



EVGA SuperNOVA 850 T2

Serial Number 1603440810850008

Lab ID 153

Certification ID 25153

Test Result Report ID:

Certificate Issue Date: Feb 8, 2018

115V

230V

Scheme: ETA-EMI PSU



115V

230V



Scheme: LAMBDA PSU

A handwritten signature in blue ink, appearing to read "Aristeidis Bitziopoulos".

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	EVGA
Model	SuperNOVA 850 T2
OEM/ODM	Super Flower
Serial Number	1603440810850008
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10
Rated Frequency (Hz)	50-60

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	140mm Double Ball-Bearing Fan (RL4Z B1402512M)
Semi-Passive Operation	✓ (selectable)
Cybenetics Testing Information	
Lab ID	153
Date of receipt	Jan 29, 2018
Testing Date	Feb 4, 2018
Report Issued Date	Feb 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 (700mm)	2	2	16-22AWG
6+2 pin PCIe (700mm)	2	2	16-22AWG
6+2 pin PCIe (700mm+145mm)	2	4	16-22AWG
SATA (550mm+100mm+100mm)	2	6	18AWG
SATA (550mm+100mm+100mm)	1	4	18AWG
4 pin Molex (550mm+100mm+100mm+100mm)	1	4	18AWG
FDD Adapter (+105mm)	1	1	20AWG

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	70.8	2.5	0.5
	Watts	100		849.6	12.5	6
Total Max. Power (W)		850				

Parts Description

Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	Bridgeless Design - 1x US30K80R & 8x Infineon MOSFETs
APFC MOSFETS	4x FETs
APFC Boost Diode	4x Infineon IDH04G65C5
Hold-up Cap(s)	3x Nippon Chemi-Con (400V, 390uF & 2x 330uF or 1050uF combined, 2000h @ 105°C, KMW)
Main Switchers	4x Infineon IPB50R140CP (550V, 15A @ 100°C, 0.14 Ohm)
APFC Controller	SF29603
Switching Controller	SFAA9013
Topology	Primary side: Bridgeless PFC & Full-Bridge LLC & Resonant Converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	8x Infineon BSC027N04LS G (40V, 88A @ 100°C, 2.7 mOhm)
5V & 3.3V	DC-DC Converters: 8x Infineon IPD060N03 FETs PWM Controller: 2x NCP1587A
Filtering Capacitors	Electrolytics: Nippon Chemi-Con (105°C, KY, KZE, KRG) Polymers: Nippon Chemi-Con
Supervisor IC	AA9013 & LM324ADG
Fan Model	Globe Fan RL4Z B1402512M (140mm, 12V, 0.3A, 1200 RPM, 92.16 CFM, 24.9 dBA, DBB)
5VSB Circuit	

Rectifier	1x Mospec S10C60C SBR
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	✓

Performance Summary 115V

Accredited	
Average Efficiency (>1450 load combinations)	92.156%
Average Noise Output (>1450 Load Combinations)	13.25dBA
Average PF (>1450 Load Combinations)	0.988
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
Standby Power Consumption	0.1105W
Non-Accredited	
12V Ripple (Full Load)	10.43mV
5V Ripple (Full Load)	13.07mV
3.3V Ripple (Full Load)	12.98mV
5VSB Ripple (Full Load)	13.82mV
12V Load Regulation	0.37%
5V Load Regulation	0.93%
3.3V Load Regulation	0.69%
5VSB Load Regulation	1.49%
Inrush Current	53.355A

