EFFICIENCY AND NOISE LEVEL CERTIFICATIONS

Anex

Lian Li PE-750

Lab ID#: 361
Receipt Date: Apr 16, 2018
Test Date: Apr 22, 2018

Report:
Report Date: Apr 25, 2018

DUT INFORMATION

Brand	Lian Li
Manufacturer (OEM)	Enhance Electronics
Series	PE Series
Model Number	
Serial Number	PE750161300249
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	50-60
Rated Power (W)	750
Type	SFX-L
Cooling	120mm Sleeve Bearing Fan (S1201512HB)
Semi-Passive Operation	✓
Cable Design	Fully Modular

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	

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Lian Li PE-750

RESULTS

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

115V

Average Efficiency	91.218%
Efficiency With 10W (≤500W) or 2% (>500W)	0.000
Average Efficiency 5VSB	80.750%
Standby Power Consumption (W)	0.0639582
Average PF	0.978
Avg Noise Output	30.21 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard++

230V

Average Efficiency	92.289%
Average Efficiency 5VSB	77.577%
Standby Power Consumption (W)	0.1083090
Average PF	0.942
Avg Noise Output	29.78 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A-

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	15	62	2.5	0.3
	Watts	80		744	12.5	3.6
Total Max. Power (W)		750				

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

Hold-Up Time (ms)	11.40
AC Loss to PWR_OK Hold Up Time (ms)	12.60
PWR_OK Inactive to DC Loss Delay (ms)	-1.20

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Lian Li PE-750

CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (400mm)	1	1	18-22AWG	No
4+4 pin EPS12V (400mm)	1	1	18AWG	No
6+2 pin PCIe (400mm+150mm)	2	4	18AWG	No
SATA (300mm+200mm+100mm+100mm)	3	12	18AWG	No
4 pin Molex (300mm+000mm+200mm) / FDD (+100mm)	1	3 / 1	18-22AWG	No
AC Power Cord (1400mm) - C13 coupler	1	1	18AWG	-

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Lian Li PE-750

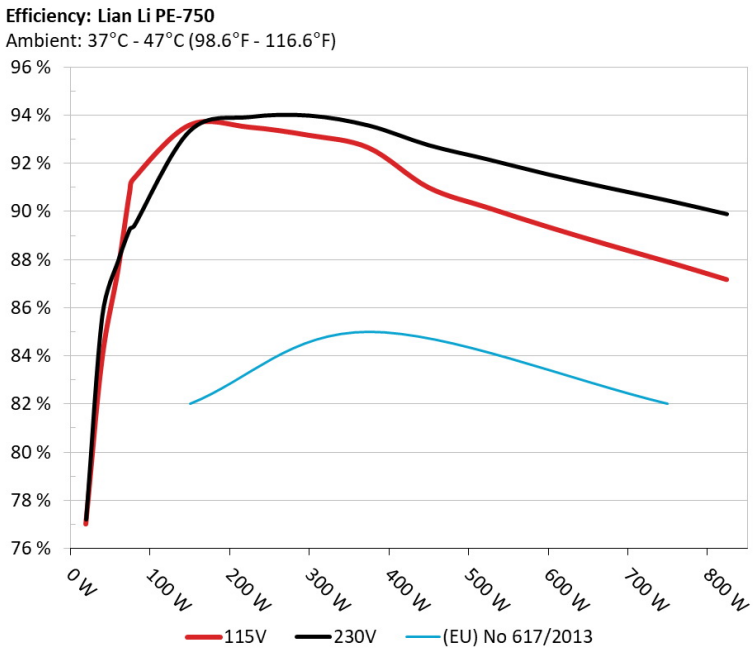
General Data	
Manufacturer (OEM)	Enhance Electronics
Primary Side	
Transient Filter	4x Y caps, 3x X caps, 2x CM chokes, 1x MOV, 1x CMD02X
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	1x GBU15L06 (600 V, 15 A @ 115 °C)
APFC MOSFETS	2x STMicroelectronics GP28S50X (650 V, 11 A @ 100 °C, 0.19 Ohm)
APFC Boost Diode	1x CREE C3D10060A (600 V, 10 A @ 153 °C)
Hold-up Cap(s)	2x Rubycon (420 V, 270 uF each, 3000 h @ 85 °C, USG)
Main Switchers	2x Infineon IPP50R140CP (550 V, 15 A @ 100 °C, 0.14 Ohm)
Driver IC	1x Silicon Labs Si8230BD
APFC Controller	Champion 6502TX & CM03X Green PFC controller
Switching Controller	Champion CM6901
Topology	Primary side: Half-Bridge & LLC Resonant Converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	8x Infineon BSC014N04LS (40 V, 100 A @ 100 °C, 1.4 mOhm)
5V & 3.3V	DC-DC Converters: 4x Infineon BSC018NE2LS (25 V, 97 A @ 100 °C, 1.8 mOhm) PWM Controller: 2x ANPEC APW7073
Filtering Capacitors	Electrolytics: Chemi-Con (105 °C, KY), Duratech (125 °C), Unicon (125 °C, UPL), Rubycon (105 °C, ZLH, YXG) Polymers: Unicon
Supervisor IC	SITI PS223 (OVP, UVP, OCP, SCP, OTP)
Fan Model	Globe Fan S1201512HB (120 mm, 12 V, 0.45 A, Sleeve Bearing)
5VSB Circuit	
Rectifier	1x PFR10V45CT (45 V, 5 x 2 A)
Standby PWM Controller	Sanken STR-A6069H
-12V Circuit	
PWM Controller	L7912CV (1.5 A)

