Super Flower Leadex Titanium 1000W

Serial Number S1506102134

Lab ID 154

Certification ID 25154

Test Result Report ID: 19PS154A

Certificate Issue Date: Mar 8, 2018

115V

Scheme: ETA-EMI PSU



115V



Scheme: LAMBDA PSU



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 Titanium 1000W
OEM/ODM	Super Flower
Serial Number	S1506102134
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	15
Rated Frequency (Hz)	50-60

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 Double Ball-Bearing Fan (RL4Z-B1402512HH)
Semi-Passive Operation	✓ (selectable)
Cybenetics Testing Information	
Lab ID	154
Date of receipt	Feb 24, 2018
Testing Date	Mar 4, 2018
Report Issued Date	Mar 8, 2018
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
ATX connector 20+4 pin (590mm)	1	1	16-22AWG
4+4 pin EPS12V (750mm)	2	2	16-22AWG
6+2 pin PCIe (750mm)	4	4	16-22AWG
6+2 pin PCIe (750mm+150mm)	2	4	16-22AWG
SATA (550mm+100mm+100mm+100mm)	3	12	18-20AWG
4 pin Molex (550mm+100mm+100mm)	2	6	18AWG
FDD Adapter (+100mm)	1	1	20AWG

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	83.3	2.5	0.5
	Watts	100		999.6	12.5	6
Total Max. Power (W)		1000				

Parts Description

Primary Side	
Transient Filter	4x Y caps, 3x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor & Electromagnetic Relay
Bridge Rectifier(s)	Bridgeless Design - 1x US30K80R & 4x Infineon Mosfets
APFC Mosfets	4x Infineon Mosfets
APFC Boost Diode	4x Infineon IDH06G65C5
Hold-up Cap(s)	3x Nippon Chemi-Con (400 V, 2x 390 uF & 1x 330 uF, 1110 uF combined, 105°C, KMW)
Main Switchers	4x IPP50R199CP (550V, 11A @ 100C, 0.199 Ohm)
APFC Controller	SF29603
Switching Controller	SFAA9013
Topology	Primary side: Bridgeless PFC & Full-Bridge LLC & Resonant Converter Secondary side: Syncronous Rectification & DC-DC converters
Secondary Side	
+12V Mosfets	8x Infineon BSC027N04LS
5V & 3.3V	DC-DC Converters: 8x Infineon IPD060N03 fets
Filtering Capacitors	Electrolytics: Chemi-Con, 105°C, KY, KRG & KMG Polymers: Chemi-Con
Supervisor IC	AA9013 & LM324ADG
Fan Model	Globe Fan RL4Z-B1402512HH (140 mm, 12 V, 0.5 A, 1800 RPM, 70.000 MTBF)
5VSB Circuit	
Rectifying Diode	Mospec S10C60C
Standby PWM Controller	29604

Test Results

Temperature & Compliance Info

Temperature Range (°C /°F)	28-32 / 82.4-89.6
ErP Lot 3/6 Ready	ErP Lot 3/6 2010: ✓ ErP Lot 3/6 2013: Partially ErP Lot 3/6 2014, CEC: ✓
(EU) No 617/2013 Compliance	✓

