

## Anex

Lian Li EDGE 1000

Lab ID#: LL10002400  
 Receipt Date: Mar 20, 2024  
 Test Date: Mar 29, 2024

Report: 24PS2400A  
 Report Date: Apr 1, 2024

DUT INFORMATION	
Brand	Lian Li
Manufacturer (OEM)	Helly Technology
Series	EDGE
Model Number	EG1000
Serial Number	
DUT Notes	

DUT SPECIFICATIONS	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	12-6
Rated Frequency (Hz)	50-60
Rated Power (W)	1000
Type	ATX12V
Cooling	120mm Fluid Dynamic Bearing Fan (HA1225M12F-Z)
Semi-Passive Operation	✓
Cable Design	Fully Modular

TEST EQUIPMENT	
Electronic Loads	Chroma 63601-5 x2 Chroma 63600-2 63640-80-80 x10 63610-80-20
AC Sources	Chroma 6530, APM SP300VAC4000W-P
Power Analyzers	RS HMC8015, N4L PPA1530, N4L PPA5530
Oscilloscopes	Picoscope 4444, Rigol DS7014, Siglent SDS2104X PLUS
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Temperature Logger	Picoscope TC-08
Tachometer	UNI-T UT372
Multimeters	Keysight 34465A, Keithley 2015 - THD
UPS	FSP Champ Tower 3kVA, CyberPower OLS3000E 3kVA
Isolation Transformer	4kVA

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### RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX v3.1 PSU Power Excursion	✓

### 115V

Average Efficiency	89.150%
Efficiency With 10W (≤500W) or 2% (>500W)	68.889
Average Efficiency 5VSB	80.418%
Standby Power Consumption (W)	0.0435000
Average PF	0.990
Avg Noise Output	25.06 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A-

### 230V

Average Efficiency	91.563%
Average Efficiency 5VSB	80.015%
Standby Power Consumption (W)	0.0948000
Average PF	0.969
Avg Noise Output	24.47 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A

### POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	83	3	0.3
	Watts	120		996	15	3.6
Total Max. Power (W)		1000				

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

Hold-Up Time (ms)	18.5
AC Loss to PWR_OK Hold Up Time (ms)	16.1
PWR_OK Inactive to DC Loss Delay (ms)	2.4

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### 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 (550mm)	2	2	18AWG	No
6+2 pin PCIe (550mm)	3	3	18AWG	No
12+4 pin PCIe (550mm) (600W)	1	1	16-26AWG	No
2x SATA (400mm+100mm)	1	4	18AWG	No
SATA (400mm+200mm+200mm+200mm)	2	8	18AWG	No
4-pin Molex (500mm+150mm+150mm+150mm)	1	4	18AWG	No

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## Anex

Lian Li EDGE 1000

General Data	
Manufacturer (OEM)	Helly Technology
PCB Type	Double-Sided
Primary Side	
Transient Filter	2x Y caps, 1x X caps, 2x CM chokes, 1x MOV
Inrush Protection	1x NTC Thermistor MF73T-2 (20 Ohm) & Relay
Bridge Rectifier(s)	2x GBU1508 (8000V, 15A @ with heatsink)
APFC MOSFETs	3x PTA25N50 (500V, 16A @ 100°C, Rds(on): 0.28Ohm)
APFC Boost Diode	1x G3S06510A (650V, 35A @ 25°C)
Bulk Cap(s)	2x Nichicon (400V, 470uF each or 940 both, 2000h @ 105°C, GN(M))
Main Switchers	4x Convert CS20N50FF (500V, 20A @ 100°C, Rds(on): 0.27Ohm)
APFC/Resonant Controller	1x Champion CM6901T6
Topology	Primary side: APFC, Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETs	12x G013N04G
5V & 3.3V	DC-DC Converters: 2x XSEMI XP3NA3R4MT (30V, 46A @ 100°C, Rds(on): 3.4mOhm) & 3x RMN3N5R0DF (30V, 19.7A @ 70°C, Rds(on): 5mOhm) PWM Controller(s): ANPEC APW7159C
Filtering Capacitors	Electrolytic: 1x Rubycon (2-10,000 @ 105°C, YXF), 2x Nippon Chemi-Con (3-6,000 @ 105°C, W), 5x Nippon Chemi-Con (2-5000 @ 105°C, KZE), Polymer: 6x PC Caps, 23x United Chemi-Con
Supervisor IC	Weltrend WT7527 (OVD, PGO, UVD)
Fan Model	Hong Hua HA1225M12F-Z (120mm, 12V, 0.45A, Fluid Dynamic Bearing Fan)
5VSB Circuit	
High Side Rectifier	1x 60R20S
Standby PWM Controller	Excelliance MOS EM8569C

