Anex

PC Power & Cooling FPS1050-A5M00 (Sample #2)

Lab ID#: 481
Receipt Date: -
Test Date: -

Report:
Report Date: Sep 25, 2018

DUT INFORMATION

Brand	PC Power & Cooling
Manufacturer (OEM)	High Power
Series	Silencer Platinum
Model Number	FPS1050-A5M00 (Sample #2)
Serial Number	1822030012491A00PT91F02001025
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	15-8
Rated Frequency (Hz)	50-60
Rated Power (W)	1050
Type	ATX12V
Cooling	135mm Double Ball-Bearing Fan (RL4Z B1352512H)
Semi-Passive Operation	✓
Cable Design	Fully Modular

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	25	25	87.5	3	0.3
	Watts	130		1050	15	3.6
Total Max. Power (W)		1050				

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 (650mm)	1	1	16AWG	No
8 pin EPS12V (650mm)	1	1	16AWG	No
6+2 pin PCIe (2x600mm)	3	6	16AWG	No
SATA (500mm+155mm+155mm+155mm)	3	12	18AWG	No
4-pin Molex (500mm+150mm+150mm)	2	6	18AWG	No
AC Power Cord (1700mm) - C13 coupler	1	1	18AWG	-

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General Data	
Manufacturer (OEM)	High Power
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x CMD02X IC
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	2x GBJ2506L (600V, 25A @ 100°C)
APFC MOSFETS	2x Infineon IPW60R120C7 (650V, 12A @ 100°C, 0.120Ohm)
APFC Boost Diode	1x CREE C3D10060 (600V, 10A @ 153°C)
Hold-up Cap(s)	2x Nichicon (400V, 680uF, 2000h @ 105 °C, GG)
Main Switchers	2x Toshiba TK31A60W (600V, 30.8A @ 150°C, 0.088Ohm)
APFC Controller	Infineon ICE3PCS01G
Resonant Controller	Champion CM6901X
Topology	Primary side: Half-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	8x APEC AP4N1R8CMT-A (60V, 32A @ 70°C, 1.8mOhm)
5V & 3.3V	DC-DC Converters: 8x Infineon BSC0906NS (30V, 40A @ 100°C, 4.5mOhm) PWM Controller: Anpec APW7159C
Filtering Capacitors	Electrolytics: Nippon Chemi-Con (4-10,000 @ 105°C, KY), Rubycon (3-6,000 @ 105°C, YXG) Polymers: Nippon Chemi-Con, FPCAP (FP)
Supervisor IC	SITI PS232S (OVP, UVP, 6x Channel OCP, SCP)
Micro Controller	STC 15W408AS
Fan Model	Globe Fan RL4Z B1352512H (135mm, 12V, 0.33A, 106.86 CFM, 1800 RPM, 29.2 dB[A], Double Ball-Bearing)
Fan Power Transistor	STi 2SD882 (NPN)
5VSB Circuit	
Rectifiers	1x PFC P10V45SP SBR (45V, 10A) & 2x Infineon BSC0906NS (30V, 40A @ 100°C, 4.5mOhm)
Standby PWM Controller	Sanken STR-A6069H
-12V Circuit	
Rectifier	KEC KIA7912PI (-12V, 1A)

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RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	90.669
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	70.806
Average Efficiency 5VSB	78.246
Standby Power Consumption (W) -115V	0.0805286
Standby Power Consumption (W) -230V	0.1114220
Average PF	0.994
ErP Lot 3/6 Ready	ErP Lot 6 2010: ✓ ErP Lot 6 2013: ✓ ErP Lot 3 2014 & CEC: Partially
(EU) No 617/2013 Compliance	✓
Avg Noise Output	30.47
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard++

