EINAREX

Einarex Nexus L1 850W

Serial Number

Lab ID EX85002547

Certification ID 252547

Test Result Report ID: 24PS2547A

Certificate Issue Date: Aug 24, 2024

Scheme: ETA-EMI PSU

115V: CYBENETICS GOLD

230V: CYBENETICS GOLD 230v

Scheme: LAMBDA PSU

115V: CYBENETICS STANDARD++

230V: CYBENETICS STANDARD++ 230v

CYBENETICS ATX 3.1 PASS

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	Einarex
Model	Nexus L1 850W
OEM/ODM	CWT (GPX Platform)
Serial Number	
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	6-12

Rated Frequency (Hz)	47-63
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
Semi-Passive Operation	✗
Cybenetics Testing Information	
Lab ID	EX85002547
Date of receipt	Aug 13, 2024
Testing Date	Aug 23, 2024
Report Issued Date	Aug 24, 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 (590mm)	1	1	18AWG	No
8 pin EPS12V (700mm) /4+4 pin EPS12V (+150mm)	1	2	18AWG	No
6+2 pin PCIe (540mm+150mm)	2	4	16-18AWG	No
12+4 pin PCIe (600mm) (600W)	1	1	16-24AWG	No
SATA (500mm+150mm+150mm+145mm)	2	8	18AWG	No
4-pin Molex (510mm+155mm+150mm)	1	3	18AWG	No
AC Power Cord (1400mm) - C13 coupler	1	1	18AWG	-

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	70.5	3	0.3
	Watts	120		846	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)	88.800%

Average Noise Output (>1450 Load Combinations)	31.75dBA
Average PF (>1450 Load Combinations)	0.977
Efficiency With 10W (≤500W) or 2% (>500W) Load	65.369%
Standby Power Consumption	0.0355W
Non-Accredited	
12V Ripple (Full Load)	22.70mV
5V Ripple (Full Load)	8.13mV
3.3V Ripple (Full Load)	9.16mV
5VSB Ripple (Full Load)	13.95mV
12V Load Regulation	0.70%
5V Load Regulation	0.46%
3.3V Load Regulation	1.18%
5VSB Load Regulation	3.45%
Inrush Current	32.610A

230V

Accredited	
Average Efficiency (>1450 load combinations)	90.916%
Average Noise Output (>1450 Load Combinations)	30.90dBA
Average PF (>1450 Load Combinations)	0.932
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
Standby Power Consumption	0.0898W
Non-Accredited	
12V Ripple (Full Load)	22.04mV
5V Ripple (Full Load)	8.09mV
3.3V Ripple (Full Load)	8.50mV
5VSB Ripple (Full Load)	14.04mV
12V Load Regulation	0.75%
5V Load Regulation	0.44%
3.3V Load Regulation	1.18%
5VSB Load Regulation	3.45%
Inrush Current	66.740A

12V Transient Response (200%)	11.31V	
5V Transient Response (200%)	4.926V	
3.3V Transient Response (200%)	3.204V	
5VSB Transient Response (200%)	4.849V	
Hold-Up Time & PWR_OK Signal	18.10ms	
AC Loss to PWR_OK Hold Up Time	16.80ms	
PWR_OK Inactive to DC Loss Delay	1.30ms	
PSU Timings: T1 (20% / 100%)	24.0ms	25.0ms
PSU Timings: T3 (20% / 100%)	116.0ms	115.0ms
12V OCP (27.6°C / 42.8°C)	92.60A (131.35%), 12.022V	84.40A (119.72%), 12.038V
5V OCP (27.6°C / 42.8°C)	27.7A (138.50%), 4.995V	27.1A (135.50%), 4.993V
3.3V OCP (27.6°C / 42.8°C)	28A (140.00%), 3.311V	28A (140.00%), 3.312V
5VSB OCP (27.6°C / 42.8°C)	3.9A (130.00%), 4.999V	4A (133.33%), 4.99V
OPP (28.06°C / 42.17°C)	127.41%	117.63%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	18.1
AC Loss to PWR_OK Hold Up Time (ms)	16.8
PWR_OK Inactive to DC Loss Delay (ms)	1.3

Stromverbrauch im Ruhezustand

Tables

115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	115.08 V	115.05 V	113.85 V	115.12 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.97 Hz	59.40 Hz	60.02 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.416	1.415	1.340	1.418	1.490	PASS