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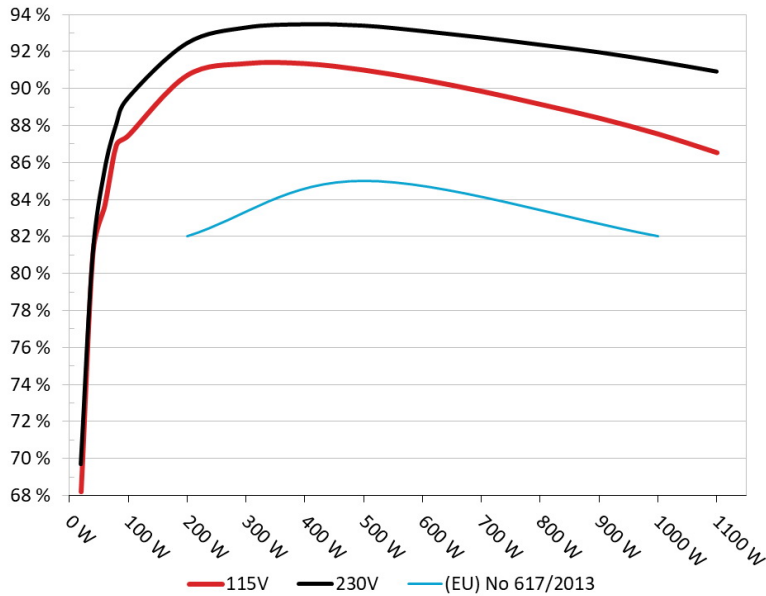
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#### EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

##### Efficiency: Lian Li EDGE 1000

Ambient: 37°C - 47°C (98.6°F - 116.6°F)



