



Super Flower Leadex III Gold ARGB 550W (#2)

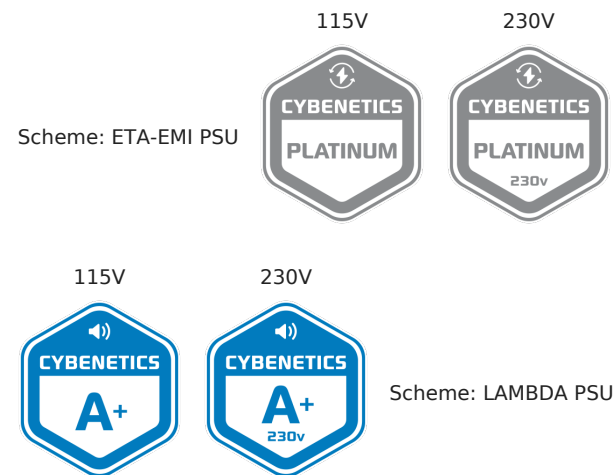
Serial Number S1908199003

Lab ID SF19550139

Certification ID 25893

Test Result Report ID: 19PS893A

Certificate Issue Date: Nov 30, 2019



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

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 550W (#2)
OEM/ODM	Super Flower
Serial Number	S1908199003
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10
Rated Frequency (Hz)	50-60

Rated Power (W)	550
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	130mm Fluid Dynamic Bearing Fan (RL4C S1302412L)
Semi-Passive Operation	✓ (selectable)
Cybenetics Testing Information	
Lab ID	SF19550139
Date of receipt	Nov 18, 2019
Testing Date	Nov 29, 2019
Report Issued Date	Nov 30, 2019
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors(Non-accredited measurements)

Modular Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (590mm)	1	1	18-22AWG	Yes
4+4 pin EPS12V (690mm)	2	2	18-22AWG	Yes
6+2 pin PCIe (540mm+150mm)	1	2	18-22AWG	Yes
SATA (550mm+120mm+120mm)	2	6	18AWG	No
4-pin Molex (550mm+100mm+100mm+100mm)	1	4	18AWG	No
ARGB Sync cable (550mm+180mm)	1	2	28AWG	No
AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	45.8	3	0.5
	Watts	100		549.6	15	6
Total Max. Power (W)		550				

Parts Description

General Data	
Manufacturer (OEM)	Super Flower
Platform Model	Leadex III
PCB Type	Single Sided
Primary Side	
Transient Filter	3x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	1x
APFC MOSFETS	2x Infineon IPA50R280CE (550V, 11.4A @ 100°C, 0.28Ohm) & 1x SPN5003 FET (for reduced no-load consumption)
APFC Boost Diode	1x STMicroelectronics STTH8R06D (600V, 8A @ 130°C)
Hold-up Cap(s)	1x Nippon Chemi-Con (400V, 470uF, 2,000h @ 105°C, KMQ)
Main Switchers	2x Infineon IPA50R199CP (550V, 11A @ 100°C, 0.199Ohm)
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	4x Infineon IPP041N04N (40V, 80A @ 100°C, 4.1mOhm)
5V & 3.3V	DC-DC Converters: 4x Alpha & Omega AON6516 (30V, 25A @ 100°C, 8mOhm @ 125°C) PWM Controllers: 2x ON Semiconductor NCP1587A
Filtering Capacitors	Electrolytics: 6x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 9x Nippon Chemi-Con (1-5,000h @ 105°C, KZE), 2x Nippon Chemi-Con (1-2,000h @ 105°C, KMG), 6x Nichicon (1,000h @ 105°C, RZ) Polymers: 5x FPCAP, 2x United Chemi-Con, 2x Jamicon
Supervisor IC	SF29603 & LM339A
Fan controller	STMicroelectronics STM8S003F3

Fan Model	Globe Fan S1302412L (130mm, 12V, 0.25A, Fluid Dynamic Bearing Fan)
5VSB Circuit	
Rectifier	1x PFC PFR20L60CT SBR (60V, 20A)
Standby PWM Controller	SF29604

Test Results

Temperature & Compliance Info

Temperature Range (°C /°F)	28-32 / 82.4-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	89.229%
Average Noise Output (>1450 Load Combinations)	19.35dBA
Average PF (>1450 Load Combinations)	0.987
Efficiency With 10W (≤500W) or 2% (>500W) Load	68.252%
Standby Power Consumption	0.0428W
Non-Accredited	
12V Ripple (Full Load)	10.64mV
5V Ripple (Full Load)	6.25mV
3.3V Ripple (Full Load)	18.38mV
5VSB Ripple (Full Load)	12.99mV
12V Load Regulation	0.38%
5V Load Regulation	0.54%
3.3V Load Regulation	0.87%
5VSB Load Regulation	2.46%
Inrush Current	32.302A

