Lian Li EDGE 1000

Lab ID LL10002400

Certification ID 252400

Test Result Report ID: 24PS2400A

Certificate Issue Date: Apr 1, 2024

Scheme: ETA-EMI PSU

115V



230V



115V



230V



Scheme: LAMBDA PSU



Outside Validation Scope

General Information

Test Equipment

Electronic Loads	Chroma 63601-5 x2 Chroma 63600-2 Chroma 63640-80-80 x10 Chroma 63610-80-20
AC Sources	Chroma 6530, APM SP300VAC4000W-P, GW Instek ASR-3500
Power Analyzers	Rohde & Schwarz HMC8015 & NPA701
Oscilloscopes	Picoscope 4444, 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
EMI Analyzer	TekBox TBMR-110M-EU
Isolation Transformer	4kVA
UPS	FSP Champ Tower 3kVA, CyberPower OLS3000E 3kVA
Testing Methodology	Cybenetics PSU Test Protocol

DUT Information(Non-accredited measurements)

Product Identification Details	
Brand	Lian Li
Model	EDGE 1000
OEM/ODM	Helly Technology
Serial Number	
Product Specifications	
Manufacturer-Provided Information	
□□□□ (Vrms)	100-240
□□□□ (Arms)	12-6

□□□□ (Hz)	50-60
□□□□ (W)	1000
Operating Temperature (Continuous Full Load) (°C)	
□□	ATX12V
□□□□	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
□□	120mm Fluid Dynamic Bearing Fan (HA1225M12F-Z)
□□□□□	✓
Cybenetics Testing Information	
Lab ID	LL10002400
Date of receipt	Mar 20, 2024
Testing Date	Mar 29, 2024
Report Issued Date	Apr 1, 2024
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

□□□□□ (Non-accredited measurements)

□□□□□				
□□	□□□□	□□□□□□	Gauge	In Cable Capacitors
ATX □□ 20+4 pin (400mm)	1	1	18-22AWG	□
4+4 pin EPS 12V □□ (550mm)	2	2	18AWG	□
6+2pin PCIe□□ (550mm)	3	3	18AWG	□
12+4 pin PCIe (550mm) (600W)	1	1	16-26AWG	□
2x SATA□□ (400mm+100mm)	1	4	18AWG	□
SATA□□ (400mm+200mm+200mm+200mm)	2	8	18AWG	□
4-pin Molex (500mm+150mm+150mm+150mm)	1	4	18AWG	□

□□□□

□		3.3V	5V	12V	5VSB	-12V
□□□□	□□	20	20	83	3	0.3
	□	120		996	15	3.6
□□□□□ (W)		1000				

Parts Description

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 (800V, 15A @ 100°C 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 All Power APG013N04G (40V, 100A @ 100°C, Rds(on): 1.3mOhm)

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

Test Results

Temperature & Compliance Info

□□□□ (°C /°F)	28-32 / 82.4-89.6
□□ ErP Lot3/6□□	✓
□□ (EU) No 617/2013□□	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX v3.1 PSU Power Excursion	✓

Performance Summary

115V

Accredited	
□□□□ (>1450 load combinations)	89.150%

Average Noise Output (>1450 Load Combinations)	25.06dBA
PF□□□ (>1450 Load Combinations)	0.990
Efficiency With 10W (≤500W) or 2% (>500W) Load	68.889%
□□□□□□	0.0435W
Non-Accredited	
12V Ripple (Full Load)	30.20mV
5V Ripple (Full Load)	16.69mV
3.3V Ripple (Full Load)	19.24mV
5VSB Ripple (Full Load)	11.31mV
12V Load Regulation	0.27%
5V Load Regulation	0.60%
3.3V Load Regulation	1.05%
5VSB Load Regulation	2.17%
Inrush Current	13.240A

230V

Accredited	
□□□□ (>1450 load combinations)	91.563%
Average Noise Output (>1450 Load Combinations)	24.47dBA
PF□□□ (>1450 Load Combinations)	0.969
Efficiency With 10W (≤500W) or 2% (>500W) Load	68.111%
□□□□□□	0.0948W
Non-Accredited	
12V Ripple (Full Load)	30.60mV
5V Ripple (Full Load)	16.01mV
3.3V Ripple (Full Load)	18.96mV
5VSB Ripple (Full Load)	10.86mV
12V Load Regulation	0.23%
5V Load Regulation	0.54%
3.3V Load Regulation	0.99%
5VSB Load Regulation	2.09%
Inrush Current	21.590A

