

Anex

Thermaltake Toughpower PF1 750W (#2)

Lab ID#: TT75001768
 Receipt Date: Nov 6, 2020
 Test Date: Dec 18, 2020

Report: 20PS1768A
 Report Date: Dec 31, 2020

DUT INFORMATION

Brand	Thermaltake
Manufacturer (OEM)	Jiu Zhou Yang Guang Power Supply (HKC)
Series	Toughpower PF1
Model Number	TTP-750AH2FKP
Serial Number	PSTPD0750FNFAPT1XG000100
DUT Notes	

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(BDK12025MS)]
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	90.460%
Efficiency With 10W (≤500W) or 2% (>500W)	69.854
Average Efficiency 5VSB	81.535%
Standby Power Consumption (W)	0.0715621
Average PF	0.985
Avg Noise Output	31.77 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard++

230V

Average Efficiency	92.522%
Average Efficiency 5VSB	80.472%
Standby Power Consumption (W)	0.1127210
Average PF	0.933
Avg Noise Output	25.16 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	A-

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	62	2.5	0.3
	Watts	100		744	12.5	3.6
Total Max. Power (W)		750				

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

Hold-Up Time (ms)	19
AC Loss to PWR_OK Hold Up Time (ms)	17.3
PWR_OK Inactive to DC Loss Delay (ms)	1.7

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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 (500mm+150mm+150mm)	3	9	18AWG	No
4-pin Molex (500mm+150mm+150mm+150mm)	1	4	18AWG	No
FDD Adapter (150mm)	1	1	22AWG	No
AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

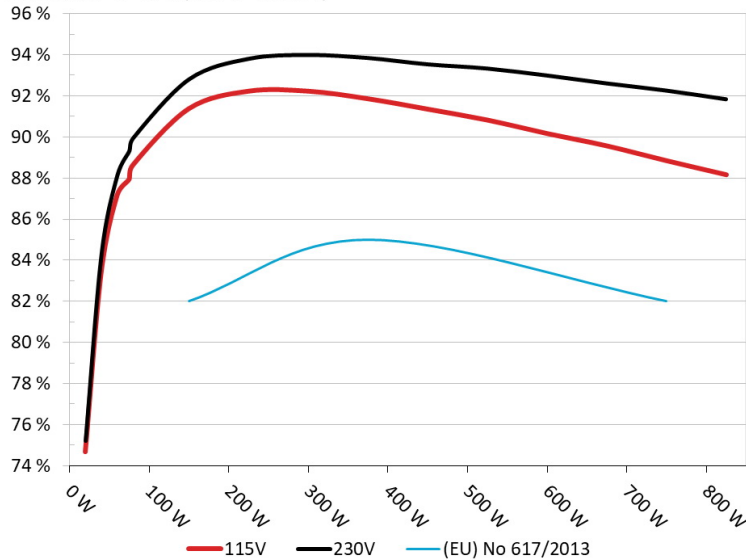
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Thermaltake Toughpower PF1 750W
Ambient: 37°C - 47°C (98.6°F - 116.6°F)

