Bitfenix Whisper 450W

711Q00002

Lab ID 138

Certification ID 25138

Test Result Report ID:

Certificate Issue Date: Jun 7, 2018

Scheme: ETA-EMI PSU

115V



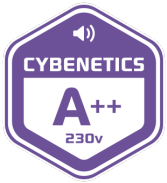
230V



115V



230V



Scheme: LAMBDA PSU



Aristeidis Bitziopoulos, Certification Body General Manager

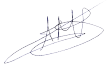
General Information

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	Bitfenix
Model	Whisper 450W
OEM/ODM	Channel Well Technology
Serial Number	711Q00002
Product Specifications	
Manufacturer-Provided Information	
□□□□ (Vrms)	100-240
□□□□ (Arms)	7
□□□□ (Hz)	47-63

□□□□ (W)	450
Operating Temperature (Continuous Full Load) (°C)	
□□	ATX12V
□□□□	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
□□	135mm Hydro Dynamic Bearing Fan (DF1352512SEMN)
□□□□□	✗
Cybenetics Testing Information	
Lab ID	138
Date of receipt	May 27, 2018
Testing Date	Jun 5, 2018
Report Issued Date	Jun 7, 2018
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

□□□□ (Non-accredited measurements)

□□□□			
□□	□□□□	□□□□□	Gauge
ATX □□ 20+4 pin (610mm)	1	1	18AWG
4+4 pin EPS 12V □□ (650mm)	1	1	18AWG
6+2pin PCIe□□ (650mm)	2	2	18AWG
SATA□□ (500mm+150mm+150mm+150mm)	2	8	18AWG
□ 4pin Molex□□ (500mm+150mm+150mm+150mm)	1	4	18AWG

□□□□

□		3.3V	5V	12V	12V	12V	5VSB	-12V
□□□□	□□	20	20	25	25	25	2.5	0.3
	□	100		450			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)	88.669%
Average Noise Output (>1450 Load Combinations)	11.63dBA
PF□□□ (>1450 Load Combinations)	0.979
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
□□□□□□	0.0464W
Non-Accredited	
12V Ripple (Full Load)	26.32mV
5V Ripple (Full Load)	12.17mV
3.3V Ripple (Full Load)	21.16mV
5VSB Ripple (Full Load)	18.65mV
12V Load Regulation	0.65%
5V Load Regulation	1.35%
3.3V Load Regulation	1.22%

5VSB Load Regulation	1.54%
Inrush Current	40.727A

230V

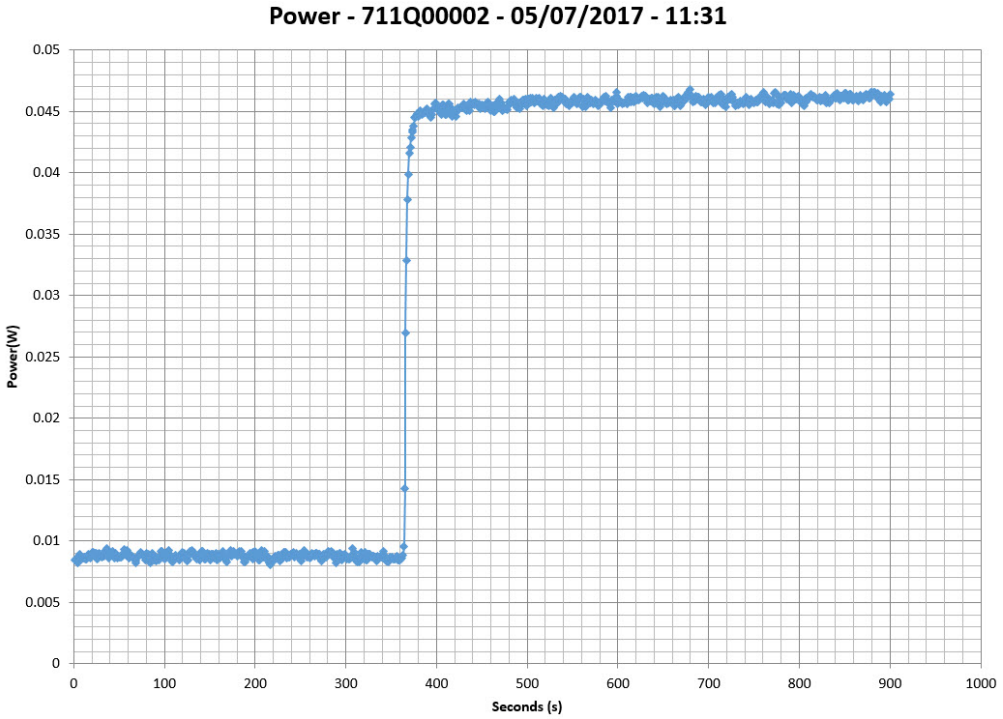
Accredited	
□□□□ (>1450 load combinations)	90.944%
Average Noise Output (>1450 Load Combinations)	11.33dBA
PF□□□ (>1450 Load Combinations)	0.912
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
□□□□□□	0.0713W
Non-Accredited	
12V Ripple (Full Load)	24.57mV
5V Ripple (Full Load)	7.40mV
3.3V Ripple (Full Load)	11.92mV
5VSB Ripple (Full Load)	20.96mV
12V Load Regulation	0.39%
5V Load Regulation	0.26%
3.3V Load Regulation	0.42%
5VSB Load Regulation	1.30%
Inrush Current	51.043A
□□□□ & PG□□	14.00ms
AC Loss to PWR_OK Hold Up Time	13.70ms
PWR_OK Inactive to DC Loss Delay	0.30ms
OPP (0.00°C / 0.00°C)	- -

