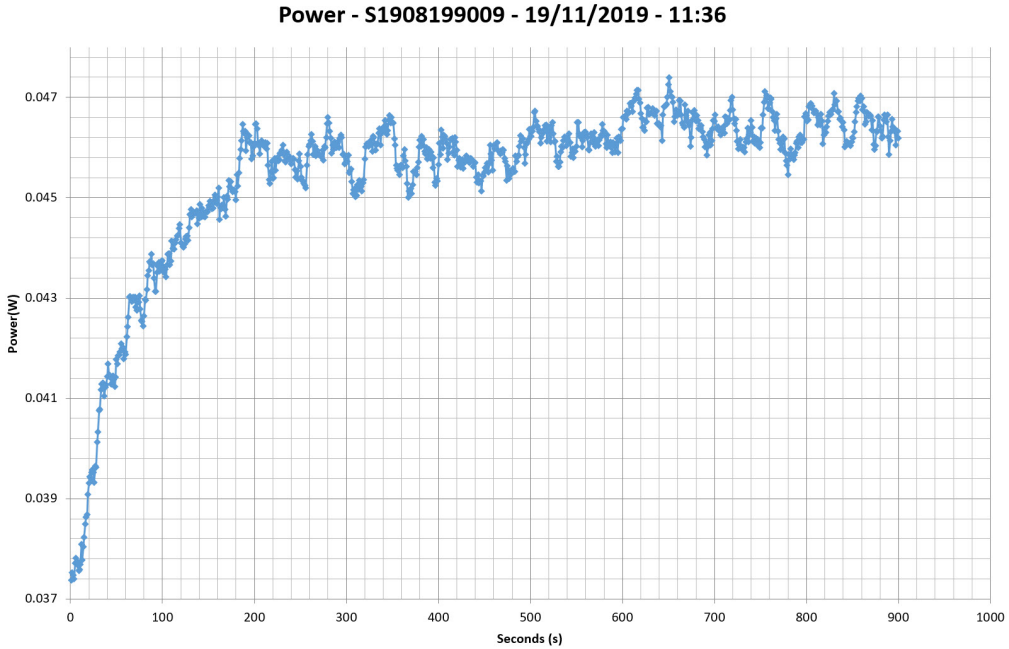
Accredited		
□□□□ (>1450 load combinations)		90.636%
Average Noise Output (>1450 Load Combinations)		23.54dBA
PF□□□ (>1450 Load Combinations)		0.932
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
□□□□□□		0.0784W
Non-Accredited		
12V Ripple (Full Load)		10.38mV
5V Ripple (Full Load)		13.22mV
3.3V Ripple (Full Load)		13.60mV
5VSB Ripple (Full Load)		11.78mV
12V Load Regulation		0.49%
5V Load Regulation		0.63%
3.3V Load Regulation		1.00%
5VSB Load Regulation		3.07%
Inrush Current		65.305A
□□□□ & PG□□		20.40ms
AC Loss to PWR_OK Hold Up Time		18.80ms
PWR_OK Inactive to DC Loss Delay		1.60ms
PSU Timings: T1 (20% / 100%)	246.0ms	246.0ms
PSU Timings: T3 (20% / 100%)	192.0ms	194.0ms
OPP (0.00°C / 0.00°C)	114.07%	-

□□□□ & PG□□

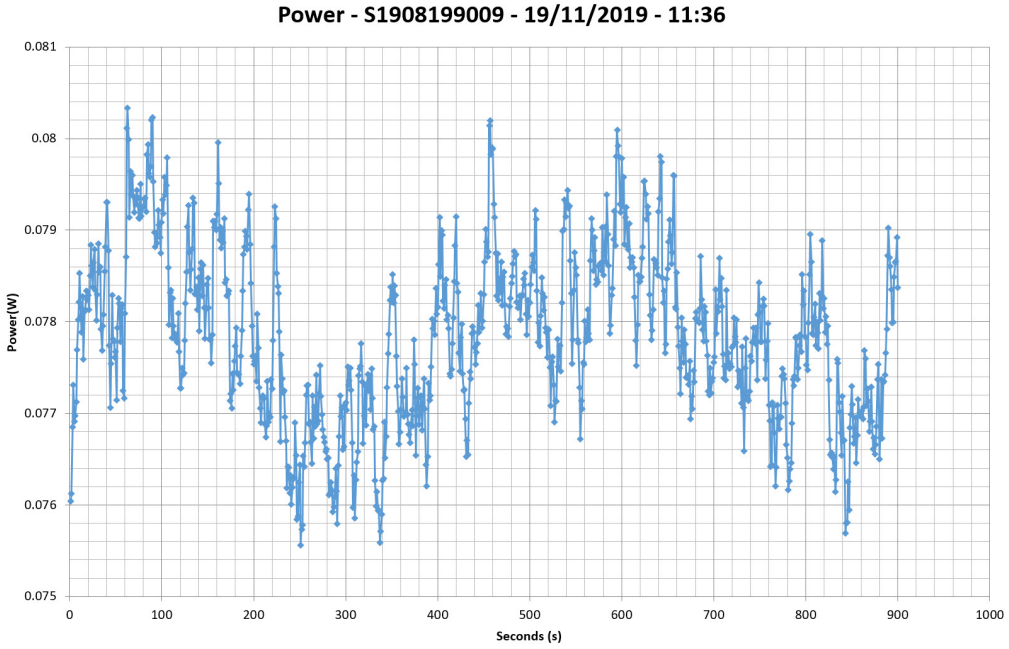
Hold-Up Time (ms)	20.40
AC Loss to PWR_OK Hold Up Time (ms)	18.80
PWR_OK Inactive to DC Loss Delay (ms)	1.60

