

Anex

Thermaltake Toughpower PF1 750W

Lab ID#: TT75001713
 Receipt Date: Jul 28, 2020
 Test Date: Sep 9, 2020

Report: 20PS1713A
 Report Date: Sep 12, 2020

DUT INFORMATION

Brand	Thermaltake
Manufacturer (OEM)	Jiu Zhou Yang Guang Power Supply (HKC)
Series	Toughpower PF1
Model Number	TTP-750AH2FKP
Serial Number	PSTPD0750FNFAPU1XD000042
DUT Notes	Toughpower PF1

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10
Rated Frequency (Hz)	50-60
Rated Power (W)	750
Type	ATX12V
Cooling	120mm Hydraulic Bearing Fan [TT-1225(XW12025MS)]
Semi-Passive Operation	✓ (selectable)
Cable Design	Fully Modular

TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Keysight AC6804B
Power Analyzers	N4L PPA1530 x2
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2
Tachometer	UNI-T UT372 x2
Digital Multimeter	Keysight U1273AX, Fluke 289, Keithley 2015 - THD
UPS	CyberPower OLS3000E 3kVA x2
Transformer	3kVA 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	90.634%
Efficiency With 10W (≤500W) or 2% (>500W)	71.384
Average Efficiency 5VSB	80.357%
Standby Power Consumption (W)	0.0555350
Average PF	0.984
Avg Noise Output	27.02 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A-

230V

Average Efficiency	92.602%
Average Efficiency 5VSB	80.193%
Standby Power Consumption (W)	0.0774691
Average PF	0.931
Avg Noise Output	26.87 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	A-

POWER SPECIFICATIONS

Rail		3.3V	5V	12V(1)	12V(2)	5VSB	-12V
Max. Power	Amps	20	20	62	0	2.5	0.3
	Watts	100		750		12.5	3.6
Total Max. Power (W)		750					

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

Hold-Up Time (ms)	17.8
AC Loss to PWR_OK Hold Up Time (ms)	17.1
PWR_OK Inactive to DC Loss Delay (ms)	0.7

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CABLES AND CONNECTORS

Modular Cables

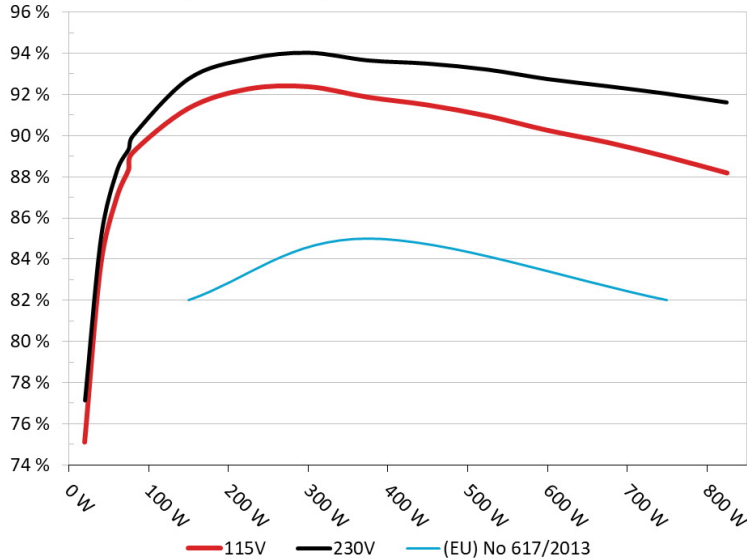
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (600mm)	1	1	16-18AWG	No
4+4 pin EPS12V (650mm)	2	2	16AWG	No
6+2 pin PCIe (500mm+150mm)	2	4	16-18AWG	No
SATA (480mm+150mm+150mm)	3	9	18AWG	No
4-pin Molex (480mm+150mm+150mm+150mm)	1	4	18AWG	No
FDD Adapter (+100mm)	1	1	22AWG	No
AC Power Cord (1400mm) - C13 coupler	1	1	18AWG	-

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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Thermaltake TTP-750AH2FKP
 Ambient: 37°C - 47°C (98.6°F - 116.6°F)

