EVGA

EVGA 450 B3

Serial Number 1703460405800888

Lab ID 148

Certification ID 25148

Test Result Report ID:

Certificate Issue Date: Jul 27, 2018

115V 230V

Scheme: ETA-EMI PSU

CYBENETICS BRONZE

115V 230V

CYBENETICS A-

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	EVGA
Model	450 B3
OEM/ODM	Super Flower
Serial Number	1703460405800888
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10
Rated Frequency (Hz)	50-60

Rated Power (W)	450
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	130mm Sleeve Bearing Fan (S1282412H)
Semi-Passive Operation	✓ (selectable)
Cybenetics Testing Information	
Lab ID	148
Date of receipt	Jul 12, 2018
Testing Date	Jul 23, 2018
Report Issued Date	Jul 27, 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 (600mm)	1	1	18-22AWG
4+4 pin EPS12V (600mm)	1	1	18-22AWG
6+2 pin PCIe (550mm+150mm)	1	2	18-22AWG
SATA (500mm+100mm+100mm)	2	6	18-20AWG
4 pin Molex (500mm+100mm+100mm)	1	3	18AWG
FDD Adapter (+105mm)	1	1	24AWG

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	37.4	3	0.5
	Watts	110		448.8	15	6
Total Max. Power (W)		450				

Parts Description

General Data	
Manufacturer (OEM)	Super Flower
Platform Model	Leadex Bronze
Primary Side	
Transient Filter	5x Y caps, 3x X caps, 2x CM chokes, 1x MOV, 1x TVS Diode
Inrush Protection	NTC Thermistor
Bridge Rectifier(s)	1x GBU806 (600V, 8A @ 100°C)
APFC MOSFETS	1x A&O AOTF14N50 (500V, 11A @ 100°C, 0.38Ohm)
APFC Boost Diode	1x STMicroelectronics STTH8R06D (600V, 8A @ 130°C)
Hold-up Cap(s)	1x Nippon Chemi-Con (400V, 330uF, 95°C)
Main Switchers	2x A&O AOTF12N50 (500V, 8.4A @ 100°C, 0.52Ohm)
APFC Controller	SF29603 & S9602
Resonant Controller	SF29605
Topology	Primary side: Half-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	2x A&O AOT240L (40V, 82A @ 100°C, 4.7mOhm @ 125°C)
5V & 3.3V	DC-DC Converters: 4x A&O AON6516 (30V, 25A @ 100°C, 8mOhm) PWM Controller: 2x On Semiconductor NCP1587A
Filtering Capacitors	Electrolytics: Teapo (3-6,000h @ 105°C, SY) Polymers: Teapo
Supervisor IC	SF29605 & LM339A
Fan Model	S1282412H (120mm, 12V, 0.35A, Sleeve Bearing)
5VSB Circuit	

Rectifier	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: Partially
(EU) No 617/2013 Compliance	✓