□□□□ & PG□□

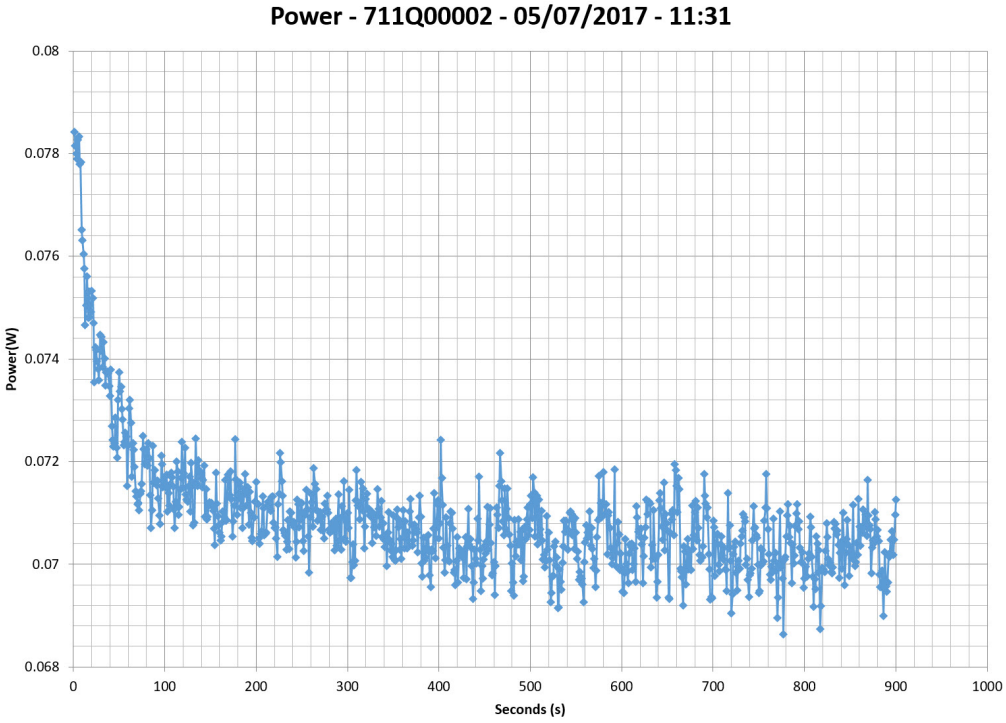
Hold-Up Time (ms)	14
AC Loss to PWR_OK Hold Up Time (ms)	13.7
PWR_OK Inactive to DC Loss Delay (ms)	0.3

