

Anex

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

Lab ID#: SF19550139
 Receipt Date: Nov 18, 2019
 Test Date: Nov 29, 2019

Report: 19PS893A

Report Date: Nov 30, 2019

DUT INFORMATION

Brand	Super Flower
Manufacturer (OEM)	Super Flower
Series	Leadex III Gold ARGB
Model Number	SF-550F14RG
Serial Number	S1908199003
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10
Rated Frequency (Hz)	50-60
Rated Power (W)	550
Type	ATX12V
Cooling	130mm Fluid Dynamic Bearing Fan (RL4C S1302412L)
Semi-Passive Operation	✓ (selectable)
Cable Design	Fully Modular

TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Keysight AC6804B
Power Analyzers	N4L PPA1530 x2
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2
Tachometer	UNI-T UT372 x2
Digital Multimeter	Keysight U1273AX, Fluke 289, Keithley 2015 - THD
UPS	CyberPower OLS3000E 3kVA x2
Transformer	3kVA x2

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RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

115V

Average Efficiency	89.229%
Efficiency With 10W (≤500W) or 2% (>500W)	68.252
Average Efficiency 5VSB	80.662%
Standby Power Consumption (W)	0.0427734
Average PF	0.987
Avg Noise Output	19.35 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A+

230V

Average Efficiency	91.219%
Average Efficiency 5VSB	79.802%
Standby Power Consumption (W)	0.0675512
Average PF	0.946
Avg Noise Output	16.25 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A+

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				

HOLD-UP TIME & POWER OK SIGNAL (230V)

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

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CABLES AND CONNECTORS

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	-

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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, 0.280hm) & 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, 0.1990hm)
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

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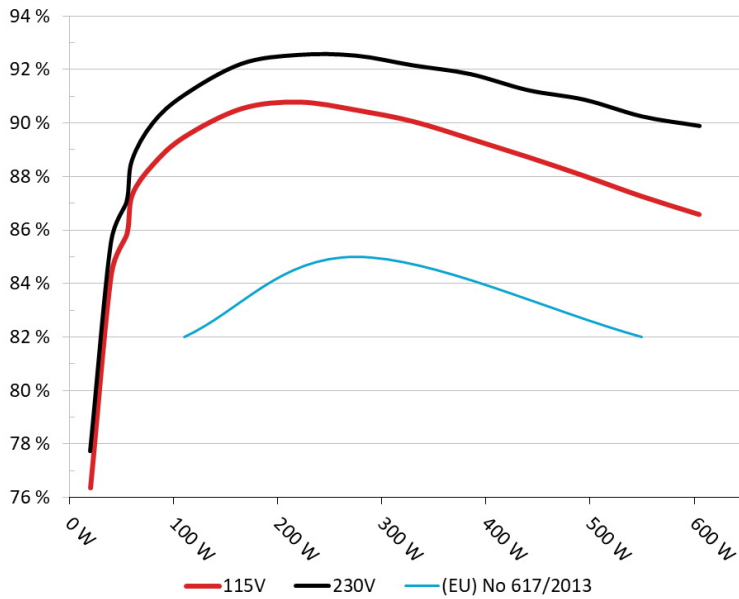
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Super Flower Leadex III Gold ARGB 550W (#2)

EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Super Flower SF-550F14RG
Ambient: 37°C - 47°C (98.6°F - 116.6°F)

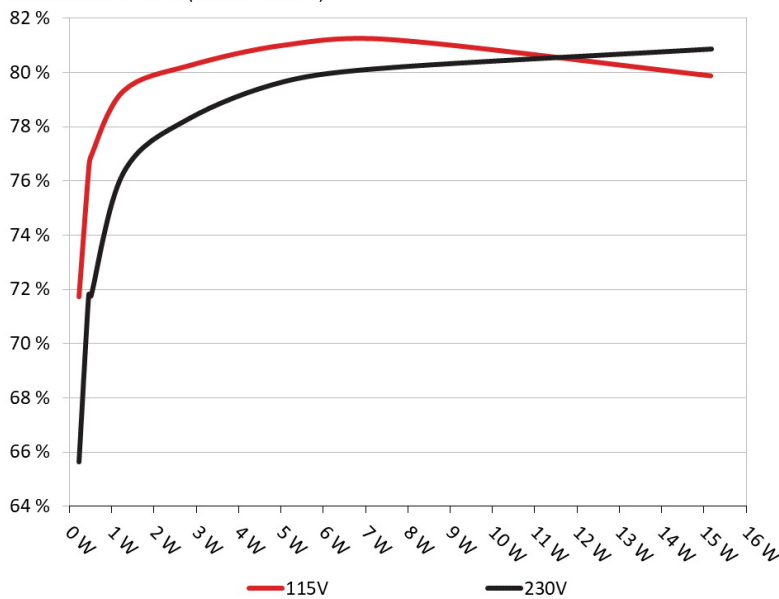


INFO

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

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5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

