

Lab ID#: 142
Receipt Date: Jul 8, 2018
Test Date: Jul 15, 2018

Report:

Report Date: Jul 18, 2018

DUT INFORMATION

Brand	Thermaltake
Manufacturer (OEM)	Enhance Electronics
Series	Toughpower SFX
Model Number	STP-0600F-G
Serial Number	PSSTP0600FPCGUSGMA000060
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	9-4.5
Rated Frequency (Hz)	50-60
Rated Power (W)	600
Type	SFX
Cooling	80mm Double Ball-Bearing Fan (R128015SM)
Semi-Passive Operation	✓
Cable Design	Fully Modular

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	15	50	2.5	0.3
	Watts	90		600	12.5	3.6
Total Max. Power (W)		600				

CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge
ATX connector 20+4 pin (305mm)	1	1	18-22AWG
4+4 pin EPS12V (410mm)	1	1	18AWG
6+2 pin PCIe (410mm+150mm)	1	2	18AWG
SATA (300mm+145mm+145mm)	1	3	18AWG
4 pin Molex (310mm+145mm) / FDD (+150mm)	1	2 / 1	18-22AWG

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General Data	
Manufacturer (OEM)	Enhance Electronics
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor
Bridge Rectifier(s)	1x Vishay BU1506 (600 V, 15 A @ 80 °C)
APFC MOSFETS	2x Infineon IPP50R140CP (550 V, 15 A @ 100 °C, 0.14 Ohm)
APFC Boost Diode	1x CREE C3D08060A (600 V, 8 A @ 152 °C)
Hold-up Cap(s)	1x Nippon Chemi-Con (450 V, 330 uF, 2000 h @ 105 °C, KMR)
Main Switchers	2x Infineon IPP50R140CP (550 V, 15 A @ 100 °C, 0.14 Ohm)
FET Driver	1x Silicon Labs Si8230BD
APFC Controller	Champion CM6500
Switching Controller	Champion CM6901
Topology	Primary side: Half-Bridge & LLC Resonant Converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	6x International Rectifier IRFH7004PbF (40 V, 164 A @ 100 °C, 1.4 mOhm)
5V & 3.3V	DC-DC Converters: 2x Infineon BSC018NE2LS (25 V, 97 A @ 100 °C, 1.8 mOhm), 2x Infineon BSC050NE2LS (25 V, 37 A @ 100 °C, 5 mOhm) PWM Controllers: 2x ANPEC APW7073
Filtering Capacitors	Electrolytics: Nippon Chemi-Con (105 °C, KZE), United Chemi-Con (105 °C, LXZ), Rubycon (105 °C, ZL), Suncon (105 °C) Polymers: Unicon
Supervisor IC	SITI PS223 (OVP, UVP, OCP, SCP, OTP)
Fan Model	EverflowR128015SM (80 mm, 12 V, 0.25 A, 3000 RPM, 33.27 CFM, 31 dBA, Dual Ball-Bearing)
5VSB Circuit	
Rectifier	1x STP3NK90ZFP (900 V, 1.89 A @ 100 °C, 4.8 Ohm)

RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6 (+-2°C / +- 3.6°F)
ErP Lot 3/6 Ready	ErP Lot 3/6 2010: ✓ ErP Lot 3/6 2013: ✓ ErP Lot 3/6 2014, CEC: Partially
(EU) No 617/2013 Compliance	✓

115V

Average Efficiency	88.401%
Efficiency With 10W (≤500W) or 2% (>500W)	0.000
Average Efficiency 5VSB	75.495%
Standby Power Consumption (W)	0.0608187
Average PF	0.984
Avg Noise Output	36.51 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	S+

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	

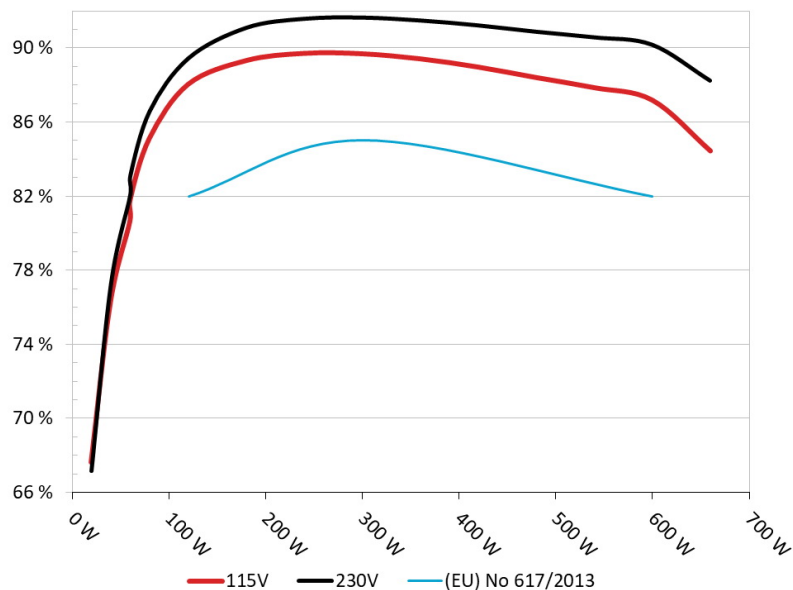
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Thermaltake STP-0600F-G
Ambient: 37°C - 46°C (98.6°F - 114.8°F)