Performance Summary 115V

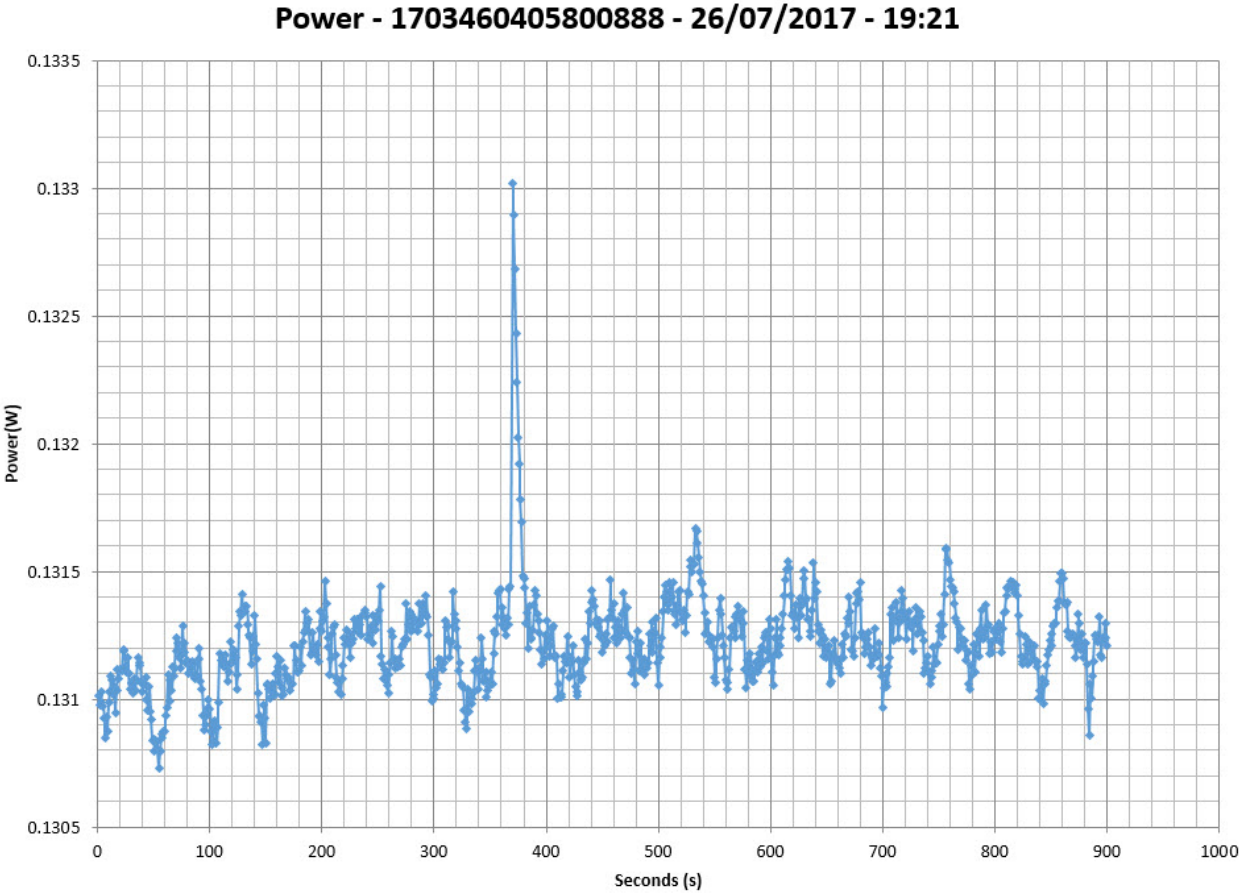
Accredited	
Average Efficiency (>1450 load combinations)	84.922%
Average Noise Output (>1450 Load Combinations)	28.95dBA
Average PF (>1450 Load Combinations)	0.984
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
Standby Power Consumption	0.1312W
Non-Accredited	
12V Ripple (Full Load)	11.82mV
5V Ripple (Full Load)	9.25mV
3.3V Ripple (Full Load)	13.67mV
5VSB Ripple (Full Load)	11.00mV
12V Load Regulation	0.53%
5V Load Regulation	0.83%
3.3V Load Regulation	1.14%
5VSB Load Regulation	3.54%
Inrush Current	79.143A

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	21.78
AC Loss to PWR_OK Hold Up Time (ms)	18.44
PWR_OK Inactive to DC Loss Delay (ms)	3.34