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Lian Li PE-750

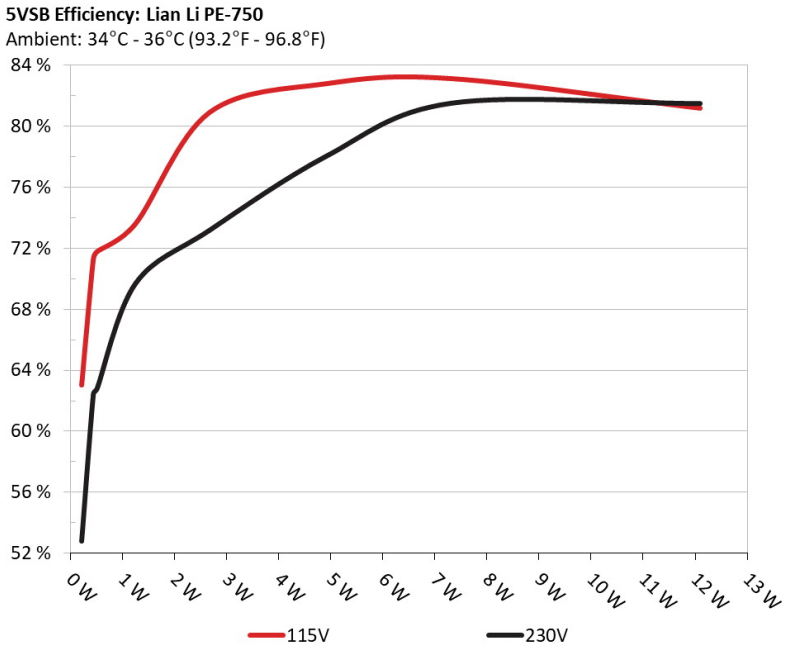
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Lian Li PE-750

