Cybenetics

Anex

PC Power & Cooling FPS1050-A5M00

Lab ID#: 480
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
Serial Number	1822030012491A00PT91F02001021
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	90.981
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	71.672
Average Efficiency 5VSB	77.458
Standby Power Consumption (W) -115V	0.0808998
Standby Power Consumption (W) -230V	0.1124120
Average PF	0.993
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	30.09
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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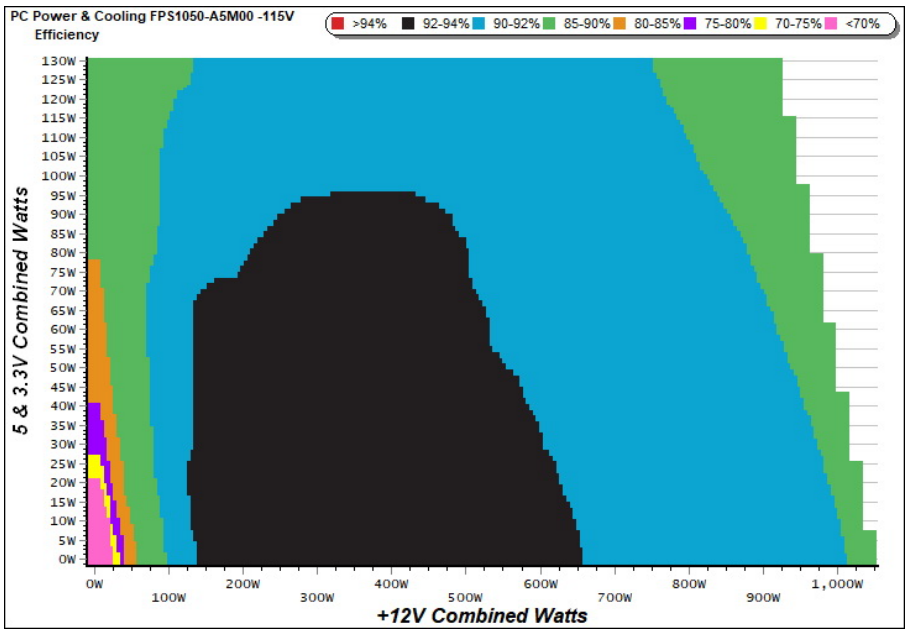
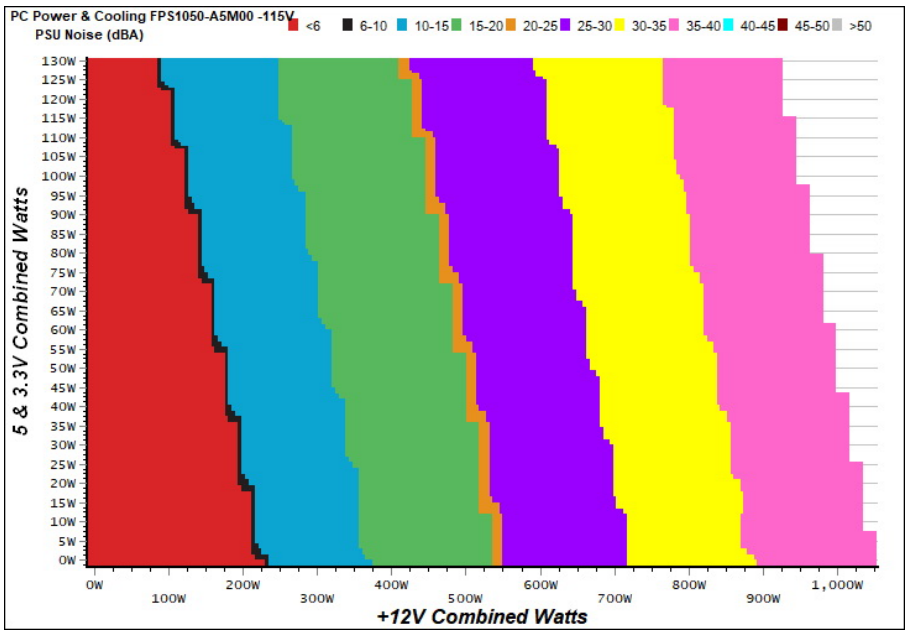
EFFICIENCY GRAPH