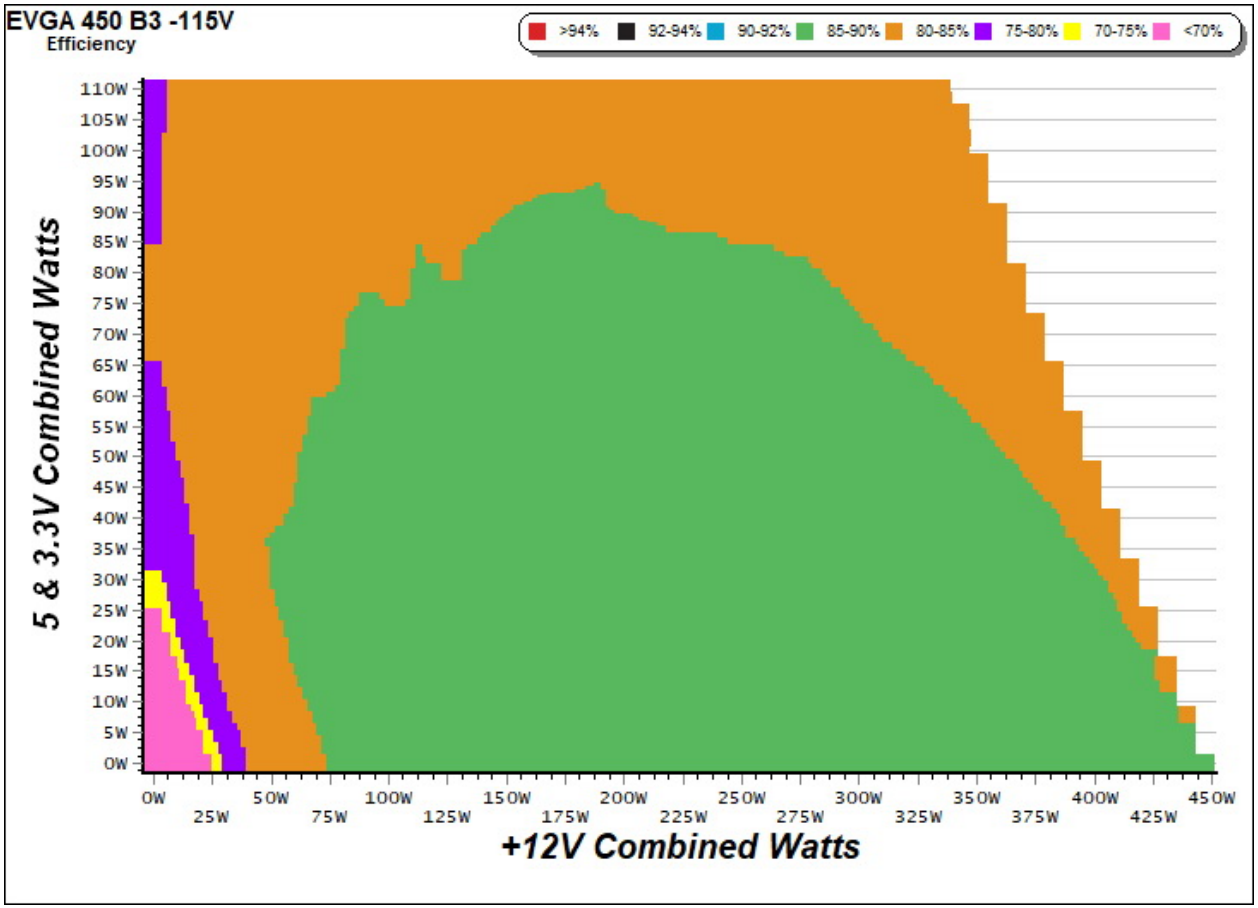
Vampire Power

Graphs 115V



Efficiency Graph

115V

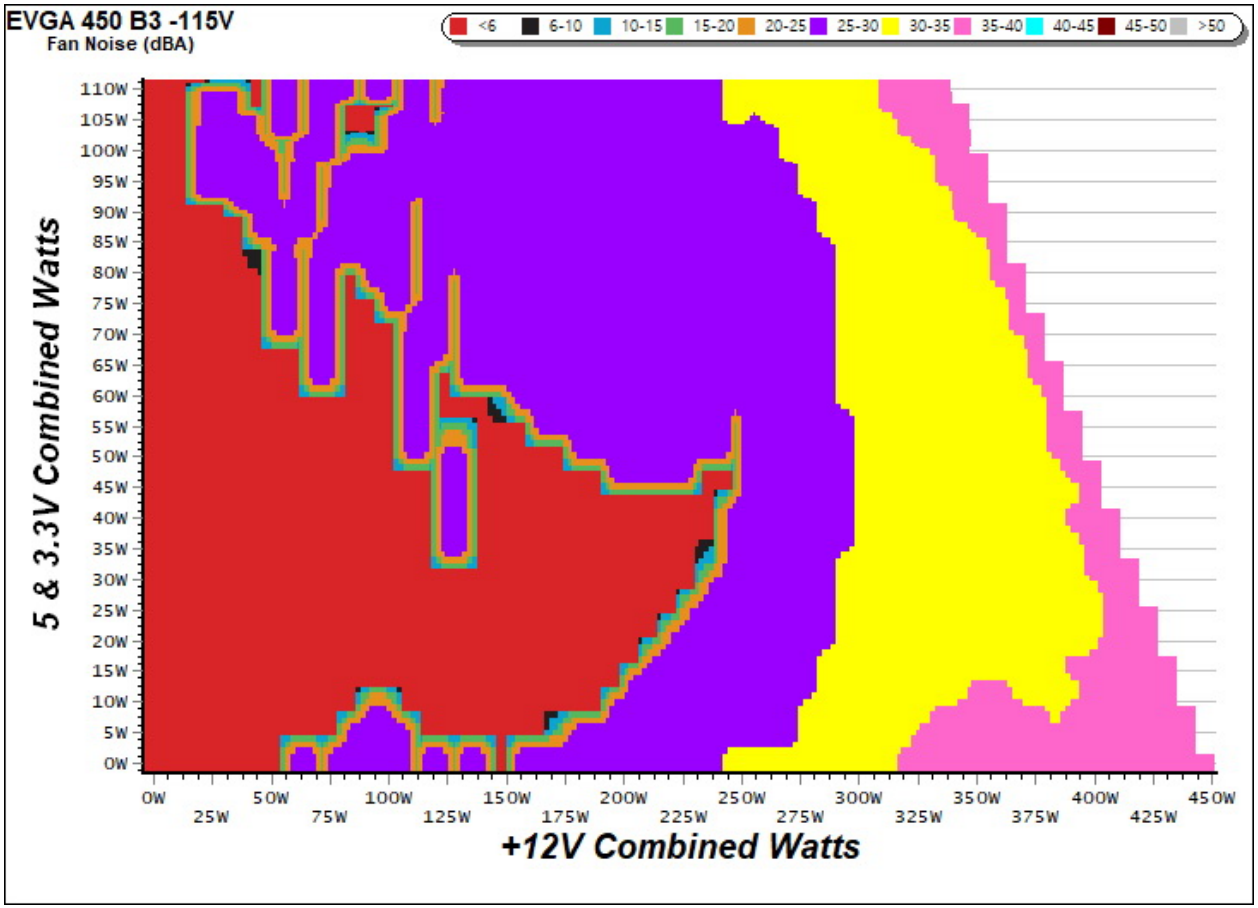


INFO

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

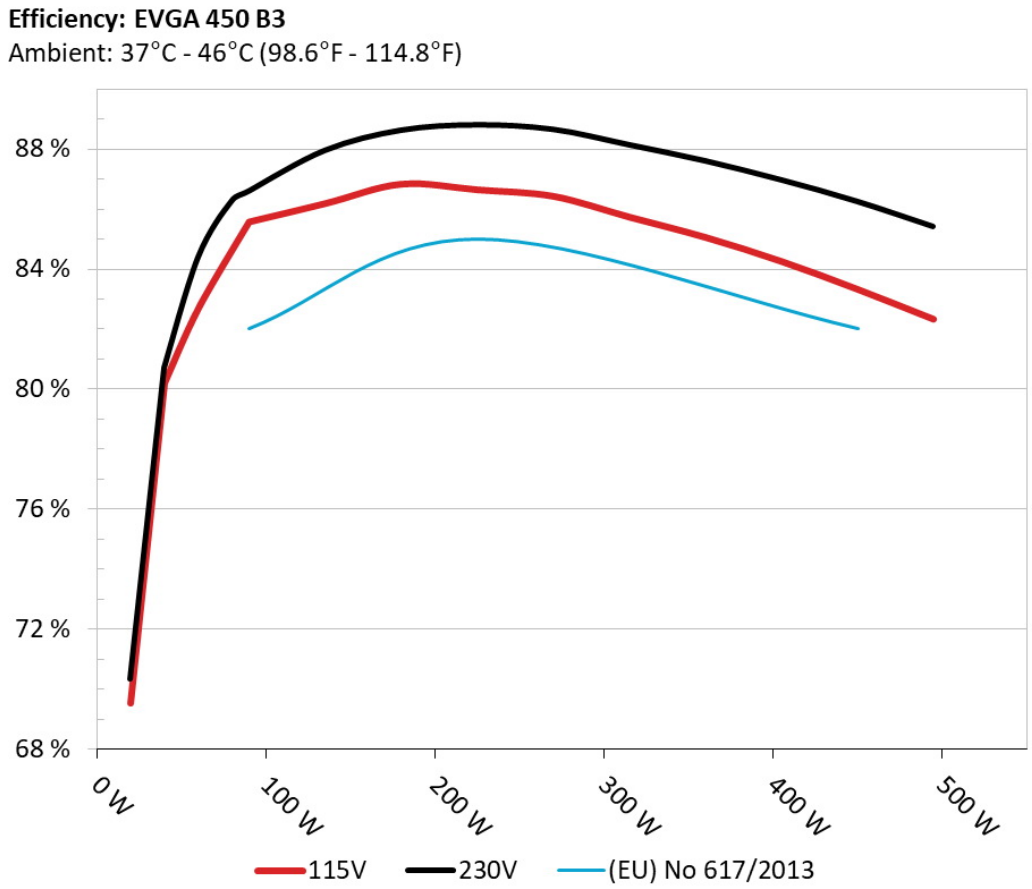


INFO