Performance Summary 115V

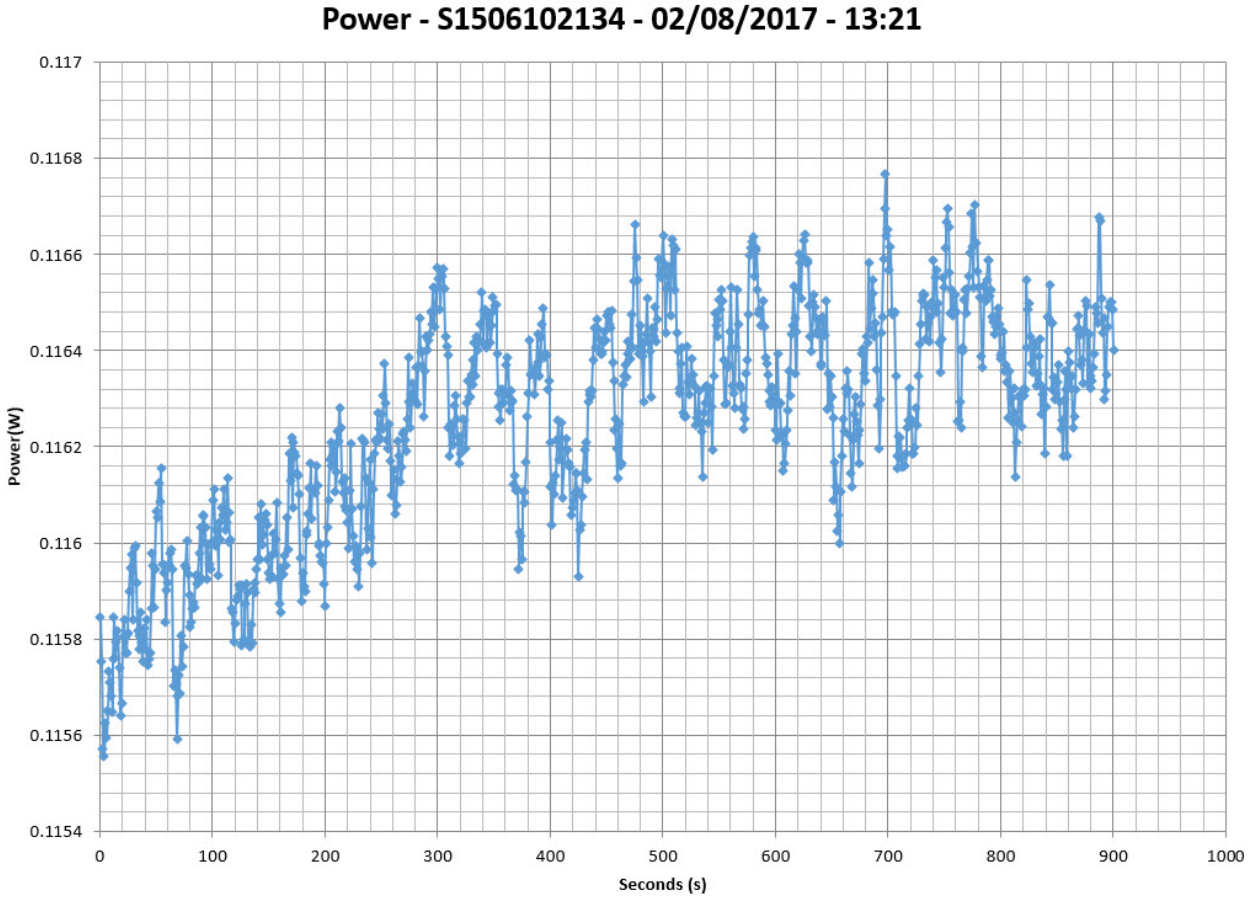
Accredited	
Average Efficiency (>1450 load combinations)	91.621%
Average Noise Output (>1450 Load Combinations)	26.26dBA
Average PF (>1450 Load Combinations)	0.993
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
Standby Power Consumption	0.1164W
Non-Accredited	
12V Ripple (Full Load)	21.60mV
5V Ripple (Full Load)	25.02mV
3.3V Ripple (Full Load)	30.07mV
5VSB Ripple (Full Load)	16.10mV
12V Load Regulation	0.40%
5V Load Regulation	0.67%
3.3V Load Regulation	0.75%
5VSB Load Regulation	1.52%
Inrush Current	40.016A

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	20.14
AC Loss to PWR_OK Hold Up Time (ms)	18.12
PWR_OK Inactive to DC Loss Delay (ms)	2.02