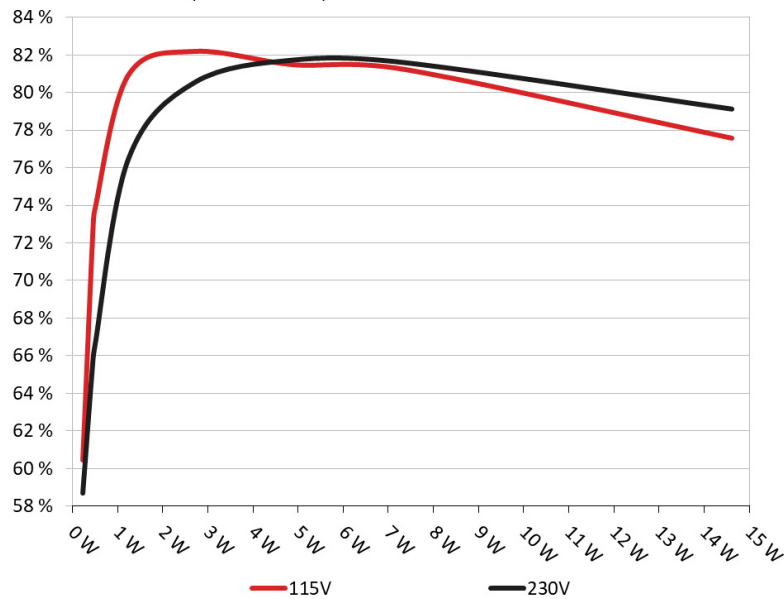
#### INFO

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 EDGE 1000

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 (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.222W	60.44%	0.034
	4.926V	0.259W		114.88V
2	0.09A	0.443W	72.564%	0.079
	4.925V	0.611W		114.88V
3	0.55A	2.704W	82.21%	0.327
	4.916V	3.289W		114.88V
4	1A	4.908W	81.494%	0.445
	4.908V	6.023W		114.88V
5	1.5A	7.349W	81.252%	0.51
	4.899V	9.045W		114.87V
6	3A	14.614W	77.588%	0.578
	4.871V	18.836W		114.88V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.222W	58.679%	0.015
	4.926V	0.378W		229.96V
2	0.09A	0.443W	65.656%	0.026
	4.925V	0.675W		229.95V
3	0.55A	2.704W	80.549%	0.123
	4.917V	3.357W		229.95V
4	1A	4.908W	81.743%	0.205
	4.909V	6.004W		229.95V
5	1.5A	7.349W	81.603%	0.278
	4.899V	9.006W		229.95V
6	3A	14.615W	79.129%	0.388
	4.872V	18.47W		229.94V

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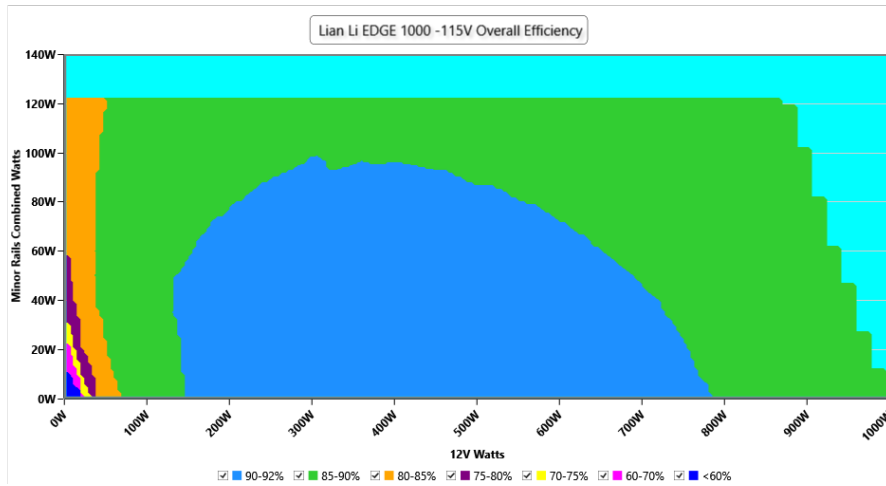
# 115V

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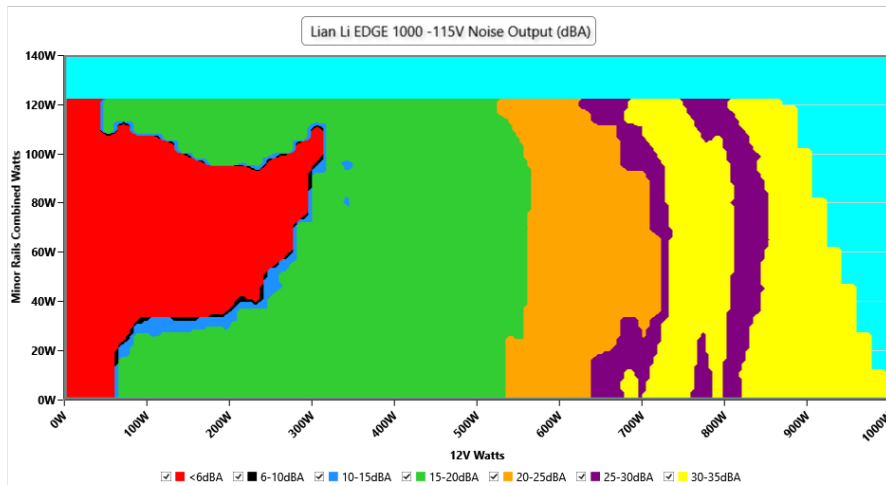
#### EFFICIENCY GRAPH 115V



