EVGA 600 BQ

Serial Number 1701230615800480

Lab ID 190

Certification ID 25190

Test Result Report ID:

Certificate Issue Date: Jun 10, 2018

Scheme: ETA-EMI PSU

115V

230V

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	600 BQ
OEM/ODM	Andyson
Serial Number	1701230615800480
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	50-60

Rated Power (W)	600
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Semi Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	120mm Fluid Dynamic Bearing Fan (S1202512L)
Semi-Passive Operation	✗
Cybenetics Testing Information	
Lab ID	190
Date of receipt	May 31, 2018
Testing Date	Jun 6, 2018
Report Issued Date	Jun 10, 2018
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors(Non-accredited measurements)

Captive Cables			
Description	Cable Count	Connector Count (Total)	Gauge
ATX connector 20+4 pin (610mm)	1	1	18-22AWG
4+4 pin EPS12V (620mm)	1	1	18AWG
Modular Cables			
6+2 pin PCIe (600mm+100mm)	1	2	18AWG
SATA (460mm+120mm+120mm)	2	6	18AWG
4 pin Molex (470mm+120mm+120mm) / FDD (+120mm)	1	3 / 1	18AWG

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	50	2.5	0.3
	Watts	120		600	12.5	3.6
Total Max. Power (W)		600				

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: ✓ ErP Lot 3/6 2014, CEC: Partially
(EU) No 617/2013 Compliance	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	85.095%
Average Noise Output (>1450 Load Combinations)	37.30dBA
Average PF (>1450 Load Combinations)	0.992
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
Standby Power Consumption	0.0812W
Non-Accredited	
12V Ripple (Full Load)	26.39mV
5V Ripple (Full Load)	12.75mV
3.3V Ripple (Full Load)	13.29mV
5VSB Ripple (Full Load)	21.95mV
12V Load Regulation	0.31%

5V Load Regulation	0.10%
3.3V Load Regulation	0.86%
5VSB Load Regulation	3.75%
Inrush Current	90.255A

230V

Accredited		
Average Efficiency (>1450 load combinations)	87.464%	
Average Noise Output (>1450 Load Combinations)	37.08dBA	
Average PF (>1450 Load Combinations)	0.964	
Efficiency With 10W (≤500W) or 2% (>500W) Load	-	
Standby Power Consumption	0.1652W	
Non-Accredited		
12V Ripple (Full Load)	21.57mV	
5V Ripple (Full Load)	12.22mV	
3.3V Ripple (Full Load)	13.24mV	
5VSB Ripple (Full Load)	23.61mV	
12V Load Regulation	0.24%	
5V Load Regulation	0.10%	
3.3V Load Regulation	0.83%	
5VSB Load Regulation	3.64%	
Inrush Current	59.579A	
Hold-Up Time & PWR_OK Signal	13.31ms	
AC Loss to PWR_OK Hold Up Time	12.66ms	
PWR_OK Inactive to DC Loss Delay	0.65ms	
OPP (0.00°C / 0.00°C)	-	-

Hold-Up Time & PWR_OK Signal

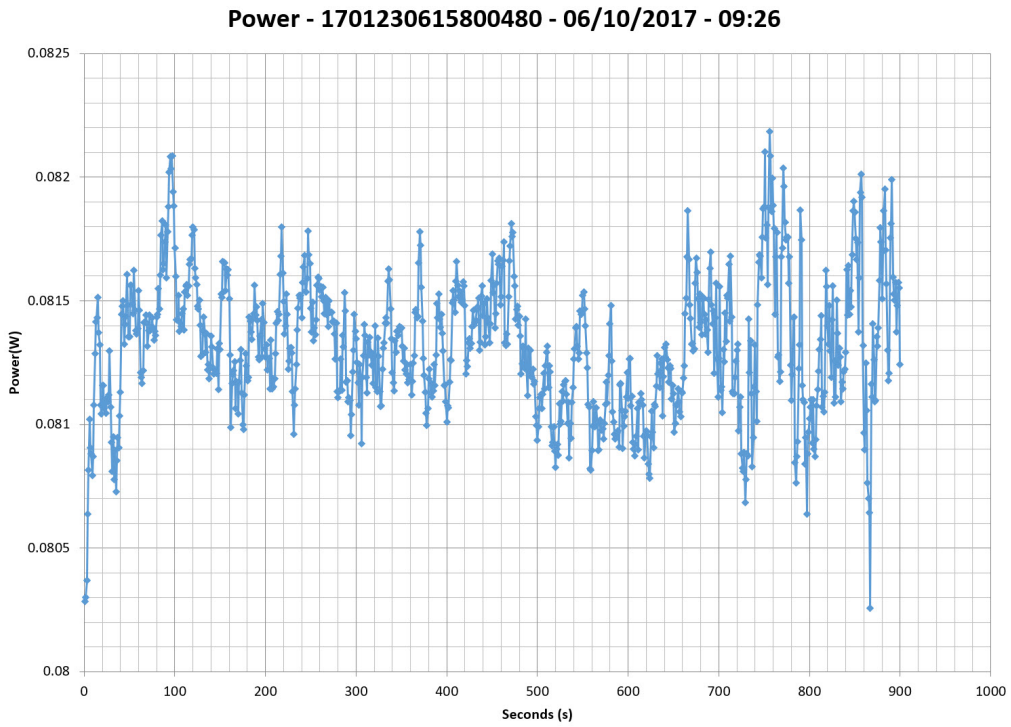
Hold-Up Time (ms)	13.31
AC Loss to PWR_OK Hold Up Time (ms)	12.66