Graphs

115V



230V



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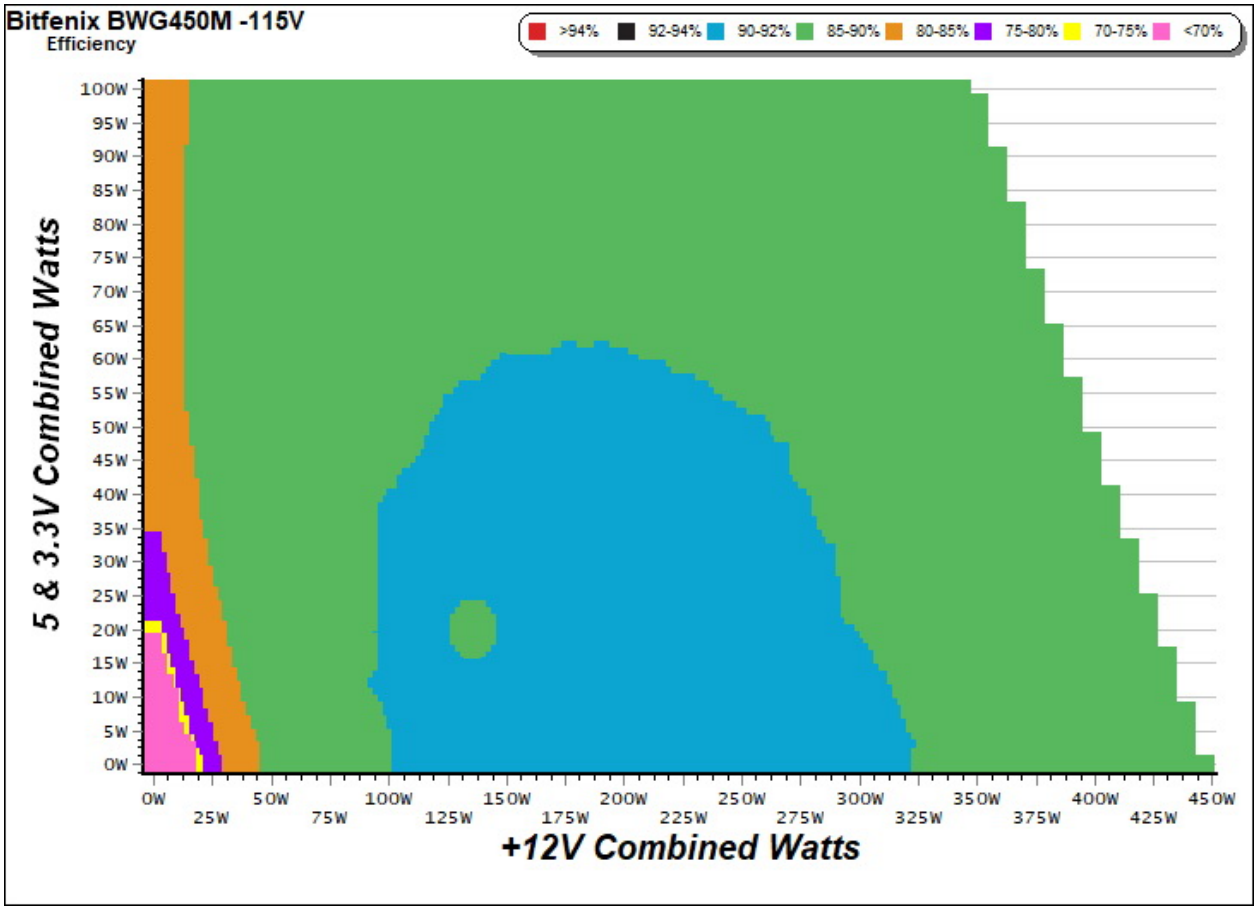
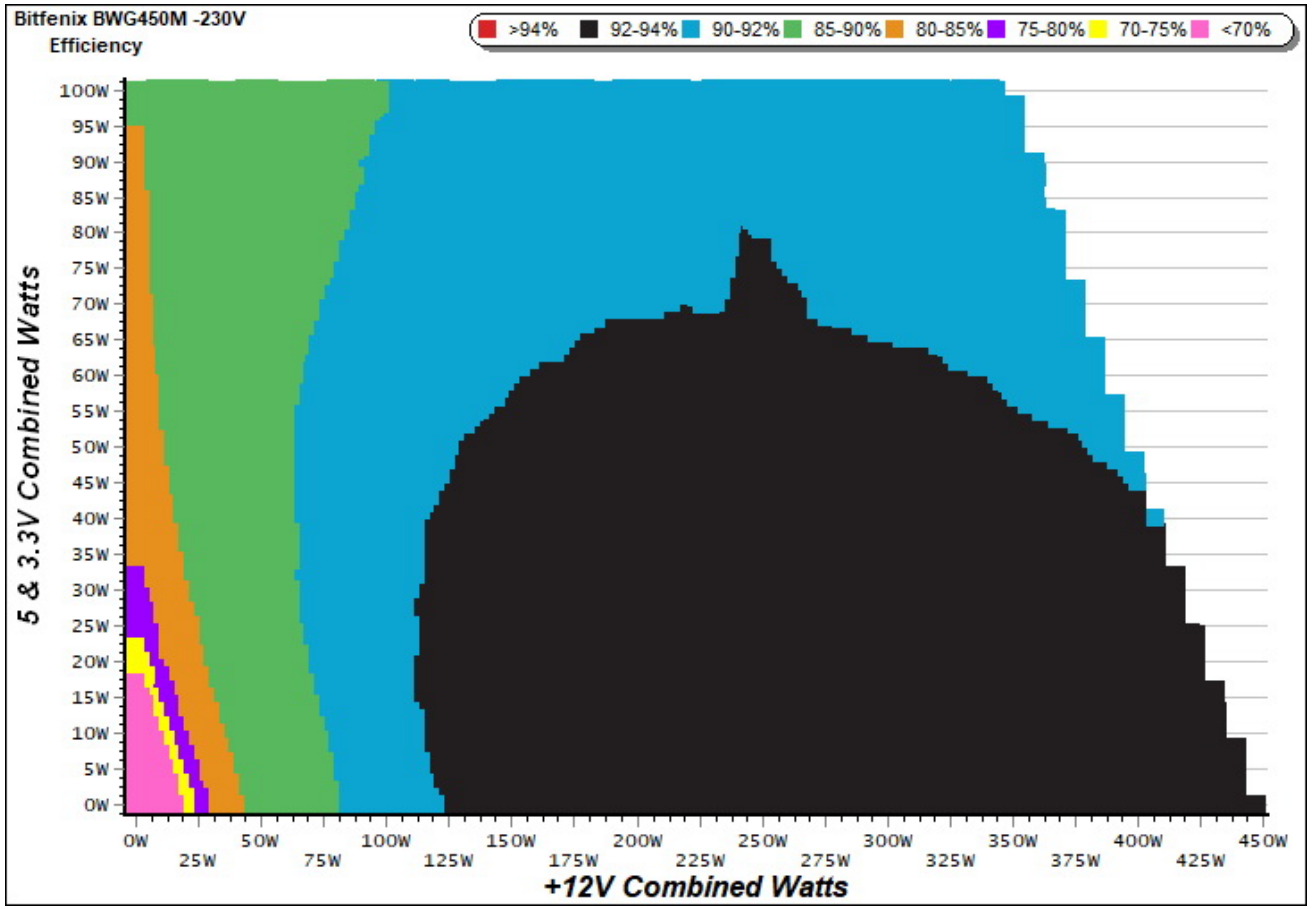
115V