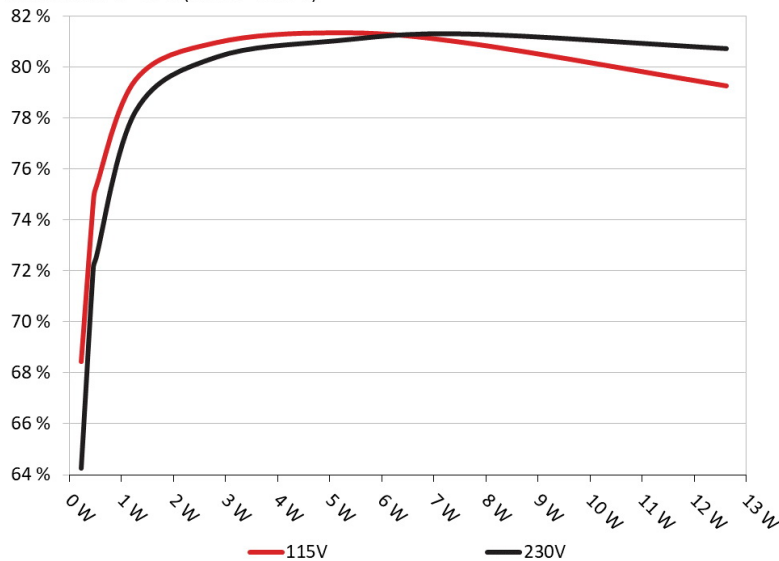


INFO

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: Thermaltake TTP-750AH2FKP
 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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5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.232	68.437%	0.039
	5.143V	0.339		115.13V
2	0.090A	0.463	74.677%	0.069
	5.141V	0.620		115.13V
3	0.550A	2.819	80.936%	0.274
	5.124V	3.483		115.13V
4	1.000A	5.108	81.325%	0.354
	5.107V	6.281		115.13V
5	1.500A	7.632	80.925%	0.399
	5.087V	9.431		115.13V
6	2.500A	12.622	79.244%	0.444
	5.048V	15.928		115.13V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.232	64.266%	0.012
	5.143V	0.361		230.28V
2	0.090A	0.463	72.118%	0.022
	5.141V	0.642		230.28V
3	0.550A	2.819	80.382%	0.111
	5.123V	3.507		230.28V
4	1.000A	5.107	81.025%	0.179
	5.106V	6.303		230.28V
5	1.500A	7.632	81.295%	0.234
	5.087V	9.388		230.28V
6	2.501A	12.621	80.723%	0.303
	5.047V	15.635		230.28V

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Thermaltake Toughpower PF1 750W

