Anex

Enermax Revolution Xt II 750W

Lab ID#: 370
Receipt Date: Jul 26, 2018
Test Date: Aug 2, 2018

Report:
Report Date: Aug 5, 2018

DUT INFORMATION

Brand	Enermax
Manufacturer (OEM)	Channel Well Technology (Enermax design)
Series	Revolution Xt II
Model Number	ERX750AWT
Serial Number	
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	47-63
Rated Power (W)	750
Type	ATX12V
Cooling	139mm Twister Bearing Fan (ED142512M-OA)
Semi-Passive Operation	✗
Cable Design	Semi Modular

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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RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

115V

Average Efficiency	88.989%
Efficiency With 10W (≤500W) or 2% (>500W)	0.000
Average Efficiency 5VSB	75.890%
Standby Power Consumption (W)	0.0974448
Average PF	0.987
Avg Noise Output	21.27 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	A

230V

Average Efficiency	90.438%
Average Efficiency 5VSB	75.474%
Standby Power Consumption (W)	0.1147180
Average PF	0.953
Avg Noise Output	21.46 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	A

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	22	22	62	2.5	0.3
	Watts	120		744	12.5	3.6
Total Max. Power (W)		750				

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

Hold-Up Time (ms)	11.8
AC Loss to PWR_OK Hold Up Time (ms)	12.1
PWR_OK Inactive to DC Loss Delay (ms)	-0.3

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CABLES AND CONNECTORS

Captive Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (580mm)	1	1	18AWG	No
4+4 pin EPS12V (610mm)	1	1	18AWG	No
Modular Cables				
2 x 6+2 pin PCIe (500mm)	2	4	18AWG	No
SATA (450mm+150mm+150mm+150mm)	2	8	18AWG	No
4 pin Molex (500mm+150mm+150mm+150mm)+FDD (+150mm)	1	3 / 1	18-20AWG	No
AC Power Cord (1400mm) - C13 coupler	1	1	18AWG	-

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Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x CAP004DG
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	1x GBU15L06 (600V, 15A @ 115°C)
APFC MOSFETS	2x GP28S50G
APFC Boost Diode	1x CREE C3D100060A (600V, 10A @ 153°C)
Hold-up Cap(s)	1x Nippon Chemi-Con (400V, 560uF each, 2000h @ 105°C, KMR)
Main Switchers	2x Vishay Siliconix SIHF30N60E (650V, 18A @ 100°C, 0.125 Ohm)
APFC Controller	Champion CM6502S & CM03X Green PFC controller
Switching Controller	Champion CM6901
Topology	Primary side: Half-Bridge & LLC Resonant Converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	6x SG40N01D
5V & 3.3V	DC-DC Converters: 2x UBIQ QM3006D (30V, 57A @ 100°C, 5.5 mOhm) 2x UBIQ QM3016D (30V, 68A @ 100°C, 4 mOhm) PWM Controller: APW7159
Filtering Capacitors	Electrolytics: Nippon Chemi-Con (105°C, KY, KZE) Polymers: Nippon Chemi-Con (Japan), Enesol (Korea)
Supervisor IC	Sitronix ST9S313-DAG (OVP, UVP, SCP)
Fan Model	Enermax ED142512M-OA (139mm, 12V, 0.45A, Twister Bearing)
5VSB Circuit	
Standby PWM Controller	TinySwitch-LT TNY177PN (18W Peak)

