Anex

Aerocool ACP-850FP7

Lab ID#: 151
Receipt Date: -
Test Date: -

Report:
Report Date: Jul 31, 2018

DUT INFORMATION

Brand	Aerocool
Manufacturer (OEM)	Andyson
Series	Project 7
Model Number	ACP-850FP7
Serial Number	D170400607
DUT Notes	Retested on 7/28/17

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	12-6
Rated Frequency (Hz)	50-60
Rated Power (W)	850
Type	ATX12V
Cooling	140mm Fluid Dynamic Bearing Fan (CD1425M12F)
Semi-Passive Operation	✓
Cable Design	Fully Modular

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	70	3	0.5
	Watts	120		840	15	6
Total Max. Power (W)		850				

CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge
ATX connector 20+4 pin (600mm)	1	1	16-20AWG
8 pin EPS12V (700mm)	1	1	16AWG
4+4 pin EPS12V (700mm)	1	1	16AWG
6+2 pin PCIe (600mm+150mm) / 6+2 pin PCIe (600mm)	2 / 2	4 / 2	18AWG
SATA (600mm+150mm+150mm+150)	2	8	18AWG
SATA (600mm+150mm) / 4 pin Molex (+150mm+150mm)	1	2 / 2	18AWG
4 pin Molex (600mm+150mm+150mm+150mm)	1	4	18AWG
FDD Adapter (+200mm)	1	1	20AWG
GRB DC Adapter (720mm+110mm)	1	2	28AWG

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General Data	
Manufacturer (OEM)	Andyson
Primary Side	
Transient Filter	4x Y caps, 3x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor & Diode
Bridge Rectifier(s)	2x GBU1506L (600V, 15A @ 100°C)
APFC MOSFETS	2x Infineon IPP50R140CP (550V, 15A @ 100°C, 0.14 Ohm)
APFC Boost Diode	1x CREE C3D10060A (600V, 14A @ 135°C)
Hold-up Cap(s)	2x Hitachi (420V, 470uF each or 940uF combined, 2000h @ 105°C, HU)
Main Switchers	2x Infineon IPP50R140CP (550V, 15A @ 100°C, 0.14 Ohm) Driver IC: Silicon Labs Si8230BD
APFC Controller	Champion CM6502S
APFC Controller	Champion CM6901
Topology	Primary side: Half-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	8x Infineon BSC010N04LS (40V, 100A @ 100°C, 1.0 mOhm)
5V & 3.3V	DC-DC Converters: 2x CSD86350Q5D power blocks PWM Controller: 2x Anpec APW7073
Filtering Capacitors	Electrolytics: Nippon Chemi-Con (105°C, KY, KZE), 1x Nichicon (4-10,000h, 105°C, HE) Polymers: 1x Nippon Chemi-Con, 6x FPCAP
Supervisor IC	SITI PS223 (OVP, UVP, OCP, SCP, OTP)
Fan Model	140mm LED fan (12V, 0.24A, 1623RPM, FDB)
5VSB Circuit	
FET / Rectifier	1x APEC AP92U03GM / PFR10V45CT (45V, 5x 2A, 0.4V @ 125°C) Driver IC: MIC4426
Standby PWM Controller	Sanken STR-A6069H
-12V Circuit	
Rectifier	KODENSHI AUK SN7912PI (-12V, 2.2A @ 25°C)

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RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	90.154
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	0.000
Average Efficiency 5VSB	78.616
Standby Power Consumption (W) -115V	0.0592044
Standby Power Consumption (W) -230V	0.1120050
Average PF	0.983
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	✓
Avg Noise Output	19.55
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A+

