EVGA 450 BT (#3)

1703430401802531

Lab ID EV45001757

Certification ID 251757

Test Result Report ID: 20PS1757A

Certificate Issue Date: Dec 18, 2020

115V 230V

Scheme: ETA-EMI PSU



115V 230V





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 BT (#3)
OEM/ODM	RSY
Serial Number	1703430401802531
Product Specifications	
Manufacturer-Provided Information	
□□□□ (Vrms)	100-240
□□□□ (Arms)	6
□□□□ (Hz)	50-60

□□□□ (W)	450
Operating Temperature (Continuous Full Load) (°C)	
□□	ATX12V
□□□□	Fixed cables
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
□□	120mm Sleeve Bearing Fan (S1202512L)
□□□□□	✗
Cybenetics Testing Information	
Lab ID	EV45001757
Date of receipt	Jul 28, 2020
Testing Date	Nov 24, 2020
Report Issued Date	Dec 18, 2020
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

□□□□□ (Non-accredited measurements)

Native Cables				
□□	□□□□	□□□□□□	Gauge	In Cable Caps
ATX □□ 20+4 pin (560mm)	1	1	20-24AWG	□
4+4 pin EPS 12V □□ (620mm)	1	1	20AWG	□
6+2pin PCIe□□ (570mm+150mm)	1	2	20-22AWG	□
SATA□□ (480mm+120mm)	2	4	20AWG	□
□ 4pin Molex□□ (480mm+120mm+120mm) / FDD (+120mm)	1	3 / 1	20-22AWG	□
□□□□□				
AC Power Cord (1070mm) - C13 coupler	1	1	18AWG	-

□□□□

□		3.3V	5V	12V	5VSB	-12V
□□□□	□□	18	18	35	2.5	0.3
	□	90		420	12.5	3.6
□□□□□ (W)		450				

Test Results

Temperature & Compliance Info

□□□□ (°C /°F)	28-32 / 82.4-89.6
□□ ErP Lot3/6□□	✓
□□ (EU) No 617/2013□□	✓

Performance Summary

115V

Accredited	
□□□□ (>1450 load combinations)	83.594%
Average Noise Output (>1450 Load Combinations)	36.07dBA
PF□□□ (>1450 Load Combinations)	0.974
Efficiency With 10W (≤500W) or 2% (>500W) Load	57.306%
□□□□□□	0.0460W
Non-Accredited	
12V Ripple (Full Load)	24.42mV
5V Ripple (Full Load)	23.34mV
3.3V Ripple (Full Load)	24.43mV
5VSB Ripple (Full Load)	21.30mV
12V Load Regulation	0.90%
5V Load Regulation	1.49%
3.3V Load Regulation	1.59%

5VSB Load Regulation	2.54%
Inrush Current	25.460A

230V

Accredited		
□□□□ (>1450 load combinations)		85.503%
Average Noise Output (>1450 Load Combinations)		35.95dBA
PF□□□ (>1450 Load Combinations)		0.868
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
□□□□□□		0.0887W
Non-Accredited		
12V Ripple (Full Load)		22.93mV
5V Ripple (Full Load)		23.29mV
3.3V Ripple (Full Load)		24.15mV
5VSB Ripple (Full Load)		20.89mV
12V Load Regulation		1.00%
5V Load Regulation		1.77%
3.3V Load Regulation		1.68%
5VSB Load Regulation		2.62%
Inrush Current		87.920A
□□□□ & PG□□		13.30ms
AC Loss to PWR_OK Hold Up Time		12.20ms
PWR_OK Inactive to DC Loss Delay		1.10ms
PSU Timings: T1 (20% / 100%)	54.0ms	52.0ms
PSU Timings: T3 (20% / 100%)	276.0ms	274.0ms
OPP (25.46°C / 33.10°C)	115.51%	115.52%