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.208	63.030%	0.029
	4.926V	0.330		115.04V
2	0.088A	0.432	71.287%	0.052
	4.924V	0.606		115.05V
3	0.542A	2.662	80.912%	0.232
	4.907V	3.290		115.04V
4	1.002A	4.902	82.804%	0.330
	4.890V	5.920		115.04V
5	1.502A	7.317	83.138%	0.389
	4.871V	8.801		115.04V
6	2.502A	12.093	81.199%	0.449
	4.834V	14.893		115.04V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.207	52.806%	0.010
	4.925V	0.392		230.20V
2	0.088A	0.432	62.428%	0.018
	4.921V	0.692		230.20V
3	0.542A	2.662	73.172%	0.091
	4.907V	3.638		230.20V
4	1.003A	4.902	78.020%	0.148
	4.889V	6.283		230.17V
5	1.502A	7.315	81.504%	0.198
	4.870V	8.975		230.19V
6	2.502A	12.091	81.481%	0.277
	4.833V	14.839		230.19V

Anex

Lian Li PE-750

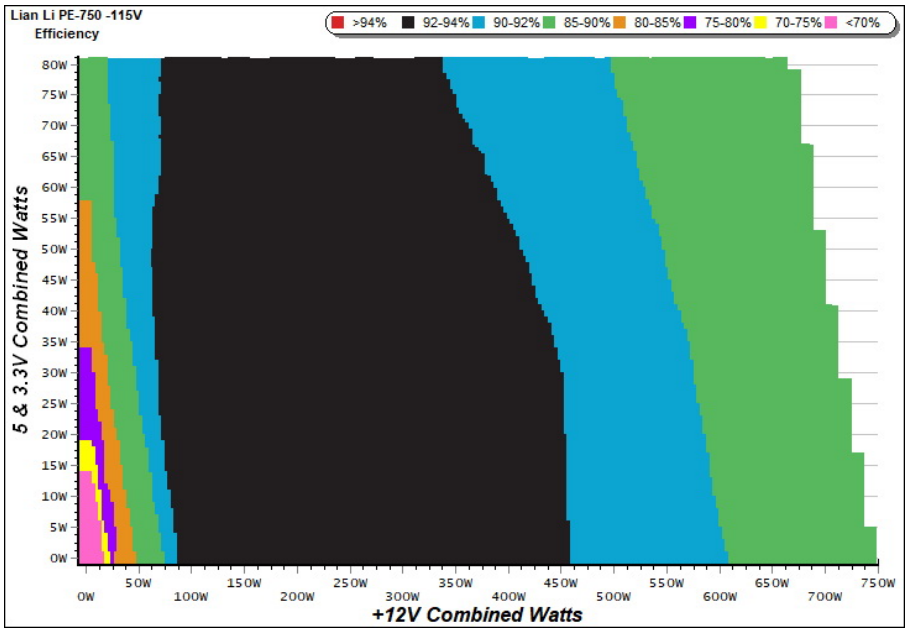
115V

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Lian Li PE-750

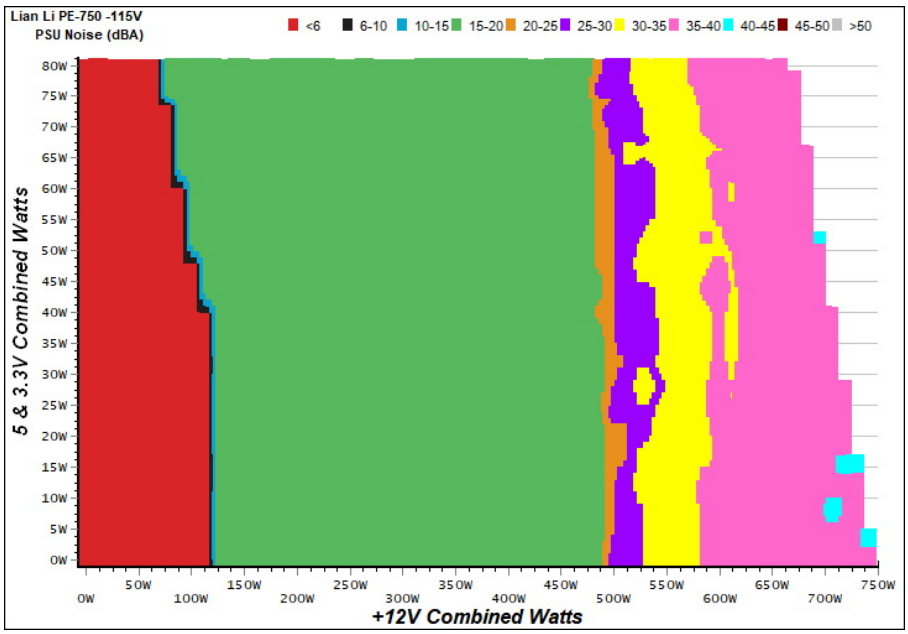
EFFICIENCY GRAPH 115V



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

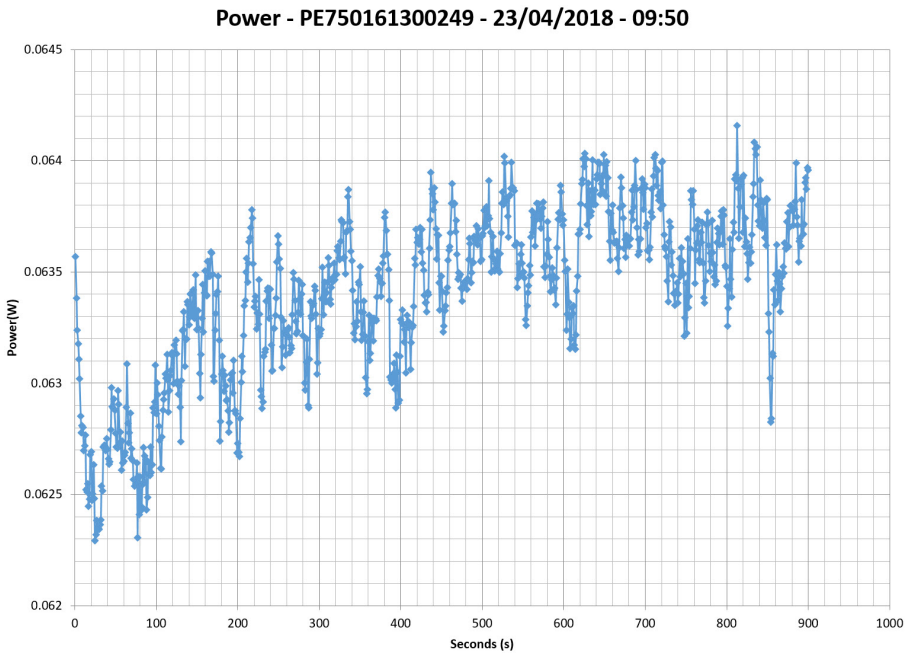
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Lian Li PE-750