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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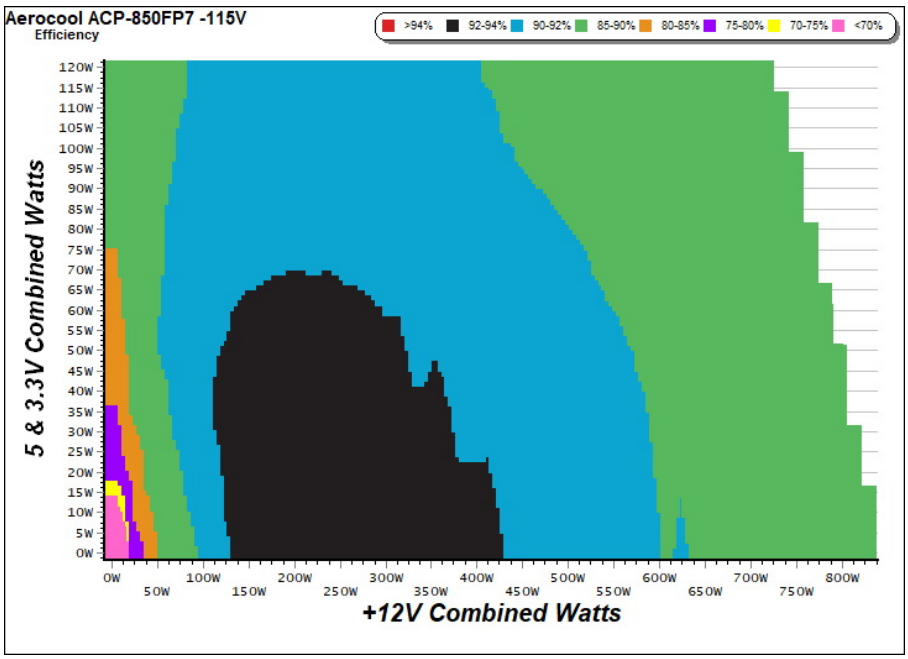
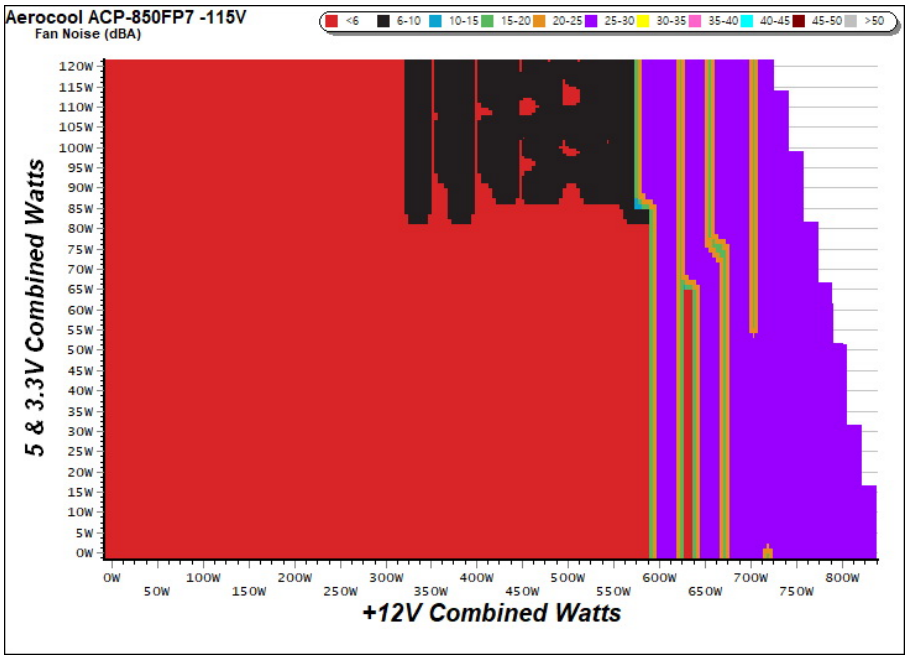
EFFICIENCY GRAPH