□□

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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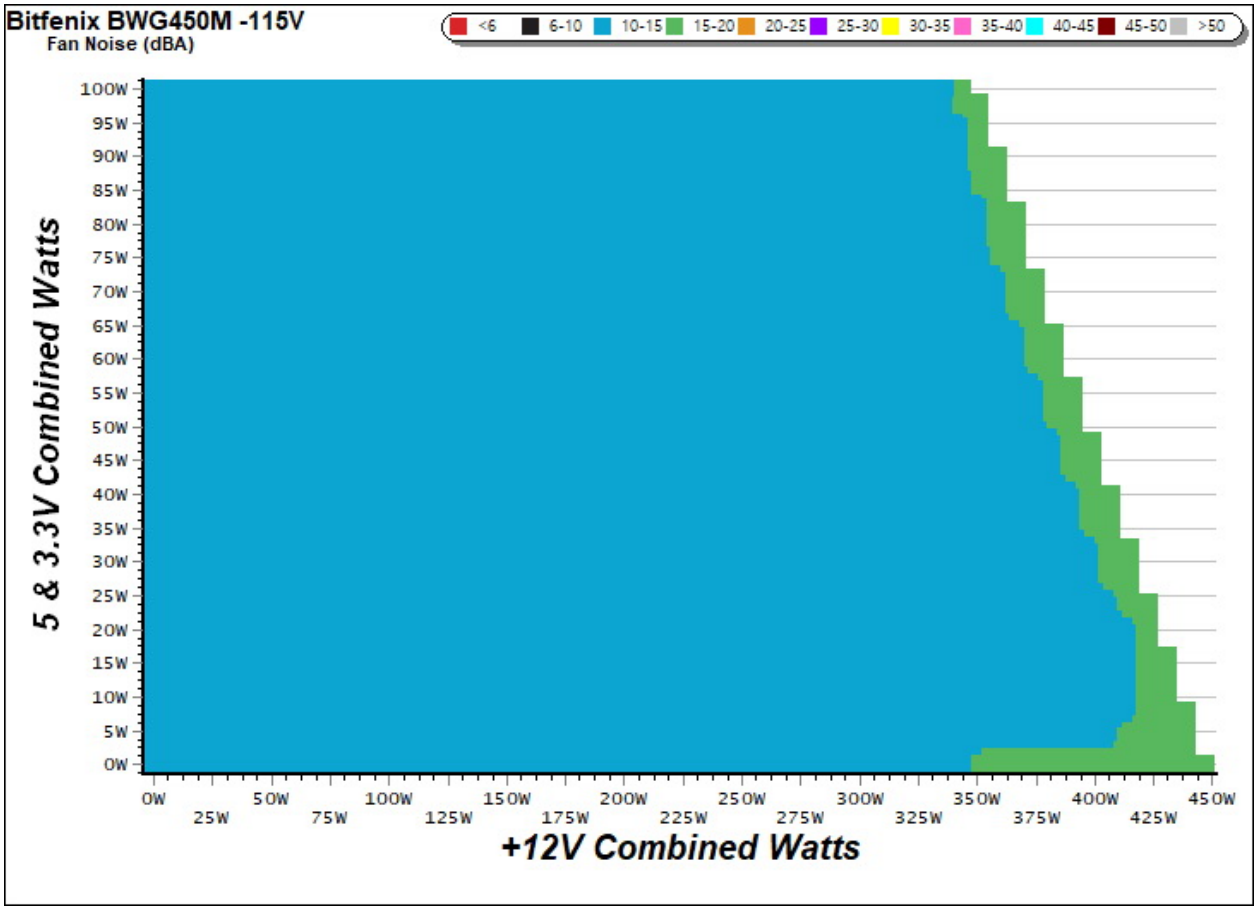
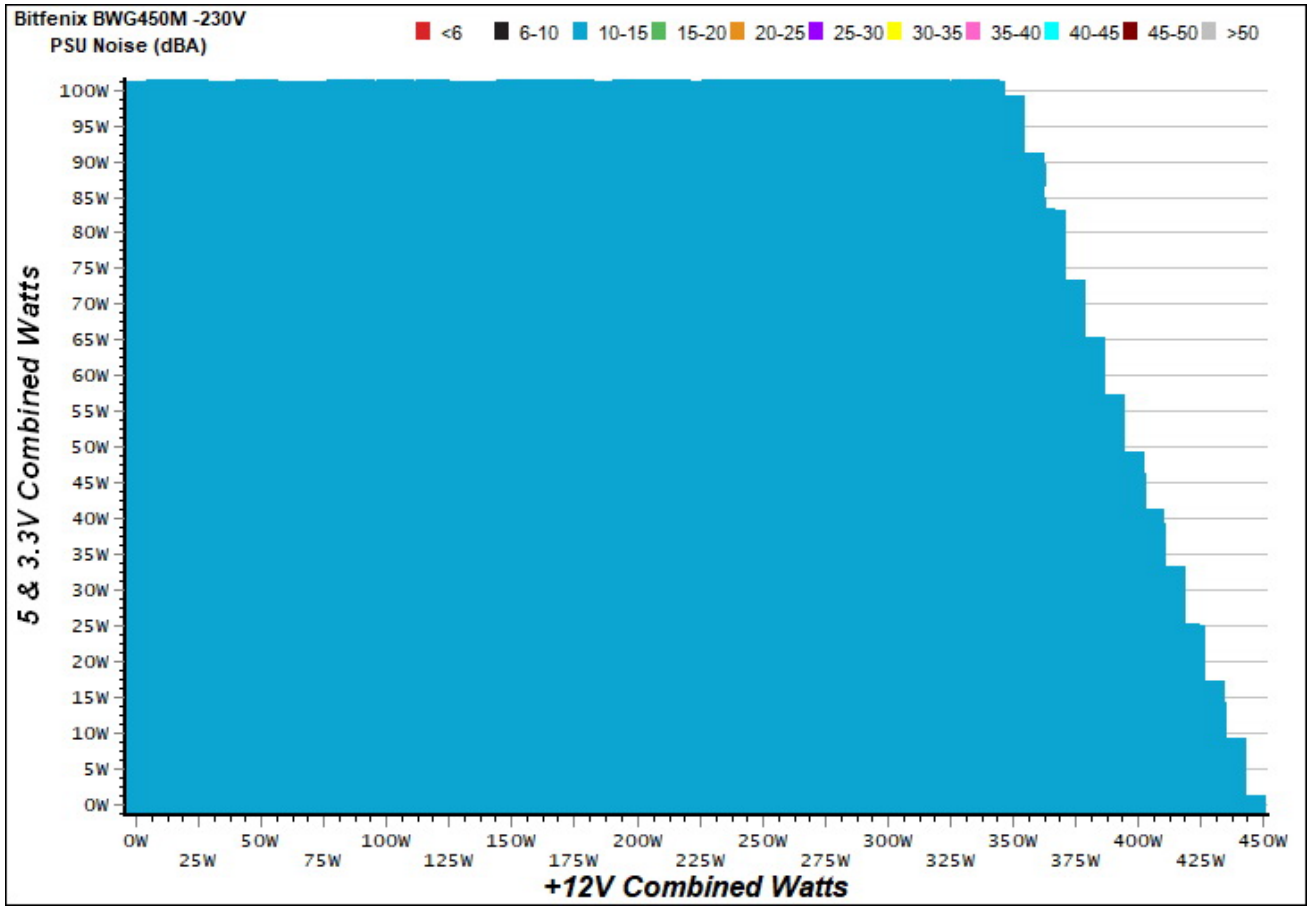
115V