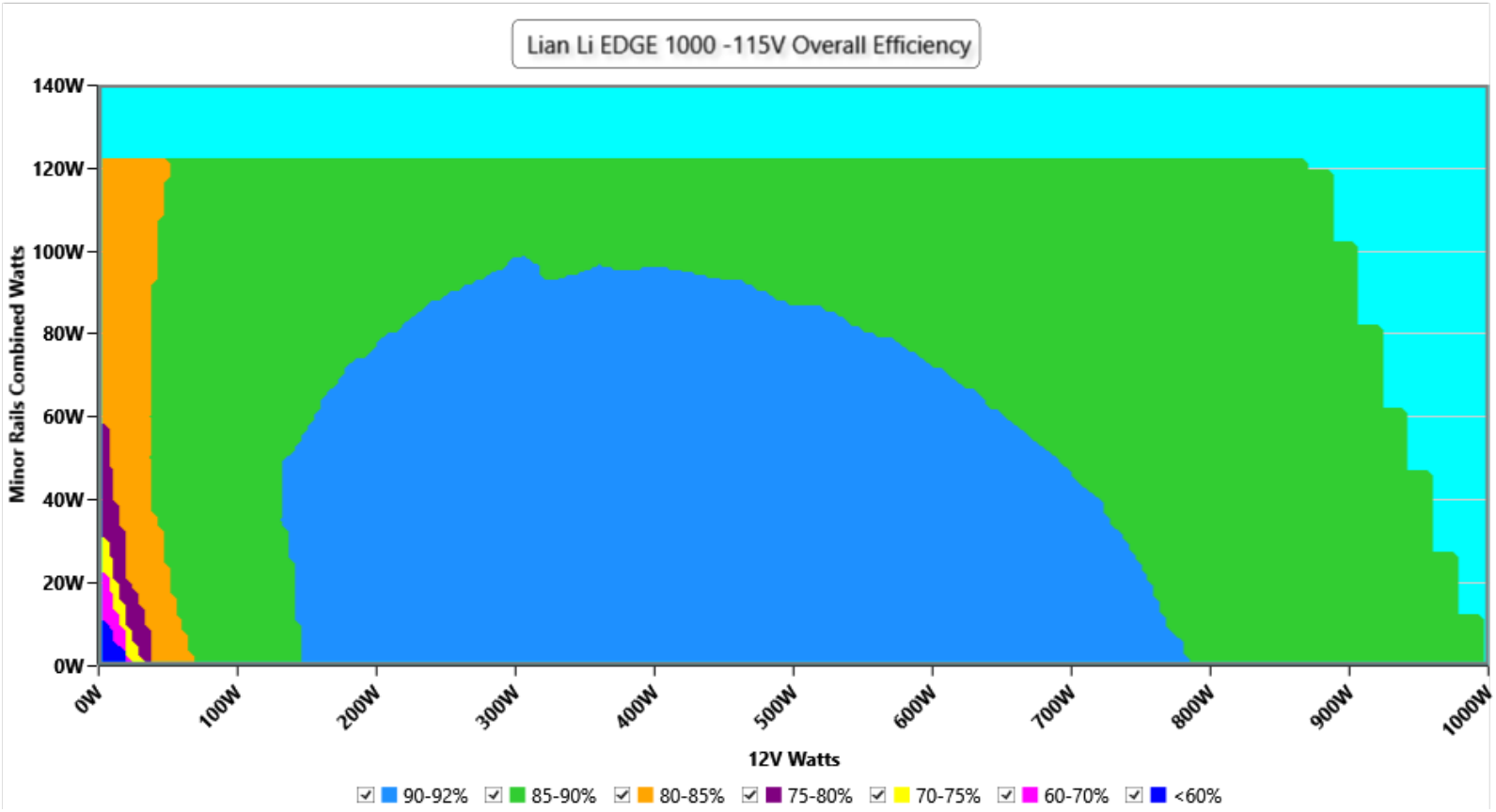
12V Transient Response (200%)		11.63V
5V Transient Response (200%)		4.897V
3.3V Transient Response (200%)		3.229V
5VSB Transient Response (200%)		4.878V
□□□□ & PG□□		18.50ms
AC Loss to PWR_OK Hold Up Time		16.10ms
PWR_OK Inactive to DC Loss Delay		2.40ms
PSU Timings: T1 (20% / 100%)	62.0ms	62.0ms
PSU Timings: T3 (20% / 100%)	121.0ms	124.0ms
OPP (28.19°C / 43.07°C)	132.91%	128.71%

