



Super Flower Combat 850W

Serial Number S2403CW000754

Lab ID SF85002577

Certification ID 252577

Test Result Report ID: 24PS2577A

Certificate Issue Date: Sep 24, 2024

115V

230V

Scheme: ETA-EMI PSU

115V

230V

Scheme: LAMBDA PSU

Outside Validation Scope

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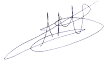
General Information

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	Brueel & Kjaer 2270 G4
Microphone	Brueel & 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	Combat 850W
OEM/ODM	CWT
Serial Number	S2403CW000754
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	12

Rated Frequency (Hz)	47-63
Rated Power (W)	850
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	120mm Fluid Dynamic Bearing Fan (ZFF122512H)
Semi-Passive Operation	X
Cybenetics Testing Information	
Lab ID	SF85002577
Date of receipt	Sep 13, 2024
Testing Date	Sep 23, 2024
Report Issued Date	Sep 24, 2024
DUT Notes	The unit broke during SCP testing on the -12V rail.
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 24 pin (595mm)	1	1	18AWG	No
4+4 pin EPS12V (600mm)	2	2	18AWG	No
6+2 pin PCIe (500mm+150mm)	2	4	18AWG	No
12+2 pin PCIe (600mm) (600W)	1	1	16-24AWG	No
SATA (400mm+150mm+150mm)	3	9	18AWG	No
4-pin Molex (400mm+150mm+150mm+150mm)	1	4	18AWG	No

FDD Adapter (+150mm)	1	1	22AWG	No
AC Power Cord (1400mm) - C13 coupler	1	1	18AWG	-

Protection Features(Manufacturer)

Over Power Protection	✓
Over Current (+12V) Protection	✓
Over Temperature Protection	✓
Short Circuit Protection	✗
Surge Protection	✓
Inrush Current Protection	✓
Fan Failure Protection	✗

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	70.5	2.5	0.3
	Watts	110		846	12.5	3.6
Total Max. Power (W)		850				

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 v3.1 PSU Power Excursion	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	88.324%
Average Noise Output (>1450 Load Combinations)	33.51dBA
Average PF (>1450 Load Combinations)	0.978
Efficiency With 10W ($\leq 500W$) or 2% (>500W) Load	67.558%
Standby Power Consumption	0.0429W
Non-Accredited	
12V Ripple (Full Load)	23.99mV
5V Ripple (Full Load)	22.89mV
3.3V Ripple (Full Load)	17.38mV
5VSB Ripple (Full Load)	17.85mV
12V Load Regulation	0.49%
5V Load Regulation	0.82%
3.3V Load Regulation	1.09%
5VSB Load Regulation	4.43%
Inrush Current	35.040A

230V

Accredited	
Average Efficiency (>1450 load combinations)	90.637%
Average Noise Output (>1450 Load Combinations)	33.81dBA
Average PF (>1450 Load Combinations)	0.927
Efficiency With 10W ($\leq 500W$) or 2% (>500W) Load	66.692%
Standby Power Consumption	0.1088W
Non-Accredited	
12V Ripple (Full Load)	23.58mV
5V Ripple (Full Load)	23.60mV
3.3V Ripple (Full Load)	16.37mV

5VSB Ripple (Full Load)	17.46mV	
12V Load Regulation	0.47%	
5V Load Regulation	0.78%	
3.3V Load Regulation	1.06%	
5VSB Load Regulation	4.32%	
Inrush Current	65.020A	
12V Transient Response (200%)	11.34V	
5V Transient Response (200%)	4.897V	
3.3V Transient Response (200%)	3.204V	
5VSB Transient Response (200%)	4.825V	
Hold-Up Time & PWR_OK Signal	19.70ms	
AC Loss to PWR_OK Hold Up Time	18.60ms	
PWR_OK Inactive to DC Loss Delay	1.10ms	
PSU Timings: T1 (20% / 100%)	24.0ms	22.0ms
PSU Timings: T3 (20% / 100%)	115.0ms	115.0ms
12V OCP (30.9°C / 44.0°C)	90.40A (128.23%), 11.947V	87.60A (124.26%), 11.971V
5V OCP (30.9°C / 44.0°C)	28.1A (140.50%), 4.947V	27.2A (136.00%), 4.953V
3.3V OCP (30.9°C / 44.0°C)	28.1A (140.50%), 3.301V	27.9A (139.50%), 3.305V
5VSB OCP (30.9°C / 44.0°C)	3.8A (152.00%), 4.989V	3.8A (152.00%), 4.979V
OPP (31.29°C / 41.27°C)	123.14%	119.12%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	19.7
AC Loss to PWR_OK Hold Up Time (ms)	18.6
PWR_OK Inactive to DC Loss Delay (ms)	1.1