Graphs

115V



230V



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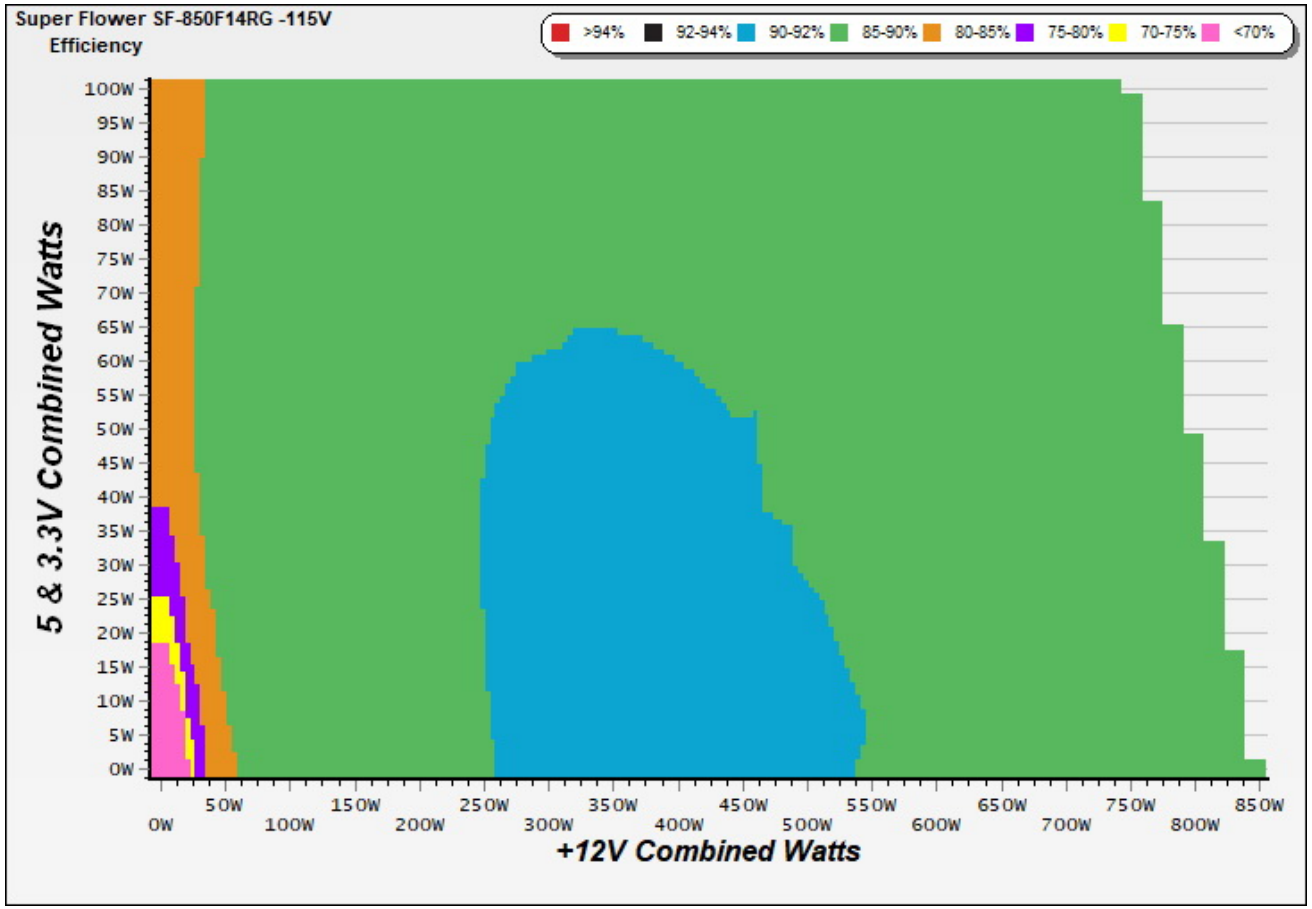
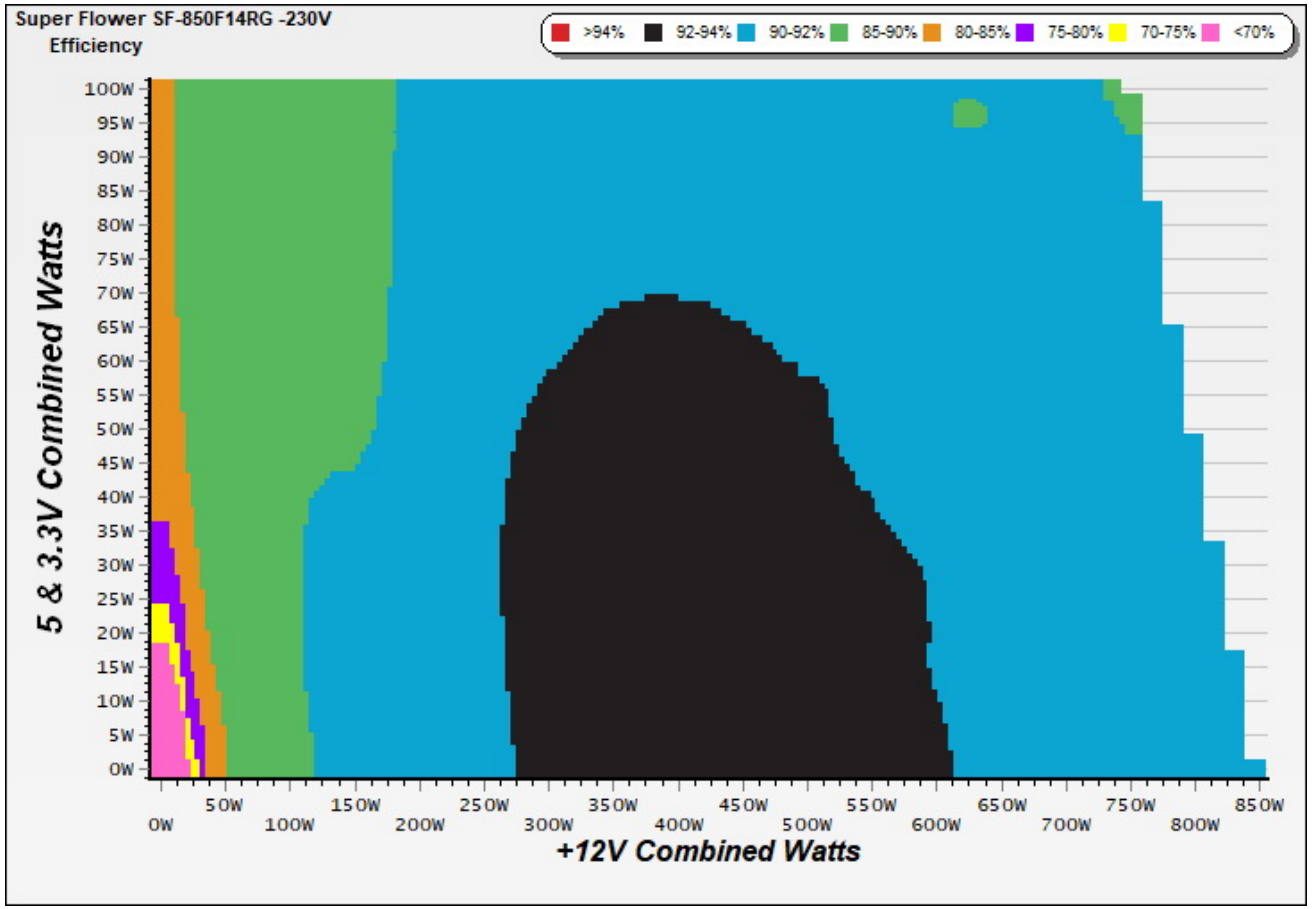
115V