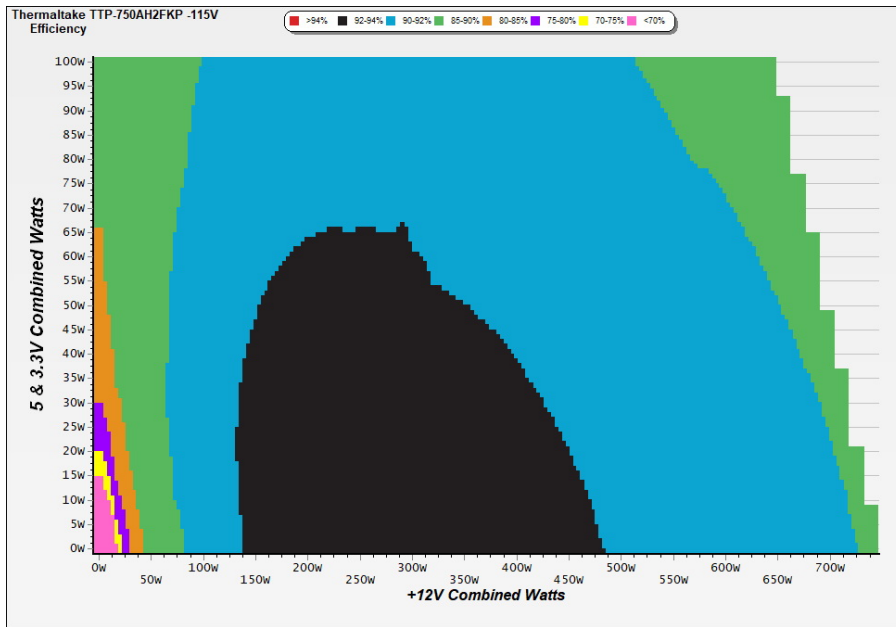
115V

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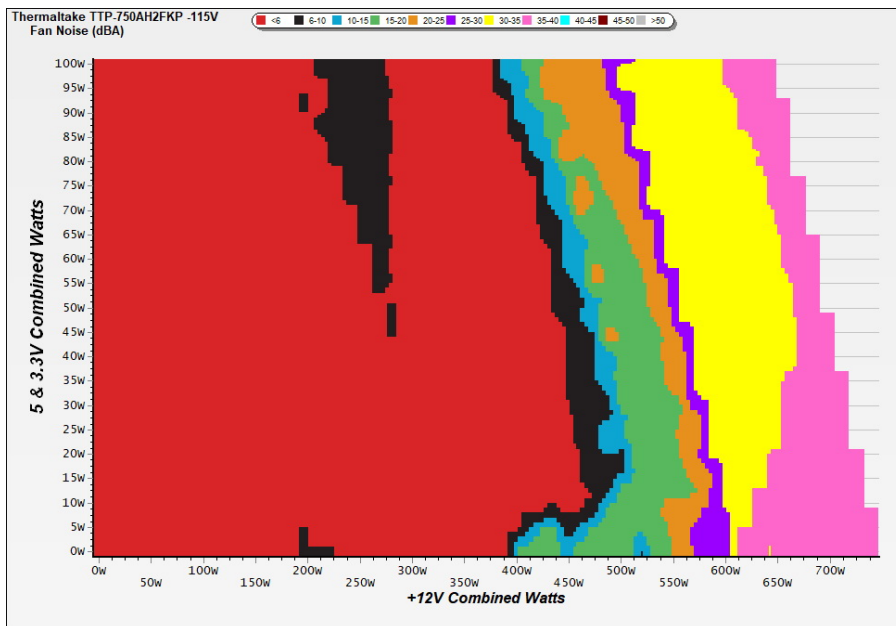
EFFICIENCY GRAPH 115V



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

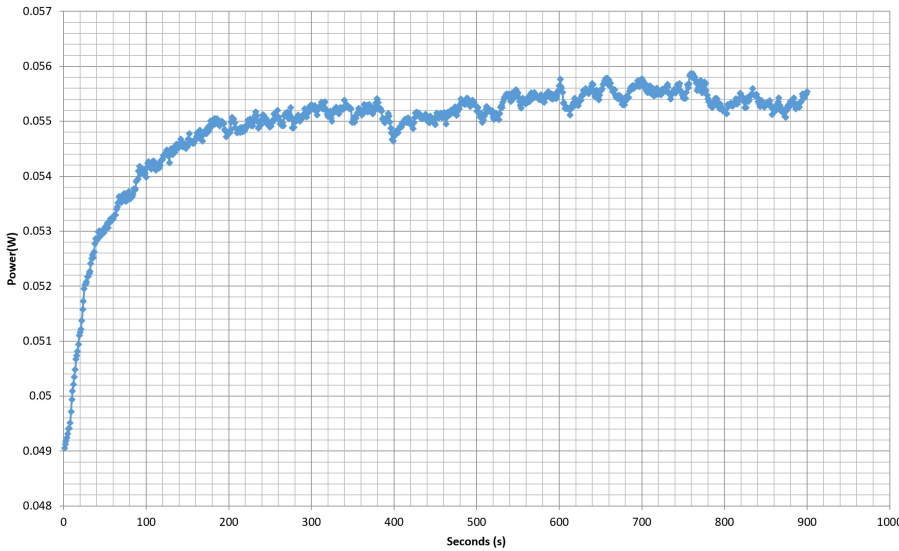
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -115V