Tables

115V

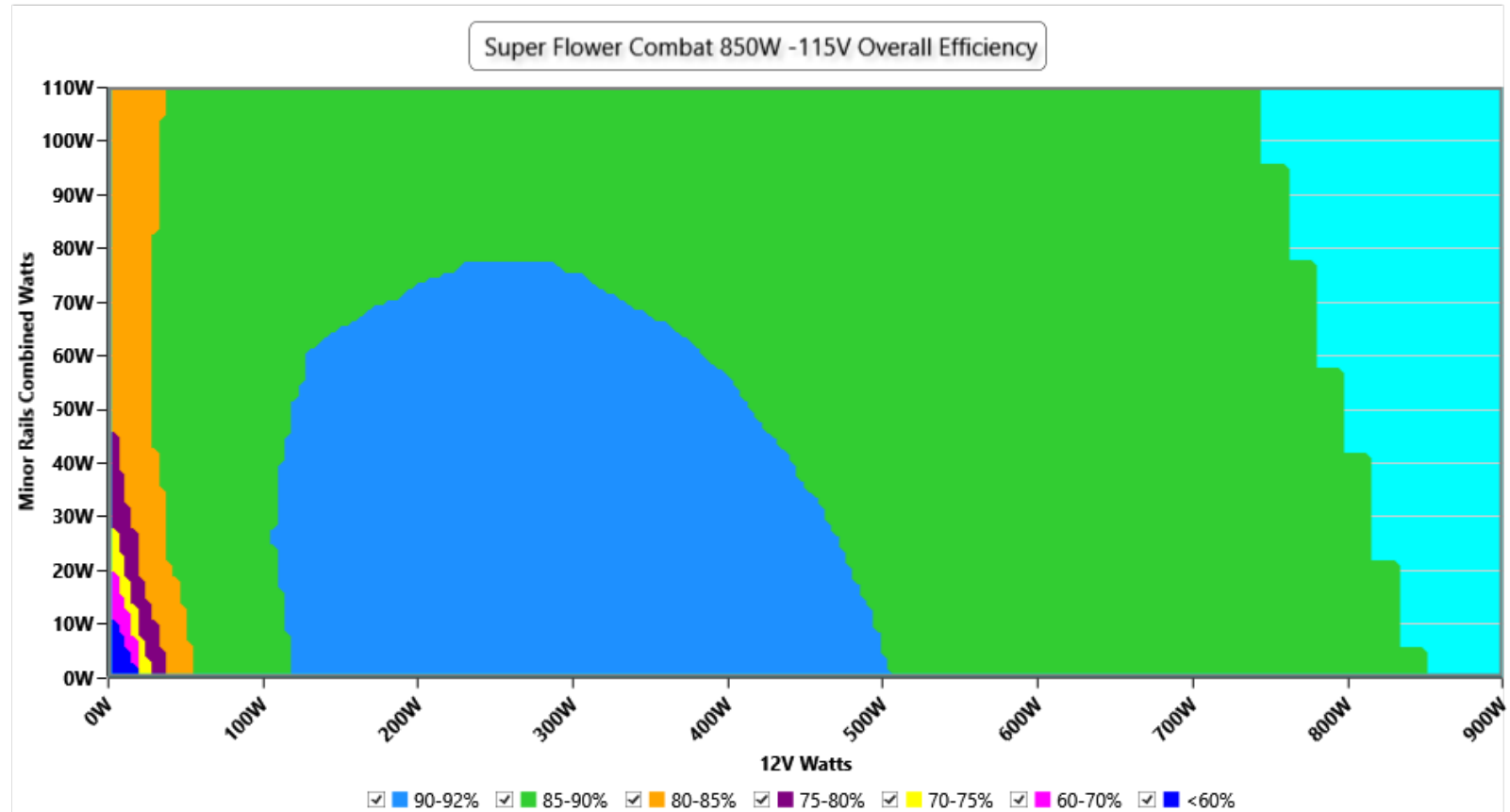
Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	115.09 V	115.04 V	113.85 V	115.11 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.99 Hz	59.40 Hz	60.01 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.416	1.415	1.340	1.418	1.490	PASS
Mains Voltage THD:	0.13 %	0.10 %	N/A	0.17 %	2.00 %	PASS
Real Power:	0.043 W	-0.004 W	N/A	0.080 W	N/A	N/A
Apparent Power:	10.743 W	10.400 W	N/A	11.114 W	N/A	N/A
Power Factor:	0.004	N/A	N/A	N/A	N/A	N/A

230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	231.04 V	230.93 V	227.70 V	231.09 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	49.99 Hz	49.50 Hz	50.01 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.417	1.416	1.340	1.419	1.490	PASS
Mains Voltage THD:	0.17 %	0.15 %	N/A	0.25 %	2.00 %	PASS
Real Power:	0.109 W	0.069 W	N/A	0.162 W	N/A	N/A
Apparent Power:	35.786 W	35.066 W	N/A	36.559 W	N/A	N/A
Power Factor:	0.002	N/A	N/A	N/A	N/A	N/A