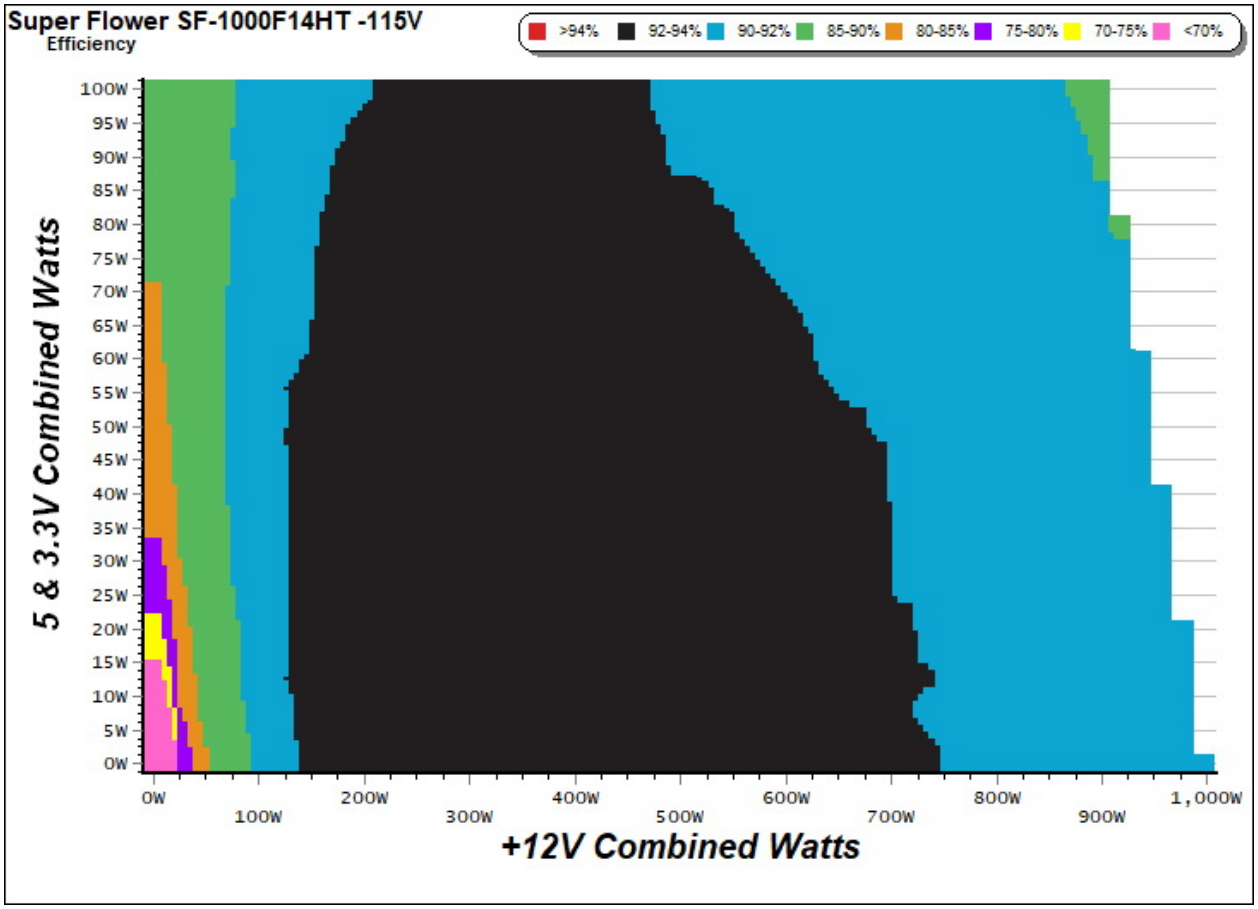
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Graphs 115V