PWR_OK Inactive to DC Loss Delay (ms)	0.65

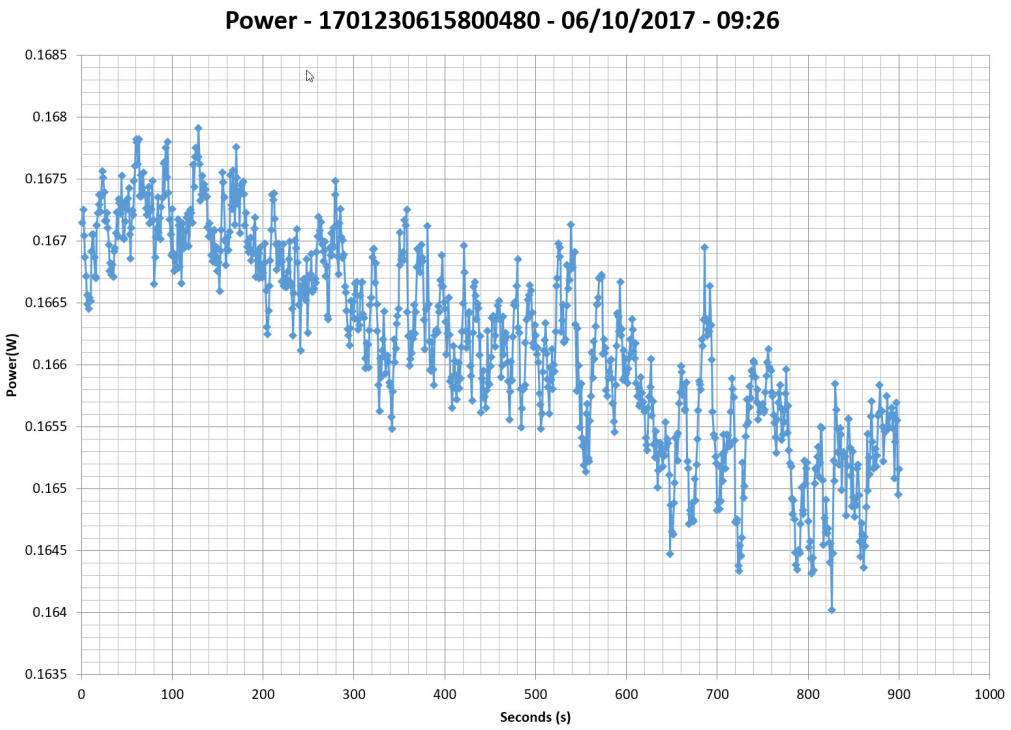
Vampire Power

Graphs

115V

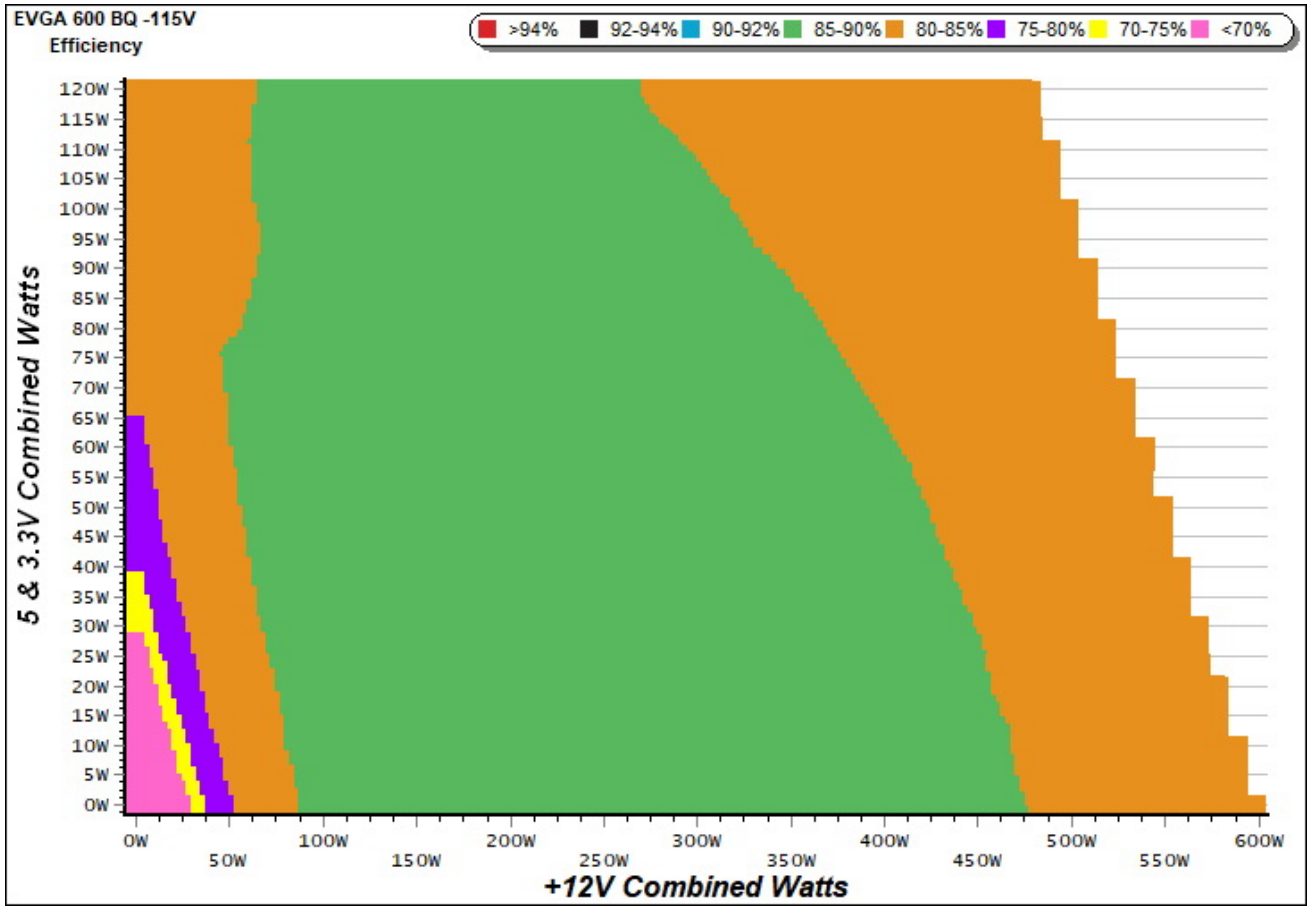


