EFFICIENCY AND NOISE LEVEL CERTIFICATIONS

Anex

Super Flower SF-550F14RG

Lab ID#: SF19550110
Receipt Date: Feb 9, 2019
Test Date: Sep 17, 2019

Report:
Report Date: Sep 27, 2019

DUT INFORMATION

Brand	Super Flower
Manufacturer (OEM)	Super Flower
Series	Leadex III Gold ARGB
Model Number	SF-550F14RG
Serial Number	S1908199004
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

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				

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	-

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Super Flower SF-550F14RG

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

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Super Flower SF-550F14RG

RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	89.064
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	69.007
Average Efficiency 5VSB	80.546
Standby Power Consumption (W) -115V	0.0452512
Standby Power Consumption (W) -230V	0.0712215
Average PF	0.982
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	20.69
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A

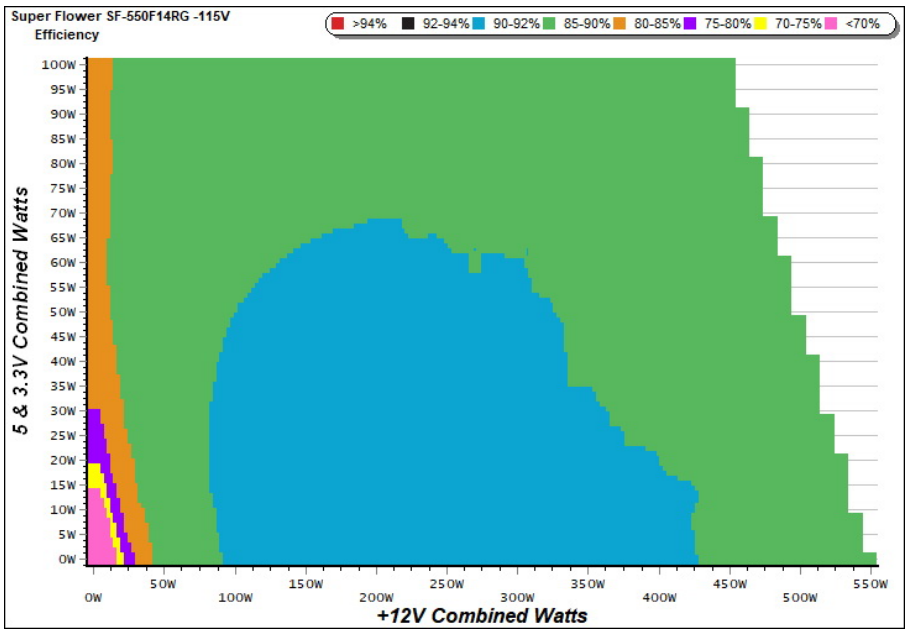
TEST EQUIPMENT	
Electronic Loads	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Keysight AC6804B
Power Analyzers	N4L PPA1530 x2
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2
Tachometer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