□□

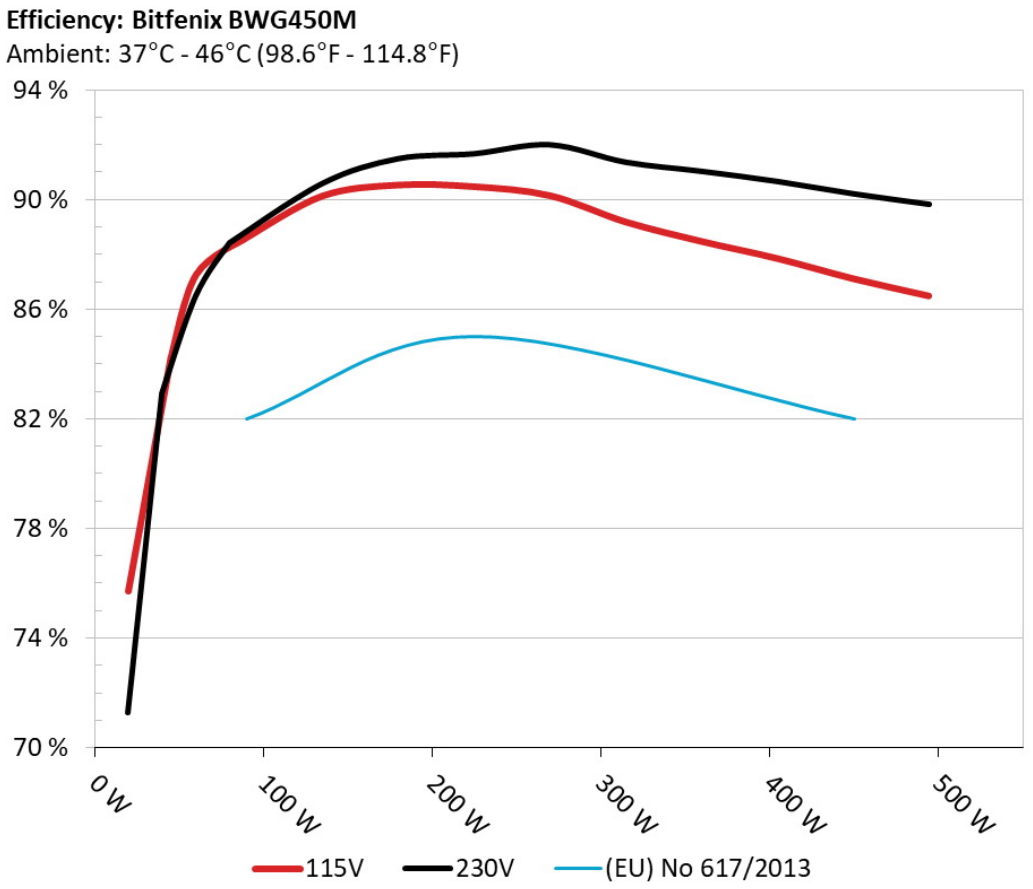
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