230V

Accredited		
Average Efficiency (>1450 load combinations)	91.219%	
Average Noise Output (>1450 Load Combinations)	16.25dBA	
Average PF (>1450 Load Combinations)	0.946	
Efficiency With 10W (≤500W) or 2% (>500W) Load	-	
Standby Power Consumption	0.0676W	
Non-Accredited		
12V Ripple (Full Load)	10.85mV	
5V Ripple (Full Load)	6.40mV	
3.3V Ripple (Full Load)	17.50mV	
5VSB Ripple (Full Load)	13.17mV	
12V Load Regulation	0.32%	
5V Load Regulation	0.50%	
3.3V Load Regulation	0.81%	
5VSB Load Regulation	2.40%	
Inrush Current	63.976A	
Hold-Up Time & PWR_OK Signal	24.80ms	
AC Loss to PWR_OK Hold Up Time	23.20ms	
PWR_OK Inactive to DC Loss Delay	1.60ms	
PSU Timings: T1 (20% / 100%)	232.0ms	232.0ms
PSU Timings: T3 (20% / 100%)	190.0ms	190.0ms
OPP (0.00°C / 0.00°C)	116.29%	-

Hold-Up Time & PWR_OK Signal

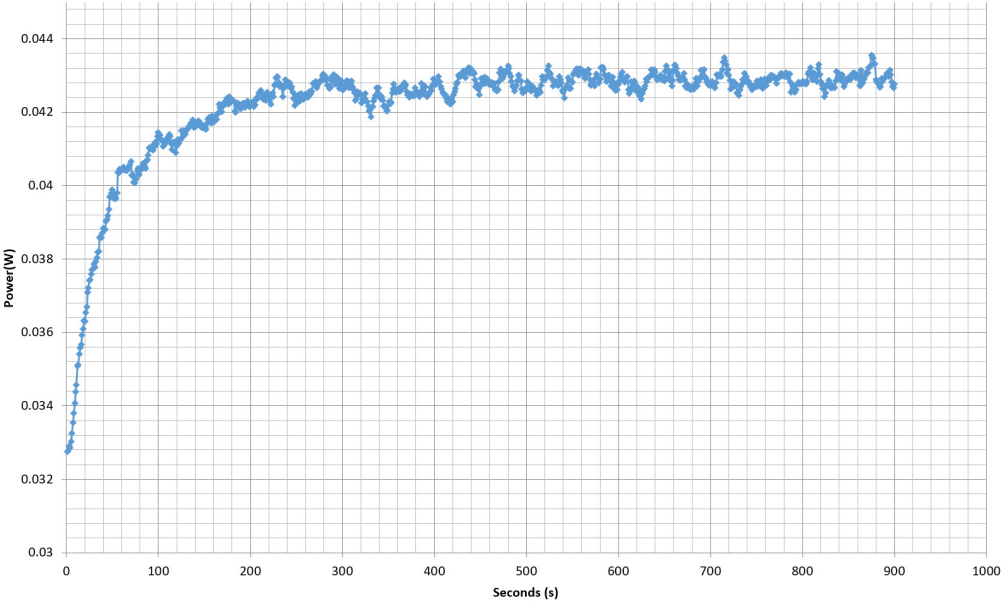
Hold-Up Time (ms)	24.80
AC Loss to PWR_OK Hold Up Time (ms)	23.20
PWR_OK Inactive to DC Loss Delay (ms)	1.60