□□□□ & PG□□

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

□□□□□□

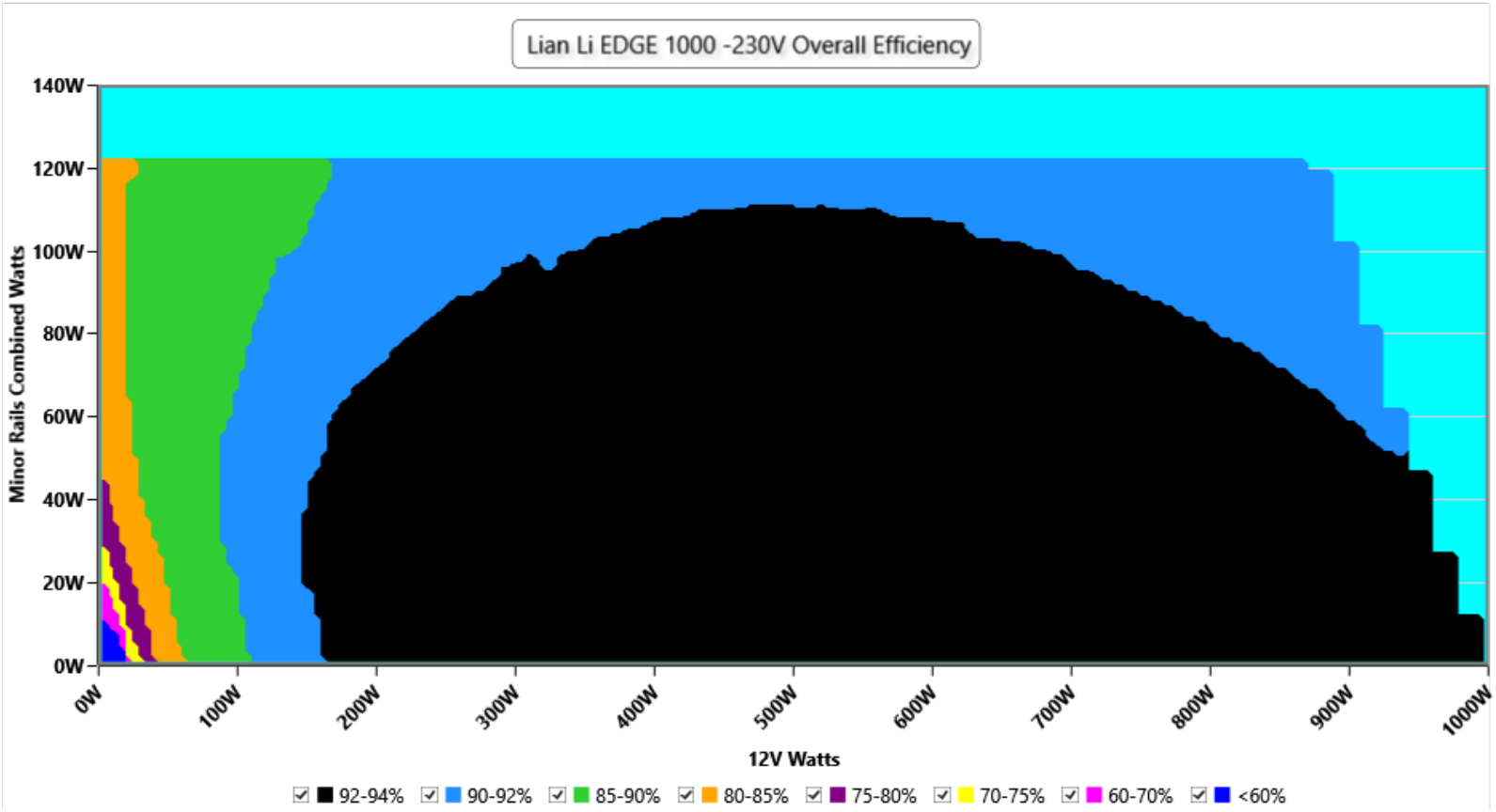
115V



□□

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

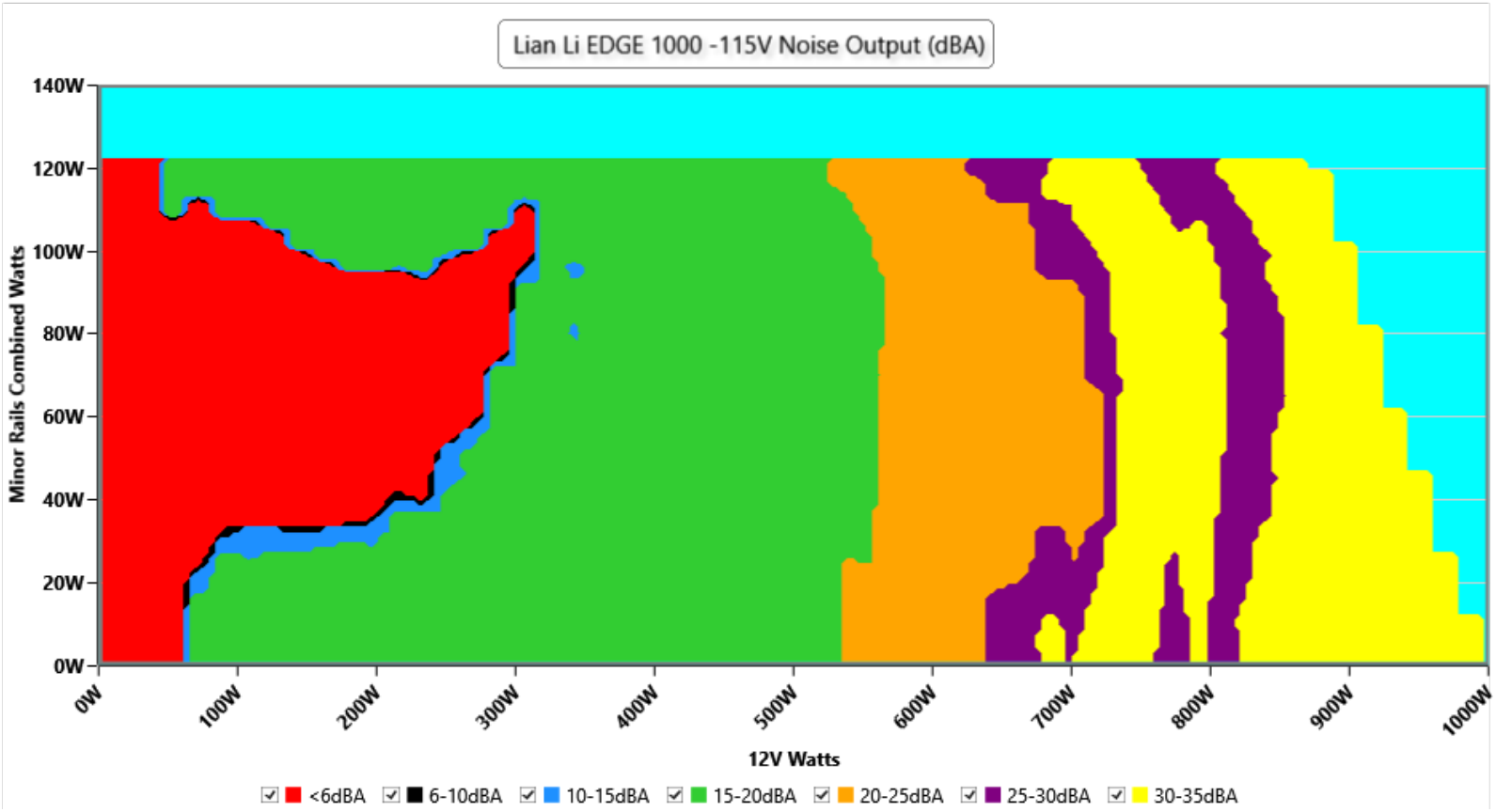
230V



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

□□□□□

