



Lian Li EDGE 850

Serial Number

Lab ID LL85002458

Certification ID 252458

Test Result Report ID: 24PS2458A

Certificate Issue Date: May 29, 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	Brueel & Kjaer 2270 G4
Microphone	Brueel & 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 850
OEM/ODM	Helly Technology
Serial Number	
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5

Rated Frequency (Hz)	50-60
Rated Power (W)	850
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	120mm Fluid Dynamic Bearing Fan (HA1225M12F-Z)
Semi-Passive Operation	✓
Cybenetics Testing Information	
Lab ID	LL85002458
Date of receipt	May 17, 2024
Testing Date	May 29, 2024
Report Issued Date	May 29, 2024
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors(Non-accredited measurements)

Modular Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (495mm)	1	1	16-22AWG	No
4+4 pin EPS12V (550mm)	1	1	16AWG	No
8 pin EPS12V (550mm)	1	1	16AWG	No
6+2 pin PCIe (550mm)	4	4	16AWG	No
12+4 pin PCIe (720mm) (600W)	1	1	16-26AWG	No
2x SATA (400mm+125mm)	1	4	18AWG	No
SATA (305mm+15mm+15mm+15mm)	1	4	18AWG	No

Modular Cables				
SATA (400mm+150mm+150mm+150mm)	2	8	18AWG	No
4-pin Molex (495mm+150mm+150mm+150mm)	1	4	18AWG	No

Protection Features(Manufacturer)

Over Power Protection	✓
Over Current (+12V) Protection	✓
Over Temperature Protection	✓
Short Circuit Protection	✓
Surge Protection	✓
Inrush Current Protection	✓
Fan Failure Protection	✗

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	70.8	3	0.3
	Watts	120		849.6	15	3.6
Total Max. Power (W)		850				

Test Results

Temperature & Compliance Info

Temperature Range (°C /°F)	28-32 / 82.4-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX v3.1 PSU Power Excursion	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	89.555%
Average Noise Output (>1450 Load Combinations)	25.82dBA
Average PF (>1450 Load Combinations)	0.989
Efficiency With 10W ($\leq 500W$) or 2% (>500W) Load	69.232%
Standby Power Consumption	0.0434W
Non-Accredited	
12V Ripple (Full Load)	33.08mV
5V Ripple (Full Load)	15.68mV
3.3V Ripple (Full Load)	12.43mV
5VSB Ripple (Full Load)	15.62mV
12V Load Regulation	0.13%
5V Load Regulation	0.70%
3.3V Load Regulation	0.60%
5VSB Load Regulation	1.88%
Inrush Current	12.890A

230V

Accredited	
Average Efficiency (>1450 load combinations)	91.691%
Average Noise Output (>1450 Load Combinations)	25.56dBA
Average PF (>1450 Load Combinations)	0.967
Efficiency With 10W ($\leq 500W$) or 2% (>500W) Load	68.443%
Standby Power Consumption	0.0959W
Non-Accredited	
12V Ripple (Full Load)	33.27mV
5V Ripple (Full Load)	15.31mV
3.3V Ripple (Full Load)	12.28mV

5VSB Ripple (Full Load)	15.61mV	
12V Load Regulation	0.45%	
5V Load Regulation	0.70%	
3.3V Load Regulation	0.63%	
5VSB Load Regulation	1.90%	
Inrush Current	18.850A	
12V Transient Response (200%)	11.79V	
5V Transient Response (200%)	4.905V	
3.3V Transient Response (200%)	3.231V	
5VSB Transient Response (200%)	4.944V	
Hold-Up Time & PWR_OK Signal	21.90ms	
AC Loss to PWR_OK Hold Up Time	19.50ms	
PWR_OK Inactive to DC Loss Delay	2.40ms	
PSU Timings: T1 (20% / 100%)	62.0ms	61.0ms
PSU Timings: T3 (20% / 100%)	124.0ms	125.0ms
OPP (30.18°C / 43.65°C)	150.11%	134.10%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	21.9
AC Loss to PWR_OK Hold Up Time (ms)	19.5
PWR_OK Inactive to DC Loss Delay (ms)	2.4



Tables

115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	115.06 V	115.02 V	113.85 V	115.11 V	116.15 V	PASS