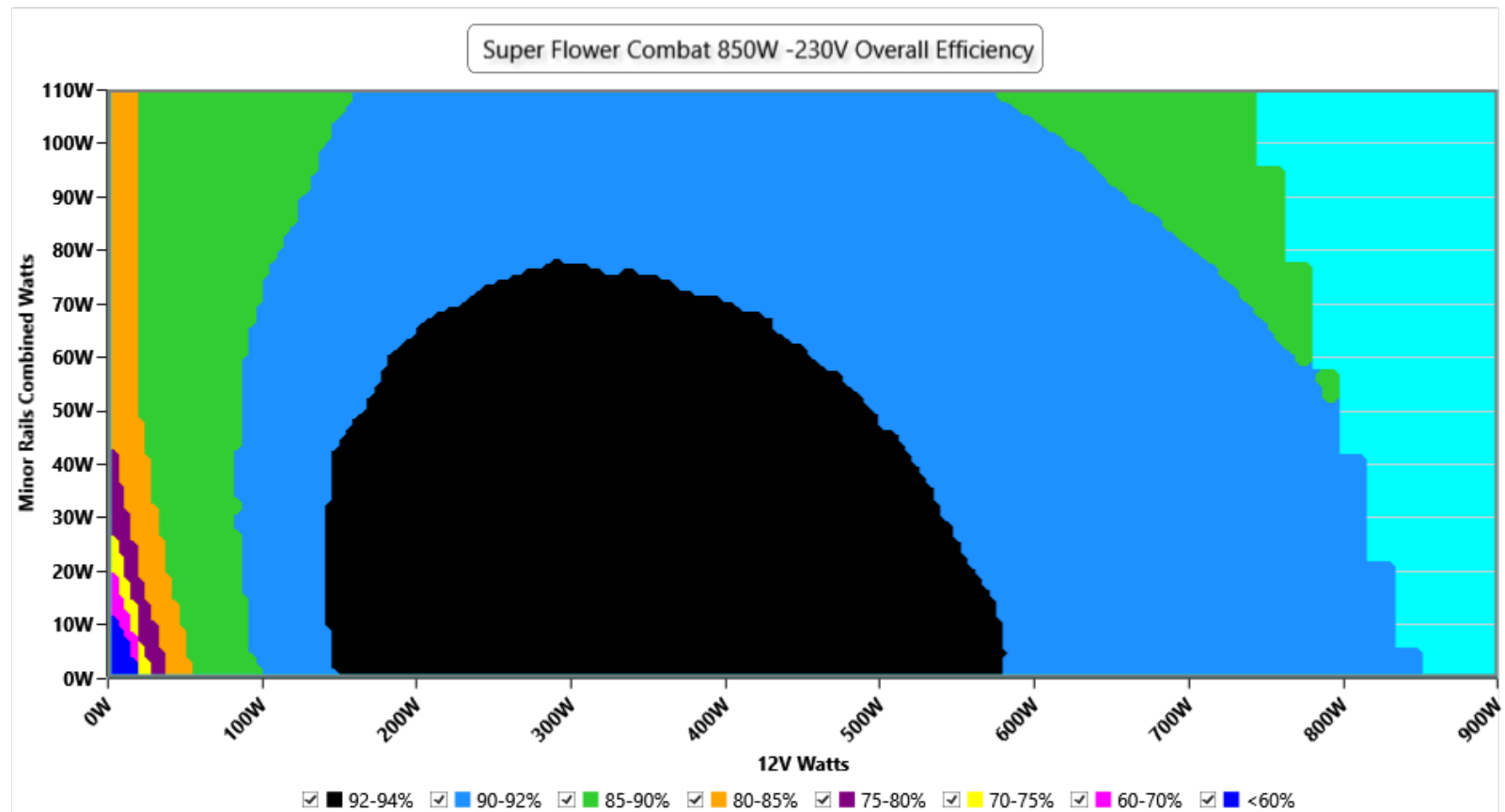
Efficiency Graph

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