Efficiency Graph

115V

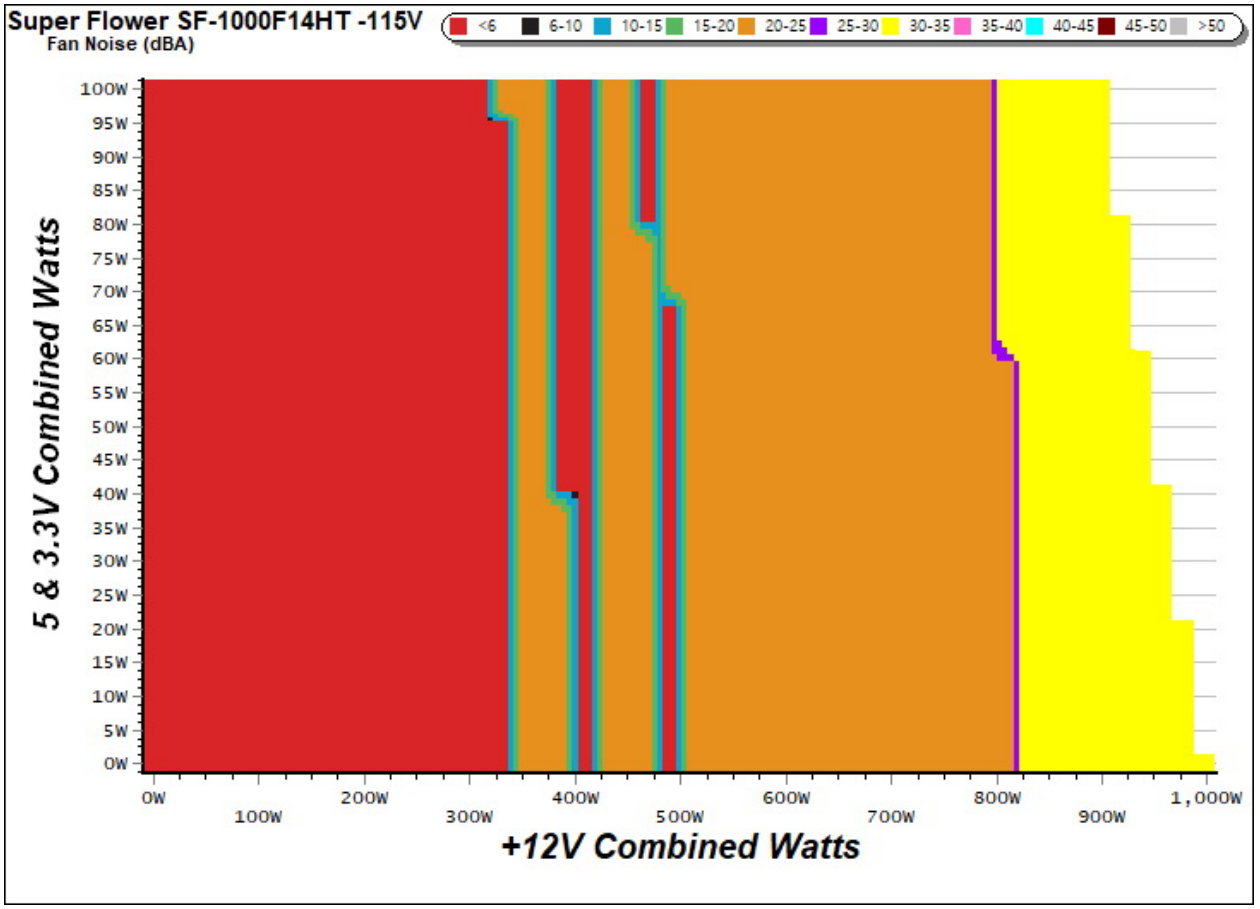


INFO

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