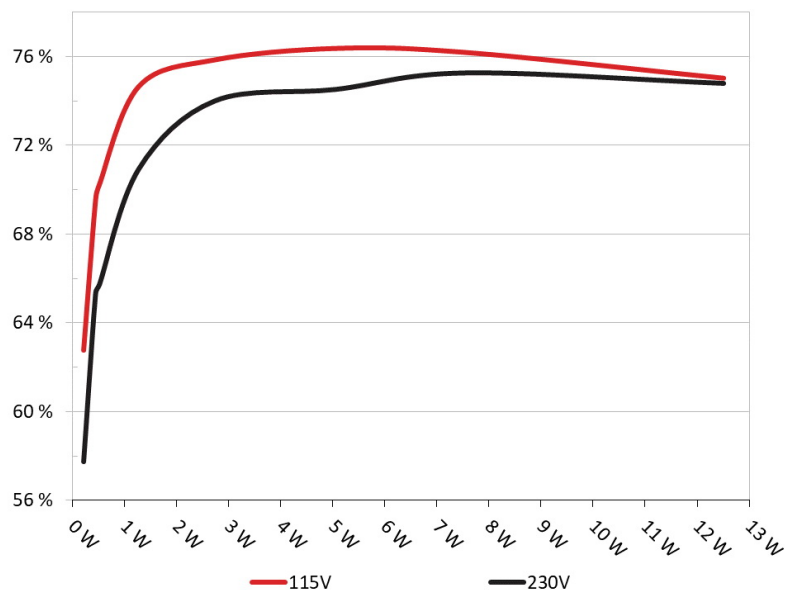


INFO

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 STP-0600F-G
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	0.041A	0.209	62.763%	0.036
	5.057V	0.333		115.17V
2	0.087A	0.438	69.524%	0.067
	5.055V	0.630		115.17V
3	0.542A	2.732	75.847%	0.274
	5.045V	3.602		115.16V
4	1.002A	5.043	76.363%	0.354
	5.035V	6.604		115.16V
5	1.501A	7.543	76.184%	0.395
	5.024V	9.901		115.16V
6	2.501A	12.513	75.022%	0.436
	5.003V	16.679		115.16V

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

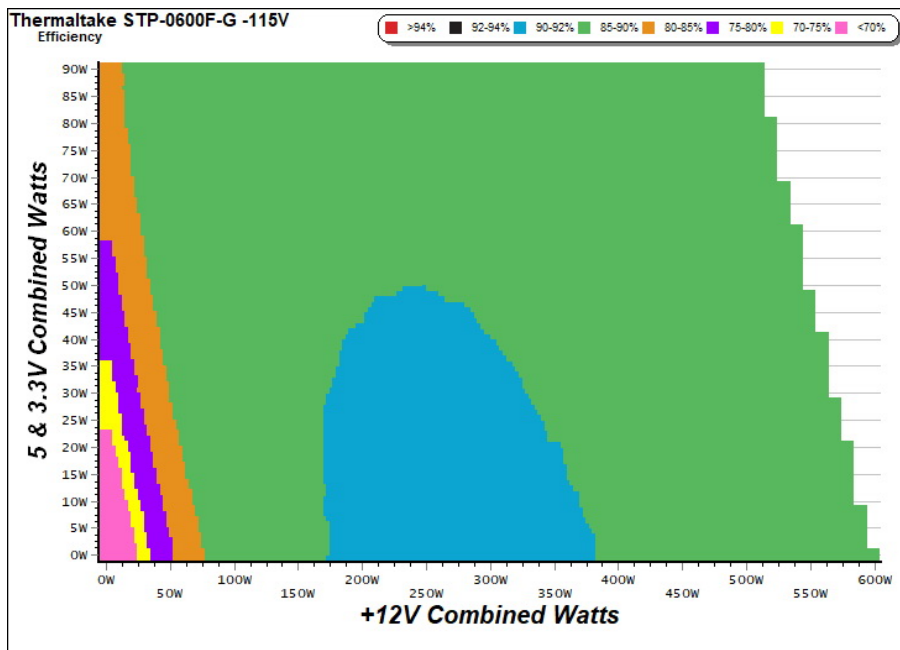
Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.041A	0.209	57.735%	0.012
	5.057V	0.362		230.40V
2	0.087A	0.439	65.327%	0.022
	5.055V	0.672		230.40V
3	0.542A	2.732	74.018%	0.113
	5.045V	3.691		230.40V
4	1.002A	5.043	74.534%	0.186
	5.035V	6.766		230.40V
5	1.501A	7.543	75.279%	0.242
	5.024V	10.020		230.40V
6	2.501A	12.512	74.810%	0.312
	5.003V	16.725		230.40V