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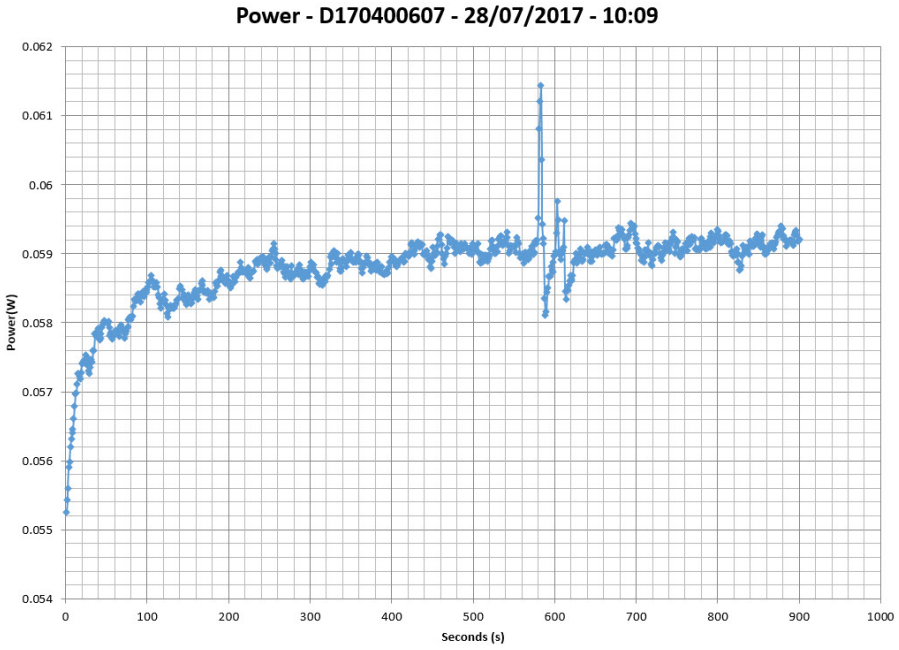
5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.207	64.486%	0.024
	4.988V	0.321		115.18V
2	0.087A	0.433	71.927%	0.045
	4.987V	0.602		115.18V
3	0.542A	2.694	79.822%	0.214
	4.971V	3.375		115.17V
4	1.002A	4.964	80.441%	0.313
	4.955V	6.171		115.17V
5	1.501A	7.414	80.334%	0.374
	4.938V	9.229		115.17V
6	3.001A	14.658	77.331%	0.457
	4.884V	18.955		115.17V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.207	55.200%	0.009
	4.988V	0.375		230.44V
2	0.087A	0.433	64.243%	0.015
	4.987V	0.674		230.44V
3	0.542A	2.693	72.160%	0.082
	4.971V	3.732		230.42V
4	1.002A	4.964	76.961%	0.136
	4.955V	6.450		230.43V
5	1.502A	7.413	79.326%	0.184
	4.937V	9.345		230.43V
6	3.001A	14.654	77.790%	0.293
	4.883V	18.838		230.45V