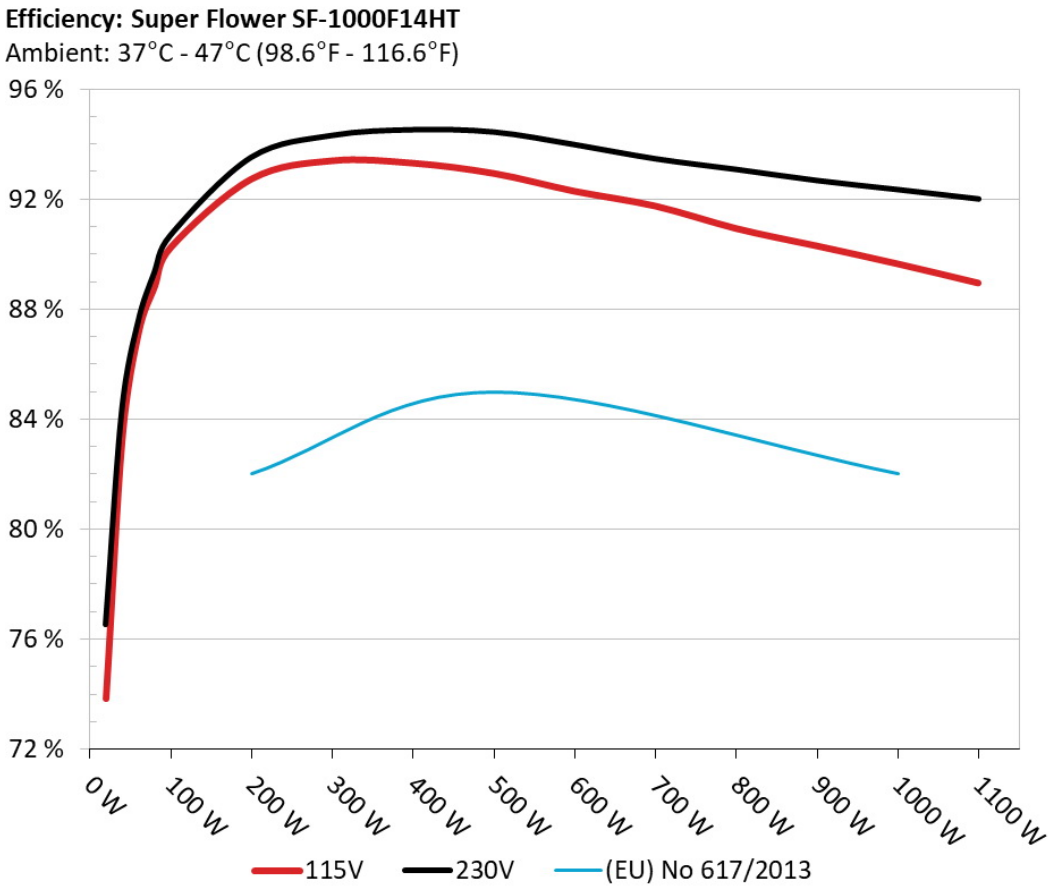


INFO

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.

