Super Flower Leadex III Gold ARGB 750W (#2)

Serial Number S1908199007

Lab ID SF19750137

Certification ID 25891

Test Result Report ID: 19PS891A

Certificate Issue Date: Nov 30, 2019

Scheme: ETA-EMI PSU

115V 230V

Scheme: LAMBDA PSU

115V 230V

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 750W (#2)
OEM/ODM	Super Flower
Serial Number	S1908199007
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10
Rated Frequency (Hz)	50-60

Rated Power (W)	750
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 (S1302412M)
Semi-Passive Operation	✓ (selectable)
Cybenetics Testing Information	
Lab ID	SF19750137
Date of receipt	Nov 18, 2019
Testing Date	Nov 26, 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)	3	6	18-22AWG	Yes
SATA (550mm+120mm+120mm)	3	9	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	62.4	3	0.5
	Watts	100		748.8	15	6
Total Max. Power (W)		750				

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 IPA50R199CP (550V, 11A @ 100°C, 0.199Ohm) & 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, 330uF each or 660uF 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	4x 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: 6x 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), 1x Nippon Chemi-Con (1-2,000h @ 105°C, KMG), 7x Nichicon (1,000h @ 105°C, RZ), 1x Nichicon (2-5,000h @ 105°C, HD) Polymers: 8x FPCAP, 3x 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

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)	88.863%
Average Noise Output (>1450 Load Combinations)	24.34dBA
Average PF (>1450 Load Combinations)	0.983
Efficiency With 10W (≤500W) or 2% (>500W) Load	68.905%
Standby Power Consumption	0.0471W
Non-Accredited	
12V Ripple (Full Load)	12.40mV
5V Ripple (Full Load)	13.58mV
3.3V Ripple (Full Load)	21.46mV
5VSB Ripple (Full Load)	13.90mV
12V Load Regulation	0.56%
5V Load Regulation	0.72%
3.3V Load Regulation	1.21%
5VSB Load Regulation	3.30%

Inrush Current	36.704A

230V

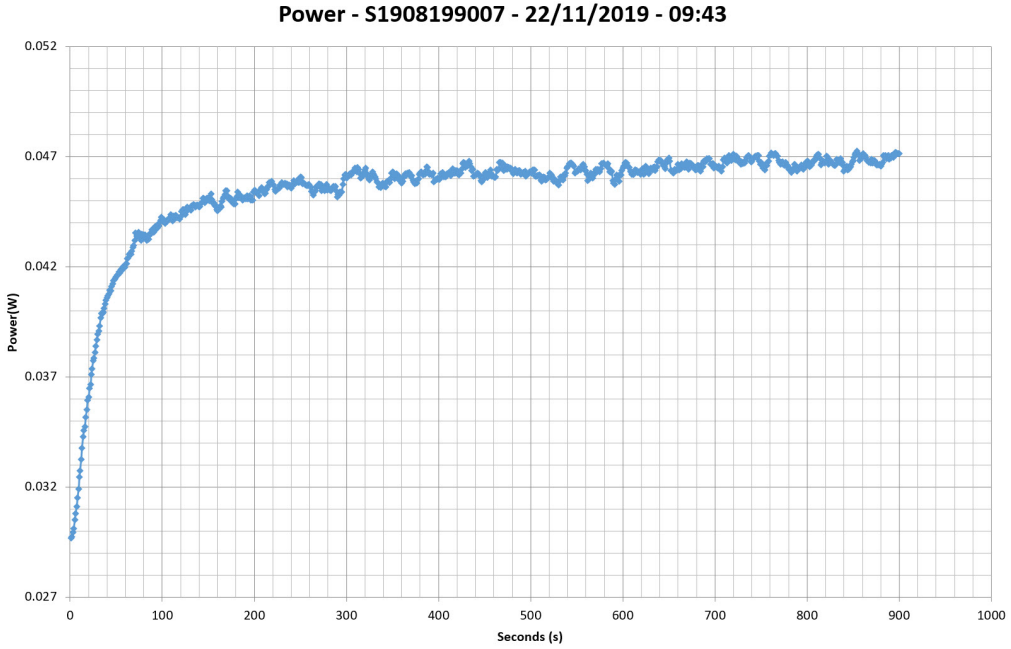
Accredited		
Average Efficiency (>1450 load combinations)	90.981%	
Average Noise Output (>1450 Load Combinations)	23.55dBA	
Average PF (>1450 Load Combinations)	0.924	
Efficiency With 10W (≤500W) or 2% (>500W) Load	-	
Standby Power Consumption	0.0790W	
Non-Accredited		
12V Ripple (Full Load)	13.00mV	
5V Ripple (Full Load)	13.94mV	
3.3V Ripple (Full Load)	22.53mV	
5VSB Ripple (Full Load)	13.39mV	
12V Load Regulation	0.71%	
5V Load Regulation	0.64%	
3.3V Load Regulation	1.18%	
5VSB Load Regulation	3.21%	
Inrush Current	65.914A	
Hold-Up Time & PWR_OK Signal	21.30ms	
AC Loss to PWR_OK Hold Up Time	18.10ms	
PWR_OK Inactive to DC Loss Delay	3.20ms	
PSU Timings: T1 (20% / 100%)	243.0ms	248.0ms
PSU Timings: T3 (20% / 100%)	193.0ms	197.0ms
OPP (0.00°C / 0.00°C)	119.47%	-