230V



Efficiency Graph

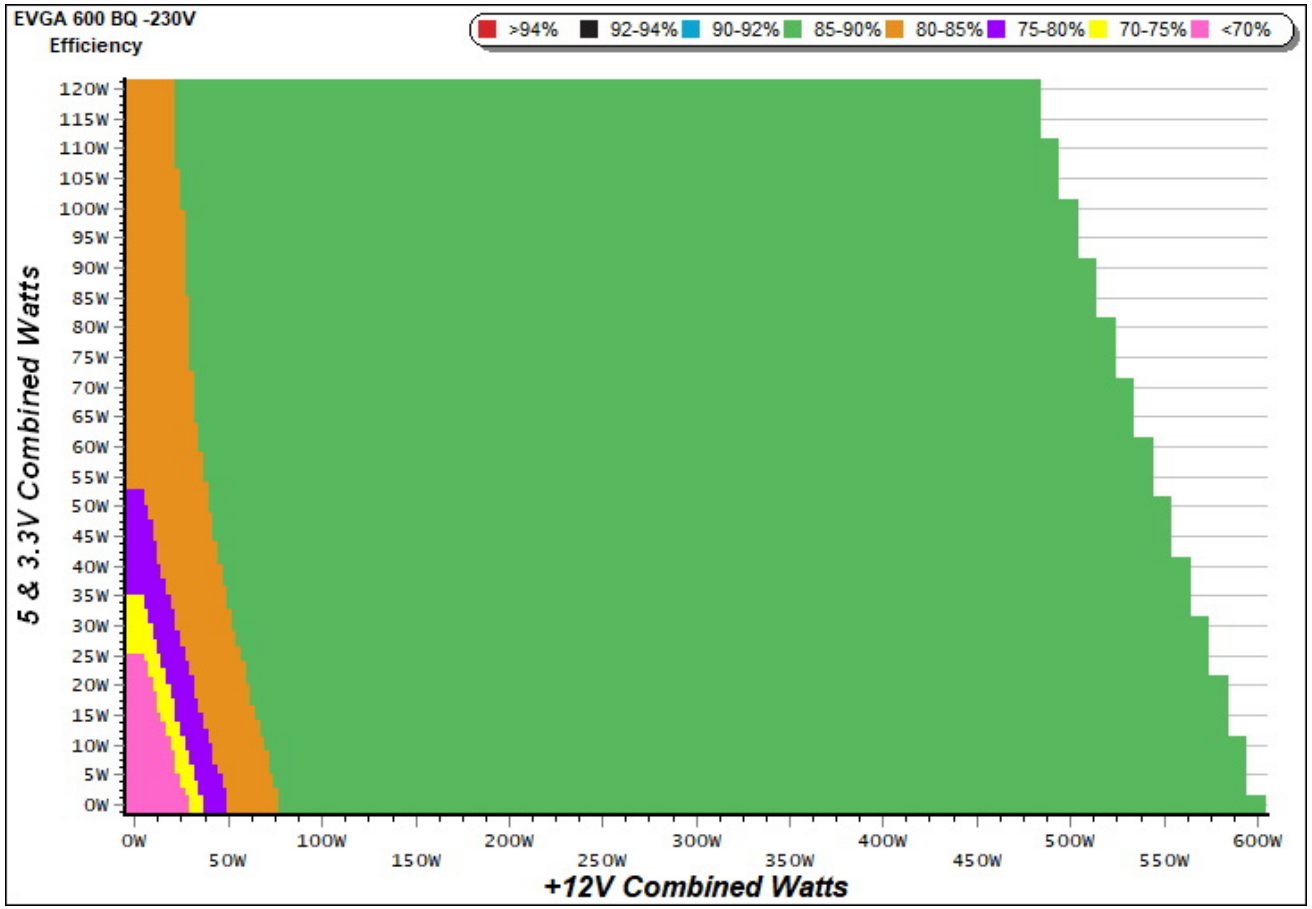
115V



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.