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

5VSB EFFICIENCY -230V (ERP LOT 3/6 & CEC)

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

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115V

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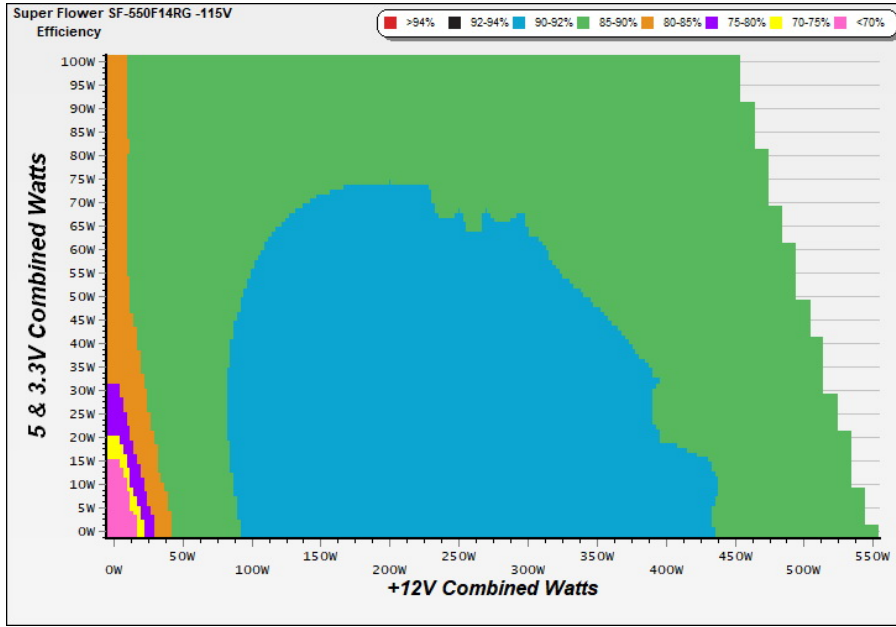
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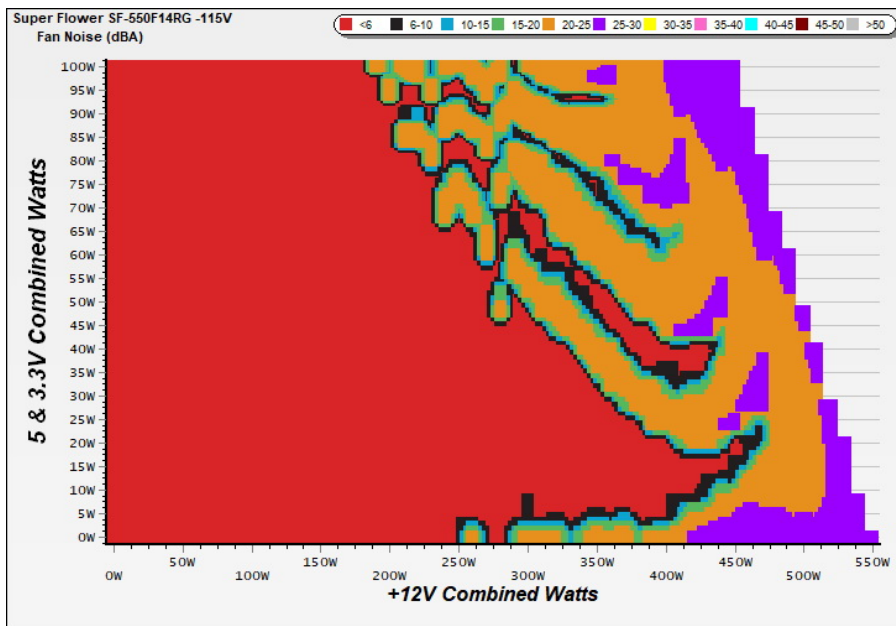
EFFICIENCY GRAPH 115V