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

Anex

Lian Li PE-750

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	4.461A	1.964A	1.974A	0.983A	74.822	90.823%	0	<6.0	44.92°C	0.933
	11.930V	5.100V	3.341V	5.076V	82.382				39.12°C	115.09V
2	9.974A	2.939A	2.969A	1.181A	149.753	93.574%	0	<6.0	45.96°C	0.963
	11.922V	5.092V	3.333V	5.065V	160.037				39.98°C	115.09V
3	15.849A	3.445A	3.487A	1.386A	224.918	93.487%	958	19.0	40.81°C	0.978
	11.914V	5.081V	3.324V	5.050V	240.587				47.63°C	115.08V
4	21.718A	3.944A	3.978A	1.585A	299.779	93.152%	938	18.6	41.13°C	0.981
	11.907V	5.073V	3.316V	5.037V	321.817				48.30°C	115.09V
5	27.248A	4.939A	4.987A	1.791A	374.786	92.633%	944	18.8	41.89°C	0.985
	11.901V	5.064V	3.308V	5.025V	404.591				49.77°C	115.09V
6	32.781A	5.934A	6.001A	1.994A	449.690	90.991%	1625	34.7	42.50°C	0.988
	11.894V	5.057V	3.298V	5.012V	494.214				50.79°C	115.09V
7	38.332A	6.938A	7.021A	2.200A	524.680	90.145%	1940	39.4	43.01°C	0.991
	11.885V	5.047V	3.289V	4.998V	582.043				51.55°C	115.10V
8	43.887A	7.940A	8.047A	2.405A	599.625	89.355%	2090	41.5	43.91°C	0.993
	11.877V	5.037V	3.280V	4.986V	671.063				53.14°C	115.09V
9	49.882A	8.458A	8.588A	2.407A	674.679	88.615%	2105	41.7	44.65°C	0.994
	11.869V	5.030V	3.272V	4.980V	761.360				54.47°C	115.10V
10	55.836A	8.968A	9.098A	2.514A	749.546	87.908%	2115	41.7	45.46°C	0.995
	11.862V	5.021V	3.264V	4.970V	852.644				55.57°C	115.11V
11	62.189A	8.979A	9.118A	2.516A	824.458	87.166%	2135	41.8	46.81°C	0.996
	11.855V	5.015V	3.256V	4.964V	945.852				57.33°C	115.11V
CL1	0.099A	10.013A	10.005A	0.004A	85.354	88.782%	2160	41.9	43.99°C	0.943
	11.926V	5.083V	3.324V	5.109V	96.139				52.81°C	115.12V
CL2	61.941A	1.003A	1.002A	1.002A	748.546	88.206%	2115	41.7	45.51°C	0.995
	11.869V	5.040V	3.283V	5.013V	848.635				55.40°C	115.16V

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Lian Li PE-750

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	1.225A	0.481A	0.473A	0.196A	19.646	77.022%	0	<6.0	0.828
	11.924V	5.106V	3.350V	5.099V	25.507				115.10V
2	2.476A	0.969A	0.984A	0.391A	39.750	83.788%	0	<6.0	0.896
	11.922V	5.105V	3.347V	5.094V	47.441				115.09V
3	3.727A	1.464A	1.494A	0.586A	59.879	87.526%	0	<6.0	0.926
	11.921V	5.103V	3.344V	5.088V	68.413				115.09V
4	4.966A	1.964A	1.973A	0.786A	79.735	91.349%	0	<6.0	0.937
	11.928V	5.100V	3.341V	5.080V	87.286				115.09V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	27.3 mV	7.3 mV	22.1 mV	6.1 mV	Pass
20% Load	15.1 mV	8.7 mV	23.5 mV	8.0 mV	Pass
30% Load	17.5 mV	10.5 mV	26.1 mV	9.5 mV	Pass
40% Load	19.1 mV	12.2 mV	27.7 mV	11.4 mV	Pass
50% Load	21.7 mV	14.4 mV	31.5 mV	13.5 mV	Pass
60% Load	25.8 mV	16.0 mV	33.6 mV	15.3 mV	Pass
70% Load	27.9 mV	18.1 mV	35.3 mV	17.6 mV	Pass
80% Load	30.1 mV	19.7 mV	38.3 mV	19.5 mV	Pass
90% Load	33.2 mV	21.3 mV	39.8 mV	21.5 mV	Pass
100% Load	35.4 mV	22.9 mV	41.8 mV	23.9 mV	Pass
110% Load	38.1 mV	25.7 mV	51.2 mV	26.8 mV	Fail
Crossload 1	28.6 mV	8.0 mV	22.4 mV	6.9 mV	Pass
Crossload 2	43.1 mV	36.3 mV	47.4 mV	39.5 mV	Pass