Vampire Power

Graphs

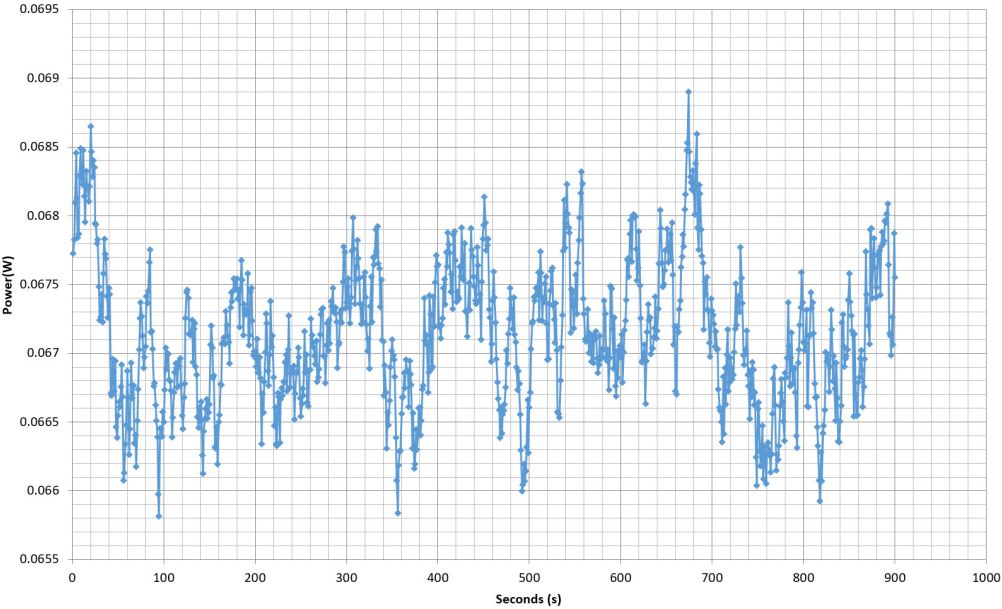
115V

Power - S1908199003 - 27/11/2019 - 11:28



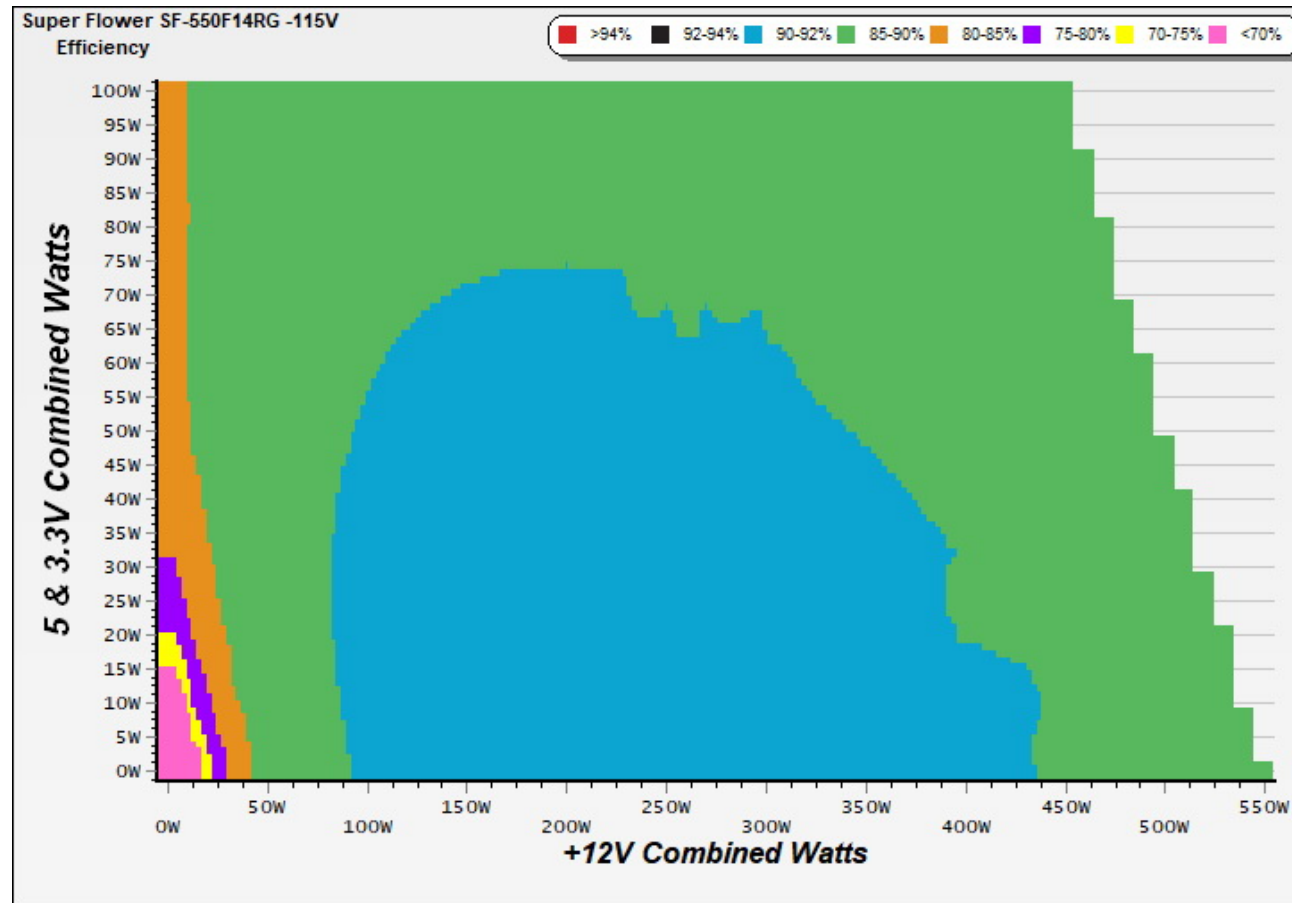