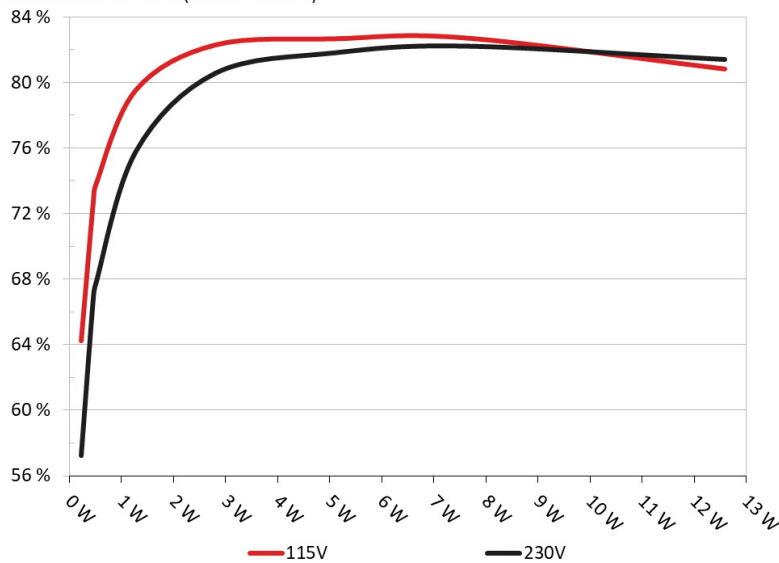


INFO

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 Toughpower PF1 750W
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	0.230	64.246%	0.035
	5.120V	0.358		115.15V
2	0.090A	0.461	72.713%	0.062
	5.119V	0.634		115.15V
3	0.550A	2.807	82.293%	0.256
	5.103V	3.411		115.14V
4	1.000A	5.088	82.665%	0.348
	5.087V	6.155		115.14V
5	1.500A	7.606	82.719%	0.402
	5.069V	9.195		115.14V
6	2.501A	12.588	80.827%	0.458
	5.034V	15.574		115.14V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	57.214%	0.012
	5.120V	0.402		230.33V
2	0.090A	0.461	66.812%	0.021
	5.118V	0.690		230.33V
3	0.550A	2.807	80.545%	0.099
	5.102V	3.485		230.33V
4	1.000A	5.088	81.787%	0.163
	5.087V	6.221		230.33V
5	1.500A	7.605	82.198%	0.222
	5.069V	9.252		230.33V
6	2.501A	12.588	81.386%	0.303
	5.034V	15.467		230.32V

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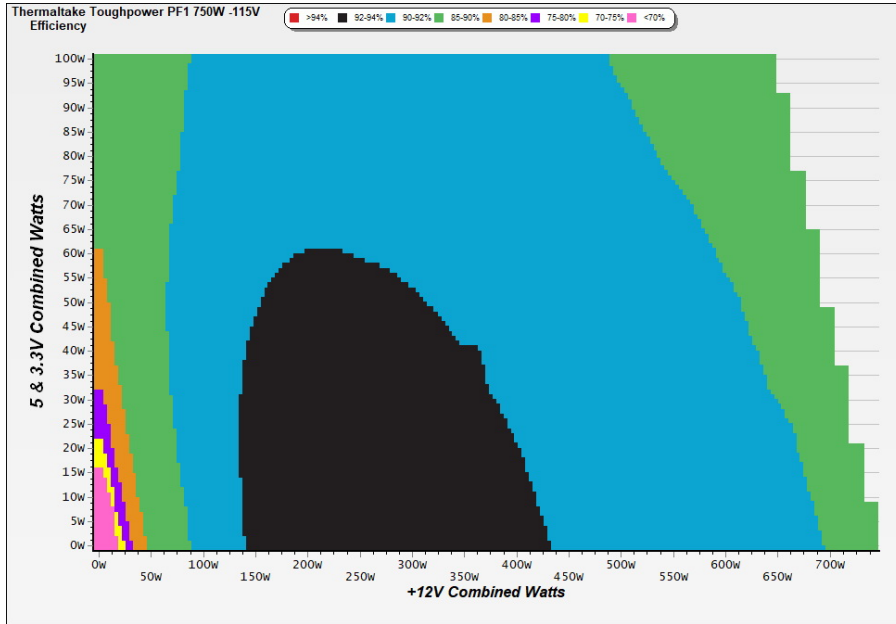
115V

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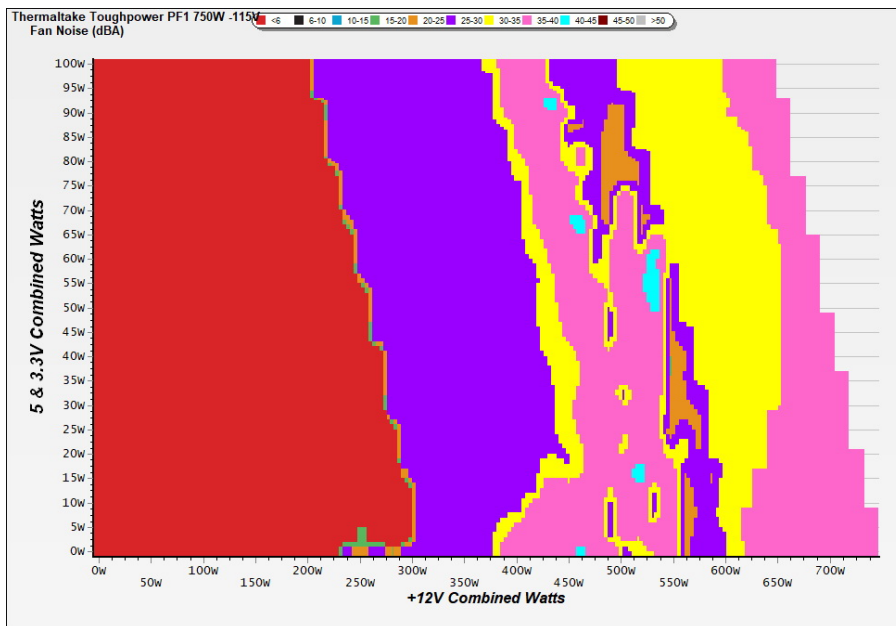
EFFICIENCY GRAPH 115V