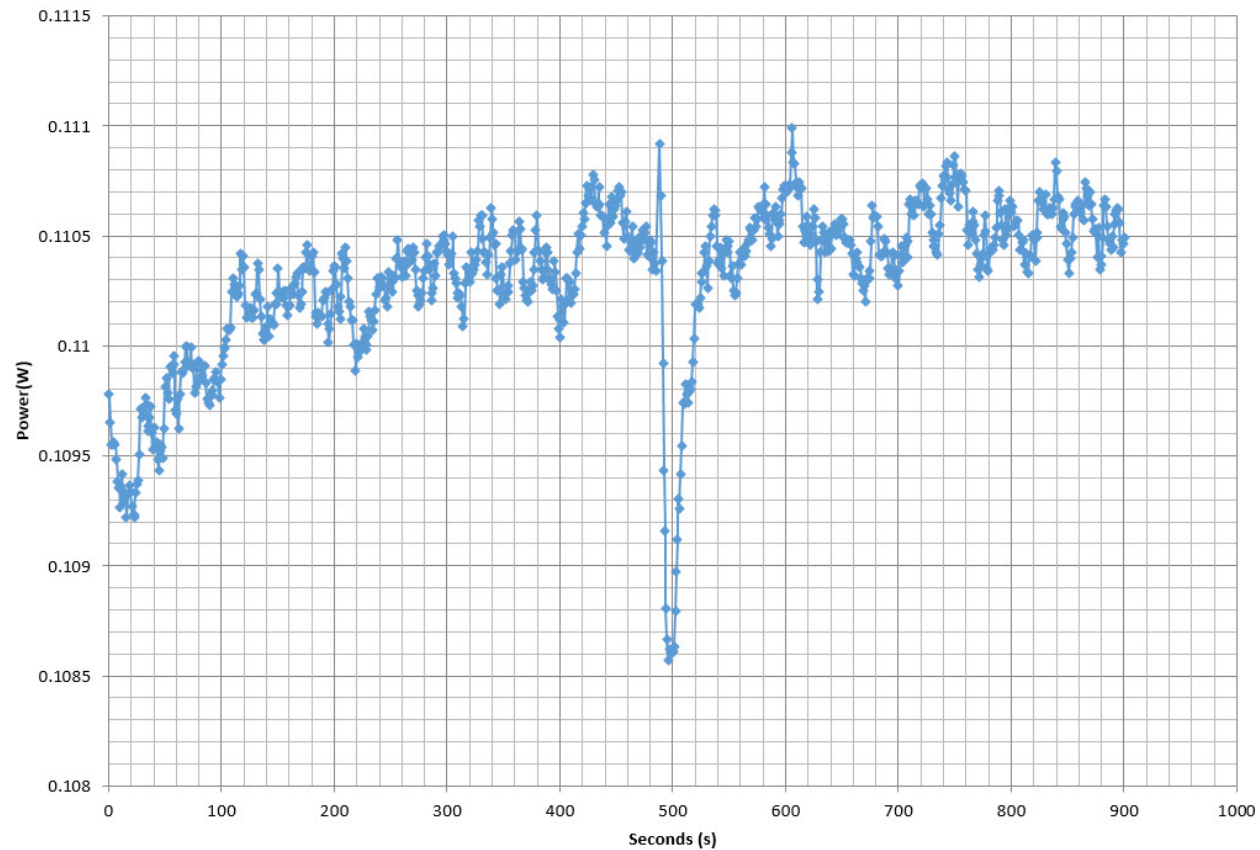
Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	24.68
AC Loss to PWR_OK Hold Up Time (ms)	18.40
PWR_OK Inactive to DC Loss Delay (ms)	6.28