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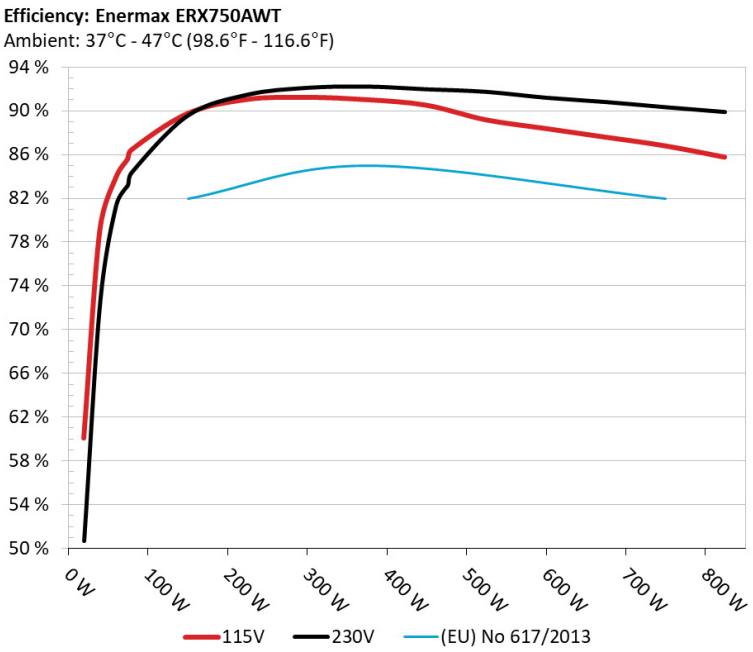
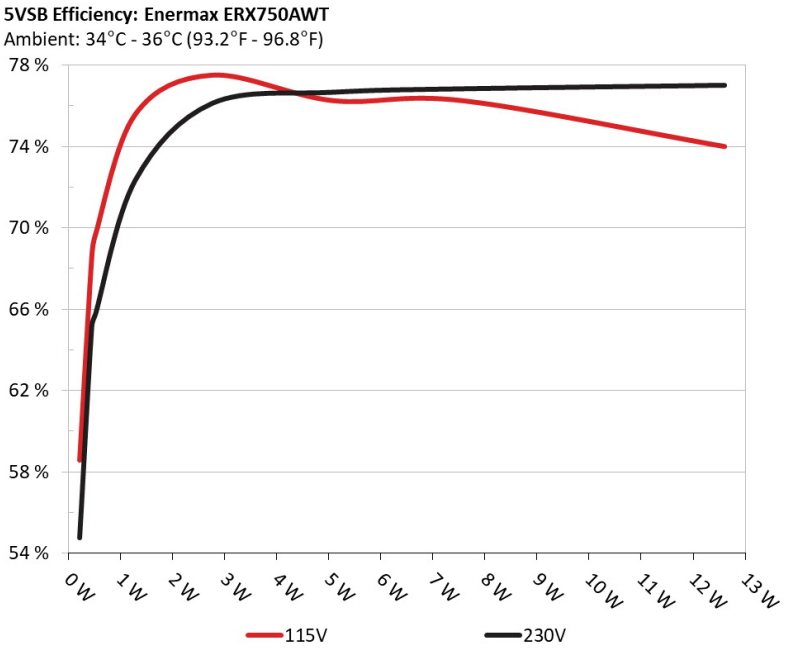
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.212	58.564%	0.036
	5.098V	0.362		115.11V
2	0.087A	0.444	68.519%	0.063
	5.097V	0.648		115.11V
3	0.542A	2.758	77.515%	0.272
	5.087V	3.558		115.11V
4	1.002A	5.085	76.260%	0.381
	5.074V	6.668		115.11V
5	1.502A	7.606	76.251%	0.438
	5.065V	9.975		115.11V
6	2.501A	12.610	74.002%	0.496
	5.042V	17.040		115.11V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.212	54.780%	0.012
	5.098V	0.387		230.31V
2	0.087A	0.445	65.154%	0.020
	5.097V	0.683		230.31V
3	0.542A	2.757	76.118%	0.102
	5.086V	3.622		230.30V
4	1.002A	5.086	76.666%	0.174
	5.075V	6.634		230.30V
5	1.502A	7.606	76.836%	0.235
	5.065V	9.899		230.31V
6	2.501A	12.606	77.007%	0.320
	5.040V	16.370		230.31V