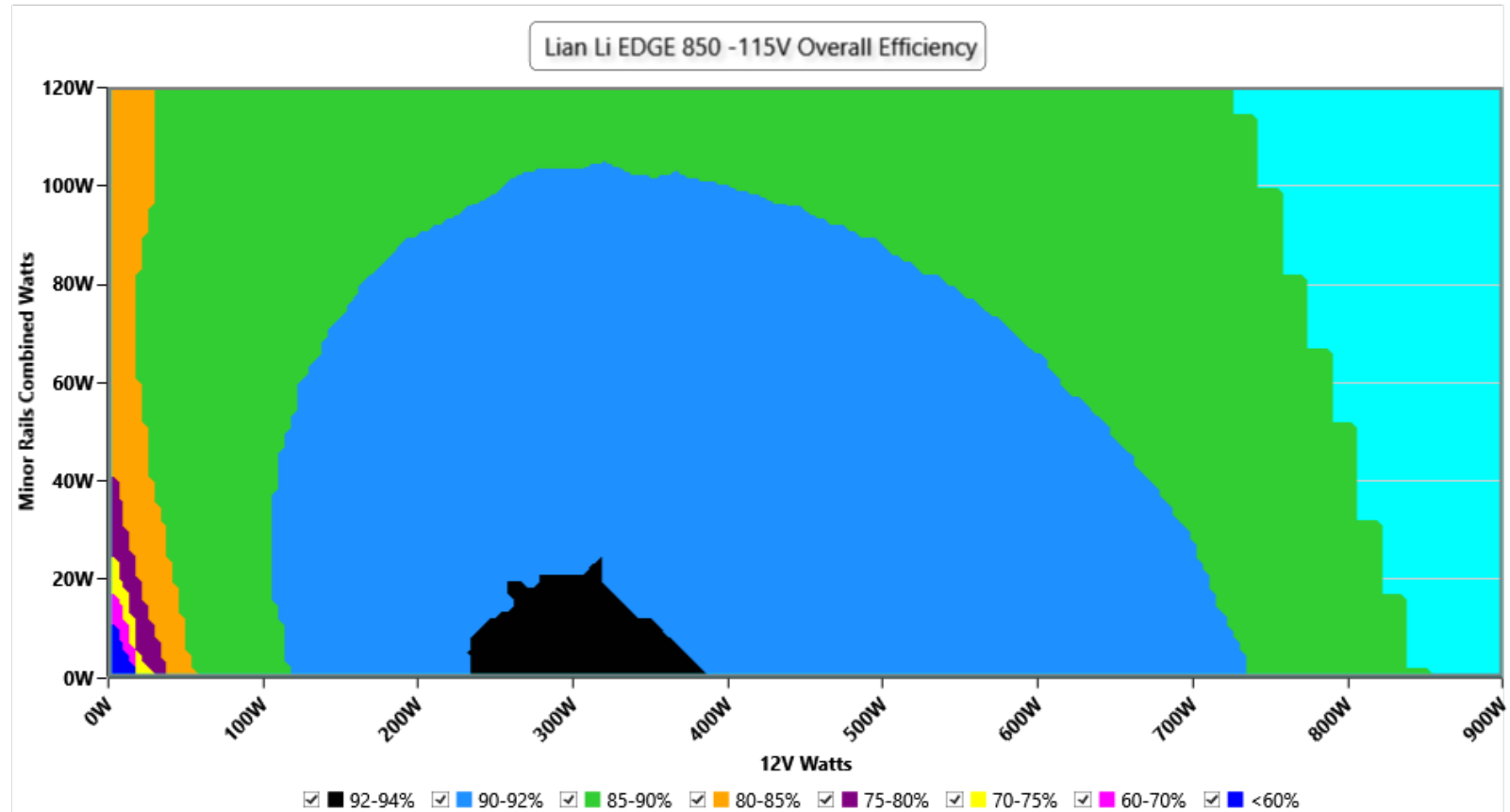
Mains Frequency:	60.00 Hz	59.93 Hz	59.40 Hz	60.03 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.416	1.415	1.340	1.418	1.490	PASS
Mains Voltage THD:	0.13 %	0.09 %	N/A	0.19 %	2.00 %	PASS
Real Power:	0.043 W	0.008 W	N/A	0.067 W	N/A	N/A
Apparent Power:	7.102 W	6.971 W	N/A	7.241 W	N/A	N/A
Power Factor:	0.008	N/A	N/A	N/A	N/A	N/A

230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	231.00 V	230.89 V	227.70 V	231.06 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	49.99 Hz	49.50 Hz	50.01 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.417	1.416	1.340	1.419	1.490	PASS
Mains Voltage THD:	0.17 %	0.14 %	N/A	0.27 %	2.00 %	PASS
Real Power:	0.096 W	0.084 W	N/A	0.128 W	N/A	N/A
Apparent Power:	23.436 W	23.221 W	N/A	23.647 W	N/A	N/A
Power Factor:	0.004	N/A	N/A	N/A	N/A	N/A

