

Lab ID#: 434

Receipt Date: Jul 5, 2018

Test Date: Jul 17, 2018

Report:

Report Date: Jul 20, 2018

DUT INFORMATION

Brand	FSP Technology Inc.
Manufacturer (OEM)	FSP
Series	Hydro PTM
Model Number	
Serial Number	
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	50-60
Rated Power (W)	850
Type	ATX12V
Cooling	135mm Fluid Dynamic Bearing Fan (MGA13512XF-A25)
Semi-Passive Operation	✓
Cable Design	Fully Modular

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	70.83	2.5	0.3
	Watts	100		850	12.5	3.6
Total Max. Power (W)		850				

CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (600mm)	1	1	16-22AWG	No
4+4 pin EPS12V (700mm)	2	2	16AWG	No
6+2 pin PCIe (650mm+150mm)	2	4	18AWG	No
6+2 pin PCIe (500mm+150mm)	2	4	16-18AWG	No
SATA (500mm+150mm+150mm+150mm)	2	8	18AWG	No
SATA (500mm+160mm) / 4 pin Molex (+160mm+100mm)	1	2 / 2	18AWG	No
SATA (500mm+160mm) / 4 pin Molex (+160mm) / FDD (+160mm)	1	2 / 1 / 1	18-22AWG	No
LED Light Cable (+600mm)	1	1	26AWG	No
AC Power Cord (1360mm) - C13 coupler	1	1	18AWG	-

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General Data	
Manufacturer (OEM)	FSP
Platform Model	HPT (M)
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	3x GBJ1506 (600V, 15A @ 100°C)
APFC MOSFETS	2x Infineon IPA60R120P7 (650V, 16A @ 100°C, 0.120hm)
APFC Boost Diode	1x ROHM SCS308AP (650V, 8A @ 135°C)
Hold-up Cap(s)	2x Chemi-Con (420V, 330uF, 2000h @ 105 °C, KMZ)
Main Switchers	2x STI STF28N60M2 (650V, 14A @ 100°C, 0.150hm) Driver IC: Silicon Labs Si8233BD
APFC Controller	Infineon ICE2PCS02
LLC Resonant Controller	Champion CM6901T2X
Topology	Primary side: Half-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	6x Infineon BSC010N04LS (40V, 100A @ 100°C, 1mOhm)
5V & 3.3V	DC-DC Converters: 4x Infineon BSC0901NS (30V, 94A @ 100°C, 2.4mOhm) PWM Controller: Anpec APW7159C
Filtering Capacitors	Electrolytics: Chemi-Con (1-5,000 @ 105°C, KZE), Chemi-Con (4-10,000 @ 105°C, KY), 3x Rubycon (105°C) Polymers: Chemi-Con
Supervisor IC	SMTI PS223H (4-channel OCP, OVP, UVP, OTP, SCP, PG)
Fan Model	Protechnic Electric MGA13512XF-A25 (135mm, 12V, 0.38A, Fluid Dynamic Bearing)
5VSB Circuit	
Rectifier	1x Infineon IRFR1018E (60V, 56A @ 100°C, 8.4mOhm)
Standby PWM Controller	InnoSwitch3-EP INN3674C

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	90.589%
Efficiency With 10W (≤500W) or 2% (>500W)	70.233
Average Efficiency 5VSB	85.447%
Standby Power Consumption (W)	0.0551990
Average PF	0.994
Avg Noise Output	24.90 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A

230V

Average Efficiency	92.672%
Average Efficiency 5VSB	83.287%
Standby Power Consumption (W)	0.1603020
Average PF	0.969
Avg Noise Output	22.75 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A

