

Lab ID#: 483  
Receipt Date: Sep 10, 2018  
Test Date: Sep 23, 2018

Report:  
Report Date: Sep 26, 2018

DUT INFORMATION	
Brand	Thermaltake
Manufacturer (OEM)	Sirfa
Series	Toughpower Grand Gold
Model Number	TPG-0650F-S
Serial Number	PSTRG0650FPCGEUSLA000190
DUT Notes	

DUT SPECIFICATIONS	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10
Rated Frequency (Hz)	50-60
Rated Power (W)	650
Type	ATX12V
Cooling	140mm Hydro Dynamic Bearing Fan (TT-1425 (A1425L12S))
Semi-Passive Operation	✓ (selectable)
Cable Design	Fully Modular

TEST EQUIPMENT		
Electronic Loads	Chroma 6314A x2 63123A x6 63102A 63101A	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Chroma 61604, Keysight AC6804B	
Power Analyzers	N4L PPA1530 x2, 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 (+-2°C / +- 3.6°F)
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

### 115V

Average Efficiency	88.838%
Efficiency With 10W (≤500W) or 2% (>500W)	62.497
Average Efficiency 5VSB	78.379%
Standby Power Consumption (W)	0.0900565
Average PF	0.988
Avg Noise Output	29.30 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	A-

### 230V

Average Efficiency	90.410%
Average Efficiency 5VSB	76.423%
Standby Power Consumption (W)	0.1675670
Average PF	0.940
Avg Noise Output	29.25 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	A-

## POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	22	22	54.2	3	0.3
	Watts	120		650	15	3.6
Total Max. Power (W)		650				

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## CABLES AND CONNECTORS

### Modular Cables

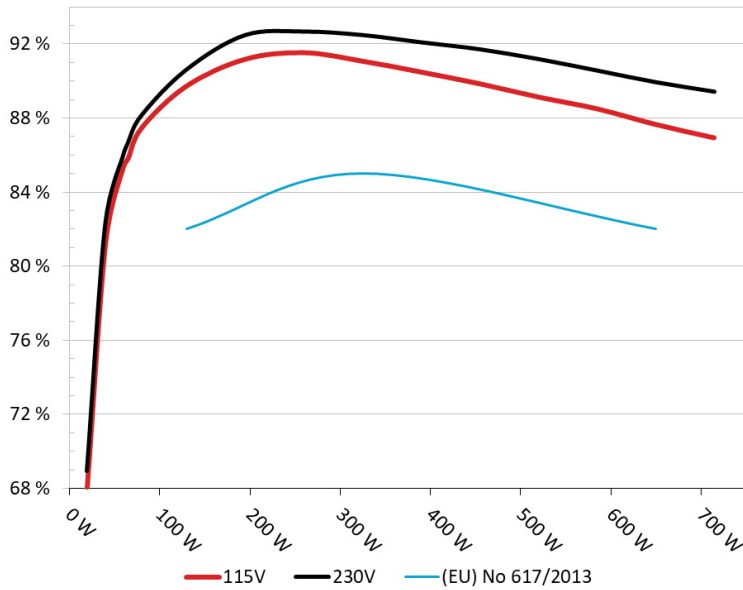
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (600mm)	1	1	18AWG	No
4+4 pin EPS12V (660mm)	1	1	18AWG	No
6+2 pin PCIe (500mm+155mm)	2	4	18AWG	No
SATA (510mm+155mm+155mm)	3	9	18AWG	No
4-pin Molex (500mm+150mm+150mm+150mm)	1	4	18AWG	No
RGB Cable (580mm+80mm)	1	1	26AWG	No
FDD Adapter (+160mm)	1	1	22AWG	No
AC Power Cord (1400mm) - C13 coupler	1	1	18AWG	-

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### EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Thermaltake TPG-0650F-S  
Ambient: 37°C - 47°C (98.6°F - 116.6°F)