Power - PSTPD0750FNFAPU1XD000042 - 07/09/2020 - 10:41



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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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	4.419A	1.967A	1.973A	0.982A	74.973	88.331%	0	<6.0	44.60°C	0.953
	12.078V	5.085V	3.343V	5.093V	84.877				40.00°C	115.13V
2	9.861A	2.951A	2.965A	1.182A	150.052	91.314%	0	<6.0	45.77°C	0.974
	12.083V	5.084V	3.339V	5.075V	164.326				40.75°C	115.13V
3	15.639A	3.443A	3.461A	1.384A	225.064	92.257%	0	<6.0	47.37°C	0.985
	12.086V	5.083V	3.337V	5.059V	243.952				41.60°C	115.13V
4	21.410A	3.938A	3.962A	1.587A	300.087	92.369%	559	<6.0	41.66°C	0.990
	12.091V	5.081V	3.334V	5.041V	324.880				48.43°C	115.13V
5	26.803A	4.925A	4.956A	1.792A	374.750	91.857%	582	<6.0	42.04°C	0.993
	12.097V	5.078V	3.330V	5.023V	407.970				49.55°C	115.12V
6	32.206A	5.911A	5.954A	1.999A	449.669	91.477%	835	17.3	42.17°C	0.995
	12.105V	5.077V	3.326V	5.004V	491.565				50.95°C	115.12V
7	37.640A	6.898A	6.959A	2.208A	524.990	90.945%	966	22.5	43.49°C	0.995
	12.111V	5.076V	3.321V	4.985V	577.260				52.73°C	115.12V
8	43.097A	7.888A	7.958A	2.418A	600.306	90.248%	1059	25.6	43.64°C	0.996
	12.109V	5.074V	3.319V	4.966V	665.172				53.49°C	115.12V
9	48.922A	8.384A	8.445A	2.422A	674.838	89.666%	1574	37.6	44.80°C	0.996
	12.107V	5.072V	3.317V	4.956V	752.612				55.27°C	115.11V
10	54.716A	8.880A	8.964A	2.530A	749.951	88.962%	1808	41.3	45.91°C	0.997
	12.112V	5.070V	3.314V	4.942V	843.003				57.19°C	115.11V
11	60.912A	8.880A	8.968A	2.535A	825.177	88.178%	2168	46.2	46.64°C	0.997
	12.115V	5.069V	3.313V	4.933V	935.805				58.31°C	115.10V
CL1	0.101A	12.004A	11.999A	0.000A	102.078	85.683%	592	6.5	41.91°C	0.967
	12.123V	5.081V	3.322V	5.110V	119.135				49.52°C	115.13V
CL2	62.022A	1.000A	1.000A	1.000A	764.762	89.507%	1804	41.1	45.55°C	0.997
	12.114V	5.076V	3.333V	5.018V	854.418				57.05°C	115.10V

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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	1.231A	0.492A	0.493A	0.195A	19.998	75.116%	0	<6.0	0.716
	12.060V	5.085V	3.346V	5.133V	26.623				115.13V
2	2.461A	0.983A	0.985A	0.391A	39.989	83.661%	0	<6.0	0.872
	12.065V	5.085V	3.345V	5.123V	47.799				115.13V
3	3.693A	1.475A	1.481A	0.587A	60.020	86.965%	0	<6.0	0.932
	12.068V	5.085V	3.344V	5.112V	69.016				115.13V
4	4.918A	1.967A	1.973A	0.784A	79.972	89.160%	0	<6.0	0.963
	12.073V	5.085V	3.343V	5.101V	89.695				115.13V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	11.70mV	11.50mV	15.00mV	4.20mV	Pass
20% Load	12.30mV	11.80mV	14.50mV	4.90mV	Pass
30% Load	12.80mV	12.60mV	15.00mV	5.80mV	Pass
40% Load	15.80mV	13.40mV	15.20mV	6.90mV	Pass
50% Load	15.20mV	14.70mV	18.20mV	8.20mV	Pass
60% Load	16.10mV	16.90mV	18.00mV	10.10mV	Pass
70% Load	16.30mV	17.90mV	19.00mV	10.90mV	Pass
80% Load	16.90mV	18.10mV	17.40mV	12.00mV	Pass
90% Load	17.60mV	20.10mV	19.40mV	11.80mV	Pass
100% Load	23.80mV	23.10mV	21.40mV	13.70mV	Pass
110% Load	24.70mV	24.70mV	23.20mV	15.00mV	Pass
Crossload1	16.50mV	15.00mV	19.70mV	6.30mV	Pass
Crossload2	23.50mV	22.10mV	19.80mV	11.10mV	Pass

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Thermaltake Toughpower PF1 750W