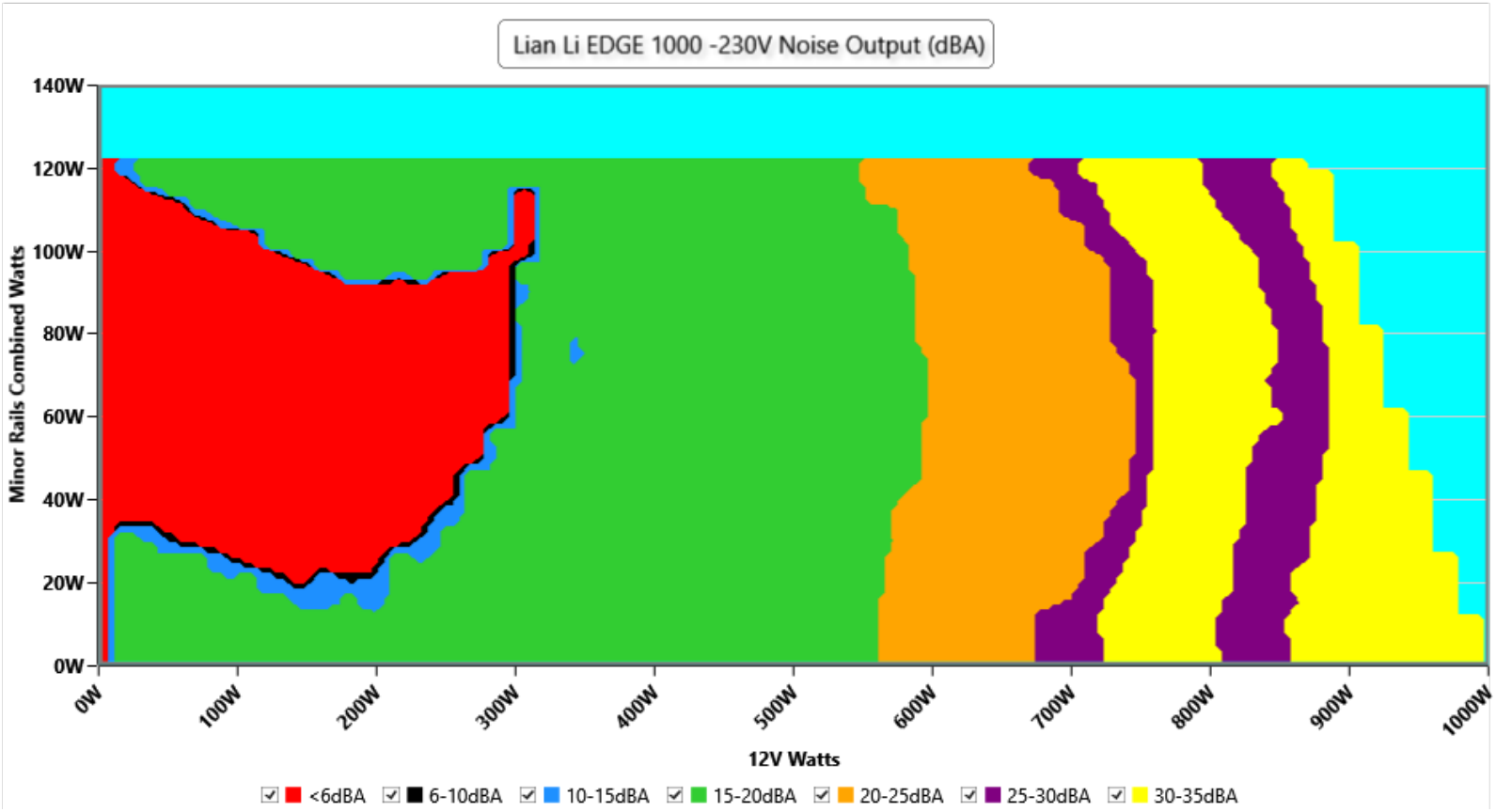
115V



□□

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

230V



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

Noise under high ambient temperature (indicative)

115V

Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	953 RPM · 19.0 dB(A) · 40.3 °C	953 RPM · 19.0 dB(A) · 40.3 °C	**+0.0 dB(A)**
20%	987 RPM · 18.1 dB(A) · 40.8 °C	987 RPM · 18.1 dB(A) · 40.8 °C	**+0.0 dB(A)**
50%	1382 RPM · 28.4 dB(A) · 42.1 °C	1382 RPM · 28.4 dB(A) · 42.1 °C	**+0.0 dB(A)**
100%	1867 RPM · 36.7 dB(A) · 45.5 °C	1867 RPM · 36.7 dB(A) · 45.5 °C	**+0.0 dB(A)**