230V



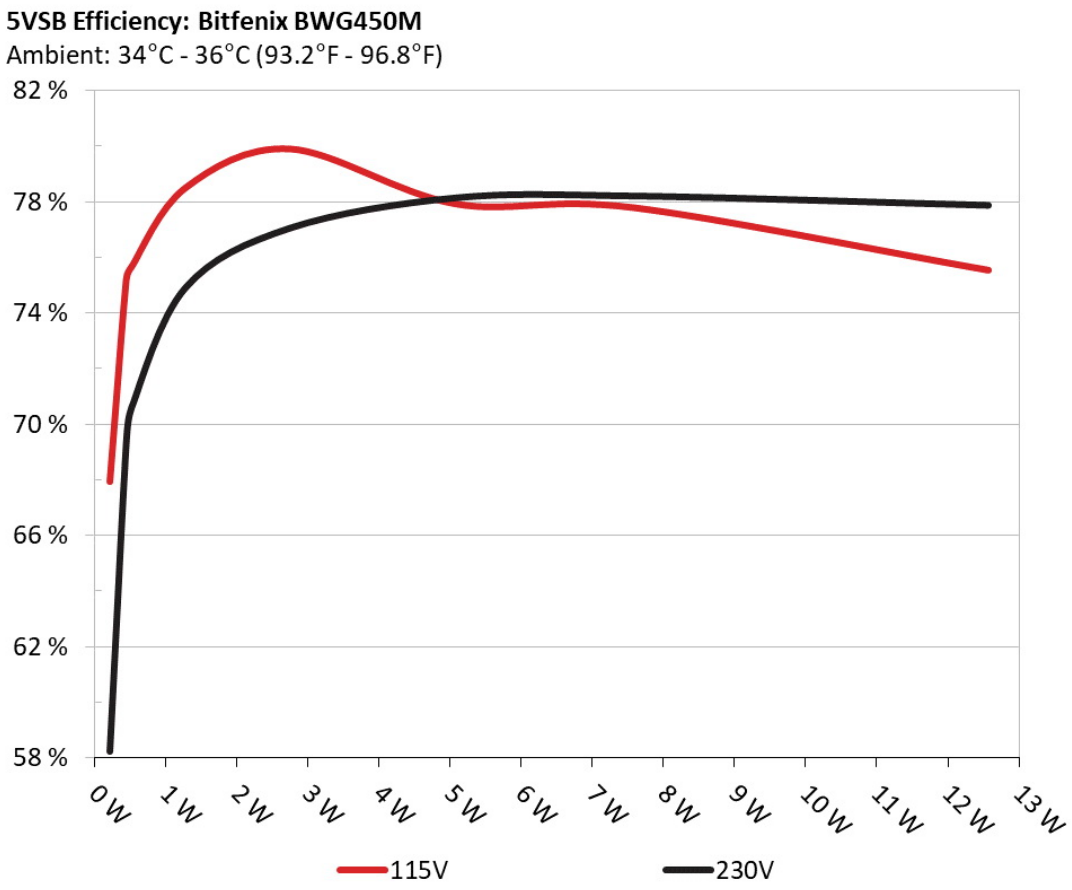
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

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	0.042A	0.212	67.949%	0.031
	5.085V	0.312		115.16V
2	0.087A	0.443	75.212%	0.058
	5.084V	0.589		115.16V
3	0.542A	2.750	79.895%	0.260
	5.073V	3.442		115.14V
4	1.002A	5.073	77.926%	0.360
	5.063V	6.510		115.14V
5	1.502A	7.585	77.787%	0.412
	5.051V	9.751		115.14V
6	2.501A	12.576	75.541%	0.462
	5.028V	16.648		115.14V