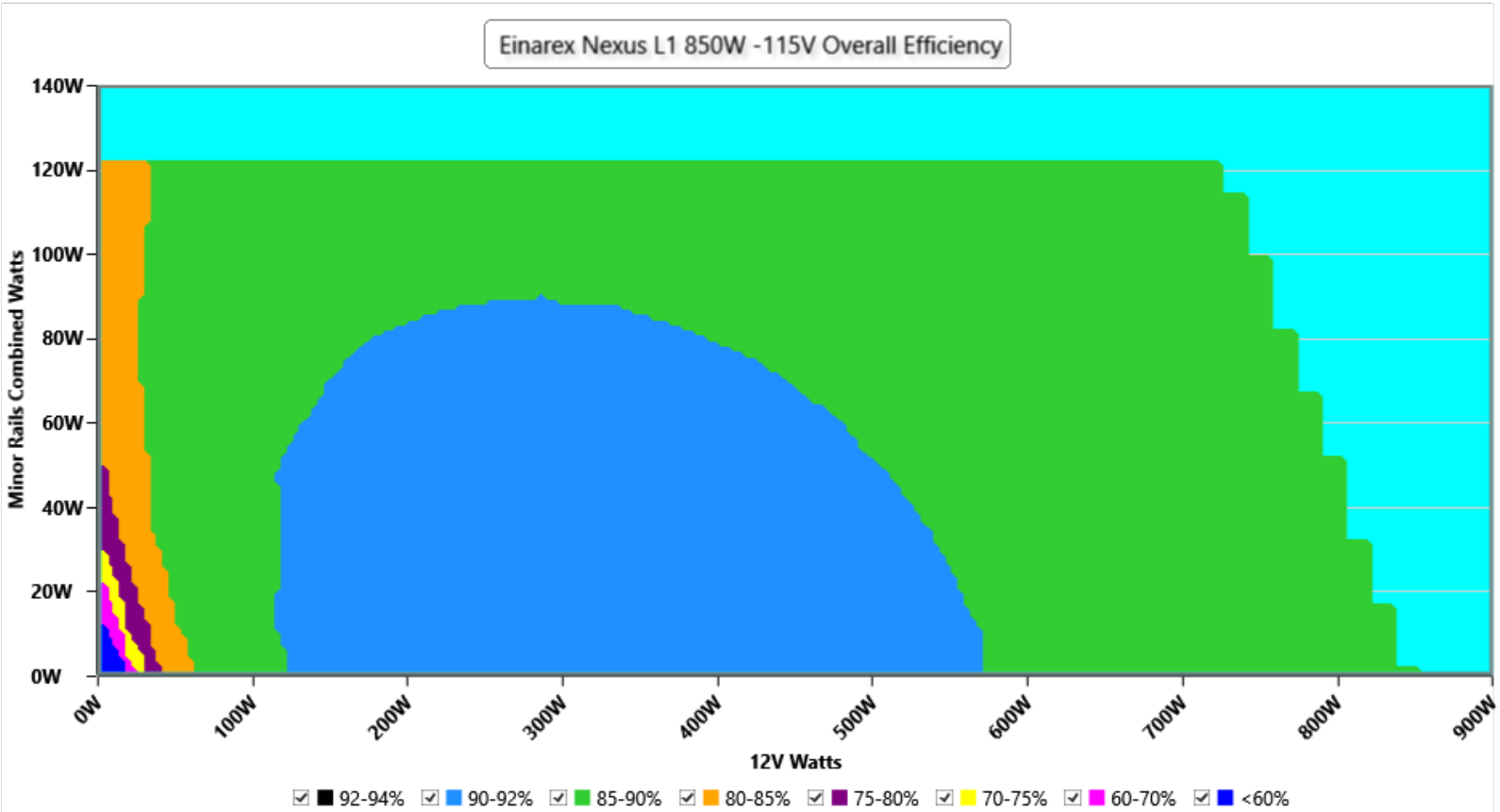
Mains Voltage THD:	0.13 %	0.09 %	N/A	0.17 %	2.00 %	PASS
Real Power:	0.035 W	-0.004 W	N/A	0.067 W	N/A	N/A
Apparent Power:	10.726 W	10.427 W	N/A	11.039 W	N/A	N/A
Power Factor:	0.005	N/A	N/A	N/A	N/A	N/A

230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	231.06 V	230.95 V	227.70 V	231.11 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	1.417	1.340	1.419	1.490	PASS
Mains Voltage THD:	0.17 %	0.15 %	N/A	0.26 %	2.00 %	PASS
Real Power:	0.090 W	0.054 W	N/A	0.148 W	N/A	N/A
Apparent Power:	35.894 W	35.253 W	N/A	36.554 W	N/A	N/A
Power Factor:	0.002	N/A	N/A	N/A	N/A	N/A