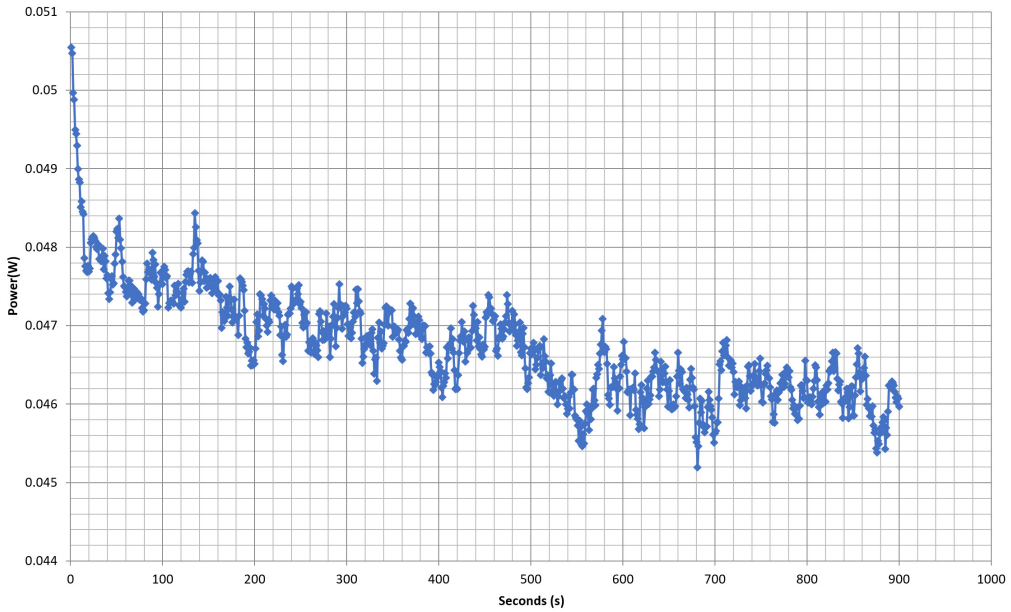
□□□□ & PG□□

Hold-Up Time (ms)	13.3
AC Loss to PWR_OK Hold Up Time (ms)	12.2

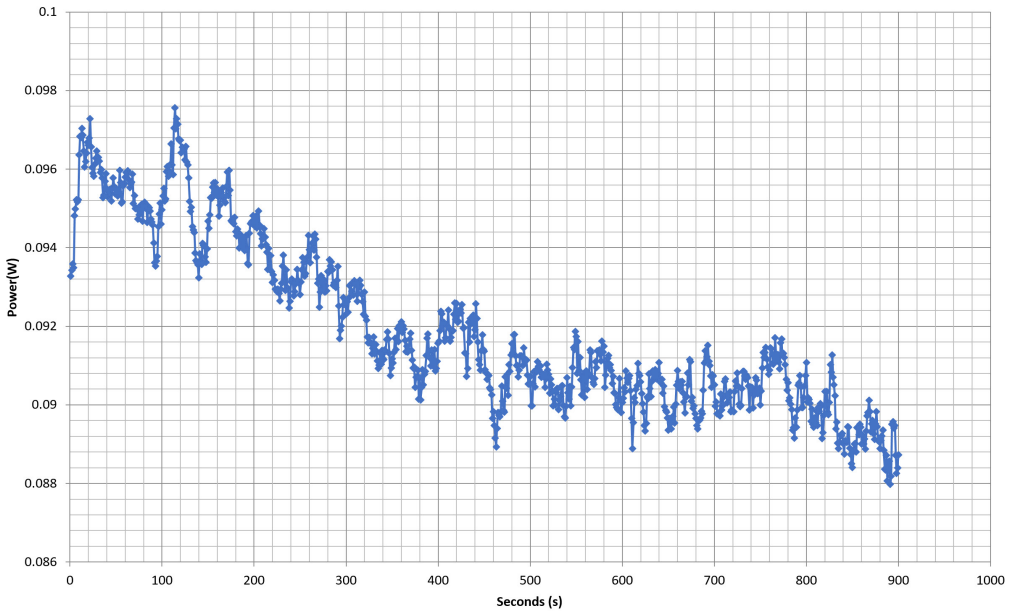
PWR_OK Inactive to DC Loss Delay (ms)	1.1

