EFFICIENCY AND NOISE LEVEL CERTIFICATIONS

Anex

Thermaltake TPG-0750F-R

Lab ID#: 52
Receipt Date: -
Test Date: -

Report:
Report Date: Feb 13, 2017

DUT INFORMATION

Brand	Thermaltake
Manufacturer (OEM)	Sirfa / High Power
Series	Toughpower Grand RGB
Model Number	TPG-0750F-R
Serial Number	PSTPG0750FPCGUSRMV000013
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	140mm HDB RGB Fan (TT-1425/A1425L12S)
Semi-Passive Operation	✓
Cable Design	Fully Modular

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	22	22	62.5	3	0.3
	Watts	120		750	15	3.6
Total Max. Power (W)		750				

CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge
ATX connector 20+4 pin (600mm)	1	1	18AWG
4+4 pin EPS12V (650mm)	1	1	16AWG
6+2 pin PCIe (500mm+150mm)	2	4	16-18AWG
SATA (500mm+150mm+150mm)	3	9	18AWG
4 pin Molex (500mm+150mm+150mm+150mm)	1	4	18AWG
FDD Adapter (+150mm)	1	1	22AWG

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General Data	
Manufacturer (OEM)	Sirfa/High Power
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x CMD02X
Inrush Protection	-
Bridge Rectifier(s)	1x GBJ1506 (600V, 15A @ 100 °C)
APFC MOSFETS	2x Toshiba TK16A60W (600V, 15.8A @ 150°C, 0.16Ohm)
APFC Boost Diode	1x Infineon IDH06G65C5 (650V, 6A @ 145°C)
Hold-up Cap(s)	1x Rubycon (400V, 680uF, 2000h @ 105 °C, MXH)
Main Switchers	2x Toshiba TK16A60W (600V, 15.8A @ 150°C, 0.16Ohm)
APFC Controller	Infineon ICE3PCS01
Switching Controller	Infineon ICE2HS01G
Topology	Primary side: Half-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	4x Infineon IPP041N04N G (40V, 80A @ 100 °C, 4.1mohm)
5V & 3.3V	DC-DC Converters: 8x Infineon IPD060N03L (30V, 50A @ 100 °C, 6 mohm) PWM Controller: APW7159
Filtering Capacitors	Electrolytics: Nippon Chemi-Con (105 °C, KY, KZE) Polymers: Nippon Chemi-Con
Supervisor IC	SITI PS223 (OVP, UVP, OCP, SCP, OTP)
Fan Model	Thermaltake TT-1425 (Hong Sheng OEM, A1425L12S, 140mm, 12V, 0.30A, 1450 RPM, hydro-dynamic bearing)
5VSB Circuit	
Rectifier	2x IPD060N03L FETs (30V, 50A @ 100°C, 6mohm)
Standby PWM Controller	Sanken STR-A6069H
-12V Circuit	
Rectifier	KIA7912PI

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RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	89.827
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	0.000
Average Efficiency 5VSB	80.074
Standby Power Consumption (W) -115V	0.0780000
Standby Power Consumption (W) -230V	0.0000000
Average PF	0.993
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	36.86
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 4189	
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2	