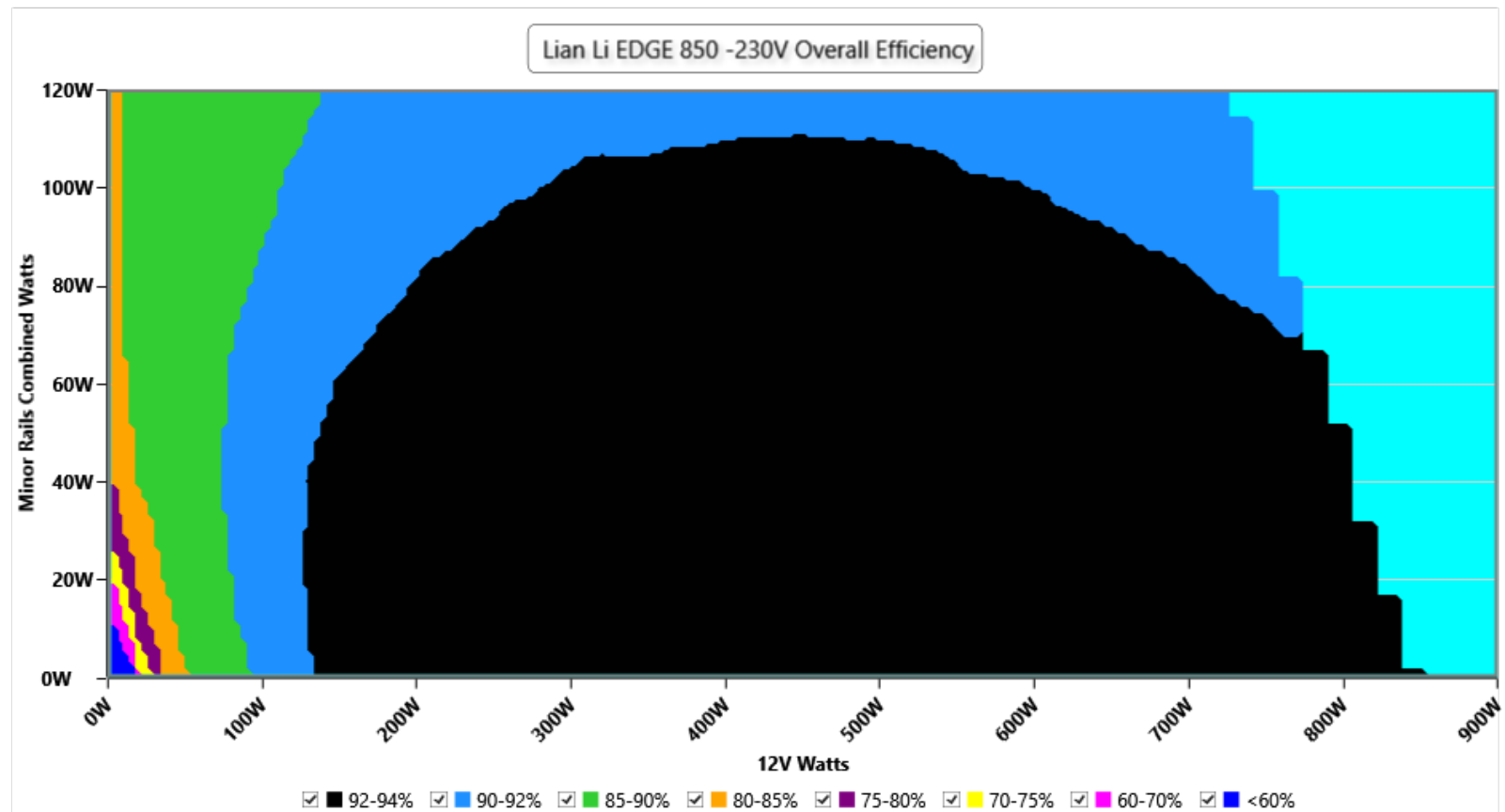
Efficiency Graph

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

