Bitfenix Whisper 750W (#2)

Serial Number 713Q00321

Lab ID 205

Certification ID 25205

Test Result Report ID:

Certificate Issue Date: Oct 30, 2018

115V

Scheme: ETA-EMI PSU



115V



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 750W (#2)
OEM/ODM	Channel Well Technology
Serial Number	713Q00321
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10
Rated Frequency (Hz)	47-63

Rated Power (W)	750
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	135mm Hydro Dynamic Bearing Fan (DF1352512SEHN)
Semi-Passive Operation	✗
Cybenetics Testing Information	
Lab ID	205
Date of receipt	Oct 17, 2018
Testing Date	Oct 27, 2018
Report Issued Date	Oct 30, 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 (610mm)	1	1	18AWG
4+4 pin EPS12V (650mm)	2	2	18AWG
6+2 pin PCIe (650mm+150mm)	2	4	18AWG
6+2 pin PCIe (650mm)	2	2	18AWG
SATA (500mm+150mm+150mm+150mm)	3	12	18AWG
4 pin Molex (500mm+150mm+150mm+150mm)	1	3	18AWG

Power Specifications

Rail		3.3V	5V	12V	12V	12V	12V	5VSB	-12V
Max. Power	Amps	22	22	25	25	35	35	2.5	0.5
	Watts	120		750				12.5	6
Total Max. Power (W)		750							

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

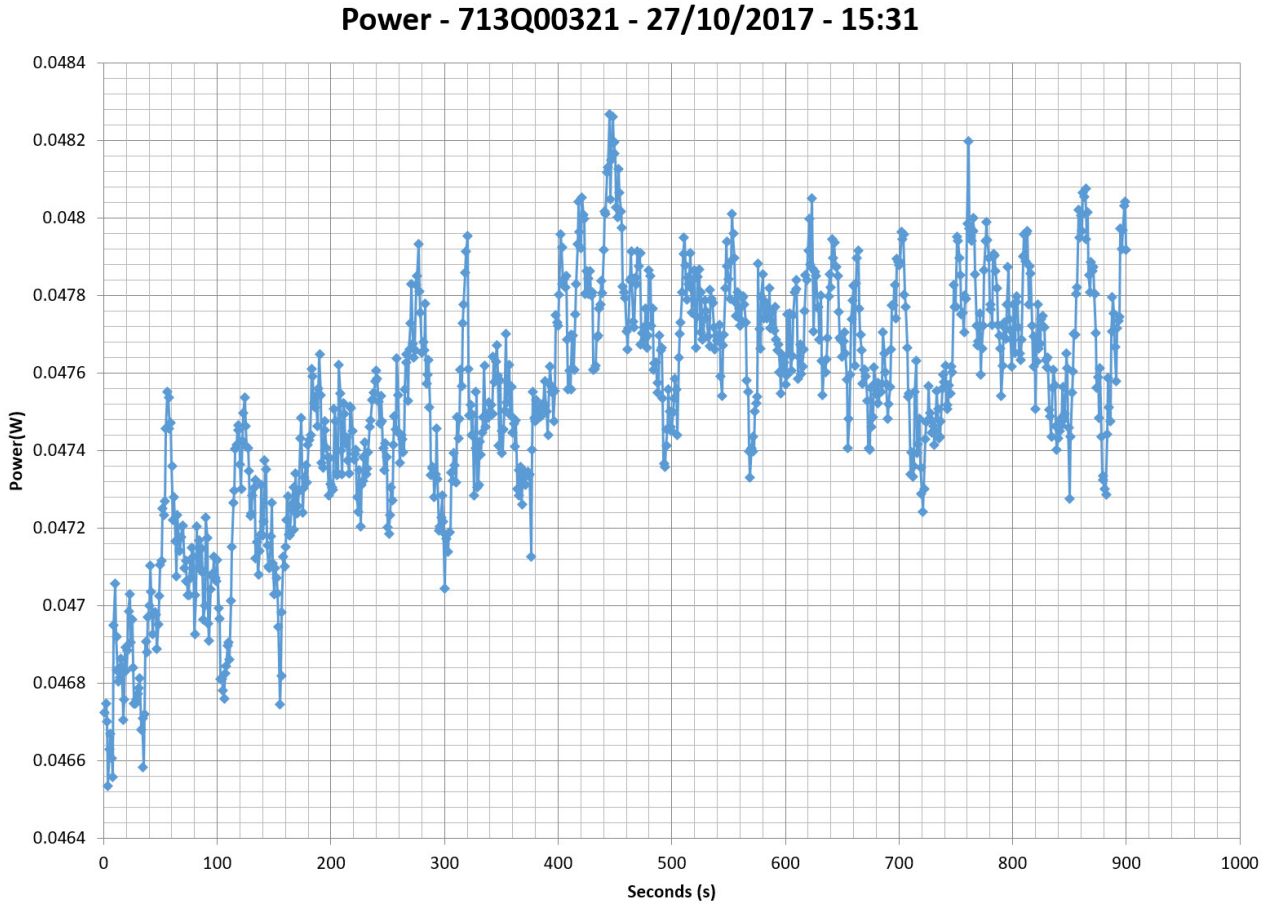
Accredited	
Average Efficiency (>1450 load combinations)	89.296%
Average Noise Output (>1450 Load Combinations)	28.61dBA
Average PF (>1450 Load Combinations)	0.980
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
Standby Power Consumption	0.0479W
Non-Accredited	
12V Ripple (Full Load)	14.77mV
5V Ripple (Full Load)	9.56mV
3.3V Ripple (Full Load)	6.60mV
5VSB Ripple (Full Load)	22.13mV
12V Load Regulation	0.58%
5V Load Regulation	0.34%
3.3V Load Regulation	0.51%
5VSB Load Regulation	1.34%
Inrush Current	43.395A