Hold-Up Time & PWR_OK Signal

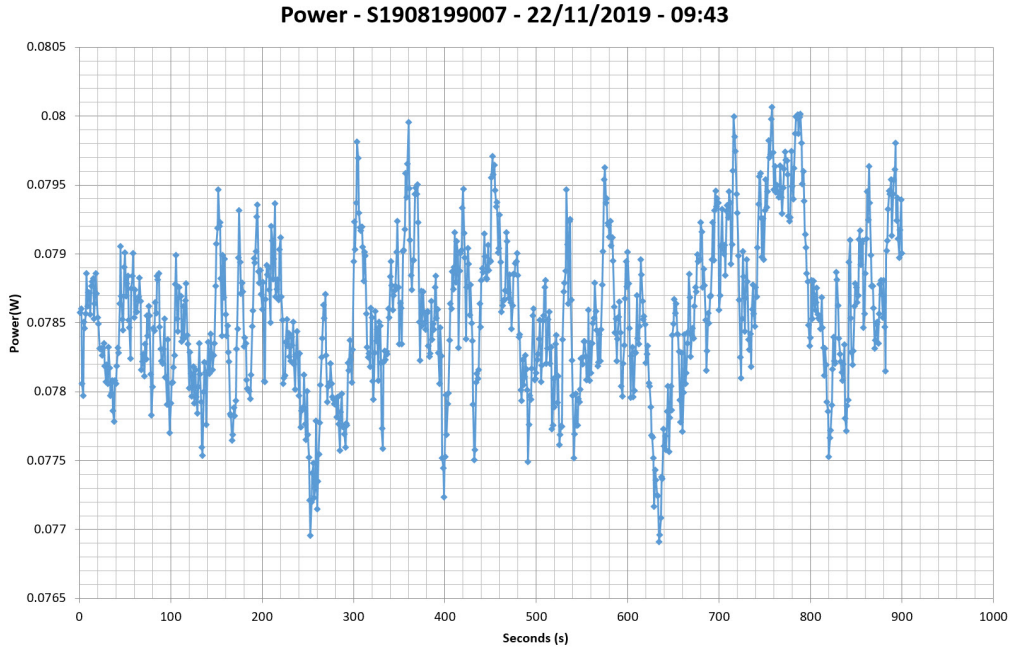
Hold-Up Time (ms)	21.3
AC Loss to PWR_OK Hold Up Time (ms)	18.1
PWR_OK Inactive to DC Loss Delay (ms)	3.2