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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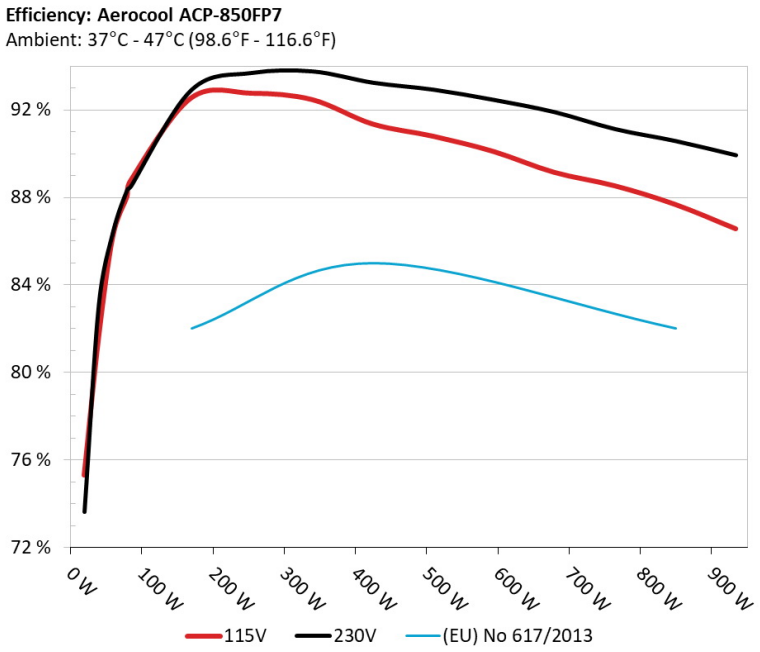
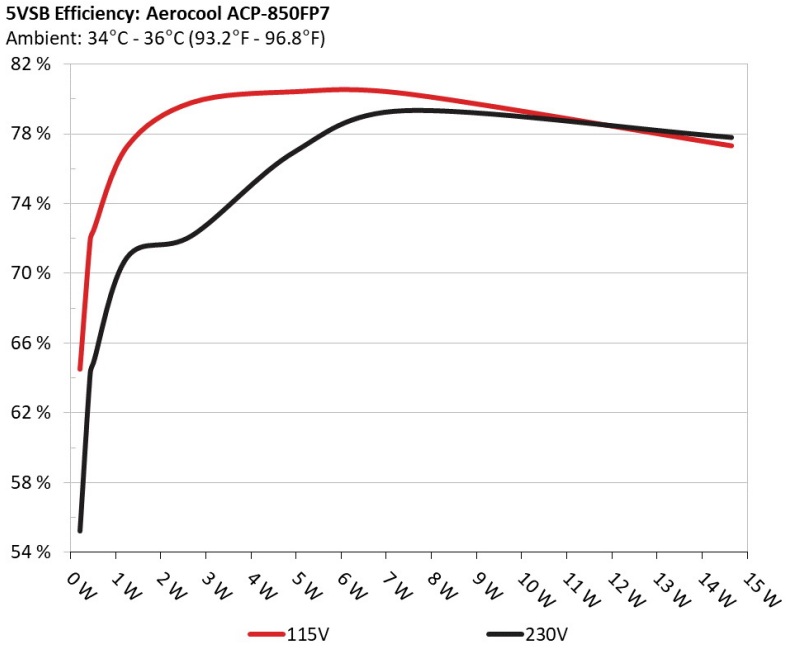
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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

Load Regulation & Efficiency Tests
Aerocool ACP-850FP7 -115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	5.184A	1.976A	1.954A	0.990A	84.747	88.776%	0	<6.0	44.13°C	0.938
	12.188V	5.058V	3.372V	5.031V	95.462				38.41°C	115.21V
2	11.385A	2.960A	2.937A	1.190A	169.602	92.562%	0	<6.0	44.76°C	0.972
	12.188V	5.057V	3.368V	5.026V	183.231				38.65°C	115.23V
3	17.962A	3.467A	3.445A	1.391A	254.857	92.779%	0	<6.0	45.65°C	0.977
	12.179V	5.055V	3.365V	5.018V	274.693				38.86°C	115.23V
4	24.531A	3.956A	3.924A	1.595A	339.711	92.488%	0	<6.0	47.32°C	0.983
	12.170V	5.053V	3.361V	5.010V	367.302				39.27°C	115.23V
5	30.765A	4.960A	4.912A	1.795A	424.648	91.370%	395	6.5	41.06°C	0.988
	12.161V	5.049V	3.357V	5.004V	464.756				55.50°C	115.21V
6	37.017A	5.946A	5.904A	2.000A	509.595	90.812%	395	6.5	41.64°C	0.991
	12.151V	5.047V	3.353V	4.998V	561.155				56.73°C	115.21V
7	43.272A	6.944A	6.896A	2.200A	594.507	90.112%	395	6.5	42.67°C	0.993
	12.142V	5.043V	3.349V	4.993V	659.741				60.74°C	115.21V
8	49.545A	7.937A	7.891A	2.405A	679.459	89.160%	1025	27.8	44.25°C	0.994
	12.132V	5.040V	3.344V	4.985V	762.067				62.96°C	115.21V
9	56.257A	8.446A	8.409A	2.405A	764.566	88.544%	1025	27.8	44.63°C	0.995
	12.122V	5.036V	3.341V	4.985V	863.487				63.53°C	115.21V
10	62.717A	8.942A	8.896A	3.020A	849.340	87.693%	1045	28.2	45.35°C	0.995
	12.112V	5.035V	3.338V	4.965V	968.538				64.52°C	115.21V
11	69.767A	8.946A	8.905A	3.020A	934.250	86.579%	1410	36.4	46.57°C	0.996
	12.105V	5.034V	3.335V	4.963V	1079.074				65.86°C	115.21V
CL1	0.097A	14.027A	14.004A	0.004A	118.996	86.427%	395	6.5	43.80°C	0.958
	12.196V	5.049V	3.354V	5.101V	137.684				57.24°C	115.22V
CL2	69.934A	1.004A	1.002A	1.001A	861.033	87.731%	1045	28.2	46.16°C	0.995
	12.120V	5.040V	3.348V	5.012V	981.447				63.92°C	115.22V