#### 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

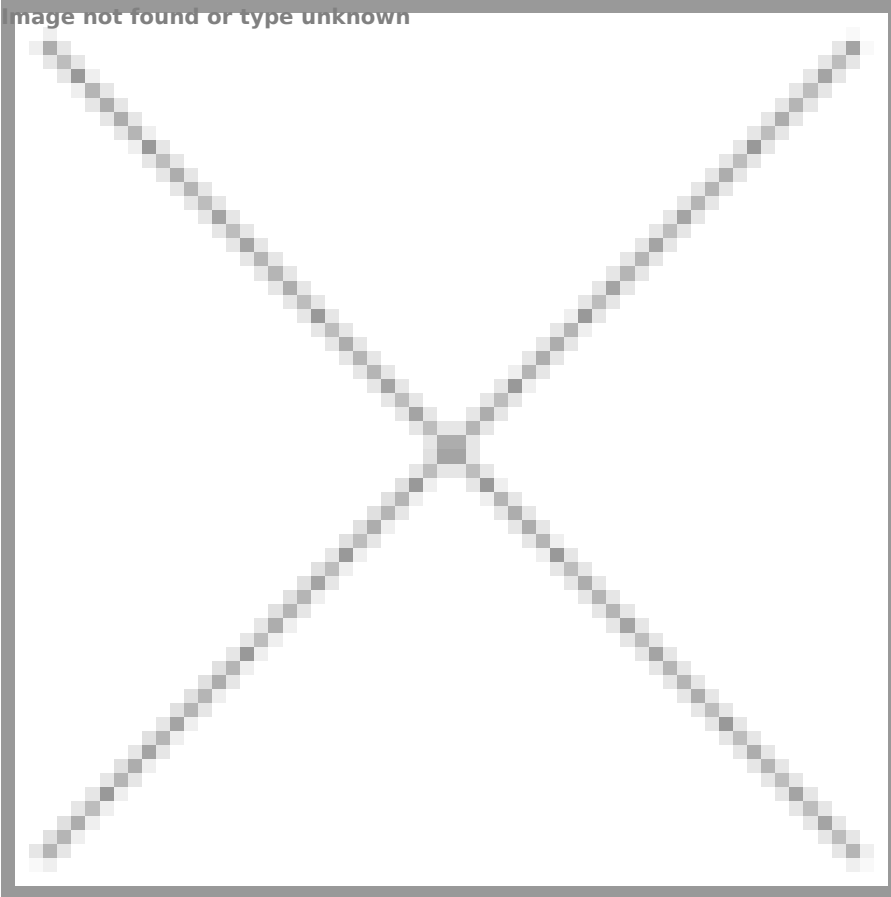
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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### VAMPIRE POWER -115V