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Super Flower SF-550F14RG

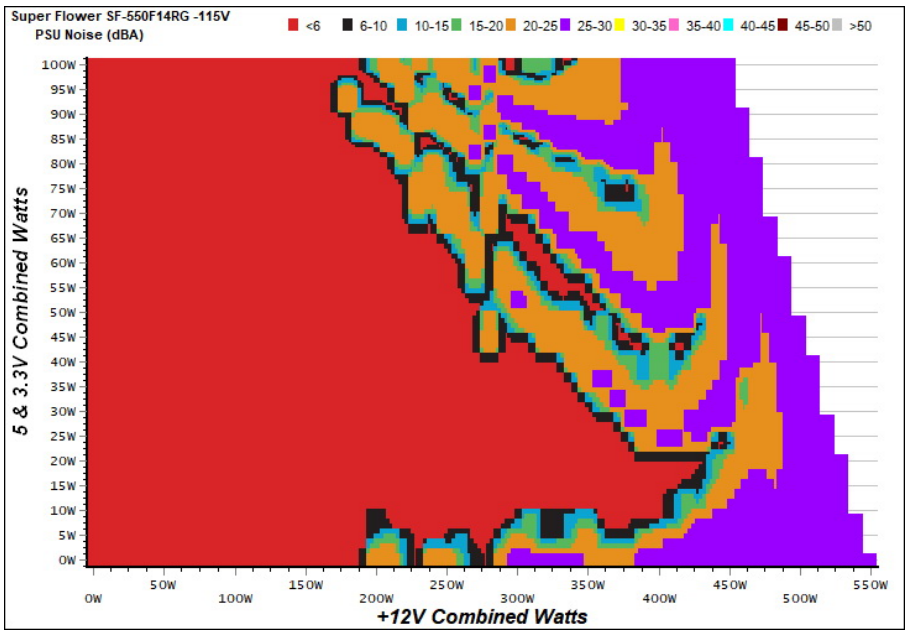
EFFICIENCY GRAPH



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



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

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Super Flower SF-550F14RG

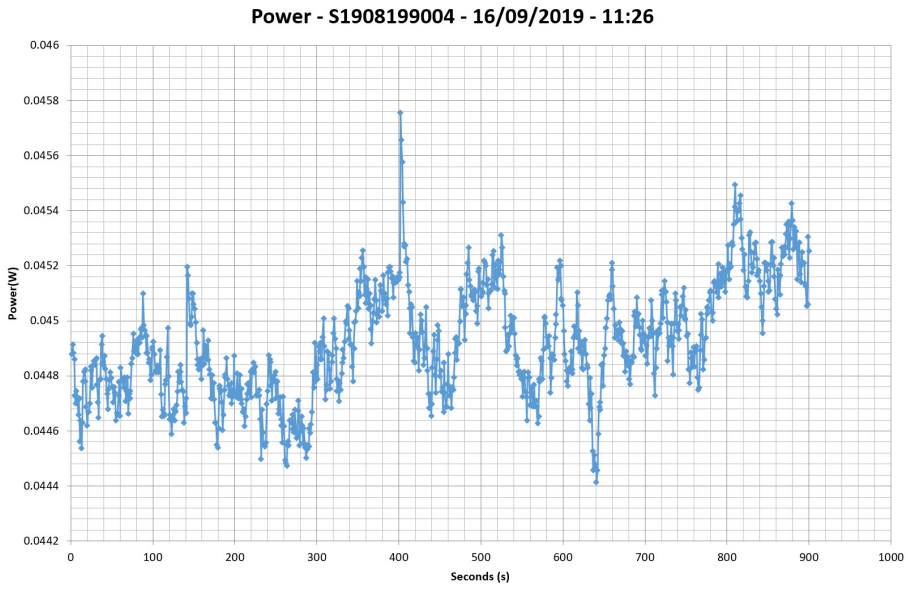
5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231	71.739%	0.037
	5.118V	0.322		115.13V
2	0.090A	0.461	76.578%	0.068
	5.117V	0.602		115.13V
3	0.550A	2.810	80.355%	0.278
	5.107V	3.497		115.13V
4	1.000A	5.098	81.075%	0.357
	5.097V	6.288		115.13V
5	1.500A	7.630	81.222%	0.400
	5.086V	9.394		115.13V
6	3.000A	15.146	79.636%	0.457
	5.049V	19.019		115.13V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231	64.888%	0.012
	5.118V	0.356		230.26V
2	0.090A	0.461	71.252%	0.022
	5.117V	0.647		230.26V
3	0.550A	2.810	78.404%	0.115
	5.107V	3.584		230.26V
4	1.000A	5.098	79.743%	0.184
	5.097V	6.393		230.26V
5	1.500A	7.629	80.263%	0.239
	5.086V	9.505		230.26V
6	3.000A	15.157	81.010%	0.327
	5.052V	18.710		230.26V