Graphs

115V

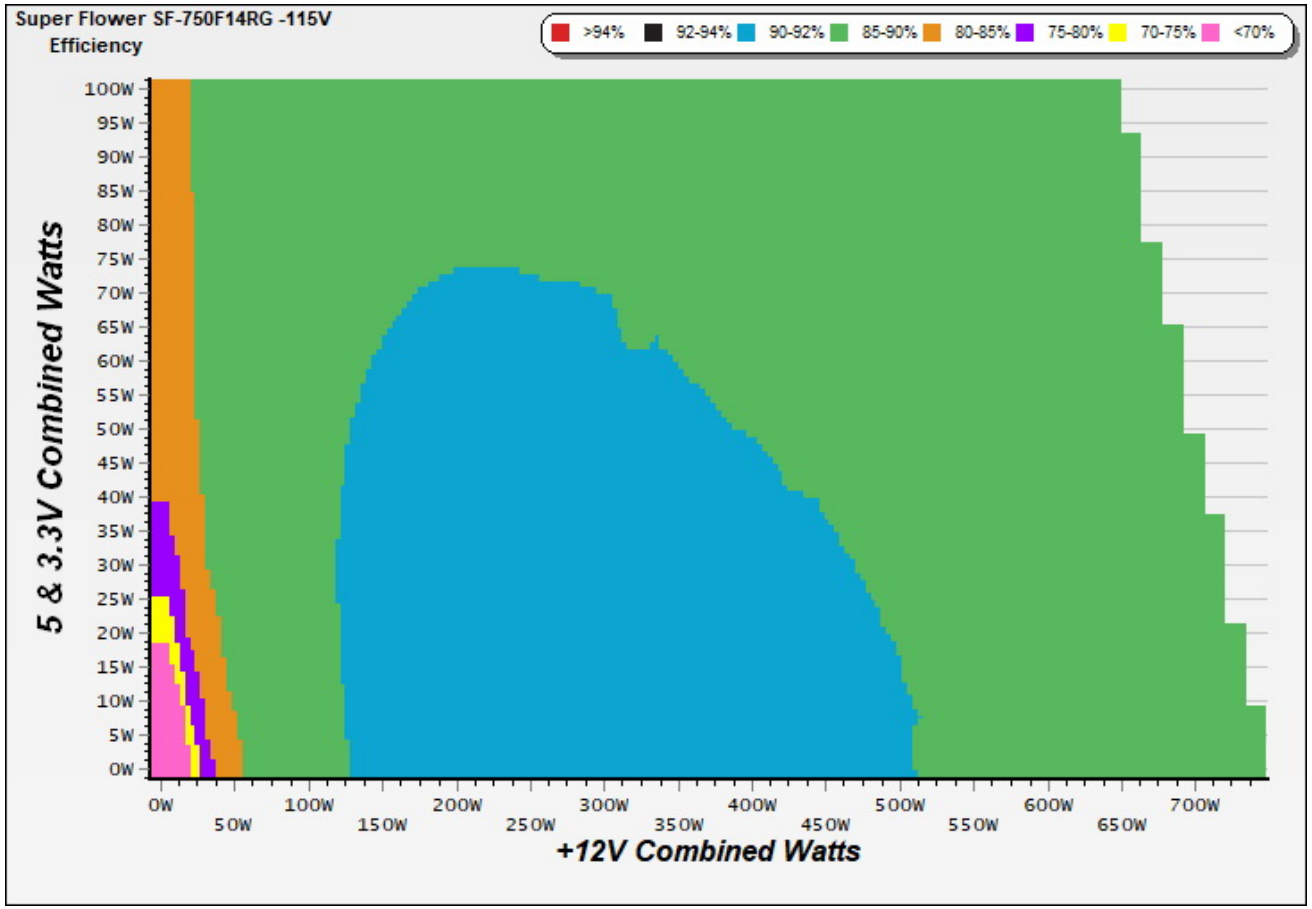


230V



Efficiency Graph

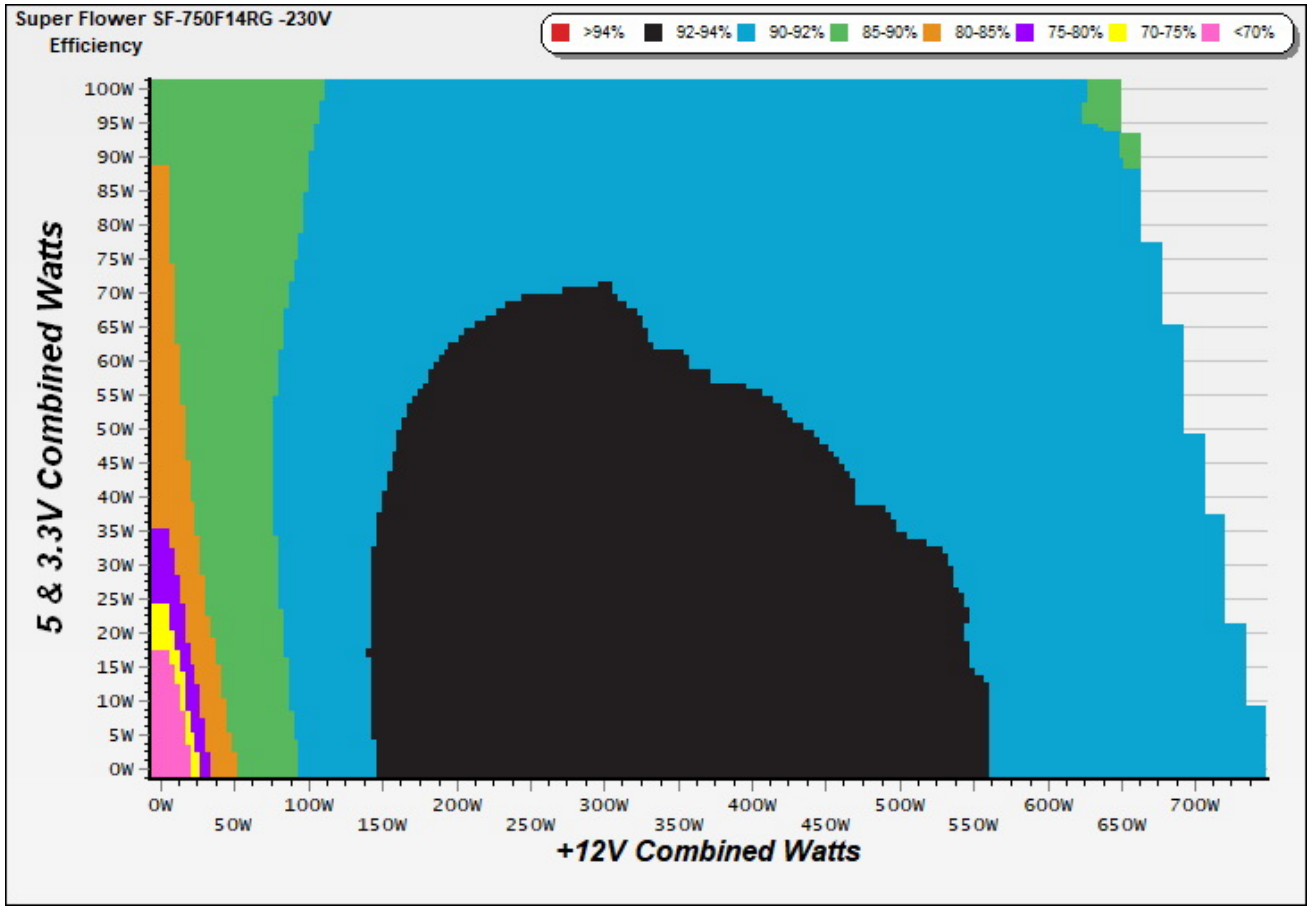
115V