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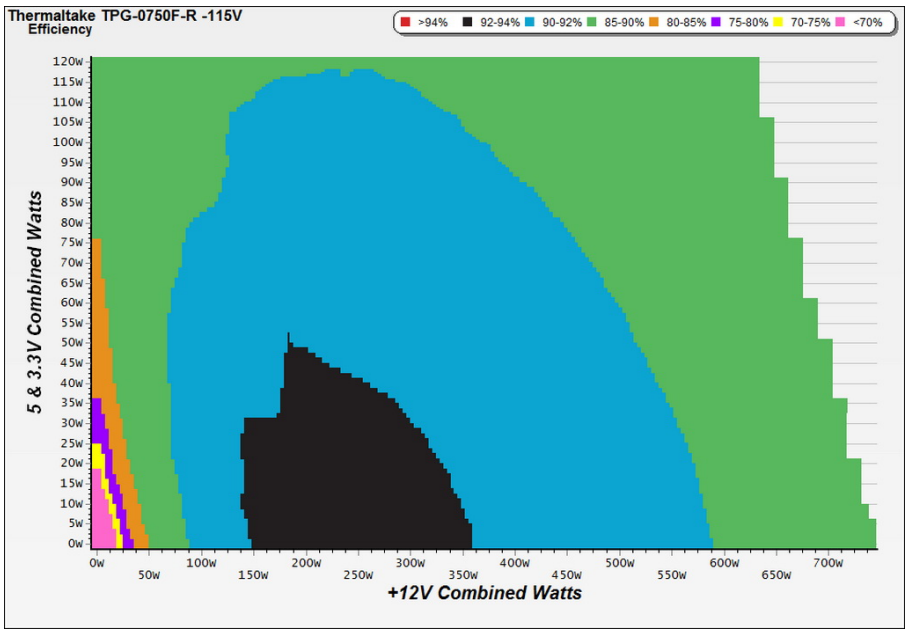
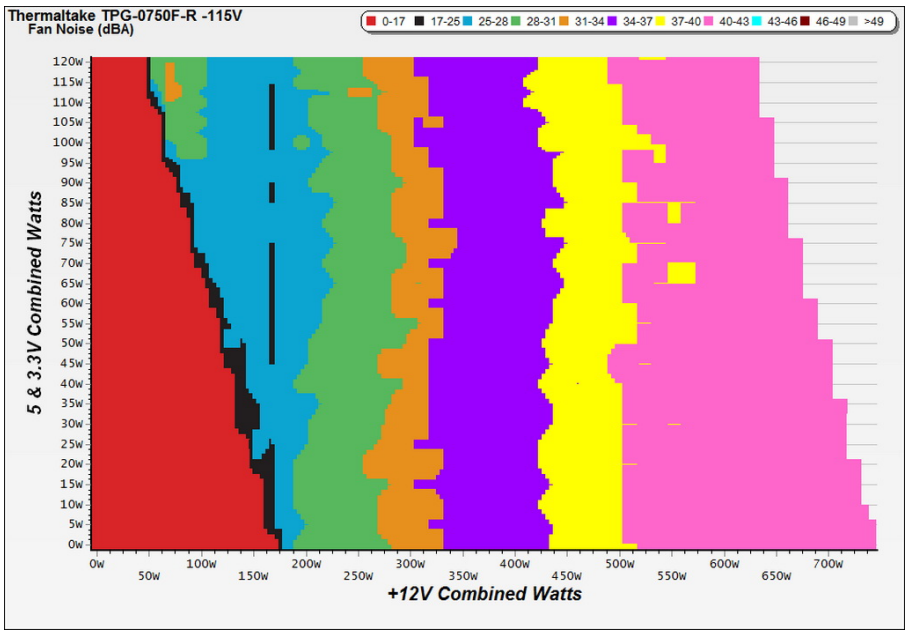
EFFICIENCY GRAPH



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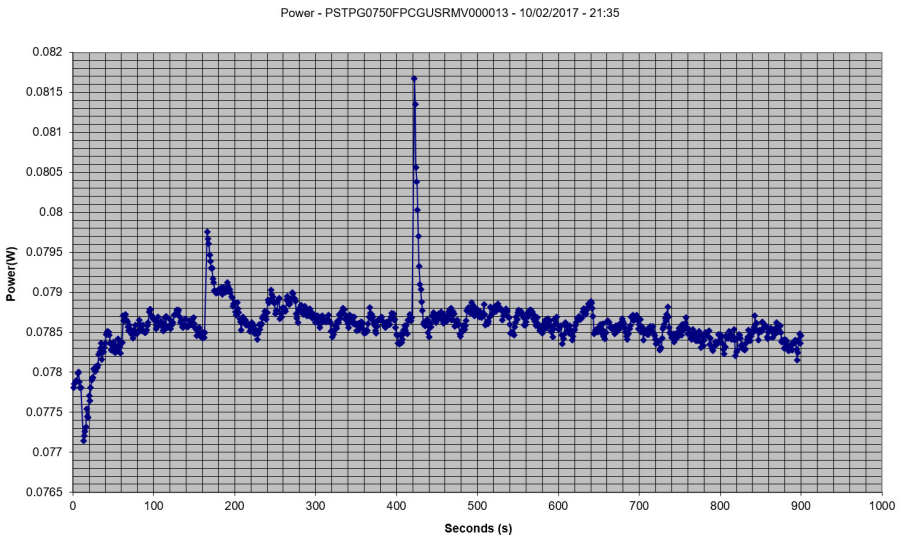
5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.047A	0.241	66.759%	0.053
	5.123V	0.361		115.10V
2	0.092A	0.471	72.685%	0.091
	5.121V	0.648		115.10V
3	0.552A	2.817	81.135%	0.272
	5.104V	3.472		115.11V
4	3.002A	15.043	79.475%	0.380
	5.011V	18.928		115.09V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.047A	0.241	59.506%	0.018
	5.122V	0.405		230.27V
2	0.092A	0.471	67.286%	0.031
	5.120V	0.700		230.27V
3	0.552A	2.815	75.510%	0.144
	5.100V	3.728		230.25V
4	3.002A	15.055	79.893%	0.318
	5.015V	18.844		230.25V