230V

Power - S1908199003 - 27/11/2019 - 11:28



Efficiency Graph

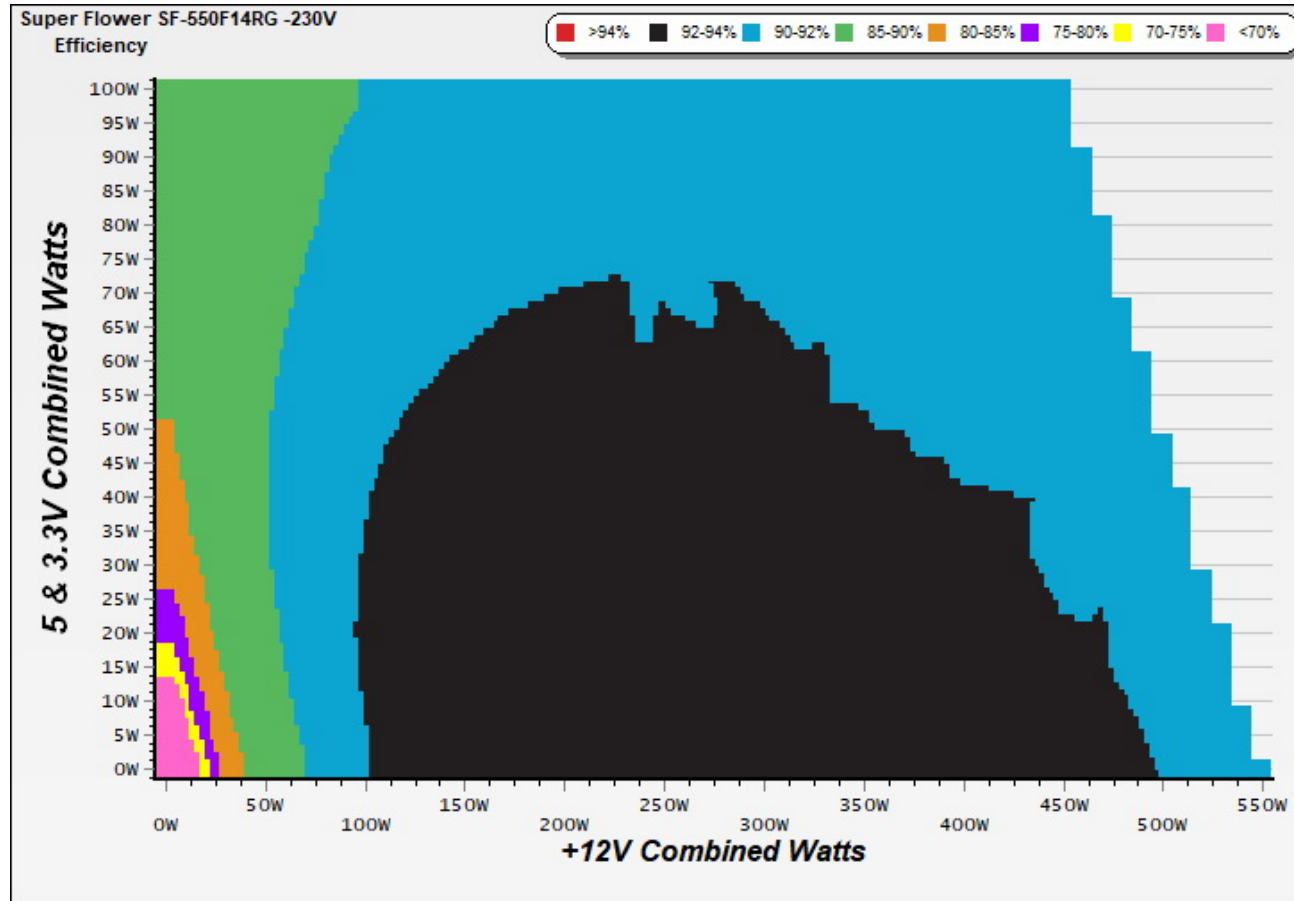
115V



INFO