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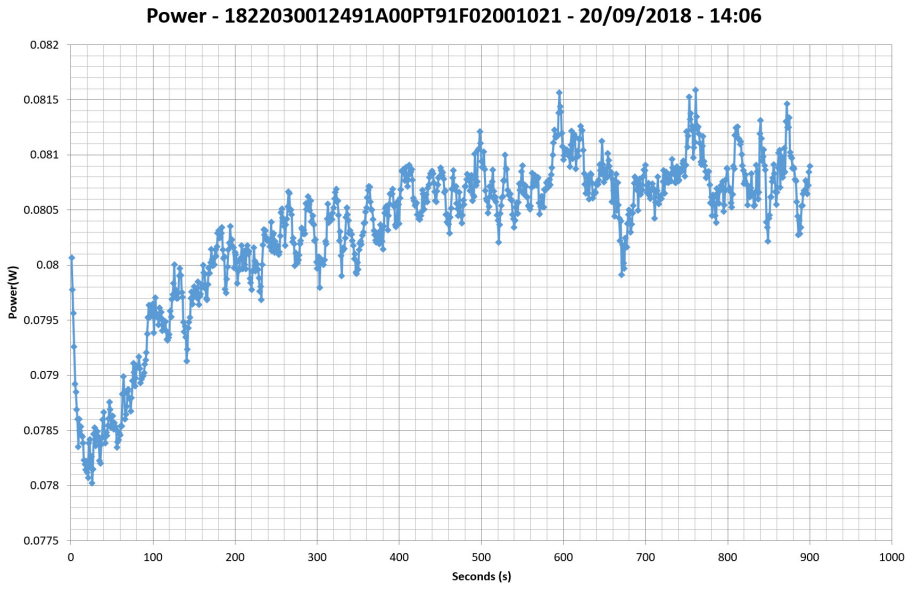
5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	61.662%	0.045
	5.112V	0.373		115.10V
2	0.090A	0.460	69.277%	0.077
	5.110V	0.664		115.10V
3	0.550A	2.803	79.136%	0.292
	5.097V	3.542		115.10V
4	1.000A	5.083	79.496%	0.378
	5.083V	6.394		115.10V
5	1.500A	7.601	79.717%	0.425
	5.067V	9.535		115.10V
6	3.000A	15.042	77.865%	0.484
	5.014V	19.318		115.09V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	55.825%	0.015
	5.112V	0.412		230.25V
2	0.090A	0.460	64.426%	0.026
	5.110V	0.714		230.25V
3	0.550A	2.802	73.951%	0.125
	5.095V	3.789		230.25V
4	1.000A	5.082	77.635%	0.195
	5.081V	6.546		230.25V
5	1.500A	7.600	79.142%	0.253
	5.067V	9.603		230.25V
6	3.000A	15.053	78.964%	0.350
	5.017V	19.063		230.25V