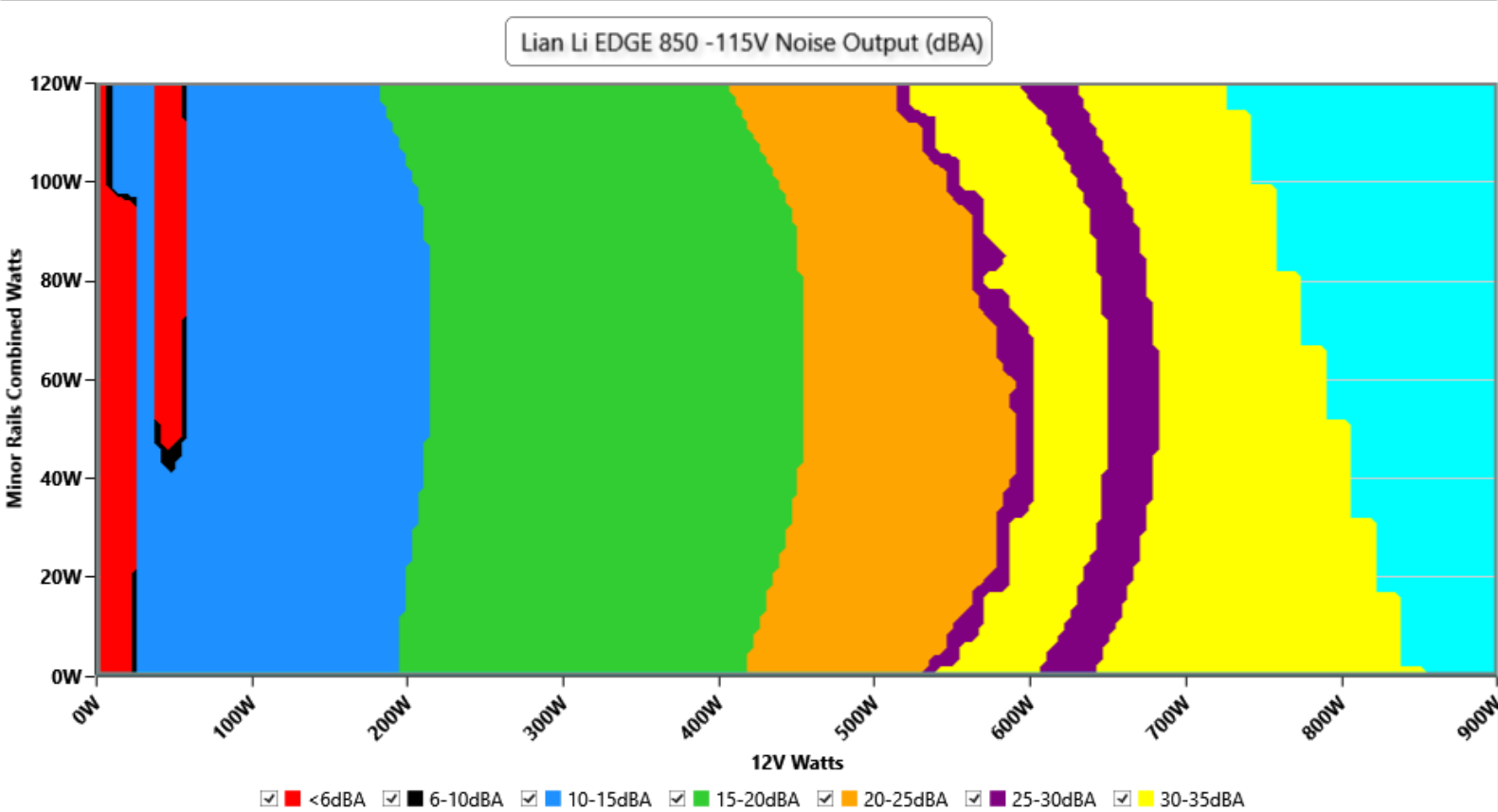


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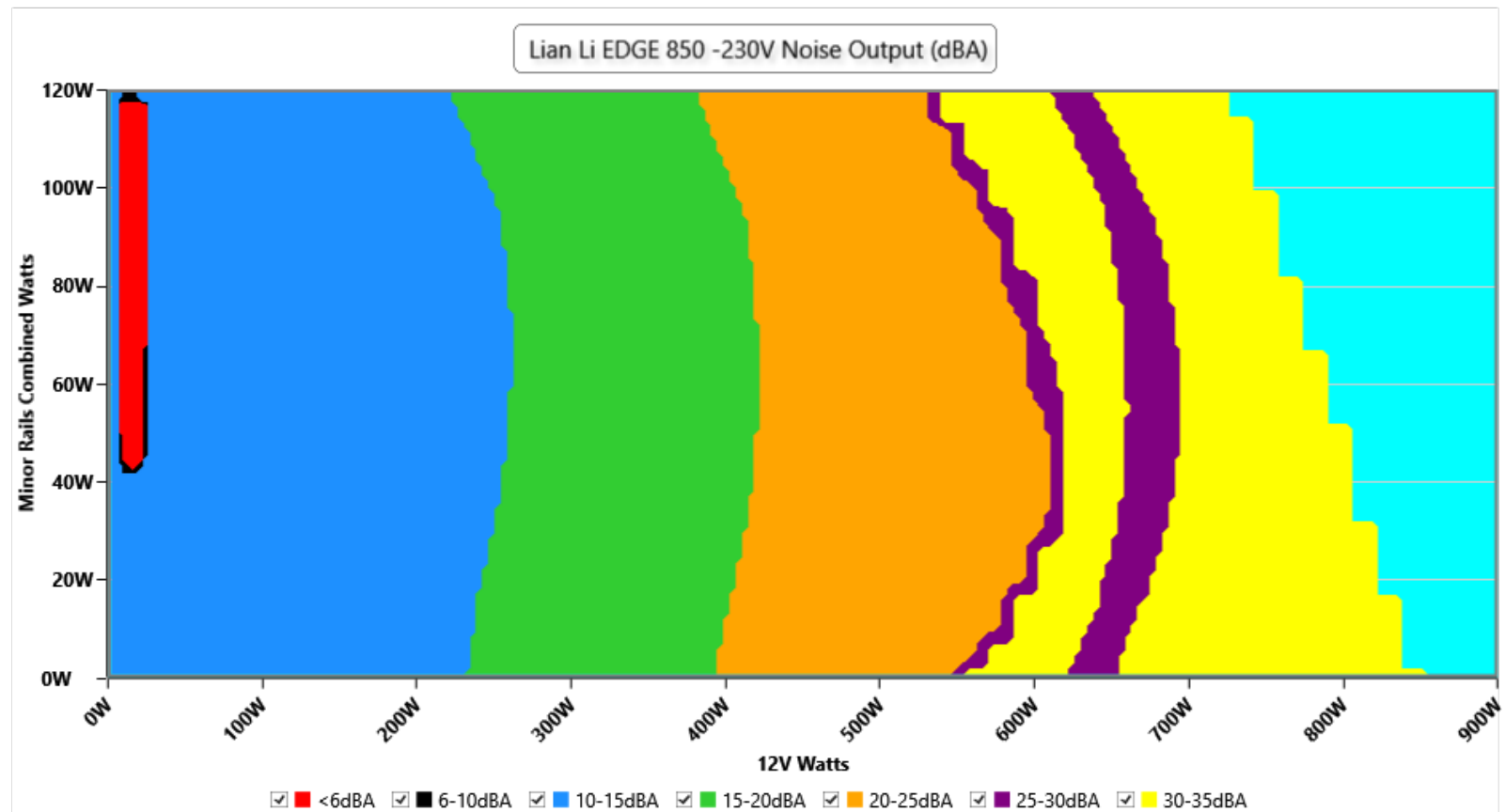
Noise Graph