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

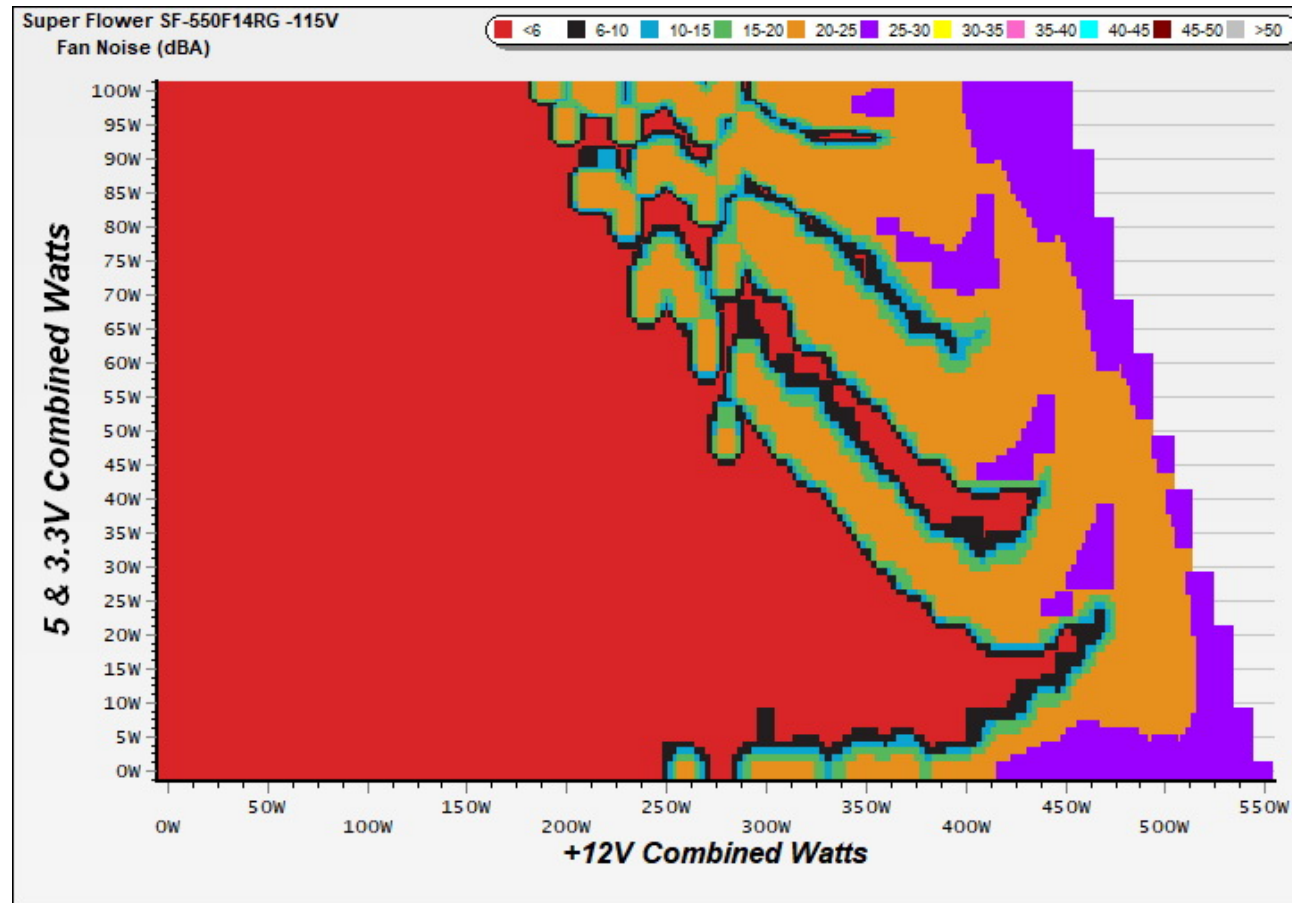


INFO

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.