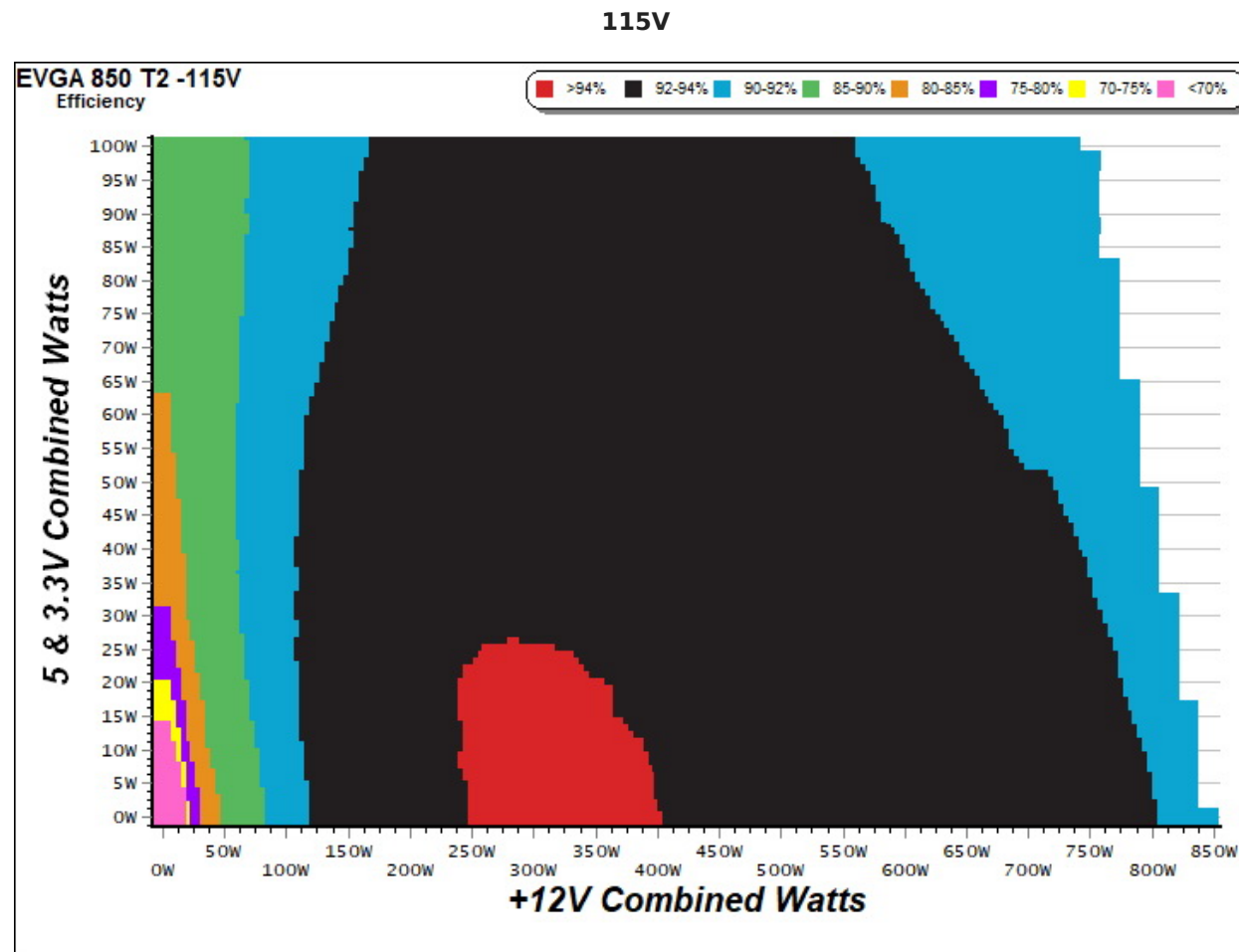
Vampire Power

Graphs 115V

Power - 1603440810850008 - 31/07/2017 - 19:28



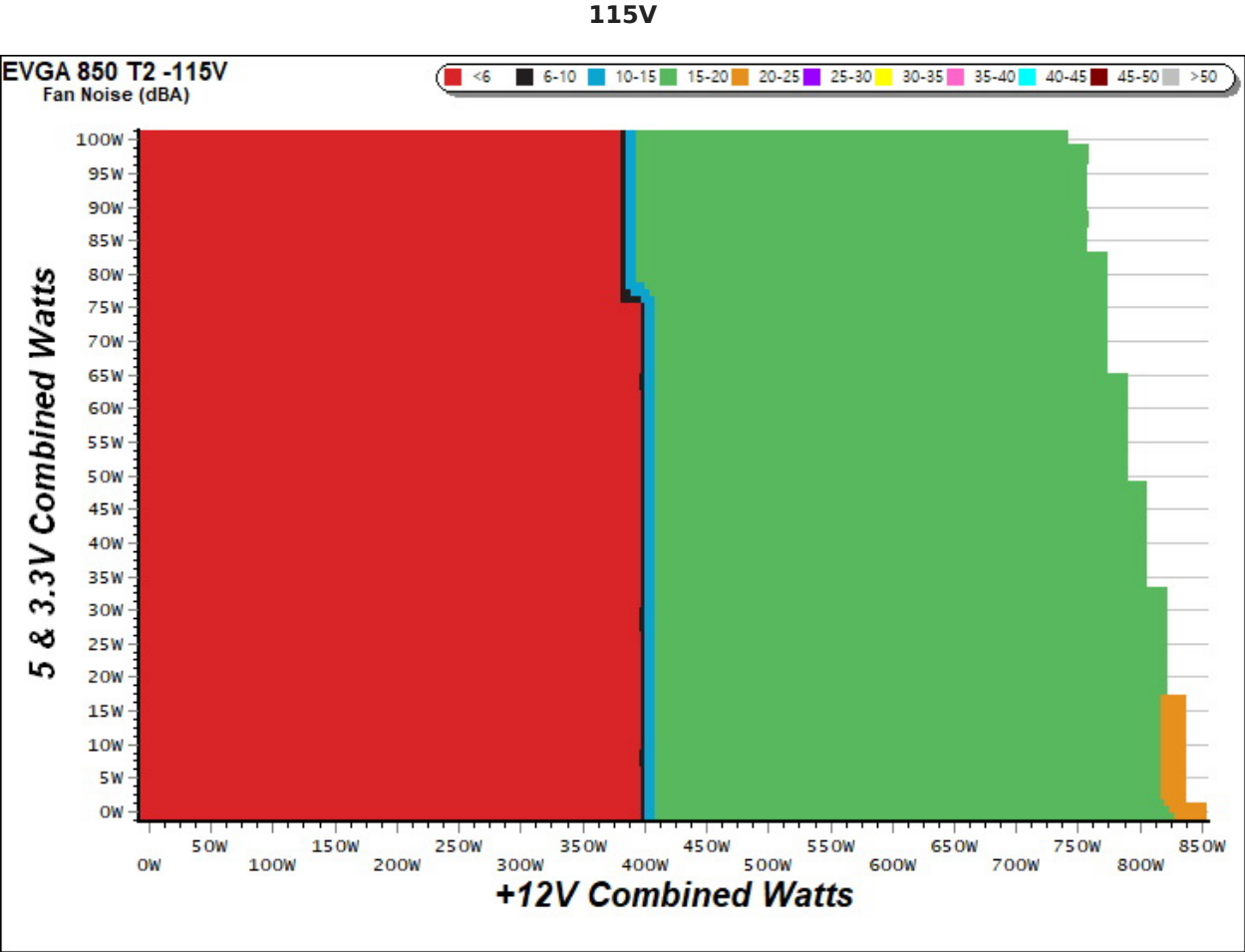