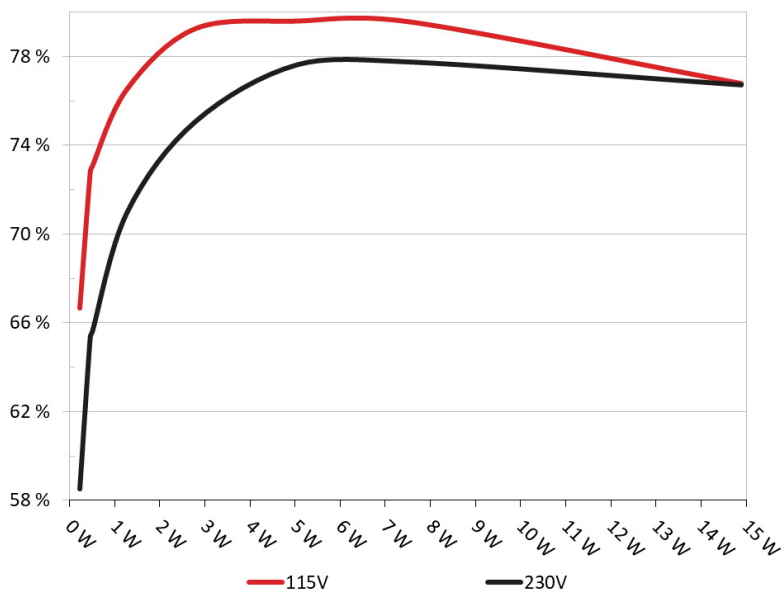


#### INFO

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 TPG-0650F-S  
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	66.667%	0.043
	5.104V	0.345		115.05V
2	0.090A	0.460	72.785%	0.077
	5.102V	0.632		115.05V
3	0.550A	2.795	79.246%	0.252
	5.080V	3.527		115.06V
4	1.000A	5.060	79.585%	0.299
	5.060V	6.358		115.05V
5	1.500A	7.556	79.545%	0.324
	5.037V	9.499		115.05V
6	3.000A	14.887	76.777%	0.360
	4.962V	19.390		115.04V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	58.524%	0.017
	5.104V	0.393		230.20V
2	0.090A	0.460	65.341%	0.029
	5.102V	0.704		230.02V
3	0.550A	2.794	75.087%	0.133
	5.080V	3.721		230.20V
4	1.000A	5.060	77.655%	0.192
	5.059V	6.516		230.20V
5	1.500A	7.555	77.774%	0.233
	5.036V	9.714		230.18V
6	3.000A	14.895	76.739%	0.286
	4.965V	19.410		230.20V

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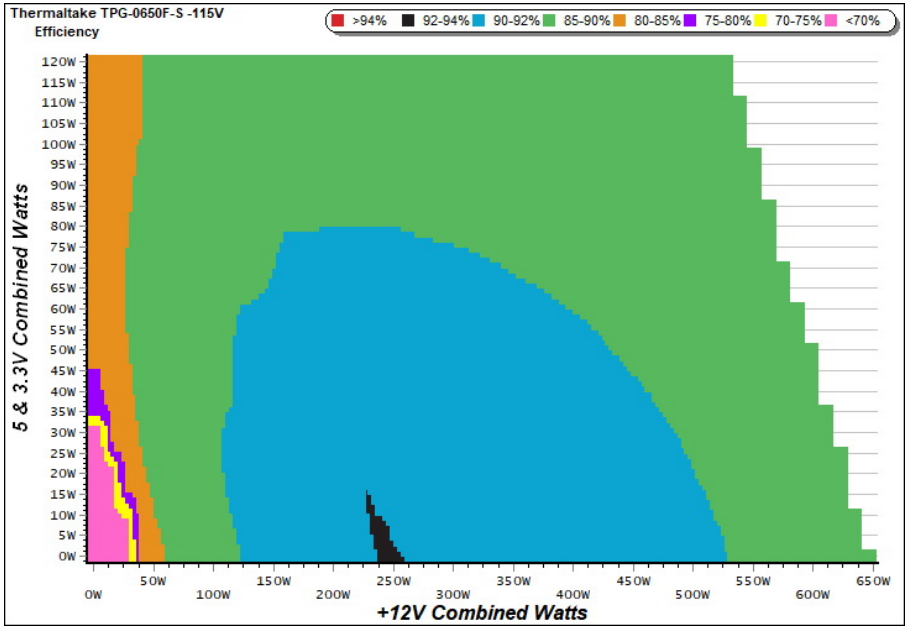
# 115V