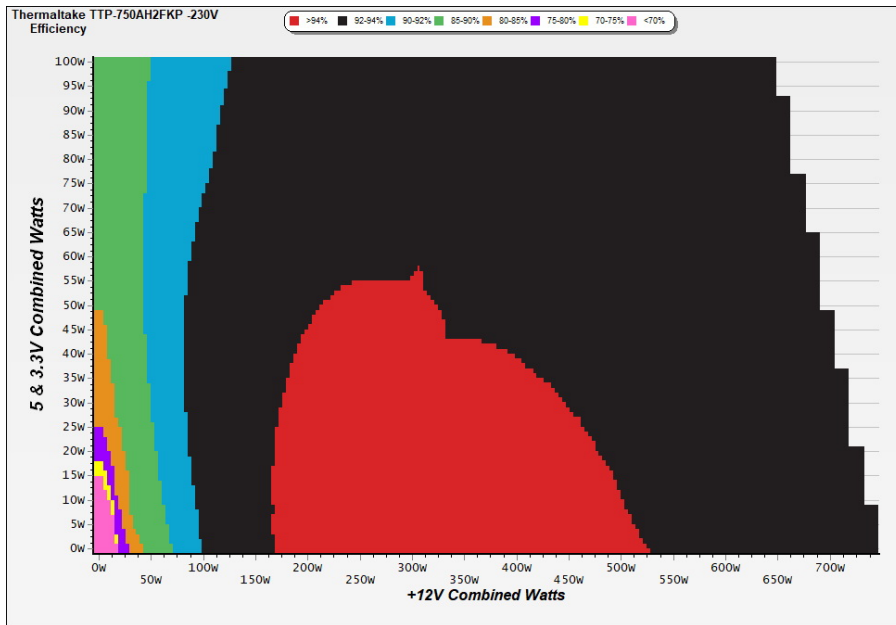
230V

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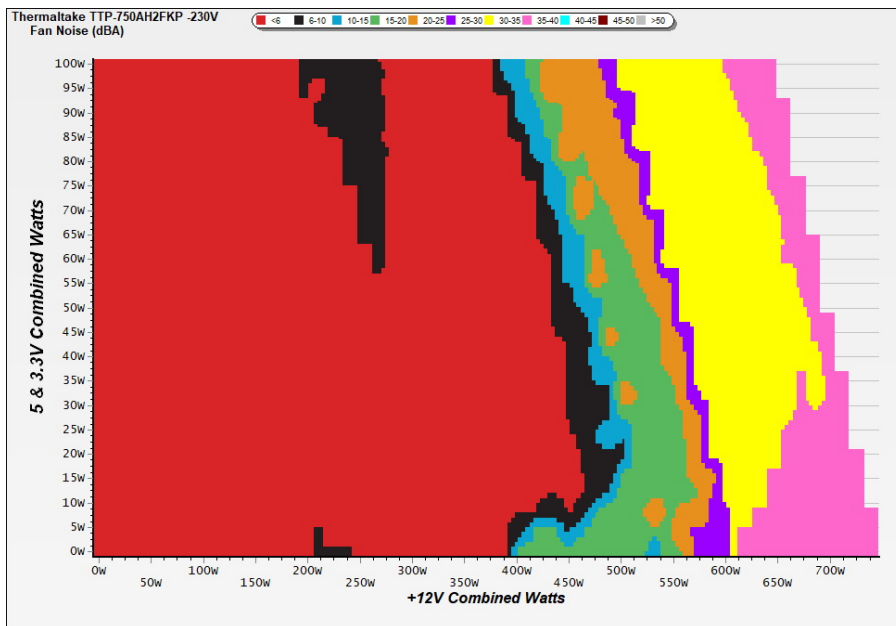
EFFICIENCY GRAPH 230V



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 230V



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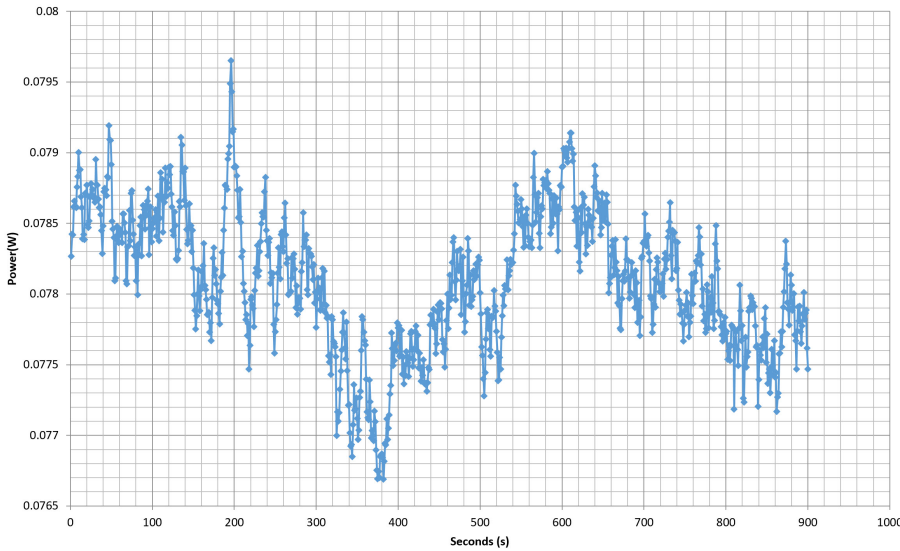
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VAMPIRE POWER -230V