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

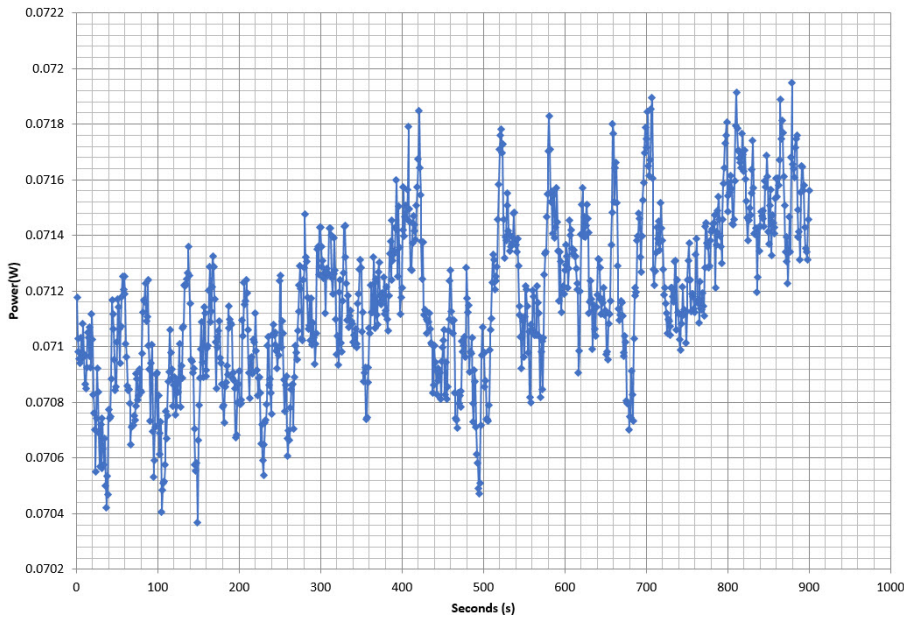
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -115V

Power - PSTPD0750FNFAPT1XG000100 - 14/12/2020 - 11:16



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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Thermaltake Toughpower PF1 750W (#2)