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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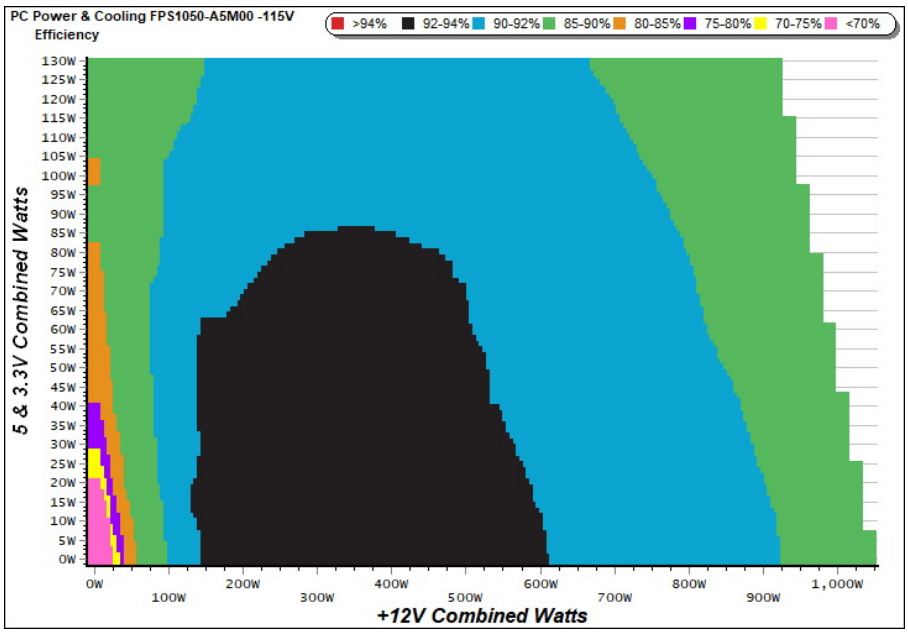
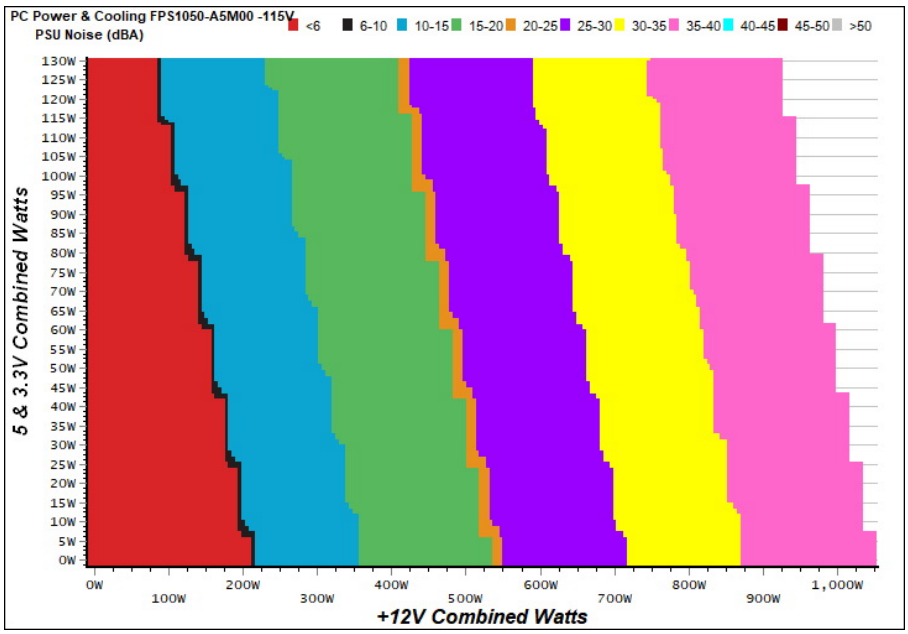
EFFICIENCY GRAPH



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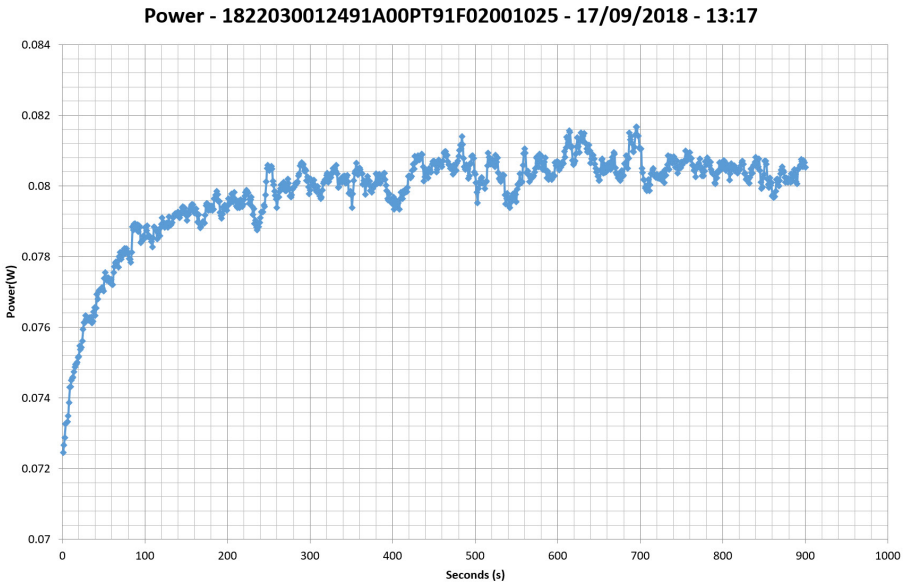
5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	61.497%	0.191
	5.070V	0.374		115.10V
2	0.090A	0.461	69.012%	0.091
	5.116V	0.668		115.10V
3	0.550A	2.806	78.688%	0.315
	5.101V	3.566		115.10V
4	1.000A	5.088	79.104%	0.393
	5.087V	6.432		115.10V
5	1.500A	7.608	79.415%	0.434
	5.071V	9.580		115.10V
6	3.000A	15.059	78.022%	0.486
	5.019V	19.301		115.10V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	55.288%	0.015
	5.118V	0.416		230.27V
2	0.090A	0.461	64.117%	0.026
	5.116V	0.719		230.27V
3	0.550A	2.805	73.372%	0.126
	5.099V	3.823		230.27V
4	1.000A	5.087	77.134%	0.196
	5.086V	6.595		230.27V
5	1.500A	7.608	79.275%	0.252
	5.071V	9.597		230.27V
6	3.000A	15.067	79.292%	0.349
	5.022V	19.002		230.27V