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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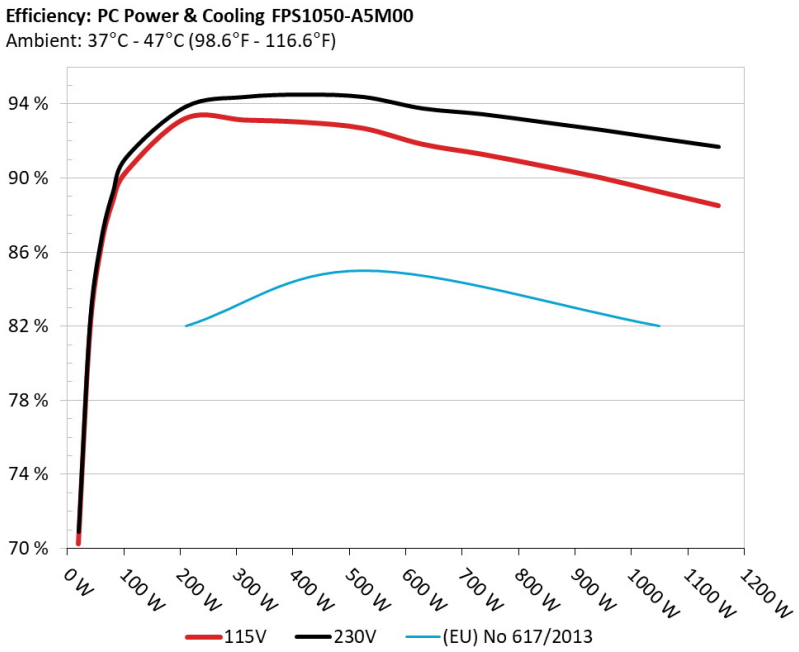
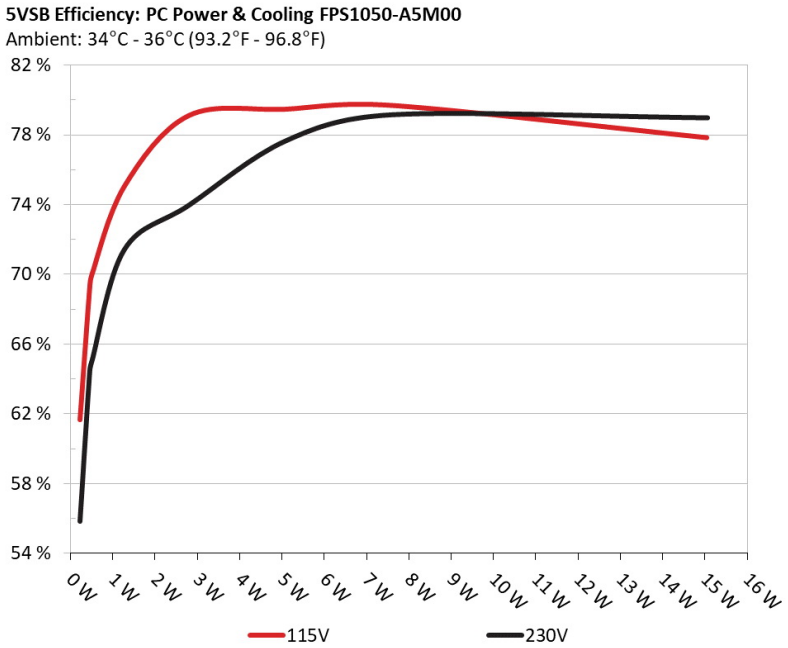
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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	6.921A	1.989A	2.001A	1.003A	104.847	90.364%	0	<6.0	45.67°C	0.975
	12.029V	5.025V	3.297V	4.987V	116.027				40.19°C	115.04V
2	14.849A	2.991A	3.007A	1.207A	209.340	93.224%	0	<6.0	46.83°C	0.995
	12.017V	5.016V	3.291V	4.971V	224.557				40.71°C	115.04V
3	23.183A	3.491A	3.495A	1.411A	314.440	93.140%	625	13.7	40.86°C	0.994
	12.010V	5.016V	3.290V	4.963V	337.598				47.73°C	115.04V
4	31.506A	3.987A	4.014A	1.614A	419.690	93.018%	802	19.7	41.79°C	0.995
	12.013V	5.017V	3.290V	4.957V	451.190				49.29°C	115.04V
5	39.524A	4.984A	5.019A	1.818A	525.003	92.694%	805	19.8	42.13°C	0.996
	12.005V	5.019V	3.288V	4.951V	566.383				50.84°C	115.03V
6	47.404A	5.979A	6.026A	2.023A	629.572	91.836%	960	25.3	42.74°C	0.997
	12.019V	5.020V	3.287V	4.944V	685.543				52.59°C	115.03V
7	55.295A	6.959A	6.957A	2.224A	734.921	91.300%	1100	29.2	43.09°C	0.997
	12.041V	5.031V	3.320V	4.949V	804.953				53.95°C	115.03V
8	63.276A	7.952A	7.988A	2.429A	840.264	90.680%	1240	33.1	43.69°C	0.998
	12.040V	5.032V	3.305V	4.943V	926.622				55.17°C	115.02V
9	71.558A	8.463A	8.436A	2.433A	945.153	90.034%	1400	36.1	44.53°C	0.998
	12.055V	5.024V	3.319V	4.934V	1049.773				56.70°C	115.02V
10	79.807A	8.957A	8.982A	3.056A	1049.948	89.273%	1400	36.1	45.72°C	0.998
	12.033V	5.026V	3.307V	4.911V	1176.114				58.87°C	115.01V
11	88.469A	8.952A	8.976A	3.054A	1154.804	88.518%	1420	36.2	46.88°C	0.998
	12.039V	5.029V	3.309V	4.913V	1304.597				60.82°C	115.01V
CL1	0.146A	16.006A	16.001A	0.000A	134.818	85.432%	0	<6.0	42.59°C	0.985
	12.054V	5.028V	3.286V	5.048V	157.807				51.73°C	115.05V
CL2	87.510A	1.004A	1.001A	1.000A	1064.493	89.548%	1405	36.1	45.34°C	0.998
	12.012V	5.016V	3.307V	4.976V	1188.743				58.32°C	115.02V