Anex

Lian Li PE-750

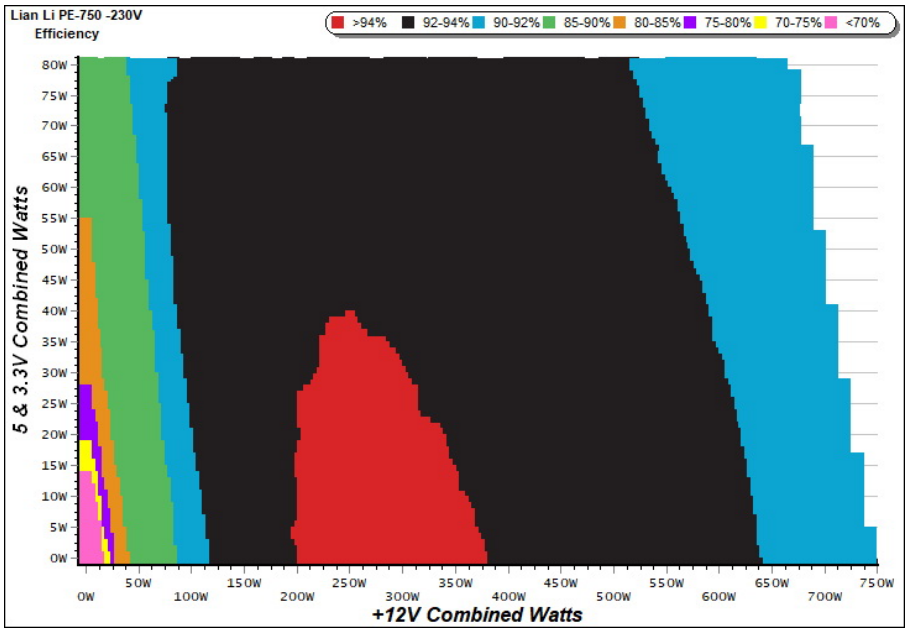
230V

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Lian Li PE-750

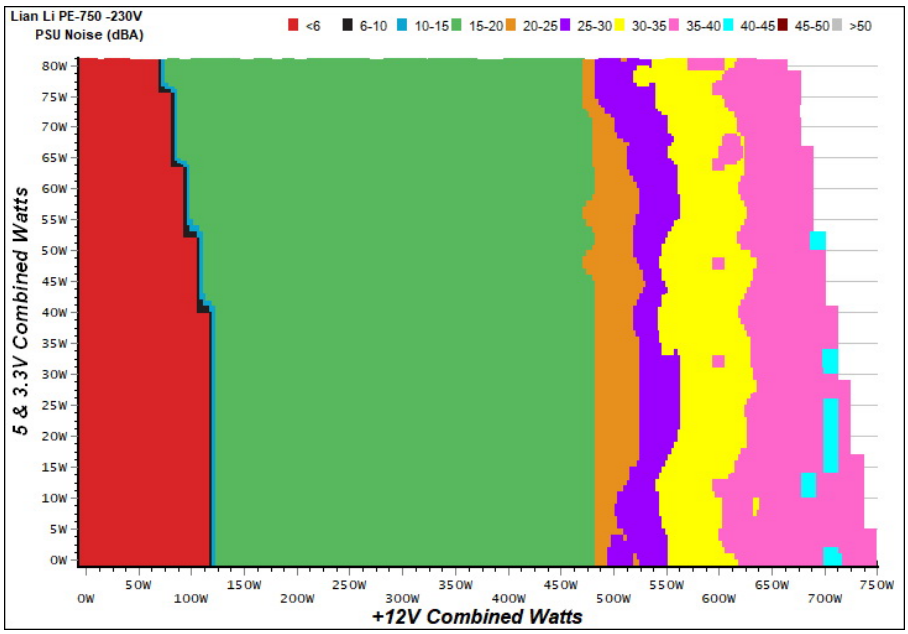
EFFICIENCY GRAPH 230V



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 230V



INFO

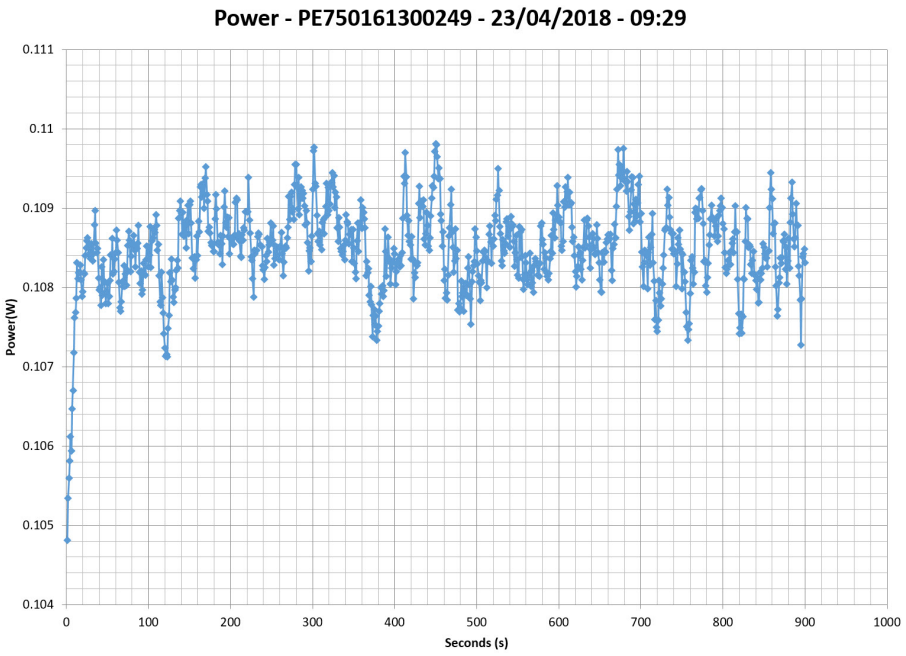
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Lian Li PE-750

VAMPIRE POWER -230V



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

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Lian Li PE-750

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	4.467A	1.964A	1.973A	0.984A	74.847	89.311%	0	<6.0	45.08°C	0.825
	11.920V	5.099V	3.341V	5.075V	83.805				39.59°C	230.47V
2	9.975A	2.938A	2.968A	1.181A	149.763	93.362%	0	<6.0	46.44°C	0.911
	11.923V	5.092V	3.332V	5.064V	160.411				40.29°C	230.26V
3	15.848A	3.445A	3.485A	1.386A	224.922	93.940%	944	18.8	40.91°C	0.940
	11.915V	5.082V	3.324V	5.051V	239.431				47.59°C	230.21V
4	21.719A	3.943A	3.976A	1.586A	299.817	93.999%	938	18.6	41.40°C	0.954
	11.909V	5.071V	3.316V	5.036V	318.958				48.76°C	230.20V
5	27.248A	4.938A	4.988A	1.791A	374.802	93.582%	1047	22.1	41.78°C	0.964