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115V

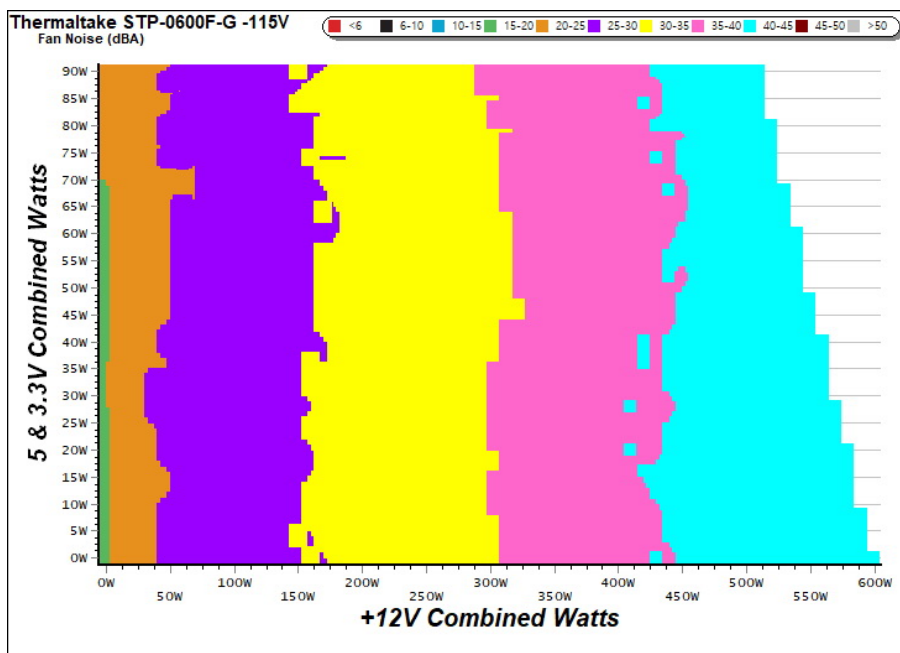
EFFICIENCY GRAPH 115V



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

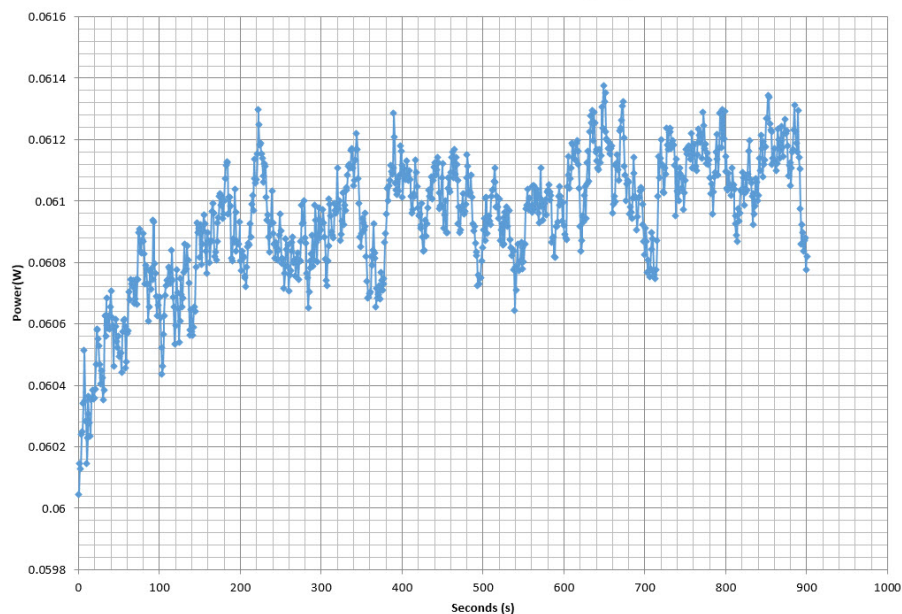
The PSU's noise in its entire operational range and under 30-32 °C (+2 °C) ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -115V

Power - PSSTP0600FPCGUSGMA000060 - 17/07/2017 - 16:05



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

Thermaltake Toughpower SFX 600W

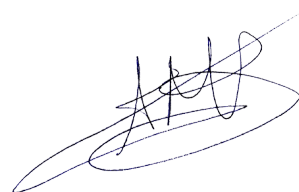


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Power specifications label

CERTIFICATIONS 115V

Aris Mpitsiopoulos
Lab Director

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