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

NOISE GRAPH 115V



INFO

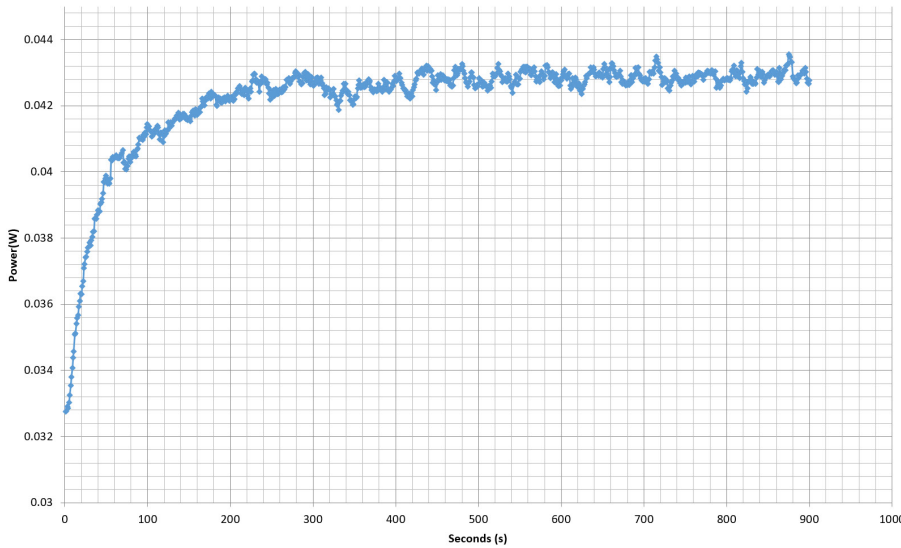
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -115V

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



INFO

This graph is generated by the PPA Standby Power Analysis software which takes full control of the power analyzer during the whole procedure. This application features all of the EN50564 & IEC62301 test limits for standby power software testing

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

10-110% 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

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20-80W 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

RIPPLE MEASUREMENTS 115V

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

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230V

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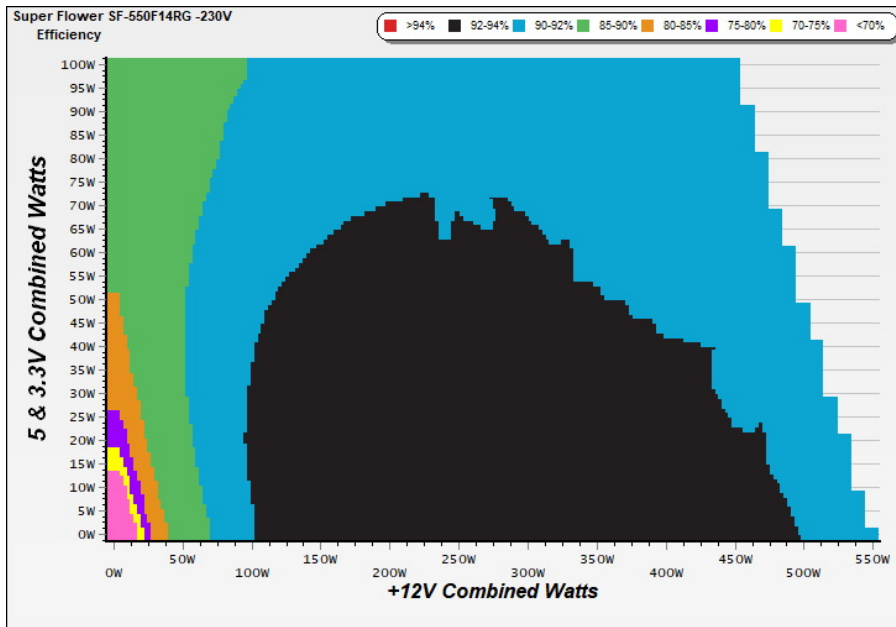
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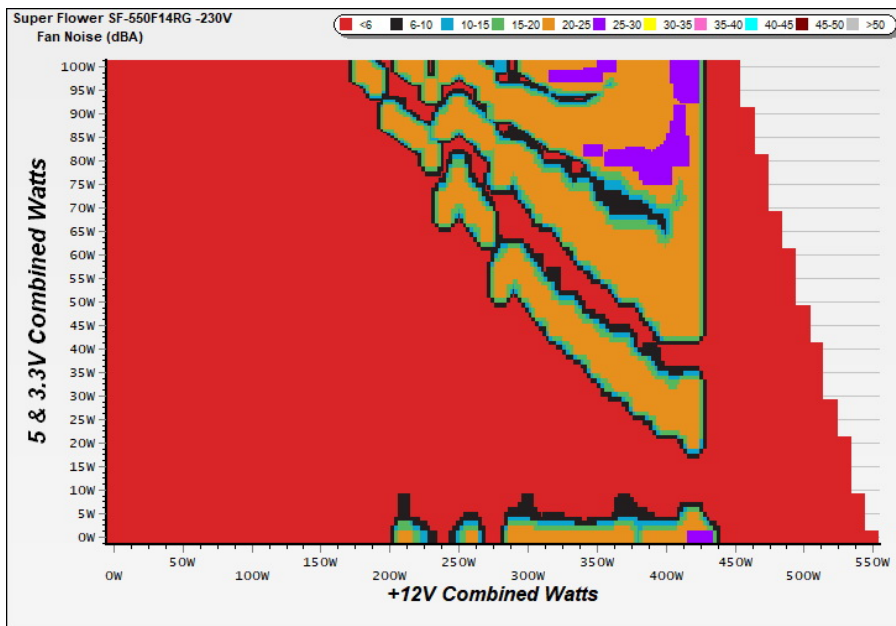
EFFICIENCY GRAPH 230V