□□

This graph depicts the PSU`s efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations.

230V



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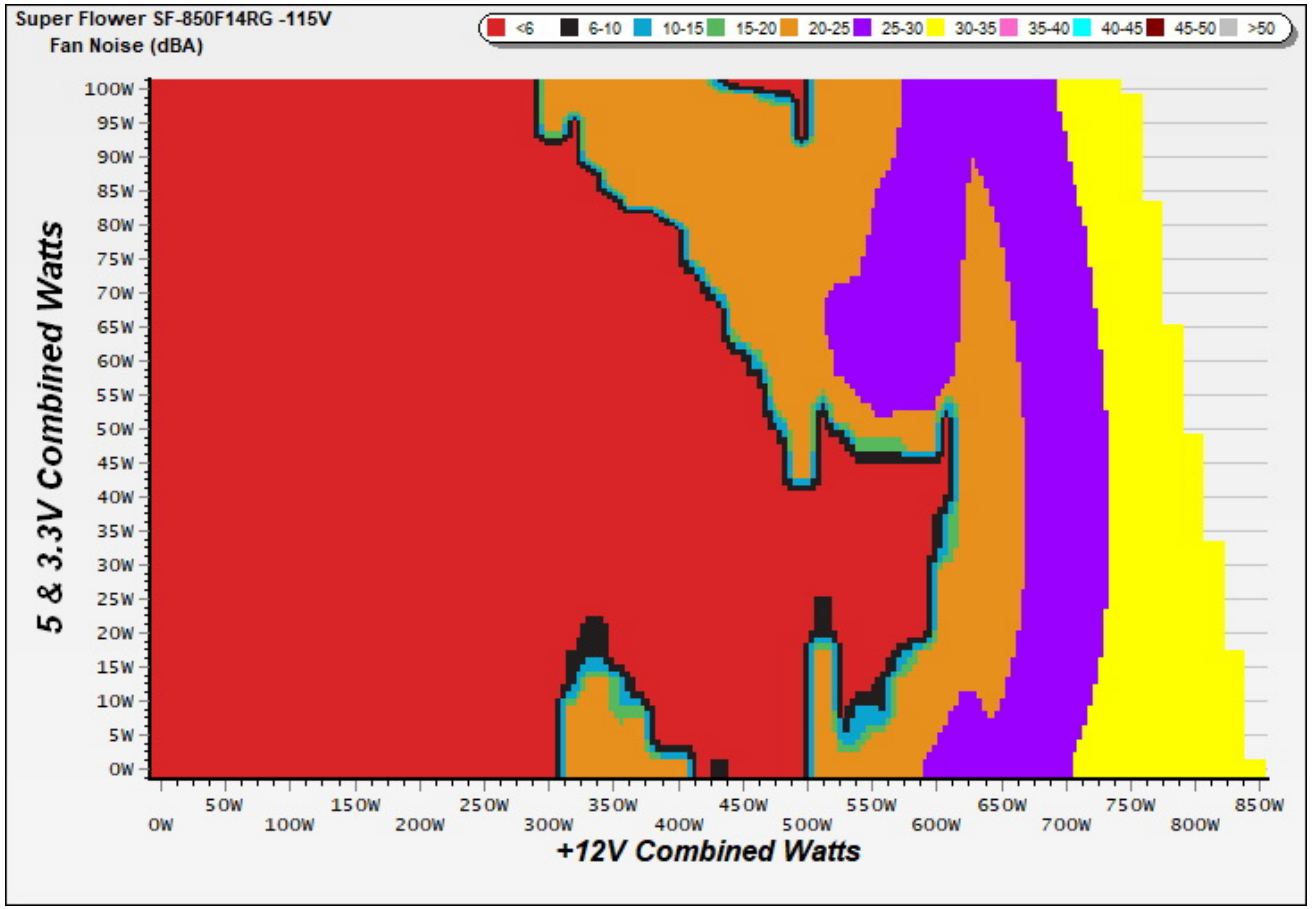
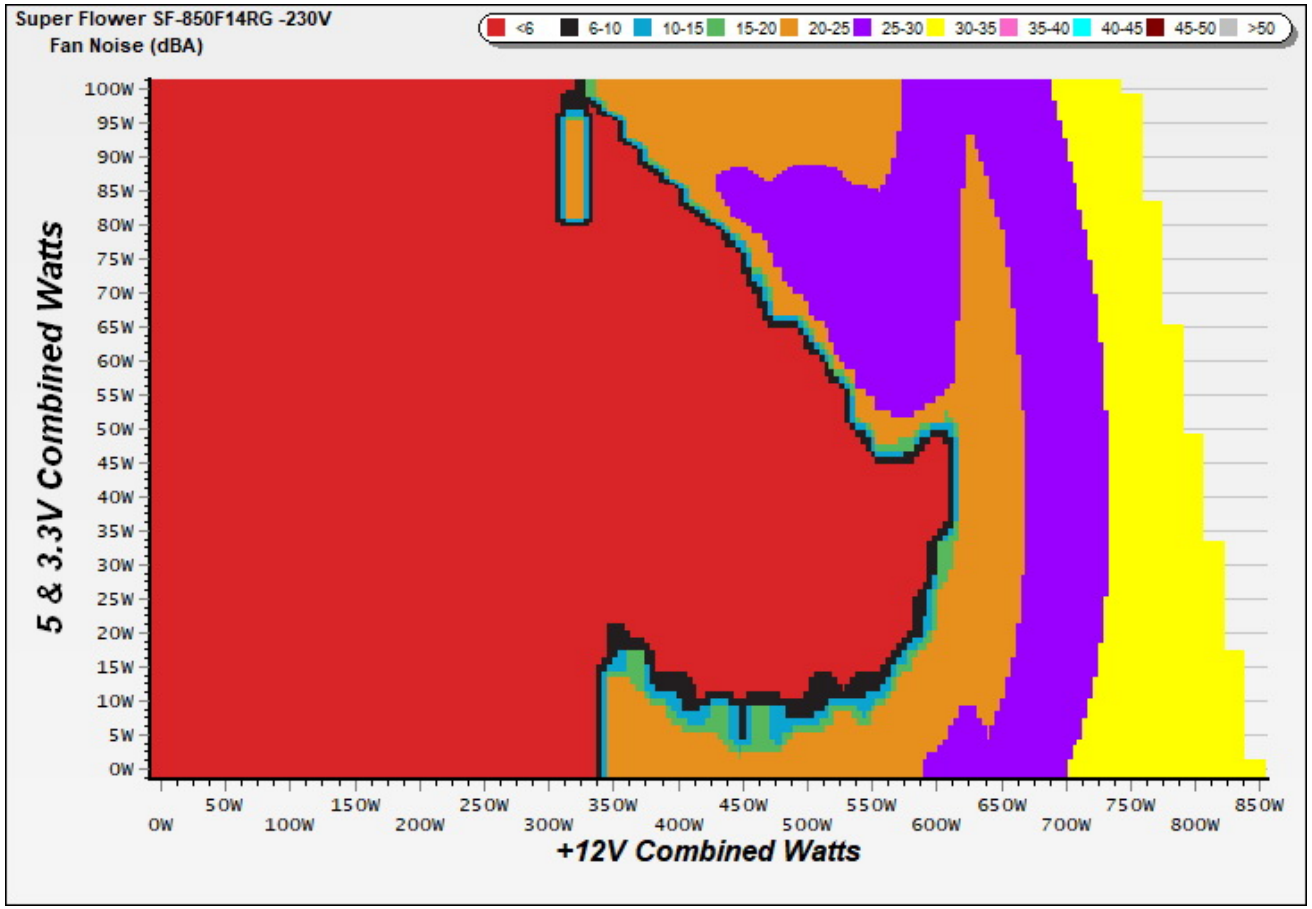
115V



□□

The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

230V



The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

Noise under high ambient temperature (indicative)

115V

Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	0 RPM · <6.0 dB(A) · 43.2 °C	0 RPM · <6.0 dB(A) · 43.2 °C	fan off in both
20%	0 RPM · <6.0 dB(A) · 44.3 °C	0 RPM · <6.0 dB(A) · 44.3 °C	fan off in both
50%	0 RPM · <6.0 dB(A) · 47.9 °C	0 RPM · <6.0 dB(A) · 47.9 °C	fan off in both
100%	1547 RPM · 37.5 dB(A) · 45.5 °C	1547 RPM · 37.5 dB(A) · 45.5 °C	**+0.0 dB(A)**