Noise Graph

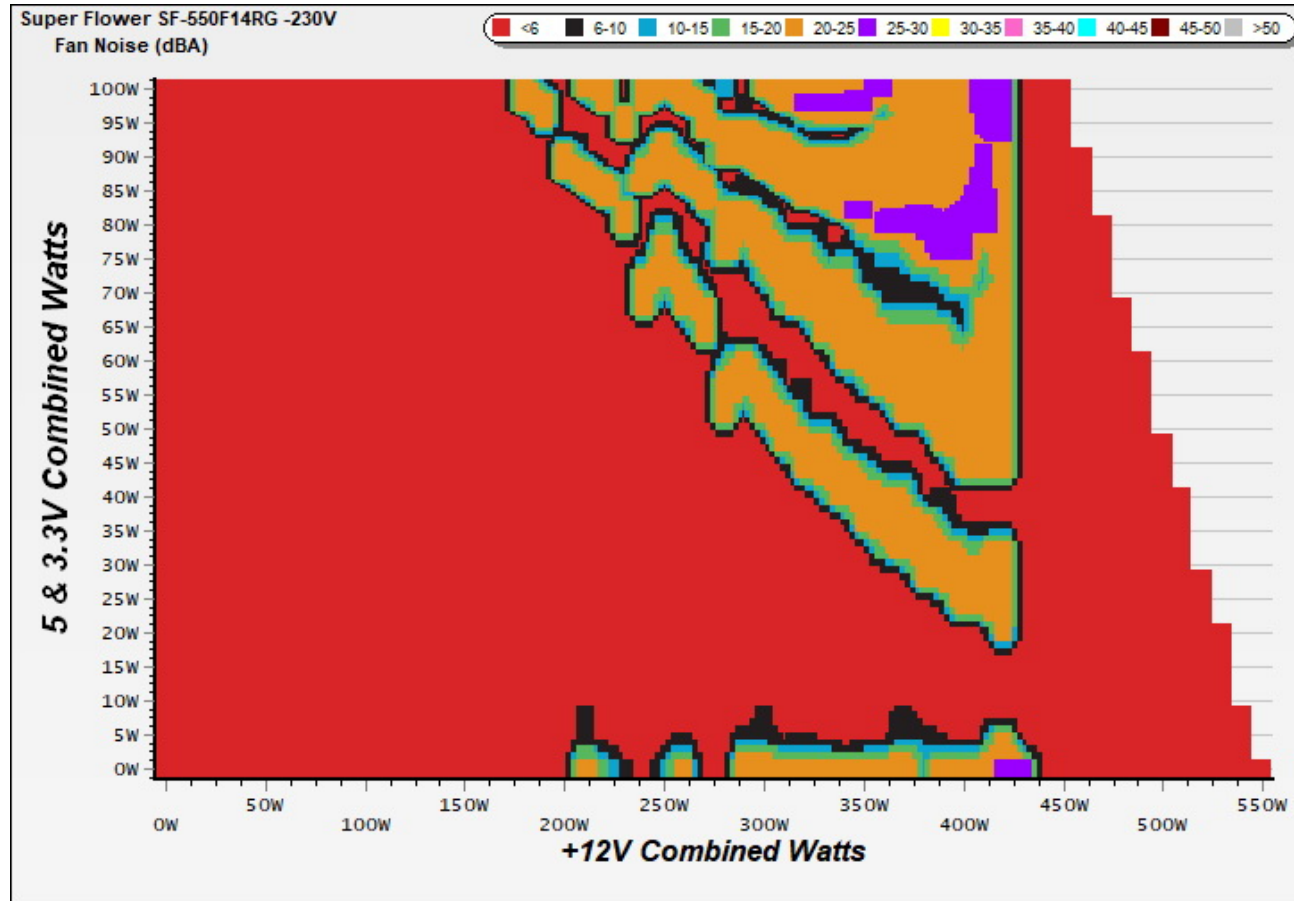
115V



INFO

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



INFO

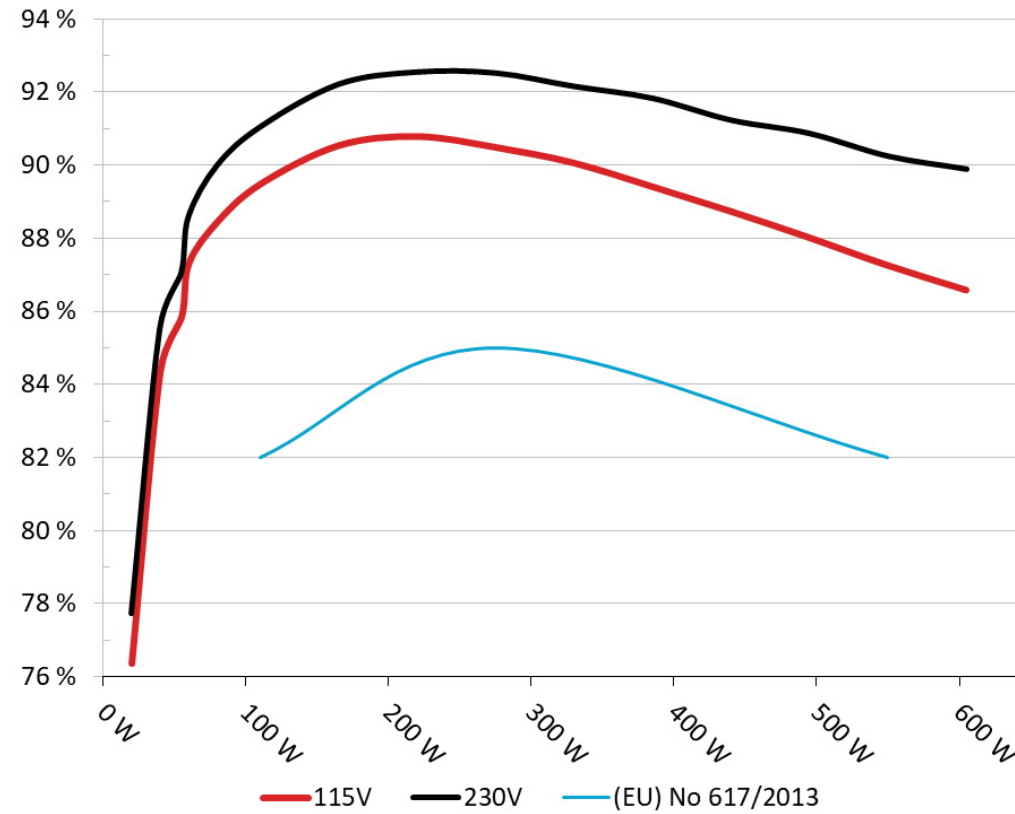
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

Indicative Performance

Efficiency under high ambient temperature

Efficiency: Super Flower SF-550F14RG

Ambient: 37°C - 47°C (98.6°F - 116.6°F)