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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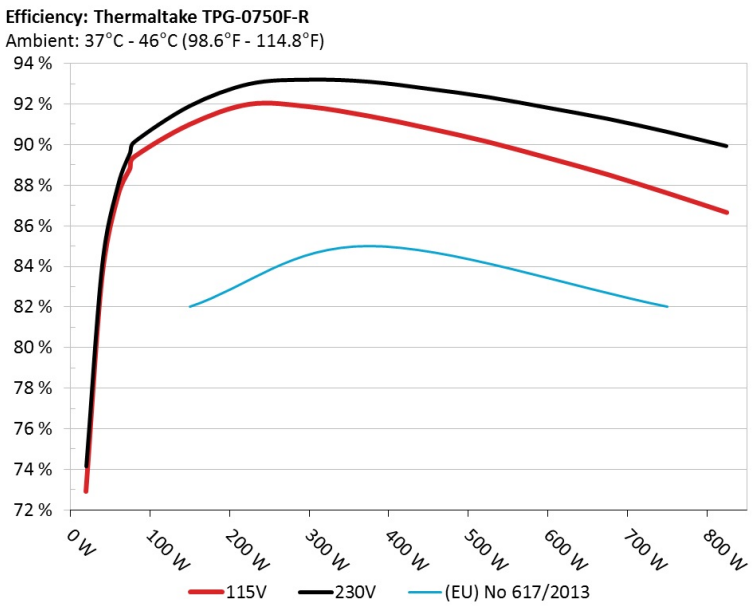
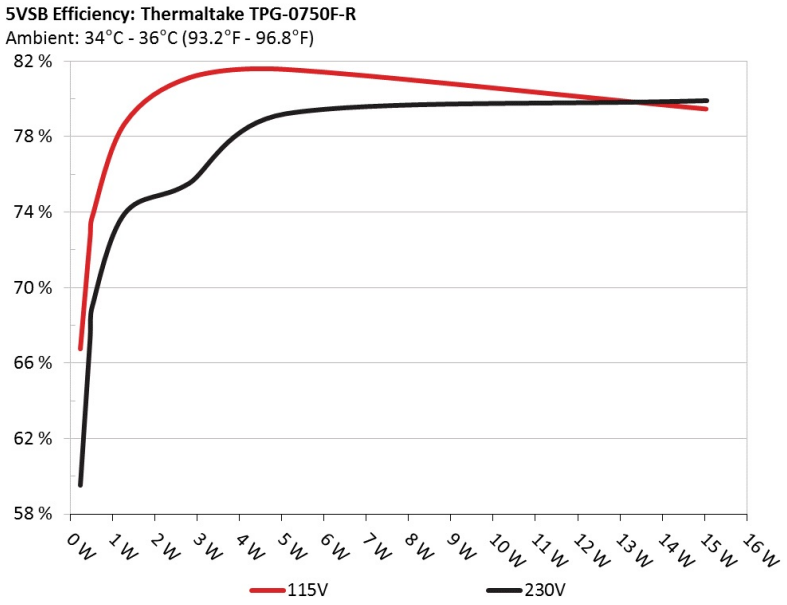
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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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Thermaltake TPG-0750F-R