230V

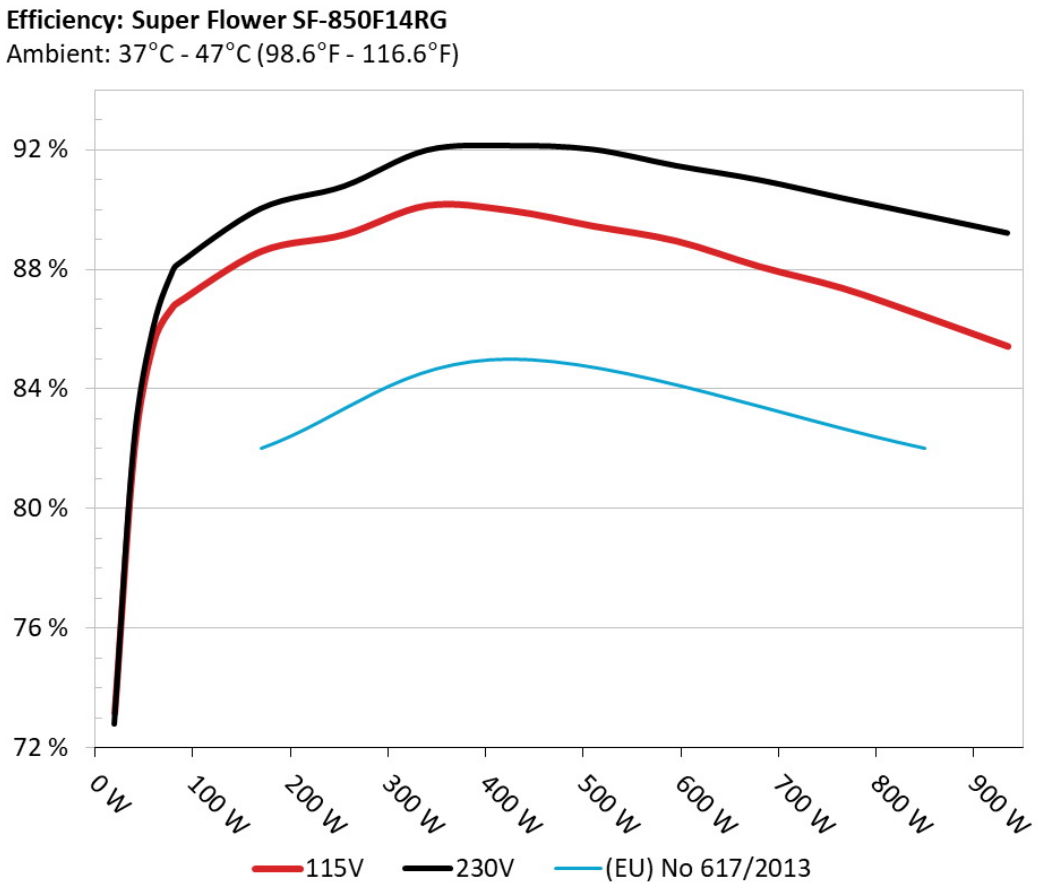
Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	0 RPM · <6.0 dB(A) · 42.4 °C	0 RPM · <6.0 dB(A) · 42.4 °C	fan off in both
20%	0 RPM · <6.0 dB(A) · 44.9 °C	0 RPM · <6.0 dB(A) · 44.9 °C	fan off in both
50%	0 RPM · <6.0 dB(A) · 49.2 °C	0 RPM · <6.0 dB(A) · 49.2 °C	fan off in both
100%	1559 RPM · 37.6 dB(A) · 45.7 °C	1559 RPM · 37.6 dB(A) · 45.7 °C	**+0.0 dB(A)**

INFO

Fan speed, noise and the measured intake temperature at 10, 20, 50 and 100 % load, from the two load regulation tests: at normal ambient (about 30-32 °C) and at high ambient (about 40-47 °C). These are stabilized readings at fixed loads, not averages over the certification sweep, so they are indicative of how the fan behaves when it is hot. "<6.0" is the floor of our sound meter, with the fan stopped; with the fan stopped, the intake sensor can read higher than the chamber air.