230V



INFO

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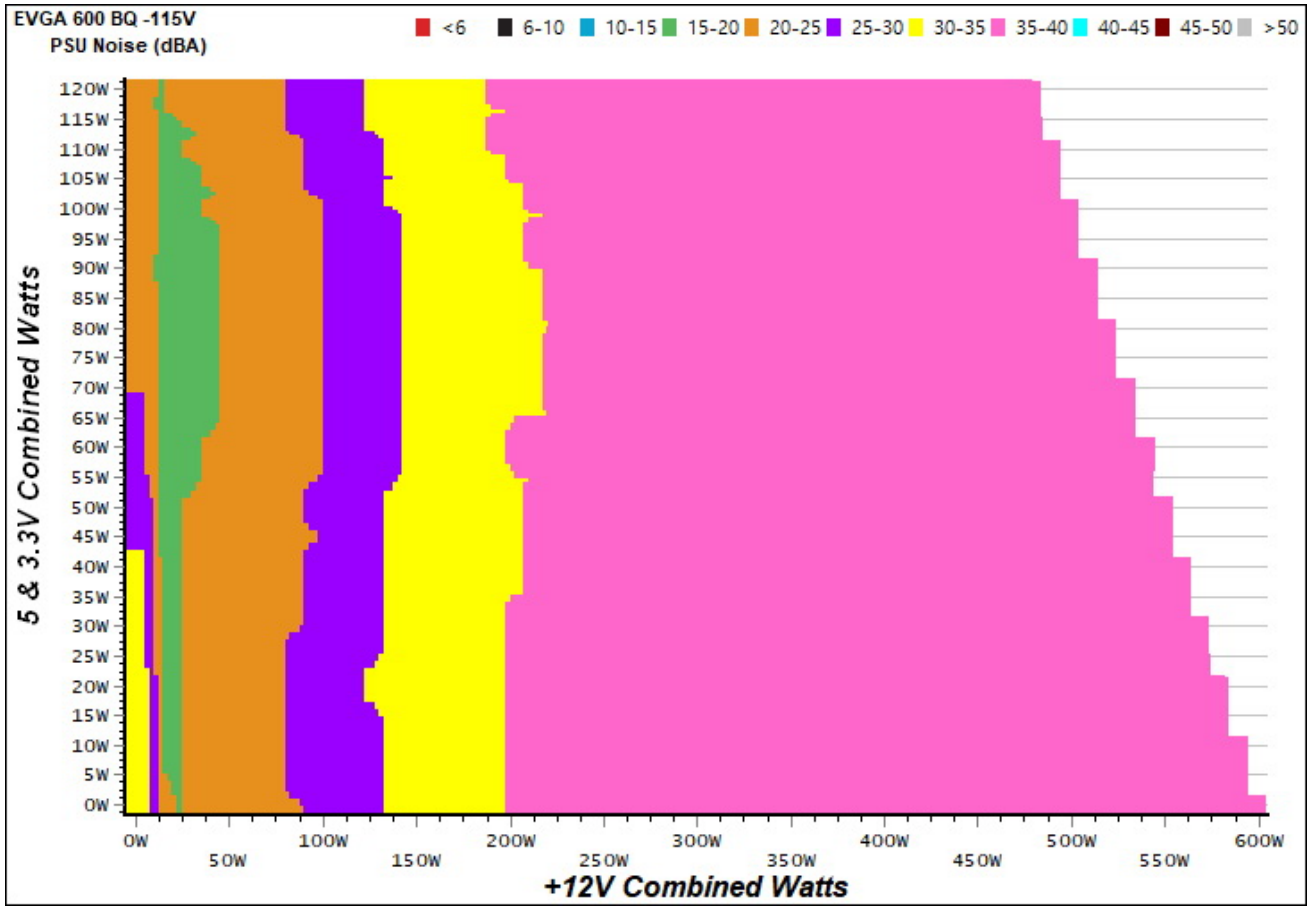
Noise Graph