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	16.5
AC Loss to PWR_OK Hold Up Time (ms)	14.1
PWR_OK Inactive to DC Loss Delay (ms)	2.4

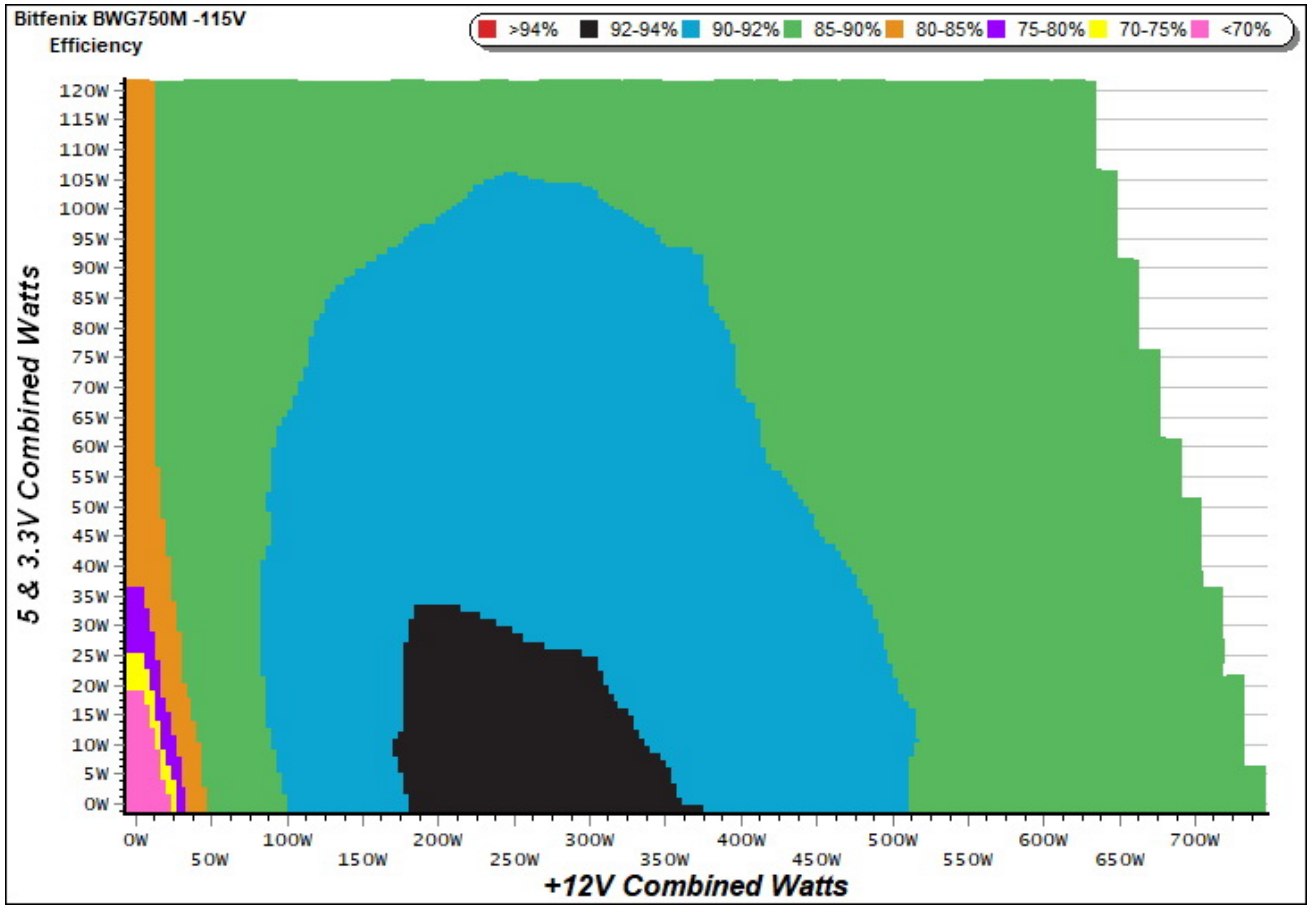
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Graphs 115V