Indicative Performance

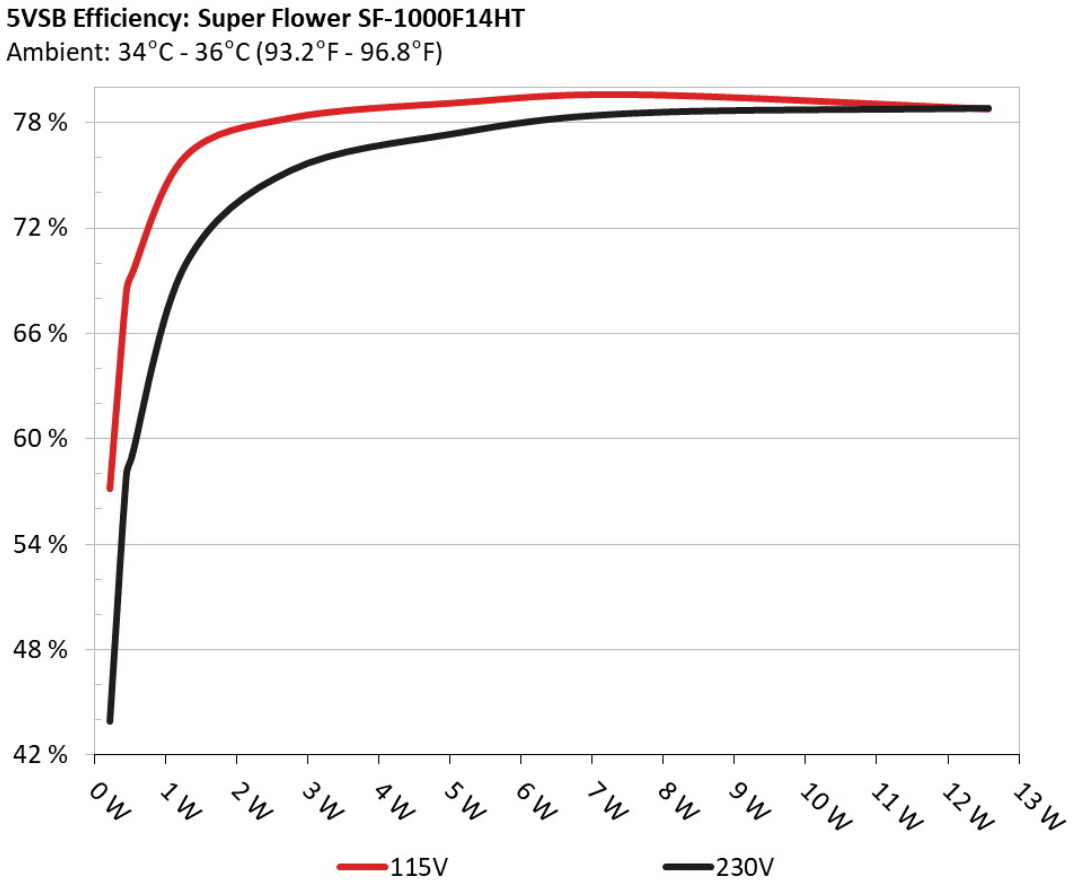
Efficiency under high ambient temperature



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	0.042A	0.212	57.143%	0.023
	5.076V	0.371		115.14V

2	0.087A	0.443	68.364%	0.041
	5.074V	0.648		115.14V
3	0.542A	2.746	78.256%	0.196
	5.065V	3.509		115.12V
4	1.002A	5.065	79.116%	0.300
	5.055V	6.402		115.13V
5	1.502A	7.576	79.588%	0.370
	5.045V	9.519		115.13V
6	2.501A	12.566	78.774%	0.445
	5.024V	15.952		115.13V

Supplementary Tests (For Reference)

Typical Load Tests 115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	Fan Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	6.431A	1.985A	1.990A	0.986A	99.795	90.252%	0	| 6	43.75°C	0.975
	12.163V	5.040V	3.310V	5.054V	110.574				38.40°C	115.18V
2	13.884A	2.972A	2.990A	1.186A	199.622	92.735%	0	| 6	44.24°C	0.989
	12.157V	5.035V	3.306V	5.046V	215.260				38.65°C	115.18V
3	21.706A	3.478A	3.508A	1.386A	299.846	93.400%	0	| 6	45.30°C	0.996
	12.152V	5.032V	3.304V	5.039V	321.033				39.13°C	115.17V
4	29.513A	3.976A	3.992A	1.586A	399.621	93.312%	0	| 6	46.29°C	0.995
	12.146V	5.029V	3.301V	5.033V	428.265				39.82°C	115.16V
5	36.984A	4.975A	4.997A	1.790A	499.610	92.938%	920	23.0	41.17°C	0.996
	12.144V	5.025V	3.298V	5.026V	537.574				48.14°C	115.16V
6	44.464A	5.977A	6.003A	1.990A	599.534	92.291%	920	23.0	41.42°C	0.997
	12.139V	5.021V	3.296V	5.019V	649.615				49.52°C	115.16V
7	51.953A	6.981A	7.013A	2.195A	699.519	91.753%	920	23.0	41.82°C	0.997
	12.134V	5.018V	3.293V	5.010V	762.390				51.07°C	115.16V
8	59.444A	7.977A	8.019A	2.395A	799.368	90.939%	1365	34.5	43.28°C	0.998
	12.129V	5.014V	3.291V	5.004V	879.016				52.19°C	115.16V