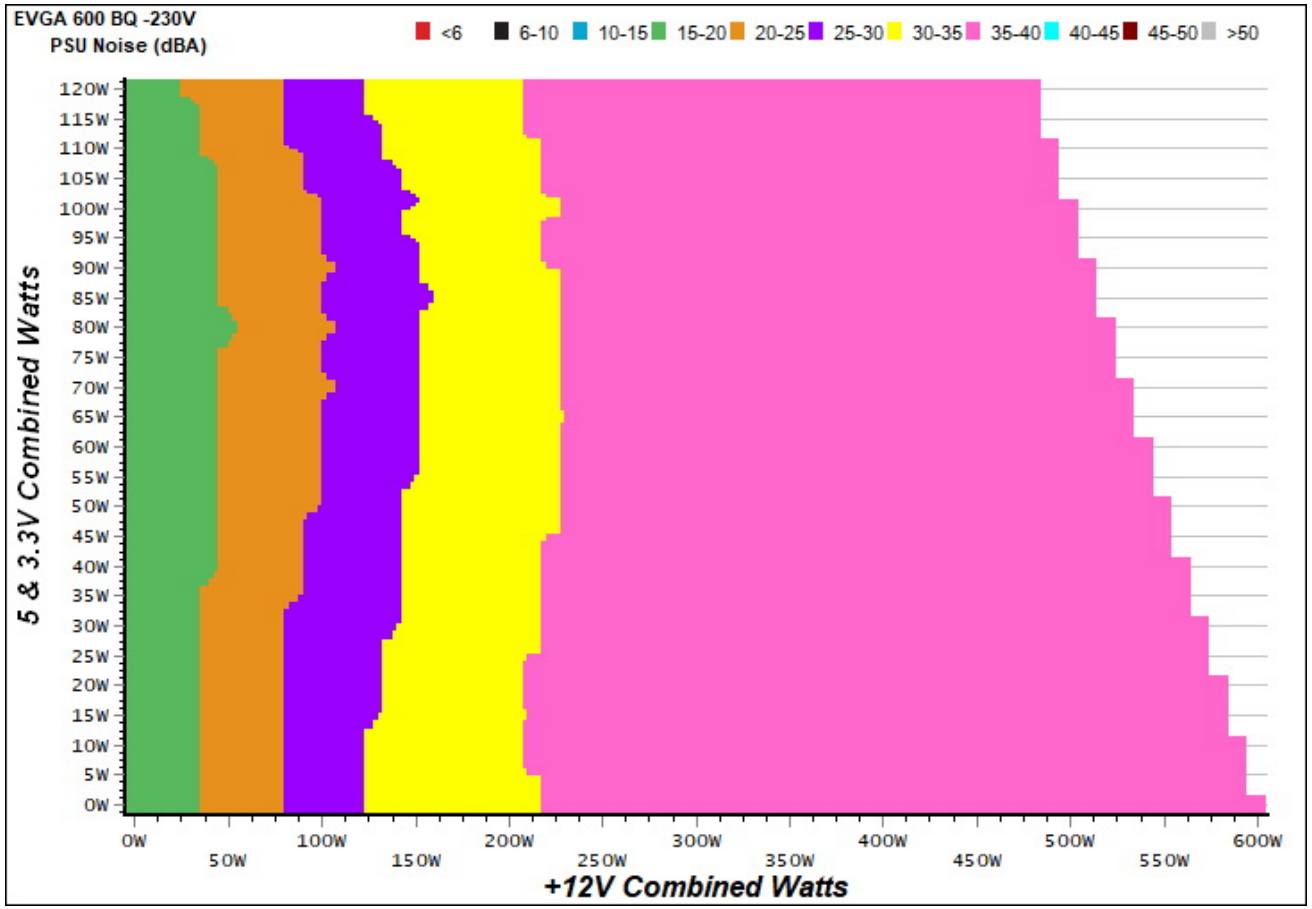
115V



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.