230V

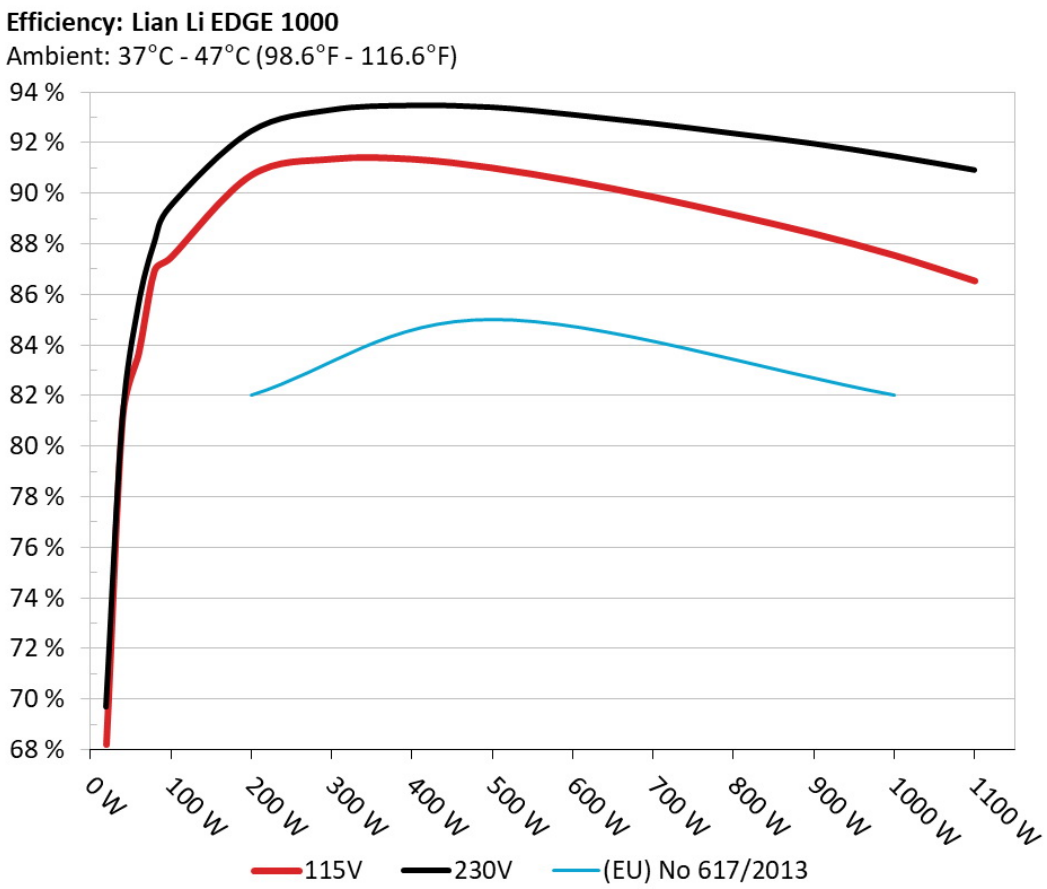
Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	1009 RPM · 20.5 dB(A) · 40.2 °C	1009 RPM · 20.5 dB(A) · 40.2 °C	**+0.0 dB(A)**
20%	1001 RPM · 19.2 dB(A) · 40.6 °C	1001 RPM · 19.2 dB(A) · 40.6 °C	**+0.0 dB(A)**
50%	1381 RPM · 28.4 dB(A) · 42.1 °C	1381 RPM · 28.4 dB(A) · 42.1 °C	**+0.0 dB(A)**
100%	1868 RPM · 36.7 dB(A) · 45.6 °C	1868 RPM · 36.7 dB(A) · 45.6 °C	**+0.0 dB(A)**

INFO

Fan speed, noise and the measured intake temperature at 10, 20, 50 and 100 % load, from the two load regulation tests: at normal ambient (about 30-32 °C) and at high ambient (about 40-47 °C). These are stabilized readings at fixed loads, not averages over the certification sweep, so they are indicative of how the fan behaves when it is hot. "<6.0" is the floor of our sound meter, with the fan stopped; with the fan stopped, the intake sensor can read higher than the chamber air.

