SilverStone

SilverStone Extreme 850R Platinum

Serial Number

Lab ID SL85002071

Certification ID 252071

Test Result Report ID: 22PS2071A

Certificate Issue Date: Sep 30, 2022

Scheme: ETA-EMI PSU

115V: CYBENETICS PLATINUM

230V: CYBENETICS PLATINUM 230v

Scheme: LAMBDA PSU

115V: CYBENETICS A-

230V: CYBENETICS A- 230v

CYBENETICS ATX 3.0 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	SilverStone
Model	Extreme 850R Platinum
OEM/ODM	High Power
Serial Number	
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	12-6

Rated Frequency (Hz)	50-60
Rated Power (W)	850
Operating Temperature (Continuous Full Load) (°C)	
Type	SFX
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	92mm Fluid Dynamic Bearing Fan (S0921512HB)
Semi-Passive Operation	✓ (selectable)
Cybenetics Testing Information	
Lab ID	SL85002071
Date of receipt	Sep 20, 2022
Testing Date	Sep 30, 2022
Report Issued Date	Sep 30, 2022
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 (300mm)	1	1	16-18AWG	No
4+4 pin EPS12V (410mm)	2	2	16AWG	No
6+2 pin PCIe (400mm+160mm)	1	2	16-18AWG	No
12+4 pin PCIe (410mm)	1	1	16-24AWG	No
SATA (310mm+200mm+100mm+100mm)	2	8	18AWG	No
4-pin Molex (300mm+200mm+200mm) / FDD (+100mm)	1	3 / 1	18-22AWG	No

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	70.8	3	3.6
	Watts	100		850	15	0.3
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 v3.0 Compliance	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	89.634%
Average Noise Output (>1450 Load Combinations)	29.85dBA
Average PF (>1450 Load Combinations)	0.992
Efficiency With 10W (≤500W) or 2% (>500W) Load	64.147%
Standby Power Consumption	0.0825W
Non-Accredited	
12V Ripple (Full Load)	35.96mV
5V Ripple (Full Load)	8.41mV
3.3V Ripple (Full Load)	12.58mV
5VSB Ripple (Full Load)	12.79mV
12V Load Regulation	1.47%

5V Load Regulation	0.80%
3.3V Load Regulation	0.85%
5VSB Load Regulation	2.02%
Inrush Current	22.960A

230V

Accredited		
Average Efficiency (>1450 load combinations)	91.622%	
Average Noise Output (>1450 Load Combinations)	26.66dBA	
Average PF (>1450 Load Combinations)	0.965	
Efficiency With 10W (≤500W) or 2% (>500W) Load	63.466%	
Standby Power Consumption	0.1317W	
Non-Accredited		
12V Ripple (Full Load)	35.58mV	
5V Ripple (Full Load)	8.60mV	
3.3V Ripple (Full Load)	13.13mV	
5VSB Ripple (Full Load)	10.93mV	
12V Load Regulation	1.48%	
5V Load Regulation	0.78%	
3.3V Load Regulation	0.85%	
5VSB Load Regulation	2.00%	
Inrush Current	81.300A	
12V Transient Response (200%)	11.45V	
5V Transient Response (200%)	4.900V	
3.3V Transient Response (200%)	3.202V	
5VSB Transient Response (200%)	4.933V	
Hold-Up Time & PWR_OK Signal	15.90ms	
AC Loss to PWR_OK Hold Up Time	14.20ms	
PWR_OK Inactive to DC Loss Delay	1.70ms	
PSU Timings: T1 (20% / 100%)	93.0ms	94.0ms
PSU Timings: T3 (20% / 100%)	123.0ms	119.0ms
OPP (30.44°C / 41.20°C)	142.70%	140.35%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	15.9
AC Loss to PWR_OK Hold Up Time (ms)	14.2
PWR_OK Inactive to DC Loss Delay (ms)	1.7

Stromverbrauch im Ruhezustand

Tables

115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	114.93 V	114.89 V	113.85 V	114.96 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	60.00 Hz	59.40 Hz	60.02 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.416	1.415	1.340	1.417	1.490	PASS
Mains Voltage THD:	0.16 %	0.12 %	N/A	0.25 %	2.00 %	PASS
Real Power:	0.082 W	0.055 W	N/A	0.126 W	N/A	N/A
Apparent Power:	7.926 W	7.565 W	N/A	8.093 W	N/A	N/A
Power Factor:	0.012	N/A	N/A	N/A	N/A	N/A