Efficiency Graph

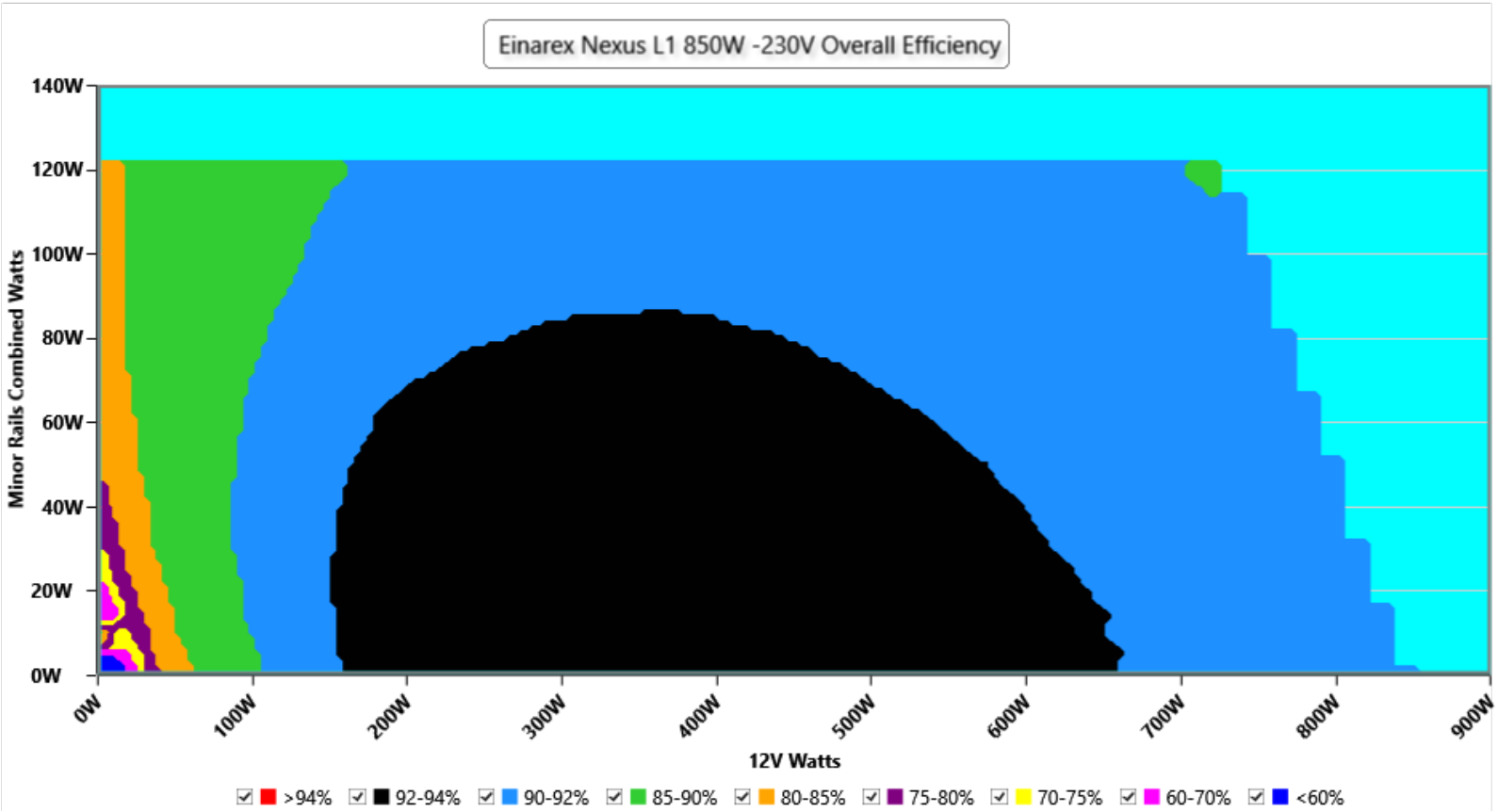
115V



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

230V



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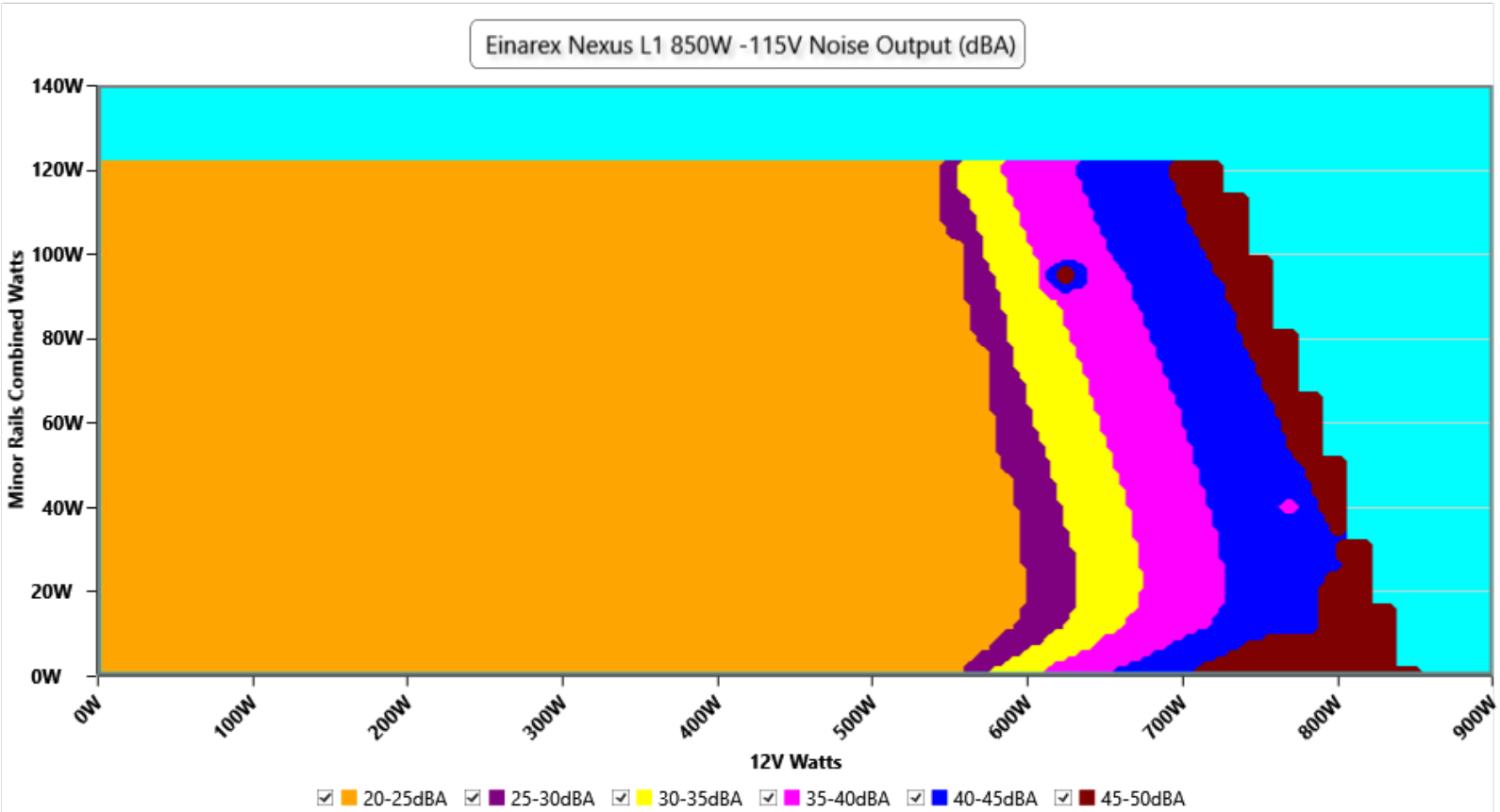
Noise Graph