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	4.354A	1.962A	1.967A	0.986A	74.784	88.807%	0	0	41.88°C	0.970
	12.224V	5.088V	3.350V	5.058V	84.210				39.03°C	115.15V
2	9.746A	2.948A	2.961A	1.185A	149.750	90.984%	1240	39.9	38.73°C	0.986
	12.201V	5.079V	3.339V	5.045V	164.589				41.25°C	115.13V
3	15.506A	3.453A	3.477A	1.391A	224.948	91.982%	1290	40.2	39.01°C	0.995
	12.180V	5.070V	3.330V	5.032V	244.557				41.85°C	115.06V
4	21.266A	3.946A	3.971A	1.590A	299.747	91.859%	1295	40.3	39.68°C	0.997
	12.160V	5.064V	3.321V	5.020V	326.312				42.72°C	115.21V
5	26.708A	4.946A	4.980A	1.797A	374.752	91.399%	1335	41.5	40.67°C	0.996
	12.140V	5.059V	3.312V	5.009V	410.016				43.64°C	115.05V
6	32.168A	5.930A	5.996A	1.998A	449.667	90.796%	1405	42.7	42.22°C	0.996
	12.121V	5.054V	3.302V	5.000V	495.249				46.00°C	115.06V
7	37.651A	6.935A	7.013A	2.200A	524.664	90.125%	1435	42.9	42.73°C	0.997
	12.100V	5.049V	3.293V	4.990V	582.154				47.54°C	115.22V
8	43.142A	7.930A	8.039A	2.407A	599.569	89.342%	1450	43.5	43.65°C	0.997
	12.081V	5.043V	3.283V	4.980V	671.093				49.33°C	115.26V
9	49.090A	8.445A	8.583A	2.410A	674.646	88.522%	1450	43.5	44.59°C	0.998
	12.060V	5.036V	3.274V	4.975V	762.126				51.47°C	115.30V
10	54.798A	8.952A	9.097A	3.033A	749.475	87.610%	1450	43.5	45.54°C	0.998
	12.040V	5.029V	3.263V	4.947V	855.468				53.75°C	115.16V
11	61.127A	8.970A	9.123A	3.035A	824.401	86.652%	1450	43.5	45.77°C	0.998
	12.019V	5.020V	3.255V	4.939V	951.388				54.97°C	115.08V
CL1	0.100A	14.023A	14.004A	0.004A	119.476	84.744%	1380	42.5	42.82°C	0.986
	12.209V	5.109V	3.327V	5.147V	140.984				47.07°C	115.09V
CL2	62.453A	1.002A	1.002A	1.002A	764.988	88.188%	1450	43.5	44.47°C	0.998
	12.036V	5.012V	3.282V	4.983V	867.450				52.10°C	115.07V

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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	1.193A	0.491A	0.474A	0.196A	19.69	72.919%	0	0	0.888
	12.237V	5.090V	3.360V	5.083V	27.00				115.03V
2	2.412A	0.978A	0.981A	0.391A	39.76	83.438%	0	0	0.940
	12.232V	5.089V	3.356V	5.076V	47.65				115.03V
3	3.635A	1.466A	1.488A	5.070A	59.89	87.484%	0	0	0.961
	12.227V	5.088V	3.353V	5.070V	68.46				115.04V
4	4.846A	1.963A	1.967A	0.787A	79.79	89.377%	0	0	0.974
	12.222V	5.087V	3.350V	5.064V	89.27				115.08V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	5.3 mV	4.8 mV	4.5 mV	4.2 mV	Pass
20% Load	6.2 mV	5.3 mV	4.7 mV	4.5 mV	Pass
30% Load	7.7 mV	5.5 mV	5.5 mV	4.2 mV	Pass
40% Load	9.5 mV	8.6 mV	6.3 mV	6.5 mV	Pass
50% Load	11.0 mV	9.5 mV	6.9 mV	7.9 mV	Pass
60% Load	12.9 mV	11.9 mV	6.1 mV	8.9 mV	Pass
70% Load	14.6 mV	11.1 mV	6.8 mV	8.4 mV	Pass
80% Load	15.5 mV	11.4 mV	7.8 mV	8.5 mV	Pass
90% Load	17.1 mV	12.2 mV	7.3 mV	7.5 mV	Pass
100% Load	22.2 mV	13.8 mV	7.8 mV	8.4 mV	Pass
110% Load	26.9 mV	14.0 mV	9.3 mV	10.1 mV	Pass
Crossload 1	6.6 mV	6.3 mV	6.1 mV	4.9 mV	Pass
Crossload 2	21.9 mV	10.6 mV	7.4 mV	6.4 mV	Pass

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HOLD-UP TIME & POWER OK SIGNAL (230V)	
Hold-Up Time (ms)	18.16
AC Loss to PWR_OK Hold Up Time (ms)	15.88
PWR_OK Inactive to DC Loss Delay (ms)	2.28

Top side

Power specifications label

CERTIFICATIONS

CYBENETICS PLATINUM

CYBENETICS STANDARD+