230V

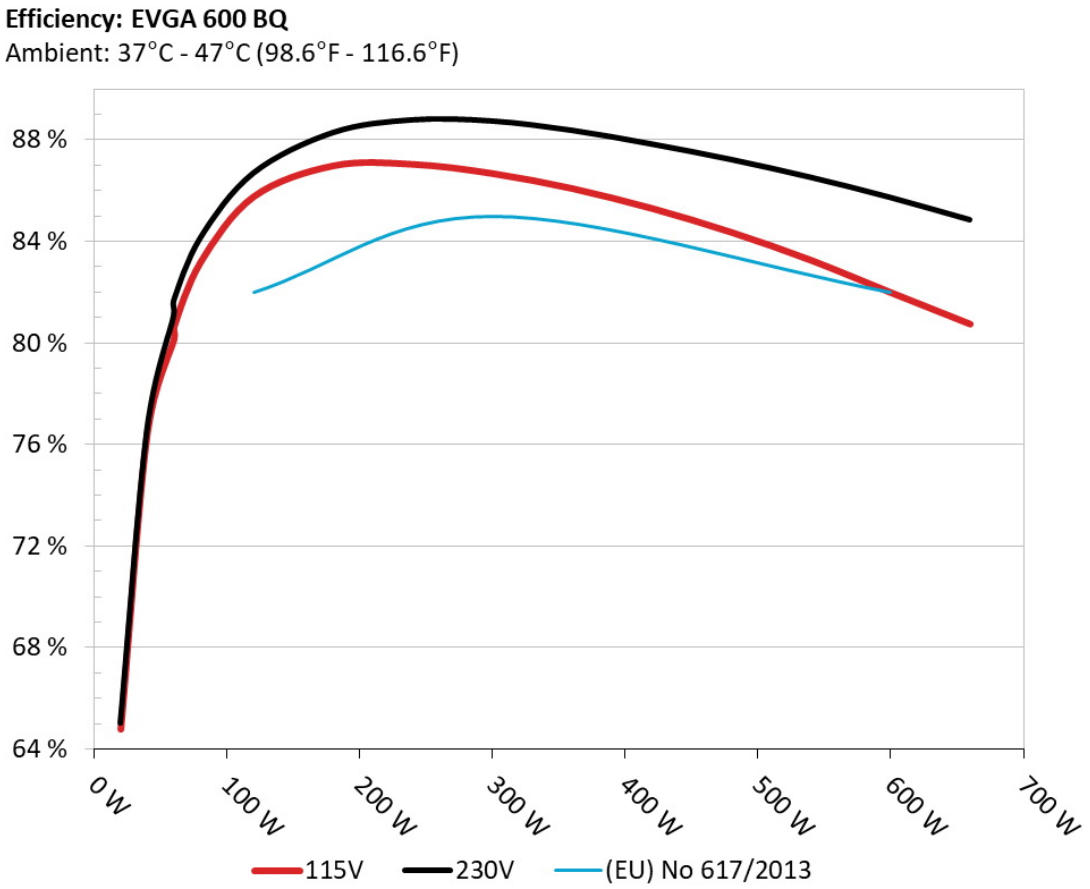


INFO

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

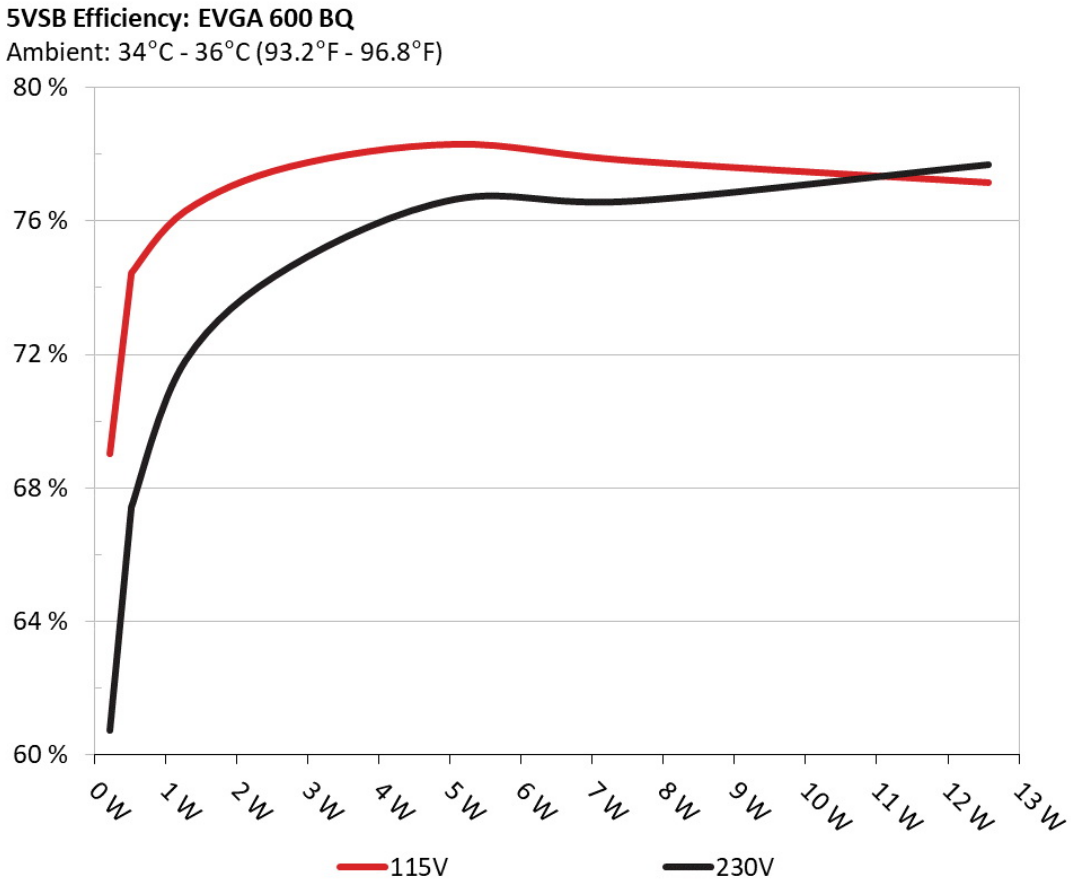
Efficiency under high ambient temperature