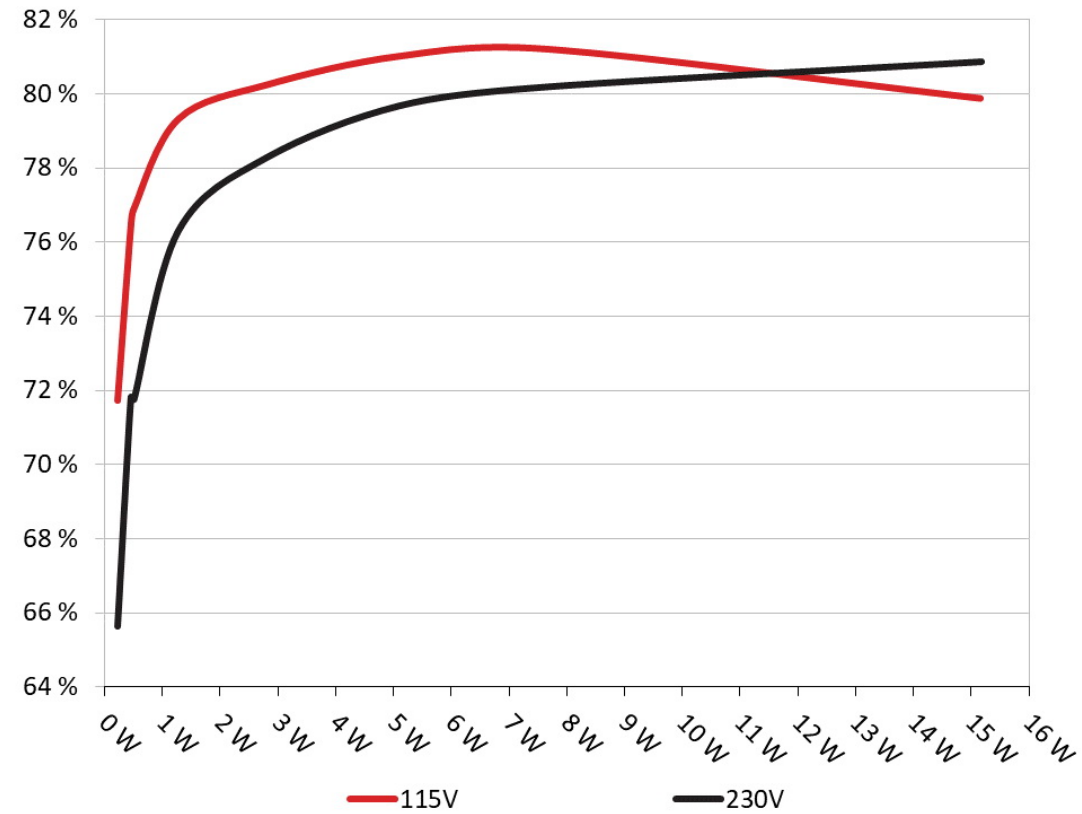
INFO

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 Efficiency

5VSB Efficiency: Super Flower SF-550F14RG

Ambient: 34°C - 36°C (93.2°F - 96.8°F)



INFO

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

5VSB Efficiency (ERP LOT 3/6 & CEC)

115V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231	71.739%	0.038
	5.128V	0.322		115.16V
2	0.090A	0.461	76.451%	0.070
	5.127V	0.603		115.16V
3	0.550A	2.815	80.245%	0.286
	5.117V	3.508		115.14V
4	1.000A	5.108	81.015%	0.366
	5.108V	6.305		115.14V
5	1.500A	7.645	81.209%	0.410
	5.096V	9.414		115.14V
6	3.000A	15.169	79.879%	0.467
	5.057V	18.990		115.14V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231	65.625%	0.013
	5.127V	0.352		230.37V
2	0.090A	0.461	71.807%	0.023
	5.127V	0.642		230.39V
3	0.550A	2.815	78.281%	0.118
	5.117V	3.596		230.37V
4	1.000A	5.108	79.676%	0.190
	5.107V	6.411		230.37V
5	1.500A	7.644	80.185%	0.246
	5.095V	9.533		230.38V
6	3.000A	15.181	80.866%	0.336
	5.061V	18.773		230.37V

Supplementary Tests (For Reference)

Typical Load Tests

115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	2.743A	1.984A	1.989A	0.981A	54.959	85.855%	0	<6.0	43.46°C	0.958
	12.162V	5.042V	3.316V	5.096V	64.014				40.13°C	115.17V
2	6.510A	2.976A	2.989A	1.180A	110.025	89.487%	0	<6.0	44.93°C	0.974
	12.155V	5.039V	3.312V	5.085V	122.951				40.52°C	115.16V
3	10.619A	3.475A	3.489A	1.380A	165.023	90.547%	0	<6.0	46.16°C	0.985
	12.146V	5.035V	3.309V	5.074V	182.251				41.28°C	115.16V
4	14.731A	3.975A	3.993A	1.580A	220.023	90.794%	0	<6.0	47.51°C	0.990
	12.139V	5.032V	3.306V	5.063V	242.333				41.89°C	115.16V
5	18.505A	4.973A	4.995A	1.782A	275.012	90.498%	877	22.8	42.01°C	0.993
	12.132V	5.029V	3.303V	5.052V	303.889				48.50°C	115.16V
6	22.277A	5.968A	6.001A	1.984A	330.017	90.068%	977	25.8	42.42°C	0.994
	12.129V	5.028V	3.301V	5.042V	366.410				49.38°C	115.16V
7	26.058A	6.966A	7.006A	2.187A	385.096	89.420%	994	26.4	43.09°C	0.995
	12.126V	5.026V	3.298V	5.030V	430.660				50.67°C	115.16V
8	29.824A	7.966A	8.011A	2.392A	440.083	88.744%	1056	28.3	43.39°C	0.996
	12.127V	5.023V	3.294V	5.019V	495.904				51.58°C	115.15V
9	33.963A	8.465A	8.507A	2.394A	494.582	88.033%	1243	32.7	44.17°C	0.996
	12.133V	5.021V	3.292V	5.013V	561.814				52.80°C	115.15V
10	37.914A	8.969A	9.026A	3.005A	549.824	87.269%	1428	35.5	45.34°C	0.996
	12.136V	5.018V	3.289V	4.994V	630.032				54.49°C	115.15V
11	42.455A	8.973A	9.035A	3.008A	605.039	86.590%	1621	38.4	46.69°C	0.996
	12.138V	5.016V	3.288V	4.988V	698.742				56.58°C	115.14V
CL1	0.115A	11.998A	12.000A	0.000A	101.286	84.413%	0	<6.0	48.36°C	0.974
	12.137V	5.031V	3.294V	5.095V	119.989				42.33°C	115.16V