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115V

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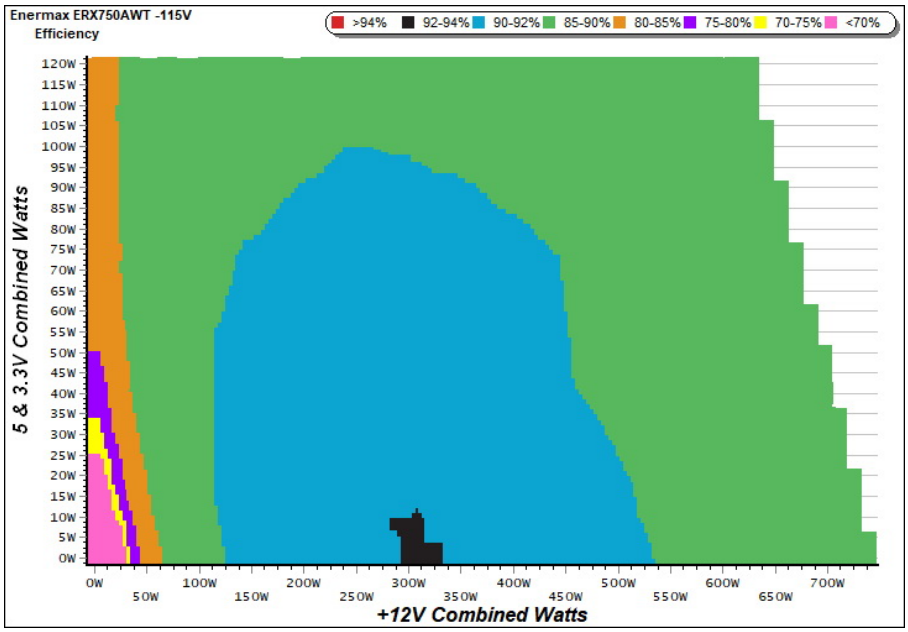
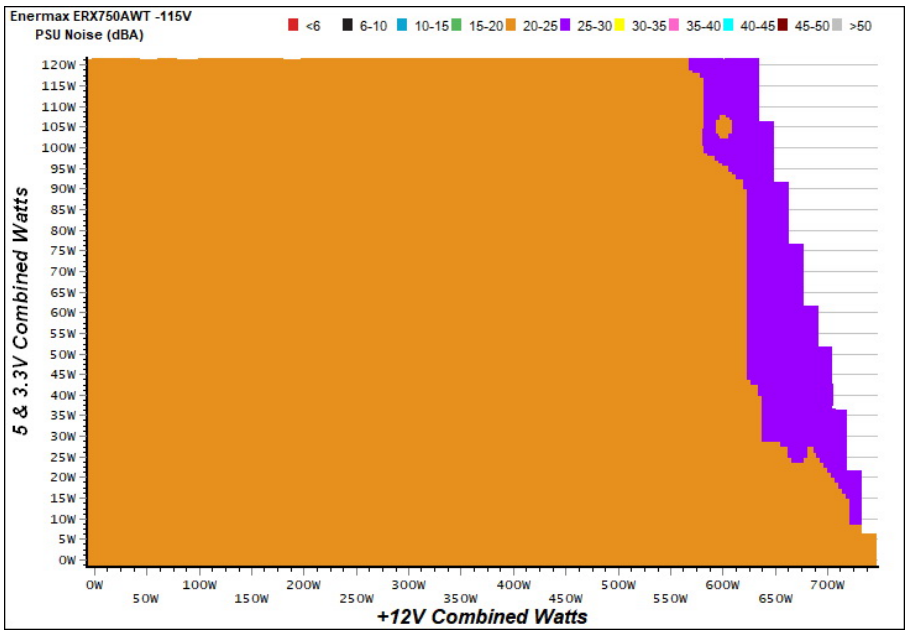
EFFICIENCY GRAPH 115V