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	4.400A	1.985A	1.978A	0.985A	74.967	87.930%	0	<6.0	44.86°C	0.966
	12.126V	5.043V	3.337V	5.078V	85.258				40.22°C	115.14V
2	9.824A	2.974A	2.968A	1.186A	150.056	91.369%	0	<6.0	45.75°C	0.978
	12.128V	5.045V	3.337V	5.061V	164.231				40.71°C	115.10V
3	15.575A	3.470A	3.461A	1.388A	225.067	92.219%	0	<6.0	46.87°C	0.983
	12.135V	5.046V	3.338V	5.045V	244.057				41.28°C	115.14V
4	21.329A	3.967A	3.956A	1.591A	300.082	92.218%	569	<6.0	42.04°C	0.988
	12.137V	5.045V	3.336V	5.029V	325.406				48.26°C	115.12V
5	26.706A	4.958A	4.948A	1.796A	374.727	91.851%	643	7.3	42.65°C	0.991
	12.140V	5.045V	3.335V	5.012V	407.974				49.58°C	115.13V
6	32.089A	5.946A	5.939A	2.001A	449.596	91.346%	842	17.5	43.57°C	0.993
	12.147V	5.047V	3.335V	4.995V	492.192				50.83°C	115.12V
7	37.508A	6.933A	6.927A	2.211A	524.923	90.814%	866	18.6	43.78°C	0.994
	12.152V	5.050V	3.336V	4.977V	578.023				51.65°C	115.16V
8	42.926A	7.923A	7.921A	2.420A	600.228	90.156%	1269	31.5	43.91°C	0.995
	12.156V	5.050V	3.334V	4.959V	665.766				52.13°C	115.14V
9	48.745A	8.419A	8.401A	2.425A	674.765	89.558%	1635	39.0	44.06°C	0.996
	12.150V	5.049V	3.333V	4.950V	753.440				53.23°C	115.14V
10	54.528A	8.913A	8.914A	2.532A	749.883	88.836%	1808	41.3	45.02°C	0.996
	12.153V	5.049V	3.332V	4.937V	844.122				54.88°C	115.15V
11	60.696A	8.917A	8.914A	2.537A	825.097	88.152%	2166	46.1	46.85°C	0.996
	12.157V	5.048V	3.332V	4.928V	935.993				57.57°C	115.16V
CL1	0.122A	12.000A	12.000A	0.000A	102.451	86.179%	600	6.5	42.42°C	0.983
	12.166V	5.076V	3.338V	5.091V	118.882				49.70°C	115.20V
CL2	62.055A	1.001A	1.000A	1.000A	767.412	89.361%	1814	41.7	44.96°C	0.996
	12.151V	5.030V	3.338V	5.009V	858.777				54.71°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	1.225A	0.497A	0.494A	0.196A	19.997	74.669%	0	<6.0	0.779
	12.117V	5.036V	3.336V	5.114V	26.781				115.16V
2	2.450A	0.992A	0.989A	0.392A	39.987	83.417%	0	<6.0	0.915
	12.118V	5.038V	3.336V	5.104V	47.936				115.16V
3	3.677A	1.488A	1.483A	0.589A	60.017	87.158%	0	<6.0	0.956
	12.121V	5.040V	3.336V	5.095V	68.860				115.16V
4	4.897A	1.984A	1.977A	0.787A	79.966	88.636%	0	<6.0	0.970
	12.123V	5.042V	3.336V	5.084V	90.218				115.14V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	8.62mV	5.88mV	4.55mV	4.74mV	Pass
20% Load	10.40mV	6.95mV	5.32mV	5.76mV	Pass
30% Load	10.20mV	7.26mV	5.17mV	6.07mV	Pass
40% Load	14.00mV	8.49mV	6.09mV	7.04mV	Pass
50% Load	13.69mV	9.05mV	6.70mV	7.95mV	Pass
60% Load	14.06mV	10.84mV	8.24mV	7.90mV	Pass
70% Load	13.89mV	10.99mV	7.93mV	9.08mV	Pass
80% Load	14.56mV	12.22mV	10.70mV	10.20mV	Pass
90% Load	15.58mV	13.55mV	11.62mV	10.81mV	Pass
100% Load	24.42mV	16.35mV	12.98mV	12.71mV	Pass
110% Load	24.94mV	16.86mV	12.91mV	13.28mV	Pass
Crossload1	13.92mV	11.65mV	13.30mV	7.84mV	Pass
Crossload2	23.61mV	15.12mV	7.94mV	12.50mV	Pass