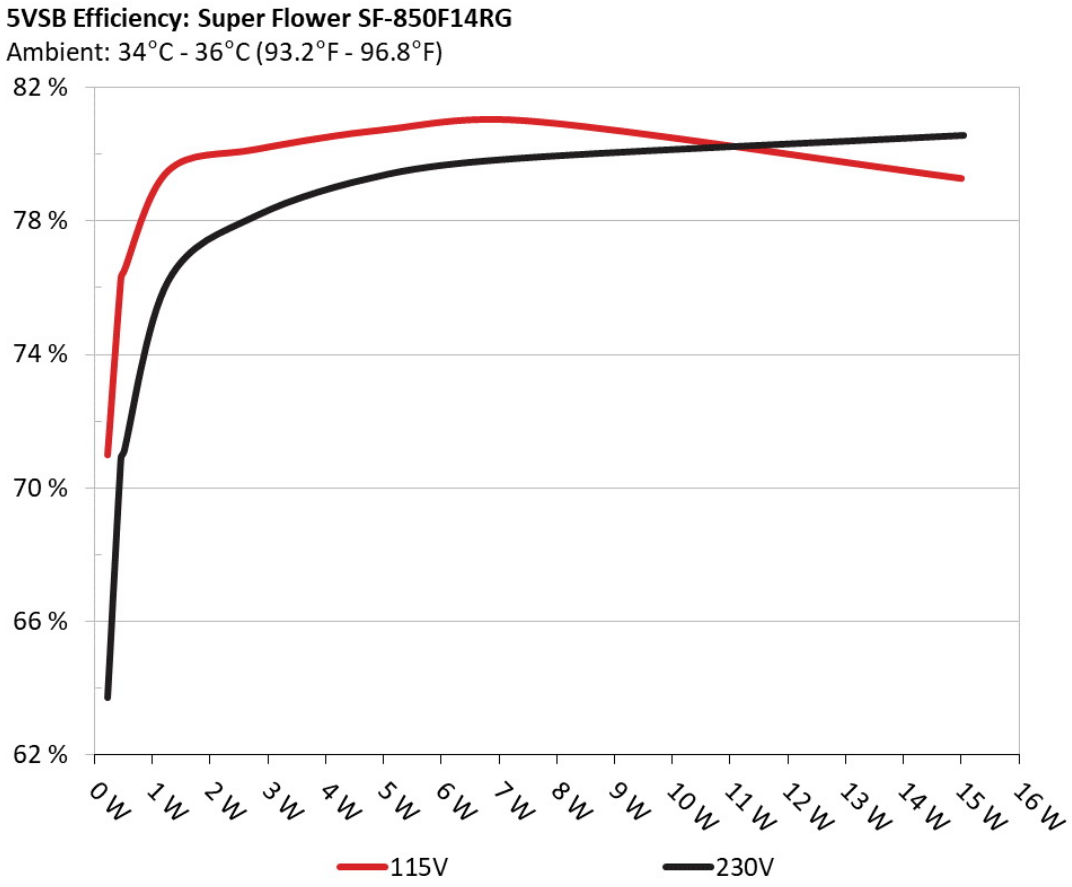
Informational. Not part of the ETA or LAMBDA rating.

Indicative Performance



The PSU`s efficiency under high ambient temperatures with 115V and 230V input. For this graph the results of the 10-110% load regulation table are used.

5Vsb□□□□



□□

This graph depicts the efficiency levels of the 5VSB rail with 115V and 230V input.

□□□□ □□ 5Vsb □□ (ErP Lot3/6 & CEC)

115V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.045A	0.230	70.988%	0.023
	5.114V	0.324		115.13V
2	0.090A	0.460	76.285%	0.043
	5.112V	0.603		115.13V
3	0.550A	2.804	80.160%	0.212
	5.098V	3.498		115.13V
4	1.000A	5.084	80.763%	0.312
	5.083V	6.295		115.13V
5	1.500A	7.601	81.000%	0.376
	5.066V	9.384		115.13V
6	3.001A	15.004	79.286%	0.460
	4.999V	18.924		115.13V

230V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.045A	0.230	63.712%	0.008
	5.114V	0.361		230.23V
2	0.090A	0.460	70.878%	0.014
	5.112V	0.649		230.24V
3	0.550A	2.804	78.149%	0.076
	5.098V	3.588		230.24V
4	1.000A	5.083	79.397%	0.130
	5.083V	6.402		230.24V
5	1.500A	7.600	79.899%	0.181
	5.066V	9.512		230.24V
6	3.000A	15.043	80.556%	0.286
	5.014V	18.674		230.23V

Supplementary Tests (For Reference)

10-110%□□□□

115V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	5.224A	1.985A	1.990A	0.985A	84.961	86.895%	0	<6.0	43.23°C	0.939
	12.129V	5.039V	3.315V	5.076V	97.774				39.99°C	115.12V
2	11.480A	2.980A	2.989A	1.185A	170.041	88.603%	0	<6.0	44.28°C	0.973
	12.120V	5.035V	3.312V	5.063V	191.914				40.50°C	115.12V
3	18.087A	3.477A	3.491A	1.386A	255.061	89.164%	0	<6.0	45.57°C	0.985
	12.109V	5.032V	3.308V	5.051V	286.058				41.25°C	115.12V
4	24.716A	3.978A	3.995A	1.588A	340.095	90.137%	0	<6.0	46.68°C	0.991
	12.093V	5.029V	3.304V	5.038V	377.307				41.45°C	115.12V
5	31.005A	4.977A	5.001A	1.792A	424.993	89.970%	0	<6.0	47.89°C	0.994
	12.078V	5.025V	3.300V	5.024V	472.374				42.08°C	115.12V
6	37.254A	5.976A	6.007A	1.997A	509.516	89.451%	983	25.6	42.39°C	0.995
	12.071V	5.022V	3.297V	5.010V	569.605				48.77°C	115.12V
7	43.533A	6.975A	7.012A	2.201A	594.815	88.952%	996	26.1	43.38°C	0.995
	12.076V	5.019V	3.295V	4.997V	668.691				50.38°C	115.11V
8	49.828A	7.977A	8.021A	2.408A	680.134	88.096%	1187	31.3	43.67°C	0.996
	12.076V	5.016V	3.291V	4.984V	772.040				51.18°C	115.11V
9	56.530A	8.477A	8.515A	2.412A	765.039	87.371%	1368	34.8	44.89°C	0.996
	12.074V	5.013V	3.288V	4.977V	875.624				53.29°C	115.10V
10	62.973A	8.982A	9.040A	3.031A	849.846	86.421%	1547	37.5	45.46°C	0.996
	12.071V	5.010V	3.285V	4.950V	983.375				54.51°C	115.10V
11	69.986A	8.986A	9.050A	3.035A	934.513	85.424%	1667	39.2	46.52°C	0.994
	12.071V	5.008V	3.282V	4.945V	1093.971				56.28°C	115.11V
CL1	0.100A	12.000A	11.999A	0.000A	101.047	82.615%	0	<6.0	48.07°C	0.952
	12.096V	5.018V	3.302V	5.096V	122.310				42.72°C	115.13V