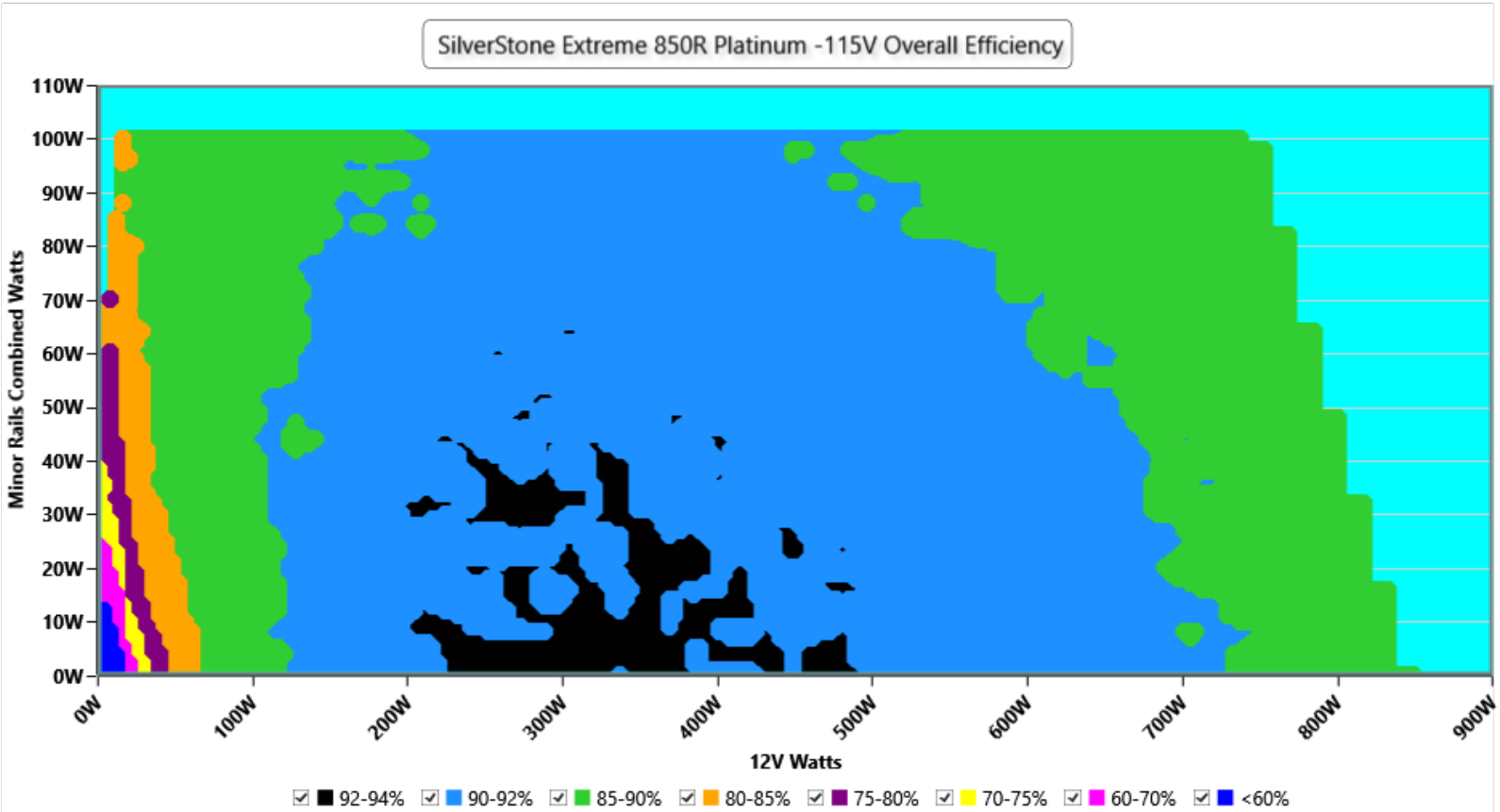
230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	229.88 V	229.84 V	227.70 V	229.93 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	50.00 Hz	49.50 Hz	50.00 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.416	1.415	1.340	1.416	1.490	PASS
Mains Voltage THD:	0.13 %	0.11 %	N/A	0.19 %	2.00 %	PASS
Real Power:	0.132 W	0.067 W	N/A	0.200 W	N/A	N/A
Apparent Power:	26.535 W	26.196 W	N/A	26.758 W	N/A	N/A