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	0.214	69.032%	0.038
	5.071V	0.310		115.05V
2	0.088A	0.446	74.457%	0.072
	5.070V	0.599		115.05V
3	0.543A	2.747	77.643%	0.278
	5.061V	3.538		115.04V
4	1.003A	5.066	78.312%	0.345
	5.052V	6.469		115.04V
5	1.502A	7.575	77.812%	0.378
	5.043V	9.735		115.04V
6	2.502A	12.566	77.163%	0.412
	5.023V	16.285		115.04V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.215	60.734%	0.013
	5.071V	0.354		230.20V
2	0.088A	0.445	67.424%	0.024
	5.070V	0.660		230.20V
3	0.543A	2.746	74.620%	0.124
	5.061V	3.680		230.18V
4	1.003A	5.066	76.641%	0.195
	5.052V	6.610		230.18V
5	1.502A	7.574	76.590%	0.249
	5.043V	9.889		230.19V
6	2.502A	12.566	77.678%	0.309
	5.023V	16.177		230.19V

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	3.177A	1.975A	1.961A	0.991A	59.833	80.164%	1296	32.5	38.17°C	0.973
	12.034V	5.074V	3.361V	5.033V	74.638				42.05°C	115.12V
2	7.390A	2.950A	2.944A	1.196A	119.767	85.761%	1474	38.3	38.64°C	0.990
	12.032V	5.073V	3.358V	5.015V	139.652				42.57°C	115.12V
3	11.957A	3.453A	3.454A	1.400A	179.925	86.979%	1614	37.5	39.43°C	0.994
	12.029V	5.071V	3.355V	4.997V	206.860				43.80°C	115.13V
4	16.516A	3.944A	3.935A	1.605A	239.787	87.034%	1737	39.3	39.73°C	0.992
	12.025V	5.070V	3.352V	4.982V	275.509				45.05°C	115.13V
5	20.735A	4.936A	4.925A	1.811A	299.774	86.671%	1757	39.7	40.09°C	0.992
	12.022V	5.069V	3.348V	4.964V	345.874				46.95°C	115.13V
6	24.960A	5.918A	5.918A	2.020A	359.725	86.078%	1770	39.9	40.99°C	0.993
	12.017V	5.069V	3.345V	4.944V	417.904				49.00°C	115.13V
7	29.184A	6.909A	6.909A	2.230A	419.687	85.297%	1770	39.9	42.30°C	0.994
	12.013V	5.069V	3.343V	4.924V	492.033				52.04°C	115.13V
8	33.411A	7.895A	7.904A	2.445A	479.596	84.355%	1770	39.9	43.38°C	0.995
	12.008V	5.069V	3.339V	4.902V	568.545				55.58°C	115.14V
9	38.079A	8.388A	8.422A	2.454A	539.686	83.252%	1776	39.9	44.97°C	0.996
	12.003V	5.071V	3.336V	4.887V	648.259				59.71°C	115.14V
10	42.693A	8.879A	8.909A	2.565A	599.474	81.986%	1776	39.9	45.46°C	0.996
	11.999V	5.071V	3.332V	4.870V	731.195				61.61°C	115.15V
11	47.703A	8.879A	8.916A	2.570A	659.392	80.742%	1776	39.9	46.55°C	0.996
	11.995V	5.070V	3.331V	4.856V	816.667				65.37°C	115.15V
CL1	0.099A	14.027A	14.004A	0.004A	119.438	81.675%	1770	39.9	44.93°C	0.991
	12.023V	5.083V	3.351V	4.990V	146.235				52.97°C	115.15V

CL2	49.950A	1.004A	1.002A	1.000A	612.815	82.236%	1776	39.9	46.61°C	0.996
	12.001V	5.070V	3.337V	4.932V	745.194				62.86°C	115.16V

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
1	3.167A	1.966A	1.958A	0.992A	59.675	80.828%	1420	34.5	38.18°C	0.842
	12.033V	5.078V	3.363V	5.038V	73.830				44.69°C	230.67V
2	7.359A	2.949A	2.942A	1.194A	119.390	86.634%	1520	37.7	38.53°C	0.930
	12.030V	5.078V	3.361V	5.023V	137.809				45.65°C	230.63V
3	11.919A	3.443A	3.419A	1.397A	179.314	88.357%	1614	37.5	38.71°C	0.958
	12.027V	5.077V	3.359V	5.010V	202.943				46.95°C	230.59V
4	16.481A	3.936A	3.929A	1.601A	239.326	88.924%	1737	39.3	38.88°C	0.972
	12.023V	5.078V	3.357V	4.996V	269.134				48.53°C	230.64V
5	20.712A	4.920A	4.917A	1.807A	299.433	88.925%	1770	39.9	39.39°C	0.977
	12.020V	5.078V	3.354V	4.980V	336.725				51.15°C	230.60V
6	24.952A	5.903A	5.905A	2.014A	359.561	88.576%	1770	39.9	40.51°C	0.981
	12.015V	5.078V	3.351V	4.965V	405.933				54.52°C	230.56V
7	29.160A	6.887A	6.893A	2.223A	419.282	88.065%	1776	39.9	41.36°C	0.984
	12.010V	5.080V	3.349V	4.948V	476.106				58.51°C	230.51V
8	33.435A	7.871A	7.886A	2.434A	479.801	87.383%	1776	39.9	42.22°C	0.985
	12.006V	5.081V	3.346V	4.931V	549.080				62.09°C	230.46V
9	38.050A	8.360A	8.369A	2.439A	539.110	86.694%	1776	39.9	43.37°C	0.986
	12.001V	5.082V	3.344V	4.920V	621.852				66.94°C	230.51V
10	42.740A	8.851A	8.888A	2.549A	599.862	85.750%	1776	39.9	45.08°C	0.987
	11.995V	5.084V	3.341V	4.905V	699.547				72.80°C	230.46V
11	47.768A	8.851A	8.892A	2.554A	659.878	84.817%	1776	39.9	46.25°C	0.987
	11.989V	5.084V	3.339V	4.894V	778.001				76.61°C	230.42V
CL1	0.719A	14.001A	13.996A	0.000A	126.840	83.465%	1770	39.9	42.57°C	0.940
	12.025V	5.086V	3.357V	5.009V	151.968				56.45°C	230.81V

