

Anex

Bitfenix BWG650M

Lab ID#: 136

Receipt Date: -

Test Date: -

Report:

Report Date: Mar 7, 2018

DUT INFORMATION

Brand	Bitfenix
Manufacturer (OEM)	Channel Well Technology
Series	Whisper
Model Number	BWG650M
Serial Number	709Q00001
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10
Rated Frequency (Hz)	47-63
Rated Power (W)	650
Type	ATX12V
Cooling	135mm Hydro Dynamic Bearing Fan (DF1352512SEHN)
Semi-Passive Operation	X
Cable Design	Fully Modular

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	12V	12V	12V	5VSB	-12V
Max. Power	Amps	20	20	25	25	30	30	2.5	0.3
	Watts	100		650				12.5	3.6
Total Max. Power (W)		650							

CABLES AND CONNECTORS

Modular Cables			
Description	Cable Count	Connector Count (Total)	Gauge
ATX connector 20+4 pin (610mm)	1	1	18AWG
4+4 pin EPS12V (650mm)	1	1	18AWG
6+2 pin PCIe (650mm+150mm)	2	4	18AWG
SATA (500mm+150mm+150mm+150mm)	2	8	18AWG
4 pin Molex (500mm+150mm+150mm+150mm)	1	4	18AWG

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RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	88.637
Efficiency With 10W ($\leq 500W$) or 2% ($> 500W$) Load -115V	0.000
Average Efficiency 5VSB	77.936
Standby Power Consumption (W) -115V	0.0460871
Standby Power Consumption (W) -230V	0.0682911
Average PF	0.982
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	31.12
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard++

TEST EQUIPMENT

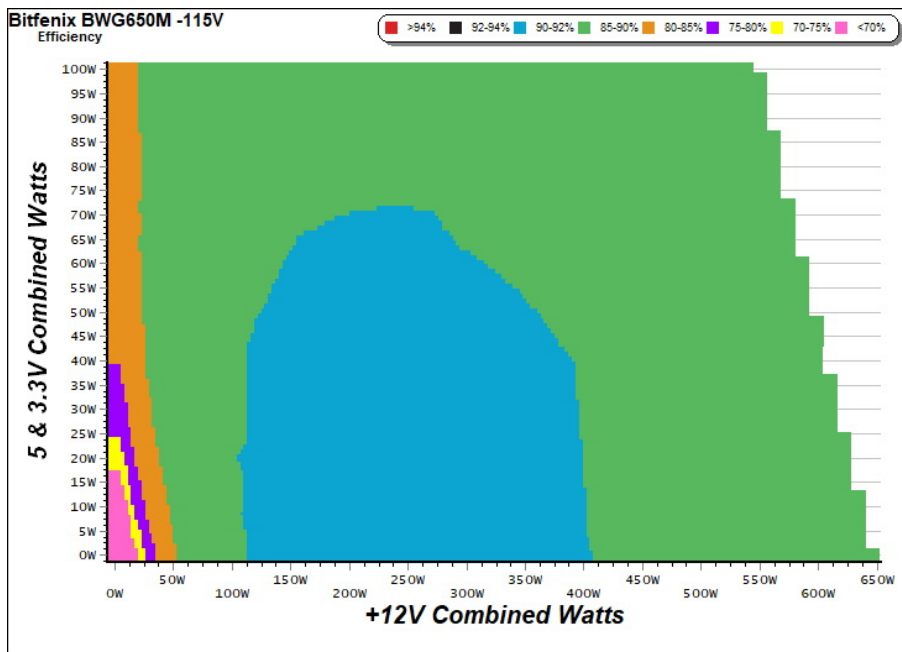
Electronic Loads	Chroma 6314A x2 63123A x6 63102A 63101A	Chroma 63601-5 x2 Chroma 63600-2 63640-80-80 x10 63610-80-20
AC Sources	Chroma 6530, Chroma 61604	
Power Analyzers	N4L PPA1530, N4L PPA5530	
Oscilloscopes	Picoscope 4444 & 3424, Keysight DSOX3024A, Rigol DS2072A	
Voltmeter	Keithley 2015 THD 6.5 Digit	
Sound Analyzer	Bruel & Kjaer 2250-L G4	
Microphone	Bruel & Kjaer Type 4955-A, Bruel & Kjaer Type 4189	
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2	