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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	1.203A	0.496A	0.485A	0.199A	19.561	70.267%	0	<6.0	0.830
	12.028V	5.026V	3.299V	5.018V	27.838				115.04V
2	2.465A	0.994A	0.999A	0.399A	39.974	81.738%	0	<6.0	0.915
	12.038V	5.032V	3.300V	5.017V	48.905				115.05V
3	3.658A	1.491A	1.484A	0.599A	59.417	86.244%	0	<6.0	0.947
	12.035V	5.029V	3.299V	5.007V	68.894				115.04V
4	4.925A	1.990A	2.000A	0.801A	79.857	88.690%	0	<6.0	0.967
	12.032V	5.027V	3.297V	4.997V	90.041				115.04V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.5 mV	4.4 mV	14.6 mV	3.0 mV	Pass
20% Load	9.3 mV	5.2 mV	6.0 mV	3.4 mV	Pass
30% Load	12.5 mV	6.0 mV	7.4 mV	4.5 mV	Pass
40% Load	13.6 mV	6.5 mV	8.5 mV	4.4 mV	Pass
50% Load	14.9 mV	8.1 mV	10.7 mV	5.9 mV	Pass
60% Load	14.3 mV	9.1 mV	12.2 mV	6.6 mV	Pass
70% Load	15.7 mV	9.0 mV	14.9 mV	6.0 mV	Pass
80% Load	18.0 mV	9.5 mV	15.2 mV	7.1 mV	Pass
90% Load	19.3 mV	11.9 mV	18.0 mV	8.5 mV	Pass
100% Load	21.7 mV	15.2 mV	19.6 mV	12.9 mV	Pass
110% Load	22.4 mV	15.9 mV	20.6 mV	13.8 mV	Pass
Crossload 1	7.1 mV	9.8 mV	12.5 mV	5.3 mV	Pass
Crossload 2	21.3 mV	12.5 mV	22.6 mV	11.5 mV	Pass

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HOLD-UP TIME & POWER OK SIGNAL (230V)	
Hold-Up Time (ms)	14.8
AC Loss to PWR_OK Hold Up Time (ms)	16.0
PWR_OK Inactive to DC Loss Delay (ms)	-1.2

Top side

Power specifications label

CERTIFICATIONS

CYBENETICS PLATINUM

CYBENETICS STANDARD++