Power Factor:	0.005	N/A	N/A	N/A	N/A	N/A

Efficiency Graph

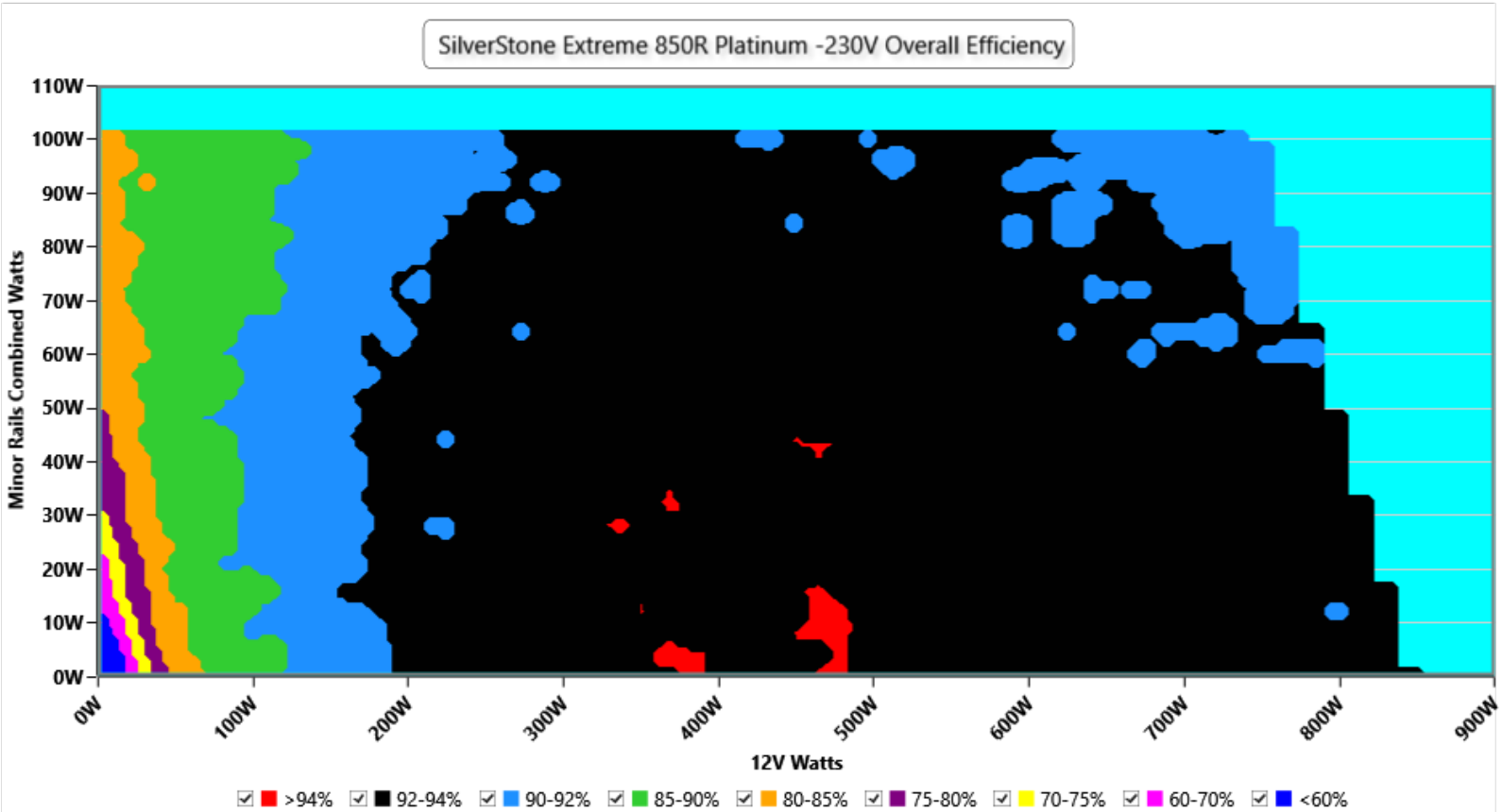
115V