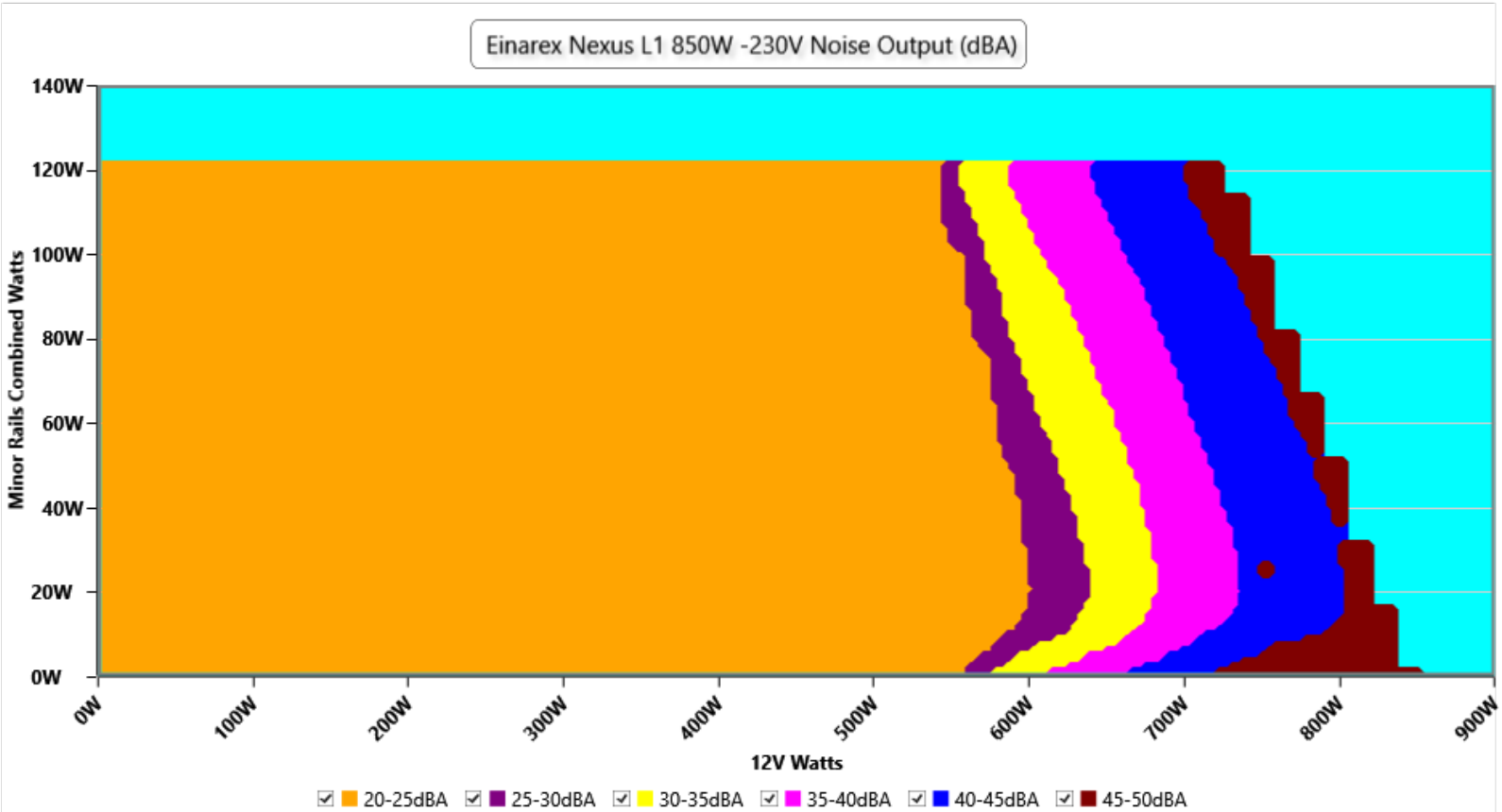
115V



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

230V

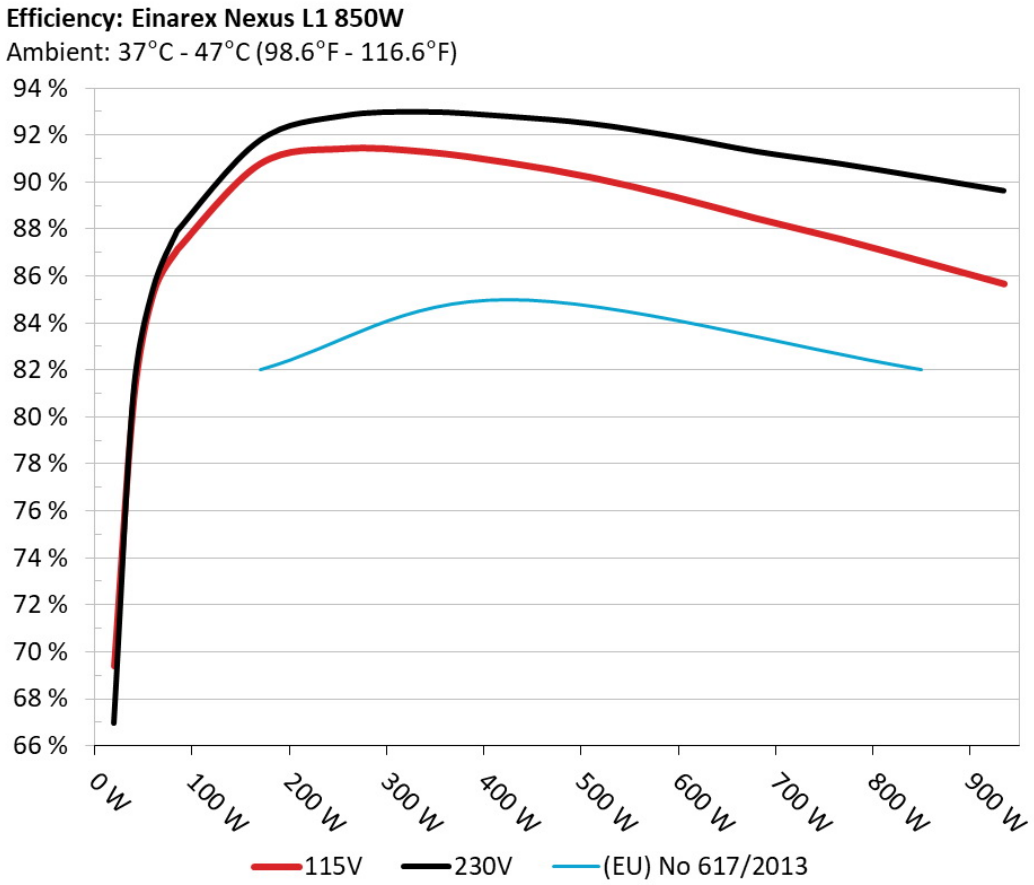


INFO

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

Indicative Performance

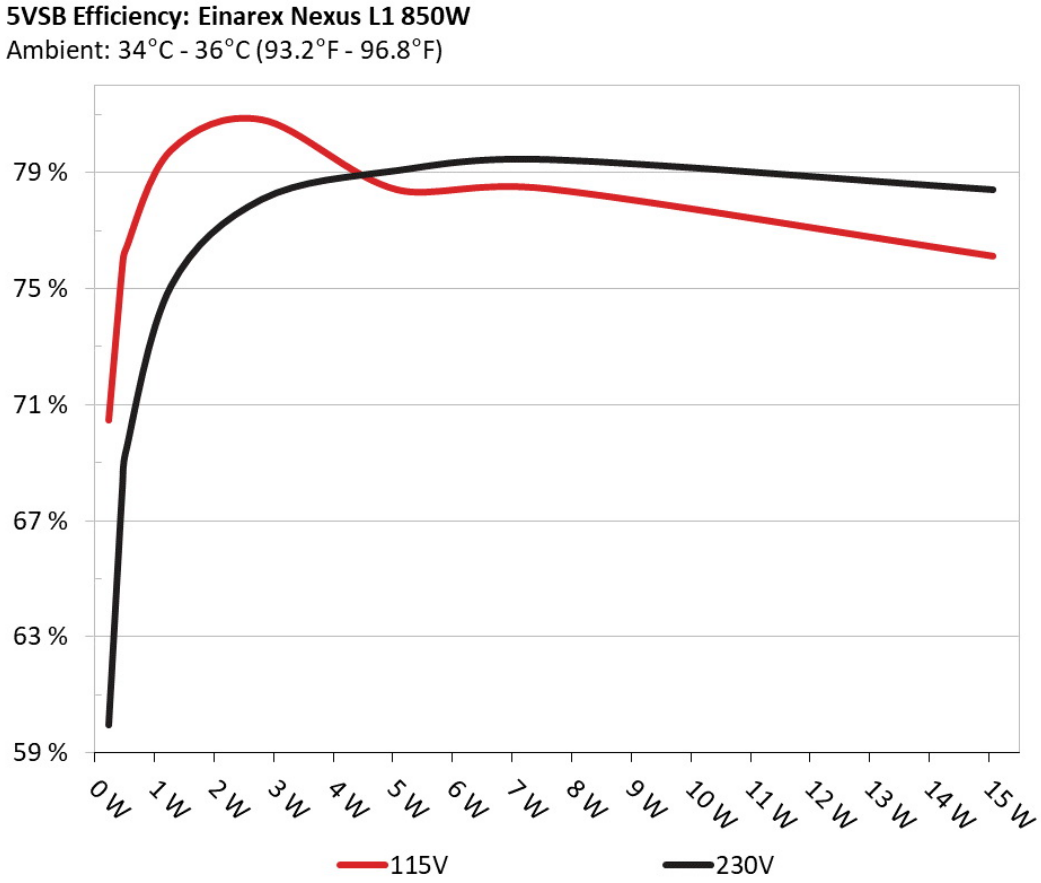
Efficiency under high ambient temperature



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

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

115V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	**0.045A**	0.23W	70.461%	0.032
	5.099V	0.327W		115.18V
2	**0.09A**	0.459W	75.79%	0.059
	5.098V	0.605W		115.17V
3	**0.55A**	2.798W	80.835%	0.263
	5.086V	3.462W		115.18V
4	**1A**	5.076W	78.413%	0.367
	5.075V	6.474W		115.16V
5	**1.5A**	7.594W	78.45%	0.418
	5.061V	9.68W		115.16V
6	**3.001A**	15.069W	76.125%	0.486
	5.022V	19.794W		115.15V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	**0.045A**	0.23W	59.967%	0.011
	5.1V	0.384W		230.39V
2	**0.09A**	0.459W	68.182%	0.02
	5.099V	0.673W		230.39V
3	**0.55A**	2.798W	78.095%	0.102
	5.086V	3.583W		230.41V
4	**1A**	5.076W	79.09%	0.169
	5.074V	6.418W		230.41V
5	**1.501A**	7.593W	79.468%	0.228
	5.06V	9.556W		230.41V
6	**3.001A**	15.067W	78.428%	0.335
	5.021V	19.211W		230.41V

Protection Features

