Super Flower Leadex VII XG 1000W

Serial Number S2212199002

Lab ID SF10002122

Certification ID 252122

Test Result Report ID: 23PS2122A

Certificate Issue Date: Jan 30, 2023

Scheme: ETA-EMI PSU

115V 230V

Scheme: LAMBDA PSU

115V 230V

Outside Validation Scope

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 VII XG 1000W
OEM/ODM	Super Flower
Serial Number	S2212199002
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	15

Rated Frequency (Hz)	60-50
Rated Power (W)	1000
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	140mm Fluid Dynamic Bearing Fan (ZIC ZFF142512D)
Semi-Passive Operation	✓ (selectable)
Cybenetics Testing Information	
Lab ID	SF10002122
Date of receipt	Dec 24, 2022
Testing Date	Jan 26, 2023
Report Issued Date	Jan 30, 2023
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 (600mm)	1	1	16-20AWG	No
4+4 pin EPS12V (700mm)	2	2	18AWG	No
6+2 pin PCIe (700mm)	4	4	16AWG	No
12+2 pin PCIe (700mm) (600W)	1	1	16-24AWG	No
SATA (600mm+150mm+150mm+150mm)	3	12	18AWG	No
4-pin Molex (600mm+150mm+150mm+150mm)	1	4	18AWG	No
AC Power Cord (1410mm) - C13 coupler	1	1	16AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	83.3	3	0.5
	Watts	100		999.6	15	6
Total Max. Power (W)		1000				

Parts Description

General Data	-
Manufacturer (OEM)	Super Flower
PCB Type	Double Sided
Primary Side	-
Transient Filter	4x Y caps, 3x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor SCK-0512 (5 Ohm) & Relay
Bridge Rectifier(s)	2x Shindengen U30K80R (800V, 30A @ 97°C)
APFC MOSFETs	3x Infineon IPA60R120P7 (600V, 16A @ 100°C, Rds(on): 0.12Ohm) & 1x Syncpower SPN5003 FET (for reduced no-load consumption)
APFC Boost Diode	1x STMicroelectronics STTH12R06 (600V, 12A @ 125°C)
Bulk Cap(s)	1x Nippon Chemi-Con (450V, 680uF, 2,000h @ 105°C, KMZ)
Main Switchers	4x Infineon IPB50R199CP (550V, 11A @ 100°C, Rds(on): 0.199Ohm)
APFC Controller	On Semiconductor NCP153A
Resonant Controller	S9602
Topology	Primary side: APFC, Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	-
+12V MOSFETs	8x Infineon BSC014N04LS (40V, 125A @ 100°C, Rds(on): 1.4mOhm)
5V & 3.3V	DC-DC Converters: 4x Alpha & Omega AON6516 (30V, 25A @ 100°C, Rds(on): 5mOhm) PWM Controller(s): ANPEC APW7073
Filtering Capacitors	Electrolytic: 5x Nippon Chemi-Con (105°C, W), 5x Nippon Chemi-Con (6-10,000h @ 105°C, KZM), 8x Nippon Chemi-Con (1-2,000h @ 105°C, KMG), 1x Nippon Chemi-Con (2-5,000h @ 105°C, KZE) Polymer: 25x Nippon Chem-Con
Supervisor IC	JTC113
Fan Model	ZIC ZFF142512D (140mm, 12V, 0.65A, Fluid Dynamic Bearing Fan)
5VSB Circuit	-

Rectifier	1x PFC PFR20L60CT SBR (60V, 20A)
Standby PWM Controller	29604

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	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX v3.0 Compliance	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	90.133%
Average Noise Output (>1450 Load Combinations)	30.31dBA
Average PF (>1450 Load Combinations)	0.989
Efficiency With 10W (≤500W) or 2% (>500W) Load	71.355%
Standby Power Consumption	0.0691W
Non-Accredited	
12V Ripple (Full Load)	17.87mV
5V Ripple (Full Load)	11.13mV
3.3V Ripple (Full Load)	14.90mV
5VSB Ripple (Full Load)	18.67mV
12V Load Regulation	0.43%
5V Load Regulation	0.16%
3.3V Load Regulation	0.36%
5VSB Load Regulation	2.44%
Inrush Current	30.390A

230V

Accredited		
Average Efficiency (>1450 load combinations)		92.225%
Average Noise Output (>1450 Load Combinations)		29.34dBA
Average PF (>1450 Load Combinations)		0.953
Efficiency With 10W (≤500W) or 2% (>500W) Load		71.264%
Standby Power Consumption		0.1194W
Non-Accredited		
12V Ripple (Full Load)		18.73mV
5V Ripple (Full Load)		12.11mV
3.3V Ripple (Full Load)		16.00mV
5VSB Ripple (Full Load)		18.21mV
12V Load Regulation		0.44%
5V Load Regulation		0.20%
3.3V Load Regulation		0.21%
5VSB Load Regulation		2.36%
Inrush Current		68.520A
12V Transient Response (200%)		11.35V
5V Transient Response (200%)		4.931V
3.3V Transient Response (200%)		3.189V
5VSB Transient Response (200%)		4.895V
Hold-Up Time & PWR_OK Signal		26.70ms
AC Loss to PWR_OK Hold Up Time		24.80ms
PWR_OK Inactive to DC Loss Delay		1.90ms
PSU Timings: T1 (20% / 100%)	113.0ms	113.0ms
PSU Timings: T3 (20% / 100%)	122.0ms	122.0ms
OPP (27.18°C / 42.74°C)	143.93%	125.88%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	26.7
AC Loss to PWR_OK Hold Up Time (ms)	24.8
PWR_OK Inactive to DC Loss Delay (ms)	1.9