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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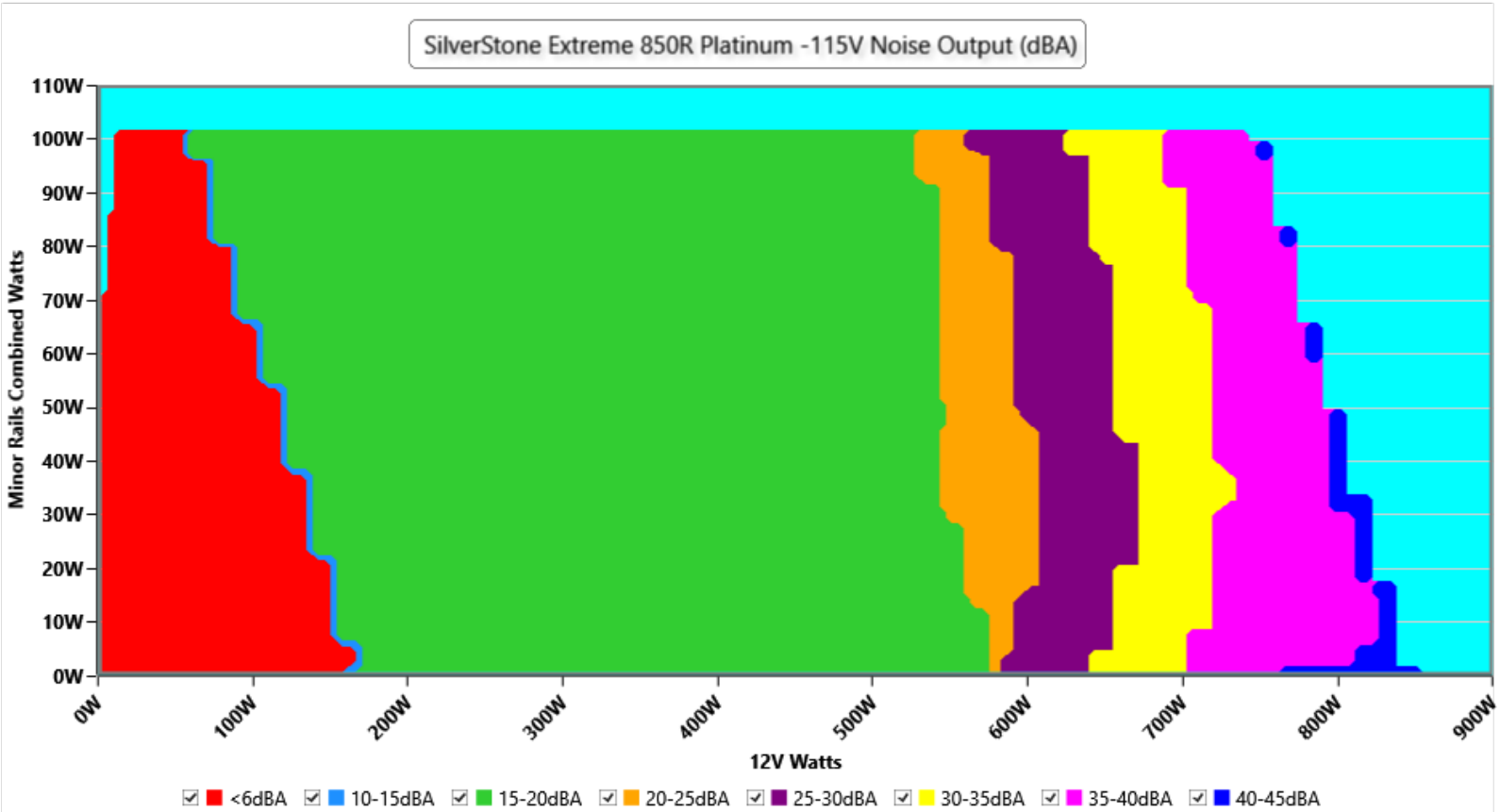
Noise Graph