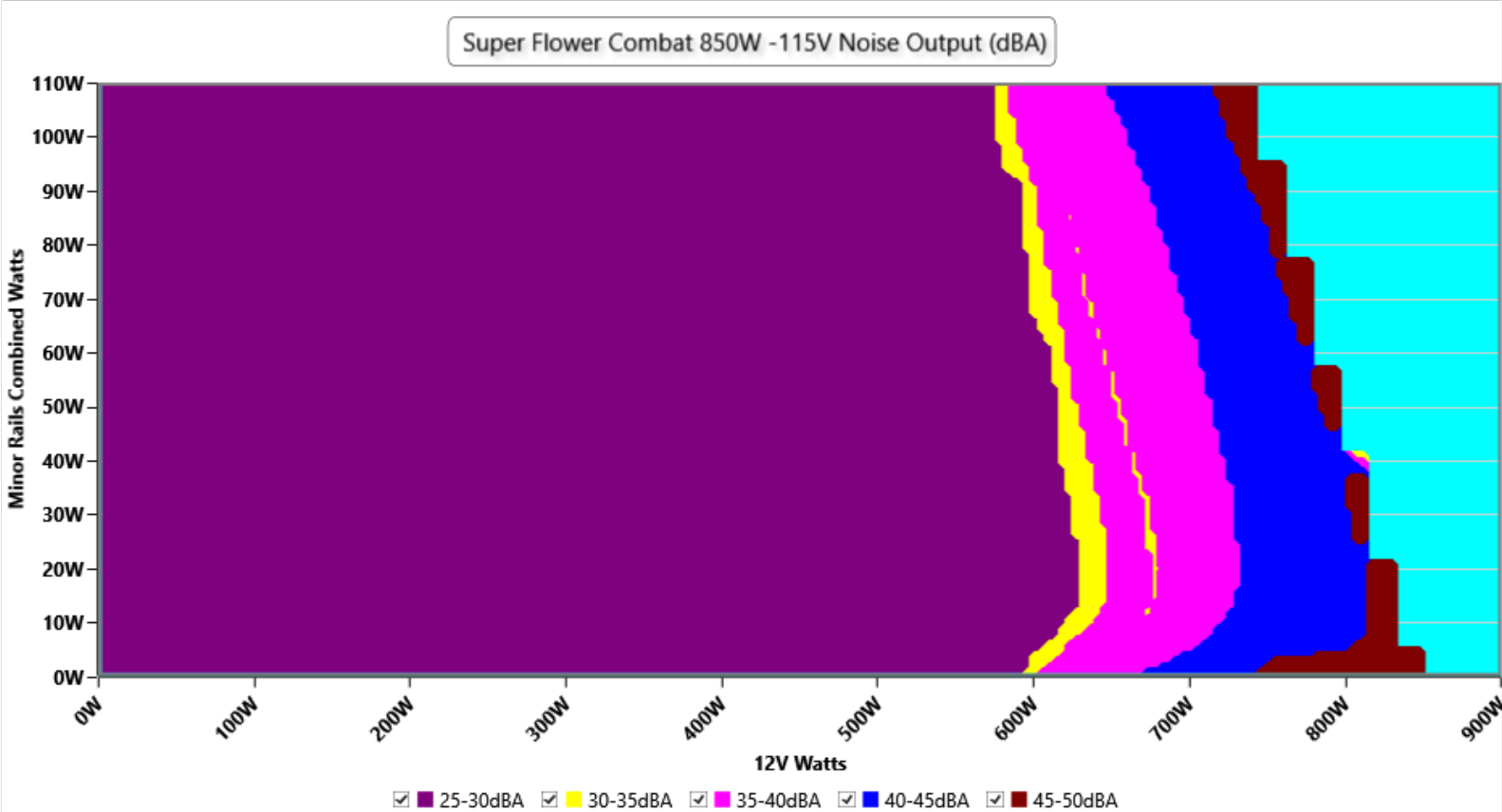


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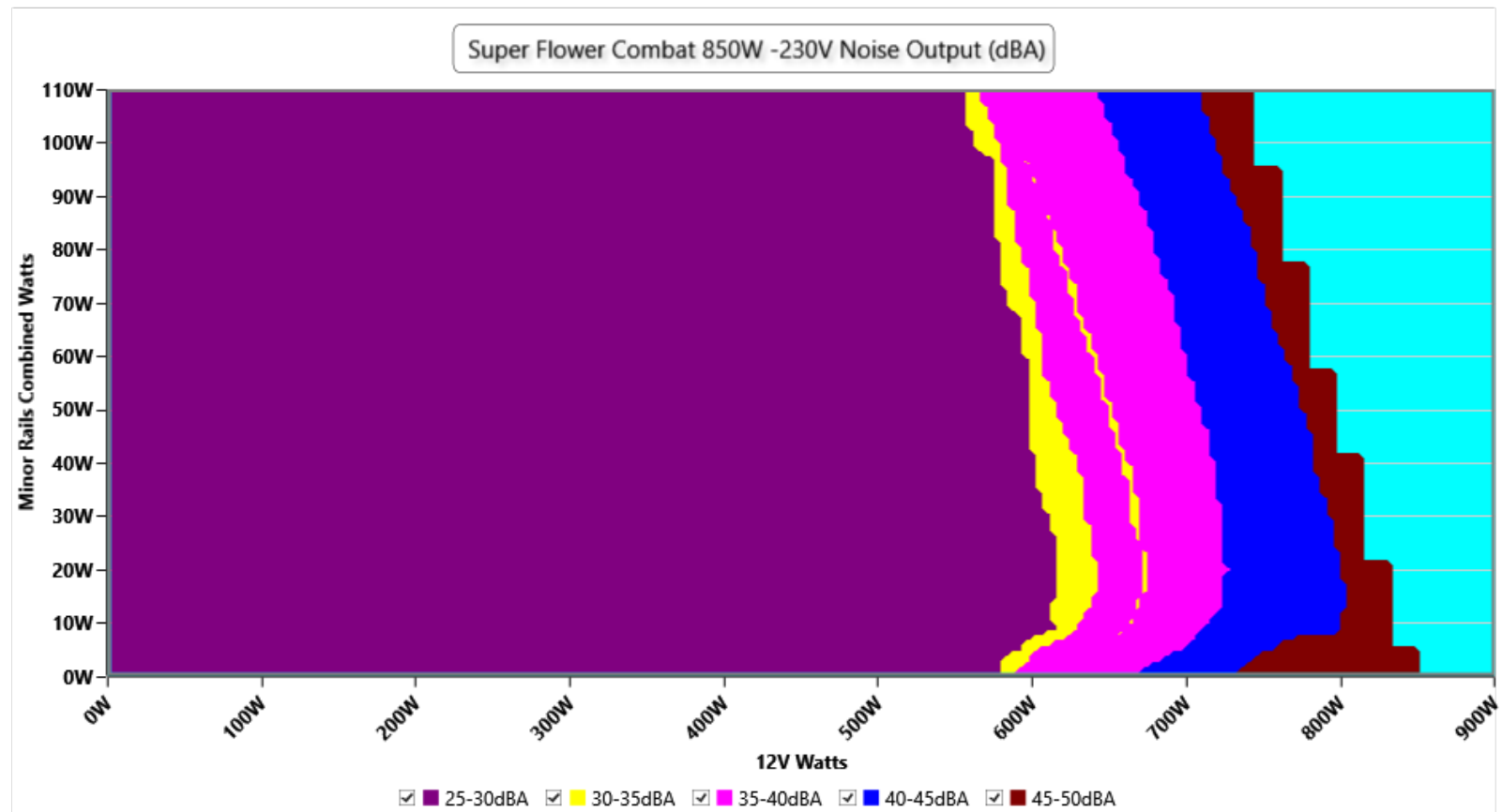
Noise Graph