CL2	45.830A	1.001A	0.999A	1.000A	570.266	87.981%	1473	36.2	45.67°C	0.996
	12.151V	5.026V	3.305V	5.053V	648.169				54.91°C	115.16V

The results above are not used in the certification process

230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])				Temps (In/Out)	PF/AC Volts		
1	2.744A	1.984A	1.991A	0.981A	54.960	87.049%	0	The results above are not used in the certification process							
Light Load Tests															
115V															
Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts						
1	1.222A	0.495A	0.496A	0.195A	19.990	76.365%	0	<6.0	0.832						
	12.149V	5.047V	3.320V	5.120V	26.177				115.18V						
2	2.439A	0.991A	0.993A	0.391A	39.981	84.364%	0	<6.0	0.930						
	12.172V	5.045V	3.318V	5.113V	47.391				115.18V						
3	3.666A	1.487A	1.492A	0.588A	60.011	87.319%	0	<6.0	0.967						
	12.155V	5.043V	3.317V	5.106V	68.726				115.18V						
4	4.884A	1.984A	1.992A	0.785A	79.960	88.453%	0	<6.0	0.965						
	12.152V	5.042V	3.315V	5.099V	90.398				115.18V						
The results above are not used in the certification process															
230V															
Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])				PF/AC Volts			

1	1.220A	0.495A	0.498A	0.195A	19.990	77.722%	0	The results above are not used in the certification process Ripple Measurements 115V <table><tr><th>Test</th><th>12V</th><th>5V</th><th>3.3V</th><th>5VSB</th><th>Pass/Fail</th></tr><tr><td>10% Load</td><td>5.9 mV</td><td>4.1 mV</td><td>15.5 mV</td><td>11.5 mV</td><td>Pass</td></tr><tr><td>20% Load</td><td>6.3 mV</td><td>3.8 mV</td><td>17.0 mV</td><td>11.2 mV</td><td>Pass</td></tr><tr><td>30% Load</td><td>6.7 mV</td><td>4.2 mV</td><td>16.9 mV</td><td>11.2 mV</td><td>Pass</td></tr><tr><td>40% Load</td><td>6.8 mV</td><td>4.3 mV</td><td>15.4 mV</td><td>11.2 mV</td><td>Pass</td></tr><tr><td>50% Load</td><td>7.6 mV</td><td>4.4 mV</td><td>15.1 mV</td><td>11.0 mV</td><td>Pass</td></tr><tr><td>60% Load</td><td>7.5 mV</td><td>4.7 mV</td><td>15.4 mV</td><td>11.5 mV</td><td>Pass</td></tr><tr><td>70% Load</td><td>7.6 mV</td><td>5.0 mV</td><td>15.9 mV</td><td>11.8 mV</td><td>Pass</td></tr><tr><td>80% Load</td><td>8.3 mV</td><td>5.2 mV</td><td>17.5 mV</td><td>18.0 mV</td><td>Pass</td></tr><tr><td>90% Load</td><td>8.1 mV</td><td>5.6 mV</td><td>16.7 mV</td><td>11.6 mV</td><td>Pass</td></tr><tr><td>100% Load</td><td>10.6 mV</td><td>6.3 mV</td><td>18.4 mV</td><td>13.0 mV</td><td>Pass</td></tr><tr><td>110% Load</td><td>10.7 mV</td><td>6.3 mV</td><td>18.1 mV</td><td>13.3 mV</td><td>Pass</td></tr><tr><td>Crossload 1</td><td>7.9 mV</td><td>4.5 mV</td><td>17.0 mV</td><td>15.1 mV</td><td>Pass</td></tr><tr><td>Crossload 2</td><td>10.7 mV</td><td>6.0 mV</td><td>17.4 mV</td><td>13.6 mV</td><td>Pass</td></tr></table> The results above are not used in the certification process 230V	Test	12V	5V	3.3V	5VSB	Pass/Fail	10% Load	5.9 mV	4.1 mV	15.5 mV	11.5 mV	Pass	20% Load	6.3 mV	3.8 mV	17.0 mV	11.2 mV	Pass	30% Load	6.7 mV	4.2 mV	16.9 mV	11.2 mV	Pass	40% Load	6.8 mV	4.3 mV	15.4 mV	11.2 mV	Pass	50% Load	7.6 mV	4.4 mV	15.1 mV	11.0 mV	Pass	60% Load	7.5 mV	4.7 mV	15.4 mV	11.5 mV	Pass	70% Load	7.6 mV	5.0 mV	15.9 mV	11.8 mV	Pass	80% Load	8.3 mV	5.2 mV	17.5 mV	18.0 mV	Pass	90% Load	8.1 mV	5.6 mV	16.7 mV	11.6 mV	Pass	100% Load	10.6 mV	6.3 mV	18.4 mV	13.0 mV	Pass	110% Load	10.7 mV	6.3 mV	18.1 mV	13.3 mV	Pass	Crossload 1	7.9 mV	4.5 mV	17.0 mV	15.1 mV	Pass	Crossload 2	10.7 mV	6.0 mV	17.4 mV	13.6 mV	Pass
Test	12V	5V	3.3V	5VSB	Pass/Fail																																																																																							
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