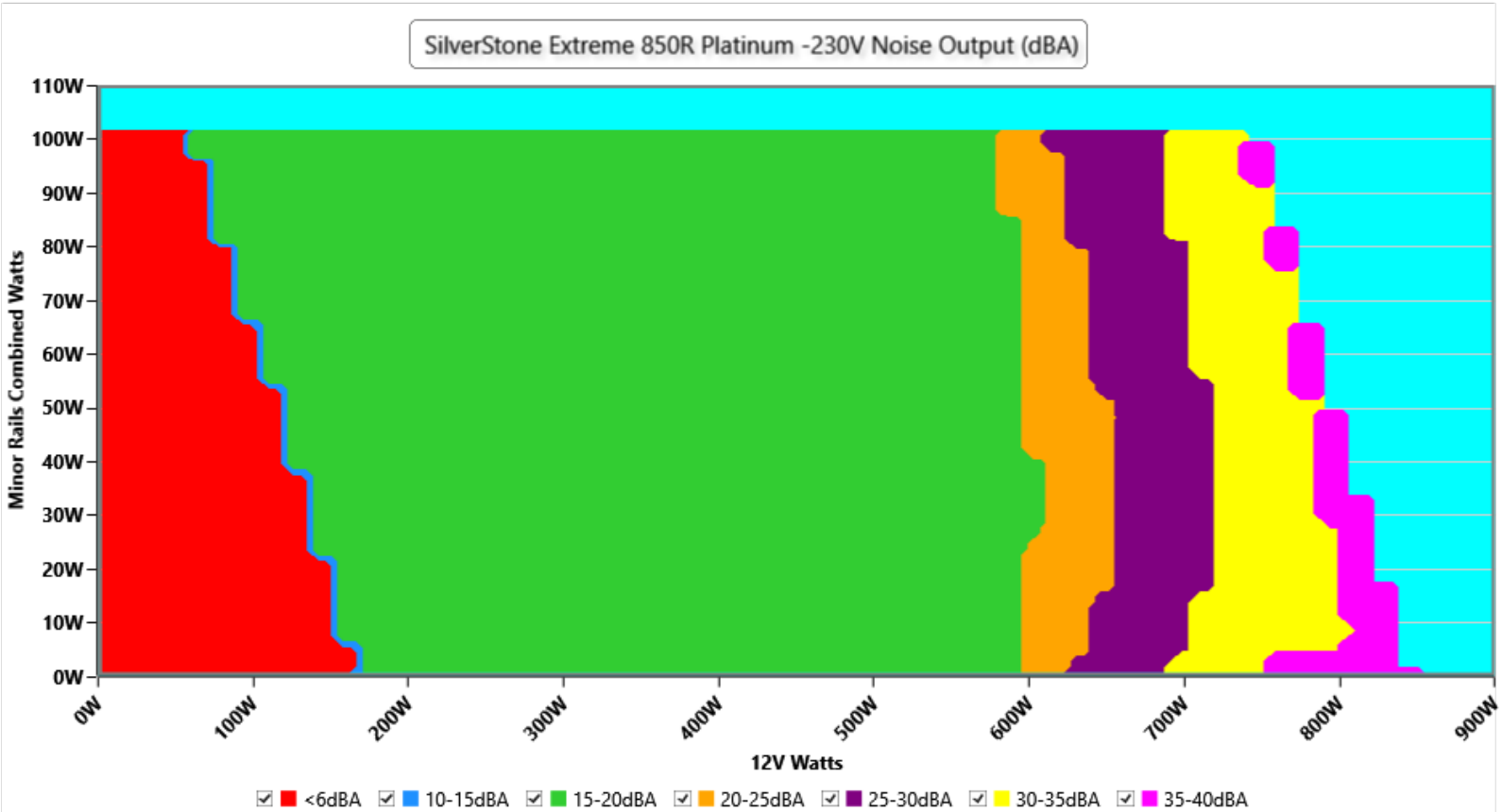
115V



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



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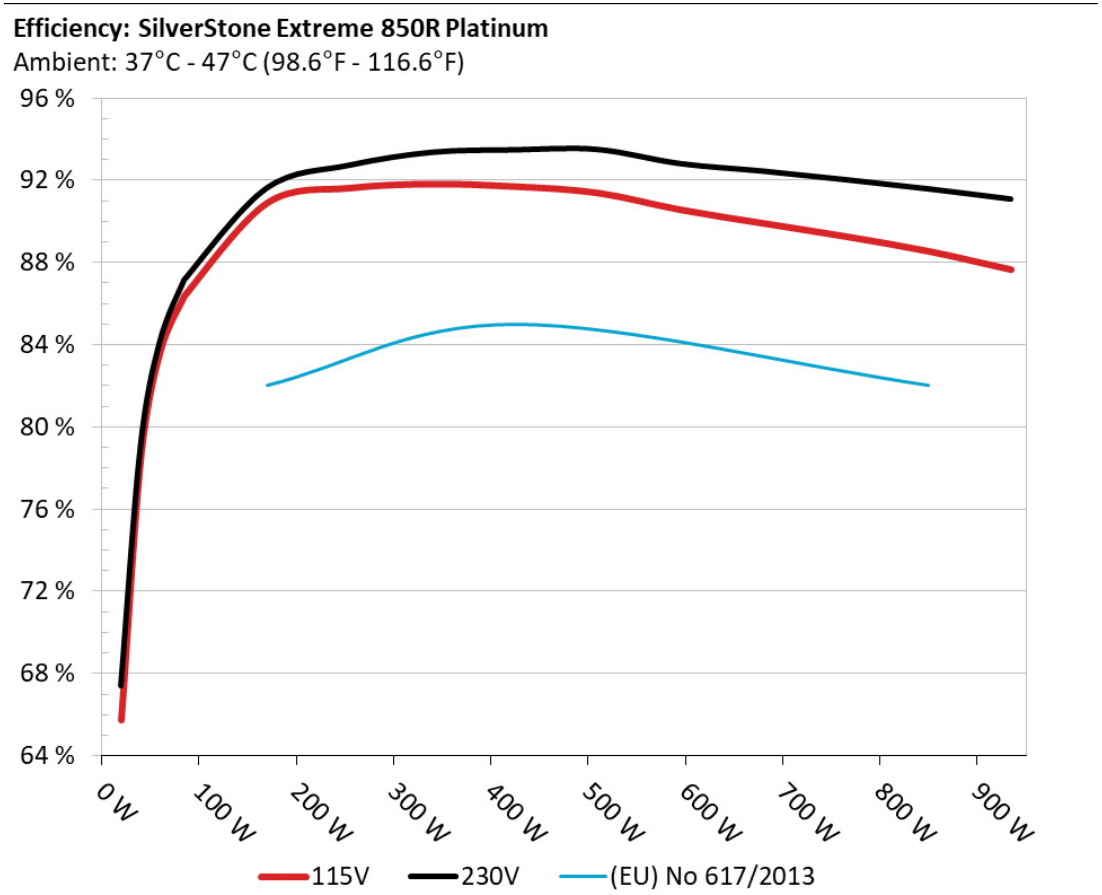