OCP (Normal @ 27.6°C)	12V: 92.60A (131.35%), 12.022V 5V: 27.7A (138.50%), 4.995V 3.3V: 28A (140.00%), 3.311V 5VSB: 3.9A (130.00%), 4.999V
OCP (Hot @ 42.8°C)	12V: 84.40A (119.72%), 12.038V 5V: 27.1A (135.50%), 4.993V 3.3V: 28A (140.00%), 3.312V 5VSB: 4A (133.33%), 4.99V
OPP (Normal @ 28.1°C)	1082.95W (127.41%)
OPP (Hot @ 42.2°C)	999.89W (117.63%)
OTP	✓ (168°C @ 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 & 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
10%	**5.236A**	**2.002A**	**1.974A**	**0.988A**	85.008	87.156%	1005	23.5	40.4°C	0.968
	12.109V	4.996V	3.343V	5.061V	97.535				44.36°C	115.14V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
20%	**11.494A**	**3.006A**	**2.965A**	**1.189A**	169.978	90.784%	1009	23.7	40.86°C	0.977
	12.101V	4.992V	3.339V	5.046V	187.232				45.23°C	115.11V
30%	**18.106A**	**3.508A**	**3.464A**	**1.391A**	254.993	91.426%	1011	23.7	41.14°C	0.983
	12.092V	4.989V	3.335V	5.033V	278.909				47.26°C	115.09V
40%	**24.734A**	**4.011A**	**3.962A**	**1.595A**	340.09	91.291%	1015	23.7	41.63°C	0.975
	12.084V	4.988V	3.332V	5.018V	372.536				49.64°C	115.06V
50%	**31.027A**	**5.016A**	**4.959A**	**1.799A**	425.152	90.828%	1015	23.7	42.46°C	0.974
	12.074V	4.986V	3.328V	5.003V	468.083				52.37°C	115.03V
60%	**37.284A**	**6.022A**	**5.957A**	**2.001A**	509.67	90.207%	1023	24	42.78°C	0.977
	12.066V	4.984V	3.324V	4.988V	565.001				55.1°C	115V