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

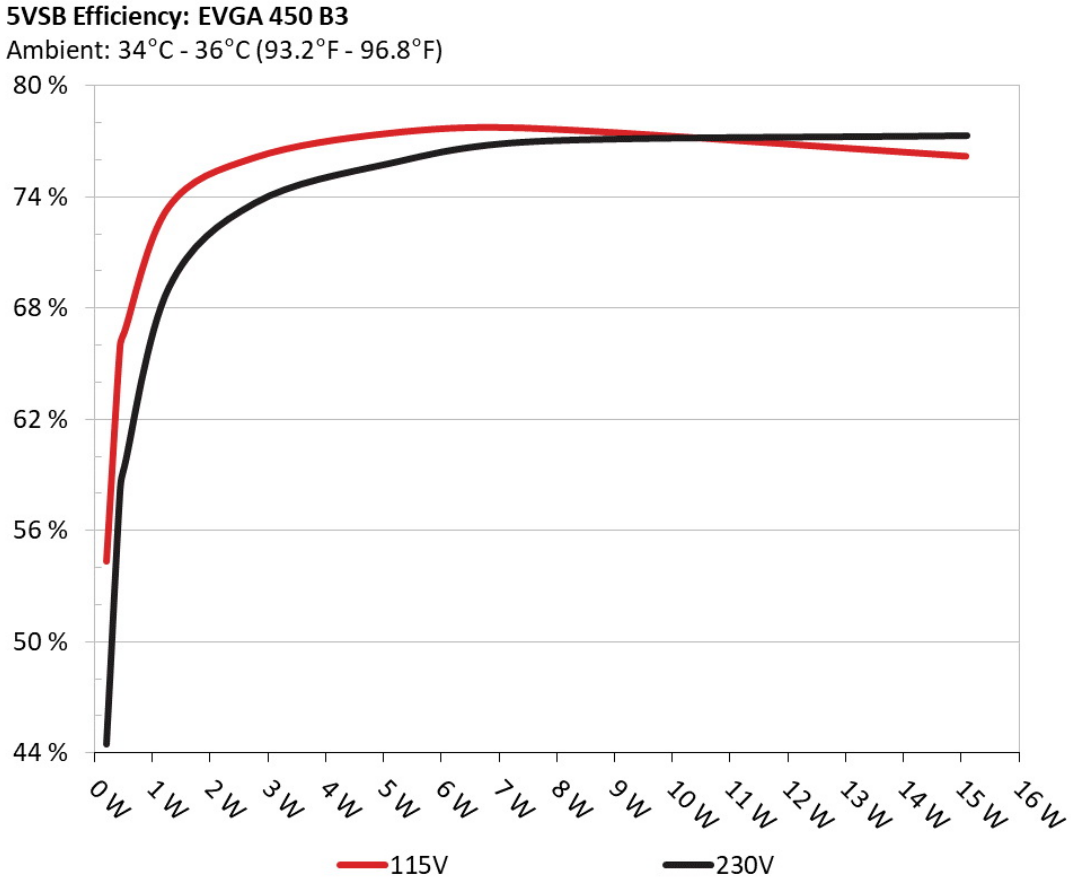
Efficiency under high ambient temperature



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	0.041A	0.213	54.337%	0.029
	5.145V	0.392		115.16V

2	0.087A	0.447	65.929%	0.049
	5.143V	0.678		115.17V
3	0.542A	2.777	76.145%	0.214
	5.126V	3.647		115.13V
4	1.002A	5.118	77.463%	0.300
	5.109V	6.607		115.14V
5	1.502A	7.643	77.720%	0.350
	5.090V	9.834		115.15V
6	3.001A	15.085	76.218%	0.417
	5.026V	19.792		115.15V