INFO

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NOISE GRAPH 230V



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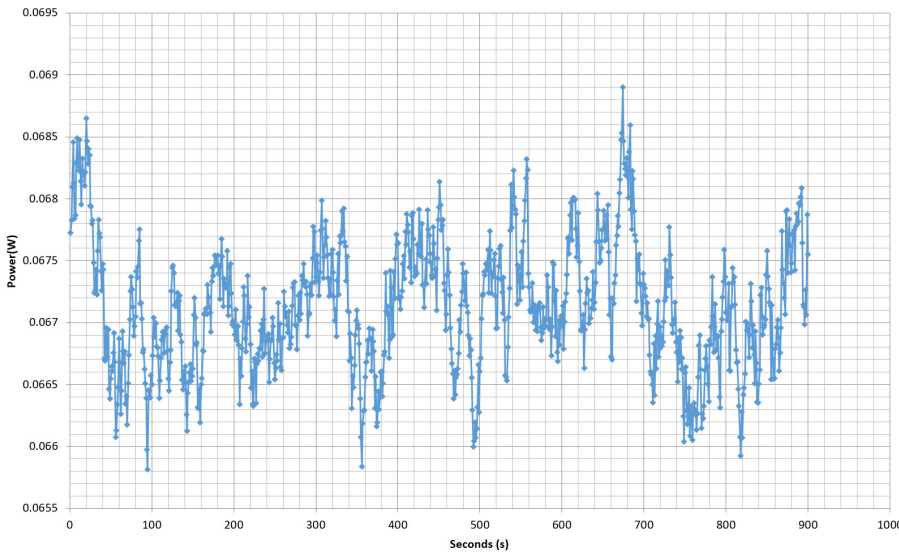
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10-110% LOAD TESTS 230V

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			

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

20-80W LOAD TESTS 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		

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	5.2 mV	3.5 mV	14.0 mV	11.6 mV	Pass
20% Load	5.9 mV	3.6 mV	15.4 mV	11.6 mV	Pass
30% Load	6.1 mV	4.1 mV	16.9 mV	12.2 mV	Pass
40% Load	6.8 mV	4.4 mV	14.2 mV	11.4 mV	Pass
50% Load	6.8 mV	4.4 mV	14.5 mV	11.7 mV	Pass
60% Load	7.1 mV	4.8 mV	15.5 mV	10.9 mV	Pass
70% Load	7.2 mV	4.8 mV	15.2 mV	11.6 mV	Pass
80% Load	8.1 mV	5.3 mV	17.3 mV	11.4 mV	Pass
90% Load	8.5 mV	6.0 mV	16.3 mV	11.8 mV	Pass
100% Load	10.9 mV	6.4 mV	17.5 mV	13.2 mV	Pass
110% Load	10.8 mV	6.7 mV	18.5 mV	12.7 mV	Pass
Crossload 1	8.3 mV	4.6 mV	18.1 mV	15.3 mV	Pass
Crossload 2	10.3 mV	5.5 mV	16.4 mV	12.5 mV	Pass

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Top side

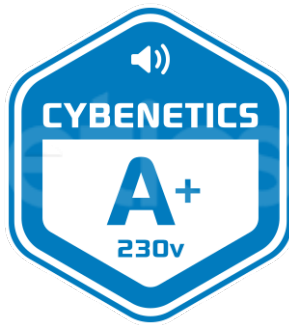


Power specifications label

CERTIFICATIONS 115V



CERTIFICATIONS 230V



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