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20-80W LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	Fan Noise (dB[A])	PF/AC Volts
1	1.196A	0.493A	0.471A	0.195A	19.647	75.302%	0	< 6	0.800
	12.192V	5.054V	3.372V	5.048V	26.091				115.21V
2	2.418A	0.981A	0.976A	0.395A	39.722	81.536%	0	< 6	0.885
	12.190V	5.058V	3.373V	5.045V	48.717				115.21V
3	3.644A	1.478A	1.479A	0.593A	59.873	86.238%	0	< 6	0.921
	12.190V	5.058V	3.372V	5.042V	69.428				115.21V
4	4.857A	1.976A	1.954A	0.790A	79.760	88.051%	0	< 6	0.934
	12.188V	5.058V	3.372V	5.036V	90.584				115.21V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	5.6 mV	7.2 mV	6.7 mV	10.8 mV	Pass
20% Load	10.5 mV	7.9 mV	7.1 mV	14.8 mV	Pass
30% Load	11.6 mV	9.3 mV	7.9 mV	15.0 mV	Pass
40% Load	13.0 mV	9.9 mV	9.7 mV	15.9 mV	Pass
50% Load	15.6 mV	10.2 mV	9.1 mV	17.5 mV	Pass
60% Load	17.4 mV	11.2 mV	10.6 mV	19.8 mV	Pass
70% Load	19.6 mV	12.8 mV	12.3 mV	20.1 mV	Pass
80% Load	22.6 mV	12.7 mV	13.0 mV	21.9 mV	Pass
90% Load	24.3 mV	14.2 mV	12.9 mV	23.9 mV	Pass
100% Load	27.2 mV	15.6 mV	14.1 mV	25.8 mV	Pass
110% Load	30.4 mV	16.2 mV	16.3 mV	29.6 mV	Pass
Crossload 1	21.4 mV	9.4 mV	9.0 mV	13.7 mV	Pass
Crossload 2	27.6 mV	15.6 mV	13.4 mV	25.9 mV	Pass

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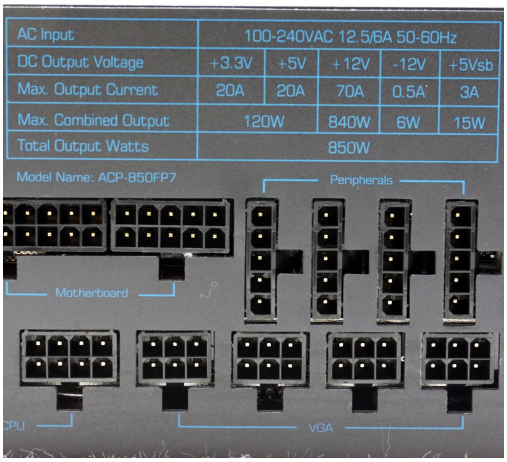
HOLD-UP TIME & POWER OK SIGNAL (230V)	
Hold-Up Time (ms)	19.51
AC Loss to PWR_OK Hold Up Time (ms)	17.60
PWR_OK Inactive to DC Loss Delay (ms)	1.91

Top side



Power specifications label

CERTIFICATIONS

CYBENETICS PLATINUM

CYBENETICS A+