230V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.042A	0.212	58.242%	0.011
	5.086V	0.364		230.39V
2	0.087A	0.443	69.327%	0.019
	5.085V	0.639		230.39V
3	0.542A	2.750	77.052%	0.101
	5.074V	3.569		230.38V
4	1.002A	5.074	78.134%	0.169
	5.063V	6.494		230.38V
5	1.502A	7.585	78.204%	0.227
	5.051V	9.699		230.39V
6	2.501A	12.577	77.867%	0.304
	5.028V	16.152		230.39V

Supplementary Tests (For Reference)

10-110%□□□□

115V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	1.920A	1.994A	1.969A	0.986A	44.770	84.034%	470	11.6	38.39°C	0.932
	12.077V	5.019V	3.345V	5.059V	53.276				43.41°C	115.18V
2	4.880A	2.988A	2.961A	1.186A	89.755	88.589%	470	11.6	38.54°C	0.967
	12.069V	5.012V	3.340V	5.053V	101.316				43.97°C	115.17V
3	8.191A	3.499A	3.474A	1.385A	134.896	90.116%	470	11.6	38.83°C	0.976
	12.062V	5.006V	3.336V	5.047V	149.692				44.56°C	115.16V
4	11.496A	4.005A	3.958A	1.585A	179.786	90.512%	470	11.6	39.07°C	0.982
	12.055V	5.000V	3.332V	5.040V	198.632				45.39°C	115.16V
5	14.469A	5.000A	4.955A	1.786A	224.723	90.453%	470	11.6	39.64°C	0.984
	12.046V	4.990V	3.328V	5.033V	248.441				46.63°C	115.16V
6	17.440A	6.018A	5.955A	1.987A	269.711	90.127%	470	11.6	40.46°C	0.985
	12.038V	4.984V	3.323V	5.026V	299.255				47.93°C	115.16V
7	20.419A	7.031A	6.960A	2.190A	314.675	89.167%	470	11.6	41.30°C	0.984
	12.028V	4.977V	3.318V	5.018V	352.906				49.20°C	115.16V
8	23.403A	8.057A	7.964A	2.394A	359.704	88.456%	800	22.4	42.44°C	0.985
	12.019V	4.969V	3.314V	5.010V	406.646				50.79°C	115.16V
9	26.822A	8.566A	8.488A	2.394A	404.755	87.832%	1150	32.3	43.73°C	0.984
	12.011V	4.963V	3.310V	5.007V	460.829				52.53°C	115.16V
10	30.192A	9.078A	8.983A	2.495A	449.563	87.099%	1455	39.2	44.87°C	0.984
	12.003V	4.956V	3.306V	5.002V	516.150				53.87°C	115.16V
11	33.959A	9.082A	8.992A	2.497A	494.540	86.468%	1455	39.2	46.08°C	0.985
	11.996V	4.954V	3.302V	5.000V	571.932				55.13°C	115.16V
CL1	0.100A	12.012A	12.004A	0.004A	101.042	84.670%	470	11.6	44.18°C	0.972
	12.043V	4.978V	3.334V	5.075V	119.336				52.88°C	115.17V

CL2	37.476A	1.003A	1.003A	1.002A	463.923	87.994%	1460	39.3	44.44°C	0.984
	12.022V	4.991V	3.316V	5.045V	527.220				53.34°C	115.17V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	1.924A	1.986A	1.967A	0.986A	44.784	83.046%	470	11.6	40.10°C	0.686
	12.066V	5.030V	3.350V	5.061V	53.927				43.59°C	230.29V
2	4.881A	2.982A	2.953A	1.186A	89.736	88.680%	470	11.6	40.75°C	0.835
	12.059V	5.028V	3.348V	5.055V	101.191				44.76°C	230.30V
3	8.189A	3.489A	3.462A	1.386A	134.880	90.784%	470	11.6	41.08°C	0.891
	12.060V	5.026V	3.347V	5.049V	148.573				45.43°C	230.30V
4	11.491A	3.981A	3.942A	1.585A	179.741	91.714%	470	11.6	41.83°C	0.919
	12.058V	5.025V	3.345V	5.043V	195.980				46.72°C	230.31V
5	14.457A	4.975A	4.931A	1.786A	224.717	91.951%	470	11.6	42.22°C	0.934
	12.052V	5.024V	3.344V	5.037V	244.388				47.85°C	230.32V
6	17.430A	5.974A	5.917A	1.985A	269.725	92.330%	470	11.6	42.69°C	0.945
	12.045V	5.023V	3.344V	5.031V	292.133				48.71°C	230.32V
7	20.405A	6.977A	6.909A	2.185A	314.730	91.544%	780	22.0	43.18°C	0.951
	12.038V	5.021V	3.341V	5.025V	343.803				49.50°C	000.00V
8	23.375A	7.972A	7.903A	2.389A	359.667	91.180%	970	27.3	43.79°C	0.955
	12.033V	5.020V	3.339V	5.018V	394.457				50.53°C	230.34V
9	26.784A	8.475A	8.416A	2.390A	404.771	90.935%	1215	33.9	44.16°C	0.959
	12.028V	5.018V	3.338V	5.018V	445.120				51.69°C	230.34V
10	30.141A	8.978A	8.899A	2.490A	449.628	90.571%	1455	39.2	45.13°C	0.961
	12.024V	5.017V	3.336V	5.013V	496.438				52.89°C	230.33V
11	33.896A	8.979A	8.901A	2.492A	494.610	90.327%	1455	39.2	46.00°C	0.964
	12.019V	5.016V	3.335V	5.012V	547.578				54.87°C	230.31V
CL1	0.101A	12.013A	12.005A	0.005A	101.813	85.103%	470	11.6	42.79°C	0.864
	12.044V	5.027V	3.347V	5.082V	119.635				49.10°C	230.29V