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

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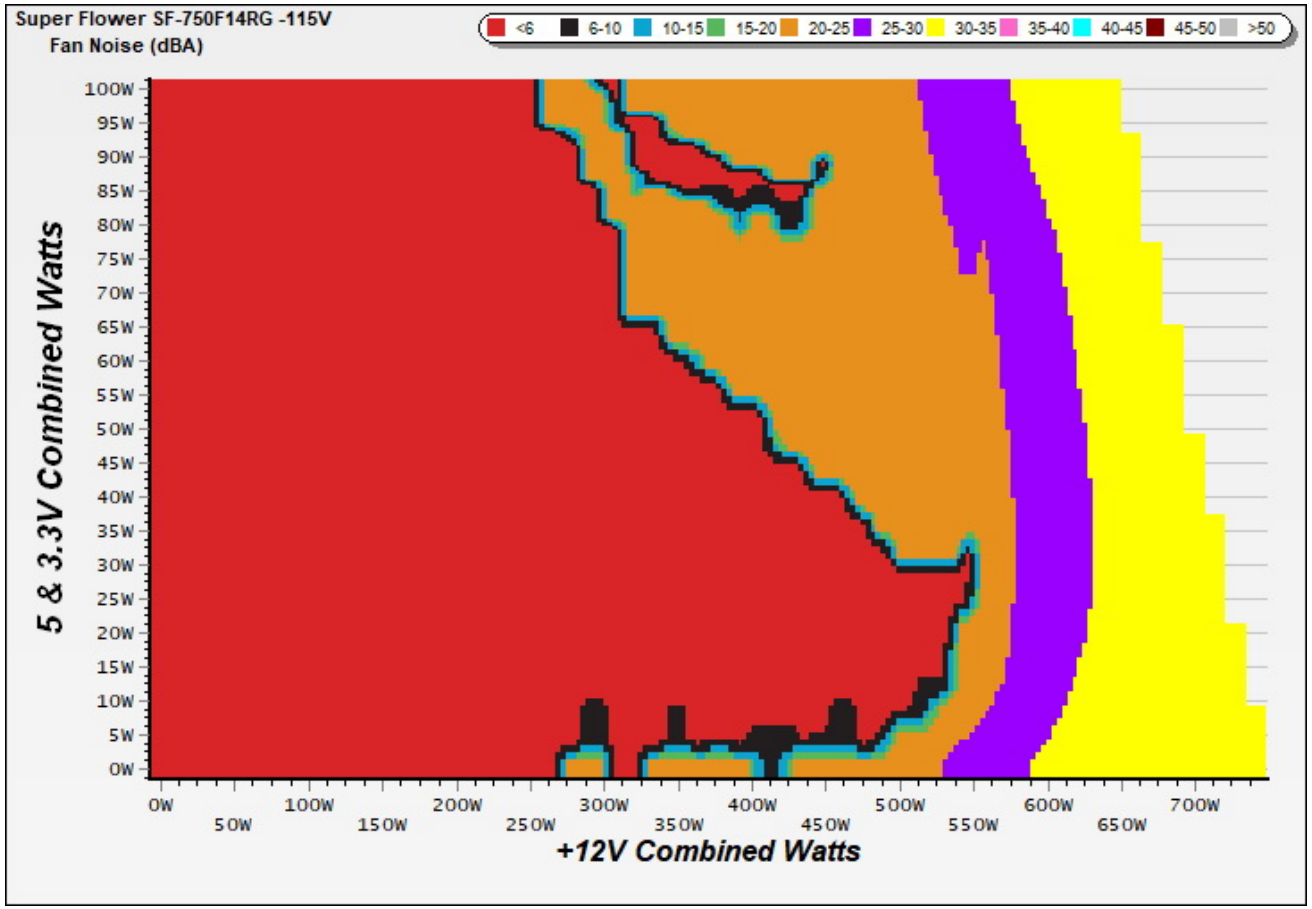
Noise Graph