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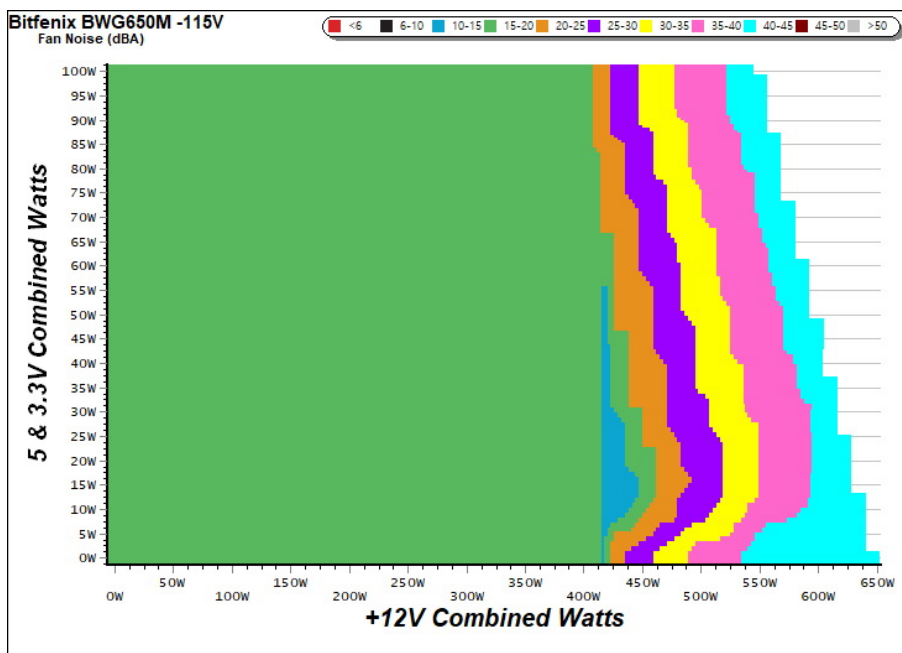
EFFICIENCY GRAPH



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



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

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5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

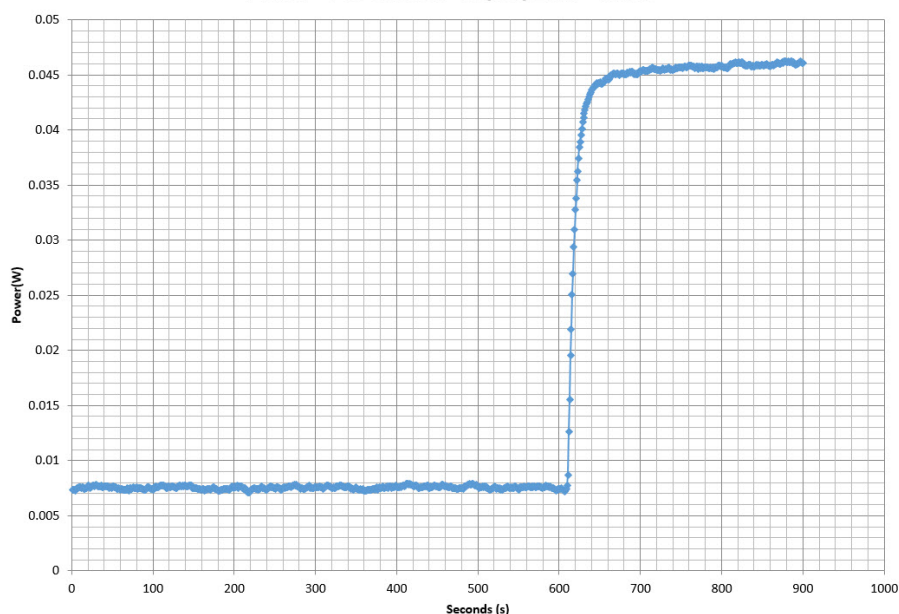
Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.041A	0.210	66.879%	0.031
	5.101V	0.314		115.23V
2	0.087A	0.442	75.042%	0.058
	5.101V	0.589		115.23V
3	0.542A	2.757	80.076%	0.258
	5.090V	3.443		115.22V
4	1.002A	5.087	77.819%	0.357
	5.079V	6.537		115.22V
5	1.501A	7.608	77.625%	0.407
	5.068V	9.801		115.22V
6	2.501A	12.613	75.288%	0.458
	5.044V	16.753		115.22V

5VSB EFFICIENCY -230V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.041A	0.210	58.824%	0.011
	5.101V	0.357		230.51V
2	0.087A	0.442	69.279%	0.019
	5.101V	0.638		230.51V
3	0.541A	2.756	77.372%	0.101
	5.090V	3.562		230.51V
4	1.002A	5.087	77.890%	0.170
	5.079V	6.531		230.51V
5	1.501A	7.606	77.954%	0.228
	5.067V	9.757		230.51V
6	2.501A	12.615	77.631%	0.305
	5.044V	16.250		230.51V