Stromverbrauch im Ruhezustand

Tables

115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	115.12 V	115.10 V	113.85 V	115.14 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	60.00 Hz	59.40 Hz	60.01 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.415	1.415	1.340	1.416	1.490	PASS
Mains Voltage THD:	0.13 %	0.11 %	N/A	0.15 %	2.00 %	PASS
Real Power:	0.069 W	0.063 W	N/A	0.076 W	N/A	N/A
Apparent Power:	9.688 W	9.686 W	N/A	9.691 W	N/A	N/A
Power Factor:	0.007	N/A	N/A	N/A	N/A	N/A

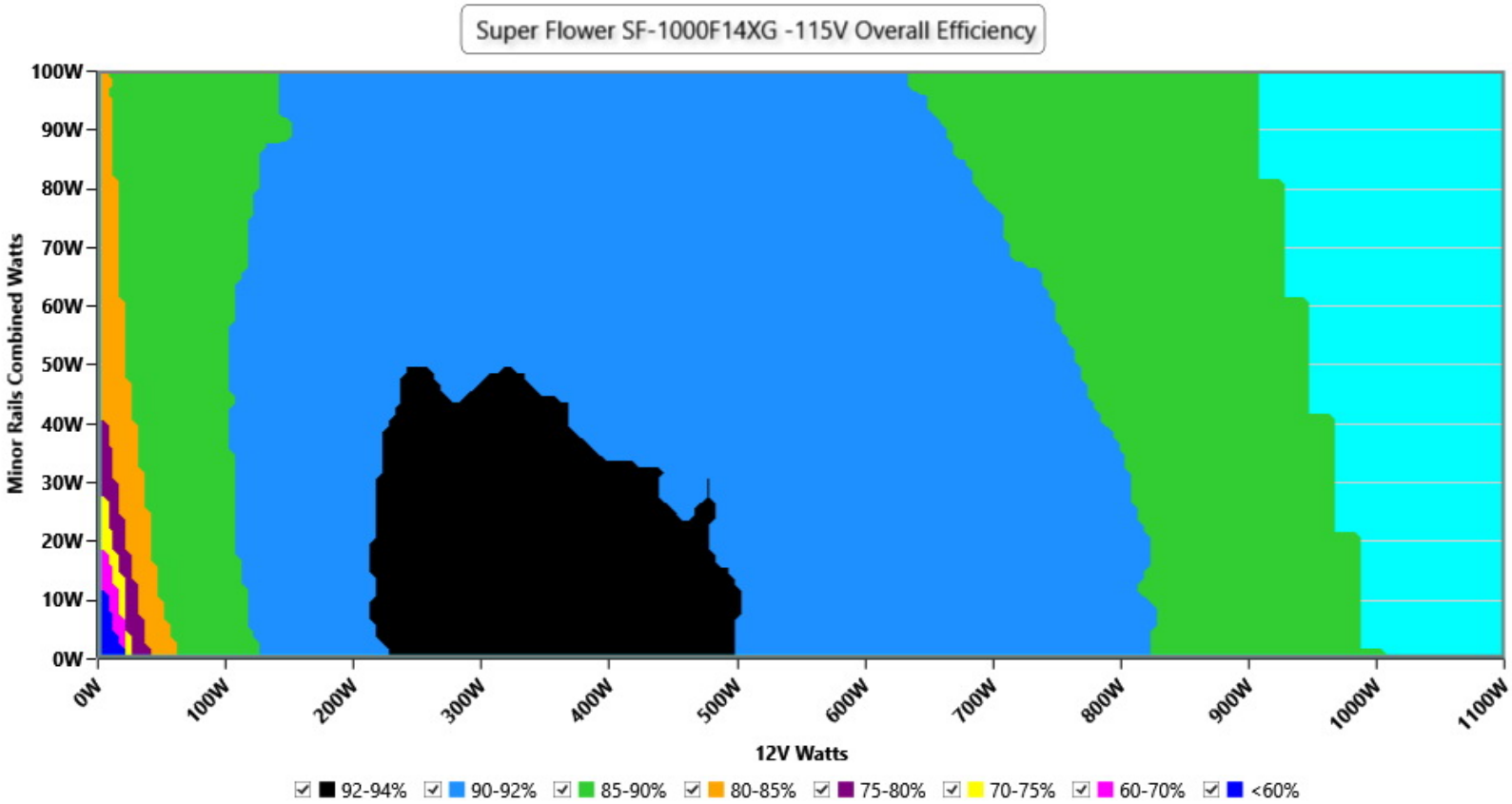
230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	230.37 V	230.35 V	227.70 V	230.39 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	50.00 Hz	49.50 Hz	50.00 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.415	1.415	1.340	1.416	1.490	PASS
Mains Voltage THD:	0.15 %	0.13 %	N/A	0.16 %	2.00 %	PASS
Real Power:	0.119 W	0.106 W	N/A	0.132 W	N/A	N/A
Apparent Power:	32.437 W	32.428 W	N/A	32.445 W	N/A	N/A