Graphs

115V



230V



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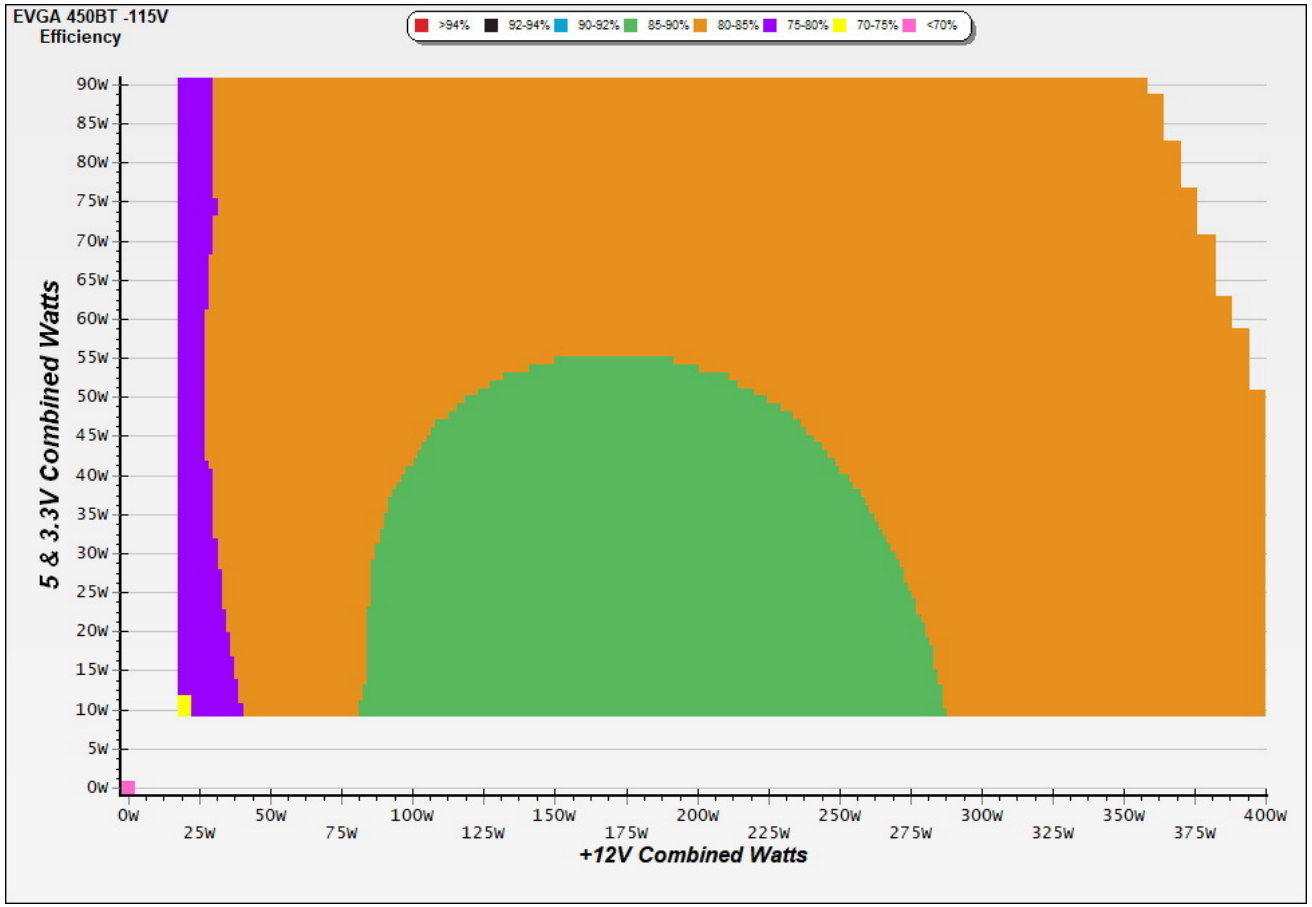
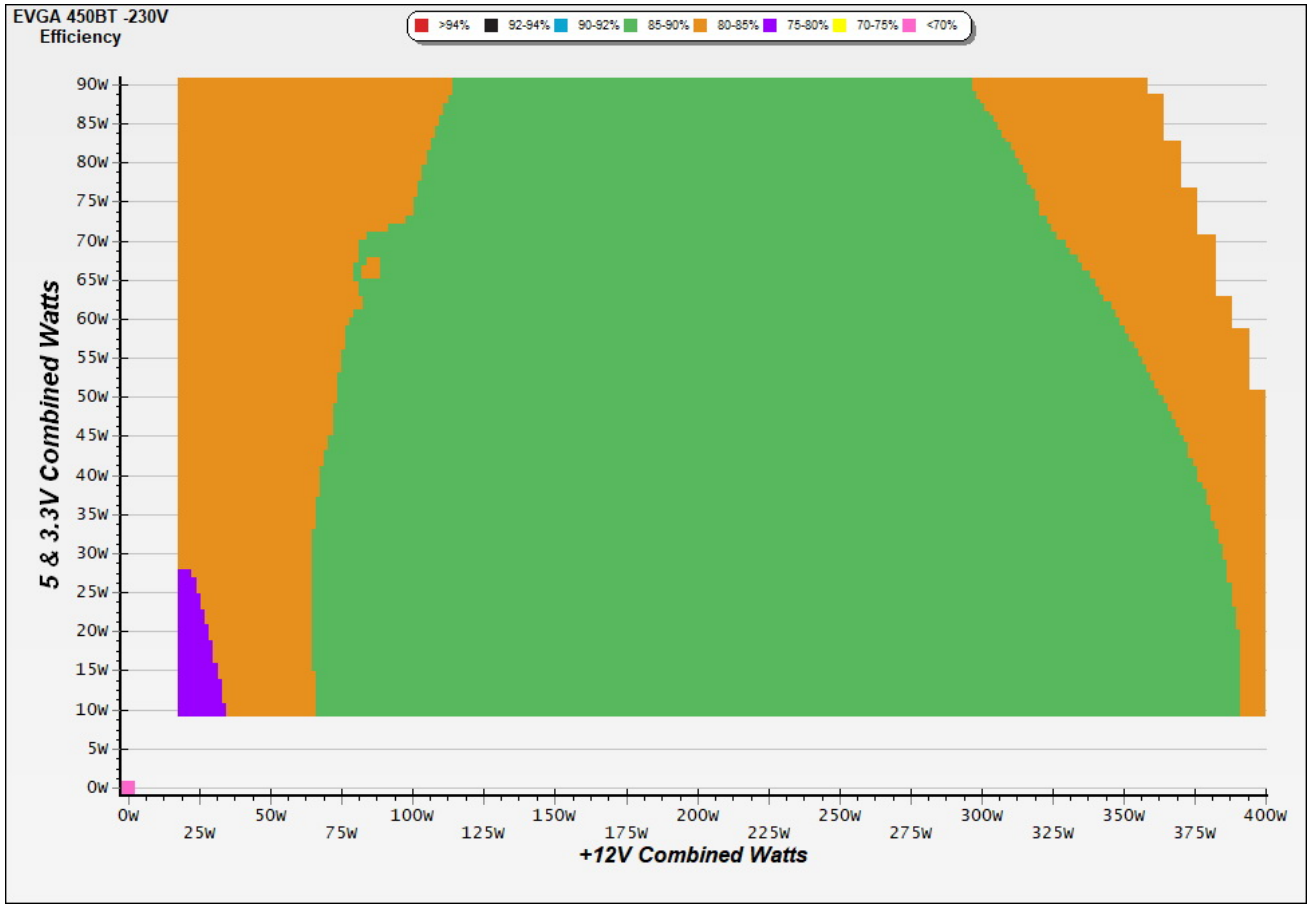
115V