CL2	70.838A	1.000A	1.001A	1.000A	867.650	86.698%	1600	38.1	45.88°C	0.996
	12.060V	5.023V	3.292V	5.026V	1000.768				54.85°C	115.10V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	5.226A	1.984A	1.992A	0.985A	84.962	88.160%	0	<6.0	42.43°C	0.724
	12.125V	5.038V	3.314V	5.076V	96.372				39.03°C	230.24V
2	11.484A	2.979A	2.991A	1.185A	170.036	90.029%	0	<6.0	44.88°C	0.885
	12.116V	5.034V	3.310V	5.063V	188.869				40.79°C	230.25V
3	18.091A	3.479A	3.495A	1.386A	255.052	90.775%	0	<6.0	46.43°C	0.934
	12.105V	5.031V	3.307V	5.050V	280.973				41.01°C	230.25V
4	24.711A	3.980A	3.997A	1.588A	340.071	91.981%	0	<6.0	48.37°C	0.951
	12.094V	5.028V	3.304V	5.037V	369.719				41.89°C	230.25V
5	30.999A	4.978A	5.003A	1.792A	424.948	92.132%	0	<6.0	49.21°C	0.963
	12.079V	5.023V	3.299V	5.023V	461.240				42.02°C	230.25V
6	37.255A	5.978A	6.006A	1.997A	509.479	92.009%	935	24.0	42.25°C	0.971
	12.070V	5.020V	3.296V	5.010V	553.730				50.02°C	230.25V
7	43.541A	6.977A	7.015A	2.202A	594.792	91.465%	1002	26.3	43.25°C	0.977
	12.073V	5.018V	3.294V	4.997V	650.296				51.60°C	230.26V
8	49.840A	7.979A	8.024A	2.409A	680.128	90.988%	1168	30.8	43.55°C	0.981
	12.073V	5.014V	3.290V	4.983V	747.488				52.43°C	230.26V
9	56.544A	8.483A	8.518A	2.412A	765.054	90.382%	1384	35.2	44.65°C	0.984
	12.071V	5.011V	3.287V	4.977V	846.468				53.81°C	230.26V
10	63.001A	8.986A	9.045A	3.032A	849.872	89.797%	1559	37.6	45.65°C	0.986
	12.066V	5.008V	3.283V	4.949V	946.442				55.29°C	230.25V
11	70.055A	8.992A	9.051A	3.035A	934.646	89.211%	1679	39.4	46.58°C	0.989
	12.061V	5.006V	3.281V	4.943V	1047.683				56.38°C	230.26V
CL1	0.098A	12.002A	11.999A	0.000A	101.033	84.039%	0	<6.0	50.45°C	0.782
	12.093V	5.018V	3.302V	5.096V	120.221				42.57°C	230.26V

CL2	70.841A	1.001A	1.000A	1.000A	867.683	90.170%	1595	38.1	45.21°C	0.987
	12.060V	5.020V	3.289V	5.027V	962.276				55.25°C	230.25V

The results above are not used in the certification process

20-80□□□□□

115V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	PF/AC □□
1	1.222A	0.496A	0.495A	0.196A	19.986	73.144%	0	<6.0	0.714
	12.144V	5.044V	3.319V	5.107V	27.324				115.11V
2	2.444A	0.992A	0.997A	0.392A	39.976	81.950%	0	<6.0	0.865
	12.139V	5.042V	3.318V	5.099V	48.781				115.11V
3	3.672A	1.488A	1.491A	0.589A	60.008	85.572%	0	<6.0	0.929
	12.136V	5.041V	3.317V	5.091V	70.126				115.12V
4	4.893A	1.983A	1.992A	0.787A	79.960	86.769%	0	<6.0	0.935
	12.132V	5.040V	3.315V	5.083V	92.153				115.12V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	PF/AC □□
1	1.222A	0.496A	0.497A	0.196A	19.987	72.786%	0	<6.0	0.375
	12.140V	5.043V	3.318V	5.107V	27.460				230.25V
2	2.445A	0.993A	0.995A	0.392A	39.977	82.149%	0	<6.0	0.513
	12.136V	5.041V	3.317V	5.099V	48.664				230.24V
3	3.674A	1.486A	1.493A	0.589A	60.008	86.069%	0	<6.0	0.618
	12.131V	5.040V	3.316V	5.091V	69.721				230.24V
4	4.895A	1.984A	1.991A	0.787A	79.960	87.958%	0	<6.0	0.704
	12.128V	5.038V	3.314V	5.083V	90.907				230.25V