9	67.370A	8.484A	8.537A	2.396A	899.367	90.303%	1830	41.2	44.05°C	0.998
	12.124V	5.012V	3.288V	5.001V	995.947				52.99°C	115.16V
10	75.261A	8.992A	9.036A	2.500A	999.245	89.656%	1830	41.2	45.20°C	0.998
	12.118V	5.009V	3.287V	4.996V	1114.533				55.04°C	115.16V
11	83.552A	8.996A	9.040A	2.500A	1099.111	88.957%	1830	41.2	46.77°C	0.998
	12.111V	5.006V	3.285V	4.993V	1235.550				58.24°C	115.17V
CL1	0.097A	12.017A	12.004A	0.004A	101.163	85.422%	1365	34.5	44.04°C	0.978
	12.165V	5.022V	3.300V	5.068V	118.428				51.13°C	115.21V
CL2	83.247A	1.003A	1.002A	1.002A	1021.920	89.921%	1830	41.2	45.93°C	0.998
	12.115V	5.020V	3.295V	5.036V	1136.470				55.64°C	115.17V

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)	Fan Noise (dB[A])	PF/AC Volts
1	1.201A	0.493A	0.479A	0.196A	19.685	73.854%	0	| 6	0.812
	12.169V	5.046V	3.314V	5.073V	26.654				115.17V
2	2.421A	0.991A	0.993A	0.391A	39.725	83.316%	0	| 6	0.921
	12.167V	5.043V	3.312V	5.068V	47.680				115.17V
3	3.653A	1.478A	1.508A	0.591A	59.881	87.155%	0	| 6	0.955
	12.166V	5.042V	3.311V	5.064V	68.706				115.17V
4	4.867A	1.985A	1.988A	0.790A	79.782	88.825%	0	| 6	0.967
	12.164V	5.040V	3.310V	5.058V	89.819				115.18V

The results above are not used in the certification process

Ripple Measurements 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	8.8 mV	7.5 mV	10.8 mV	8.5 mV	Pass
20% Load	13.7 mV	10.5 mV	14.0 mV	10.6 mV	Pass
30% Load	16.1 mV	11.5 mV	17.6 mV	11.8 mV	Pass
40% Load	16.9 mV	13.7 mV	19.4 mV	11.8 mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
50% Load	17.2 mV	15.5 mV	20.0 mV	13.3 mV	Pass
60% Load	18.1 mV	18.3 mV	24.2 mV	14.5 mV	Pass
70% Load	21.4 mV	20.4 mV	24.5 mV	14.9 mV	Pass
80% Load	19.1 mV	21.2 mV	25.2 mV	14.0 mV	Pass
90% Load	20.6 mV	23.2 mV	28.4 mV	15.5 mV	Pass
100% Load	21.6 mV	25.0 mV	30.1 mV	16.1 mV	Pass
110% Load	21.3 mV	27.0 mV	31.6 mV	14.9 mV	Pass
Crossload 1	12.2 mV	10.2 mV	9.9 mV	20.6 mV	Pass
Crossload 2	20.5 mV	25.0 mV	29.1 mV	16.2 mV	Pass

The results above are not used in the certification process

Super Flower Leadex Titanium 1000W



Top side



Power specifications label

Cybenetics □□□□□□□□□□□□□□□□□□ ETA□□□□ LAMBDA□□□□ SAFE□□□□□□□□□□□□□□□□ DELTA□□□□□□ PHI□□□□□□□□

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