Efficiency Graph



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

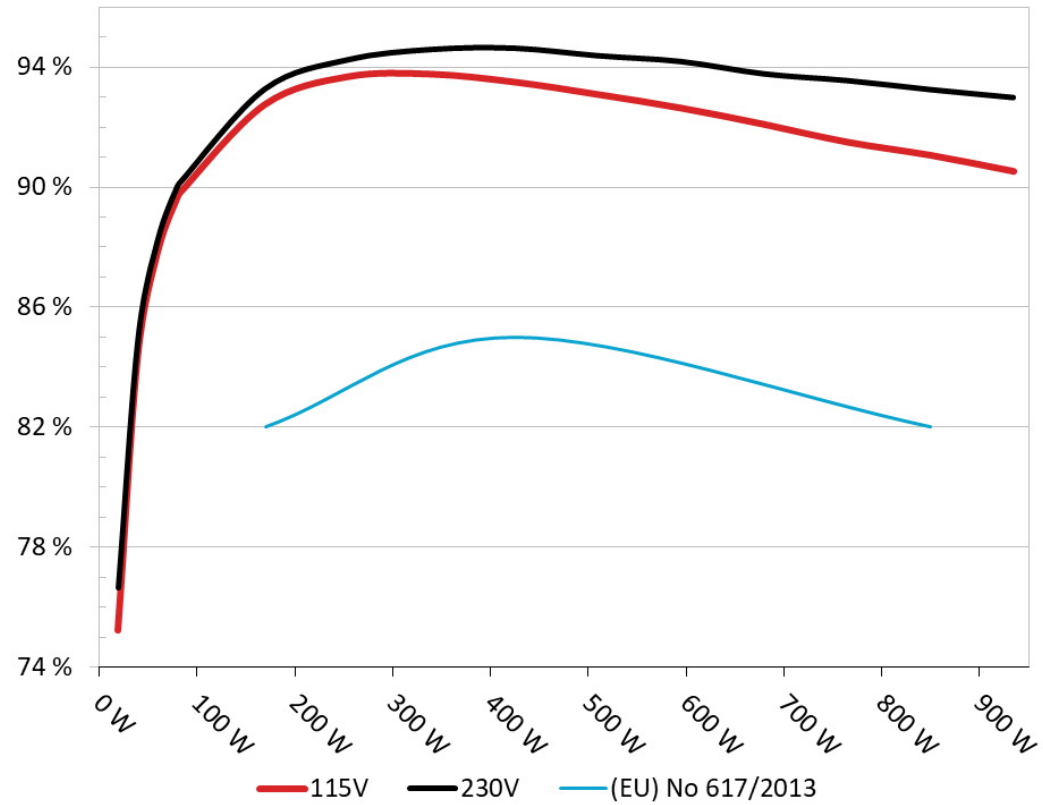
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