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



INFO

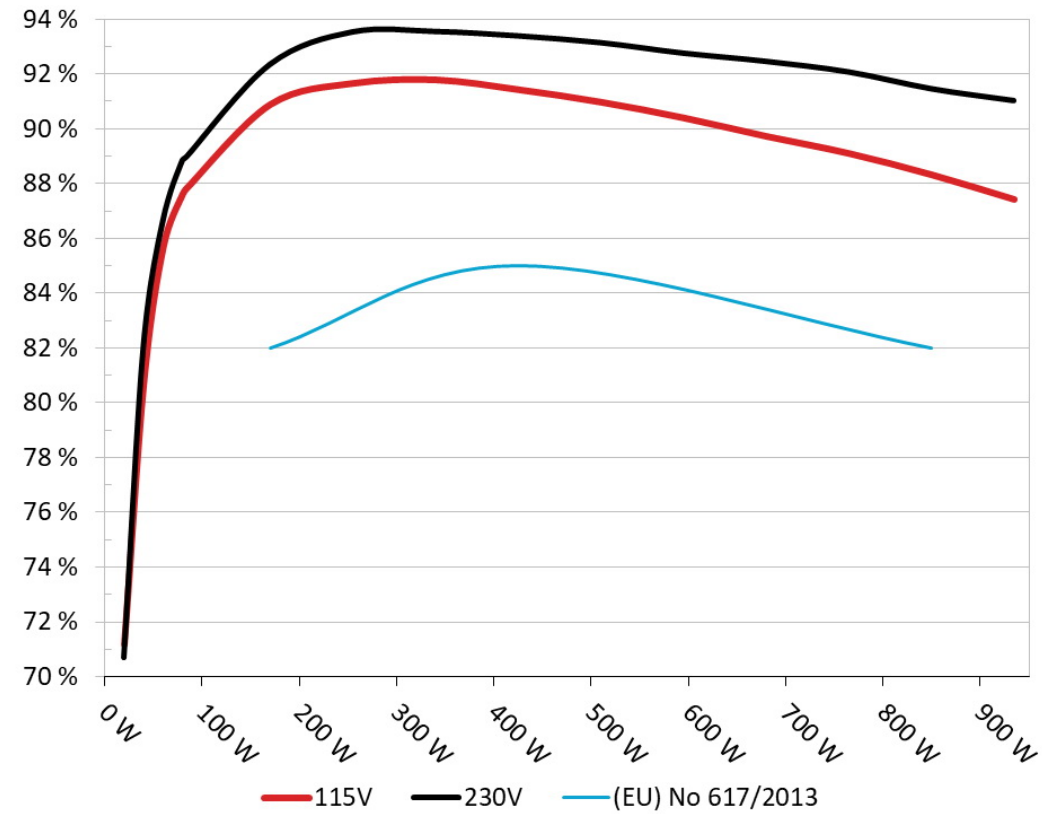
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Indicative Performance