□□

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



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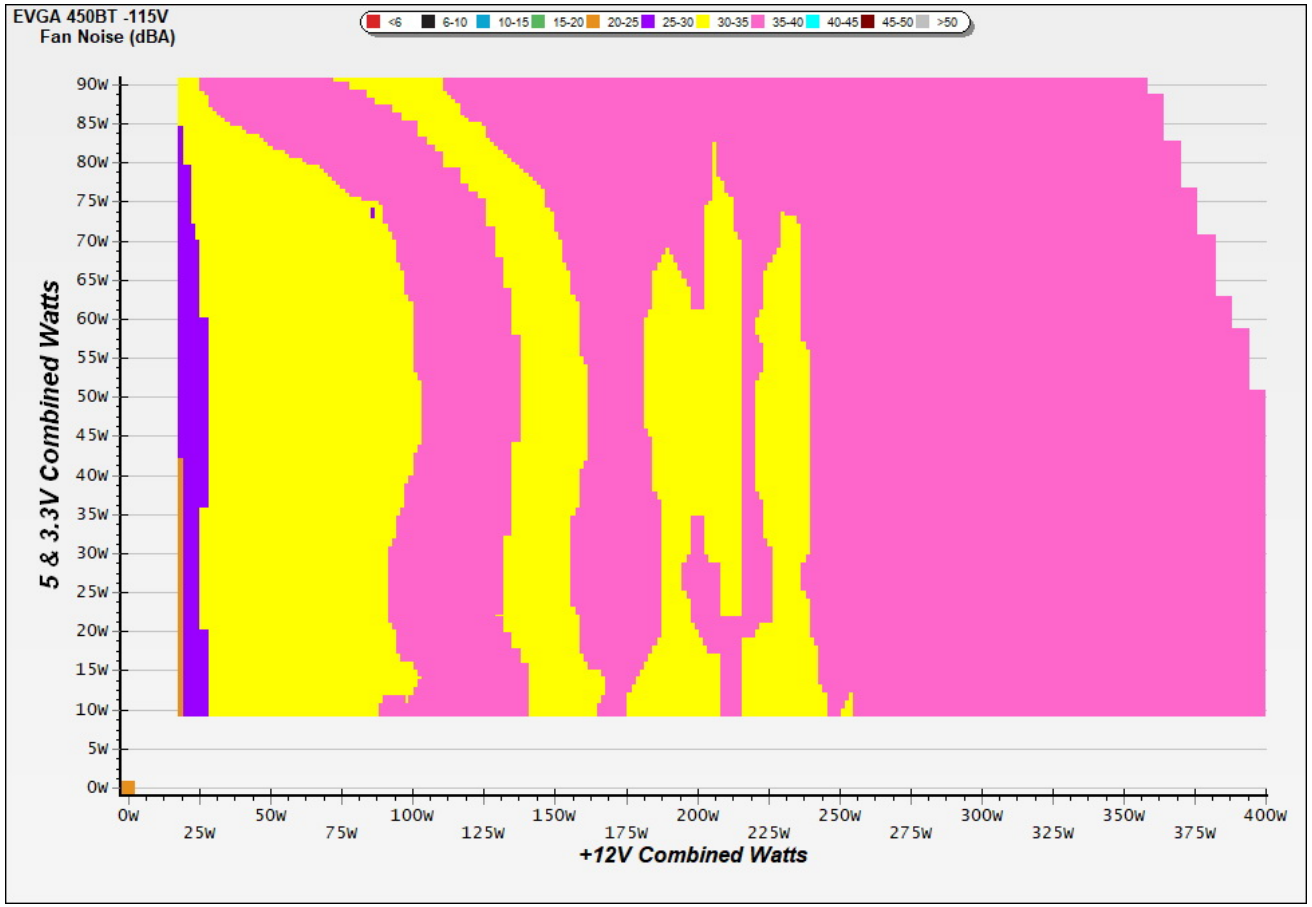
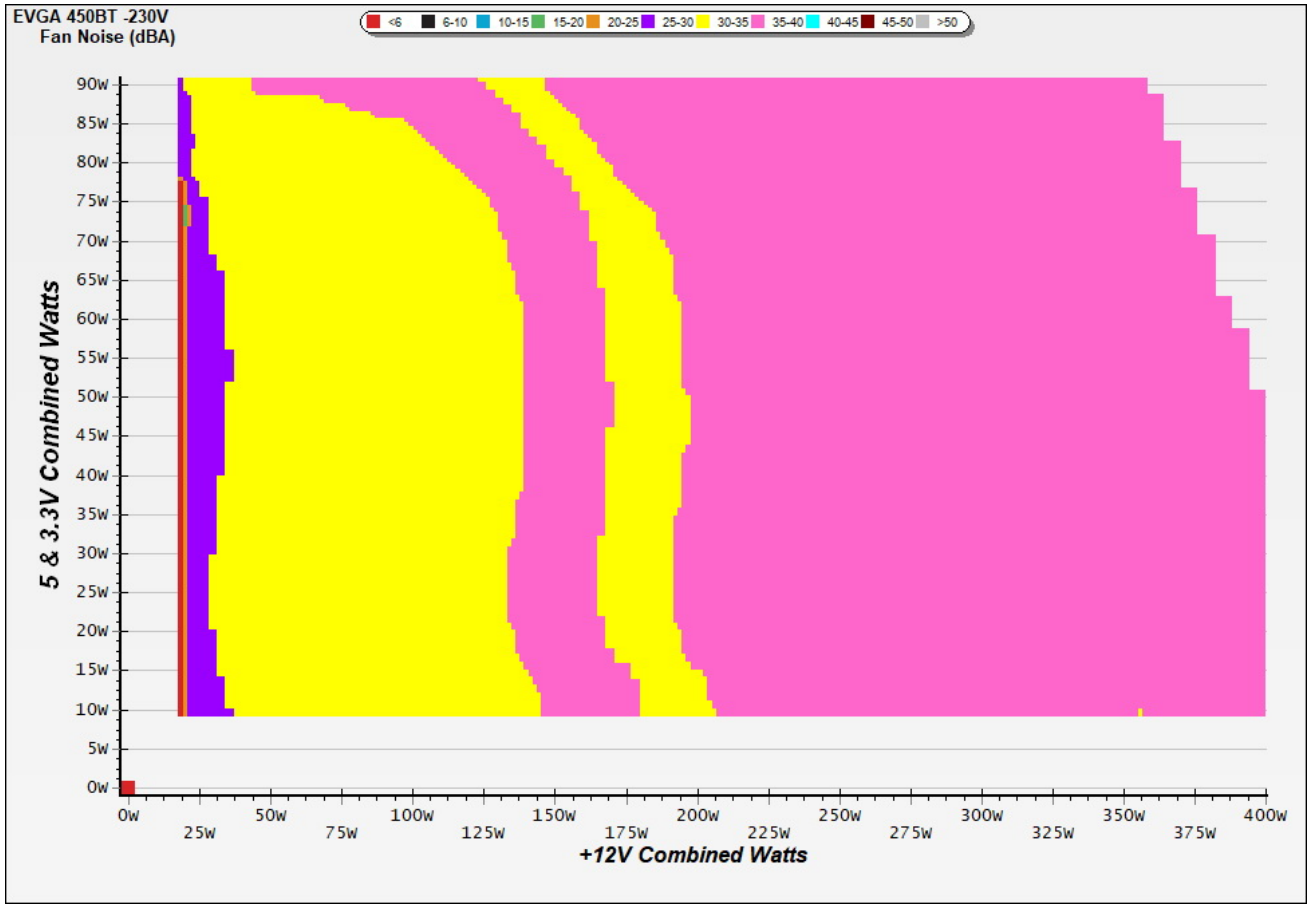
115V



□□

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



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

Noise under high ambient temperature (indicative)