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



INFO

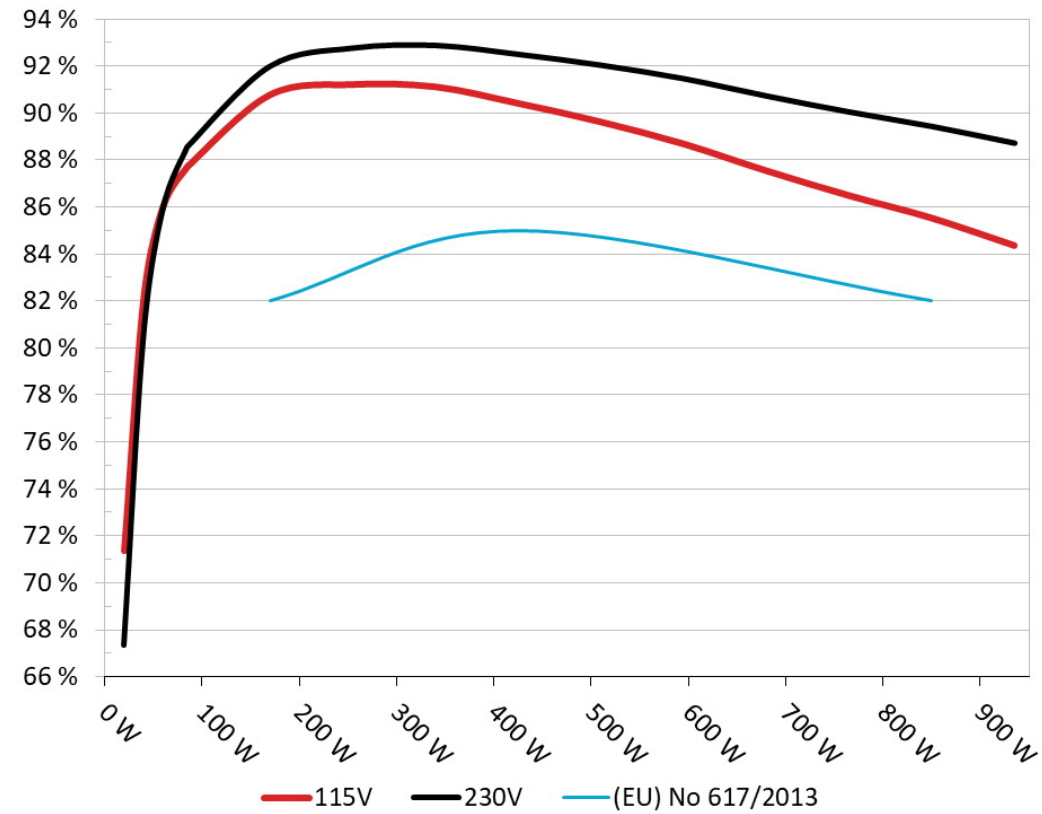
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Indicative Performance

Efficiency under high ambient temperature

Efficiency: Super Flower Combat 850W

Ambient: 36°C - 47°C (96.8°F - 116.6°F)