Power Factor:	0.004	N/A	N/A	N/A	N/A	N/A

Efficiency Graph

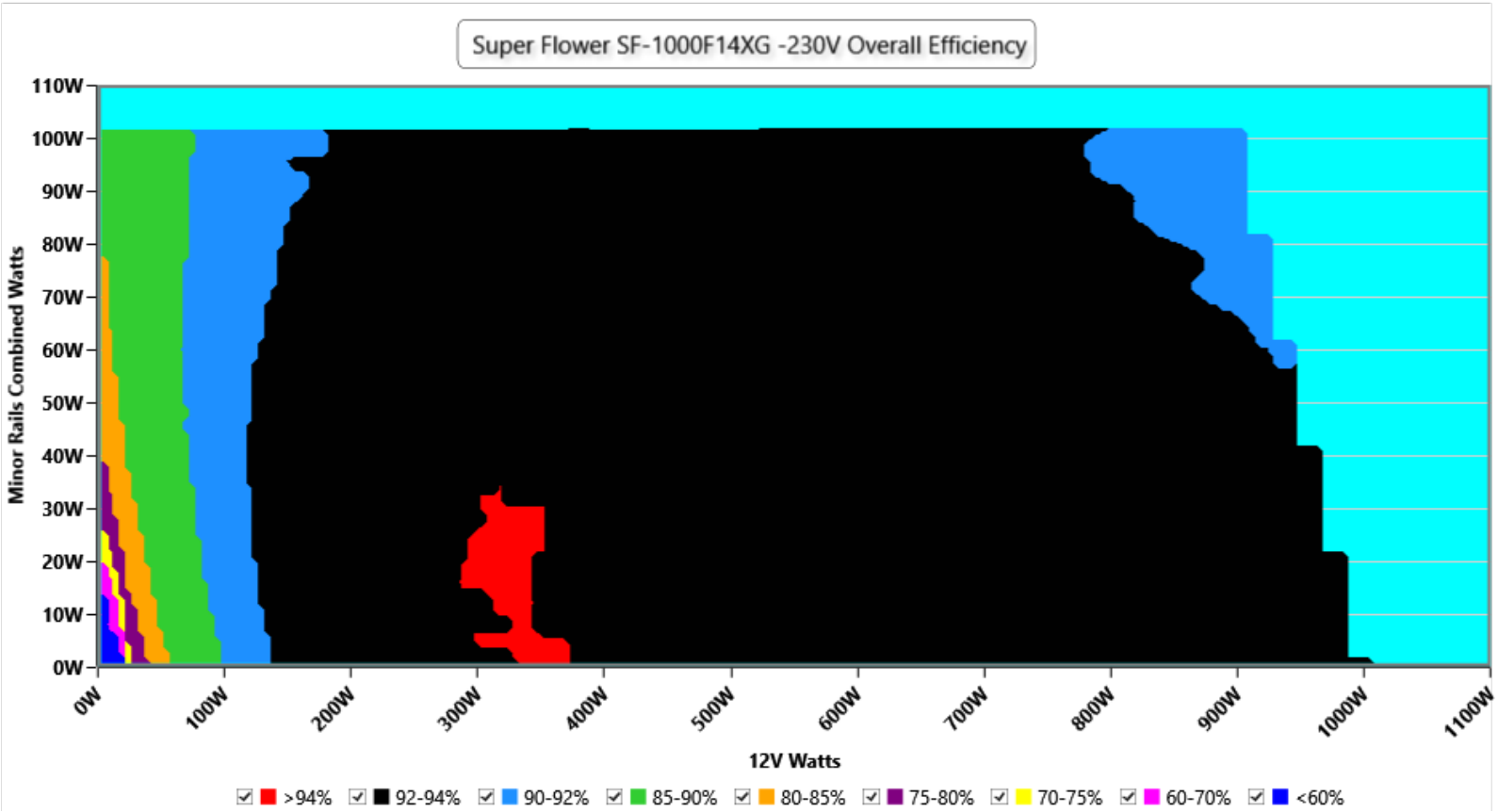
115V



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

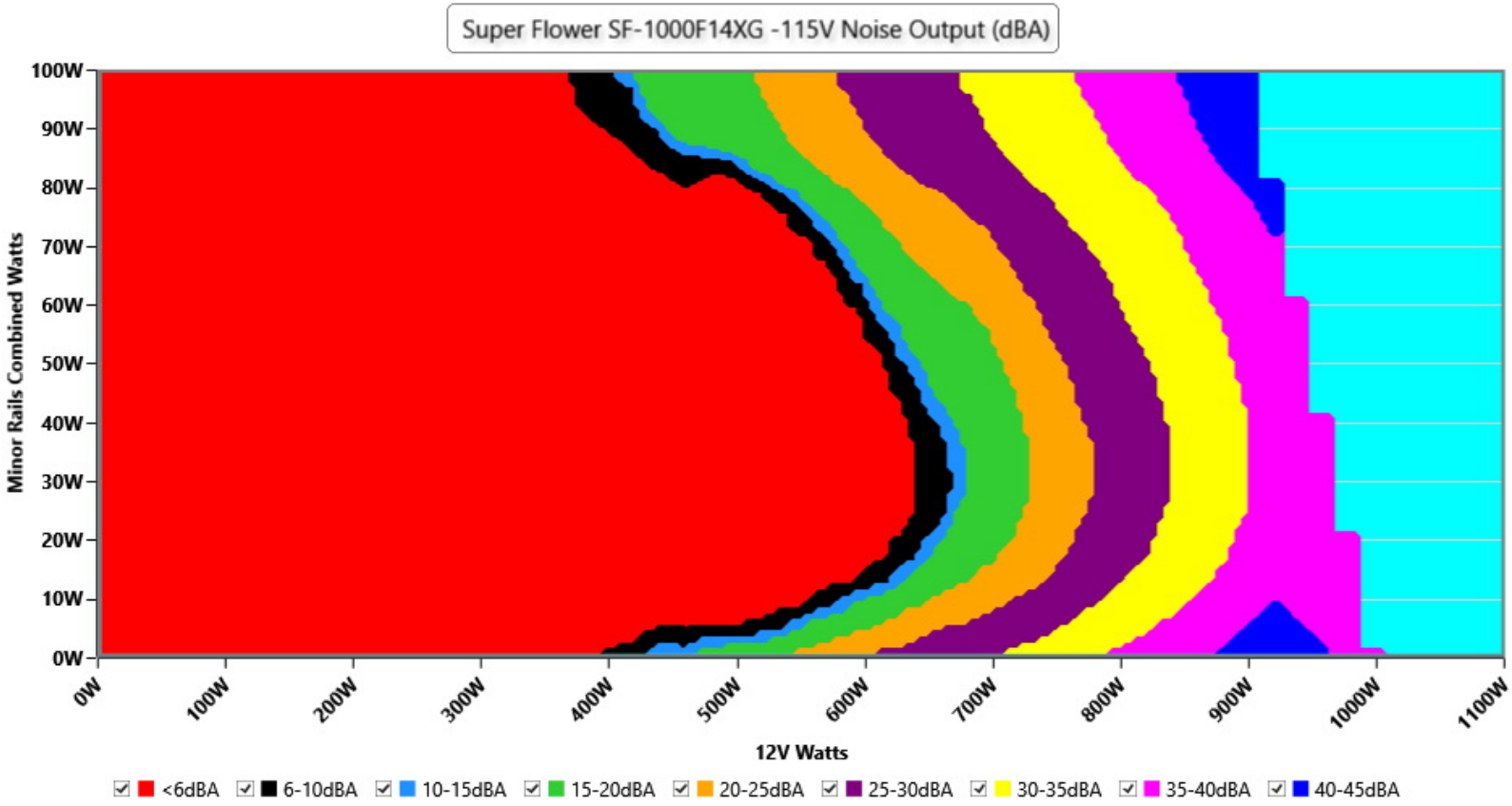


INFO

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

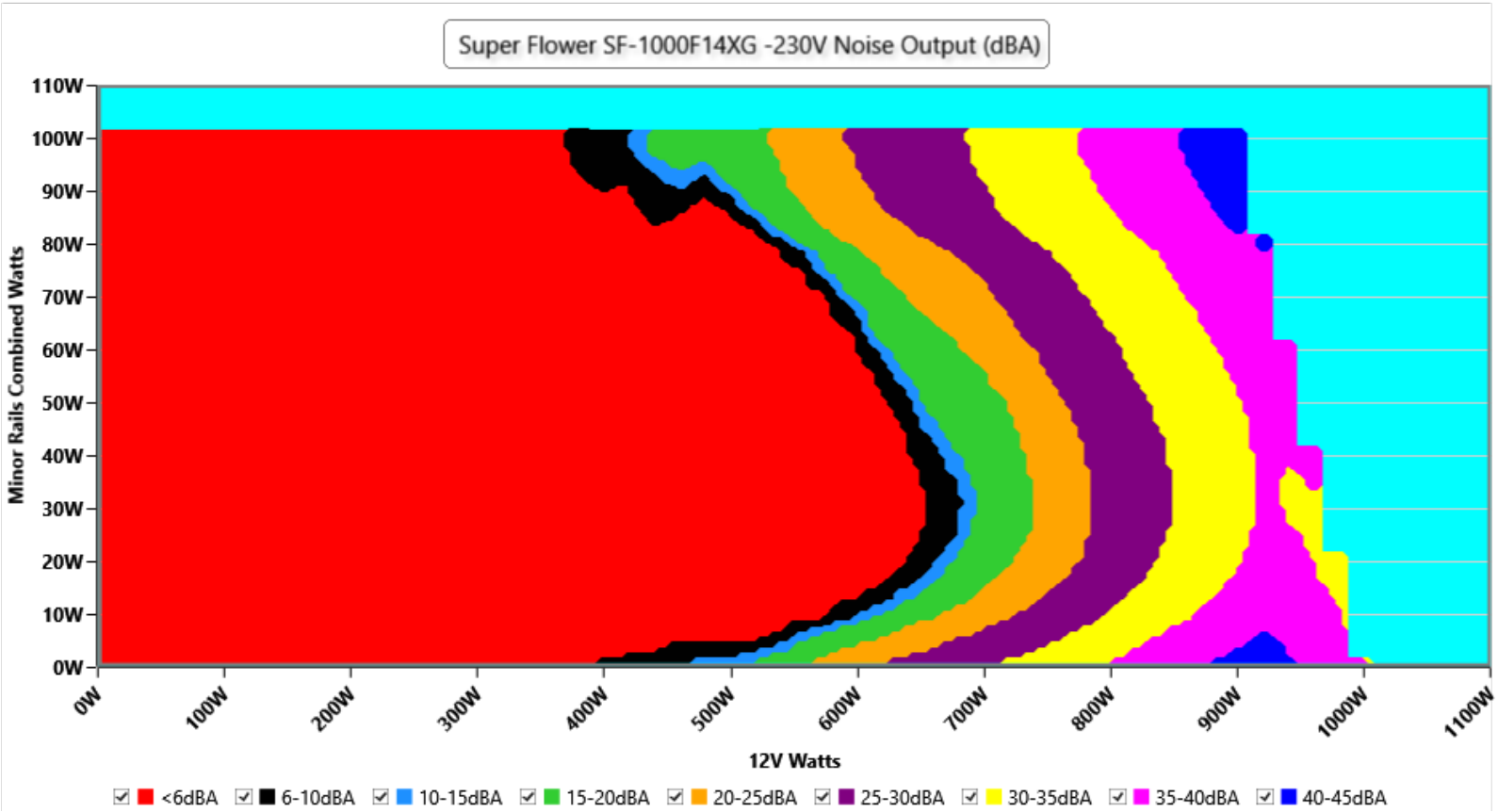
115V



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

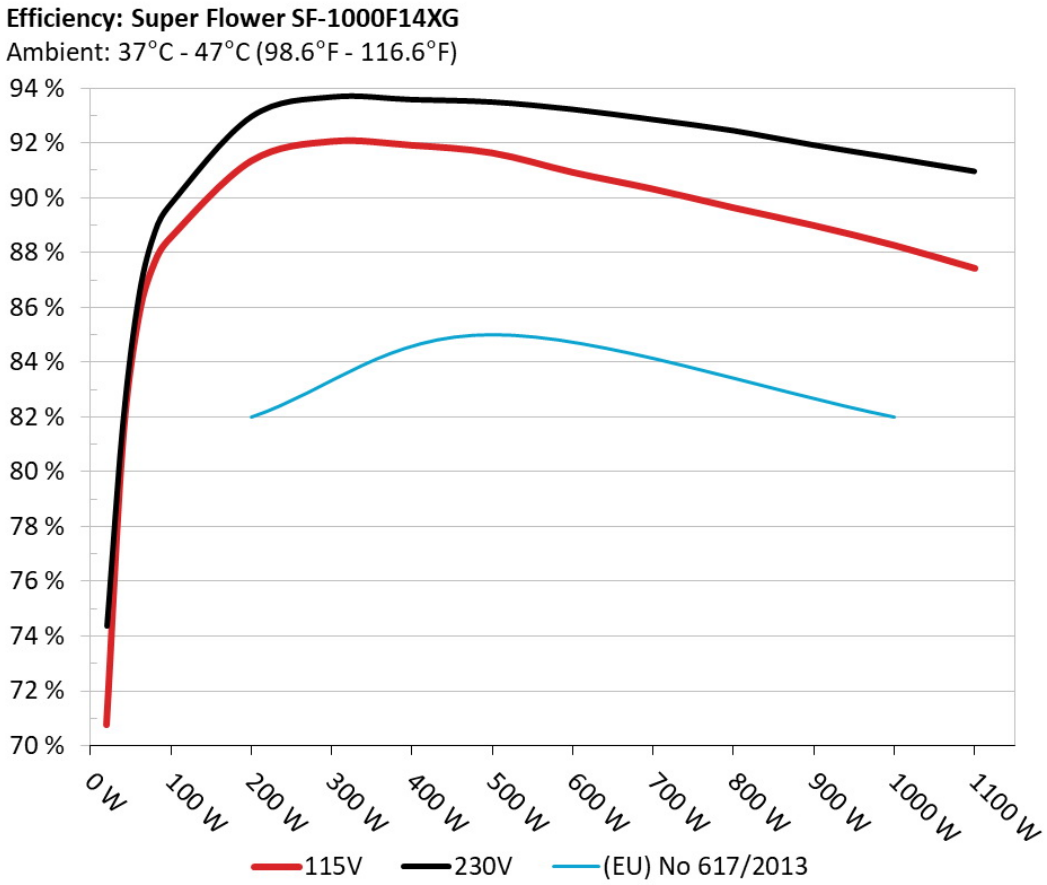


INFO

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

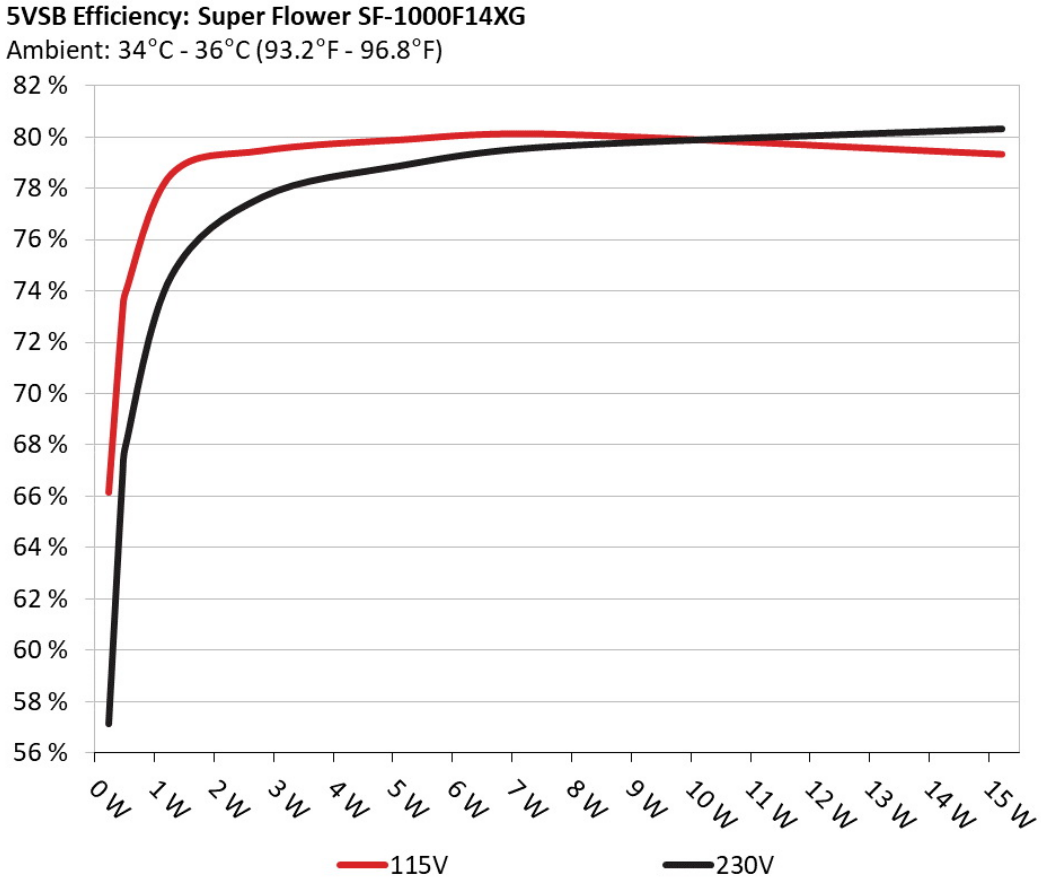
Efficiency under high ambient temperature



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	0.231W	66.161%	0.036
	5.123V	0.349W		115.16V
2	0.09A	0.461W	73.169%	0.064
	5.123V	0.63W		115.15V
3	0.55A	2.814W	79.485%	0.278
	5.114V	3.54W		115.16V
4	1A	5.108W	79.903%	0.378
	5.107V	6.393W		115.15V