115V

Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	1079 RPM · 25.1 dB(A) · 30.6 °C	1079 RPM · 25.1 dB(A) · 30.6 °C	**+0.0 dB(A)**
20%	1083 RPM · 25.2 dB(A) · 30.6 °C	1083 RPM · 25.2 dB(A) · 30.6 °C	**+0.0 dB(A)**
50%	1424 RPM · 35.9 dB(A) · 32.3 °C	1424 RPM · 35.9 dB(A) · 32.3 °C	**+0.0 dB(A)**
100%	1737 RPM · 40.6 dB(A) · 34.8 °C	1737 RPM · 40.6 dB(A) · 34.8 °C	**+0.0 dB(A)**

230V

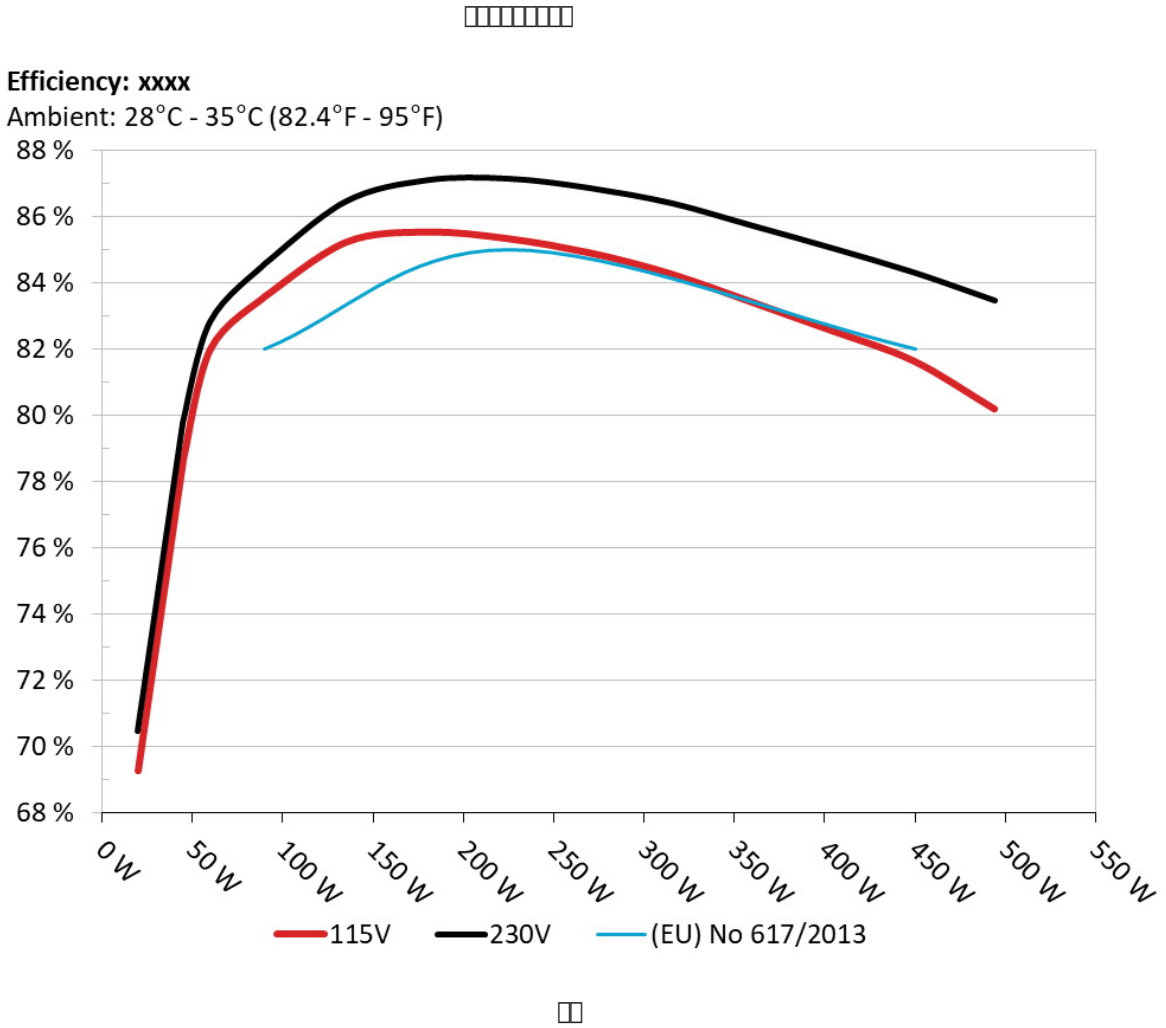
Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	1013 RPM · 26.5 dB(A) · 30.8 °C	1013 RPM · 26.5 dB(A) · 30.8 °C	**+0.0 dB(A)**
20%	1172 RPM · 28.7 dB(A) · 31.0 °C	1172 RPM · 28.7 dB(A) · 31.0 °C	**+0.0 dB(A)**
50%	1372 RPM · 34.7 dB(A) · 32.2 °C	1372 RPM · 34.7 dB(A) · 32.2 °C	**+0.0 dB(A)**
100%	1744 RPM · 40.8 dB(A) · 34.6 °C	1744 RPM · 40.8 dB(A) · 34.6 °C	**+0.0 dB(A)**

INFO

Fan speed, noise and the measured intake temperature at 10, 20, 50 and 100 % load, from the two load regulation tests: at normal ambient (about 30-32 °C) and at high ambient (about 40-47 °C). These are stabilized readings at fixed loads, not averages over the certification sweep, so they are indicative of how the fan behaves when it is hot. "<6.0" is the floor of our sound meter, with the fan stopped; with the fan stopped, the intake sensor can read higher than the chamber air.