Efficiency under high ambient temperature

Efficiency: Lian Li EDGE 850

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

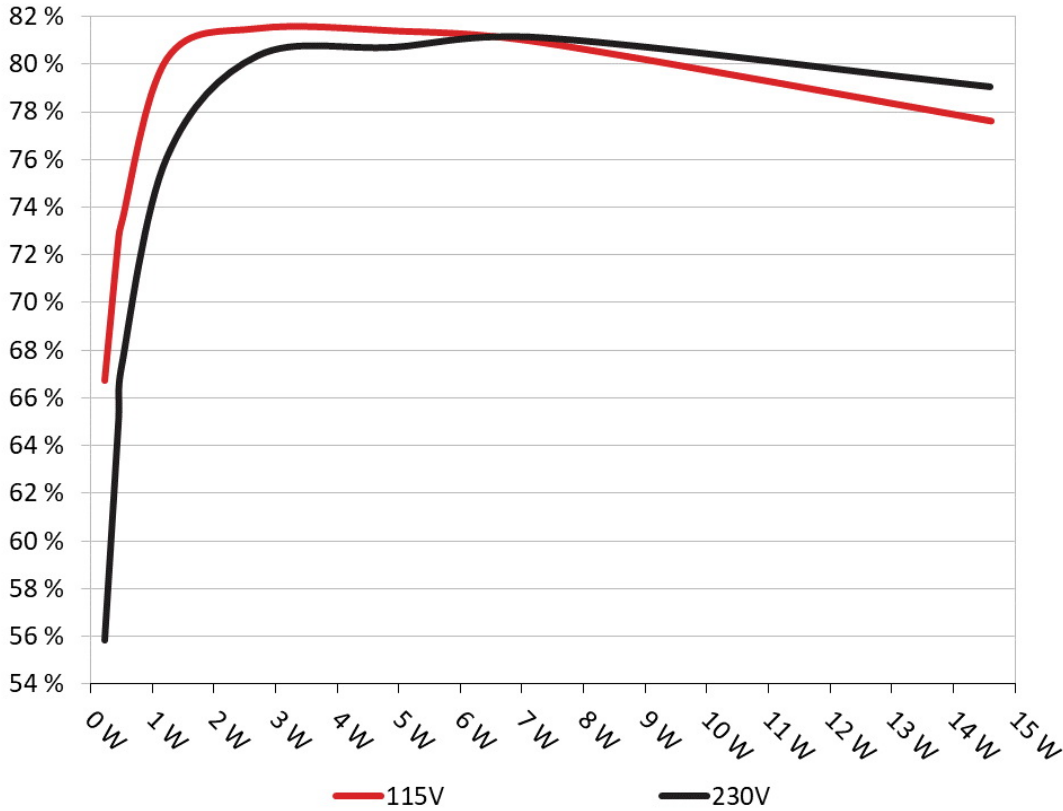


INFO

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 850
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

5VSB Efficiency (ERP LOT 3/6 & CEC)

115V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.222W	66.721%	0.045
	4.936V	0.333W		114.94V
2	0.09A	0.444W	72.649%	0.082
	4.935V	0.611W		114.94V
3	0.55A	2.709W	81.495%	0.334
	4.924V	3.324W		114.91V
4	1A	4.915W	81.39%	0.447
	4.914V	6.039W		114.91V
5	1.5A	7.356W	80.886%	0.508
	4.903V	9.094W		114.9V
6	3A	14.606W	77.607%	0.571
	4.869V	18.82W		114.9V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.222W	55.814%	0.016
	4.936V	0.398W		229.88V
2	0.09A	0.444W	64.967%	0.027
	4.935V	0.684W		229.88V
3	0.55A	2.708W	80.371%	0.128
	4.925V	3.37W		229.88V
4	1A	4.915W	80.724%	0.213
	4.914V	6.089W		229.88V
5	1.5A	7.355W	81.125%	0.284
	4.903V	9.066W		229.88V
6	3A	14.605W	79.068%	0.393
	4.868V	18.472W		229.88V

Protection Features

Protection Features	
OCP (Cold @ 29°C)	12V: 100.8A (142.37%), 12.324V 5V: 31.1A (155.5%), 4.957V 3.3V: 29.8A (149%), 3.34V 5VSB: 4.1A (136.67%), 4.837V
OCP (Hot @ 41°C)	12V: 98.8A (139.55%), 12.342V 5V: 31.3A (156.5%), 4.955V 3.3V: 29.8A (149%), 3.343V 5VSB: 4.1A (136.67%), 4.835V
OPP (Cold @ 30°C)	1275.91W (150.11%)
OPP (Hot @ 44°C)	1139.88W (134.1%)
OTP	✓ (120°C @ +12V Heat Sink)
SCP	12V to Earth: ✓ 5V to Earth: ✓ 3.3V to Earth: ✓ 5VSB to Earth: ✓ -12V to Earth: ✓
PWR_OK	Proper operation
NLO	✓
Fan Failure Protection	✗
SIP	Surge: MOV Inrush: NTC Thermistor & Bypass relay

Supplementary Tests (For Reference)

Typical 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
	5.130A	1.989A	1.961A	1A	85	87.86%	1020	19.5	40.22°C	0.963
	12.360V	5.026V	3.365V	4.998V	96.742				44.43°C	114.88V
	11.250A	2.987A	2.944A	1.201A	169.933	90.878%	1073	21.7	40.93°C	0.979
	12.358V	5.022V	3.363V	4.994V	186.991				45.5°C	114.86V
	17.714A	3.486A	3.436A	1.404A	254.939	91.649%	1145	22.9	41.24°C	0.987
	12.357V	5.02V	3.361V	4.986V	278.166				46.33°C	114.83V
	24.188A	3.986A	3.929A	1.607A	340.027	91.778%	1227	24.6	41.65°C	0.992
	12.355V	5.018V	3.36V	4.978V	370.49				47.27°C	114.8V
	30.305A	4.987A	4.915A	1.809A	424.825	91.422%	1477	29.4	42.33°C	0.994
	12.352V	5.014V	3.357V	4.974V	464.685				48.39°C	114.77V
	36.394A	5.988A	5.901A	2A	509.288	90.969%	1592	32.0	42.66°C	0.995
	12.352V	5.011V	3.356V	4.972V	559.852				49.27°C	114.75V
	42.561A	6.991A	6.889A	2.214A	594.685	90.393%	1679	34.4	43.04°C	0.996
	12.349V	5.007V	3.354V	4.967V	657.886				50.04°C	114.7V
	48.721A	7.993A	7.877A	2.314A	679.491	89.72%	1801	36.1	43.6°C	0.996
	12.347V	5.003V	3.351V	4.969V	757.355				51.67°C	114.68V
	55.279A	8.497A	8.358A	2.416A	764.921	89.094%	1859	37.0	44.1°C	0.997
	12.345V	5.001V	3.35V	4.966V	858.557				53.13°C	114.64V
	61.574A	9A	8.869A	3.039A	849.759	88.317%	1864	37.0	45.66°C	0.997
	12.344V	4.999V	3.349V	4.936V	962.171				55.69°C	114.62V
	67.740A	10.007A	9.95A	3.035A	934.343	87.422%	1871	37.0	46.71°C	0.997
	12.343V	4.996V	3.347V	4.943V	1068.776				57.62°C	114.58V
	0.112A	14.465A	14.238A	0A	121.291	82.313%	1618	33.2	42.78°C	0.978
	12.370V	4.991V	3.351V	5.17V	147.353				48.74°C	114.87V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
	0.112A	20.057A	0A	0A	101.34	80.887%	1463	29.6	42.33°C	0.975
	12.369V	4.983V	3.362V	5.224V	125.286				46.28°C	114.88V
	0.112A	0A	19.687A	0A	67.394	76.278%	1404	30.2	40.99°C	0.959
	12.365V	5.027V	3.353V	5.035V	88.358				44.19°C	114.89V
	68.839A	0A	0A	0A	849.486	89.195%	1862	37.0	44.23°C	0.997
	12.341V	5.028V	3.362V	5.013V	952.395				54.15°C	114.62V