5	1.5A	7.648W	80.129%	0.428
	5.098V	9.545W		115.15V
6	3A	15.214W	79.343%	0.492
	5.071V	19.174W		115.15V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231W	57.142%	0.012
	5.123V	0.405W		230.38V
2	0.09A	0.461W	66.762%	0.021
	5.122V	0.691W		230.38V
3	0.55A	2.813W	77.664%	0.107
	5.114V	3.623W		230.38V
4	1A	5.108W	78.868%	0.176
	5.106V	6.476W		230.38V
5	1.5A	7.648W	79.619%	0.237
	5.098V	9.607W		230.38V
6	3A	15.214W	80.311%	0.341
	5.071V	18.944W		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
10%	6.488A	1.991A	1.978A	0.981A	99.994	88.569%	0	<6.0	44.56°C	0.964
	12.083V	5.024V	3.336V	5.096V	112.902				40.22°C	115.09V
20%	13.999A	2.986A	2.966A	1.18A	199.945	91.36%	0	<6.0	45.51°C	0.985
	12.076V	5.025V	3.337V	5.085V	218.85				40.66°C	115.07V
30%	21.870A	3.483A	3.459A	1.38A	299.992	92.073%	0	<6.0	46.63°C	0.991
	12.068V	5.025V	3.339V	5.075V	325.822				41.43°C	115.06V
40%	29.711A	3.98A	3.951A	1.58A	399.584	91.932%	352	<6.0	41.79°C	0.993
	12.062V	5.026V	3.341V	5.064V	434.654				47.47°C	115.03V
50%	37.227A	4.976A	4.938A	1.781A	499.321	91.655%	422	<6.0	42.15°C	0.994
	12.056V	5.025V	3.342V	5.053V	544.812				48.27°C	115.01V
60%	44.822A	5.973A	5.924A	1.983A	599.881	90.942%	730	26.2	42.69°C	0.995
	12.049V	5.024V	3.343V	5.043V	659.626				49.29°C	114.98V
70%	52.361A	6.97A	6.91A	2.186A	699.62	90.335%	977	33.9	43.37°C	0.995
	12.042V	5.022V	3.343V	5.032V	774.459				50.42°C	114.95V
80%	59.945A	7.967A	7.894A	2.29A	799.671	89.651%	1199	40.8	43.7°C	0.996
	12.040V	5.022V	3.344V	5.022V	891.973				52.05°C	114.92V
90%	67.860A	8.466A	8.37A	2.394A	899.458	89.006%	1370	43.9	44.14°C	0.996
	12.039V	5.02V	3.344V	5.014V	1010.543				53.15°C	114.89V
100%	75.592A	8.966A	8.877A	3.003A	999.469	88.28%	1574	47.7	45.23°C	0.996
	12.036V	5.019V	3.345V	4.996V	1132.167				55.31°C	114.86V
110%	83.262A	9.962A	9.949A	3.008A	1100.108	87.437%	1691	48.4	47.1°C	0.996
	12.032V	5.019V	3.346V	4.987V	1258.168				58.02°C	114.83V
CL1	0.115A	11.933A	11.87A	0A	101.289	84.577%	417	<6.0	40.62°C	0.966
	12.088V	5.045V	3.344V	5.098V	119.761				46.13°C	115.12V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL2	0.115A	19.786A	0A	0A	101.39	82.877%	419	<6.0	41.89°C	0.966
	12.091V	5.054V	3.34V	5.107V	122.33				48.98°C	115.11V
CL3	0.116A	0A	19.701A	0A	67.395	76.498%	959	32.8	42.99°C	0.96
	12.086V	5.031V	3.35V	5.096V	88.101				52.09°C	115.12V
CL4	83.132A	0A	0A	0.001A	1000.248	88.688%	1524	46.7	44.89°C	0.996
	12.032V	5.012V	3.345V	5.061V	1127.816				55.84°C	114.86V

