EFFICIENCY AND NOISE LEVEL CERTIFICATIONS

Anex

Aerocool ACP-650FP7

Lab ID#: 149
Receipt Date: -
Test Date: -

Report: 19PS149A
Report Date: Jul 31, 2000

DUT INFORMATION

Brand	Aerocool
Manufacturer (OEM)	Andyson
Series	Project 7
Model Number	ACP-650FP7
Serial Number	D170500001
DUT Notes	Retested on 7/10/17

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	50-60
Rated Power (W)	650
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	54	3	0.5
	Watts	120		648	15	6
Total Max. Power (W)		650				

CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge
ATX connector 20+4 pin (600mm)	1	1	16-20AWG
4+4 pin EPS12V (700mm)	1	1	16AWG
8 pin EPS12V (700mm)	1	1	16AWG
6+2 pin PCIe (600mm)	4	4	18AWG
SATA (610mm+150mm+150mm)	2	6	18AWG
SATA (610mm+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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RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	90.337
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	0.000
Average Efficiency 5VSB	77.604
Standby Power Consumption (W) -115V	0.0986781
Standby Power Consumption (W) -230V	0.1722210
Average PF	0.979
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	13.45
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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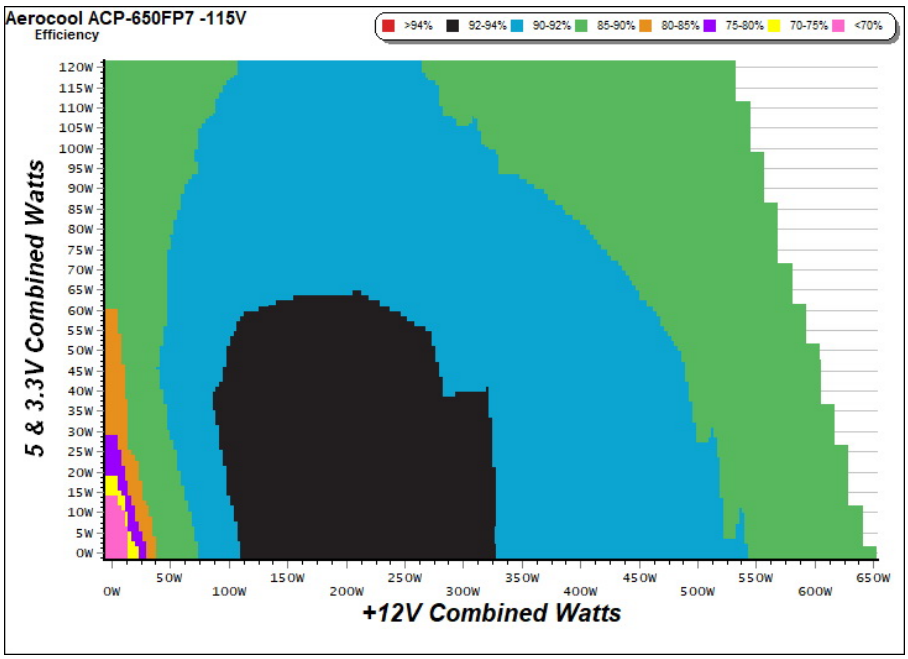
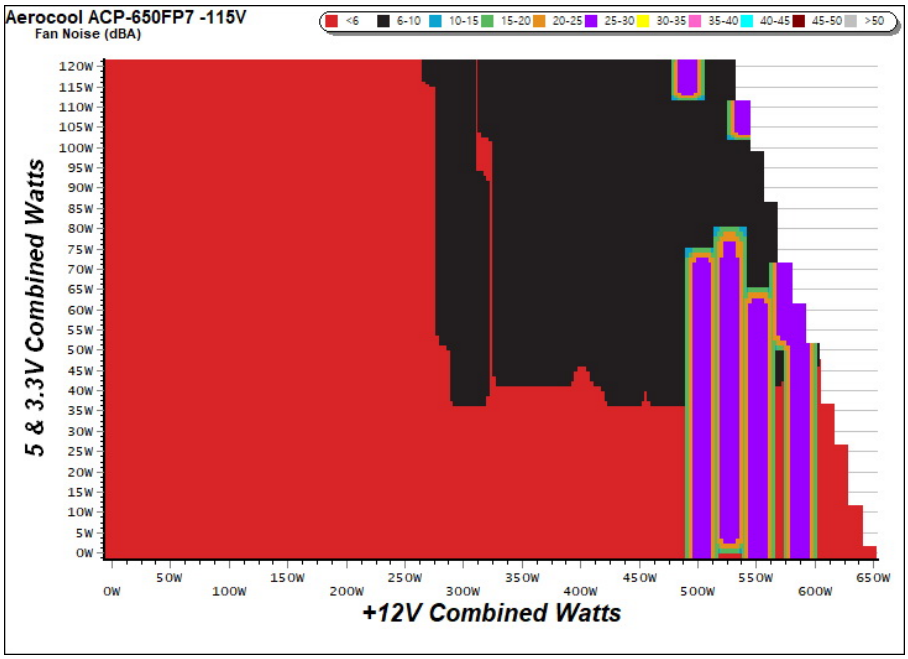
EFFICIENCY GRAPH



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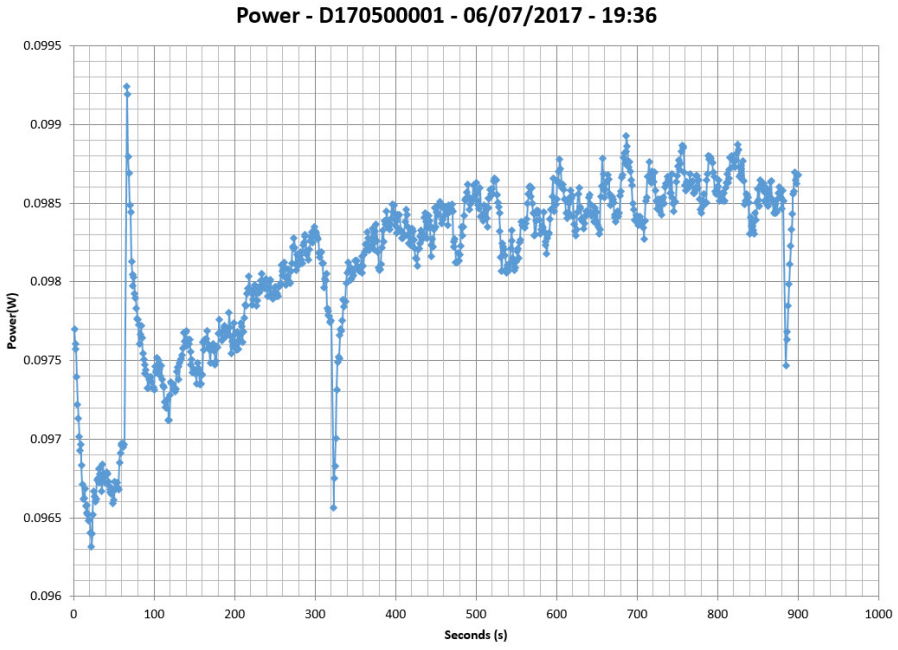
5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.210	59.659%	0.027
	5.049V	0.352		115.16V
2	0.087A	0.440	69.291%	0.049
	5.047V	0.635		115.16V
3	0.542A	2.727	78.656%	0.228
	5.032V	3.467		115.15V
4	1.002A	5.027	79.743%	0.334
	5.017V	6.304		115.15V
5	1.502A	7.509	79.251%	0.402
	5.000V	9.475		115.16V
6	3.001A	14.861	76.702%	0.485
	4.952V	19.375		115.16V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.211	49.647%	0.010
	5.048V	0.425		230.39V
2	0.087A	0.440	61.281%	0.017
	5.047V	0.718		230.39V
3	0.542A	2.728	74.050%	0.084
	5.030V	3.684		230.39V
4	1.002A	5.026	77.862%	0.140
	5.016V	6.455		230.39V
5	1.502A	7.508	78.306%	0.195
	4.999V	9.588		230.39V
6	3.001A	14.857	77.558%	0.310
	4.950V	19.156		230.39V

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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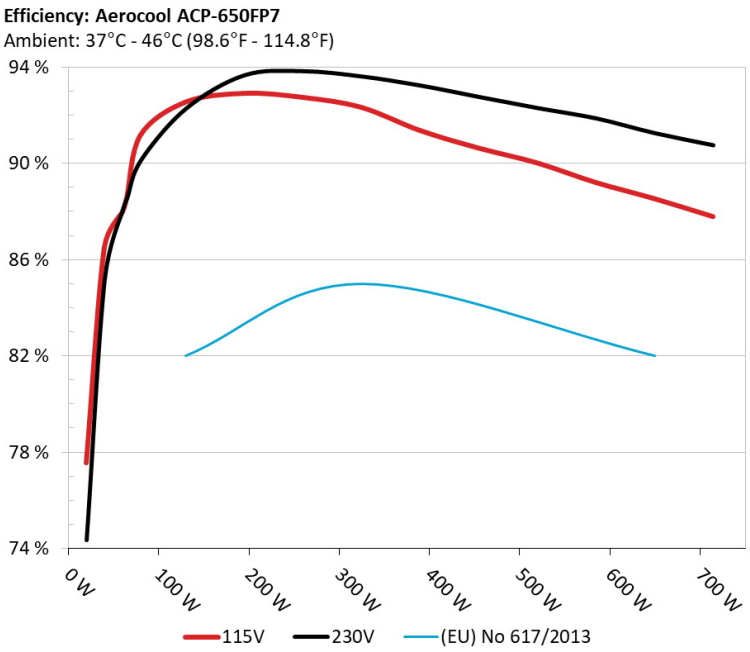
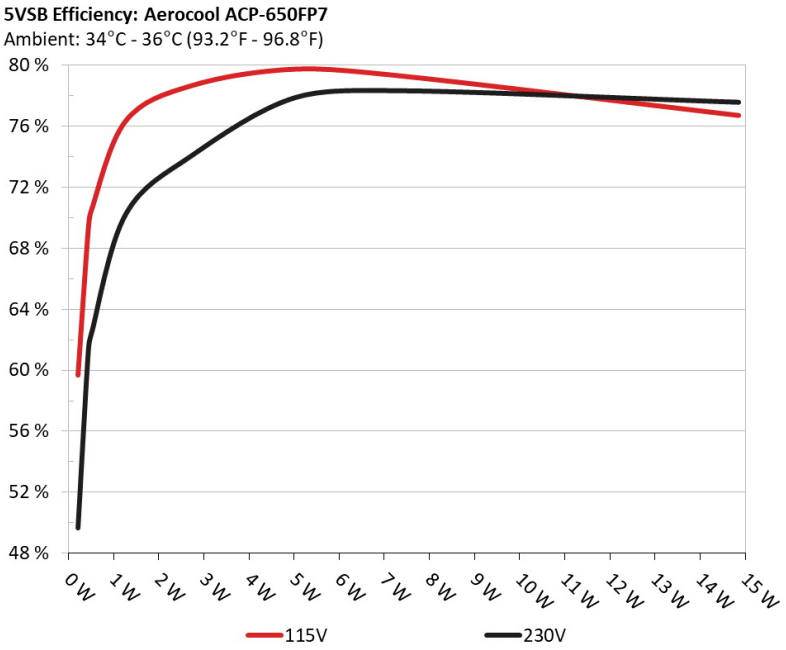
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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)	Fan Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	3.551A	1.975A	1.961A	0.991A	64.782	88.613%	0	< 6	42.46°C	0.918
	12.166V	5.062V	3.361V	5.036V	73.107				37.95°C	115.17V
2	8.130A	2.960A	2.944A	1.191A	129.755	92.532%	0	< 6	42.83°C	0.960
	12.166V	5.057V	3.358V	5.029V	140.227				38.19°C	115.17V
3	13.060A	3.466A	3.456A	1.394A	194.889	92.896%	0	< 6	43.48°C	0.970
	12.159V	5.050V	3.355V	5.017V	209.793				38.59°C	115.16V
4	17.990A	3.964A	3.933A	1.596A	259.763	92.727%	0	< 6	44.26°C	0.977
	12.151V	5.043V	3.353V	5.005V	280.136				38.78°C	115.17V
5	22.587A	4.968A	4.922A	1.801A	324.788	92.312%	0	< 6	45.73°C	0.985
	12.144V	5.034V	3.350V	4.994V	351.838				39.17°C	115.17V
6	27.184A	5.967A	5.914A	2.006A	389.727	91.352%	0	< 6	46.63°C	0.989
	12.137V	5.028V	3.347V	4.985V	426.623				39.81°C	115.18V
7	31.782A	6.978A	6.907A	2.210A	454.700	90.621%	395	6.5	41.19°C	0.991
	12.132V	5.021V	3.343V	4.975V	501.762				48.53°C	115.18V
8	36.395A	7.978A	7.902A	2.415A	519.642	90.006%	395	6.5	42.49°C	0.993
	12.124V	5.014V	3.340V	4.967V	577.342				49.96°C	115.18V
9	41.426A	8.485A	8.421A	2.415A	584.679	89.192%	1025	27.8	44.21°C	0.994
	12.120V	5.009V	3.338V	4.963V	655.525				51.93°C	115.18V
10	46.245A	9.004A	8.903A	3.036A	649.598	88.521%	1045	28.2	44.82°C	0.995
	12.107V	5.002V	3.334V	4.937V	733.836				52.63°C	115.18V
11	51.628A	9.015A	8.910A	3.041A	714.582	87.775%	1025	27.8	46.11°C	0.995
	12.103V	4.996V	3.333V	4.930V	814.104				54.09°C	115.18V
CL1	0.099A	14.025A	14.004A	0.004A	118.686	85.651%	835	21.8	44.59°C	0.965
	12.172V	5.034V	3.346V	5.096V	138.570				48.74°C	115.17V
CL2	54.118A	1.004A	1.000A	1.002A	668.960	88.848%	1045	28.2	44.70°C	0.995
	12.114V	5.014V	3.344V	4.987V	752.929				50.19°C	115.18V

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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	1.202A	0.492A	0.474A	0.196A	19.702	77.549%	0	< 6	0.814
	12.168V	5.063V	3.361V	5.058V	25.406				115.17V
2	2.424A	0.977A	0.979A	0.396A	39.734	86.502%	0	< 6	0.879
	12.167V	5.064V	3.362V	5.055V	45.934				115.17V
3	3.655A	1.478A	1.483A	0.591A	59.914	87.977%	0	< 6	0.914
	12.165V	5.063V	3.361V	5.049V	68.102				115.17V
4	4.865A	1.975A	1.963A	0.791A	79.767	91.159%	0	< 6	0.931
	12.166V	5.061V	3.360V	5.042V	87.503				115.16V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	4.7 mV	6.6 mV	5.6 mV	13.1 mV	Pass
20% Load	11.4 mV	7.0 mV	5.9 mV	15.7 mV	Pass
30% Load	11.3 mV	7.6 mV	6.2 mV	17.0 mV	Pass
40% Load	12.8 mV	7.6 mV	6.7 mV	17.7 mV	Pass
50% Load	14.2 mV	8.5 mV	9.2 mV	18.8 mV	Pass
60% Load	15.0 mV	9.2 mV	7.4 mV	20.6 mV	Pass
70% Load	16.8 mV	9.4 mV	8.0 mV	22.1 mV	Pass
80% Load	18.1 mV	10.1 mV	8.8 mV	22.9 mV	Pass
90% Load	19.4 mV	10.9 mV	11.2 mV	24.2 mV	Pass
100% Load	22.4 mV	13.4 mV	13.3 mV	27.1 mV	Pass
110% Load	24.1 mV	13.7 mV	12.9 mV	29.8 mV	Pass
Crossload 1	16.5 mV	9.2 mV	7.9 mV	17.1 mV	Pass
Crossload 2	22.5 mV	13.0 mV	13.1 mV	26.5 mV	Pass

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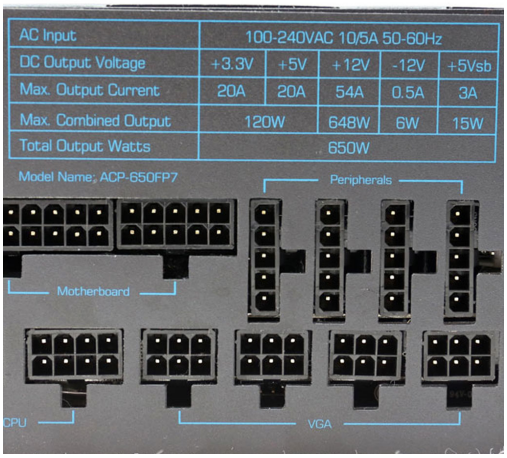
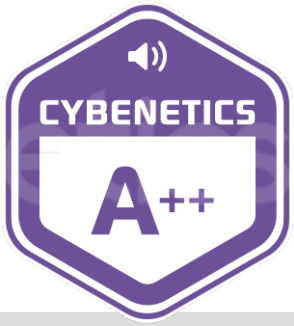
HOLD-UP TIME & POWER OK SIGNAL (230V)	
Hold-Up Time (ms)	18.86
AC Loss to PWR_OK Hold Up Time (ms)	16.56
PWR_OK Inactive to DC Loss Delay (ms)	2.30

Top side



Power specifications label

CERTIFICATIONS



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