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
	5.130A	1.989A	1.961A	1A	84.996	89.014%	991	19.0	40.43°C	0.888
	12.359V	5.027V	3.365V	4.998V	95.485				44.85°C	229.87V
	11.249A	2.986A	2.944A	1.201A	169.925	92.357%	1072	21.7	40.67°C	0.947
	12.358V	5.023V	3.363V	4.995V	183.993				45.17°C	229.86V
	17.747A	3.49A	3.44A	1.405A	254.933	93.55%	1164	22.6	41.26°C	0.963
	12.334V	5.015V	3.358V	4.982V	272.515				46.28°C	229.88V
	24.184A	3.985A	3.928A	1.607A	340.008	93.565%	1408	30.1	41.78°C	0.974
	12.356V	5.019V	3.36V	4.979V	363.394				47.32°C	229.83V
	30.298A	4.985A	4.914A	1.809A	424.774	93.404%	1471	29.3	42.07°C	0.978
	12.353V	5.015V	3.358V	4.975V	454.767				48.16°C	229.82V
	36.390A	5.986A	5.9A	2A	509.243	93.157%	1583	31.9	42.65°C	0.982
	12.352V	5.012V	3.356V	4.973V	546.638				49.25°C	229.8V
	42.714A	6.993A	6.892A	2.215A	594.651	92.773%	1443	29.4	43.54°C	0.984
	12.304V	5.006V	3.352V	4.967V	640.982				50.57°C	229.82V
	48.714A	7.989A	7.875A	2.314A	679.439	92.475%	1801	36.1	43.72°C	0.986
	12.348V	5.006V	3.352V	4.97V	734.732				51.79°C	229.77V
	55.297A	8.495A	8.358A	2.416A	764.962	92.085%	1852	36.9	44.77°C	0.987
	12.342V	5.002V	3.35V	4.966V	830.713				53.86°C	229.76V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
	61.716A	9A	8.871A	3.04A	849.825	91.472%	1862	37.0	45.66°C	0.988
	12.317V	4.999V	3.348V	4.935V	929.074				55.64°C	229.74V
	67.838A	10.007A	9.952A	3.035A	934.398	91.039%	1869	37.0	46.57°C	0.989
	12.326V	4.996V	3.346V	4.942V	1026.359				57.44°C	229.73V
	0.114A	14.463A	14.239A	0A	121.302	83.605%	1531	31.3	43.29°C	0.934
	12.362V	4.991V	3.35V	5.168V	145.089				47.12°C	229.87V
	0.113A	20.053A	0A	0A	101.347	82.232%	1406	30.2	41.61°C	0.919
	12.356V	4.984V	3.361V	5.223V	123.245				45.06°C	229.87V
	0.112A	0A	19.686A	0A	67.404	77.58%	1210	24.4	40.35°C	0.878
	12.355V	5.027V	3.353V	5.035V	86.883				43.65°C	229.88V
	68.853A	0A	0A	0A	849.626	92.359%	1859	37.0	44.06°C	0.988
	12.340V	5.028V	3.362V	5.013V	919.898				48.78°C	229.74V

The results above are not used in the certification process

Light 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	1.202A	0.497A	0.49A	0.199A	19.996	71.197%	841	14.5	36.56°C	0.89
	12.358V	5.034V	3.369V	5.029V	28.091				39.67°C	114.92V
40W	2.645A	0.695A	0.686A	0.298A	39.996	80.751%	903	16.8	37.98°C	0.933
	12.358V	5.033V	3.369V	5.026V	49.53				41.35°C	114.9V
60W	4.088A	0.894A	0.882A	0.398A	59.996	85.69%	917	17.2	38.15°C	0.954
	12.359V	5.032V	3.368V	5.022V	70.015				41.83°C	114.89V
80W	5.526A	1.093A	1.078A	0.498A	79.94	87.612%	969	18.6	39.39°C	0.959
	12.360V	5.031V	3.368V	5.017V	91.236				43.32°C	114.89V