	11.902V	5.063V	3.307V	5.025V	400.508				49.38°C	230.20V
6	32.787A	5.933A	5.999A	1.995A	449.734	92.770%	1725	36.2	42.22°C	0.969
	11.894V	5.054V	3.298V	5.010V	484.782				50.08°C	230.20V
7	38.328A	6.937A	7.022A	2.201A	524.705	92.174%	1890	38.3	42.84°C	0.974
	11.887V	5.046V	3.289V	4.998V	569.252				51.37°C	000.00V
8	43.885A	7.944A	8.049A	2.406A	599.579	91.559%	2060	40.8	43.21°C	0.977
	11.876V	5.036V	3.280V	4.985V	654.854				52.20°C	230.30V
9	49.881A	8.460A	8.588A	2.409A	674.659	91.001%	2105	41.7	44.52°C	0.980
	11.869V	5.028V	3.271V	4.978V	741.377				53.89°C	230.30V
10	55.840A	8.969A	9.098A	2.514A	749.589	90.476%	2115	41.7	45.48°C	0.982
	11.862V	5.021V	3.263V	4.970V	828.497				55.32°C	230.30V
11	62.180A	8.981A	9.121A	2.517A	824.424	89.907%	2125	41.8	46.58°C	0.983
	11.856V	5.015V	3.255V	4.962V	916.970				56.82°C	230.29V
CL1	0.102A	10.011A	10.007A	0.005A	85.370	84.277%	1670	35.5	42.66°C	0.858
	11.918V	5.081V	3.324V	5.107V	101.297				51.20°C	230.28V
CL2	61.946A	1.003A	1.003A	1.002A	748.667	90.972%	2125	41.8	45.79°C	0.982
	11.870V	5.039V	3.283V	5.011V	822.967				55.36°C	230.25V