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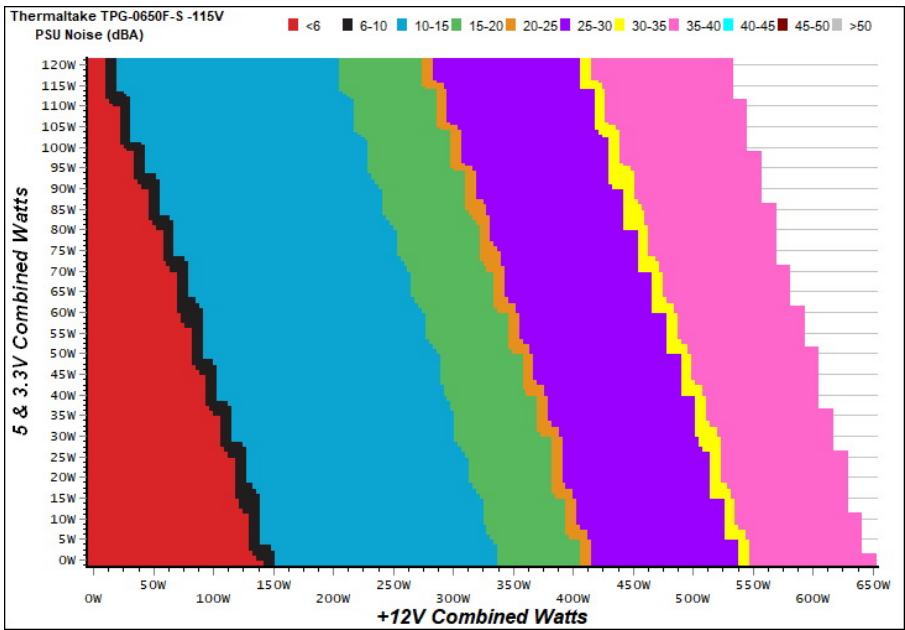
### EFFICIENCY GRAPH 115V



#### 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

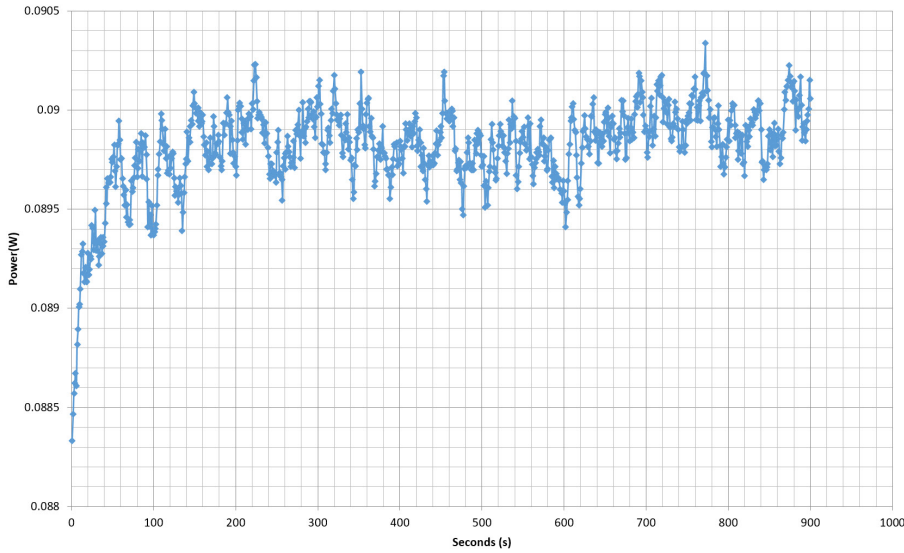
The PSU's noise in its entire operational range and under 30-32 °C (+2 °C) ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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**VAMPIRE POWER -115V**

Power - PSTRG0650FPCGEUSLA000190 - 20/09/2018 - 14:08



**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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**COMMISSION REGULATION (EU) NO 617/2013 TESTING 115V**

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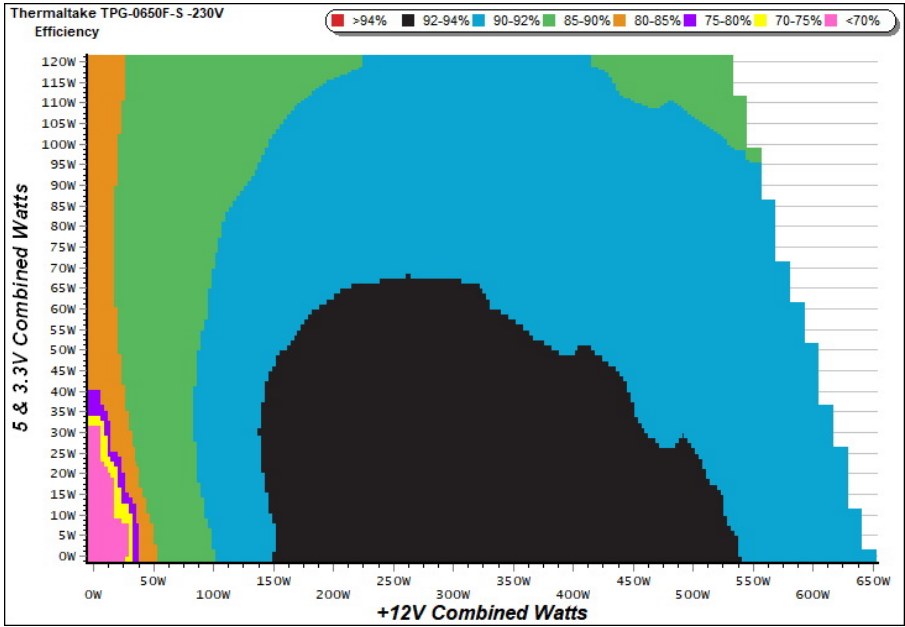
# 230V