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230V

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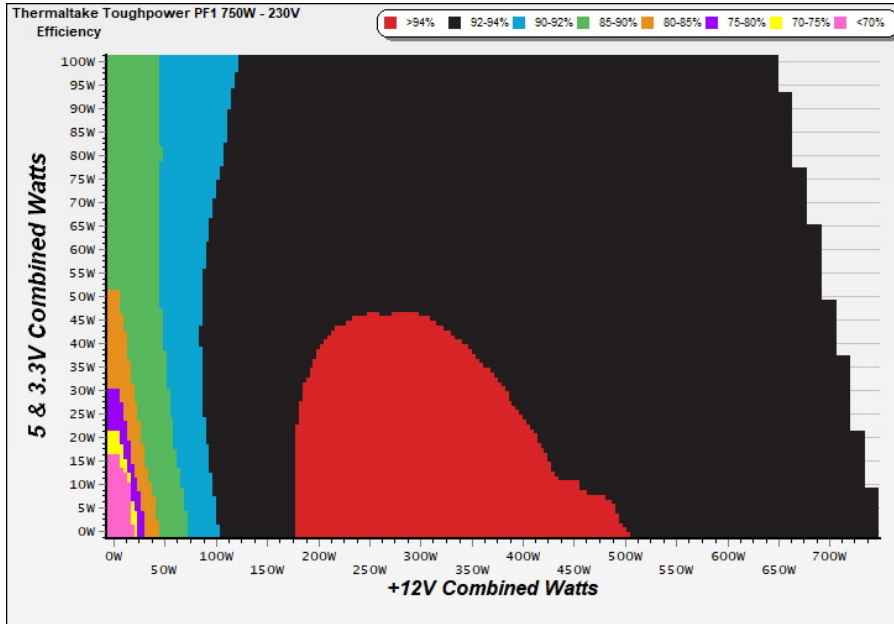
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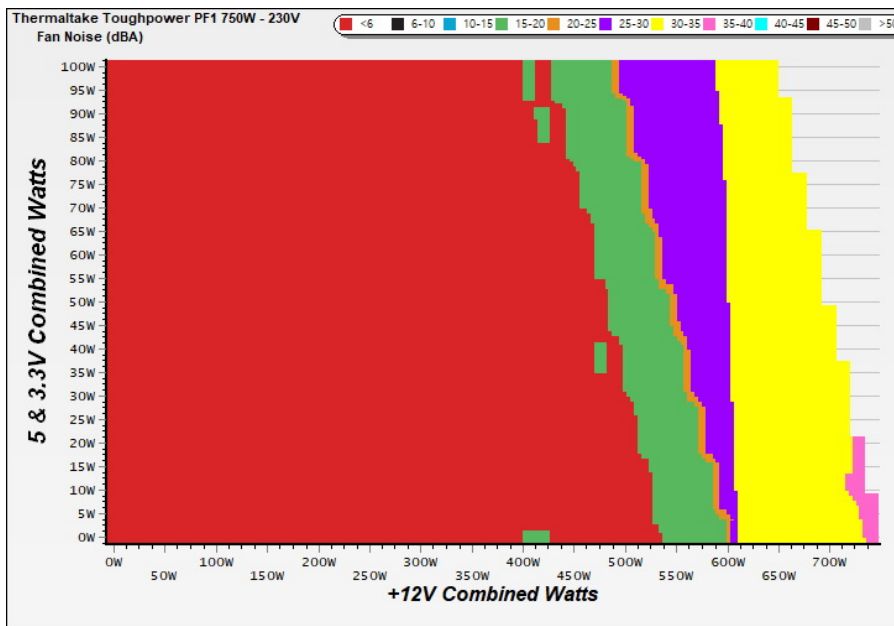
EFFICIENCY GRAPH 230V



INFO

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NOISE GRAPH 230V



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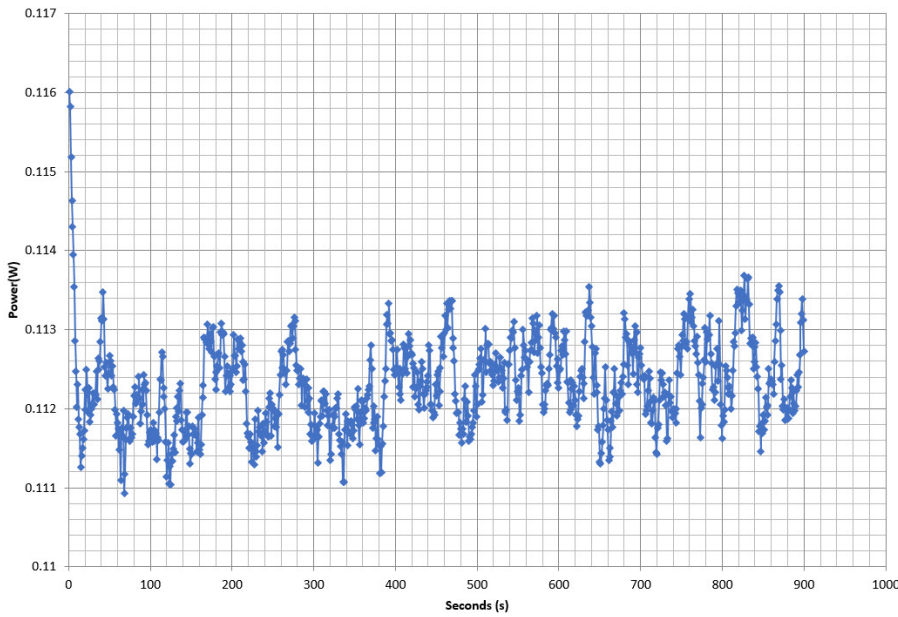
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VAMPIRE POWER -230V

Power - PSTPD0750FNFAPT1XG000100 - 14/12/2020 - 11:16



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Thermaltake Toughpower PF1 750W (#2)