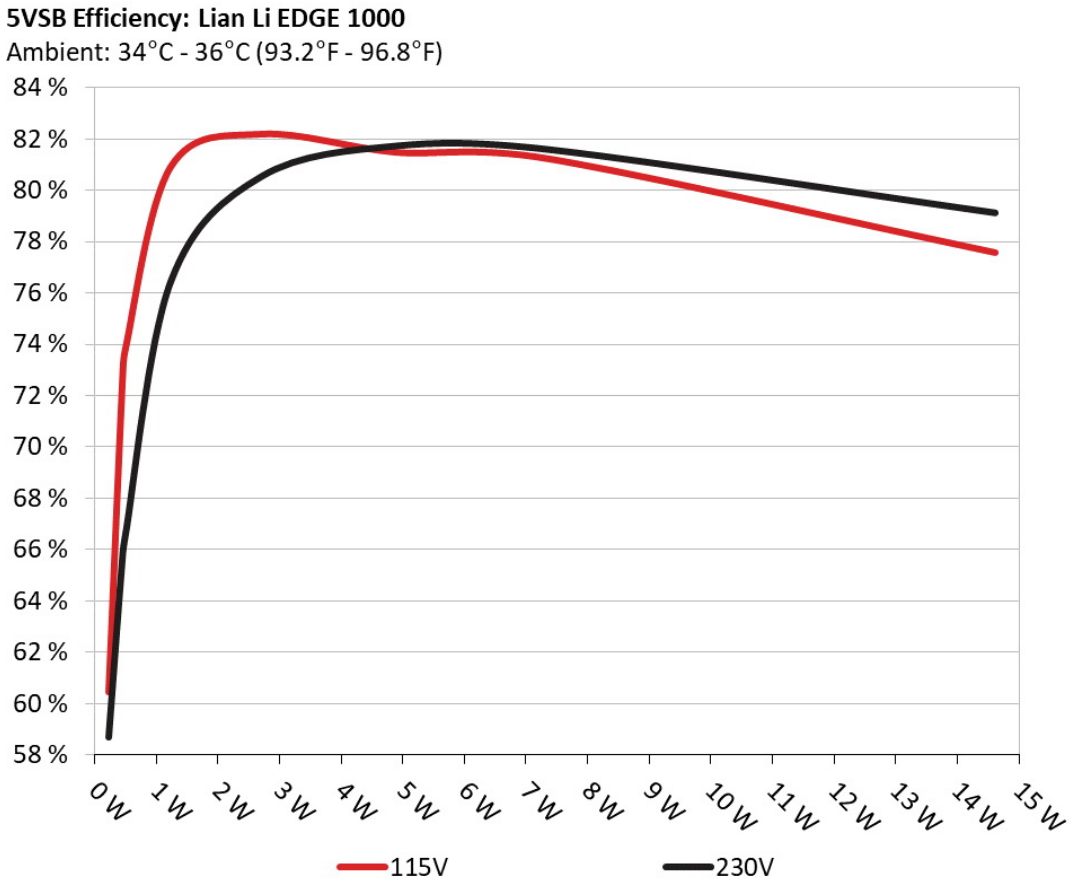
Informational. Not part of the ETA or LAMBDA rating.

Indicative Performance



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□□□□



□□

This graph depicts the efficiency levels of the 5VSB rail with 115V and 230V input

□□□□ □□ 5Vsb □□ (ErP Lot3/6 & CEC)

115V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
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

230V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
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

Supplementary Tests (For Reference)

10-110%□□□□

115V

□□	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
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

The results above are not used in the certification process

230V

□□	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
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

The results above are not used in the certification process

20-80□□□□□

115V

□□	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
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

The results above are not used in the certification process

230V

□□	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
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