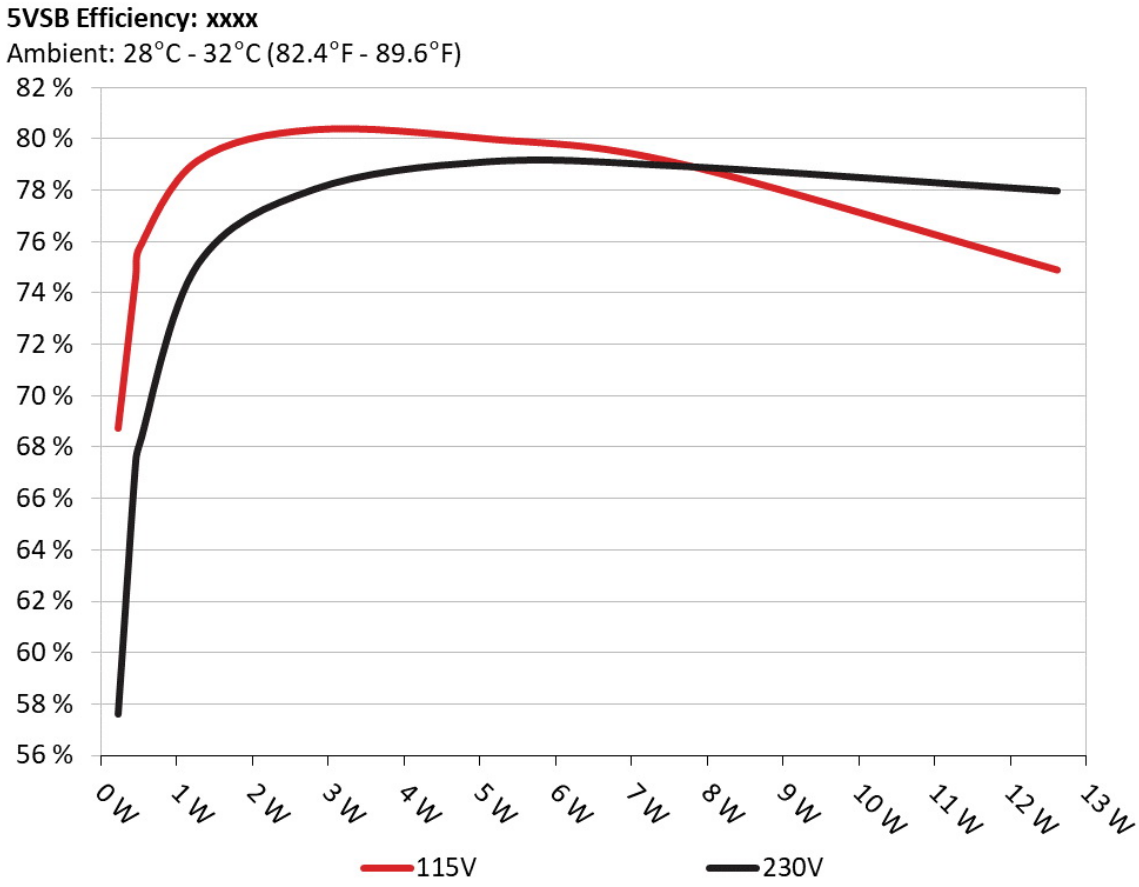
Informational. Not part of the ETA or LAMBDA rating.

Indicative Performance



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□□□□



□□

This graph depicts the efficiency levels of the 5VSB rail with 115V and 230V input

□□□□ □□ 5Vsb □□ (ErP Lot3/6 & CEC)

115V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.045A	0.231	68.750%	0.021
	5.128V	0.336		115.17V
2	0.090A	0.461	74.595%	0.039
	5.127V	0.618		115.17V
3	0.550A	2.811	80.360%	0.196
	5.112V	3.498		115.16V
4	1.000A	5.098	80.006%	0.301
	5.098V	6.372		115.16V
5	1.500A	7.622	79.050%	0.374
	5.082V	9.642		115.16V
6	2.499A	12.613	74.908%	0.454
	5.047V	16.838		115.17V

230V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.045A	0.231	57.606%	0.008
	5.128V	0.401		230.33V
2	0.090A	0.461	67.398%	0.013
	5.127V	0.684		230.32V
3	0.550A	2.811	78.040%	0.066
	5.112V	3.602		230.32V
4	1.000A	5.097	79.121%	0.115
	5.098V	6.442		230.32V
5	1.500A	7.622	78.952%	0.164
	5.081V	9.654		230.32V
6	2.499A	12.614	77.980%	0.244
	5.047V	16.176		230.33V

Supplementary Tests (For Reference)

10-110%□□□□

115V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	1.972A	1.975A	1.978A	0.981A	44.947	77.530%	1079	25.1	30.57°C	0.742
	11.845V	5.058V	3.337V	5.095V	57.974				32.59°C	115.14V
2	4.993A	2.971A	2.973A	1.180A	90.011	83.414%	1083	25.2	30.63°C	0.929
	11.839V	5.049V	3.330V	5.083V	107.909				33.27°C	115.14V
3	8.372A	3.466A	3.476A	1.380A	134.983	85.229%	1146	28.7	31.00°C	0.971
	11.816V	5.050V	3.325V	5.072V	158.376				34.24°C	115.14V
4	11.771A	3.961A	3.977A	1.581A	179.977	85.540%	1316	31.6	31.82°C	0.972
	11.789V	5.051V	3.320V	5.059V	210.401				35.62°C	115.14V
5	14.807A	4.959A	4.979A	1.783A	224.962	85.337%	1424	35.9	32.26°C	0.982
	11.783V	5.041V	3.313V	5.046V	263.617				36.37°C	115.14V
6	17.842A	5.961A	5.986A	1.987A	269.947	84.912%	1507	35.8	32.85°C	0.988
	11.779V	5.030V	3.308V	5.033V	317.912				37.38°C	115.13V
7	20.892A	6.970A	6.996A	2.190A	315.003	84.274%	1615	37.2	33.52°C	0.992
	11.770V	5.023V	3.302V	5.020V	373.784				38.86°C	115.13V
8	23.925A	7.983A	8.008A	2.396A	359.977	83.420%	1689	39.0	33.78°C	0.995
	11.769V	5.012V	3.296V	5.008V	431.522				39.72°C	115.13V
9	27.419A	8.476A	8.504A	2.398A	404.644	82.552%	1727	40.2	34.08°C	0.996
	11.750V	5.013V	3.291V	5.002V	490.170				40.71°C	115.12V
10	30.856A	8.981A	9.036A	2.502A	449.352	81.652%	1737	40.6	34.77°C	0.997
	11.738V	5.009V	3.285V	4.994V	550.329				42.01°C	115.12V
11	34.762A	8.971A	9.050A	2.505A	494.206	80.199%	1751	41.0	35.26°C	0.998
	11.709V	5.015V	3.281V	4.988V	616.227				43.17°C	115.12V
CL1	0.115A	10.998A	10.998A	0.002A	90.423	77.037%	1584	36.7	32.68°C	0.943
	12.318V	4.775V	3.317V	5.109V	117.376				36.93°C	115.15V