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
1	1.900A	1.985A	1.984A	0.981A	44.763	80.203%	0	<6.0	45.56°C	0.911
	12.195V	5.039V	3.322V	5.095V	55.812				38.04°C	115.19V
2	4.830A	2.970A	2.980A	1.181A	89.732	85.002%	1005	20.9	38.75°C	0.968
	12.192V	5.035V	3.319V	5.081V	105.564				40.79°C	115.18V
3	8.107A	3.478A	3.496A	1.380A	134.893	86.183%	1005	20.9	38.91°C	0.980
	12.188V	5.031V	3.316V	5.068V	156.519				40.97°C	115.19V
4	11.375A	3.976A	3.980A	1.580A	179.732	86.829%	1005	20.9	39.19°C	0.986
	12.182V	5.028V	3.313V	5.054V	206.996				41.74°C	115.18V
5	14.314A	4.976A	4.981A	1.785A	224.761	86.641%	1276	29.0	39.70°C	0.990
	12.176V	5.023V	3.310V	5.038V	259.417				42.38°C	115.18V
6	17.252A	5.977A	5.985A	1.990A	269.746	86.424%	1315	30.4	40.40°C	0.991
	12.170V	5.019V	3.307V	5.024V	312.119				43.12°C	115.18V
7	20.199A	6.986A	6.993A	2.195A	314.762	85.731%	1462	34.3	41.48°C	0.993
	12.162V	5.013V	3.302V	5.007V	367.152				44.33°C	115.17V
8	23.151A	7.988A	8.008A	2.400A	359.739	85.056%	1584	35.9	42.61°C	0.993
	12.153V	5.009V	3.296V	4.991V	422.943				45.57°C	115.17V

9	26.534A	8.491A	8.536A	2.405A	404.808	84.253%	1667	38.1	43.85°C	0.993
	12.144V	5.005V	3.291V	4.985V	480.472				47.08°C	115.17V
10	29.666A	9.009A	9.039A	3.025A	449.689	83.325%	1817	42.0	45.47°C	0.994
	12.134V	5.000V	3.285V	4.953V	539.682				48.76°C	115.18V
11	33.397A	9.014A	9.051A	3.030A	494.676	82.329%	1945	42.1	46.33°C	0.994
	12.125V	4.997V	3.282V	4.947V	600.854				49.83°C	115.17V
CL1	0.099A	13.019A	13.005A	0.004A	109.380	79.493%	1425	32.3	43.02°C	0.977
	12.175V	5.016V	3.295V	5.106V	137.597				45.80°C	115.19V
CL2	37.474A	1.004A	1.002A	1.002A	468.254	84.034%	1817	42.0	44.77°C	0.994
	12.138V	5.013V	3.297V	5.049V	557.221				47.98°C	115.18V

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])	PF/AC Volts
1	1.194A	0.493A	0.477A	0.191A	19.626	69.527%	0	<6.0	0.770
	12.204V	5.045V	3.324V	5.135V	28.228				115.18V
2	2.415A	0.992A	0.990A	0.391A	39.755	80.129%	0	<6.0	0.895
	12.199V	5.042V	3.323V	5.123V	49.614				115.18V
3	3.643A	1.477A	1.503A	0.585A	59.843	82.694%	0	<6.0	0.941
	12.193V	5.039V	3.321V	5.111V	72.367				115.18V
4	4.858A	1.986A	1.983A	0.781A	79.786	85.571%	0	<6.0	0.967
	12.190V	5.036V	3.320V	5.099V	93.239				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	7.3 mV	5.0 mV	6.7 mV	4.7 mV	Pass
20% Load	7.9 mV	5.2 mV	8.1 mV	5.2 mV	Pass
30% Load	7.9 mV	5.9 mV	7.9 mV	5.5 mV	Pass
40% Load	8.4 mV	6.3 mV	8.3 mV	5.8 mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
50% Load	14.0 mV	6.3 mV	9.2 mV	5.9 mV	Pass
60% Load	10.5 mV	7.3 mV	10.4 mV	6.6 mV	Pass
70% Load	16.0 mV	7.8 mV	14.8 mV	10.7 mV	Pass
80% Load	10.9 mV	7.6 mV	12.9 mV	7.7 mV	Pass
90% Load	11.9 mV	7.4 mV	13.6 mV	7.7 mV	Pass
100% Load	11.8 mV	9.5 mV	13.5 mV	10.4 mV	Pass
110% Load	11.8 mV	9.3 mV	13.7 mV	11.0 mV	Pass
Crossload 1	9.3 mV	7.4 mV	7.9 mV	8.6 mV	Pass
Crossload 2	11.1 mV	8.6 mV	12.4 mV	9.3 mV	Pass

The results above are not used in the certification process

EVGA 450 B3

Top side

Power specifications label

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 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

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