VAMPIRE POWER -115V

Power - 709Q00001 - 03/07/2017 - 11:53



INFO

This graph is generated by the PPA Standby Power Analysis software which takes full control of the power analyzer during the whole procedure. This application features all of the EN50564 & IEC62301 test limits for standby power software testing

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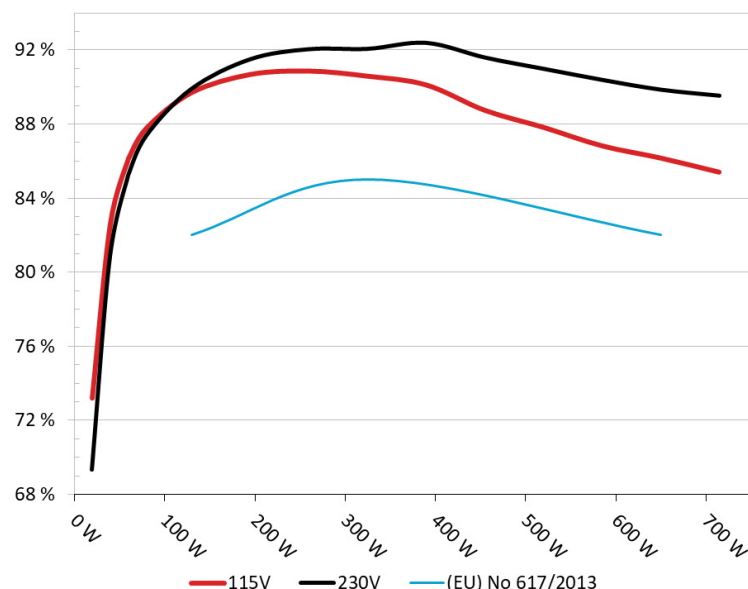
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Bitfenix BWG650M

Ambient: 37°C - 46°C (98.6°F - 114.8°F)



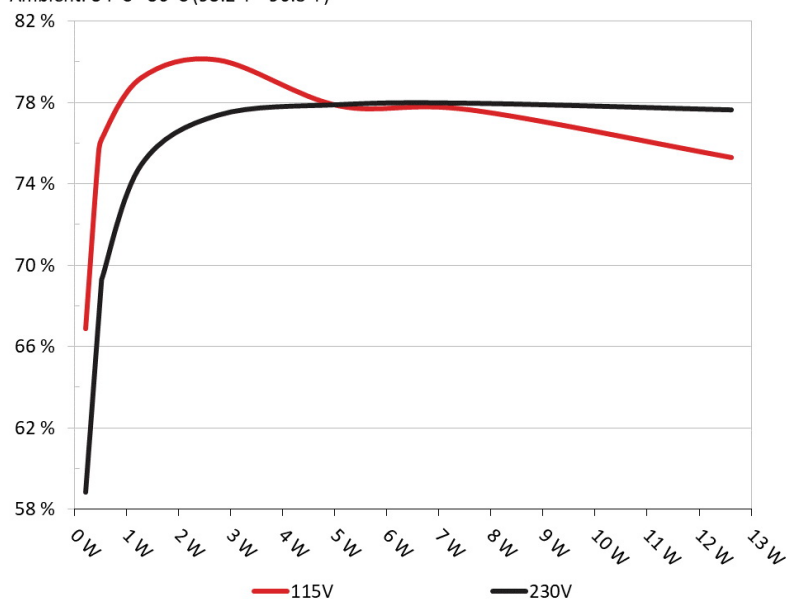
INFO

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

5VSB Efficiency: Bitfenix BWG650M

Ambient: 34°C - 36°C (93.2°F - 96.8°F)