#### 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
10%	6.399A	2.001A	1.957A	1.007A	99.999	87.443%	953	19.0	40.32°C	0.965
	12.252V	4.998V	3.372V	4.964V	114.358				44.59°C	114.84V
20%	13.802A	3.003A	2.939A	1.21A	199.952	90.694%	987	18.1	40.75°C	0.982
	12.249V	4.995V	3.368V	4.959V	220.472				45.41°C	114.81V
30%	21.557A	3.506A	3.432A	1.414A	300.006	91.335%	1042	19.2	41.05°C	0.988
	12.244V	4.993V	3.365V	4.95V	328.467				46.1°C	114.77V
40%	29.279A	4.008A	3.926A	1.619A	399.611	91.33%	1127	22.8	41.85°C	0.992
	12.241V	4.99V	3.362V	4.941V	437.547				47.39°C	114.75V
50%	36.674A	5.013A	4.913A	1.823A	499.305	90.986%	1382	28.4	42.14°C	0.994
	12.238V	4.988V	3.359V	4.937V	548.774				48.2°C	114.7V
60%	44.141A	6.02A	5.902A	2A	599.719	90.464%	1474	29.3	42.7°C	0.995
	12.234V	4.985V	3.355V	4.933V	662.934				49.2°C	114.67V
70%	51.544A	7.027A	6.892A	2.233A	699.563	89.84%	1577	31.7	43.42°C	0.996
	12.231V	4.982V	3.352V	4.927V	778.678				50.47°C	114.63V
80%	59.018A	8.034A	7.884A	2.334A	799.573	89.137%	1679	34.4	43.69°C	0.996
	12.228V	4.979V	3.349V	4.928V	897.017				51.69°C	114.6V
90%	66.821A	8.539A	8.369A	2.437A	899.357	88.391%	1782	34.7	44.55°C	0.997
	12.225V	4.977V	3.346V	4.924V	1017.485				53.52°C	114.56V
100%	74.433A	9.046A	8.885A	3.067A	999.377	87.538%	1867	36.7	45.52°C	0.997
	12.222V	4.975V	3.343V	4.892V	1141.646				55.7°C	114.51V
110%	81.976A	10.056A	9.973A	3.063A	1099.978	86.524%	1875	36.9	46.75°C	0.997
	12.219V	4.972V	3.339V	4.898V	1271.305				57.68°C	114.48V
CL1	0.115A	14.513A	14.21A	0A	121.302	81.189%	1457	29.3	40.17°C	0.975
	12.253V	4.975V	3.357V	5.126V	149.406				41.5°C	114.83V
CL2	0.114A	20.123A	0A	0A	101.373	79.71%	1162	22.6	40.11°C	0.969
	12.253V	4.968V	3.378V	5.182V	127.177				41.51°C	114.84V
CL4	81.829A	0A	0A	0A	999.949	88.478%	1722	34.3	41.55°C	0.997
	12.220V	4.993V	3.355V	4.98V	1130.172				47.94°C	114.53V

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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])	Temps (In/Out)	PF/AC Volts
20W	1.212A	0.5A	0.488A	0.2A	20.001	68.219%	0	<6.0	39.78°C	0.897
	12.255V	5.005V	3.378V	4.998V	29.325				36.65°C	114.86V
40W	2.668A	0.699A	0.684A	0.3A	40.001	81.113%	0	<6.0	40.57°C	0.93
	12.254V	5.005V	3.378V	4.995V	49.315				37.26°C	114.86V
60W	4.124A	0.9A	0.88A	0.401A	60.001	83.646%	0	<6.0	41.88°C	0.951
	12.253V	5.002V	3.376V	4.989V	71.731				38.26°C	114.86V
80W	5.576A	1.1A	1.076A	0.502A	79.946	86.935%	941	16.8	39.32°C	0.96
	12.253V	5.002V	3.375V	4.985V	91.963				43.25°C	114.85V

### RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	13.92mV	11.44mV	15.36mV	7.64mV	Pass
20% Load	15.00mV	11.59mV	15.20mV	7.69mV	Pass
30% Load	15.41mV	11.64mV	15.67mV	7.59mV	Pass
40% Load	15.83mV	11.64mV	15.31mV	7.69mV	Pass
50% Load	16.75mV	14.07mV	15.62mV	9.09mV	Pass
60% Load	17.22mV	14.89mV	16.29mV	10.43mV	Pass
70% Load	17.69mV	18.29mV	18.51mV	13.52mV	Pass
80% Load	20.11mV	16.64mV	19.14mV	12.65mV	Pass
90% Load	19.75mV	16.75mV	19.34mV	12.23mV	Pass
100% Load	30.20mV	16.69mV	19.24mV	11.31mV	Pass
110% Load	30.51mV	18.19mV	18.86mV	12.16mV	Pass
Crossload1	20.89mV	13.64mV	16.82mV	8.49mV	Pass
Crossload2	15.00mV	13.81mV	15.62mV	7.90mV	Pass
Crossload3	0.00mV	0.00mV	0.00mV	0.00mV	Pass
Crossload4	30.08mV	14.87mV	17.50mV	9.04mV	Pass