VAMPIRE POWER -115V



INFO

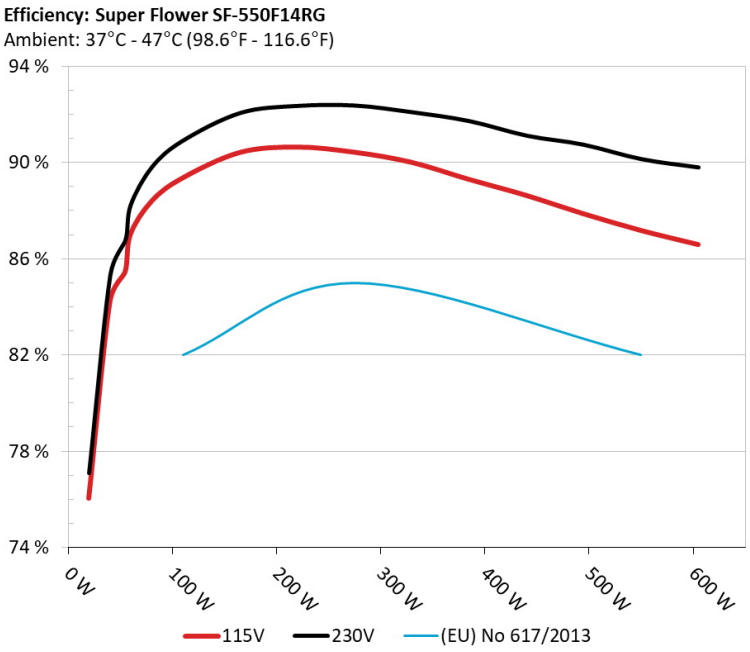
This graph is generated by the PPA Standby Power Analysis software which takes full control of the power analyzer during the whole procedure. This application features all of the EN50564 & IEC62301 test limits for standby power software testing

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Super Flower SF-550F14RG

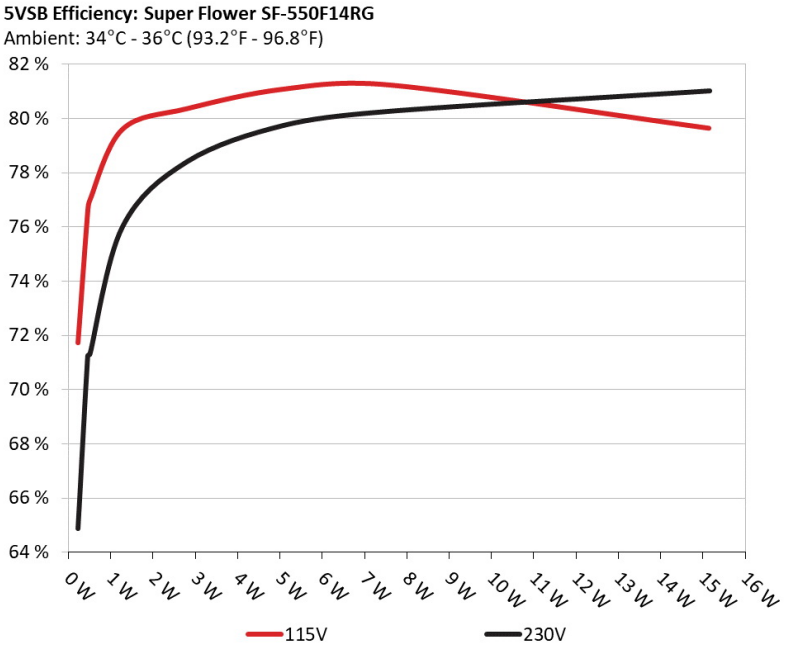
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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

Anex

Super Flower SF-550F14RG

10-110% LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	2.697A	1.990A	1.993A	0.983A	54.492	85.440%	0	<6.0	45.87°C	0.922
	12.196V	5.026V	3.310V	5.087V	63.778				40.57°C	115.12V
2	6.441A	2.989A	2.995A	1.182A	109.408	89.337%	0	<6.0	46.59°C	0.962
	12.188V	5.020V	3.306V	5.075V	122.466				40.76°C	115.12V
3	10.582A	3.489A	3.483A	1.383A	164.887	90.407%	0	<6.0	47.64°C	0.977
	12.179V	5.016V	3.303V	5.064V	182.384				41.57°C	115.11V
4	14.667A	3.992A	4.001A	1.584A	219.706	90.628%	0	<6.0	48.41°C	0.986
	12.170V	5.012V	3.299V	5.052V	242.425				41.86°C	115.11V
5	18.431A	4.996A	5.007A	1.786A	274.629	90.415%	0	<6.0	49.49°C	0.990
	12.160V	5.006V	3.295V	5.040V	303.744				42.48°C	115.11V
6	22.201A	6.002A	6.015A	1.990A	329.552	89.997%	0	<6.0	50.71°C	0.992
	12.150V	5.000V	3.291V	5.027V	366.180				43.06°C	115.11V
7	25.998A	7.010A	7.029A	2.193A	384.865	89.287%	947	24.8	43.26°C	0.993
	12.145V	4.995V	3.287V	5.016V	431.043				51.27°C	115.12V
8	29.799A	8.017A	8.043A	2.399A	440.180	88.618%	1142	30.4	43.48°C	0.993
	12.141V	4.988V	3.282V	5.004V	496.719				52.05°C	115.12V
9	33.953A	8.530A	8.541A	2.402A	494.711	87.861%	1383	34.8	44.71°C	0.994
	12.140V	4.984V	3.279V	4.997V	563.059				53.71°C	115.12V
10	37.905A	9.040A	9.068A	3.015A	549.935	87.167%	1487	36.3	45.77°C	0.994
	12.141V	4.980V	3.276V	4.977V	630.897				55.13°C	115.12V
11	42.445A	9.042A	9.072A	3.018A	605.116	86.579%	1614	38.3	46.68°C	0.994
	12.143V	4.978V	3.273V	4.971V	698.916				56.56°C	115.12V
CL1	0.145A	12.003A	11.998A	0.000A	101.014	84.032%	0	<6.0	49.99°C	0.963
	12.173V	4.983V	3.287V	5.086V	120.209				42.88°C	115.13V
CL2	45.853A	1.003A	1.002A	1.000A	570.153	87.923%	1512	36.8	45.42°C	0.994
	12.143V	5.013V	3.293V	5.033V	648.471				55.34°C	115.11V