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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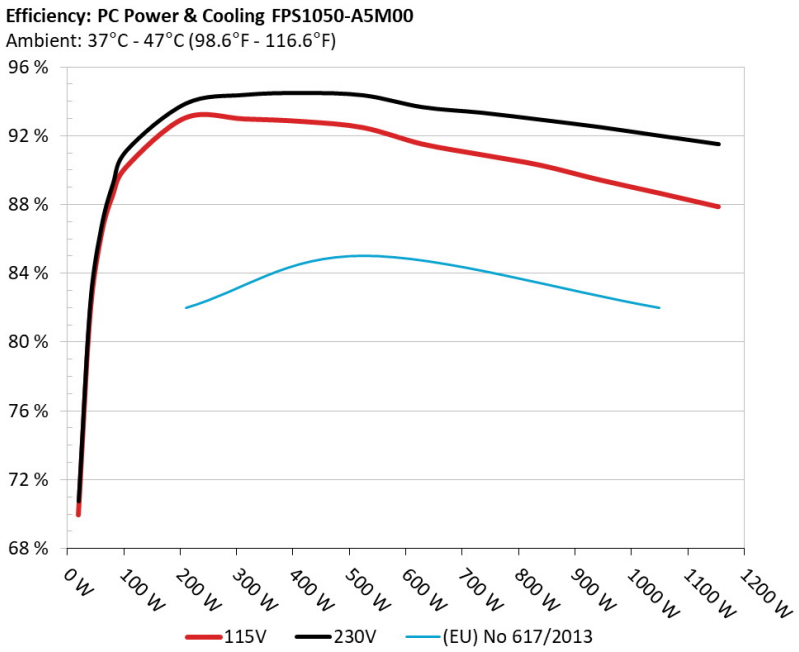
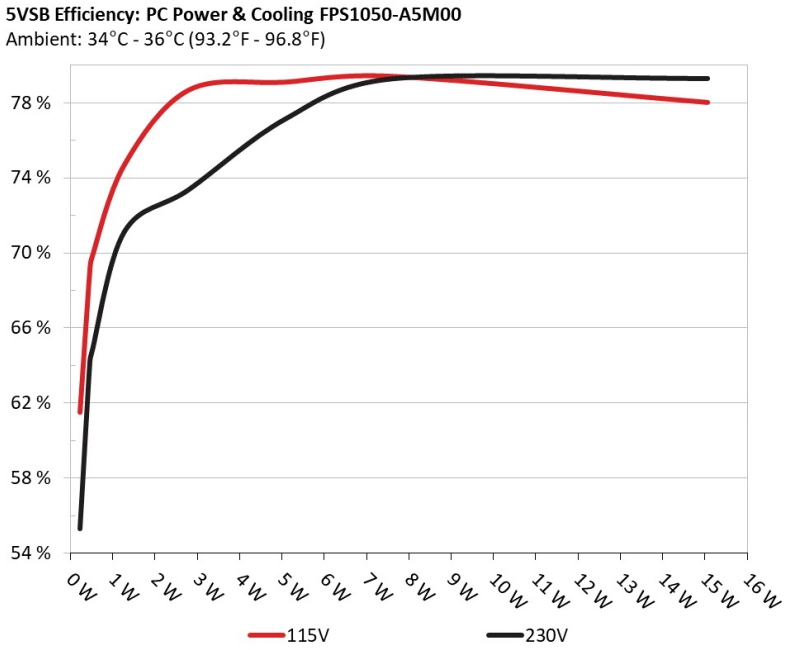
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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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10-110% LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	6.894A	1.998A	1.996A	1.006A	104.860	90.221%	0	<6.0	45.07°C	0.981
	12.078V	5.007V	3.302V	4.969V	116.226				40.15°C	115.11V
2	14.760A	2.996A	2.994A	1.209A	209.329	93.068%	0	<6.0	46.47°C	0.996
	12.089V	5.008V	3.304V	4.963V	224.921				40.69°C	115.11V
3	23.038A	3.495A	3.478A	1.413A	314.395	93.003%	615	13.6	41.04°C	0.994
	12.084V	5.009V	3.305V	4.956V	338.049				47.51°C	115.09V
4	31.340A	3.993A	3.991A	1.617A	419.635	92.851%	795	19.7	41.83°C	0.995
	12.075V	5.010V	3.307V	4.948V	451.945				49.12°C	115.09V
5	39.305A	4.991A	5.004A	1.822A	524.980	92.498%	800	19.7	42.20°C	0.996
	12.072V	5.009V	3.295V	4.941V	567.560				50.71°C	115.10V
6	47.182A	5.990A	6.009A	2.028A	629.536	91.541%	1090	29.1	42.77°C	0.997
	12.075V	5.009V	3.296V	4.933V	687.711				52.71°C	115.09V
7	55.151A	7.004A	6.967A	2.239A	734.881	90.918%	1220	33.0	43.10°C	0.997
	12.072V	4.998V	3.314V	4.914V	808.291				53.65°C	115.09V
8	63.100A	8.004A	7.964A	2.446A	840.214	90.300%	1225	33.0	44.01°C	0.997
	12.073V	4.998V	3.315V	4.907V	930.472				55.33°C	115.08V
9	71.448A	8.503A	8.441A	2.446A	945.103	89.447%	1405	36.1	44.54°C	0.998
	12.073V	4.999V	3.317V	4.908V	1056.605				56.93°C	115.08V
10	79.543A	9.003A	8.951A	3.074A	1049.952	88.680%	1412	36.2	45.97°C	0.998
	12.072V	4.999V	3.318V	4.881V	1183.977				59.34°C	115.14V
11	88.204A	9.018A	8.964A	3.080A	1154.784	87.890%	1425	36.2	47.14°C	0.998
	12.075V	4.991V	3.314V	4.872V	1313.895				61.96°C	115.08V
CL1	0.145A	16.001A	16.000A	0.000A	134.944	85.364%	0	<6.0	42.66°C	0.987
	12.107V	5.026V	3.298V	5.046V	158.080				51.48°C	115.12V
CL2	87.528A	1.005A	0.999A	1.000A	1070.285	88.917%	1410	36.1	45.46°C	0.998
	12.076V	4.997V	3.317V	4.961V	1203.690				59.47°C	115.08V