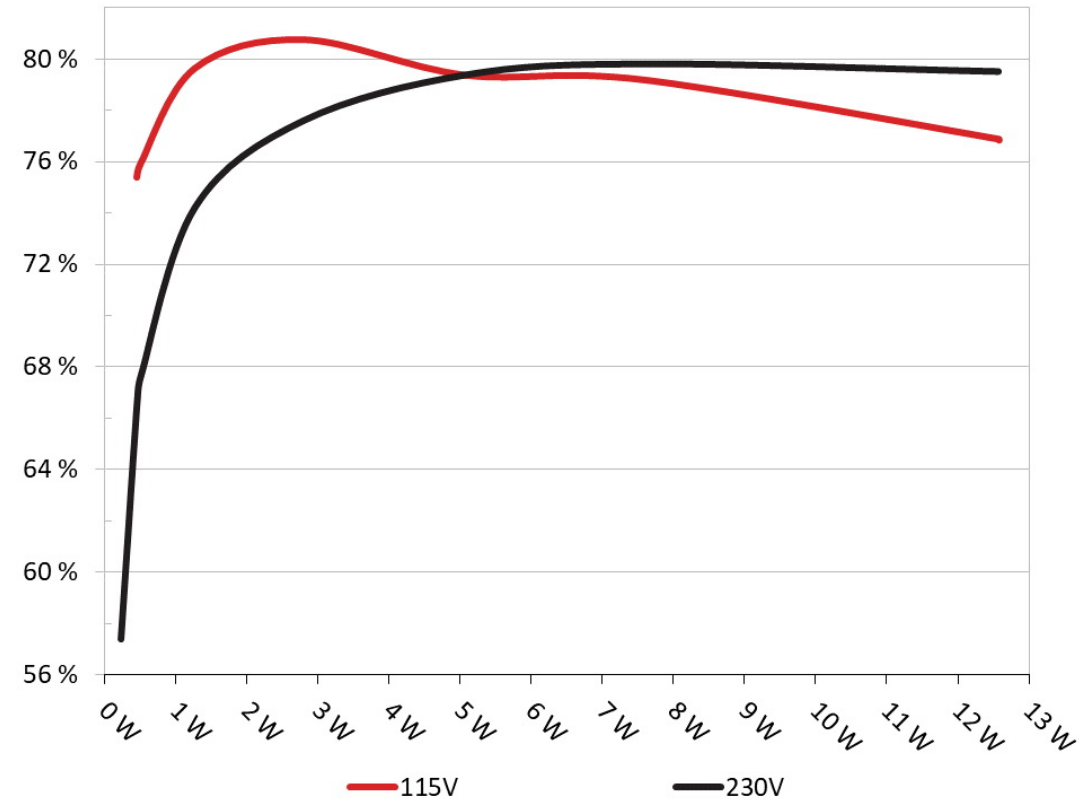
INFO

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 Combat 850W

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

5VSB Efficiency (ERP LOT 3/6 & CEC)

115V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	2.5A	12.573W	76.851%	0.467
	5.029V	16.361W		114.9V
2	0.09A	0.459W	75.408%	0.058
	5.098V	0.609W		114.91V
3	0.55A	2.798W	80.762%	0.26
	5.087V	3.465W		114.92V
4	1A	5.075W	79.381%	0.352
	5.074V	6.393W		114.91V
5	1.5A	7.589W	79.194%	0.409
	5.059V	9.583W		114.91V
6	2.5A	12.572W	76.892%	0.465
	5.029V	16.35W		114.91V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.23W	57.394%	0.012
	5.099V	0.401W		229.89V
2	0.09A	0.459W	66.666%	0.02
	5.1V	0.689W		229.89V
3	0.55A	2.798W	77.591%	0.099
	5.087V	3.606W		229.89V
4	1A	5.075W	79.368%	0.164
	5.074V	6.394W		229.89V
5	1.5A	7.589W	79.801%	0.211
	5.058V	9.51W		229.88V
6	2.5A	12.572W	79.502%	0.293
	5.029V	15.813W		229.89V

Protection Features

OCP (Normal @ 30.9°C)	12V: 90.40A (128.23%), 11.947V 5V: 28.1A (140.50%), 4.947V 3.3V: 28.1A (140.50%), 3.301V 5VSB: 3.8A (152.00%), 4.989V
OCP (Hot @ 44.0°C)	12V: 87.60A (124.26%), 11.971V 5V: 27.2A (136.00%), 4.953V 3.3V: 27.9A (139.50%), 3.305V 5VSB: 3.8A (152.00%), 4.979V
OPP (Normal @ 31.3°C)	1046.68W (123.14%)
OPP (Hot @ 41.3°C)	1012.55W (119.12%)
OTP	-
SCP	12V to Earth: ✓ 5V to Earth: ✓ 3.3V to Earth: ✓ 5VSB to Earth: ✓ -12V to Earth: ✗
PWR_OK	Proper Operation
NLO	✓
Fan Failure Protection	✗
SIP	Surge: MOV Inrush: NTC & Bypass Relay