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Indicative Performance

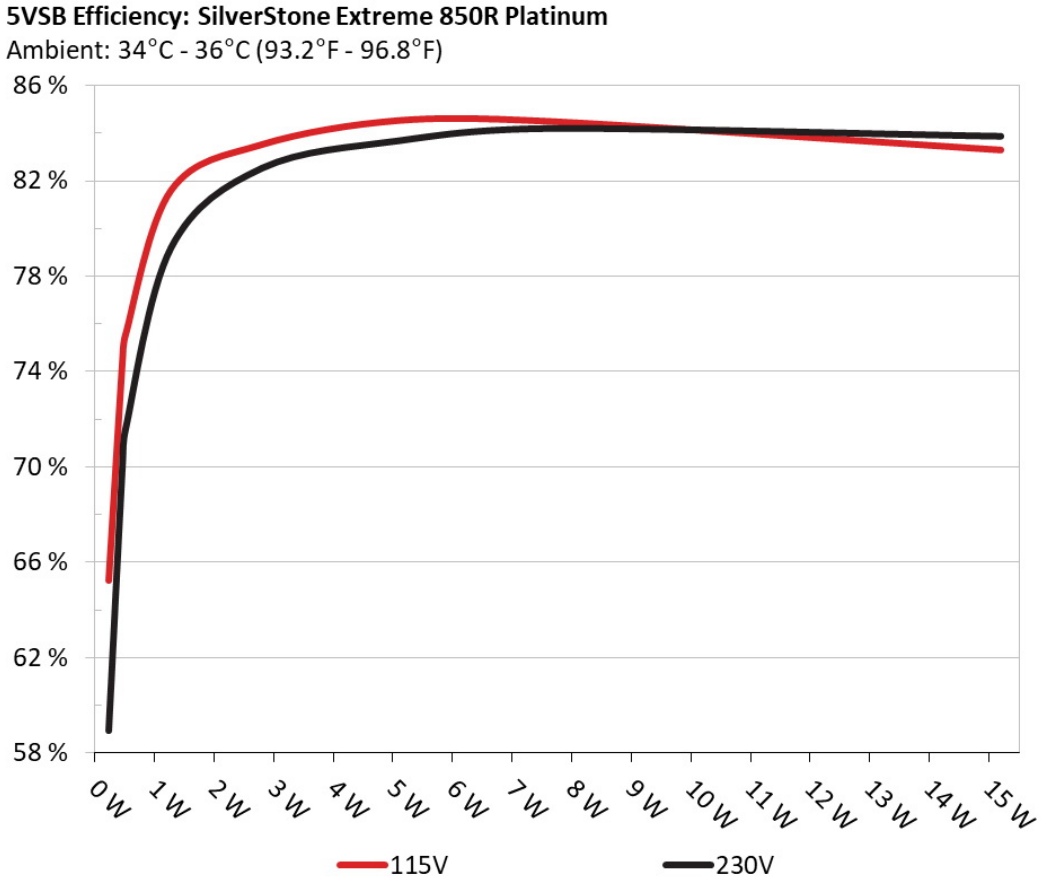
Efficiency under high ambient temperature