CL2	37.483A	1.003A	1.001A	1.002A	464.663	91.714%	1390	35.2	45.57°C	0.962
	12.038V	5.020V	3.342V	5.051V	506.645				52.63°C	230.29V

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	1.206A	0.492A	0.474A	0.196A	19.633	75.695%	470	11.6	0.821
	12.086V	5.029V	3.350V	5.080V	25.937				115.17V
2	2.441A	0.991A	0.984A	0.391A	39.749	84.193%	470	11.6	0.919
	12.082V	5.024V	3.347V	5.074V	47.212				115.17V
3	3.677A	1.487A	1.494A	0.591A	59.865	87.246%	470	11.6	0.949
	12.077V	5.020V	3.345V	5.069V	68.616				115.17V
4	4.903A	1.994A	1.972A	0.786A	79.771	88.595%	470	11.6	0.962
	12.073V	5.017V	3.343V	5.064V	90.030				115.17V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	PF/AC □□
1	1.210A	0.492A	0.472A	0.196A	19.663	71.214%	470	11.6	0.477
	12.074V	5.031V	3.353V	5.080V	27.611				230.27V
2	2.447A	0.988A	0.984A	0.391A	39.787	83.005%	470	11.6	0.650
	12.070V	5.030V	3.352V	5.075V	47.933				230.27V
3	3.684A	1.487A	1.489A	0.590A	59.913	86.630%	470	11.6	0.753
	12.067V	5.029V	3.350V	5.070V	69.160				230.27V
4	4.907A	1.985A	1.967A	0.786A	79.745	88.484%	470	11.6	0.813
	12.063V	5.029V	3.349V	5.065V	90.124				230.29V

The results above are not used in the certification process

□□□□

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	13.7 mV	8.4 mV	8.1 mV	5.3 mV	Pass
20% Load	20.5 mV	8.1 mV	8.4 mV	5.9 mV	Pass
30% Load	21.3 mV	8.1 mV	9.0 mV	5.8 mV	Pass
40% Load	20.9 mV	8.6 mV	9.2 mV	7.1 mV	Pass
50% Load	20.7 mV	8.8 mV	9.3 mV	7.3 mV	Pass
60% Load	21.0 mV	8.9 mV	11.4 mV	10.4 mV	Pass
70% Load	22.0 mV	9.7 mV	14.8 mV	10.4 mV	Pass
80% Load	23.5 mV	16.0 mV	17.8 mV	19.8 mV	Pass
90% Load	24.6 mV	10.9 mV	19.0 mV	21.4 mV	Pass
100% Load	26.3 mV	12.2 mV	21.2 mV	18.7 mV	Pass
110% Load	26.2 mV	12.2 mV	20.8 mV	20.7 mV	Pass
Crossload 1	23.8 mV	12.4 mV	10.1 mV	5.6 mV	Pass
Crossload 2	25.0 mV	11.7 mV	18.7 mV	13.9 mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	4.7 mV	5.6 mV	7.6 mV	6.7 mV	Pass
20% Load	4.6 mV	5.6 mV	7.9 mV	6.3 mV	Pass
30% Load	47.2 mV	6.4 mV	8.0 mV	7.8 mV	Pass
40% Load	28.8 mV	6.3 mV	8.5 mV	7.8 mV	Pass
50% Load	24.5 mV	6.0 mV	8.2 mV	8.7 mV	Pass
60% Load	19.7 mV	6.1 mV	8.5 mV	11.4 mV	Pass
70% Load	21.0 mV	6.0 mV	8.3 mV	11.2 mV	Pass
80% Load	22.4 mV	15.4 mV	12.8 mV	20.4 mV	Pass





Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	22.7 mV	10.7 mV	9.9 mV	21.4 mV	Pass
100% Load	24.6 mV	7.4 mV	11.9 mV	21.0 mV	Pass
110% Load	24.5 mV	7.6 mV	12.6 mV	21.7 mV	Pass
Crossload 1	5.8 mV	6.4 mV	11.6 mV	5.5 mV	Pass
Crossload 2	23.8 mV	7.5 mV	10.3 mV	11.8 mV	Pass

The results above are not used in the certification process

Bitfenix Whisper 450W

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

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