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

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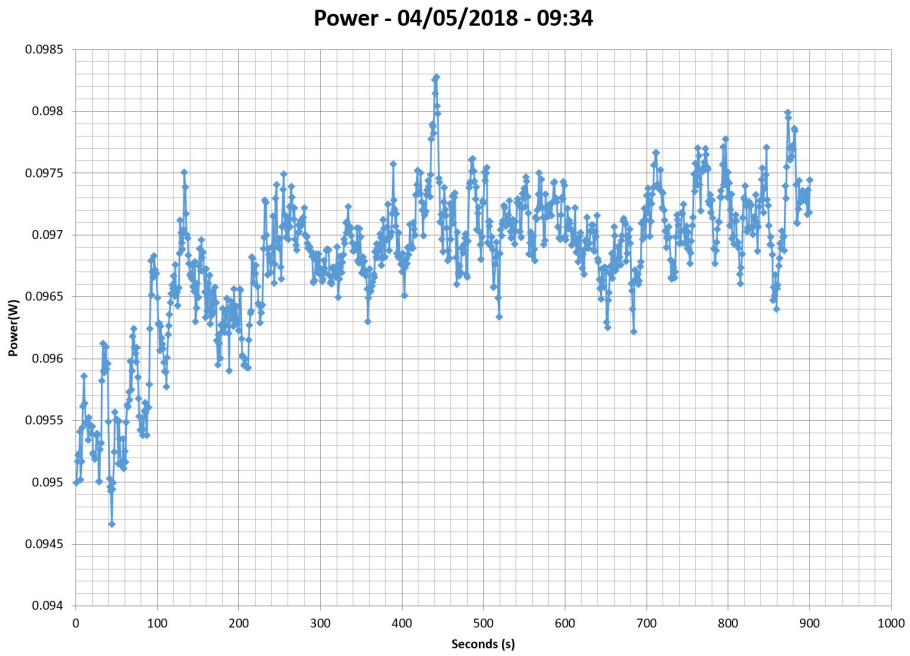
VAMPIRE POWER -115V



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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Enermax Revolution Xt II 750W

10-110% 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	4.383A	1.965A	1.949A	0.986A	74.802	85.576%	758	21.2	40.10°C	0.968
	12.141V	5.088V	3.384V	5.065V	87.410				46.01°C	115.13V
2	9.799A	2.947A	2.934A	1.186A	149.730	89.721%	758	21.2	40.87°C	0.986
	12.132V	5.077V	3.372V	5.053V	166.884				47.23°C	115.14V
3	15.570A	3.458A	3.446A	1.385A	224.871	91.014%	755	21.3	41.17°C	0.989
	12.124V	5.069V	3.363V	5.041V	247.072				48.03°C	115.13V
4	21.337A	3.955A	3.933A	1.590A	299.728	91.199%	753	21.4	41.65°C	0.990
	12.116V	5.062V	3.354V	5.030V	328.653				49.03°C	115.13V
5	26.777A	4.951A	4.935A	1.790A	374.685	90.988%	753	21.4	42.20°C	0.990
	12.107V	5.054V	3.342V	5.017V	411.797				50.47°C	115.12V
6	32.218A	5.949A	5.941A	1.996A	449.538	90.484%	750	21.4	42.61°C	0.989
	12.098V	5.042V	3.330V	5.003V	496.813				52.52°C	115.12V
7	37.676A	6.958A	6.962A	2.200A	524.596	89.144%	935	25.5	43.16°C	0.988
	12.090V	5.033V	3.317V	4.991V	588.482				54.89°C	115.19V
8	43.135A	7.967A	7.984A	2.410A	599.516	88.351%	1165	31.7	43.68°C	0.989
	12.081V	5.023V	3.305V	4.978V	678.562				55.66°C	115.13V
9	49.035A	8.477A	8.526A	2.411A	674.541	87.564%	1380	36.6	44.89°C	0.991
	12.072V	5.015V	3.295V	4.971V	770.340				57.42°C	115.21V
10	54.892A	8.995A	9.039A	2.516A	749.369	86.771%	1467	39.9	46.27°C	0.992
	12.063V	5.006V	3.285V	4.962V	863.616				59.21°C	115.17V
11	58.432A	9.011A	9.058A	2.520A	824.240	85.736%	1465	39.9	47.06°C	0.993
	12.613V	5.000V	3.279V	4.953V	961.372				60.50°C	115.18V
CL1	0.100A	14.028A	14.006A	0.004A	118.532	83.662%	763	20.8	45.12°C	0.983
	12.123V	5.048V	3.319V	5.064V	141.679				55.65°C	115.24V
CL2	61.934A	1.003A	1.002A	1.002A	760.950	87.276%	1470	39.9	46.02°C	0.992
	12.070V	5.037V	3.331V	5.006V	871.887				58.07°C	115.12V