Anex

Lian Li PE-750

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	1.226A	0.480A	0.475A	0.196A	19.664	77.220%	0	<6.0	0.498
	11.927V	5.107V	3.348V	5.100V	25.465				230.23V
2	2.477A	0.968A	0.984A	0.392A	39.767	85.655%	0	<6.0	0.685
	11.924V	5.104V	3.347V	5.094V	46.427				230.24V
3	3.729A	1.464A	1.494A	0.586A	59.903	87.961%	0	<6.0	0.782
	11.922V	5.102V	3.343V	5.088V	68.102				230.24V
4	4.971A	1.964A	1.974A	0.786A	79.861	89.413%	0	<6.0	0.837
	11.921V	5.099V	3.340V	5.080V	89.317				230.22V

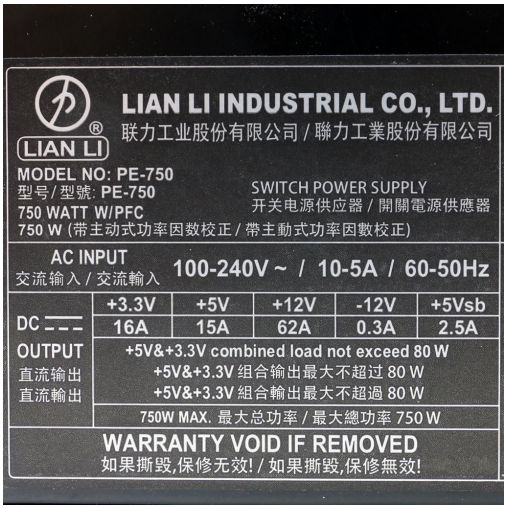
RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	9.53mV	7.70mV	24.49mV	6.51mV	Pass
20% Load	18.64mV	9.95mV	25.35mV	7.91mV	Pass
30% Load	18.97mV	12.07mV	28.46mV	9.87mV	Pass
40% Load	21.11mV	13.52mV	30.20mV	12.03mV	Pass
50% Load	23.13mV	16.94mV	35.99mV	15.06mV	Pass
60% Load	26.46mV	16.56mV	34.69mV	15.13mV	Pass
70% Load	28.58mV	18.70mV	36.80mV	17.40mV	Pass
80% Load	29.14mV	19.54mV	38.05mV	19.79mV	Pass
90% Load	32.17mV	21.12mV	39.99mV	21.67mV	Pass
100% Load	35.20mV	23.29mV	44.07mV	24.88mV	Pass
110% Load	38.61mV	25.82mV	52.36mV	26.91mV	Fail
Crossload1	22.01mV	9.31mV	25.46mV	7.55mV	Pass
Crossload2	34.87mV	23.21mV	40.76mV	23.61mV	Pass

Anex

Lian Li PE-750

Top side



Power specifications label

CERTIFICATIONS 115V

CYBENETICS PLATINUM

CYBENETICS STANDARD++

CERTIFICATIONS 230V

CYBENETICS PLATINUM 230v

CYBENETICS A- 230v

Aristeidis Bitziopoulos
Lab Director