70%	**43.617A**	**7.028A**	**6.959A**	**2.213A**	595.034	89.387%	1215	29.7	43.32°C	0.979
	12.057V	4.982V	3.32V	4.971V	665.689				57.4°C	114.98V
80%	**49.964A**	**8.036A**	**7.963A**	**2.32A**	679.872	88.459%	1847	41	43.69°C	0.981
	12.048V	4.979V	3.316V	4.958V	768.569				55.44°C	114.95V
90%	**56.720A**	**8.542A**	**8.456A**	**2.426A**	765.327	87.587%	2328	47.3	44.18°C	0.983
	12.038V	4.977V	3.311V	4.947V	873.785				55.35°C	114.92V
100%	**63.212A**	**9.048A**	**8.979A**	**3.049A**	850.118	86.634%	2329	47.3	45.58°C	0.984
	12.030V	4.975V	3.308V	4.921V	981.274				58°C	114.89V
110%	**69.607A**	**10.057A**	**10.078A**	**3.055A**	934.628	85.673%	2323	47.4	46.72°C	0.986
	12.015V	4.972V	3.304V	4.91V	1090.933				60.61°C	114.86V
CL1	**0.116A**	**14.48A**	**14.335A**	**0A**	121.315	81.308%	1031	24.3	42.11°C	0.978
	12.099V	4.987V	3.327V	5.067V	149.202				53.15°C	115.12V
CL2	**0.116A**	**20.043A**	**0A**	**0A**	101.403	79.822%	1031	24.3	40.63°C	0.973
	12.109V	4.989V	3.348V	5.079V	127.037				48.83°C	115.13V
CL3	**0.116A**	**0A**	**19.859A**	**0A**	67.399	74.631%	1010	23.9	41.2°C	0.967
	12.104V	4.992V	3.323V	5.075V	90.311				48.22°C	115.15V
CL4	**70.617A**	**0A**	**0A**	**0A**	849.787	87.616%	2330	47.4	45.38°C	0.985
	12.034V	4.983V	3.323V	5.012V	969.908				56.92°C	114.9V