Indicative Performance

Efficiency under high ambient temperature

Efficiency: EVGA 850 T2

Ambient: 37°C - 46°C (98.6°F - 114.8°F)



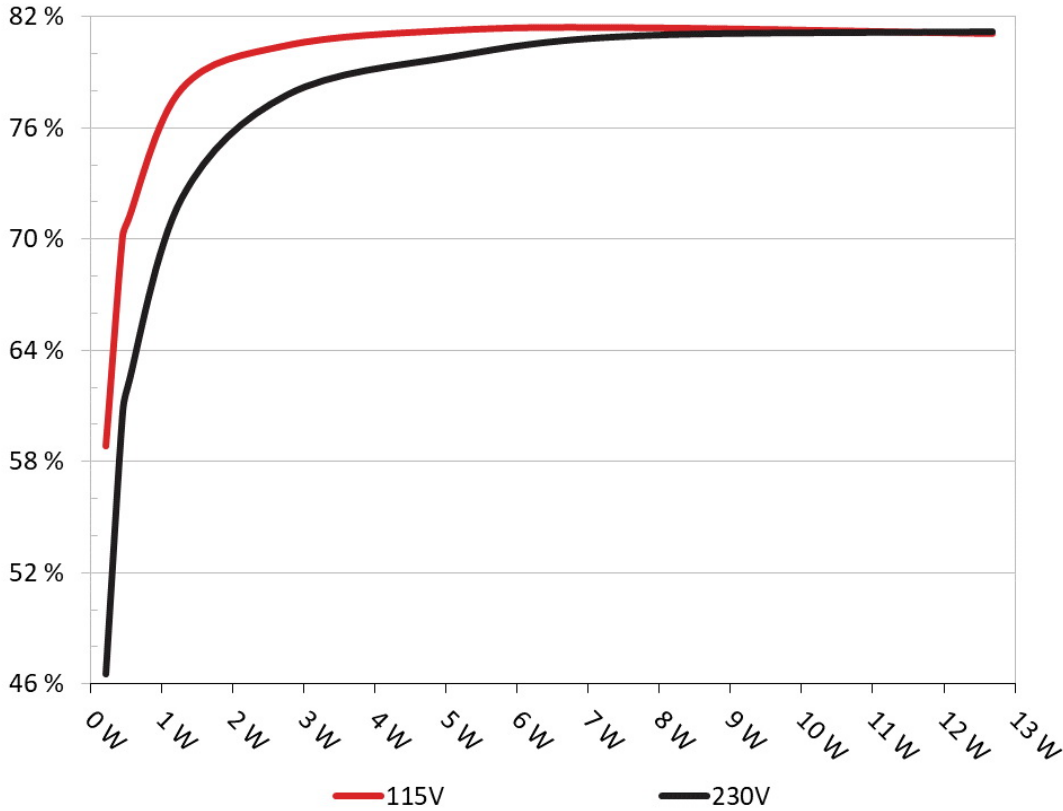
INFO

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: EVGA 850 T2

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	0.042A	0.213	58.840%	0.016
	5.113V	0.362		115.14V

2	0.087A	0.445	70.079%	0.029
	5.112V	0.635		115.14V
3	0.542A	2.766	80.477%	0.146
	5.103V	3.437		115.11V
4	1.002A	5.106	81.293%	0.240
	5.096V	6.281		115.12V
5	1.502A	7.638	81.429%	0.316
	5.086V	9.380		115.13V
6	2.501A	12.676	81.111%	0.407
	5.068V	15.628		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	5.167A	1.987A	1.986A	0.981A	84.781	89.888%	0	6	42.98°C	0.944
	12.227V	5.042V	3.318V	5.093V	94.319				38.33°C	115.19V
2	11.355A	2.971A	2.984A	1.176A	169.619	92.763%	0	6	43.74°C	0.976
	12.222V	5.036V	3.316V	5.086V	182.852				38.79°C	115.19V
3	17.910A	3.479A	3.498A	1.375A	254.903	93.695%	0	6	44.37°C	0.988
	12.218V	5.032V	3.313V	5.079V	272.057				39.24°C	115.19V
4	24.446A	3.976A	3.982A	1.575A	339.732	93.777%	0	6	45.16°C	0.994
	12.213V	5.029V	3.312V	5.073V	362.276				39.81°C	115.18V
5	30.643A	4.975A	4.982A	1.776A	424.628	93.514%	0	6	46.39°C	0.995
	12.210V	5.023V	3.310V	5.066V	454.080				40.83°C	115.18V
6	36.854A	5.978A	5.985A	1.975A	509.656	93.099%	0	6	48.16°C	0.996
	12.207V	5.018V	3.307V	5.058V	547.435				42.35°C	115.17V
7	43.074A	6.987A	6.986A	2.175A	594.605	92.647%	620	14.3	42.51°C	0.997
	12.200V	5.013V	3.305V	5.052V	641.795				50.13°C	115.17V
8	49.297A	7.990A	7.994A	2.375A	679.514	92.102%	620	14.3	43.16°C	0.997
	12.194V	5.008V	3.302V	5.043V	737.787				54.18°C	115.16V