INFO

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

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10-110% LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	Fan Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	3.582A	1.997A	1.987A	0.980A	64.750	86.146%	455	10.9	38.53°C	0.958
	12.055V	5.009V	3.317V	5.077V	75.163				42.03°C	115.23V
2	8.209A	2.993A	2.986A	1.180A	129.721	89.701%	455	10.9	38.84°C	0.978
	12.045V	5.002V	3.312V	5.070V	144.615				43.20°C	115.23V
3	13.186A	3.511A	3.503A	1.380A	194.835	90.682%	435	9.9	39.16°C	0.984
	12.037V	4.996V	3.307V	5.065V	214.856				44.09°C	115.22V
4	18.167A	4.010A	3.992A	1.580A	259.692	90.865%	455	10.9	39.69°C	0.986
	12.028V	4.989V	3.302V	5.058V	285.800				45.30°C	115.22V
5	22.815A	5.012A	5.002A	1.780A	324.643	90.590%	435	9.9	40.27°C	0.987
	12.018V	4.983V	3.296V	5.051V	358.364				45.92°C	115.22V
6	27.459A	6.034A	6.012A	1.980A	389.602	90.116%	435	9.9	40.86°C	0.986
	12.011V	4.975V	3.291V	5.044V	432.334				47.51°C	115.22V
7	32.111A	7.043A	7.027A	2.180A	454.496	88.747%	895	25.4	41.96°C	0.985
	12.003V	4.969V	3.286V	5.037V	512.124				49.24°C	115.21V
8	36.789A	8.069A	8.048A	2.384A	519.526	87.828%	1415	38.2	42.92°C	0.986
	11.990V	4.962V	3.280V	5.029V	591.528				50.98°C	115.22V
9	41.881A	8.578A	8.579A	2.385A	584.544	86.827%	1795	44.4	43.59°C	0.987
	11.985V	4.956V	3.275V	5.028V	673.228				53.09°C	115.22V
10	46.957A	9.092A	9.082A	2.485A	649.363	86.168%	1795	44.4	44.61°C	0.988
	11.972V	4.951V	3.270V	5.023V	753.603				54.78°C	115.21V
11	52.391A	9.097A	9.087A	2.487A	714.295	85.406%	1795	44.4	46.12°C	0.989
	11.970V	4.947V	3.267V	5.020V	836.353				57.61°C	115.22V
CL1	0.095A	12.014A	12.005A	0.004A	100.466	84.532%	555	13.1	44.96°C	0.975
	12.042V	4.973V	3.295V	5.096V	118.849				57.68°C	115.23V
CL2	54.094A	1.005A	1.003A	1.001A	662.011	86.828%	1800	44.4	45.29°C	0.988
	11.991V	4.978V	3.290V	5.062V	762.439				55.83°C	115.21V

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20-80W LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	Fan Noise (dB[A])	PF/AC Volts
1	1.208A	0.494A	0.479A	0.195A	19.633	73.200%	435	9.9	0.825
	12.061V	5.017V	3.323V	5.096V	26.821				115.23V
2	2.445A	0.991A	0.990A	0.390A	39.721	82.620%	435	9.9	0.922
	12.057V	5.013V	3.321V	5.092V	48.077				115.23V
3	3.681A	1.489A	1.504A	0.585A	59.803	86.123%	455	10.9	0.951
	12.055V	5.010V	3.319V	5.087V	69.439				115.23V
4	4.909A	1.995A	1.987A	0.785A	79.736	87.778%	435	9.9	0.965
	12.053V	5.008V	3.316V	5.081V	90.838				115.23V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	12.7 mV	7.9 mV	12.7 mV	9.6 mV	Pass
20% Load	17.9 mV	8.1 mV	17.1 mV	6.8 mV	Pass
30% Load	16.3 mV	8.4 mV	13.5 mV	6.1 mV	Pass
40% Load	16.1 mV	9.0 mV	15.6 mV	7.4 mV	Pass
50% Load	16.7 mV	9.2 mV	17.5 mV	8.2 mV	Pass
60% Load	18.0 mV	11.1 mV	18.1 mV	13.9 mV	Pass
70% Load	17.7 mV	10.1 mV	21.9 mV	17.3 mV	Pass
80% Load	18.9 mV	12.0 mV	23.4 mV	18.8 mV	Pass
90% Load	19.5 mV	11.7 mV	27.2 mV	23.0 mV	Pass
100% Load	19.0 mV	13.4 mV	27.3 mV	19.7 mV	Pass
110% Load	19.7 mV	13.6 mV	31.8 mV	22.0 mV	Pass
Crossload 1	18.1 mV	11.6 mV	10.8 mV	6.5 mV	Pass
Crossload 2	17.9 mV	13.0 mV	27.9 mV	17.3 mV	Pass

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HOLD-UP TIME & POWER OK SIGNAL (230V)

Hold-Up Time (ms)	14.96
AC Loss to PWR_OK Hold Up Time (ms)	13.72
PWR_OK Inactive to DC Loss Delay (ms)	1.24



Top side



Power specifications label

CERTIFICATIONS



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