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
10%	6.488A	1.989A	1.977A	0.982A	100.001	89.786%	0	<6.0	43.41°C	0.838
	12.084V	5.028V	3.339V	5.095V	111.376				39.33°C	230.38V
20%	13.998A	2.984A	2.965A	1.18A	199.951	92.951%	0	<6.0	45.28°C	0.928
	12.076V	5.028V	3.339V	5.084V	215.117				40.9°C	230.36V
30%	21.867A	3.481A	3.457A	1.38A	300.001	93.662%	0	<6.0	46.39°C	0.96
	12.070V	5.028V	3.341V	5.074V	320.293				41.66°C	230.35V
40%	29.705A	3.98A	3.951A	1.58A	399.589	93.568%	354	<6.0	41.86°C	0.968
	12.065V	5.026V	3.341V	5.064V	427.052				47.01°C	230.34V
50%	37.225A	4.976A	4.938A	1.781A	499.323	93.48%	531	14.8	42.25°C	0.973
	12.057V	5.024V	3.342V	5.053V	534.153				47.74°C	230.32V
60%	44.822A	5.974A	5.925A	1.983A	599.882	93.213%	729	26.2	42.55°C	0.977
	12.049V	5.023V	3.342V	5.043V	643.559				48.59°C	230.31V
70%	52.360A	6.971A	6.911A	2.186A	699.609	92.843%	987	33.9	43.26°C	0.98
	12.042V	5.022V	3.343V	5.032V	753.535				50.29°C	230.29V
80%	59.943A	7.97A	7.895A	2.289A	799.593	92.438%	1299	43.6	43.99°C	0.982
	12.040V	5.02V	3.343V	5.023V	865.012				52.09°C	230.28V
90%	67.857A	8.466A	8.372A	2.393A	899.409	91.914%	1521	46.7	45.96°C	0.984
	12.039V	5.02V	3.344V	5.014V	978.526				55.06°C	230.26V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
100%	75.585A	8.965A	8.877A	3.002A	999.435	91.442%	1697	48.6	45.46°C	0.985
	12.036V	5.019V	3.345V	4.997V	1092.974				55.54°C	230.25V
110%	83.256A	9.963A	9.952A	3.007A	1100.064	90.955%	1843	51.4	46.78°C	0.987
	12.032V	5.018V	3.345V	4.989V	1209.47				57.68°C	230.24V
CL1	0.116A	11.94A	11.872A	0A	101.291	84.525%	704	23.6	41.53°C	0.851
	12.089V	5.042V	3.343V	5.098V	119.85				46.99°C	230.38V
CL2	0.115A	19.794A	0A	0A	101.389	84.146%	405	<6.0	38.57°C	0.852
	12.091V	5.052V	3.339V	5.107V	120.486				45.68°C	230.38V
CL3	0.115A	0A	19.702A	0A	67.381	79.128%	663	21.8	39.95°C	0.79
	12.086V	5.03V	3.349V	5.096V	85.153				49.22°C	230.38V
CL4	83.099A	0A	0A	0.001A	999.975	92.111%	1489	46.1	46.63°C	0.986
	12.033V	5.008V	3.342V	5.063V	1085.619				57.51°C	230.25V

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])	Temps (In/Out)	PF/AC Volts
20W	1.228A	0.498A	0.495A	0.195A	19.995	70.768%	0	<6.0	39.71°C	0.823
	12.088V	5.018V	3.333V	5.118V	28.258				36.53°C	115.11V
40W	2.704A	0.697A	0.693A	0.293A	39.993	81.012%	0	<6.0	40.58°C	0.92
	12.087V	5.019V	3.334V	5.114V	49.367				37.19°C	115.11V
60W	4.180A	0.896A	0.89A	0.391A	59.991	85.665%	0	<6.0	41.99°C	0.957
	12.085V	5.021V	3.335V	5.111V	70.029				38.29°C	115.11V
80W	5.653A	1.095A	1.088A	0.49A	79.942	87.664%	0	<6.0	42.97°C	0.96
	12.084V	5.022V	3.336V	5.108V	91.192				39.01°C	115.1V