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20-80W LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.197A	0.499A	0.482A	0.200A	19.572	69.930%	0	<6.0	0.850
	12.091V	5.016V	3.306V	5.010V	27.988				115.12V
2	2.456A	0.998A	0.997A	0.400A	39.983	81.470%	0	<6.0	0.932
	12.088V	5.013V	3.303V	4.999V	49.077				115.12V
3	3.645A	1.495A	1.482A	0.602A	59.438	86.130%	0	<6.0	0.959
	12.085V	5.011V	3.302V	4.989V	69.010				115.12V
4	4.904A	1.996A	1.995A	0.804A	79.842	88.516%	0	<6.0	0.976
	12.082V	5.009V	3.304V	4.979V	90.201				115.12V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	7.7 mV	6.7 mV	14.8 mV	8.2 mV	Pass
20% Load	9.8 mV	6.6 mV	35.8 mV	20.5 mV	Pass
30% Load	9.7 mV	7.9 mV	12.8 mV	10.0 mV	Pass
40% Load	12.0 mV	8.5 mV	13.4 mV	9.7 mV	Pass
50% Load	13.1 mV	8.6 mV	15.0 mV	10.4 mV	Pass
60% Load	14.5 mV	9.6 mV	16.1 mV	11.5 mV	Pass
70% Load	15.0 mV	10.5 mV	17.3 mV	11.3 mV	Pass
80% Load	15.1 mV	11.2 mV	21.6 mV	13.0 mV	Pass
90% Load	16.0 mV	11.4 mV	21.8 mV	13.3 mV	Pass
100% Load	23.6 mV	12.7 mV	30.7 mV	16.1 mV	Pass
110% Load	25.3 mV	13.8 mV	30.2 mV	16.5 mV	Pass
Crossload 1	11.0 mV	9.5 mV	20.7 mV	10.1 mV	Pass
Crossload 2	23.6 mV	11.7 mV	22.4 mV	15.7 mV	Pass

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HOLD-UP TIME & POWER OK SIGNAL (230V)	
Hold-Up Time (ms)	18.40
AC Loss to PWR_OK Hold Up Time (ms)	16.70
PWR_OK Inactive to DC Loss Delay (ms)	1.70

Top side

Power specifications label

CERTIFICATIONS

CYBENETICS PLATINUM

CYBENETICS STANDARD++