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%	5.276A	1.997A	1.977A	0.989A	85.008	87.735%	1130	28.9	40.03°C	0.96
	12.019V	5.008V	3.339V	5.056V	96.888				42.08°C	114.88V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
20%	11.575A	2.998A	2.969A	1.192A	169.955	90.788%	1136	28.9	40.61°C	0.979
	12.012V	5.003V	3.334V	5.034V	187.199				43.84°C	114.85V
30%	18.233A	3.5A	3.467A	1.396A	254.957	91.223%	1139	29.2	41.28°C	0.981
	12.006V	5V	3.331V	5.015V	279.492				46.17°C	114.82V
40%	24.904A	4.003A	3.966A	1.602A	340.046	91.124%	1142	29.2	41.6°C	0.979
	11.999V	4.997V	3.328V	4.995V	373.17				49.17°C	114.79V
50%	31.212A	5.007A	4.963A	1.81A	424.861	90.422%	1147	29.6	42.2°C	0.977
	11.993V	4.993V	3.325V	4.973V	469.863				52.71°C	114.76V
60%	37.502A	6.013A	5.961A	2A	509.295	89.639%	1153	30	42.98°C	0.979
	11.988V	4.99V	3.322V	4.952V	568.161				57.52°C	114.73V
70%	43.863A	7.021A	6.963A	2.231A	594.705	88.699%	1158	29.9	43.08°C	0.981
	11.983V	4.986V	3.318V	4.93V	670.478				62.38°C	114.7V
80%	50.231A	8.029A	7.966A	2.342A	679.504	87.562%	1682	39.2	43.84°C	0.983
	11.977V	4.981V	3.314V	4.911V	776.031				63.75°C	114.67V
90%	57.019A	8.538A	8.458A	2.452A	764.938	86.499%	2315	46.5	44.1°C	0.984
	11.969V	4.977V	3.31V	4.894V	884.332				62.42°C	114.63V
100%	63.743A	9.047A	8.98A	2.564A	849.66	85.548%	2319	46.6	45.83°C	0.985
	11.961V	4.973V	3.307V	4.876V	993.197				66.18°C	114.59V
110%	70.198A	10.06A	10.079A	2.572A	935.055	84.371%	2321	46.5	46.77°C	0.987
	11.956V	4.969V	3.304V	4.86V	1108.265				72.07°C	114.55V
CL1	0.116A	13.282A	13.159A	0A	111.293	80.622%	1159	29.8	40.31°C	0.971
	12.031V	4.984V	3.321V	5.06V	138.041				56.06°C	114.87V
CL2	0.115A	20.07A	0A	0A	101.34	78.529%	1169	29.5	41.4°C	0.972
	12.034V	4.98V	3.337V	5.07V	129.047				51.38°C	114.87V
CL3	0.115A	0A	19.87A	0A	67.395	74.353%	1134	28.8	40.26°C	0.961
	12.032V	5.006V	3.322V	5.071V	90.644				48.58°C	114.88V
CL4	71.047A	0A	0A	0A	849.506	86.679%	2319	46.6	45.85°C	0.986
	11.957V	4.999V	3.326V	4.971V	980.069				62.98°C	114.6V

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%	5.276A	1.997A	1.977A	0.989A	85.007	88.565%	1130	28.9	40.46°C	0.788
	12.020V	5.008V	3.339V	5.056V	95.984				42.05°C	229.87V
20%	11.575A	2.998A	2.969A	1.192A	169.954	91.996%	1134	28.8	40.61°C	0.894
	12.013V	5.004V	3.335V	5.035V	184.741				43.09°C	229.86V
30%	18.232A	3.5A	3.467A	1.396A	254.963	92.777%	1138	29	41.07°C	0.928
	12.007V	5V	3.332V	5.016V	274.814				44.55°C	229.85V
40%	24.903A	4.003A	3.966A	1.601A	340.057	92.889%	1141	29.2	41.57°C	0.939
	12.001V	4.997V	3.329V	4.996V	366.091				46.83°C	229.83V
50%	31.212A	5.007A	4.962A	1.809A	424.891	92.51%	1147	29.6	42.18°C	0.948
	11.994V	4.993V	3.325V	4.975V	459.289				49.3°C	229.82V
60%	37.501A	6.013A	5.961A	2A	509.34	92.052%	1152	30	42.6°C	0.952
	11.990V	4.99V	3.322V	4.954V	553.318				52.05°C	229.8V
70%	43.861A	7.021A	6.962A	2.23A	594.75	91.477%	1157	29.9	43.2°C	0.956
	11.984V	4.986V	3.319V	4.932V	650.165				55.38°C	229.78V
80%	50.227A	8.029A	7.965A	2.34A	679.551	90.739%	1675	39.1	43.73°C	0.96
	11.979V	4.981V	3.315V	4.914V	748.906				55.71°C	229.77V
90%	57.009A	8.537A	8.456A	2.45A	764.974	90.056%	2318	46.6	44.53°C	0.962
	11.972V	4.977V	3.311V	4.898V	849.442				54.87°C	229.75V
100%	63.728A	9.046A	8.978A	2.561A	849.683	89.441%	2322	46.5	45.54°C	0.964
	11.964V	4.974V	3.308V	4.881V	949.987				57.08°C	229.74V
110%	70.177A	10.057A	10.076A	2.569A	935.075	88.726%	2325	46.6	46.32°C	0.967
	11.960V	4.971V	3.305V	4.866V	1053.893				60.4°C	229.72V
CL1	0.117A	13.28A	13.158A	0A	111.298	81.433%	1161	29.7	41.48°C	0.856
	12.033V	4.984V	3.322V	5.061V	136.675				52.69°C	229.86V
CL2	0.115A	20.067A	0A	0A	101.343	79.312%	1169	29.5	41.22°C	0.845
	12.035V	4.981V	3.337V	5.071V	127.779				49.81°C	229.87V
CL3	0.115A	0A	19.869A	0A	67.399	75.055%	1135	28.8	40.88°C	0.774
	12.033V	5.007V	3.322V	5.072V	89.799				48.08°C	229.88V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL4	71.031A	0A	0A	0A	849.529	90.511%	2323	46.6	45.92°C	0.964
	11.960V	5V	3.327V	4.975V	938.598				55.33°C	229.74V