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
10%	**5.236A**	**2.002A**	**1.974A**	**0.988A**	85.007	87.923%	1005	23.5	40.31°C	0.814
	12.109V	4.996V	3.343V	5.06V	96.685				43.64°C	230.4V
20%	**11.494A**	**3.005A**	**2.965A**	**1.189A**	169.97	91.78%	1008	23.7	40.69°C	0.905
	12.100V	4.993V	3.339V	5.046V	185.194				44.58°C	230.38V
30%	**18.107A**	**3.508A**	**3.463A**	**1.391A**	254.983	92.823%	1012	23.7	41.62°C	0.934
	12.091V	4.99V	3.335V	5.033V	274.697				46.2°C	230.37V
40%	**24.737A**	**4.011A**	**3.962A**	**1.595A**	340.077	92.994%	1015	23.7	41.72°C	0.942
	12.082V	4.988V	3.332V	5.018V	365.7				48.07°C	230.37V
50%	**31.029A**	**5.015A**	**4.959A**	**1.799A**	425.103	92.802%	1017	23.9	42.38°C	0.948
	12.072V	4.986V	3.328V	5.003V	458.078				49.92°C	230.36V
60%	**37.288A**	**6.02A**	**5.957A**	**2.001A**	509.611	92.495%	1022	23.9	42.54°C	0.952
	12.063V	4.985V	3.324V	4.988V	550.963				51.84°C	230.35V
70%	**43.625A**	**7.027A**	**6.959A**	**2.213A**	594.962	91.961%	1149	27.8	43.44°C	0.954
	12.053V	4.983V	3.32V	4.972V	646.976				54.02°C	230.33V
80%	**49.974A**	**8.034A**	**7.963A**	**2.32A**	679.79	91.312%	1779	40.2	43.7°C	0.957
	12.044V	4.98V	3.315V	4.959V	744.474				52.96°C	230.32V
90%	**56.735A**	**8.539A**	**8.455A**	**2.426A**	765.24	90.798%	2330	47.4	44.15°C	0.96
	12.034V	4.978V	3.312V	4.948V	842.79				52.5°C	230.31V
100%	**63.234A**	**9.046A**	**8.979A**	**3.049A**	850.058	90.223%	2332	47.4	45.92°C	0.962
	12.024V	4.976V	3.308V	4.921V	942.178				55.3°C	230.3V
110%	**69.609A**	**10.055A**	**10.079A**	**3.055A**	934.637	89.64%	2333	47.5	46.61°C	0.964
	12.015V	4.973V	3.304V	4.911V	1042.652				56.5°C	230.29V
CL1	**0.116A**	**14.476A**	**14.335A**	**0A**	121.31	82.25%	1031	24.3	40.87°C	0.88
	12.099V	4.988V	3.327V	5.067V	147.49				51.16°C	230.39V
CL2	**0.116A**	**20.037A**	**0A**	**0A**	101.402	80.501%	1032	24.3	41.89°C	0.859
	12.108V	4.991V	3.348V	5.079V	125.966				49.33°C	230.4V
CL3	**0.116A**	**0A**	**19.858A**	**0A**	67.397	74.969%	1010	23.9	41.22°C	0.798
	12.105V	4.992V	3.323V	5.075V	89.899				48.46°C	230.4V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL4	**70.617A**	**0A**	**0A**	**0A**	849.744	91.275%	2333	47.5	45.16°C	0.963
	12.034V	4.983V	3.323V	5.012V	930.974				53.49°C	230.3V