Efficiency Graph

115V

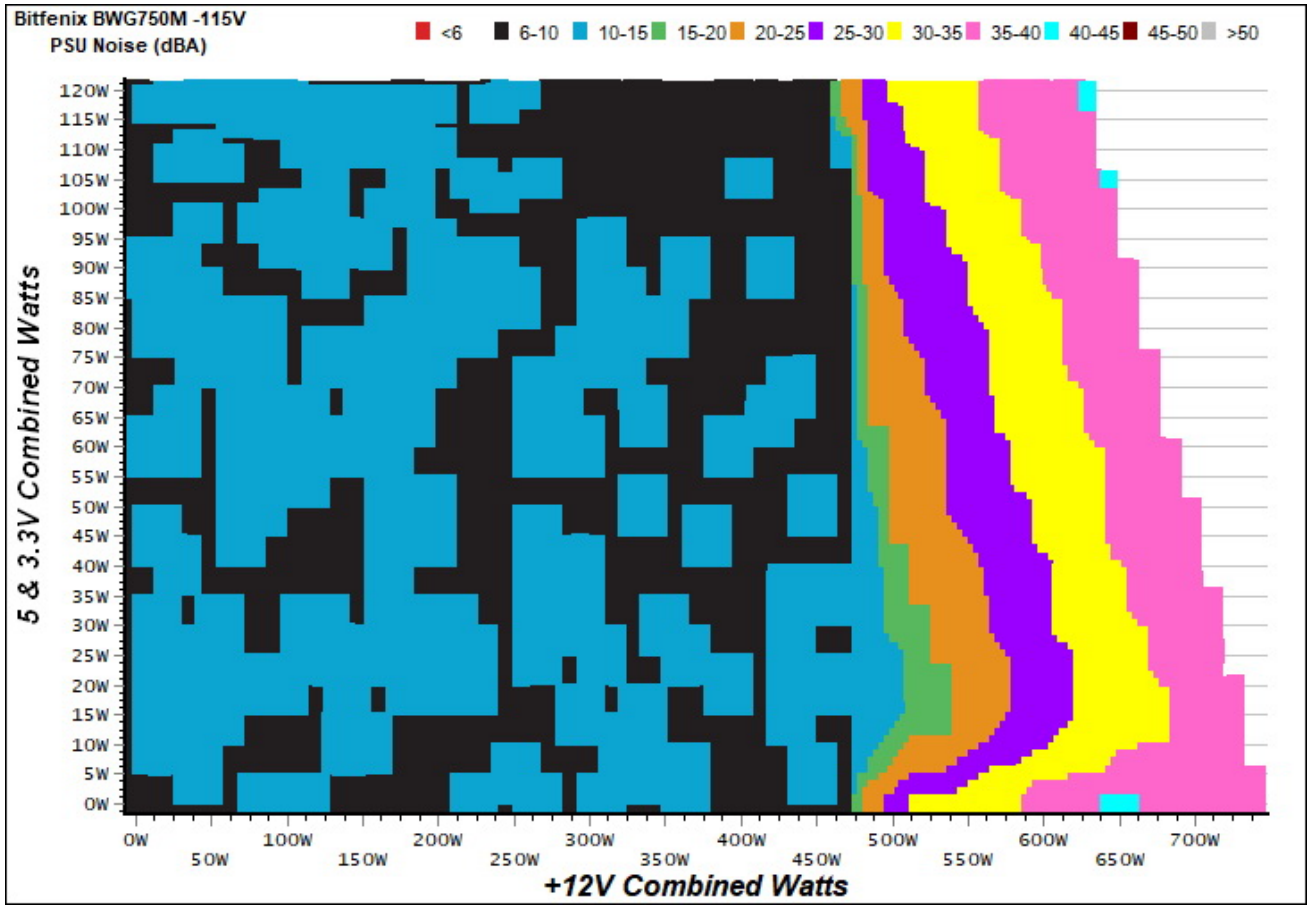


INFO

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

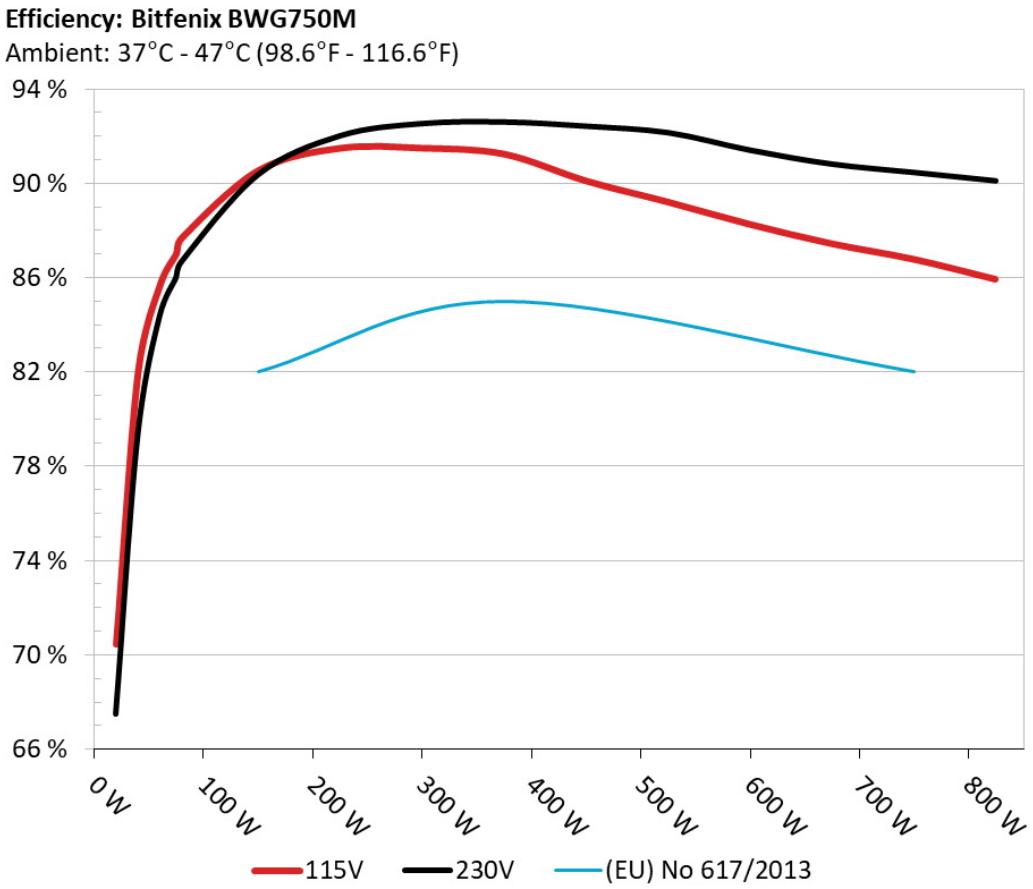


INFO

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