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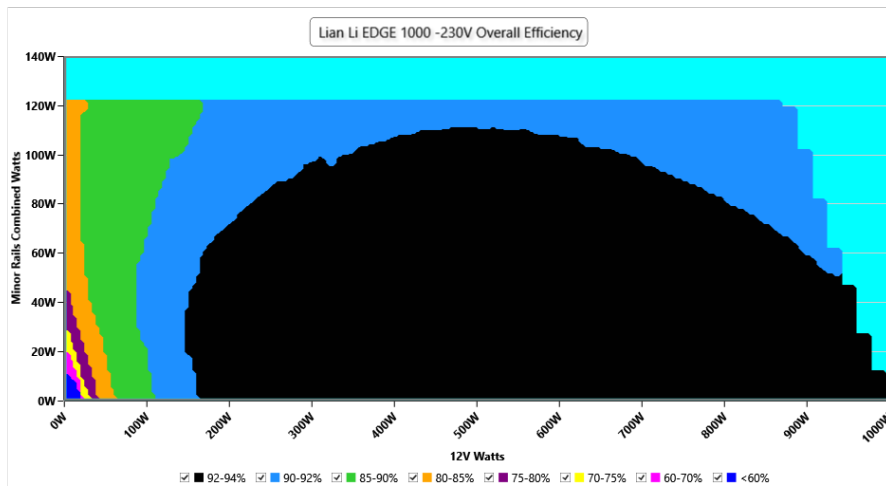
# 230V

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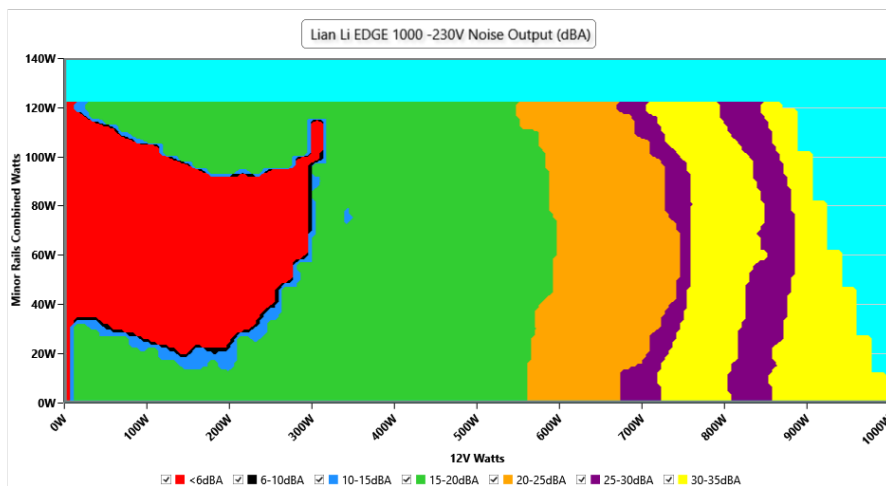
#### EFFICIENCY GRAPH 230V