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20-80W LOAD TESTS 115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.200A	0.492A	0.469A	0.196A	19.667	60.070%	760	21.2	0.868
	12.141V	5.098V	3.396V	5.088V	32.740				115.14V
2	2.424A	0.981A	0.971A	0.391A	39.720	79.045%	758	21.2	0.930
	12.146V	5.095V	3.392V	5.081V	50.250				115.14V
3	3.659A	1.467A	1.475A	0.591A	59.893	83.860%	758	21.2	0.959
	12.143V	5.090V	3.387V	5.075V	71.420				115.13V
4	4.875A	1.966A	1.948A	0.786A	79.758	86.422%	758	21.2	0.971
	12.140V	5.087V	3.383V	5.069V	92.289				115.13V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	18.0 mV	31.6 mV	13.1 mV	22.6 mV	Pass
20% Load	23.5 mV	34.8 mV	15.3 mV	24.1 mV	Pass
30% Load	25.4 mV	35.8 mV	14.3 mV	23.5 mV	Pass
40% Load	28.3 mV	34.4 mV	14.1 mV	23.9 mV	Pass
50% Load	31.7 mV	34.1 mV	13.0 mV	23.9 mV	Pass
60% Load	37.5 mV	35.4 mV	14.2 mV	34.3 mV	Pass
70% Load	36.6 mV	37.9 mV	22.9 mV	25.6 mV	Pass
80% Load	38.2 mV	39.7 mV	27.1 mV	23.6 mV	Pass
90% Load	41.2 mV	36.6 mV	25.2 mV	25.0 mV	Pass
100% Load	46.8 mV	42.3 mV	23.2 mV	29.5 mV	Pass
110% Load	48.8 mV	41.6 mV	22.1 mV	28.9 mV	Pass
Crossload 1	32.8 mV	32.6 mV	17.3 mV	63.3 mV	Fail
Crossload 2	37.1 mV	39.5 mV	19.2 mV	27.9 mV	Pass

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230V

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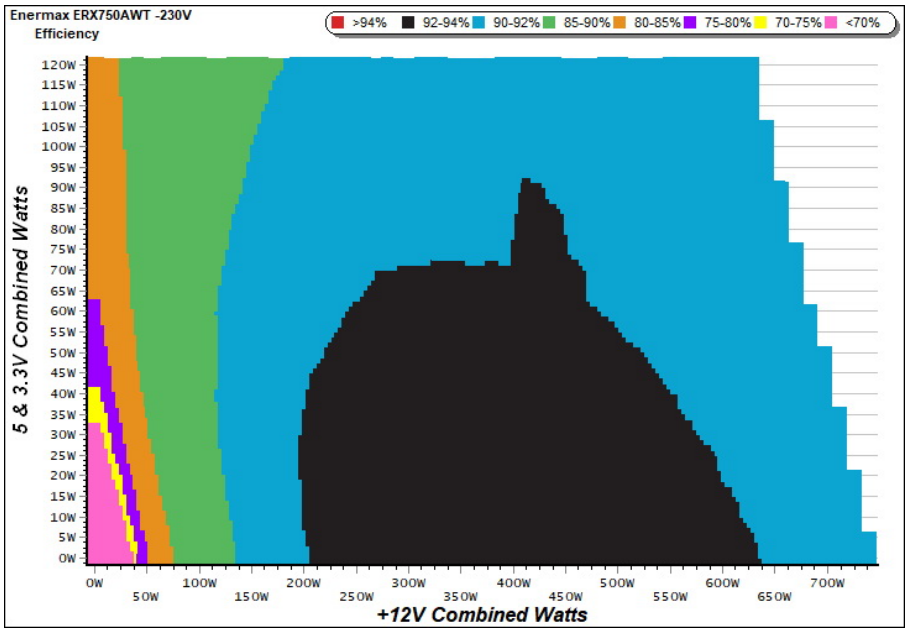
EFFICIENCY GRAPH 230V