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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	4.418A	1.967A	1.975A	0.982A	74.969	89.352%	0	<6.0	44.88°C	0.716
	12.078V	5.086V	3.343V	5.093V	83.903				40.04°C	230.28V
2	9.862A	2.950A	2.965A	1.182A	150.042	92.757%	0	<6.0	46.11°C	0.876
	12.081V	5.084V	3.340V	5.075V	161.758				40.82°C	230.28V
3	15.634A	3.443A	3.462A	1.384A	225.054	93.726%	447	<6.0	41.14°C	0.929
	12.089V	5.083V	3.337V	5.058V	240.120				47.99°C	230.28V
4	21.406A	3.937A	3.961A	1.587A	300.067	94.021%	491	<6.0	41.30°C	0.951
	12.093V	5.080V	3.334V	5.040V	319.149				48.75°C	230.28V
5	26.793A	4.923A	4.956A	1.793A	374.702	93.650%	586	6.1	42.11°C	0.967
	12.100V	5.078V	3.330V	5.022V	400.107				50.39°C	230.28V
6	32.204A	5.911A	5.953A	1.999A	449.620	93.493%	838	17.4	42.79°C	0.973
	12.104V	5.078V	3.327V	5.003V	480.914				51.42°C	230.28V
7	37.640A	6.897A	6.952A	2.208A	524.937	93.202%	896	19.9	43.07°C	0.977
	12.110V	5.076V	3.323V	4.984V	563.226				52.24°C	230.28V
8	43.087A	7.887A	7.954A	2.418A	600.251	92.743%	1371	33.8	43.73°C	0.980
	12.111V	5.074V	3.319V	4.965V	647.222				53.38°C	230.28V
9	48.907A	8.383A	8.445A	2.422A	674.796	92.399%	1768	40.8	44.77°C	0.982
	12.110V	5.072V	3.317V	4.955V	730.305				55.45°C	230.27V
10	54.715A	8.877A	8.962A	2.531A	749.877	92.031%	1803	41.1	45.10°C	0.985
	12.111V	5.071V	3.314V	4.942V	814.813				56.21°C	230.27V
11	60.932A	8.882A	8.968A	2.535A	825.126	91.608%	2159	45.9	46.54°C	0.986
	12.110V	5.069V	3.313V	4.933V	900.712				58.45°C	230.27V
CL1	0.103A	12.004A	12.000A	0.000A	102.058	86.990%	588	6.3	42.21°C	0.812
	12.122V	5.079V	3.320V	5.110V	117.321				50.82°C	230.27V
CL2	62.037A	1.000A	1.001A	1.000A	764.515	92.629%	1803	41.1	45.43°C	0.985
	12.107V	5.077V	3.334V	5.018V	825.356				56.61°C	230.27V

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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	1.231A	0.492A	0.491A	0.195A	19.998	77.135%	0	<6.0	0.436
	12.064V	5.086V	3.347V	5.133V	25.926				230.28V
2	2.460A	0.982A	0.988A	0.391A	39.987	85.008%	0	<6.0	0.538
	12.067V	5.086V	3.345V	5.123V	47.039				230.28V
3	3.692A	1.475A	1.480A	0.587A	60.018	88.279%	0	<6.0	0.649
	12.071V	5.086V	3.344V	5.112V	67.987				230.29V
4	4.917A	1.967A	1.974A	0.784A	79.969	89.979%	0	<6.0	0.733
	12.074V	5.085V	3.343V	5.101V	88.875				230.28V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	11.20mV	10.80mV	14.80mV	3.90mV	Pass
20% Load	11.30mV	11.80mV	13.50mV	4.60mV	Pass
30% Load	12.00mV	11.90mV	15.30mV	5.30mV	Pass
40% Load	13.40mV	12.70mV	15.50mV	6.10mV	Pass
50% Load	14.30mV	13.50mV	15.60mV	6.80mV	Pass
60% Load	15.20mV	15.50mV	16.30mV	9.20mV	Pass
70% Load	15.90mV	15.80mV	16.90mV	10.30mV	Pass
80% Load	15.20mV	16.40mV	17.20mV	9.10mV	Pass
90% Load	16.80mV	17.70mV	18.00mV	9.90mV	Pass
100% Load	22.70mV	20.30mV	20.10mV	11.30mV	Pass
110% Load	23.50mV	20.90mV	21.50mV	12.70mV	Pass
Crossload1	15.40mV	14.90mV	19.00mV	6.50mV	Pass
Crossload2	21.90mV	18.40mV	17.70mV	10.60mV	Pass

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