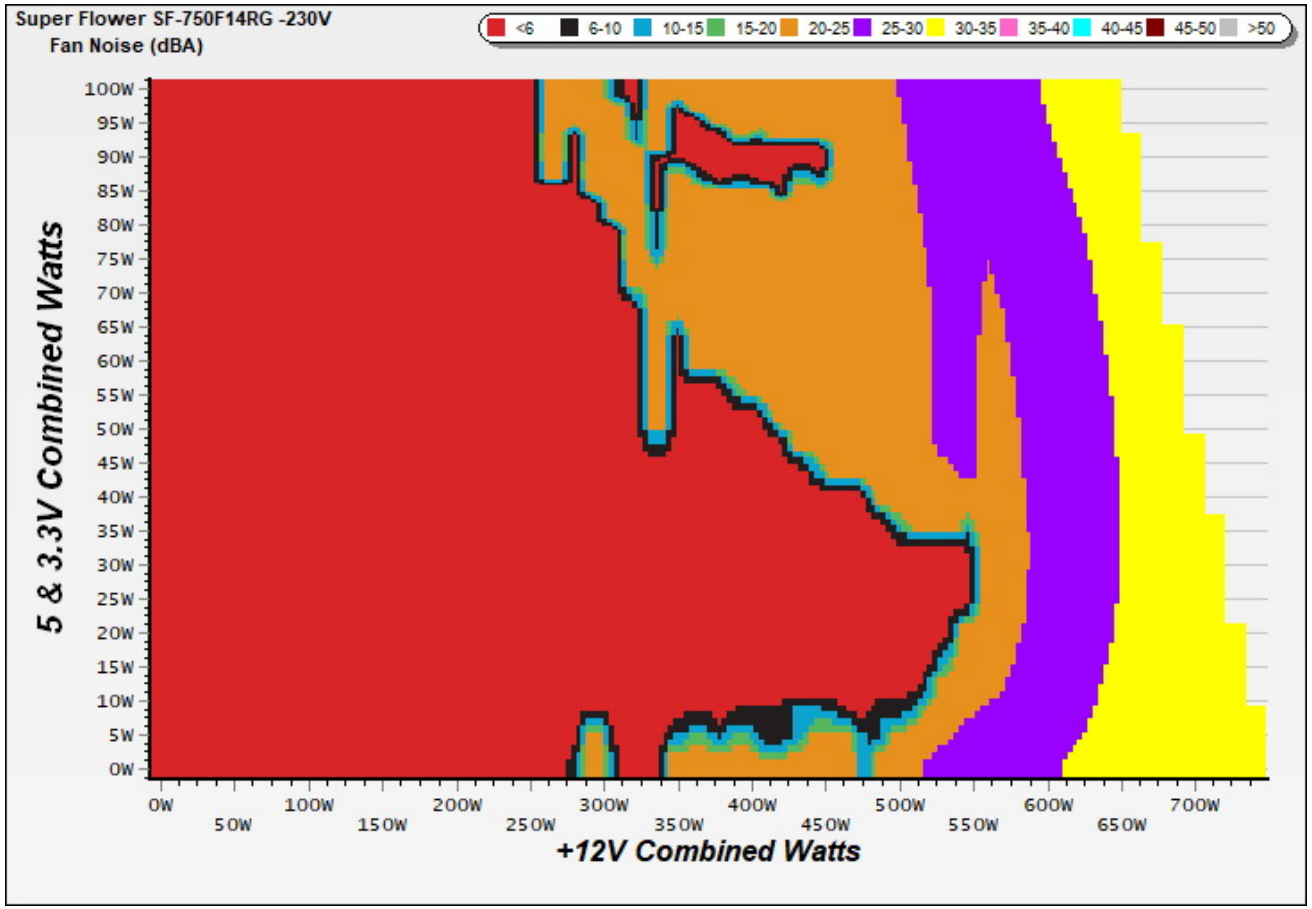
115V



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

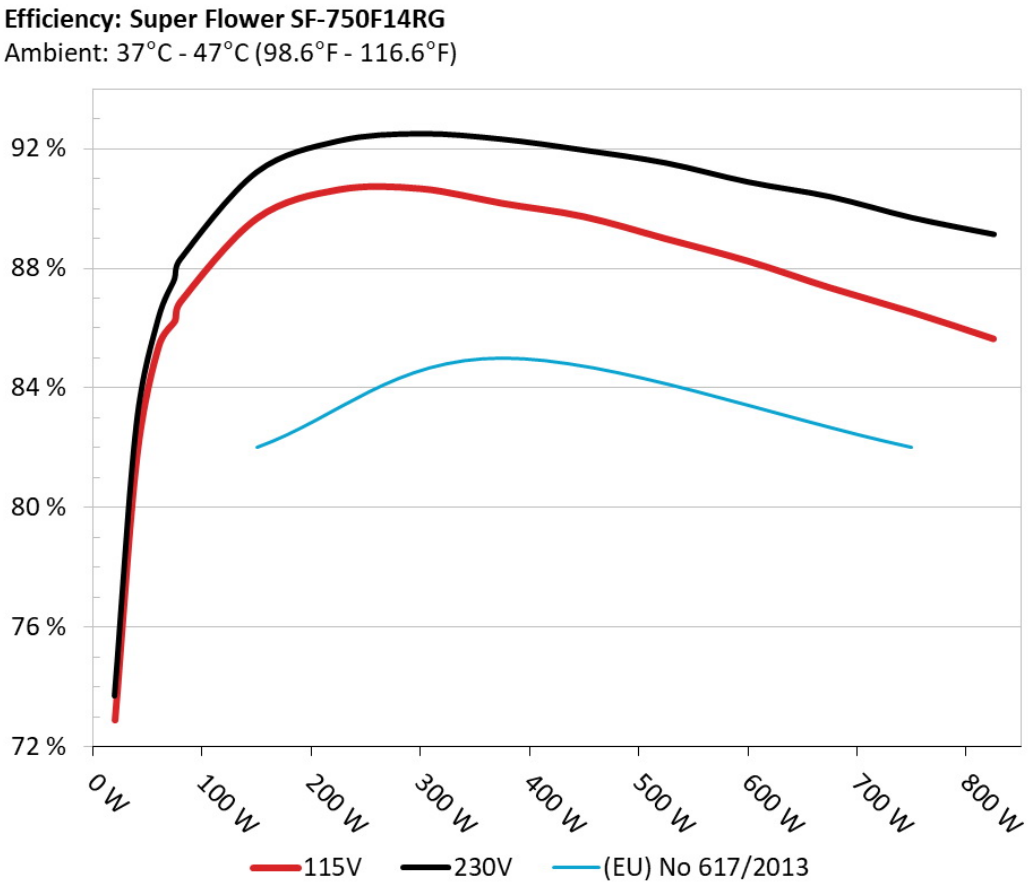


INFO

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

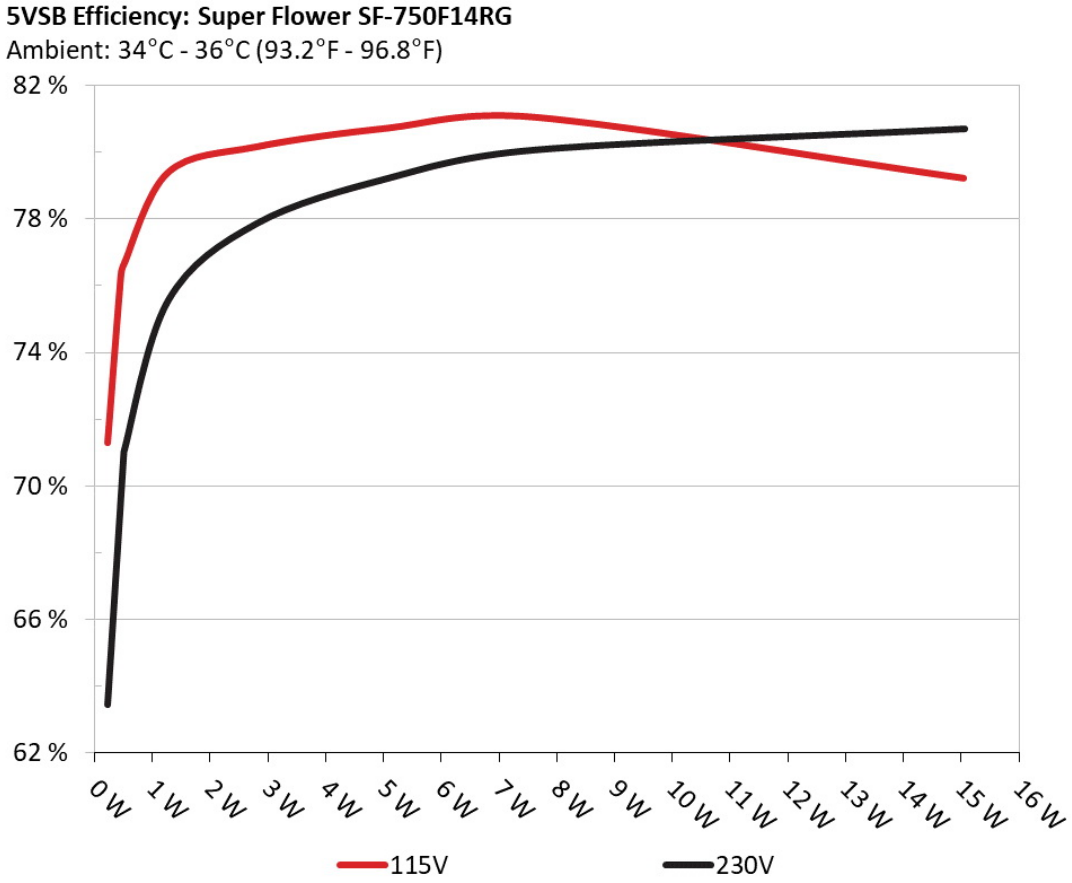
Efficiency under high ambient temperature



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



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	71.296%	0.025
	5.125V	0.324		115.15V
2	0.090A	0.461	76.325%	0.045
	5.123V	0.604		115.15V
3	0.550A	2.810	80.171%	0.223
	5.109V	3.505		115.15V
4	1.000A	5.095	80.732%	0.325
	5.094V	6.311		115.15V
5	1.500A	7.617	81.058%	0.390
	5.077V	9.397		115.15V
6	3.000A	15.048	79.229%	0.472
	5.016V	18.993		115.14V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231	63.462%	0.008
	5.125V	0.364		230.34V
2	0.090A	0.461	71.032%	0.015
	5.123V	0.649		230.33V
3	0.550A	2.810	77.861%	0.080
	5.108V	3.609		230.33V
4	1.000A	5.094	79.222%	0.136
	5.093V	6.430		230.33V
5	1.500A	7.615	80.065%	0.188
	5.076V	9.511		230.33V
6	3.000A	15.067	80.697%	0.296
	5.023V	18.671		230.34V