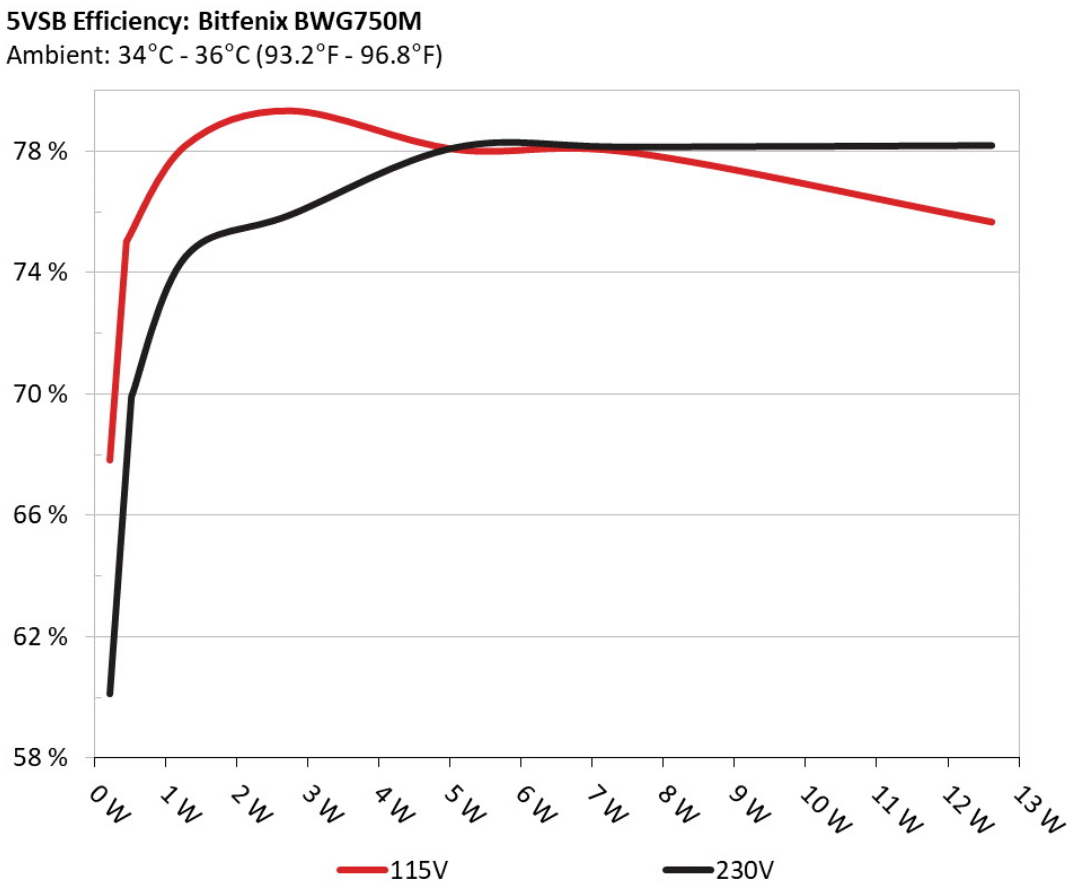
Efficiency under high ambient temperature



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	0.042A	0.213	67.834%	0.032
	5.098V	0.314		115.11V

2	0.087A	0.445	74.916%	0.059
	5.097V	0.594		115.11V
3	0.542A	2.757	79.338%	0.263
	5.086V	3.475		115.12V
4	1.002A	5.086	78.066%	0.361
	5.076V	6.515		115.12V
5	1.502A	7.607	77.949%	0.413
	5.065V	9.759		115.12V
6	2.501A	12.615	75.679%	0.463
	5.043V	16.669		115.11V