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	4.403A	1.983A	1.977A	0.985A	74.956	89.310%	0	<6.0	44.71°C	0.747
	12.119V	5.042V	3.336V	5.078V	83.928				40.72°C	230.39V
2	9.828A	2.974A	2.968A	1.186A	150.022	92.790%	0	<6.0	45.85°C	0.879
	12.120V	5.044V	3.337V	5.061V	161.679				41.05°C	230.37V
3	15.588A	3.469A	3.461A	1.388A	225.024	93.787%	0	<6.0	46.87°C	0.927
	12.123V	5.045V	3.336V	5.045V	239.930				41.14°C	230.35V
4	21.335A	3.966A	3.958A	1.591A	300.025	93.972%	352	<6.0	41.43°C	0.950
	12.131V	5.044V	3.336V	5.029V	319.269				47.92°C	230.31V
5	26.697A	4.956A	4.947A	1.796A	374.524	93.827%	611	6.7	42.21°C	0.960
	12.137V	5.045V	3.335V	5.012V	399.165				49.35°C	230.32V
6	32.092A	5.946A	5.940A	2.000A	449.432	93.518%	839	17.4	42.57°C	0.968
	12.141V	5.047V	3.334V	4.995V	480.584				50.51°C	230.33V
7	37.503A	6.935A	6.930A	2.210A	524.780	93.314%	841	17.5	43.32°C	0.977
	12.150V	5.049V	3.334V	4.977V	562.378				52.25°C	230.34V
8	42.962A	7.925A	7.922A	2.420A	600.100	92.974%	1062	25.9	43.92°C	0.979
	12.143V	5.049V	3.332V	4.960V	645.446				53.05°C	230.37V
9	48.723A	8.417A	8.401A	2.425A	674.632	92.593%	1475	35.9	44.47°C	0.981
	12.153V	5.049V	3.333V	4.950V	728.600				54.34°C	230.34V
10	54.517A	8.913A	8.916A	2.532A	749.755	92.243%	1805	41.3	45.17°C	0.982
	12.153V	5.049V	3.332V	4.937V	812.806				55.19°C	230.37V
11	60.714A	8.917A	8.914A	2.536A	824.993	91.823%	2146	45.8	46.56°C	0.984
	12.152V	5.047V	3.331V	4.929V	898.460				57.37°C	230.39V
CL1	0.118A	11.999A	11.999A	0.000A	102.406	87.503%	596	6.5	42.17°C	0.821
	12.159V	5.076V	3.339V	5.091V	117.031				49.71°C	230.39V
CL2	62.023A	1.000A	1.002A	1.000A	767.079	92.762%	1740	40.3	45.60°C	0.983
	12.152V	5.026V	3.335V	5.009V	826.936				55.41°C	230.35V

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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	1.225A	0.495A	0.493A	0.196A	19.988	75.225%	0	<6.0	0.424
	12.119V	5.038V	3.337V	5.114V	26.571				230.38V
2	2.449A	0.992A	0.989A	0.392A	39.977	84.304%	0	<6.0	0.572
	12.118V	5.040V	3.337V	5.104V	47.420				230.39V
3	3.677A	1.488A	1.483A	0.589A	60.007	88.141%	0	<6.0	0.684
	12.118V	5.041V	3.337V	5.094V	68.081				230.39V
4	4.898A	1.983A	1.980A	0.787A	79.956	89.946%	0	<6.0	0.763
	12.118V	5.041V	3.336V	5.084V	88.893				230.39V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	8.41mV	5.93mV	4.81mV	4.69mV	Pass
20% Load	10.50mV	6.80mV	5.43mV	5.71mV	Pass
30% Load	10.54mV	7.46mV	5.73mV	5.97mV	Pass
40% Load	13.96mV	7.88mV	6.24mV	6.83mV	Pass
50% Load	13.65mV	9.41mV	6.81mV	7.34mV	Pass
60% Load	14.93mV	10.02mV	7.27mV	8.26mV	Pass
70% Load	13.19mV	11.56mV	7.98mV	8.87mV	Pass
80% Load	13.86mV	12.53mV	11.00mV	9.69mV	Pass
90% Load	14.61mV	13.14mV	10.85mV	10.14mV	Pass
100% Load	24.42mV	16.93mV	13.24mV	12.10mV	Pass
110% Load	25.72mV	17.08mV	13.53mV	12.98mV	Pass
Crossload1	13.25mV	10.75mV	13.52mV	7.44mV	Pass
Crossload2	24.85mV	14.33mV	8.13mV	11.39mV	Pass

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Top side



Power specifications label

CERTIFICATIONS 115V



Aristeidis Bitziopoulos
Lab Director

CERTIFICATIONS 230V



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