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	4.396A	1.993A	1.993A	0.984A	74.955	86.246%	0	<6.0	43.20°C	0.929
	12.135V	5.021V	3.312V	5.083V	86.908				40.02°C	115.15V
2	9.818A	2.991A	2.995A	1.184A	150.024	89.668%	0	<6.0	44.57°C	0.968
	12.132V	5.017V	3.307V	5.069V	167.310				40.80°C	115.15V
3	15.590A	3.491A	3.499A	1.385A	225.032	90.623%	0	<6.0	45.41°C	0.984
	12.121V	5.014V	3.304V	5.055V	248.317				41.03°C	115.16V
4	21.376A	3.995A	4.000A	1.588A	300.041	90.657%	0	<6.0	46.39°C	0.990
	12.108V	5.010V	3.300V	5.041V	330.963				41.36°C	115.16V
5	26.794A	4.996A	5.007A	1.792A	374.586	90.170%	0	<6.0	47.87°C	0.992
	12.095V	5.006V	3.295V	5.025V	415.420				42.34°C	115.16V
6	32.234A	5.999A	6.017A	1.996A	449.526	89.723%	919	23.4	42.62°C	0.994
	12.090V	5.003V	3.291V	5.011V	501.015				48.86°C	115.16V
7	37.682A	7.003A	7.028A	2.202A	524.846	88.983%	1059	28.0	43.32°C	0.995
	12.094V	5.000V	3.287V	4.997V	589.829				50.32°C	115.16V
8	43.138A	8.003A	8.041A	2.409A	600.147	88.238%	1243	32.6	43.95°C	0.996
	12.095V	4.997V	3.283V	4.983V	680.144				51.35°C	115.15V
9	48.972A	8.512A	8.538A	2.412A	674.717	87.355%	1471	36.4	44.51°C	0.996
	12.093V	4.993V	3.279V	4.976V	772.381				52.75°C	115.15V
10	54.614A	9.020A	9.067A	3.033A	749.940	86.536%	1660	39.1	45.50°C	0.996
	12.089V	4.989V	3.276V	4.948V	866.617				54.46°C	115.14V
11	60.861A	9.026A	9.072A	3.037A	825.146	85.644%	1712	39.8	46.70°C	0.996
	12.084V	4.986V	3.273V	4.941V	963.463				56.38°C	115.14V
CL1	0.116A	12.001A	12.001A	0.000A	100.941	83.588%	0	<6.0	47.88°C	0.950
	12.110V	5.010V	3.284V	5.097V	120.760				42.64°C	115.18V

CL2	62.446A	1.001A	1.000A	1.000A	767.799	86.904%	1701	39.6	45.73°C	0.996
	12.082V	4.995V	3.295V	5.031V	883.500				54.85°C	115.15V

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	4.393A	1.992A	1.993A	0.984A	74.957	87.655%	0	<6.0	43.25°C	0.689
	12.145V	5.021V	3.312V	5.083V	85.514				40.03°C	230.35V
2	9.821A	2.990A	2.992A	1.184A	150.034	91.220%	0	<6.0	44.54°C	0.863
	12.131V	5.017V	3.307V	5.068V	164.474				40.70°C	230.37V
3	15.590A	3.491A	3.497A	1.385A	225.041	92.266%	0	<6.0	45.58°C	0.921
	12.122V	5.014V	3.304V	5.055V	243.905				41.17°C	230.37V
4	21.371A	3.993A	3.999A	1.587A	300.048	92.511%	0	<6.0	46.63°C	0.943
	12.112V	5.010V	3.300V	5.041V	324.336				41.61°C	230.38V
5	26.788A	4.996A	5.010A	1.791A	374.600	92.326%	0	<6.0	47.78°C	0.957
	12.098V	5.006V	3.295V	5.026V	405.738				42.01°C	230.38V
6	32.226A	5.997A	6.016A	1.996A	449.526	91.959%	0	<6.0	49.25°C	0.966
	12.093V	5.004V	3.292V	5.012V	488.832				42.85°C	230.39V
7	37.684A	7.001A	7.027A	2.201A	524.856	91.530%	1034	27.3	43.25°C	0.973
	12.094V	5.000V	3.287V	4.999V	573.424				50.38°C	230.39V
8	43.143A	8.004A	8.038A	2.408A	600.166	90.892%	1254	33.7	43.98°C	0.979
	12.094V	4.997V	3.284V	4.984V	660.306				51.63°C	230.40V
9	49.110A	8.512A	8.535A	2.411A	674.723	90.406%	1444	36.0	44.79°C	0.946
	12.059V	4.994V	3.280V	4.978V	746.328				52.82°C	230.41V
10	54.606A	9.018A	9.065A	3.032A	749.946	89.701%	1647	38.8	45.52°C	0.947
	12.091V	4.990V	3.276V	4.950V	836.054				54.53°C	230.41V
11	60.859A	9.025A	9.070A	3.036A	825.190	89.143%	1714	39.8	46.61°C	0.946
	12.085V	4.987V	3.274V	4.943V	925.689				56.13°C	230.42V
CL1	0.113A	12.001A	12.002A	0.000A	100.944	85.084%	0	<6.0	47.59°C	0.782
	12.110V	5.011V	3.286V	5.097V	118.641				41.95°C	230.40V