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	4.391A	1.974A	1.968A	0.985A	74.810	87.021%	455	10.9	37.85°C	0.961
	12.123V	5.063V	3.346V	5.075V	85.968				44.18°C	115.08V
2	9.816A	2.960A	2.957A	1.181A	149.789	90.542%	455	10.9	38.27°C	0.977
	12.116V	5.062V	3.344V	5.069V	165.436				46.47°C	115.08V
3	15.594A	3.457A	3.469A	1.381A	224.893	91.490%	470	11.5	38.42°C	0.983
	12.108V	5.060V	3.343V	5.063V	245.811				50.06°C	115.08V
4	21.369A	3.952A	3.951A	1.580A	299.784	91.494%	455	10.9	39.31°C	0.983
	12.102V	5.058V	3.340V	5.057V	327.655				54.67°C	115.08V
5	26.808A	4.949A	4.939A	1.780A	374.749	91.243%	455	10.9	40.43°C	0.983
	12.095V	5.057V	3.339V	5.050V	410.715				56.51°C	115.08V
6	32.254A	5.932A	5.930A	1.981A	449.626	90.107%	627	16.1	41.32°C	0.982
	12.087V	5.055V	3.338V	5.044V	498.990				58.11°C	115.07V
7	37.713A	6.928A	6.924A	2.180A	524.616	89.214%	1165	33.0	42.33°C	0.983
	12.079V	5.053V	3.335V	5.038V	588.042				59.31°C	115.07V
8	43.174A	7.915A	7.919A	2.384A	599.572	88.269%	1603	41.1	42.92°C	0.984
	12.072V	5.052V	3.333V	5.031V	679.256				60.31°C	115.07V

9	49.068A	8.422A	8.434A	2.385A	674.636	87.446%	1800	44.4	44.11°C	0.986
	12.065V	5.050V	3.332V	5.030V	771.493				61.58°C	115.06V
10	54.933A	8.919A	8.917A	2.485A	749.531	86.788%	1800	44.4	45.37°C	0.987
	12.057V	5.048V	3.330V	5.025V	863.634				63.26°C	115.06V
11	61.177A	8.919A	8.922A	2.485A	824.383	85.942%	1800	44.4	47.36°C	0.989
	12.050V	5.047V	3.329V	5.024V	959.237				65.79°C	115.07V
CL1	0.100A	14.026A	14.005A	0.004A	118.993	84.604%	570	13.6	44.29°C	0.975
	12.103V	5.059V	3.342V	5.098V	140.647				58.95°C	115.10V
CL2	62.455A	1.003A	1.003A	1.002A	767.002	87.235%	1800	44.4	45.63°C	0.987
	12.065V	5.052V	3.334V	5.061V	879.237				60.97°C	115.08V

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	1.208A	0.491A	0.476A	0.196A	19.720	70.471%	455	10.9	0.863
	12.119V	5.066V	3.349V	5.093V	27.983				115.08V
2	2.434A	0.979A	0.983A	0.391A	39.756	82.000%	455	10.9	0.927
	12.127V	5.065V	3.347V	5.089V	48.483				115.08V
3	3.667A	1.476A	1.492A	0.590A	59.926	85.705%	455	10.9	0.953
	12.124V	5.064V	3.347V	5.083V	69.921				115.08V
4	4.885A	1.974A	1.968A	0.786A	79.785	87.689%	470	11.5	0.966
	12.122V	5.063V	3.345V	5.079V	90.986				115.08V

The results above are not used in the certification process

Ripple Measurements 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	10.8 mV	5.6 mV	3.5 mV	4.5 mV	Pass
20% Load	14.1 mV	5.7 mV	3.7 mV	6.0 mV	Pass
30% Load	13.5 mV	5.9 mV	3.7 mV	6.0 mV	Pass
40% Load	13.3 mV	6.7 mV	4.2 mV	7.8 mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
50% Load	14.3 mV	6.6 mV	4.5 mV	9.0 mV	Pass
60% Load	14.7 mV	6.6 mV	4.3 mV	11.6 mV	Pass
70% Load	15.5 mV	6.8 mV	4.6 mV	18.1 mV	Pass
80% Load	15.0 mV	12.2 mV	6.0 mV	21.8 mV	Pass
90% Load	15.4 mV	22.4 mV	17.3 mV	23.7 mV	Pass
100% Load	14.8 mV	9.6 mV	6.6 mV	22.1 mV	Pass
110% Load	15.1 mV	9.1 mV	6.3 mV	17.0 mV	Pass
Crossload 1	14.4 mV	7.1 mV	4.8 mV	3.1 mV	Pass
Crossload 2	13.8 mV	8.5 mV	6.5 mV	17.0 mV	Pass

The results above are not used in the certification process

Bitfenix Whisper 750W (#2)



Top side



Power specifications label