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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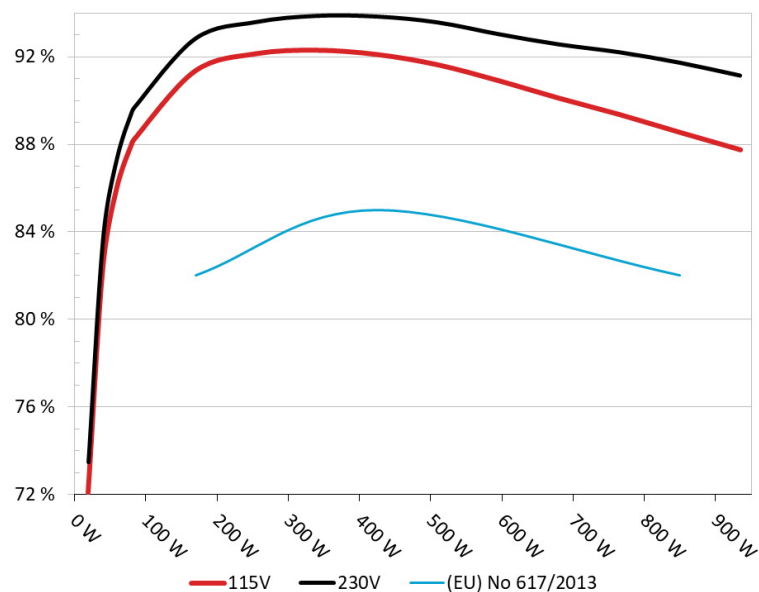
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: FSP HPT850M

Ambient: 37°C - 47°C (98.6°F - 116.6°F)



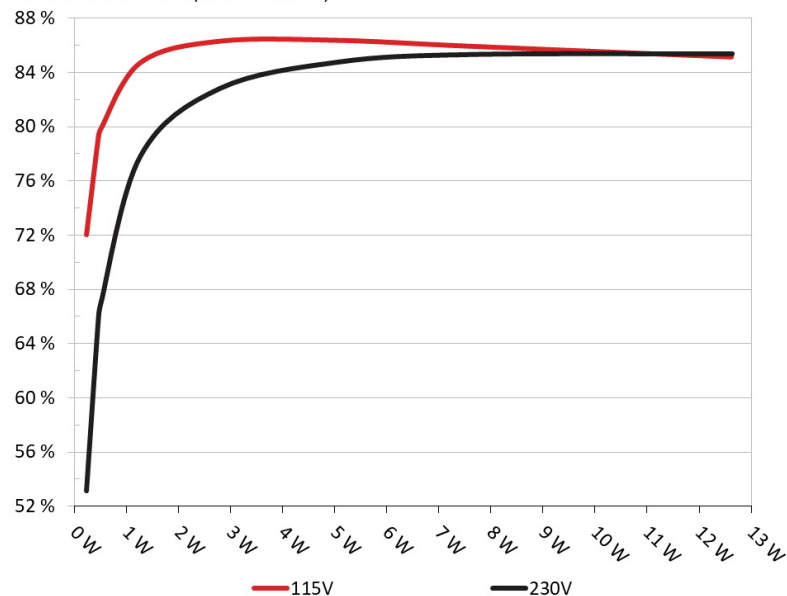
INFO

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: FSP HPT850M

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	0.229	72.013%	0.037
	5.080V	0.318		115.13V
2	0.090A	0.458	79.239%	0.066
	5.079V	0.578		115.15V
3	0.550A	2.792	86.333%	0.273
	5.076V	3.234		115.13V
4	1.000A	5.085	86.391%	0.725
	5.086V	5.886		115.13V
5	1.500A	7.603	85.958%	0.412
	5.067V	8.845		115.13V
6	2.501A	12.620	85.161%	0.461
	5.046V	14.819		115.14V