The results above are not used in the certification process

□□□□

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

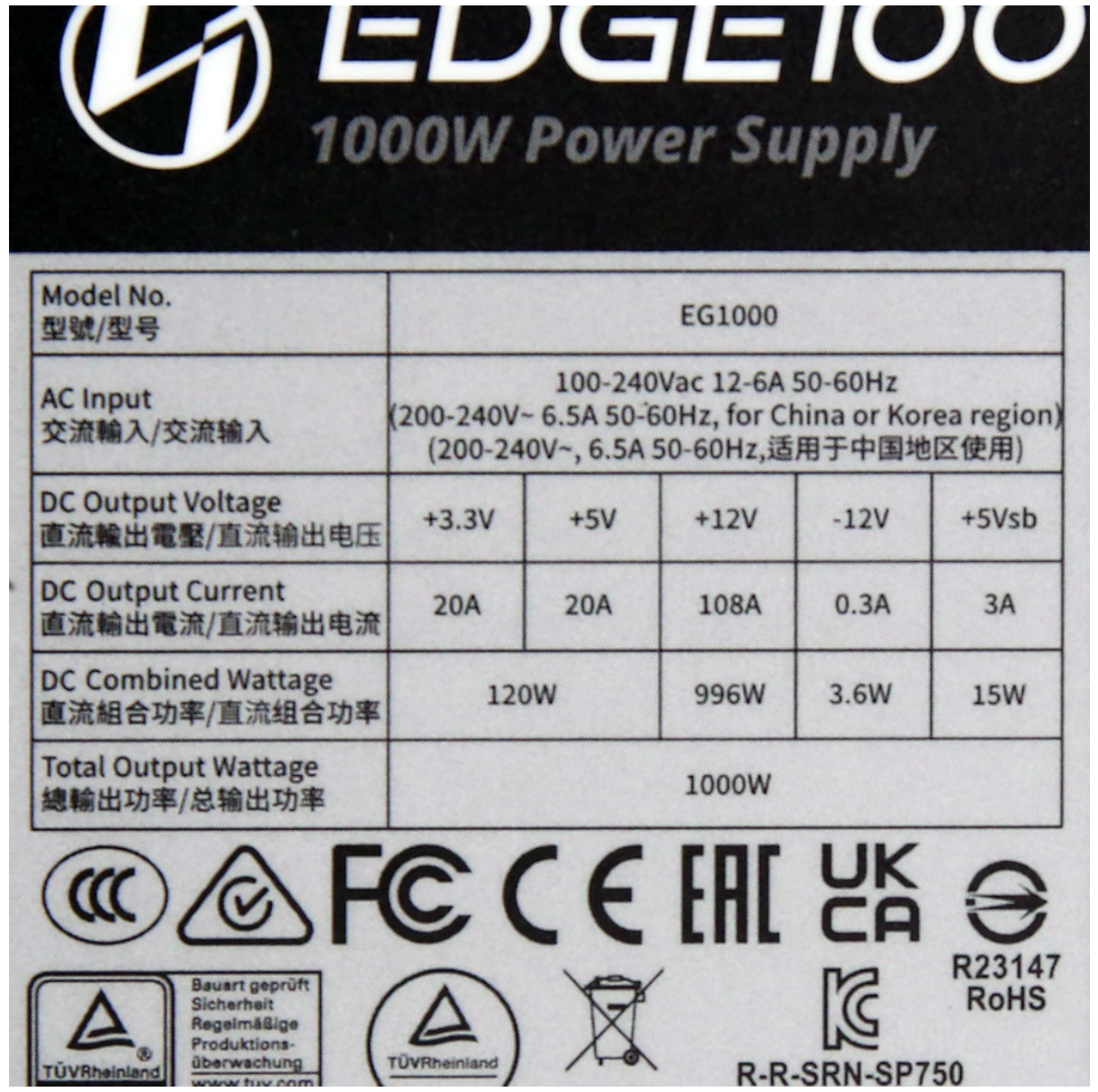
The results above are not used in the certification process

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

The results above are not used in the certification process





Lian Li EDGE 1000

Top side

Power specifications label

本测试报告中包含的所有数据和图表均可在以下条件下由任何人使用：使用过程需提及测试结果由Cybenetics提供。
在任何情况下都应提供原始测试结果文档的网站链接

Cybenetics 提供自愿性认证计划：电源方面有 ETA（效率）、LAMBDA（噪声）与 SAFE（安全与正确运行）；散热产品方面有 DELTA（机箱隔音）与 PHI（风扇风量与静压）

CYBENETICS LTD Syrou 6, Latsia, 2231, Nicosia Cyprus

www.cybenetics.com - info@cybenetics.com