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	1.236A	0.499A	0.494A	0.196A	20.003	71.377%	1119	28.6	36.42°C	0.809
	12.020V	5.014V	3.343V	5.092V	28.025				39.14°C	114.89V
40W	2.720A	0.698A	0.691A	0.295A	40.002	82.139%	1121	28.5	37.1°C	0.91
	12.020V	5.013V	3.342V	5.086V	48.698				38.73°C	114.89V
60W	4.204A	0.898A	0.889A	0.394A	60.003	86.048%	1124	28.7	38.44°C	0.941
	12.019V	5.011V	3.341V	5.079V	69.734				39.5°C	114.89V
80W	5.686A	1.098A	1.087A	0.493A	79.957	87.864%	1127	28.7	39.01°C	0.962
	12.018V	5.01V	3.34V	5.072V	90.999				40.54°C	114.88V

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	1.236A	0.499A	0.494A	0.196A	20.014	67.346%	1118	28.6	36.05°C	0.452
	12.020V	5.013V	3.343V	5.092V	29.718				41.31°C	229.88V
40W	2.720A	0.698A	0.691A	0.295A	40.007	80.459%	1120	28.7	37.43°C	0.607
	12.020V	5.012V	3.342V	5.086V	49.723				40.26°C	229.88V
60W	4.204A	0.898A	0.889A	0.394A	60.004	85.923%	1122	28.5	38.17°C	0.712
	12.020V	5.011V	3.341V	5.08V	69.831				40.35°C	229.88V
80W	5.684A	1.098A	1.087A	0.493A	79.954	88.604%	1126	28.7	39.23°C	0.775
	12.019V	5.01V	3.34V	5.073V	90.24				41.05°C	229.88V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	12.53mV	13.64mV	12.89mV	14.22mV	Pass
20% Load	14.02mV	14.92mV	13.86mV	13.66mV	Pass
30% Load	16.27mV	15.22mV	14.02mV	13.35mV	Pass
40% Load	15.30mV	16.20mV	14.37mV	17.49mV	Pass
50% Load	14.22mV	17.42mV	14.27mV	17.90mV	Pass
60% Load	13.86mV	17.37mV	14.27mV	18.77mV	Pass
70% Load	14.02mV	18.49mV	13.76mV	15.86mV	Pass
80% Load	15.14mV	19.62mV	14.99mV	16.27mV	Pass
90% Load	15.71mV	20.54mV	15.14mV	17.70mV	Pass
100% Load	23.99mV	22.89mV	17.38mV	17.85mV	Pass
110% Load	25.49mV	23.52mV	16.60mV	19.52mV	Pass
Crossload1	20.54mV	22.12mV	15.43mV	12.15mV	Pass
Crossload2	15.65mV	25.50mV	15.14mV	13.04mV	Pass
Crossload3	14.79mV	13.74mV	15.81mV	12.38mV	Pass
Crossload4	22.53mV	18.24mV	14.31mV	16.37mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	12.08mV	14.41mV	13.10mV	13.20mV	Pass
20% Load	13.04mV	15.07mV	13.14mV	12.84mV	Pass
30% Load	15.79mV	14.71mV	14.63mV	13.40mV	Pass
40% Load	15.14mV	16.61mV	13.61mV	16.62mV	Pass
50% Load	13.61mV	17.22mV	13.35mV	17.65mV	Pass
60% Load	14.12mV	17.27mV	13.76mV	19.44mV	Pass

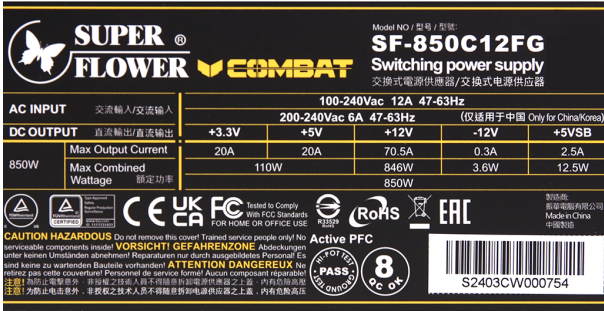
Test	12V	5V	3.3V	5VSB	Pass/Fail
70% Load	14.33mV	18.29mV	14.37mV	16.73mV	Pass
80% Load	15.76mV	18.65mV	15.30mV	17.24mV	Pass
90% Load	15.25mV	20.03mV	14.63mV	18.57mV	Pass
100% Load	23.58mV	23.60mV	16.37mV	17.46mV	Pass
110% Load	25.11mV	23.43mV	16.23mV	17.72mV	Pass
Crossload1	20.25mV	20.95mV	16.64mV	12.46mV	Pass
Crossload2	14.58mV	26.05mV	14.99mV	12.59mV	Pass
Crossload3	13.40mV	14.10mV	16.83mV	11.87mV	Pass
Crossload4	22.45mV	17.58mV	15.61mV	16.16mV	Pass

The results above are not used in the certification process

Super Flower Combat 850W



Top side



Power specifications label

Cybernetics [REDACTED] ETA[REDACTED] LAMBDA[REDACTED] SAFE[REDACTED] DELTA[REDACTED] PHI[REDACTED]

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