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

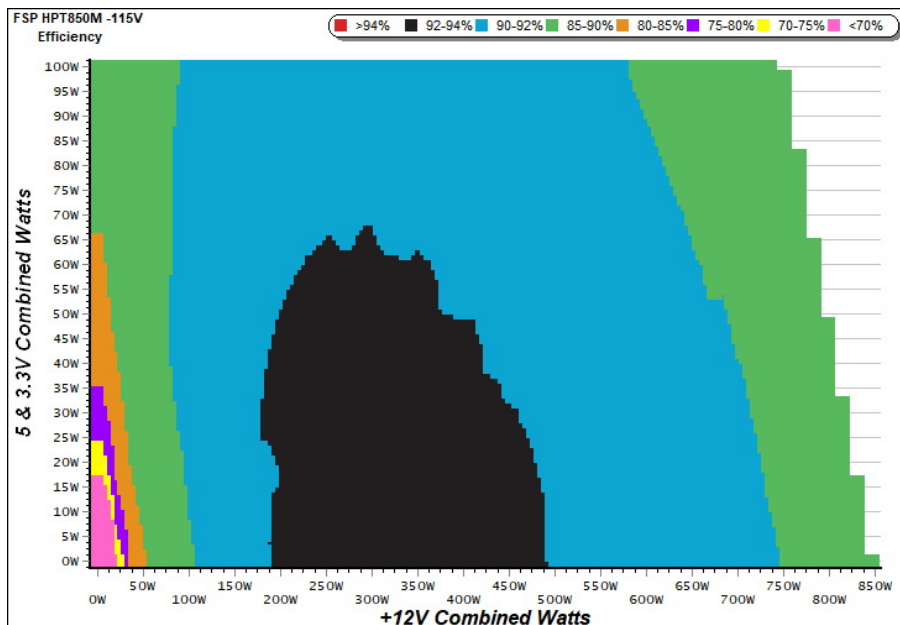
Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.229	53.132%	0.015
	5.086V	0.431		230.36V
2	0.090A	0.458	65.805%	0.024
	5.084V	0.696		230.36V
3	0.550A	2.790	82.814%	0.111
	5.072V	3.369		230.36V
4	1.000A	5.077	84.772%	0.179
	5.076V	5.989		230.36V
5	1.500A	7.610	85.323%	0.237
	5.072V	8.919		230.36V
6	2.500A	12.640	85.382%	0.313
	5.055V	14.804		230.36V