The results above are not used in the certification process

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	1.202A	0.497A	0.49A	0.199A	19.991	70.692%	832	14.3	36.68°C	0.637
	12.354V	5.034V	3.369V	5.029V	28.279				39.75°C	229.88V
40W	2.644A	0.695A	0.686A	0.298A	39.992	82.058%	898	16.6	37.32°C	0.773
	12.357V	5.033V	3.369V	5.026V	48.734				40.57°C	229.88V
60W	4.088A	0.894A	0.881A	0.398A	59.992	86.639%	940	18.0	38.49°C	0.847
	12.358V	5.033V	3.369V	5.022V	69.241				42.01°C	229.88V
80W	5.526A	1.093A	1.078A	0.498A	79.931	88.846%	973	18.7	39.4°C	0.881
	12.358V	5.031V	3.368V	5.017V	89.967				43.15°C	229.87V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	13.76mV	11.09mV	10.95mV	13.30mV	Pass
20% Load	14.63mV	11.49mV	10.74mV	13.86mV	Pass
30% Load	16.06mV	10.93mV	12.17mV	12.74mV	Pass
40% Load	18.27mV	12.92mV	13.10mV	14.12mV	Pass
50% Load	17.85mV	16.14mV	13.50mV	16.98mV	Pass
60% Load	16.63mV	17.17mV	13.20mV	16.47mV	Pass
70% Load	17.65mV	15.22mV	11.56mV	16.11mV	Pass
80% Load	18.62mV	15.33mV	11.15mV	14.73mV	Pass
90% Load	19.90mV	14.97mV	12.12mV	15.96mV	Pass
100% Load	33.08mV	15.68mV	12.43mV	15.62mV	Pass
110% Load	33.63mV	16.52mV	12.72mV	15.79mV	Pass
Crossload1	21.23mV	12.79mV	12.42mV	13.80mV	Pass
Crossload2	13.71mV	17.06mV	10.90mV	13.97mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	12.64mV	10.47mV	11.51mV	12.02mV	Pass
Crossload4	33.69mV	14.20mV	11.33mV	15.07mV	Pass

The results above are not used in the certification process

230V

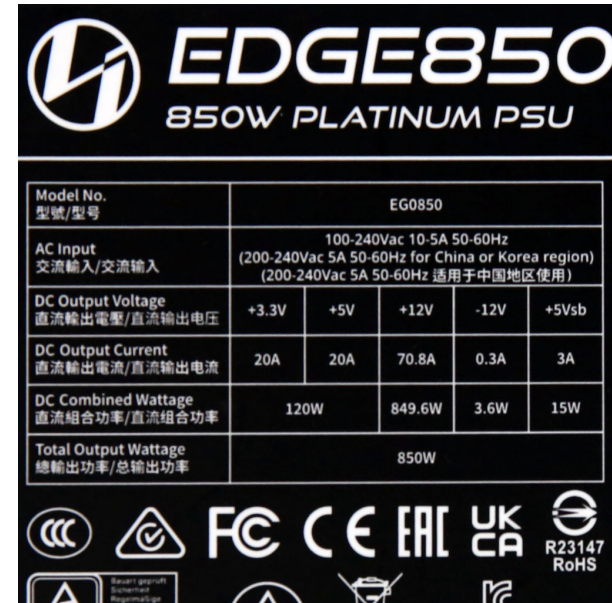
Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	13.30mV	10.42mV	9.87mV	13.14mV	Pass
20% Load	14.07mV	10.68mV	10.03mV	12.94mV	Pass
30% Load	15.38mV	11.70mV	11.76mV	14.12mV	Pass
40% Load	17.19mV	13.79mV	12.69mV	15.96mV	Pass
50% Load	18.61mV	14.56mV	13.45mV	15.70mV	Pass
60% Load	18.30mV	14.97mV	12.63mV	15.91mV	Pass
70% Load	12.84mV	13.74mV	9.72mV	14.17mV	Pass
80% Load	17.84mV	15.53mV	10.79mV	17.55mV	Pass
90% Load	20.45mV	14.30mV	11.31mV	14.22mV	Pass
100% Load	33.27mV	15.31mV	12.28mV	15.61mV	Pass
110% Load	35.15mV	15.34mV	12.54mV	15.64mV	Pass
Crossload1	20.73mV	12.13mV	11.75mV	13.33mV	Pass
Crossload2	13.61mV	17.47mV	11.51mV	14.07mV	Pass
Crossload3	12.13mV	10.37mV	12.02mV	12.28mV	Pass
Crossload4	32.80mV	14.59mV	11.09mV	14.18mV	Pass

The results above are not used in the certification process

Lian Li EDGE 850



Top side



Power specifications label

[illegible]ETA LAMBDA

SAFE□□□□□□□□□□□□□□□□

DELTA PHI

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