

Lab ID#: 199
Receipt Date: Oct 9, 2018
Test Date: Oct 15, 2018

Report:

Report Date: Oct 18, 2018

DUT INFORMATION

Brand	Thermaltake
Manufacturer (OEM)	Channel Well Technology
Series	Toughpower Grand RGB
Model Number	TPG-1200F1FAP
Serial Number	PSTG1200F1FAPU1AL000009
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	14
Rated Frequency (Hz)	50-60
Rated Power (W)	1200
Type	ATX12V
Cooling	140mm HDB RGB Fan (TT-1425/A1425H12S)
Semi-Passive Operation	✓ (selectable)
Cable Design	Fully Modular

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	25	25	100	3	0.3
	Watts	130		1200	15	3.6
Total Max. Power (W)		1200				

CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge
ATX connector 20+4 pin (600mm)	1	1	16AWG
4+4 pin EPS12V (650mm)	1	1	16AWG
8 pin EPS12V (650mm)	1	1	16AWG
6+2 pin PCIe (500mm+150mm)	4	8	16-18AWG
SATA (500mm+150mm+150mm+150mm)	3	12	18AWG
4 pin Molex (500mm+150mm+150mm+150mm)	2	8	18AWG
FDD Adapter (+100mm)	1	1	22AWG

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General Data	
Manufacturer (OEM)	CWT
Primary Side	
Transient Filter	6x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x CM02X
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	2x Vishay LVB2560 (600V, 25A @ 105°C)
APFC MOSFETS	2x Toshiba TK25A60X (600V, 25A @ 150°C, 0.105Ohm)
APFC Boost Diode	2x CREE C3D10060A (600V, 10A @ 153°C)
Hold-up Cap(s)	2x Nichicon (400V, 680uF, 2000h @ 105°C, GG)
Main Switchers	4x A26N60EFL
Driver ICs	2x Silicon Labs Si8230BD
APFC MCU	Texas Instruments UCD3138A (31.25 MHz, 32-bit ARM7TDMI-S Processor, 32KB Flash, 4KB RAM, 3x Feedback loop control, 14-bit DAC, up to 2 MHz switching frequency)
LLC Resonant MCU	Texas Instruments UCD3138A (31.25 MHz, 32-bit ARM7TDMI-S Processor, 32KB Flash, 4KB RAM, 3x Feedback loop control, 14-bit DAC, up to 2 MHz switching frequency)
Topology	Primary side: Interleaved PFC, Full-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	8x Infineon BSC014N06NS (60V, 100A @ 100°C, 1.45mOhm)
5V & 3.3V	DC-DC Converters: 5x FETS PWM Controller: 1x
Filtering Capacitors	Electrolytics: Nippon Chemi-Con (1-5,000 @ 105°C, KZE), Nippon Chemi-Con (4-10,000 @ 105°C, KY) Polymers: CapXon, Su'scon, APAQ
Supervisor IC	Weltrend WT751002 (OVP, UVP, PG) & LM358
Fan Model	Thermaltake TT-1425 (Hong Sheng OEM, A1425H12S, 140mm, 12V, 0.39A, Hydro Dynamic Bearing, RGB LED Lighting)
5VSB Circuit	
Rectifiers	ISD04N65A (650V, 4A, 2.50Ohm), SPN5003 (N-Channel Enhancement Mode FET) & PS1045L SBR
Driver IC	Texas Instruments UCC27324
PWM Controller	On-Bright OB5282CP

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	89.944%
Efficiency With 10W (≤500W) or 2% (>500W)	0.000
Average Efficiency 5VSB	77.364%
Standby Power Consumption (W)	0.0414325
Average PF	0.993
Avg Noise Output	32.74 dB(A)
Efficiency Rating (ETA)	PLATINUM
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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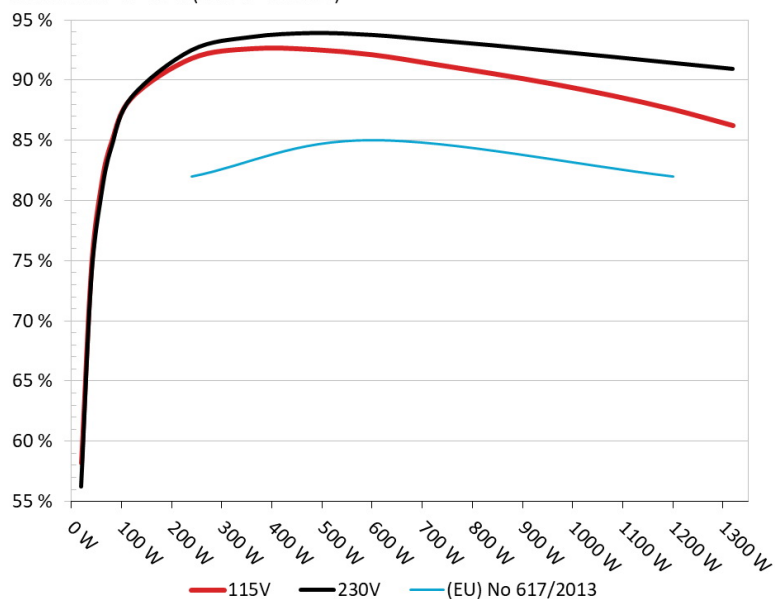
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Thermaltake TPG-1200F1FAP