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115V

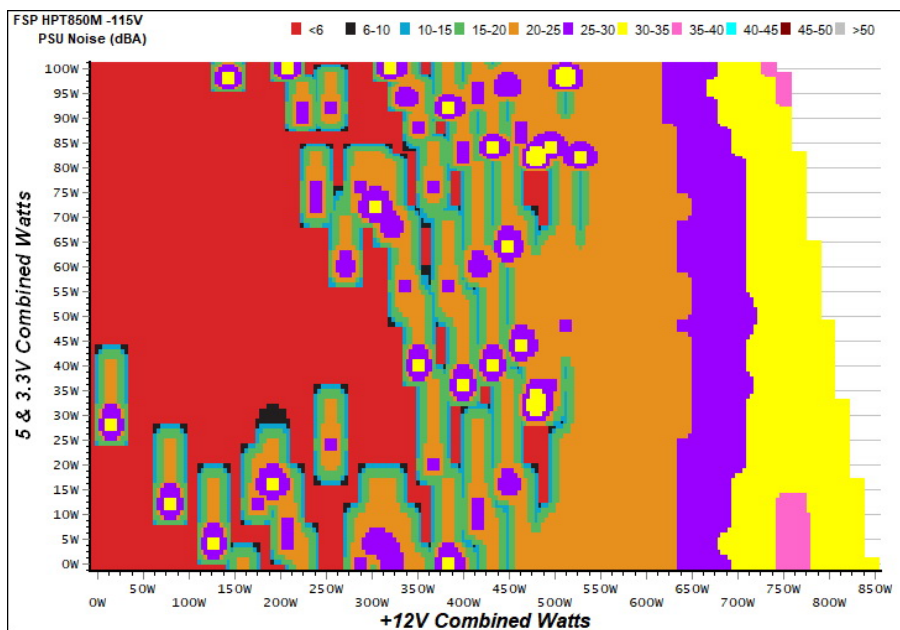
EFFICIENCY GRAPH 115V



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

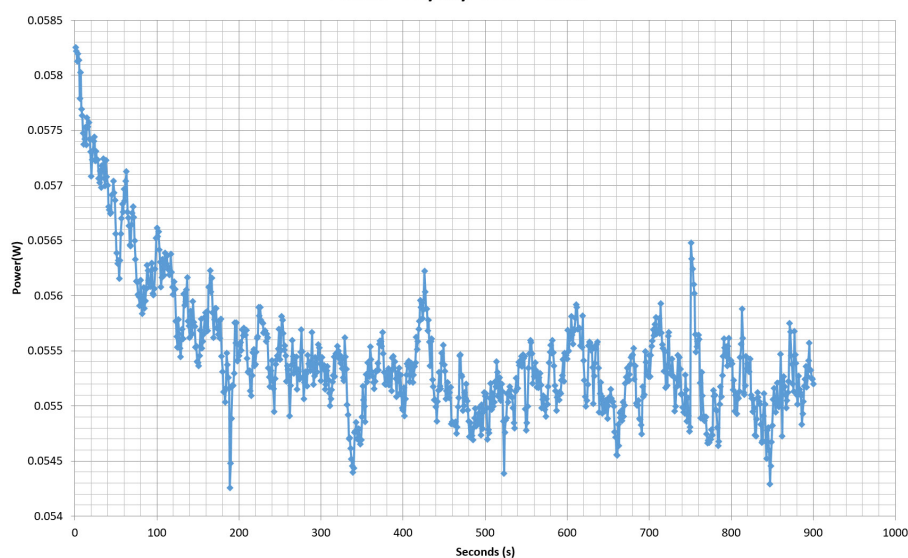
The PSU's noise in its entire operational range and under 30-32 °C (+2 °C) ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -115V

Power - 17/07/2018 - 16:08



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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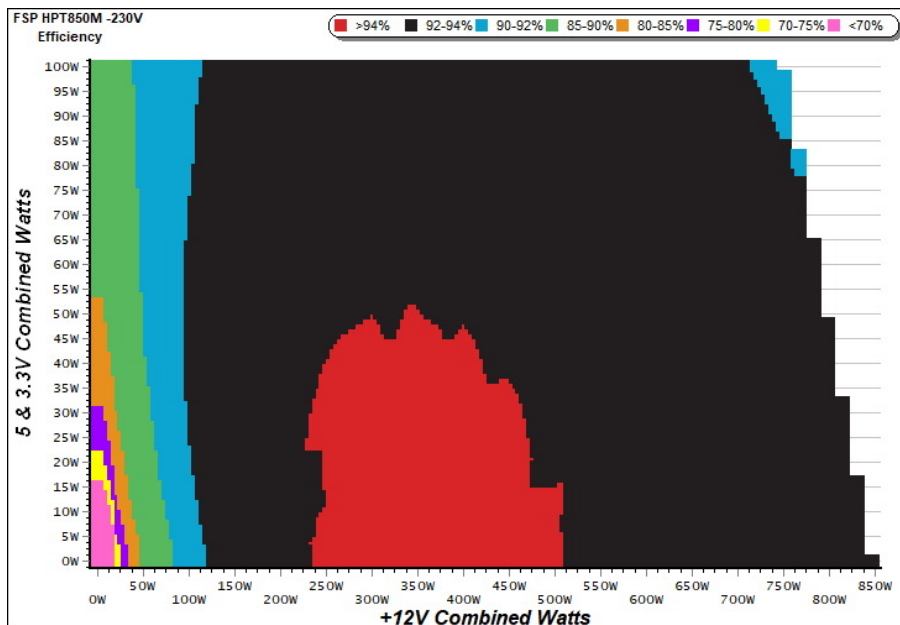
230V