#### INFO

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#### NOISE GRAPH 230V



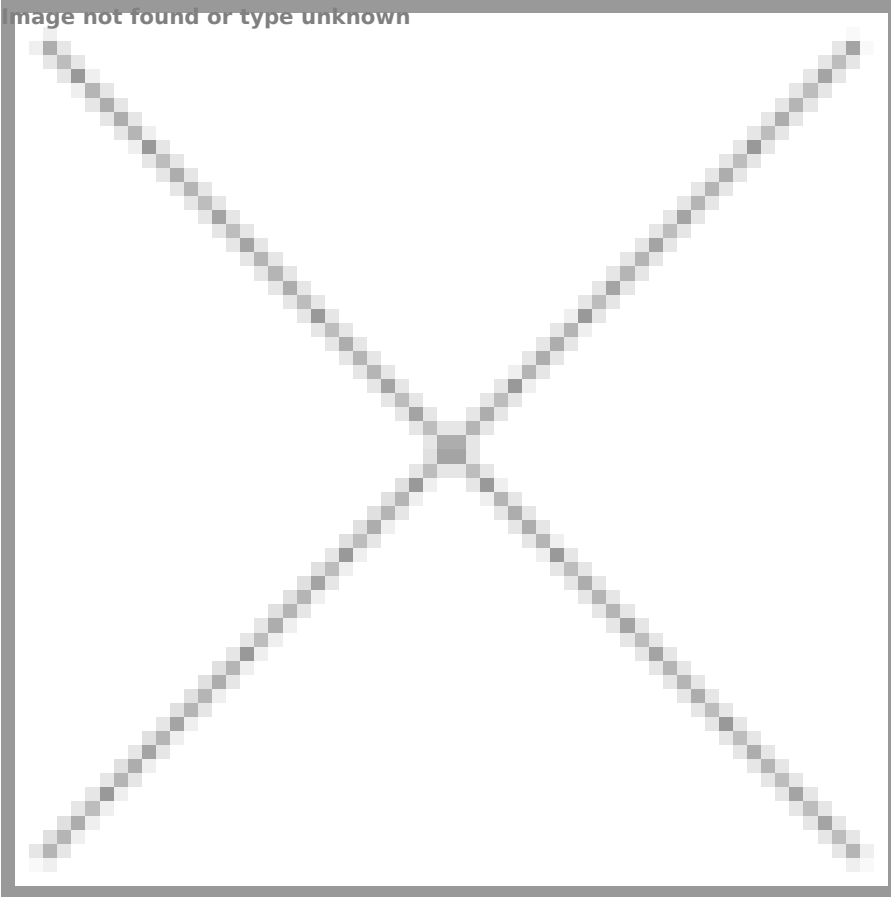
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**VAMPIRE POWER -230V**



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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
10%	6.398A	1.999A	1.956A	1.006A	99.984	89.483%	1009	20.5	40.23°C	0.902
	12.252V	5.001V	3.374V	4.968V	111.736				44.5°C	229.93V
20%	13.800A	3.003A	2.938A	1.209A	199.931	92.442%	1001	19.2	40.55°C	0.953
	12.249V	4.996V	3.369V	4.961V	216.279				45.22°C	229.91V
30%	21.551A	3.505A	3.431A	1.414A	299.978	93.293%	1071	21.7	41.4°C	0.968
	12.246V	4.994V	3.366V	4.952V	321.542				46.49°C	229.9V
40%	29.266A	4.007A	3.925A	1.619A	399.519	93.469%	1147	22.9	41.7°C	0.977
	12.243V	4.991V	3.363V	4.942V	427.438				47.28°C	229.88V
50%	36.662A	5.012A	4.911A	1.823A	499.217	93.4%	1381	28.4	42.09°C	0.981
	12.239V	4.988V	3.36V	4.938V	534.494				48.15°C	229.87V
60%	44.129A	6.018A	5.9A	2A	599.642	93.107%	1470	29.3	42.8°C	0.984
	12.236V	4.985V	3.356V	4.934V	644.033				49.3°C	229.85V
70%	51.532A	7.026A	6.891A	2.232A	699.492	92.761%	1557	31.6	43.3°C	0.986
	12.233V	4.983V	3.353V	4.928V	754.077				50.32°C	229.84V
80%	59.004A	8.032A	7.882A	2.334A	799.506	92.366%	1680	34.4	43.93°C	0.988
	12.230V	4.98V	3.349V	4.928V	865.578				52.1°C	229.82V
90%	66.809A	8.538A	8.367A	2.437A	899.313	91.963%	1776	34.6	44.86°C	0.989
	12.226V	4.977V	3.346V	4.924V	977.908				53.95°C	229.81V
100%	74.418A	9.044A	8.883A	3.067A	999.325	91.468%	1868	36.7	45.6°C	0.99
	12.224V	4.975V	3.343V	4.892V	1092.54				55.68°C	229.79V
110%	81.963A	10.056A	9.972A	3.063A	1099.931	90.919%	1875	36.9	46.85°C	0.991
	12.221V	4.972V	3.339V	4.897V	1209.784				57.76°C	229.77V
CL1	0.114A	14.509A	14.204A	0A	121.296	82.59%	1515	32.5	41.65°C	0.926
	12.256V	4.976V	3.358V	5.128V	146.862				43.81°C	229.93V
CL2	0.113A	20.122A	0A	0A	101.365	81.214%	1192	23.5	41°C	0.913
	12.257V	4.968V	3.378V	5.183V	124.812				42.27°C	229.93V
CL4	81.809A	0A	0A	0A	999.927	92.253%	1777	34.6	45.56°C	0.99
	12.223V	4.994V	3.356V	4.981V	1083.907				47.41°C	229.79V