The results above are not used in the certification process

115V

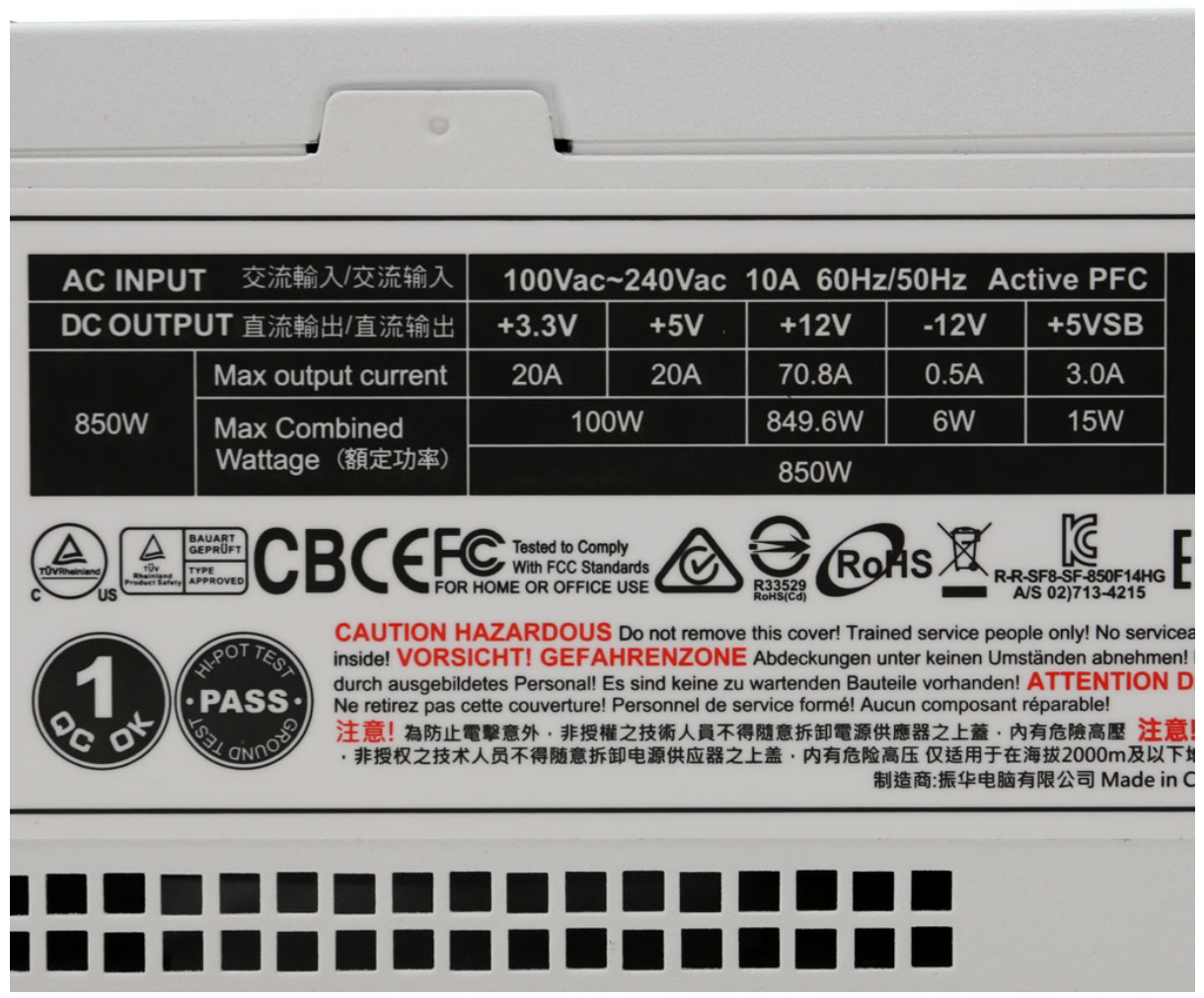
Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	4.5 mV	5.0 mV	6.5 mV	4.5 mV	Pass
20% Load	6.5 mV	5.8 mV	7.6 mV	5.5 mV	Pass
30% Load	5.7 mV	7.0 mV	7.8 mV	5.6 mV	Pass
40% Load	6.2 mV	7.7 mV	9.1 mV	7.8 mV	Pass
50% Load	6.7 mV	8.2 mV	9.5 mV	10.7 mV	Pass
60% Load	7.1 mV	8.9 mV	11.2 mV	11.9 mV	Pass
70% Load	6.5 mV	9.2 mV	9.1 mV	9.6 mV	Pass
80% Load	7.7 mV	10.9 mV	11.7 mV	11.4 mV	Pass
90% Load	7.8 mV	11.5 mV	12.5 mV	13.1 mV	Pass
100% Load	10.8 mV	13.4 mV	13.4 mV	13.9 mV	Pass
110% Load	11.7 mV	13.4 mV	15.4 mV	15.0 mV	Pass
Crossload 1	6.4 mV	6.4 mV	8.1 mV	9.0 mV	Pass
Crossload 2	10.2 mV	12.5 mV	12.8 mV	14.7 mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	4.5 mV	5.7 mV	6.9 mV	4.6 mV	Pass
20% Load	6.2 mV	6.1 mV	7.2 mV	5.3 mV	Pass
30% Load	5.3 mV	7.0 mV	8.1 mV	5.9 mV	Pass
40% Load	5.6 mV	8.0 mV	10.0 mV	6.4 mV	Pass
50% Load	6.4 mV	8.7 mV	10.0 mV	7.9 mV	Pass
60% Load	6.7 mV	9.1 mV	10.4 mV	10.9 mV	Pass
70% Load	7.5 mV	10.3 mV	11.0 mV	9.3 mV	Pass
80% Load	7.5 mV	10.4 mV	12.2 mV	9.6 mV	Pass





Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	7.8 mV	11.9 mV	12.8 mV	11.0 mV	Pass
100% Load	10.4 mV	13.2 mV	13.6 mV	11.8 mV	Pass
110% Load	10.8 mV	14.2 mV	14.1 mV	12.6 mV	Pass
Crossload 1	6.5 mV	6.8 mV	8.8 mV	9.2 mV	Pass
Crossload 2	9.8 mV	12.6 mV	12.7 mV	10.6 mV	Pass

The results above are not used in the certification process

Super Flower Leadex III Gold ARGB 850W (#2)

Top side

Power specifications label

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