CL2	35.003A	2.001A	2.001A	1.000A	423.270	82.398%	1625	37.5	34.43°C	0.997
	11.463V	5.184V	3.300V	5.055V	513.687				41.82°C	115.13V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	1.971A	1.978A	1.978A	0.981A	44.950	78.933%	1013	26.5	30.83°C	0.540
	11.846V	5.058V	3.336V	5.095V	56.947				32.86°C	230.31V
2	4.993A	2.971A	2.973A	1.180A	90.011	84.463%	1172	28.7	31.02°C	0.603
	11.839V	5.049V	3.330V	5.083V	106.568				33.56°C	230.32V
3	8.376A	3.464A	3.474A	1.380A	134.996	86.452%	1242	29.5	31.54°C	0.755
	11.814V	5.050V	3.325V	5.071V	156.152				34.80°C	230.32V
4	11.773A	3.960A	3.977A	1.581A	179.991	87.096%	1333	32.1	31.74°C	0.852
	11.789V	5.051V	3.319V	5.059V	206.659				35.73°C	230.33V
5	14.795A	4.965A	4.981A	1.784A	224.971	87.144%	1372	34.7	32.16°C	0.898
	11.792V	5.036V	3.313V	5.046V	258.160				36.80°C	230.32V
6	17.842A	5.965A	5.986A	1.987A	269.961	86.860%	1524	36.0	33.68°C	0.923
	11.779V	5.030V	3.307V	5.033V	310.799				38.86°C	230.33V
7	20.892A	6.973A	6.997A	2.191A	315.025	86.406%	1609	37.1	33.70°C	0.941
	11.771V	5.021V	3.301V	5.019V	364.587				39.98°C	230.32V
8	23.934A	7.983A	8.007A	2.396A	359.998	85.725%	1682	38.8	33.91°C	0.952
	11.766V	5.012V	3.295V	5.007V	419.947				40.83°C	230.32V
9	27.421A	8.479A	8.504A	2.398A	404.686	85.039%	1727	40.2	34.15°C	0.960
	11.751V	5.011V	3.290V	5.002V	475.883				41.35°C	230.32V
10	30.890A	8.986A	9.049A	2.505A	449.416	84.312%	1744	40.8	34.64°C	0.966
	11.727V	5.006V	3.281V	4.988V	533.040				42.21°C	230.24V
11	34.783A	8.980A	9.062A	2.508A	494.189	83.464%	1757	40.9	35.08°C	0.970
	11.701V	5.011V	3.277V	4.983V	592.101				43.02°C	230.24V
CL1	0.115A	10.999A	10.997A	0.002A	90.368	78.106%	1542	36.3	32.46°C	0.613
	12.314V	4.772V	3.315V	5.107V	115.699				36.92°C	230.25V

CL2	35.000A	1.999A	2.000A	1.000A	423.103	85.034%	1666	38.4	34.39°C	0.963
	11.460V	5.181V	3.297V	5.052V	497.567				42.24°C	230.25V

The results above are not used in the certification process

20-80□□□□□

115V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	PF/AC □□
1	1.259A	0.490A	0.494A	0.195A	19.982	69.274%	792	16.0	0.521
	11.779V	5.104V	3.342V	5.124V	28.845				115.16V
2	2.514A	0.982A	0.989A	0.391A	39.970	78.676%	778	15.2	0.700
	11.804V	5.085V	3.338V	5.115V	50.803				115.16V
3	3.773A	1.475A	1.484A	0.587A	59.999	82.004%	779	15.3	0.774
	11.811V	5.076V	3.336V	5.107V	73.166				115.14V
4	5.027A	1.972A	1.979A	0.784A	79.951	83.589%	969	23.5	0.872
	11.808V	5.071V	3.333V	5.098V	95.648				115.14V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	PF/AC □□
1	1.259A	0.489A	0.494A	0.195A	19.979	70.470%	795	16.1	0.282
	11.782V	5.103V	3.342V	5.124V	28.351				230.32V
2	2.515A	0.983A	0.987A	0.391A	39.969	79.793%	793	16.0	0.520
	11.799V	5.087V	3.338V	5.115V	50.091				230.32V
3	3.775A	1.476A	1.484A	0.587A	60.000	82.824%	968	23.4	0.579
	11.803V	5.079V	3.336V	5.106V	72.443				230.32V
4	5.027A	1.972A	1.978A	0.785A	79.951	84.562%	1025	25.8	0.598
	11.807V	5.072V	3.333V	5.098V	94.547				230.32V