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
20W	1.228A	0.497A	0.494A	0.195A	20.001	74.386%	0	<6.0	40.18°C	0.462
	12.090V	5.029V	3.339V	5.115V	27.891				37.08°C	230.39V
40W	2.704A	0.696A	0.692A	0.293A	39.997	81.819%	0	<6.0	40.01°C	0.646
	12.088V	5.028V	3.339V	5.112V	48.887				36.63°C	230.39V
60W	4.180A	0.895A	0.889A	0.392A	59.994	86.452%	0	<6.0	41.71°C	0.739
	12.086V	5.028V	3.339V	5.109V	69.395				38.18°C	230.39V
80W	5.654A	1.094A	1.087A	0.49A	79.951	88.772%	0	<6.0	42.76°C	0.801
	12.085V	5.027V	3.338V	5.106V	90.061				38.88°C	230.38V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.95mV	5.68mV	5.58mV	6.68mV	Pass
20% Load	7.51mV	5.42mV	5.78mV	7.14mV	Pass
30% Load	8.17mV	5.78mV	6.55mV	7.34mV	Pass
40% Load	10.42mV	6.24mV	6.70mV	8.36mV	Pass
50% Load	10.01mV	6.70mV	7.32mV	9.33mV	Pass
60% Load	11.39mV	7.06mV	7.52mV	10.81mV	Pass
70% Load	11.59mV	7.26mV	8.09mV	11.47mV	Pass
80% Load	11.95mV	8.03mV	11.87mV	13.10mV	Pass
90% Load	12.26mV	9.41mV	13.56mV	13.82mV	Pass
100% Load	17.87mV	11.13mV	14.90mV	18.67mV	Pass
110% Load	17.98mV	11.95mV	15.83mV	20.75mV	Pass
Crossload1	11.19mV	8.83mV	12.97mV	23.99mV	Pass
Crossload2	8.07mV	6.75mV	6.45mV	21.36mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	6.69mV	7.93mV	14.18mV	21.77mV	Pass
Crossload4	17.38mV	9.66mV	10.84mV	25.00mV	Pass

The results above are not used in the certification process

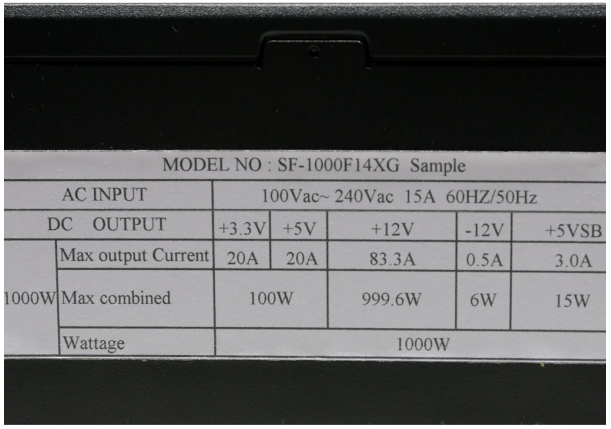
230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	7.15mV	5.62mV	5.68mV	7.03mV	Pass
20% Load	8.31mV	6.19mV	6.24mV	7.29mV	Pass
30% Load	10.72mV	6.80mV	7.52mV	8.36mV	Pass
40% Load	11.53mV	7.72mV	8.70mV	9.94mV	Pass
50% Load	11.08mV	7.93mV	8.44mV	9.89mV	Pass
60% Load	12.21mV	7.16mV	8.19mV	10.76mV	Pass
70% Load	11.90mV	7.31mV	8.04mV	11.73mV	Pass
80% Load	12.62mV	8.13mV	11.98mV	12.90mV	Pass
90% Load	13.23mV	9.56mV	13.67mV	13.36mV	Pass
100% Load	18.73mV	12.11mV	16.00mV	18.21mV	Pass
110% Load	19.01mV	12.39mV	15.21mV	19.71mV	Pass
Crossload1	12.07mV	8.90mV	13.13mV	24.67mV	Pass
Crossload2	8.38mV	7.11mV	6.86mV	22.23mV	Pass
Crossload3	6.69mV	7.88mV	15.25mV	22.99mV	Pass
Crossload4	18.34mV	9.88mV	10.36mV	25.90mV	Pass

The results above are not used in the certification process

Super Flower Leadex VII XG 1000W

Top side



MODEL NO : SF-1000F14XG Sample						
AC INPUT		100Vac~ 240Vac 15A 60HZ/50Hz				
DC OUTPUT		+3.3V	+5V	+12V	-12V	+5VSB
1000W	Max output Current	20A	20A	83.3A	0.5A	3.0A
	Max combined	100W		999.6W	6W	15W
	Wattage	1000W				

Power specifications label

Cybenetics bietet freiwillige Zertifizierungsprogramme für Netzteile – ETA für Effizienz, LAMBDA für Lautstärke und SAFE für Sicherheit und korrekten Betrieb – sowie für Kühlprodukte mit DELTA für die Schalldämmung von Gehäusen und PHI für Luftstrom und statischen Druck von Lüftern

CYBENETICS LTD Syrou 6, Latsia, 2231, Nicosia Cyprus

www.cybenetics.com - info@cybenetics.com