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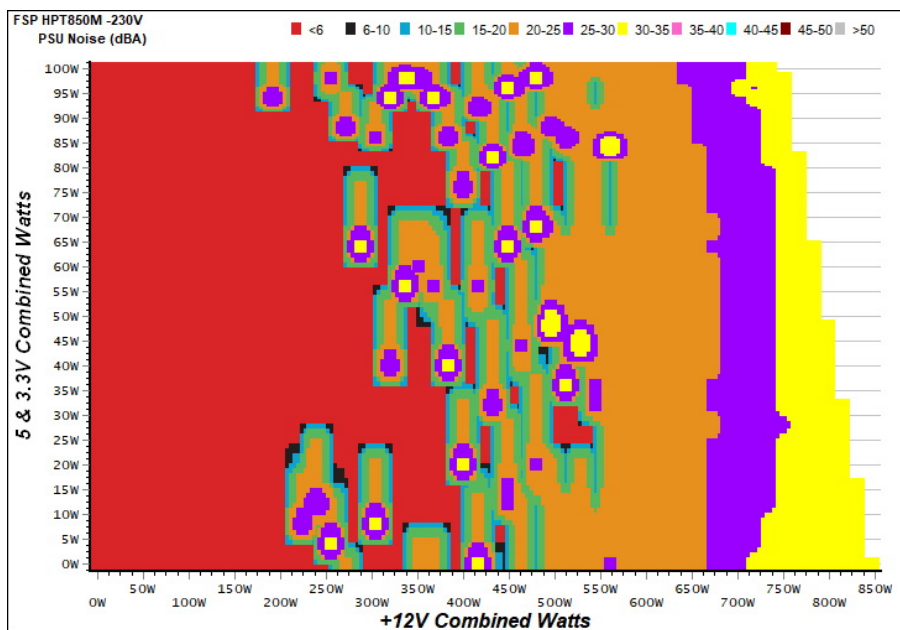
EFFICIENCY GRAPH 230V



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NOISE GRAPH 230V



INFO

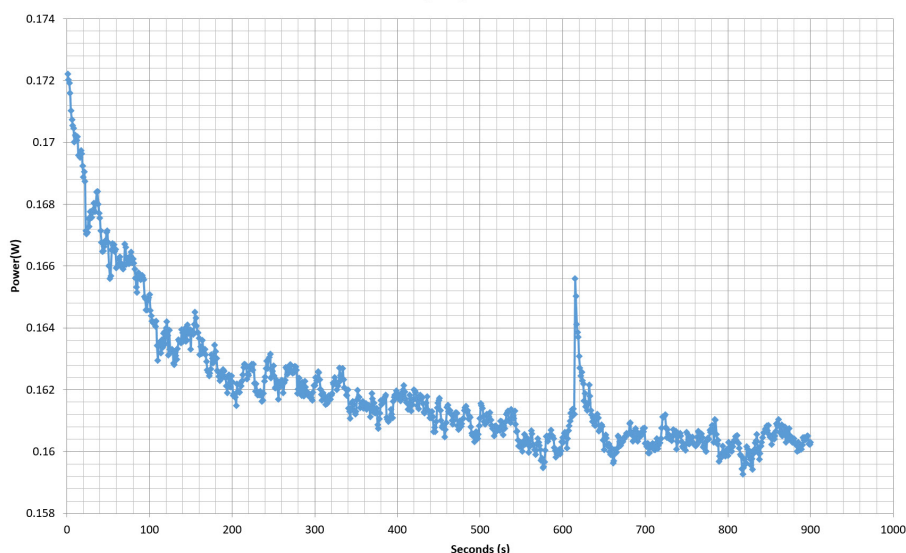
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VAMPIRE POWER -230V

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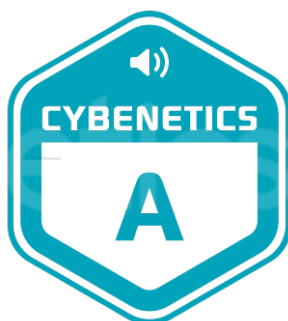
FSP

AC Input 交流輸入 / 交流输入 / 입력입력	100-240V ~ 10-5A 50-60Hz				
DC Output 直流輸出 / 直流输出	+3.3V	+5V	+12V	-12V	+5Vsb
Max Output Current 最大電流 / 最大电流 / 출력전류	20A	20A	70.83A	0.3A	2.5A
Max Combined Power 最大功率 / 最大功率	100W		850W	3.6W	12.5W
Total Power 額定功率 / 额定功率	850W				


 R43001
RoHS

Power specifications label

CERTIFICATIONS 115V



Aris Mpitsiopoulos
Lab Director

CERTIFICATIONS 230V



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