9	55.950A	8.492A	8.516A	2.379A	764.562	91.510%	940	23.6	44.62°C	0.998
	12.189V	5.005V	3.299V	5.040V	835.498				56.85°C	115.17V
10	62.566A	9.010A	9.004A	2.480A	849.404	91.072%	1315	33.7	45.63°C	0.998
	12.182V	5.000V	3.297V	5.036V	932.678				58.42°C	115.16V
11	69.563A	9.014A	9.015A	2.480A	934.307	90.537%	1315	33.7	46.20°C	0.998
	12.177V	4.998V	3.295V	5.033V	1031.966				59.80°C	115.17V
CL1	0.099A	12.014A	12.006A	0.004A	101.293	86.385%	930	23.5	44.16°C	0.961
	12.231V	5.016V	3.315V	5.102V	117.258				54.75°C	115.20V
CL2	70.786A	1.004A	1.003A	1.002A	875.458	91.483%	930	23.5	44.88°C	0.998
	12.178V	5.018V	3.297V	5.071V	956.962				57.89°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	1.194A	0.495A	0.479A	0.196A	19.691	75.231%	0	6	0.715
	12.227V	5.050V	3.321V	5.112V	26.174				115.17V
2	2.411A	0.991A	0.993A	0.391A	39.773	84.352%	0	6	0.863
	12.227V	5.047V	3.320V	5.105V	47.151				115.18V
3	3.633A	1.478A	1.505A	0.586A	59.860	87.811%	0	6	0.918
	12.227V	5.044V	3.319V	5.100V	68.169				115.18V
4	4.842A	1.985A	1.985A	0.782A	79.778	89.627%	0	6	0.941
	12.226V	5.042V	3.318V	5.096V	89.011				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	4.5 mV	5.0 mV	5.9 mV	5.7 mV	Pass
20% Load	6.1 mV	6.1 mV	6.8 mV	6.3 mV	Pass
30% Load	6.8 mV	6.3 mV	7.0 mV	7.4 mV	Pass
40% Load	8.3 mV	7.3 mV	8.7 mV	8.2 mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
50% Load	8.8 mV	8.1 mV	9.3 mV	10.1 mV	Pass
60% Load	9.6 mV	8.6 mV	10.6 mV	10.9 mV	Pass
70% Load	9.2 mV	9.3 mV	11.3 mV	10.1 mV	Pass
80% Load	10.1 mV	10.6 mV	12.8 mV	11.6 mV	Pass
90% Load	11.0 mV	10.8 mV	13.4 mV	11.7 mV	Pass
100% Load	10.4 mV	13.1 mV	13.0 mV	13.8 mV	Pass
110% Load	11.2 mV	14.1 mV	14.4 mV	14.4 mV	Pass
Crossload 1	6.7 mV	7.3 mV	8.1 mV	13.6 mV	Pass
Crossload 2	9.8 mV	12.9 mV	12.8 mV	14.3 mV	Pass

The results above are not used in the certification process

EVGA SuperNOVA 850 T2



Top side

All data and graphs included in this test report can be used by any individual on the following conditions:

- › It should be mentioned that the test results are provided by Cybenetics
- › The link to the original test results document should be provided in any case

CYBENETICS LTD Syrou 6, Latsia, 2231, Nicosia Cyprus



Power specifications label

Cybenetics runs voluntary certification programs for power supplies - ETA for efficiency, LAMBDA for noise and SAFE for safety and correct operation - and for cooling products, with DELTA for chassis soundproofing and PHI for fan airflow and static pressure. THETA rates cooler performance on AMD AM5 and Intel LGA1851 outside ISO 17065 and accreditation scope

www.cybenetics.com - info@cybenetics.com