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Super Flower SF-550F14RG

20-80W LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.189A	0.498A	0.482A	0.196A	19.621	76.039%	0	<6.0	0.783
	12.207V	5.035V	3.315V	5.111V	25.804				115.12V
2	2.437A	0.993A	0.997A	0.392A	40.036	84.235%	0	<6.0	0.887
	12.202V	5.031V	3.313V	5.104V	47.529				115.12V
3	3.616A	1.492A	1.480A	0.589A	59.517	86.994%	0	<6.0	0.932
	12.199V	5.028V	3.311V	5.097V	68.415				115.12V
4	4.863A	1.991A	1.994A	0.786A	79.909	88.377%	0	<6.0	0.947
	12.195V	5.026V	3.309V	5.089V	90.418				115.12V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	5.2 mV	4.1 mV	6.3 mV	4.7 mV	Pass
20% Load	5.5 mV	4.3 mV	7.6 mV	4.7 mV	Pass
30% Load	6.2 mV	4.5 mV	8.1 mV	4.6 mV	Pass
40% Load	6.4 mV	5.2 mV	9.1 mV	4.6 mV	Pass
50% Load	7.7 mV	5.5 mV	9.6 mV	4.7 mV	Pass
60% Load	7.9 mV	5.7 mV	10.8 mV	4.7 mV	Pass
70% Load	8.3 mV	6.3 mV	12.7 mV	5.2 mV	Pass
80% Load	8.9 mV	6.6 mV	13.2 mV	5.5 mV	Pass
90% Load	9.6 mV	7.2 mV	15.3 mV	5.4 mV	Pass
100% Load	10.9 mV	8.6 mV	16.2 mV	7.5 mV	Pass
110% Load	12.3 mV	8.4 mV	18.6 mV	7.5 mV	Pass
Crossload 1	7.0 mV	5.3 mV	10.0 mV	8.4 mV	Pass
Crossload 2	11.2 mV	7.4 mV	15.1 mV	5.6 mV	Pass

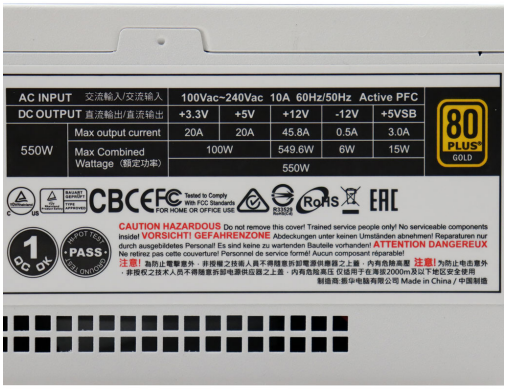
www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Super Flower SF-550F14RG

HOLD-UP TIME & POWER OK SIGNAL (230V)	
Hold-Up Time (ms)	22.6
AC Loss to PWR_OK Hold Up Time (ms)	21.6
PWR_OK Inactive to DC Loss Delay (ms)	1.0

Top side



Power specifications label

CERTIFICATIONS

CYBENETICS PLATINUM

CYBENETICS A

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus