

Anex

Lian Li SP750

Lab ID#: LL75001861
 Receipt Date: Jun 8, 2021
 Test Date: Jun 18, 2021

Report: 21PS1861A

Report Date: Jun 22, 2021

DUT INFORMATION

Brand	Lian Li
Manufacturer (OEM)	Helly
Series	
Model Number	SP750
Serial Number	G89SP750BY210501444
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10
Rated Frequency (Hz)	50-60
Rated Power (W)	750
Type	SFX
Cooling	92mm Double Ball Bearing Fan (D92LH-12B)
Semi-Passive Operation	X
Cable Design	Fully Modular

TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Keysight AC6804B
Power Analyzers	N4L PPA1530 x2
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2
Tachometer	UNI-T UT372 x2
Digital Multimeter	Keysight U1273AX, Fluke 289, Keithley 2015 - THD
UPS	CyberPower OLS3000E 3kVA x2
Transformer	3kVA x2

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Anex

Lian Li SP750

RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

115V

Average Efficiency	89.769%
Efficiency With 10W (≤500W) or 2% (>500W)	69.159
Average Efficiency 5VSB	83.062%
Standby Power Consumption (W)	0.0651919
Average PF	0.983
Avg Noise Output	38.96 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard+

230V

Average Efficiency	91.327%
Average Efficiency 5VSB	81.382%
Standby Power Consumption (W)	0.0859174
Average PF	0.947
Avg Noise Output	38.41 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard+

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	62	2.5	0.3
	Watts	100		744	12.5	3.6
Total Max. Power (W)		750				

HOLD-UP TIME & POWER OK SIGNAL (230V)

Hold-Up Time (ms)	12.5
AC Loss to PWR_OK Hold Up Time (ms)	10.9
PWR_OK Inactive to DC Loss Delay (ms)	1.6

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CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (300mm)	1	1	16-20AWG	No
4+4 pin EPS12V (450mm+70mm)	1	2	18AWG	No
6+2 pin PCIe (400mm+125mm)	1	2	18AWG	No
6+2 pin PCIe (400mm)	1	1	18AWG	No
SATA (115mm+120mm+120mm+120mm)	2	8	18AWG	No
4-pin Molex (120mm+120mm+120mm+120mm)	1	4	18AWG	No
AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

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General Data	
Manufacturer (OEM)	Helly
PCB Type	Double Sided
Primary Side	
Transient Filter	2x Y caps, 1x SMD-Y cap, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	-
Bridge Rectifier(s)	1x
APFC MOSFETs	2x Oriental Semiconductor OSG55R140F (550V, 14.5A @ 100°C, Rds(on): 0.14Ohm)
APFC Boost Diode	1x Global Power Technology G3S06506A (650V, 6A @ 155°C)
Bulk Cap(s)	1x Nippon Chemi-Con (400V, 470uF, 2,000h @ 105°C, KMW)
Main Switchers	2x Oriental Semiconductor OSG55R140F (550V, 14.5A @ 100°C, Rds(on): 0.14Ohm)
APFC Controller	Champion CM6502UHH
Resonant Controller	Champion CM6901X
Topology	Primary side: APFC, Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETs	6x NCE NCEP40T13GU (40V, 100A @ 100°C, Rds(on): 2.3mOhm)
5V & 3.3V	DC-DC Converters: 2x Excelliance MOS EMB03N03R (30V, 50A @ 100°C, Rds(on): 3.5mOhm) & 2x Excelliance MOS EMB06N03A (30V, 50A @ 100°C, Rds(on): 6mOhm) PWM Controller(s): ANPEC APW7159B
Filtering Capacitors	Electrolytic: 1x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 2x Nippon Chemi-Con (2-8,000h @ 105°C, LXZ) Polymer: 22x no info
Supervisor IC	Grenergy GR8313 (OVP, UVP, SCP, PG)
Fan Model	Yate Loon D92LH-12B (92mm, 12V, 0.60A, Double Ball Bearing Fan)
5VSB Circuit	
Rectifier	1x 45R20S
Standby PWM Controller	Excelliance MOS EM8569C
-12V	
Rectifier	1x STMicroelectronics L7912CV (-12V, 1.5A)

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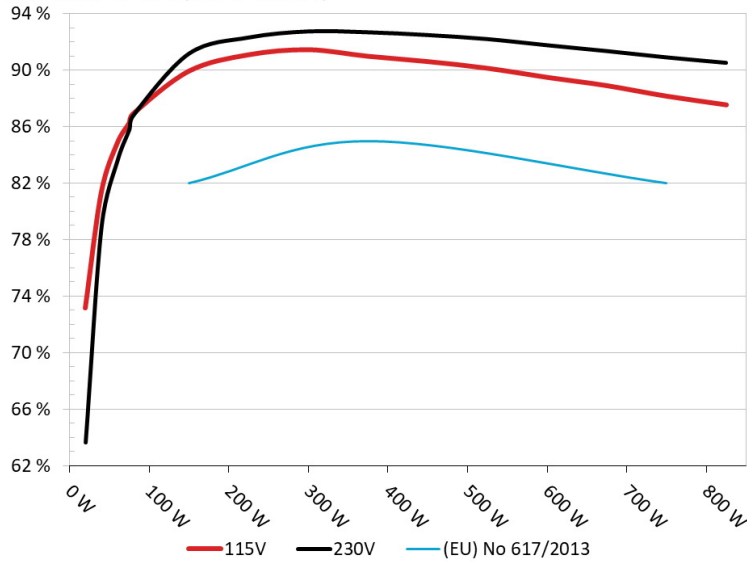
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Lian Li SP750

Ambient: 37°C - 46°C (98.6°F - 114.8°F)



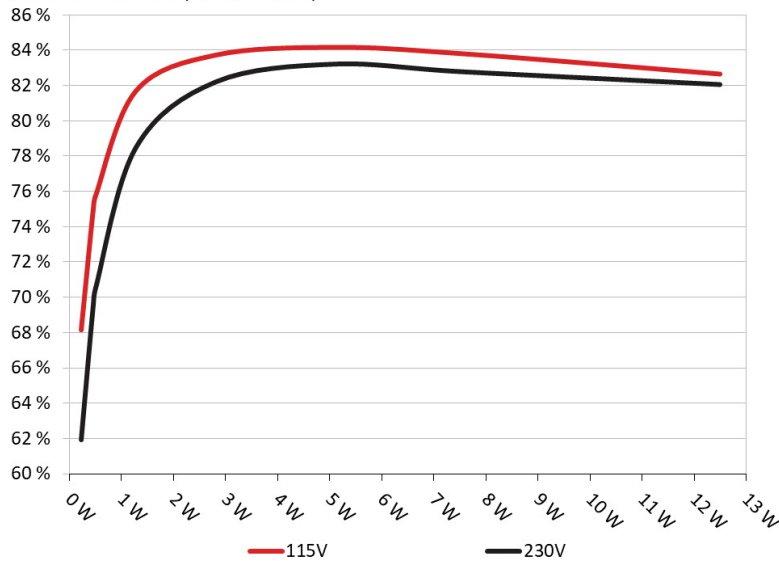
INFO

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: Lian Li SP750

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	0.231	68.142%	0.053
	5.142V	0.339		115.15V
2	0.090A	0.462	75.000%	0.093
	5.138V	0.616		115.15V
3	0.550A	2.811	83.735%	0.268
	5.112V	3.357		115.15V
4	1.000A	5.086	84.177%	0.312
	5.087V	6.042		115.15V
5	1.500A	7.587	83.806%	0.335
	5.059V	9.053		115.15V
6	2.499A	12.500	82.661%	0.362
	5.002V	15.122		115.15V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231	61.930%	0.018
	5.141V	0.373		230.28V
2	0.090A	0.462	69.578%	0.032
	5.138V	0.664		230.27V
3	0.550A	2.811	82.217%	0.138
	5.113V	3.419		230.26V
4	1.000A	5.087	83.230%	0.200
	5.088V	6.112		230.26V
5	1.500A	7.588	82.793%	0.240
	5.059V	9.165		230.27V
6	2.499A	12.498	82.072%	0.280
	5.001V	15.228		230.27V

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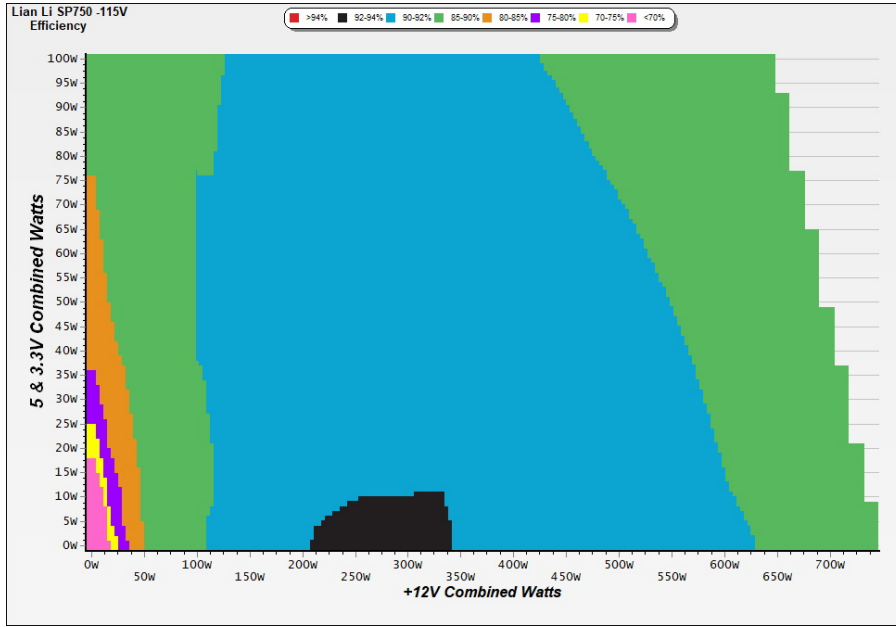
115V

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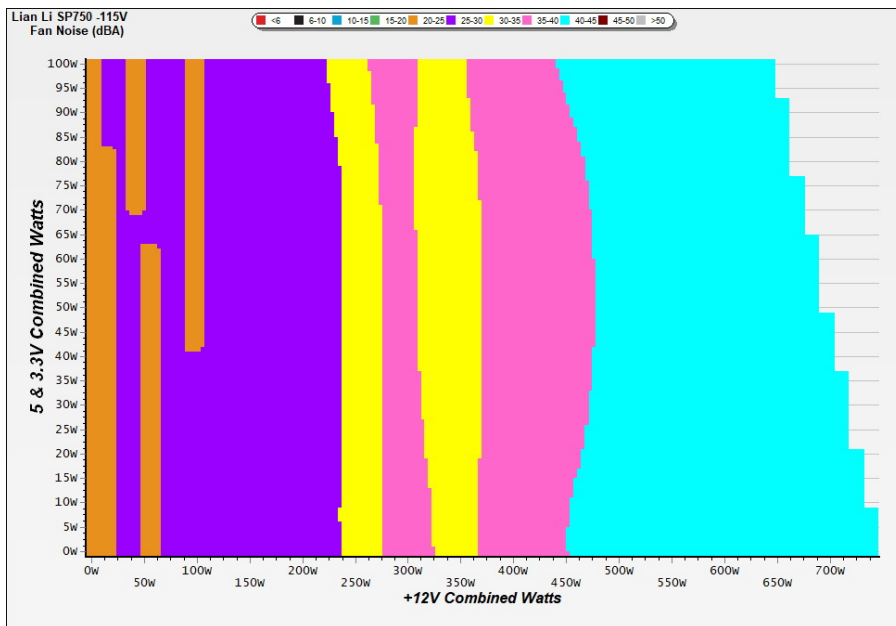
EFFICIENCY GRAPH 115V



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

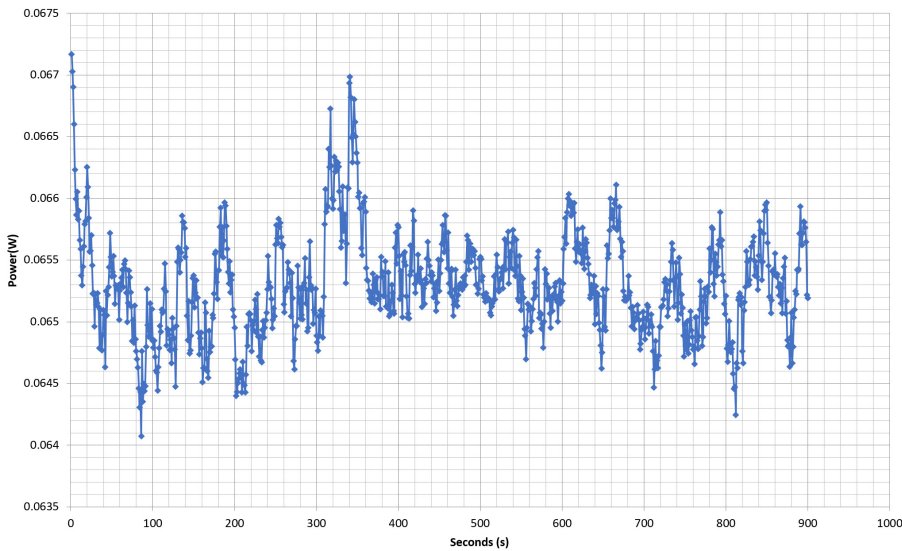
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -115V

Power - G89SP750BY210501444 - 16/06/2021 - 15:21



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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10-110% LOAD TESTS 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	4.405A	1.955A	1.961A	0.984A	74.951	86.227%	1871	31.5	40.68°C	0.948
	12.111V	5.119V	3.363V	5.081V	86.923				44.25°C	115.14V
2	9.840A	2.935A	2.952A	1.185A	149.988	89.910%	1967	33.3	40.76°C	0.974
	12.102V	5.111V	3.355V	5.062V	166.821				44.88°C	115.13V
3	15.623A	3.428A	3.449A	1.387A	224.980	91.066%	2078	34.6	41.09°C	0.981
	12.094V	5.103V	3.348V	5.044V	247.052				45.73°C	115.13V
4	21.413A	3.925A	3.950A	1.592A	299.976	91.421%	2220	35.9	41.86°C	0.988
	12.085V	5.096V	3.341V	5.026V	328.127				47.05°C	115.13V
5	26.814A	4.915A	4.951A	1.798A	374.279	90.962%	2456	40.4	42.26°C	0.991
	12.075V	5.087V	3.332V	5.006V	411.469				48.28°C	115.13V
6	32.274A	5.908A	5.957A	2.000A	449.201	90.588%	2672	40.8	42.62°C	0.993
	12.066V	5.079V	3.324V	4.987V	495.870				49.26°C	115.13V
7	37.777A	6.904A	6.968A	2.214A	524.546	90.114%	2896	44.1	43.20°C	0.994
	12.056V	5.070V	3.316V	4.967V	582.091				50.22°C	115.13V
8	43.288A	7.906A	7.983A	2.425A	599.855	89.469%	2978	44.9	43.93°C	0.995
	12.046V	5.061V	3.307V	4.947V	670.461				51.81°C	115.12V
9	49.170A	8.407A	8.484A	2.428A	674.381	88.887%	2979	44.9	44.07°C	0.996
	12.038V	5.054V	3.299V	4.940V	758.696				52.63°C	115.12V
10	55.065A	8.917A	9.022A	2.537A	749.515	88.142%	2988	45.2	45.49°C	0.996
	12.028V	5.046V	3.292V	4.926V	850.348				54.66°C	115.11V
11	61.358A	8.928A	9.039A	2.540A	824.701	87.527%	2997	45.4	46.26°C	0.996
	12.020V	5.039V	3.285V	4.920V	942.227				55.88°C	115.11V
CL1	0.116A	11.998A	11.997A	0.000A	102.628	85.123%	2461	40.5	41.98°C	0.964
	12.099V	5.096V	3.341V	5.127V	120.564				48.81°C	115.15V
CL2	61.993A	0.998A	1.000A	1.000A	759.663	88.565%	2993	45.4	45.66°C	0.996
	12.038V	5.064V	3.308V	5.029V	857.747				54.43°C	115.11V

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20-80W LOAD TESTS 115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.223A	0.488A	0.490A	0.195A	19.978	73.174%	1708	29.6	0.800
	12.119V	5.128V	3.372V	5.133V	27.302				115.15V
2	2.449A	0.976A	0.978A	0.390A	39.966	81.319%	1737	30.0	0.895
	12.117V	5.124V	3.368V	5.119V	49.147				115.14V
3	3.678A	1.464A	1.471A	0.587A	59.999	84.808%	1764	30.2	0.930
	12.114V	5.121V	3.365V	5.106V	70.747				115.14V
4	4.901A	1.954A	1.962A	0.785A	79.952	86.892%	1825	31.5	0.951
	12.111V	5.118V	3.363V	5.092V	92.013				115.14V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	8.24mV	11.74mV	6.03mV	8.13mV	Pass
20% Load	9.29mV	12.30mV	6.20mV	8.73mV	Pass
30% Load	11.19mV	12.52mV	6.25mV	8.73mV	Pass
40% Load	12.85mV	12.83mV	6.98mV	9.24mV	Pass
50% Load	15.23mV	13.62mV	7.64mV	9.62mV	Pass
60% Load	17.28mV	13.97mV	7.99mV	10.35mV	Pass
70% Load	18.60mV	14.83mV	8.45mV	10.35mV	Pass
80% Load	20.19mV	14.91mV	9.71mV	12.39mV	Pass
90% Load	21.51mV	15.37mV	9.98mV	12.52mV	Pass
100% Load	29.17mV	16.65mV	10.83mV	15.64mV	Pass
110% Load	31.81mV	16.68mV	11.02mV	15.46mV	Pass
Crossload1	14.56mV	19.84mV	11.66mV	17.34mV	Pass
Crossload2	29.59mV	15.49mV	10.29mV	12.10mV	Pass

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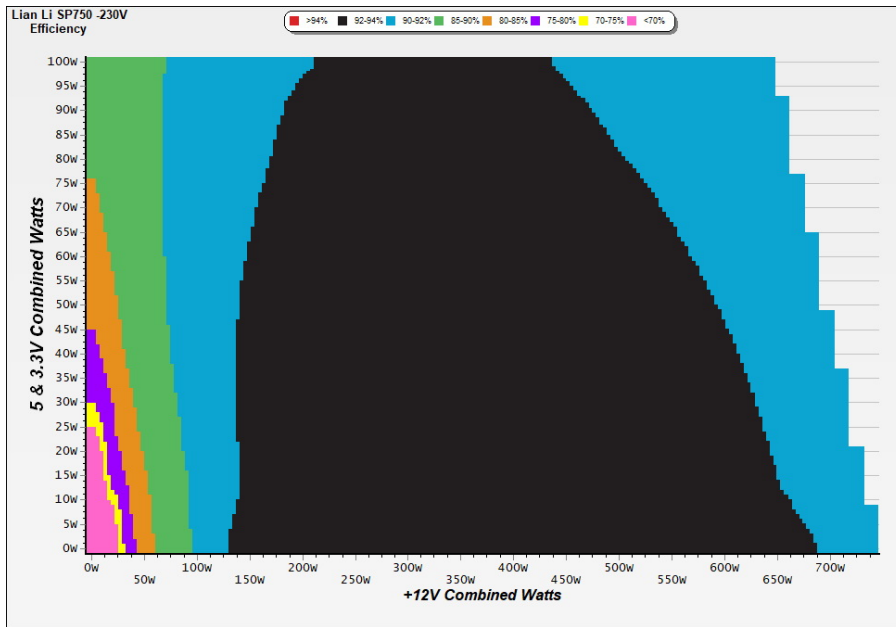
230V

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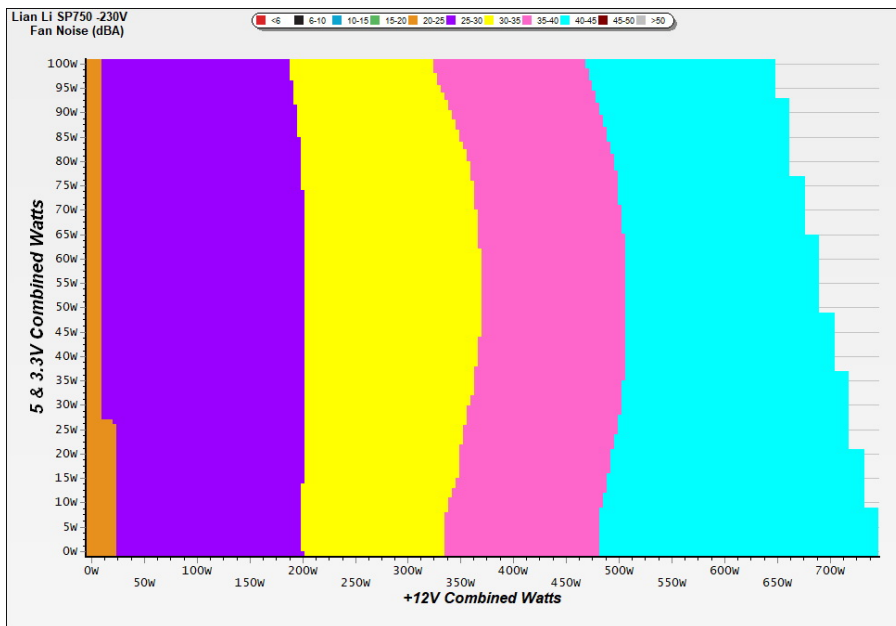
EFFICIENCY GRAPH 230V



INFO

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NOISE GRAPH 230V



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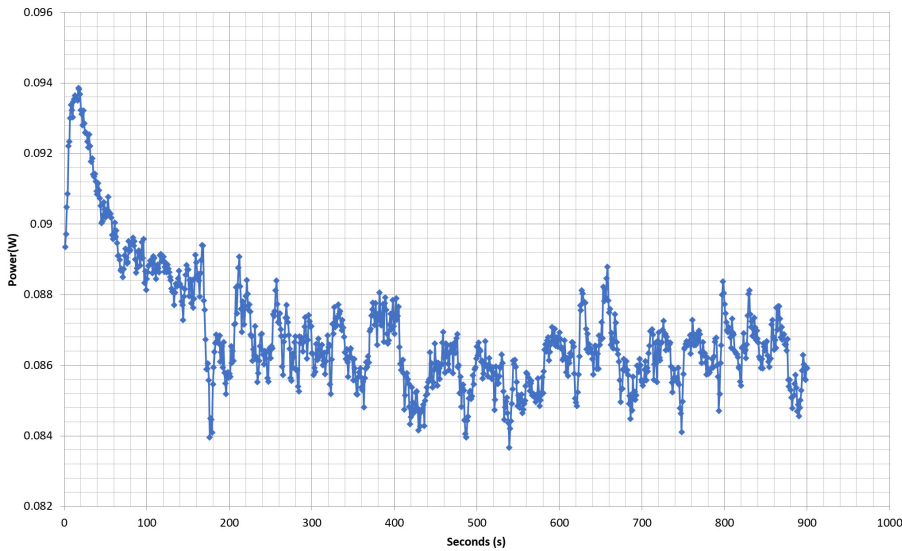
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10-110% LOAD TESTS 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	4.409A	1.954A	1.963A	0.984A	74.952	85.784%	2010	34.0	40.66°C	0.815
	12.100V	5.118V	3.363V	5.081V	87.373				43.60°C	230.34V
2	9.841A	2.935A	2.952A	1.185A	149.996	91.162%	2002	34.1	40.77°C	0.914
	12.102V	5.110V	3.355V	5.062V	164.537				44.18°C	230.33V
3	15.624A	3.430A	3.448A	1.388A	224.989	92.299%	2145	35.7	41.06°C	0.946
	12.093V	5.103V	3.348V	5.044V	243.762				45.11°C	230.32V
4	21.415A	3.925A	3.951A	1.592A	299.979	92.733%	2228	35.9	41.52°C	0.961
	12.084V	5.096V	3.340V	5.026V	323.487				46.32°C	230.32V
5	26.816A	4.918A	4.952A	1.798A	374.324	92.667%	2462	40.5	42.65°C	0.970
	12.075V	5.087V	3.332V	5.007V	403.945				48.24°C	230.31V
6	32.279A	5.908A	5.956A	2.000A	449.225	92.475%	2679	40.8	42.79°C	0.974
	12.065V	5.079V	3.324V	4.987V	485.781				49.48°C	230.31V
7	37.783A	6.905A	6.967A	2.214A	524.575	92.190%	2869	44.3	43.24°C	0.978
	12.055V	5.070V	3.315V	4.967V	569.012				50.79°C	230.31V
8	43.291A	7.905A	7.981A	2.425A	599.880	91.751%	2983	45.2	43.94°C	0.981
	12.046V	5.061V	3.307V	4.947V	653.816				51.86°C	230.30V
9	49.179A	8.409A	8.487A	2.429A	674.415	91.342%	2983	45.2	44.19°C	0.983
	12.036V	5.054V	3.299V	4.940V	738.343				52.90°C	230.31V
10	55.072A	8.917A	9.020A	2.537A	749.538	90.893%	2987	45.2	45.52°C	0.984
	12.027V	5.046V	3.292V	4.926V	824.634				54.83°C	230.31V
11	61.365A	8.929A	9.037A	2.540A	824.723	90.509%	3000	45.5	46.17°C	0.985
	12.019V	5.039V	3.285V	4.920V	911.206				55.85°C	230.30V
CL1	0.116A	11.998A	11.998A	0.000A	102.629	85.962%	2570	40.9	42.55°C	0.874
	12.091V	5.096V	3.341V	5.126V	119.389				48.18°C	230.31V
CL2	61.994A	1.000A	1.001A	1.000A	759.564	91.454%	2999	45.5	45.40°C	0.984
	12.036V	5.064V	3.308V	5.028V	830.541				54.50°C	230.31V

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20-80W LOAD TESTS 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.225A	0.488A	0.490A	0.195A	19.985	63.622%	1750	30.1	0.521
	12.108V	5.126V	3.370V	5.132V	31.412				230.32V
2	2.452A	0.975A	0.979A	0.391A	39.976	78.915%	1769	30.3	0.668
	12.105V	5.123V	3.368V	5.119V	50.657				230.37V
3	3.682A	1.464A	1.469A	0.588A	60.005	83.572%	1890	31.7	0.768
	12.103V	5.120V	3.365V	5.106V	71.800				230.36V
4	4.906A	1.953A	1.963A	0.785A	79.953	86.787%	1913	32.3	0.826
	12.100V	5.117V	3.362V	5.092V	92.126				230.34V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.48mV	11.61mV	5.90mV	7.75mV	Pass
20% Load	12.71mV	11.92mV	6.20mV	7.90mV	Pass
30% Load	12.41mV	12.52mV	6.96mV	8.46mV	Pass
40% Load	14.02mV	13.03mV	7.26mV	8.94mV	Pass
50% Load	15.59mV	13.21mV	7.66mV	9.79mV	Pass
60% Load	16.68mV	13.72mV	7.77mV	10.30mV	Pass
70% Load	18.14mV	14.02mV	8.19mV	10.83mV	Pass
80% Load	19.66mV	15.67mV	9.91mV	12.27mV	Pass
90% Load	21.51mV	15.65mV	9.83mV	12.12mV	Pass
100% Load	29.58mV	17.03mV	10.39mV	15.44mV	Pass
110% Load	31.73mV	17.21mV	11.11mV	14.94mV	Pass
Crossload1	19.14mV	19.97mV	12.99mV	19.05mV	Pass
Crossload2	29.60mV	14.83mV	9.48mV	11.43mV	Pass

All data and graphs included in this test report can be used by any individual on the following conditions:

- > It should be mentioned that the test results are provided by Cybenetics
- > The link to the original test results document should be provided in any case

Anex

Lian Li SP750



Top side



Power specifications label

CERTIFICATIONS 115V



CERTIFICATIONS 230V



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- > The link to the original test results document should be provided in any case