CL2	49.992A	0.996A	0.997A	1.000A	612.953	86.135%	1776	39.9	44.15°C	0.987
	11.994V	5.077V	3.343V	4.959V	711.618				69.43°C	230.45V

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	1.213A	0.492A	0.473A	0.196A	19.676	64.781%	1015	25.3	0.932
	12.037V	5.068V	3.360V	5.060V	30.373				115.11V
2	2.454A	0.980A	0.981A	0.396A	39.803	76.485%	1163	29.0	0.965
	12.036V	5.071V	3.361V	5.052V	52.040				115.11V
3	3.690A	1.467A	1.486A	0.592A	59.827	80.645%	1265	31.8	0.973
	12.034V	5.073V	3.361V	5.042V	74.186				115.11V
4	4.919A	1.975A	1.960A	0.791A	79.783	83.176%	1326	32.0	0.988
	12.034V	5.073V	3.360V	5.035V	95.921				115.11V

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])	PF/AC Volts
1	1.170A	0.490A	0.470A	0.197A	19.143	63.625%	1326	32.0	0.579
	12.035V	5.070V	3.362V	5.063V	30.087				230.69V
2	2.436A	0.982A	0.976A	0.396A	39.580	76.173%	1296	32.5	0.751
	12.034V	5.073V	3.363V	5.055V	51.961				230.68V
3	3.630A	1.472A	1.453A	0.594A	59.036	81.262%	1326	32.0	0.838
	12.033V	5.076V	3.363V	5.047V	72.649				230.67V
4	4.898A	1.964A	1.959A	0.794A	79.493	83.969%	1420	34.5	0.884
	12.032V	5.078V	3.362V	5.039V	94.670				230.66V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	5.7 mV	5.3 mV	6.0 mV	8.6 mV	Pass
20% Load	6.9 mV	5.7 mV	6.6 mV	9.4 mV	Pass
30% Load	8.3 mV	6.1 mV	7.0 mV	10.3 mV	Pass
40% Load	9.3 mV	6.8 mV	7.7 mV	11.5 mV	Pass
50% Load	10.1 mV	7.7 mV	8.5 mV	12.7 mV	Pass
60% Load	11.9 mV	8.6 mV	9.3 mV	14.4 mV	Pass
70% Load	14.6 mV	9.5 mV	10.2 mV	16.0 mV	Pass
80% Load	19.0 mV	10.8 mV	11.6 mV	18.0 mV	Pass
90% Load	22.5 mV	11.8 mV	12.2 mV	19.4 mV	Pass
100% Load	26.4 mV	12.8 mV	13.3 mV	22.0 mV	Pass
110% Load	29.0 mV	14.0 mV	15.0 mV	24.7 mV	Pass
Crossload 1	8.3 mV	6.6 mV	9.2 mV	19.3 mV	Pass
Crossload 2	26.2 mV	13.2 mV	13.8 mV	17.4 mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	5.6 mV	6.1 mV	6.7 mV	7.8 mV	Pass
20% Load	6.6 mV	6.6 mV	8.0 mV	9.1 mV	Pass
30% Load	8.4 mV	7.7 mV	8.7 mV	10.5 mV	Pass
40% Load	8.9 mV	8.4 mV	9.6 mV	10.9 mV	Pass
50% Load	11.2 mV	8.9 mV	10.8 mV	12.0 mV	Pass
60% Load	13.3 mV	10.9 mV	12.2 mV	13.6 mV	Pass
70% Load	14.7 mV	11.8 mV	13.5 mV	14.7 mV	Pass
80% Load	18.1 mV	12.4 mV	15.8 mV	16.4 mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	21.4 mV	13.2 mV	18.0 mV	17.8 mV	Pass
100% Load	24.4 mV	14.6 mV	19.1 mV	20.6 mV	Pass
110% Load	28.4 mV	15.9 mV	20.0 mV	22.4 mV	Pass
Crossload 1	8.2 mV	9.8 mV	13.1 mV	19.2 mV	Pass
Crossload 2	24.7 mV	13.5 mV	15.4 mV	17.0 mV	Pass

The results above are not used in the certification process

EVGA 600 BQ

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

CYBENETICS LTD Syrou 6, Latsia, 2231, Nicosia Cyprus

www.cybenetics.com - info@cybenetics.com