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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])	Temps (In/Out)	PF/AC Volts
20W	1.212A	0.5A	0.489A	0.2A	19.989	69.695%	0	<6.0	39.74°C	0.594
	12.249V	5V	3.375V	4.994V	28.679				36.64°C	229.96V
40W	2.668A	0.7A	0.684A	0.3A	39.992	80.943%	0	<6.0	41.22°C	0.747
	12.249V	5.002V	3.376V	4.993V	49.41				37.92°C	229.96V
60W	4.124A	0.9A	0.88A	0.401A	59.992	85.521%	0	<6.0	41.88°C	0.833
	12.250V	5.002V	3.375V	4.989V	70.149				38.18°C	229.95V
80W	5.576A	1.1A	1.075A	0.501A	79.929	88.037%	0	<6.0	43.13°C	0.876
	12.250V	5.002V	3.375V	4.985V	90.789				39.27°C	229.94V

### RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	13.20mV	11.23mV	14.94mV	7.79mV	Pass
20% Load	14.13mV	11.69mV	14.84mV	7.59mV	Pass
30% Load	15.17mV	11.59mV	16.75mV	7.69mV	Pass
40% Load	17.74mV	11.33mV	16.44mV	7.90mV	Pass
50% Load	16.77mV	13.96mV	16.08mV	9.45mV	Pass
60% Load	17.08mV	16.12mV	17.11mV	12.44mV	Pass
70% Load	17.27mV	16.18mV	19.14mV	12.54mV	Pass
80% Load	18.92mV	16.07mV	17.94mV	11.98mV	Pass
90% Load	18.87mV	17.46mV	17.89mV	12.75mV	Pass
100% Load	30.60mV	16.01mV	18.96mV	10.86mV	Pass
110% Load	32.84mV	16.69mV	19.16mV	10.87mV	Pass
Crossload1	23.01mV	12.66mV	17.67mV	9.27mV	Pass
Crossload2	13.77mV	13.39mV	15.31mV	7.64mV	Pass
Crossload3	0.00mV	0.00mV	0.00mV	0.00mV	Pass
Crossload4	30.33mV	14.22mV	16.84mV	9.38mV	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 EDGE 1000



Top side

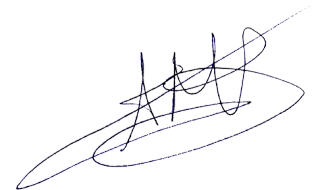


EDGE 1000 1000W Power Supply					
Model No. 型號/型号	EG1000				
AC Input 交流輸入/交流輸入	100-240Vac 12-6A 50-60Hz (200-240V~ 6.5A 50-60Hz, for China or Korea region) (200-240V~, 6.5A 50-60Hz, 适用于中国地区使用)				
DC Output Voltage 直流輸出電壓/直流輸出電壓	+3.3V	+5V	+12V	-12V	+5Vsb
DC Output Current 直流輸出電流/直流輸出電流	20A	20A	108A	0.3A	3A
DC Combined Wattage 直流組合功率/直流組合功率	120W	996W	3.6W	15W	
Total Output Wattage 總輸出功率/總輸出功率	1000W				



Power specifications label

### CERTIFICATIONS 115V

**Aristeidis Bitziopoulos**  
Lab Director

### CERTIFICATIONS 230V



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