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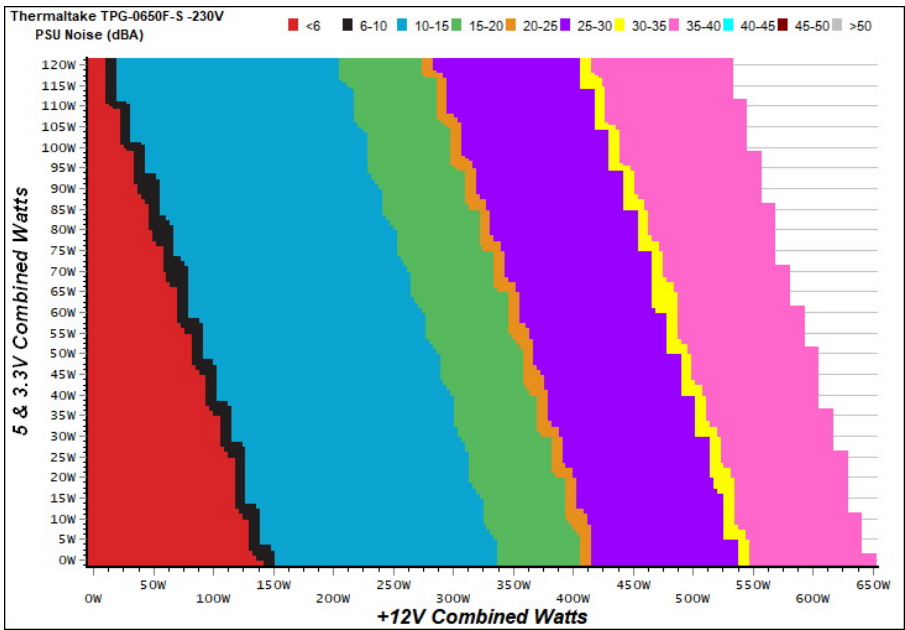
### EFFICIENCY GRAPH 230V



#### INFO

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### NOISE GRAPH 230V



#### INFO

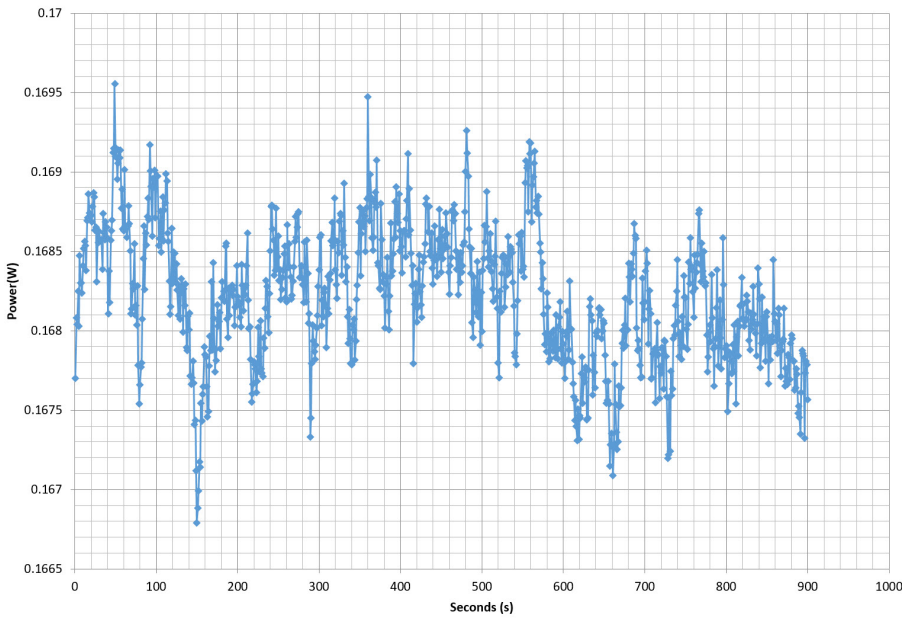
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VAMPIRE POWER -230V

Power - PSTRG0650FPCGEUSLA000190 - 20/09/2018 - 14:08



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EFFICIENCY AND NOISE REPORT IN ACCORDANCE WITH  
CYBENETICS ETA AND CYBENETICS LAMBDA PROCEDURE

## Thermaltake Toughpower Grand Gold 650W



Top side



Power specifications label

### CERTIFICATIONS 115V



**Aristeidis Bitziopoulos**  
Lab Director

### CERTIFICATIONS 230V



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