Ambient: 37°C - 48°C (98.6°F - 118.4°F)



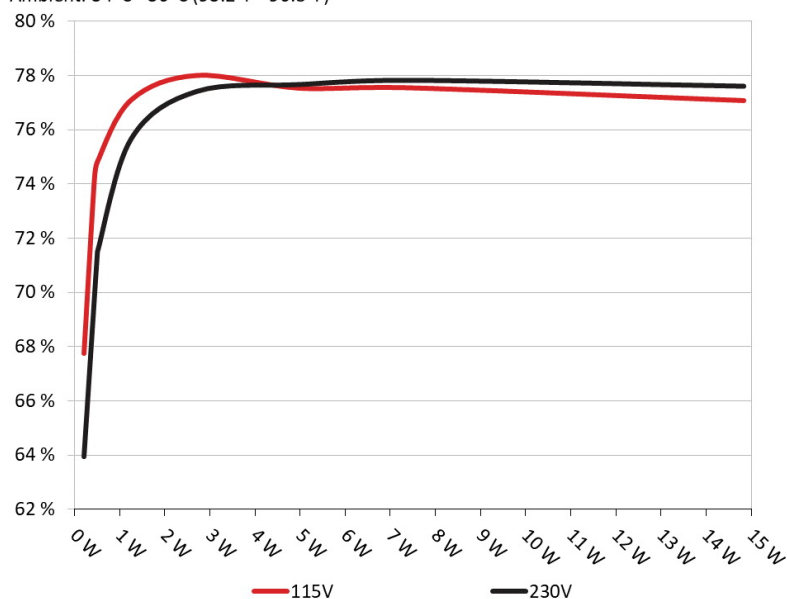
INFO

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-1200F1FAP

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	0.042A	0.210	67.742%	0.031
	5.003V	0.310		115.09V
2	0.088A	0.438	74.112%	0.059
	5.001V	0.591		115.10V
3	0.543A	2.708	77.995%	0.269
	4.991V	3.472		115.09V
4	1.002A	4.994	77.523%	0.374
	4.982V	6.442		115.09V
5	1.502A	7.469	77.536%	0.430
	4.973V	9.633		115.09V
6	3.002A	14.837	77.067%	0.497
	4.943V	19.252		115.09V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.211	63.939%	0.010
	5.003V	0.330		230.27V
2	0.088A	0.439	71.498%	0.019
	5.001V	0.614		230.27V
3	0.542A	2.708	77.416%	0.101
	4.992V	3.498		230.26V
4	1.002A	4.995	77.671%	0.171
	4.983V	6.431		230.26V
5	1.502A	7.469	77.826%	0.232
	4.973V	9.597		230.27V
6	3.002A	14.838	77.609%	0.340
	4.943V	19.119		230.26V

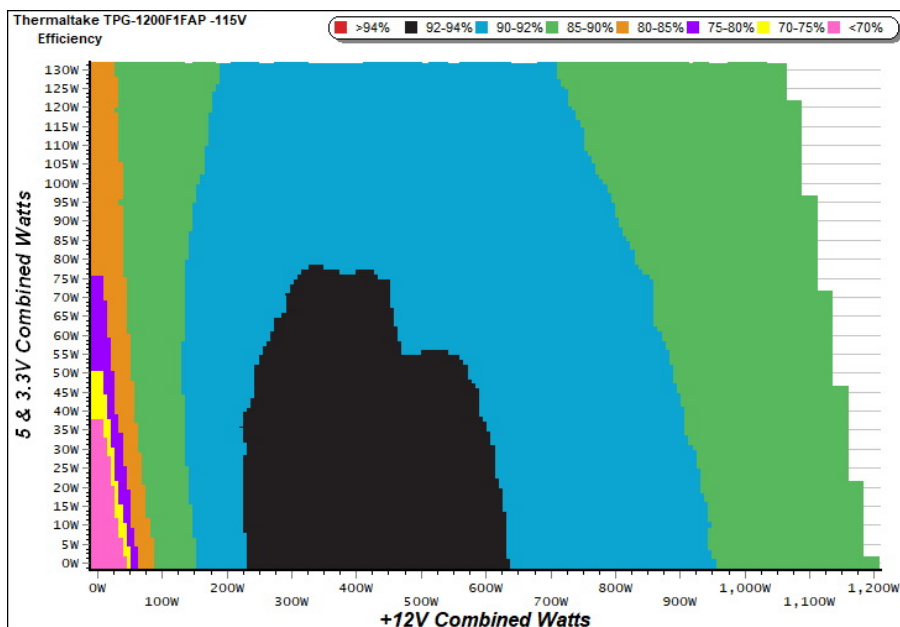
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115V