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	65.219%	0.045
	5.108V	0.353W		114.93V
2	0.09A	0.46W	74.451%	0.077
	5.107V	0.617W		114.93V
3	0.55A	2.806W	83.509%	0.293
	5.101V	3.361W		114.93V
4	1A	5.096W	84.514%	0.374
	5.095V	6.03W		114.93V
5	1.5A	7.633W	84.476%	0.42
	5.088V	9.036W		114.94V
6	3.001A	15.204W	83.278%	0.481
	5.067V	18.256W		114.93V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.23W	58.945%	0.015
	5.108V	0.399W		229.91V
2	0.09A	0.46W	70.069%	0.025
	5.108V	0.657W		229.9V
3	0.55A	2.807W	82.55%	0.12
	5.101V	3.401W		229.89V
4	1A	5.096W	83.693%	0.193
	5.095V	6.091W		229.89V
5	1.5A	7.634W	84.207%	0.252
	5.088V	9.066W		229.89V
6	3.001A	15.204W	83.882%	0.351
	5.067V	18.126W		229.88V

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%	5.210A	1.991A	1.99A	0.983A	85.016	86.405%	0	<6.0	44.56°C	0.971
	12.173V	5.023V	3.317V	5.085V	98.435				40.3°C	114.92V
20%	11.440A	2.987A	2.986A	1.182A	169.983	90.921%	0	<6.0	45.39°C	0.987
	12.157V	5.022V	3.315V	5.076V	186.952				40.74°C	114.9V
30%	18.052A	3.486A	3.486A	1.381A	255.004	91.651%	1200	19.3	41.24°C	0.997
	12.129V	5.021V	3.314V	5.07V	278.213				46.26°C	114.88V
40%	24.680A	3.985A	3.986A	1.581A	340.11	91.846%	1205	19.5	41.5°C	0.996
	12.111V	5.02V	3.312V	5.061V	370.302				46.86°C	114.87V
50%	30.975A	4.981A	4.985A	1.782A	425.138	91.723%	1206	19.5	42.16°C	0.997
	12.095V	5.02V	3.31V	5.051V	463.493				47.86°C	114.83V
60%	37.245A	5.986A	5.985A	1.984A	509.649	91.413%	1208	19.6	42.74°C	0.997
	12.078V	5.012V	3.309V	5.042V	557.526				48.79°C	114.81V
70%	43.604A	6.998A	6.991A	2.187A	594.944	90.586%	1217	19.9	43.09°C	0.997
	12.059V	5.003V	3.305V	5.032V	656.795				50.24°C	114.78V
80%	49.982A	8.003A	8.004A	2.29A	679.737	89.928%	1959	35.4	43.68°C	0.998
	12.041V	4.994V	3.298V	5.024V	755.889				51.97°C	114.77V
90%	56.789A	8.521A	8.5A	2.393A	765.196	89.282%	2381	41.0	44.63°C	0.998
	12.021V	4.989V	3.294V	5.016V	857.118				53.67°C	114.74V
100%	63.343A	9.031A	9.028A	3A	850.013	88.565%	2874	45.5	45.51°C	0.997
	12.003V	4.984V	3.29V	5.001V	959.776				55.61°C	114.72V
110%	69.788A	10.044A	10.134A	3.004A	934.594	87.672%	2860	45.3	46.5°C	0.993
	11.984V	4.979V	3.286V	4.994V	1066.046				57.44°C	114.7V
CL1	0.115A	12.051A	11.963A	0A	101.324	82.252%	0	<6.0	48.91°C	0.982
	12.183V	4.997V	3.319V	5.087V	123.196				43.39°C	114.89V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL2	0.115A	20.182A	0A	0A	101.431	79.257%	0	<6.0	50.84°C	0.981
	12.197V	4.957V	3.303V	5.092V	128.005				44.57°C	114.9V
CL3	0.115A	0A	20.011A	0A	67.392	74.654%	0	<6.0	52.87°C	0.97
	12.187V	5.003V	3.298V	5.088V	90.271				44.83°C	114.9V
CL4	70.805A	0A	0A	0.001A	849.692	89.164%	2706	43.8	45.97°C	0.998
	12.001V	4.987V	3.272V	5.054V	952.964				55.93°C	114.72V