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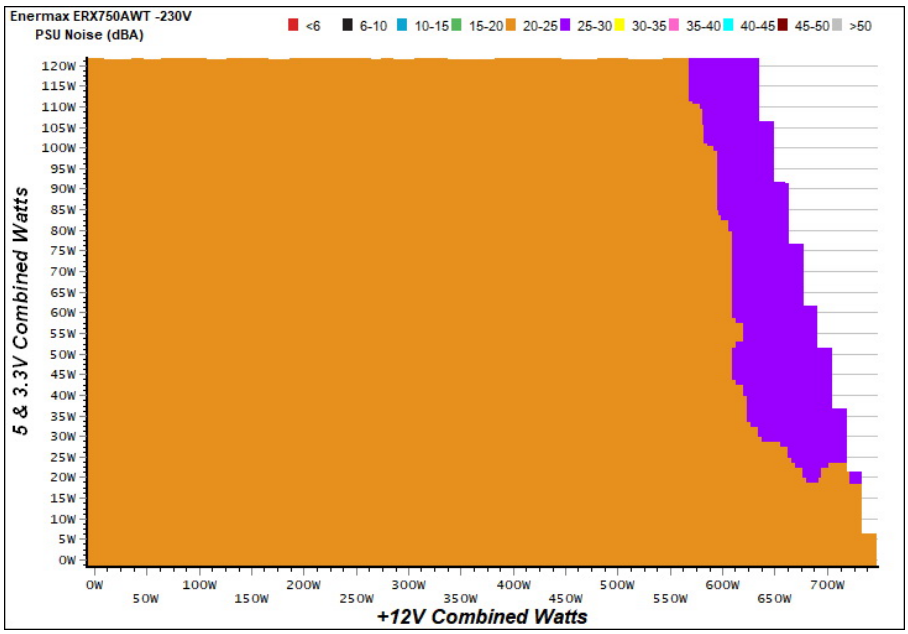
NOISE GRAPH 230V



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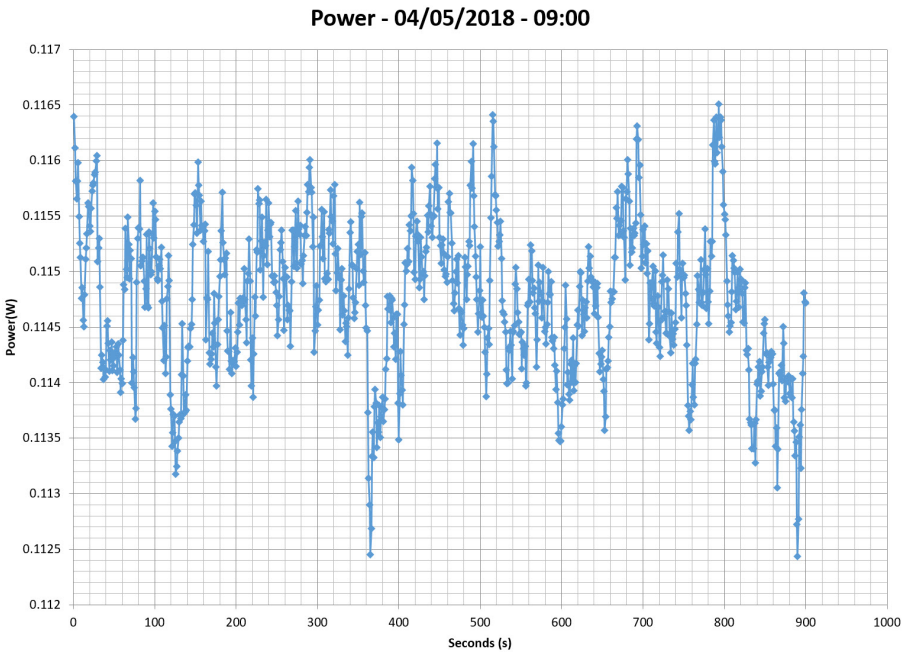
VAMPIRE POWER -230V