The results above are not used in the certification process

□□□□

115V

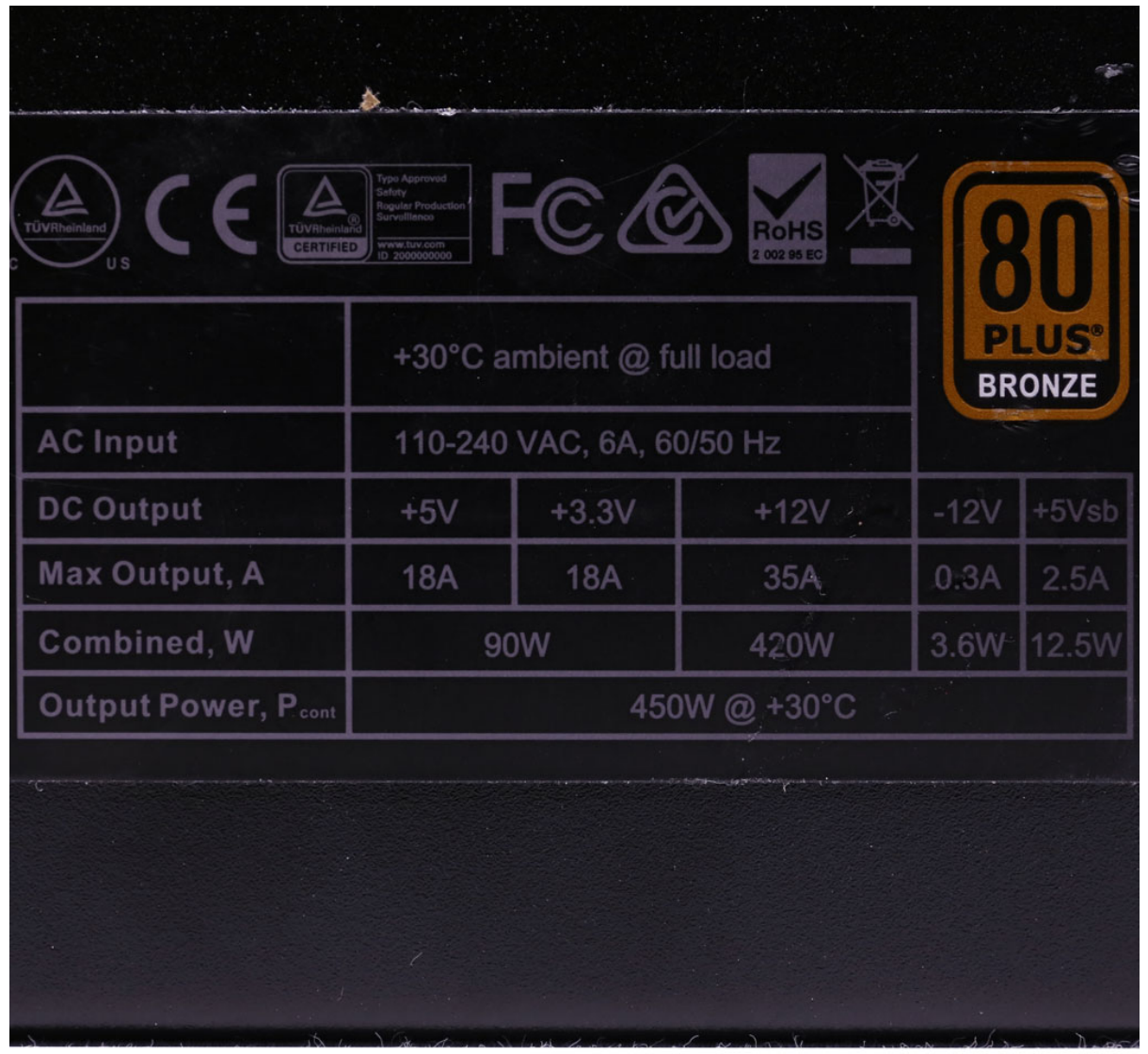
Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	23.90mV	17.70mV	14.70mV	42.60mV	Pass
20% Load	20.40mV	15.30mV	15.20mV	36.70mV	Pass
30% Load	20.10mV	15.90mV	15.40mV	16.30mV	Pass
40% Load	11.60mV	15.60mV	14.80mV	16.80mV	Pass
50% Load	12.50mV	15.90mV	15.40mV	17.60mV	Pass
60% Load	25.30mV	18.20mV	17.10mV	39.00mV	Pass
70% Load	14.30mV	18.50mV	19.20mV	19.30mV	Pass
80% Load	16.40mV	19.50mV	22.70mV	19.80mV	Pass
90% Load	18.90mV	21.80mV	23.50mV	20.10mV	Pass
100% Load	24.40mV	23.30mV	24.40mV	21.30mV	Pass
110% Load	26.70mV	24.20mV	25.20mV	21.90mV	Pass
Crossload1	20.00mV	22.00mV	31.80mV	21.60mV	Pass
Crossload2	24.20mV	20.70mV	18.40mV	18.60mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	13.10mV	13.90mV	14.70mV	14.50mV	Pass
20% Load	11.20mV	14.60mV	15.10mV	14.90mV	Pass
30% Load	21.00mV	16.10mV	14.50mV	30.80mV	Pass
40% Load	10.90mV	15.10mV	14.00mV	16.30mV	Pass
50% Load	19.20mV	19.30mV	15.20mV	17.50mV	Pass
60% Load	12.50mV	17.40mV	17.40mV	17.80mV	Pass
70% Load	13.80mV	17.60mV	19.00mV	19.00mV	Pass
80% Load	14.90mV	18.30mV	21.70mV	18.50mV	Pass





Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	18.20mV	20.40mV	23.00mV	20.20mV	Pass
100% Load	22.90mV	23.30mV	24.20mV	20.90mV	Pass
110% Load	26.10mV	23.40mV	24.60mV	21.10mV	Pass
Crossload1	24.60mV	24.10mV	32.50mV	22.60mV	Pass
Crossload2	23.20mV	20.30mV	19.00mV	17.50mV	Pass

The results above are not used in the certification process

EVGA 450 BT (#3)

Top side

Power specifications label

本测试报告中包含的所有数据和图表均可在以下条件下由任何人使用：使用过程需提及测试结果由Cybenetics提供。
在任何情况下都应提供原始测试结果文档的网站链接

Cybenetics 提供自愿性认证计划：电源方面有 ETA (效率)、LAMBDA (噪声) 与 SAFE (安全与正确运行)；散热产品方面有 DELTA (机箱隔音) 与 PHI (风扇风量与静压)

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