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	**1.226A**	**0.5A**	**0.493A**	**0.196A**	20.01	69.411%	989	23	36.91°C	0.815
	12.114V	4.998V	3.347V	5.091V	28.83				39.24°C	115.17V
40W	**2.700A**	**0.7A**	**0.69A**	**0.295A**	40.007	80.776%	995	23.1	37.29°C	0.919
	12.113V	4.997V	3.346V	5.086V	49.529				40.44°C	115.16V
60W	**4.172A**	**0.901A**	**0.888A**	**0.394A**	60.006	85.269%	997	23.1	38.39°C	0.943
	12.111V	4.997V	3.345V	5.081V	70.373				41.29°C	115.15V
80W	**5.644A**	**1.101A**	**1.085A**	**0.493A**	79.972	87.335%	1001	23.2	39.23°C	0.968
	12.110V	4.996V	3.345V	5.076V	91.569				42.95°C	115.14V

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	**1.226A**	**0.5A**	**0.493A**	**0.196A**	20.006	66.978%	989	23	36.89°C	0.46
	12.114V	4.998V	3.347V	5.091V	29.002				39.29°C	230.4V
40W	**2.699A**	**0.7A**	**0.69A**	**0.295A**	40.005	80.986%	993	23	37.41°C	0.621
	12.113V	4.997V	3.346V	5.086V	49.397				39.96°C	230.39V
60W	**4.172A**	**0.901A**	**0.888A**	**0.394A**	60.004	85.428%	997	23.1	38.28°C	0.731
	12.111V	4.996V	3.345V	5.081V	70.239				41.18°C	230.39V
80W	**5.643A**	**1.101A**	**1.085A**	**0.493A**	79.968	87.877%	1000	23.1	39.24°C	0.801
	12.110V	4.996V	3.345V	5.076V	90.999				42.42°C	230.39V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	9.58mV	5.87mV	3.76mV	6.27mV	Pass
20% Load	14.37mV	5.87mV	5.14mV	9.68mV	Pass
30% Load	16.50mV	6.02mV	6.26mV	7.85mV	Pass
40% Load	17.11mV	6.17mV	4.12mV	10.34mV	Pass
50% Load	12.72mV	6.12mV	4.68mV	12.07mV	Pass
60% Load	11.47mV	6.53mV	5.04mV	17.83mV	Pass
70% Load	11.62mV	6.38mV	5.24mV	11.31mV	Pass
80% Load	12.28mV	6.99mV	7.93mV	11.56mV	Pass
90% Load	13.45mV	7.09mV	8.39mV	15.44mV	Pass
100% Load	22.70mV	8.13mV	9.16mV	13.95mV	Pass
110% Load	22.39mV	8.39mV	10.09mV	14.57mV	Pass
Crossload1	18.25mV	7.18mV	10.65mV	5.93mV	Pass
Crossload2	12.62mV	8.83mV	4.07mV	5.71mV	Pass
Crossload3	10.38mV	5.61mV	11.90mV	5.09mV	Pass
Crossload4	21.13mV	8.07mV	5.79mV	10.79mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	9.94mV	6.02mV	5.65mV	6.47mV	Pass
20% Load	14.26mV	5.81mV	4.78mV	8.86mV	Pass
30% Load	16.91mV	6.02mV	6.00mV	8.00mV	Pass
40% Load	18.03mV	6.12mV	4.68mV	9.63mV	Pass
50% Load	13.75mV	6.48mV	6.41mV	12.74mV	Pass
60% Load	11.98mV	6.48mV	4.63mV	17.47mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
70% Load	12.33mV	6.27mV	5.09mV	11.16mV	Pass
80% Load	12.89mV	6.58mV	8.04mV	11.77mV	Pass
90% Load	13.40mV	7.14mV	8.34mV	14.72mV	Pass
100% Load	22.04mV	8.09mV	8.50mV	14.04mV	Pass
110% Load	22.95mV	8.36mV	10.27mV	14.24mV	Pass
Crossload1	18.42mV	7.05mV	10.80mV	6.06mV	Pass
Crossload2	11.26mV	8.57mV	4.47mV	5.30mV	Pass
Crossload3	10.64mV	5.82mV	12.21mV	5.30mV	Pass
Crossload4	22.14mV	8.10mV	5.88mV	11.22mV	Pass

The results above are not used in the certification process

Einarex Nexus L1 850W

Top side

Power specifications label

Cybenetics bietet freiwillige Zertifizierungsprogramme für Netzteile – ETA für Effizienz, LAMBDA für Lautstärke und SAFE für Sicherheit und korrekten Betrieb – sowie für Kühlprodukte mit DELTA für die Schalldämmung von Gehäusen und PHI für Luftstrom und statischen Druck von Lüftern

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