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10-110% LOAD TESTS 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	4.387A	1.963A	1.952A	0.986A	74.817	83.238%	758	21.2	40.08°C	0.834
	12.135V	5.087V	3.383V	5.062V	89.883				45.58°C	230.24V
2	9.798A	2.949A	2.934A	1.186A	149.753	89.558%	755	21.3	40.82°C	0.923
	12.135V	5.077V	3.372V	5.050V	167.214				46.86°C	230.23V
3	15.571A	3.456A	3.445A	1.386A	224.892	91.472%	755	21.3	41.11°C	0.951
	12.126V	5.068V	3.361V	5.039V	245.859				47.67°C	230.24V
4	21.338A	3.952A	3.935A	1.591A	299.768	92.099%	753	21.4	41.81°C	0.963
	12.118V	5.061V	3.353V	5.028V	325.486				48.85°C	230.24V
5	26.780A	4.948A	4.937A	1.792A	374.762	92.213%	753	21.4	42.14°C	0.970
	12.109V	5.053V	3.341V	5.015V	406.411				49.30°C	230.24V
6	32.223A	5.943A	5.943A	1.998A	449.619	91.963%	768	20.5	42.97°C	0.974
	12.099V	5.043V	3.330V	5.001V	488.915				50.58°C	230.24V
7	37.674A	6.959A	6.965A	2.201A	524.648	91.735%	760	21.2	43.17°C	0.977
	12.092V	5.031V	3.316V	4.992V	571.914				51.39°C	230.25V
8	43.138A	7.965A	7.987A	2.410A	599.596	91.193%	1110	31.3	43.96°C	0.978
	12.082V	5.023V	3.305V	4.978V	657.502				52.48°C	230.24V
9	49.035A	8.476A	8.527A	2.411A	674.623	90.806%	1330	36.3	44.56°C	0.979
	12.074V	5.014V	3.294V	4.972V	742.926				53.24°C	230.24V
10	54.892A	8.995A	9.038A	2.516A	749.484	90.330%	1467	39.9	45.55°C	0.980
	12.065V	5.007V	3.285V	4.962V	829.715				54.96°C	230.25V
11	61.140A	9.010A	9.057A	2.521A	824.392	89.895%	1467	39.9	46.61°C	0.983
	12.057V	5.000V	3.278V	4.954V	917.060				56.62°C	230.25V
CL1	0.098A	14.025A	14.004A	0.005A	118.548	83.311%	766	20.5	43.19°C	0.906
	12.121V	5.051V	3.320V	5.066V	142.295				51.95°C	230.25V
CL2	61.944A	1.002A	1.003A	1.002A	761.193	91.010%	1470	39.9	45.38°C	0.980
	12.072V	5.037V	3.331V	5.007V	836.383				54.70°C	230.25V

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20-80W LOAD TESTS 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.204A	0.489A	0.469A	0.196A	19.703	50.722%	758	21.2	0.592
	12.144V	5.097V	3.395V	5.086V	38.845				230.24V
2	2.430A	0.980A	0.972A	0.391A	39.776	72.494%	758	21.2	0.707
	12.141V	5.093V	3.392V	5.079V	54.868				230.24V
3	3.662A	1.466A	1.474A	0.591A	59.897	81.362%	755	21.3	0.788
	12.138V	5.088V	3.386V	5.073V	73.618				230.24V
4	4.878A	1.965A	1.949A	0.786A	79.757	84.399%	758	21.2	0.844
	12.134V	5.085V	3.382V	5.068V	94.500				230.24V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	13.6 mV	30.2 mV	14.3 mV	22.4 mV	Pass
20% Load	28.9 mV	34.3 mV	14.3 mV	22.5 mV	Pass
30% Load	32.0 mV	45.1 mV	18.7 mV	24.5 mV	Pass
40% Load	31.4 mV	36.6 mV	15.6 mV	27.3 mV	Pass
50% Load	34.1 mV	39.7 mV	17.8 mV	25.8 mV	Pass
60% Load	34.6 mV	37.7 mV	15.1 mV	29.1 mV	Pass
70% Load	38.5 mV	40.7 mV	22.8 mV	27.5 mV	Pass
80% Load	40.7 mV	42.0 mV	26.1 mV	25.3 mV	Pass
90% Load	43.8 mV	41.0 mV	26.8 mV	26.0 mV	Pass
100% Load	46.2 mV	39.6 mV	25.9 mV	28.7 mV	Pass
110% Load	48.7 mV	39.3 mV	22.5 mV	27.5 mV	Pass
Crossload 1	41.3 mV	34.7 mV	16.6 mV	71.6 mV	Fail
Crossload 2	37.7 mV	37.4 mV	20.1 mV	23.7 mV	Pass

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Anex

Enermax Revolution Xt II 750W

Top side

Power specifications label

CERTIFICATIONS 115V

CERTIFICATIONS 230V

Aristeidis Bitziopoulos
Lab Director