CL2	62.444A	1.000A	1.000A	1.000A	767.893	90.142%	1702	39.6	45.42°C	0.947
	12.084V	4.993V	3.294V	5.033V	851.868				54.29°C	230.42V

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	1.220A	0.498A	0.496A	0.195A	19.984	72.910%	0	<6.0	0.719
	12.162V	5.026V	3.318V	5.117V	27.409				115.14V
2	2.441A	0.995A	0.994A	0.392A	39.973	81.694%	0	<6.0	0.866
	12.157V	5.025V	3.316V	5.108V	48.930				115.14V
3	3.666A	1.494A	1.493A	0.588A	60.003	85.399%	0	<6.0	0.920
	12.153V	5.023V	3.314V	5.099V	70.262				115.15V
4	4.887A	1.991A	1.994A	0.786A	79.954	86.879%	0	<6.0	0.931
	12.145V	5.021V	3.312V	5.090V	92.029				115.15V

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	0.497A	0.497A	0.196A	19.986	73.703%	0	<6.0	0.376
	12.161V	5.026V	3.319V	5.116V	27.117				230.33V
2	2.441A	0.995A	0.994A	0.392A	39.976	82.780%	0	<6.0	0.516
	12.158V	5.024V	3.317V	5.108V	48.292				230.34V
3	3.666A	1.493A	1.493A	0.589A	60.006	86.322%	0	<6.0	0.626
	12.153V	5.023V	3.315V	5.099V	69.514				230.35V
4	4.886A	1.992A	1.992A	0.786A	79.956	88.296%	0	<6.0	0.707
	12.148V	5.021V	3.313V	5.090V	90.554				230.35V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	5.9 mV	4.9 mV	15.6 mV	9.5 mV	Pass
20% Load	6.7 mV	6.3 mV	16.2 mV	9.4 mV	Pass
30% Load	7.0 mV	7.3 mV	16.0 mV	9.6 mV	Pass
40% Load	7.6 mV	8.1 mV	16.5 mV	10.2 mV	Pass
50% Load	8.8 mV	8.9 mV	17.1 mV	12.7 mV	Pass
60% Load	9.2 mV	9.1 mV	18.2 mV	13.2 mV	Pass
70% Load	9.4 mV	10.2 mV	17.8 mV	13.1 mV	Pass
80% Load	10.0 mV	11.1 mV	20.7 mV	12.8 mV	Pass
90% Load	10.3 mV	12.3 mV	20.3 mV	13.0 mV	Pass
100% Load	12.4 mV	13.6 mV	21.5 mV	13.9 mV	Pass
110% Load	13.0 mV	14.1 mV	22.0 mV	15.9 mV	Pass
Crossload 1	7.9 mV	6.6 mV	18.9 mV	15.7 mV	Pass
Crossload 2	12.5 mV	13.1 mV	21.3 mV	13.9 mV	Pass

The results above are not used in the certification process

230V

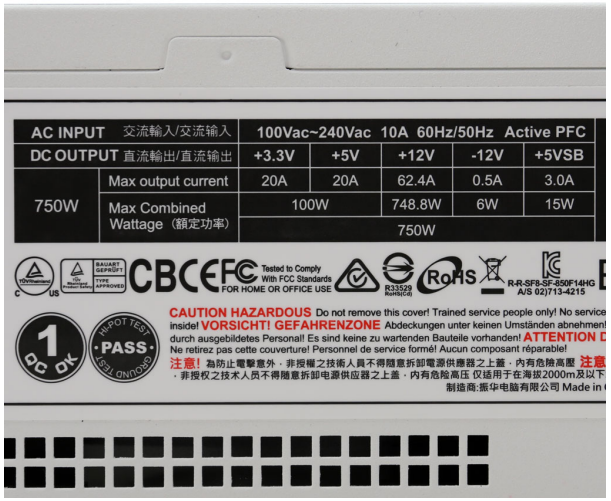
Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	9.5 mV	9.6 mV	15.5 mV	12.9 mV	Pass
20% Load	6.9 mV	6.4 mV	16.0 mV	10.2 mV	Pass
30% Load	7.4 mV	7.7 mV	17.2 mV	10.4 mV	Pass
40% Load	7.7 mV	8.5 mV	16.7 mV	10.9 mV	Pass
50% Load	8.2 mV	9.0 mV	16.8 mV	12.1 mV	Pass
60% Load	9.0 mV	9.6 mV	17.6 mV	11.1 mV	Pass
70% Load	9.8 mV	10.3 mV	17.9 mV	12.6 mV	Pass
80% Load	10.6 mV	11.8 mV	19.8 mV	12.5 mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	10.8 mV	12.7 mV	20.0 mV	12.5 mV	Pass
100% Load	13.0 mV	13.9 mV	22.5 mV	13.4 mV	Pass
110% Load	13.3 mV	15.1 mV	22.8 mV	14.2 mV	Pass
Crossload 1	7.8 mV	7.2 mV	18.8 mV	15.8 mV	Pass
Crossload 2	13.0 mV	13.5 mV	20.7 mV	13.7 mV	Pass

The results above are not used in the certification process

Super Flower Leadex III Gold ARGB 750W (#2)

Top side



Power specifications label

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