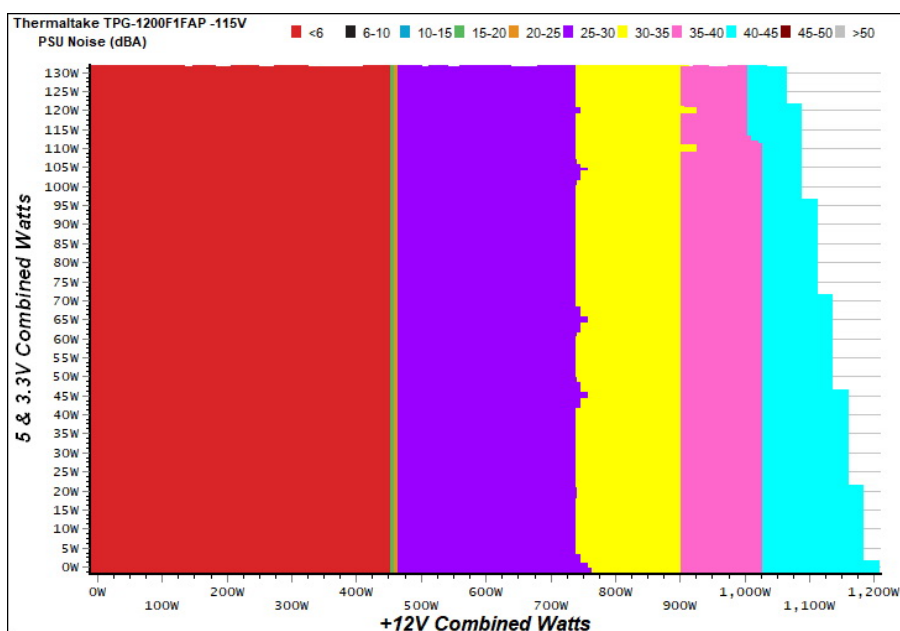
EFFICIENCY GRAPH 115V



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

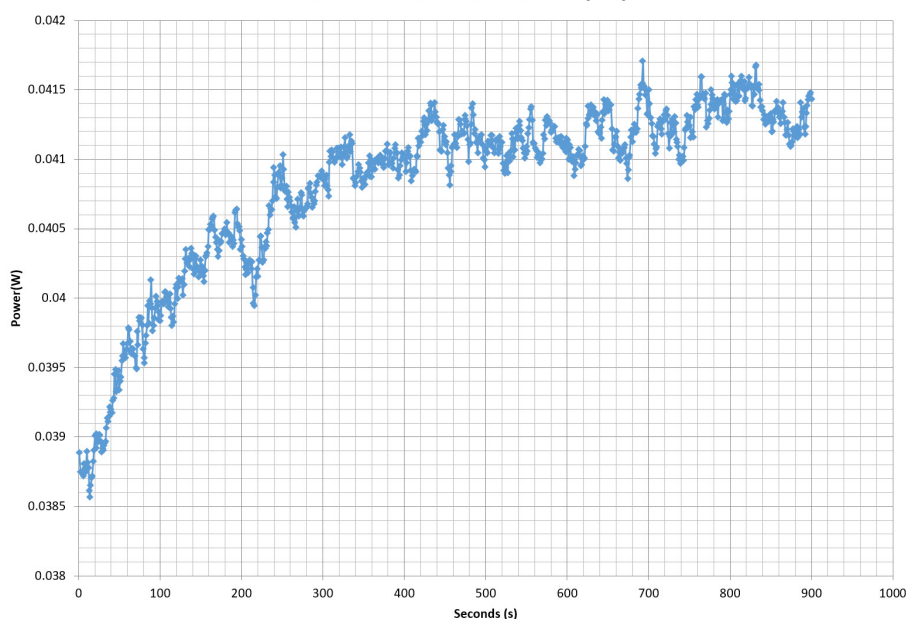
The PSU's noise in its entire operational range and under 30-32 °C (+2 °C) ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -115V

Power - PSTPG1200F1FAPU1AL000009 - 18/10/2017 - 11:47



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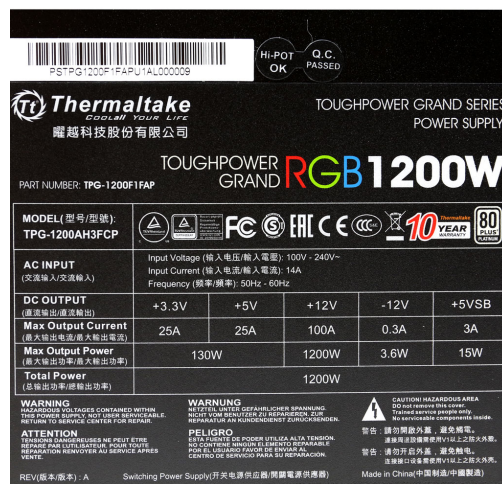
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EFFICIENCY AND NOISE REPORT IN ACCORDANCE WITH
CYBENETICS ETA AND CYBENETICS LAMBDA PROCEDURE



Top side

Thermaltake Toughpower Grand RGB 1200W Platinum



Power specifications label

CERTIFICATIONS 115V




Aris Mpitsiopoulos
Lab Director

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