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%	5.210A	1.989A	1.989A	0.983A	85.015	87.091%	0	<6.0	44.48°C	0.846
	12.173V	5.027V	3.318V	5.085V	97.611				40.16°C	229.88V
20%	11.439A	2.984A	2.985A	1.182A	169.973	91.639%	0	<6.0	45.66°C	0.944
	12.157V	5.026V	3.316V	5.077V	185.493				40.89°C	229.87V
30%	18.052A	3.482A	3.485A	1.381A	254.991	92.752%	1193	19.1	41.13°C	0.969
	12.128V	5.026V	3.315V	5.07V	274.912				46.36°C	229.86V
40%	24.678A	3.981A	3.985A	1.581A	340.086	93.382%	1194	19.1	41.31°C	0.976
	12.111V	5.024V	3.312V	5.061V	364.137				46.87°C	229.85V
50%	30.970A	4.976A	4.984A	1.782A	425.085	93.499%	1198	19.2	42.65°C	0.982
	12.095V	5.024V	3.311V	5.052V	454.612				48.75°C	229.84V
60%	37.236A	5.979A	5.981A	1.983A	509.532	93.519%	1197	19.2	42.98°C	0.988
	12.078V	5.018V	3.311V	5.043V	544.807				49.62°C	229.83V
70%	43.599A	6.99A	6.988A	2.186A	594.871	92.828%	1207	19.5	43.07°C	0.991
	12.059V	5.008V	3.306V	5.033V	640.692				50.17°C	229.82V
80%	49.977A	8.003A	8.001A	2.289A	679.718	92.464%	1697	31.0	43.75°C	0.993
	12.041V	4.999V	3.299V	5.025V	735.041				51.82°C	229.82V
90%	56.782A	8.513A	8.498A	2.392A	765.152	92.048%	2376	40.9	44.46°C	0.995
	12.022V	4.994V	3.295V	5.017V	831.259				53.48°C	229.81V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
100%	63.341A	9.022A	9.025A	2.999A	849.977	91.601%	2711	43.9	45.38°C	0.996
	12.003V	4.989V	3.291V	5.002V	927.949				55.42°C	229.8V
110%	69.787A	10.035A	10.131A	3.004A	934.551	91.106%	2858	45.3	46.69°C	0.997
	11.983V	4.984V	3.287V	4.995V	1025.774				57.62°C	229.79V
CL1	0.115A	12.039A	11.958A	0A	101.323	82.804%	0	<6.0	48.96°C	0.894
	12.179V	5.002V	3.32V	5.088V	122.423				43.52°C	229.88V
CL2	0.115A	20.166A	0A	0A	101.429	79.731%	0	<6.0	50.59°C	0.895
	12.193V	4.96V	3.303V	5.093V	127.253				44.11°C	229.88V
CL3	0.115A	0A	19.981A	0A	67.389	75.514%	0	<6.0	52.53°C	0.828
	12.176V	5.005V	3.303V	5.089V	89.218				44.5°C	229.88V
CL4	70.817A	0A	0A	0.001A	849.756	92.17%	2717	43.9	45.85°C	0.996
	12.000V	4.989V	3.276V	5.054V	921.85				55.76°C	229.79V

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	1.220A	0.498A	0.497A	0.196A	20.019	65.71%	0	<6.0	39.9°C	0.868
	12.179V	5.023V	3.318V	5.102V	30.472				36.81°C	114.91V
40W	2.686A	0.697A	0.696A	0.294A	40.015	78.468%	0	<6.0	40.95°C	0.932
	12.179V	5.024V	3.318V	5.099V	51.005				37.63°C	114.92V
60W	4.150A	0.896A	0.895A	0.393A	60.013	83.677%	0	<6.0	42.36°C	0.96
	12.176V	5.023V	3.317V	5.096V	71.72				38.68°C	114.92V
80W	5.614A	1.095A	1.095A	0.491A	79.977	86.407%	0	<6.0	43.89°C	0.967
	12.173V	5.023V	3.317V	5.093V	92.551				39.94°C	114.92V

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	1.220A	0.497A	0.497A	0.196A	20.013	67.429%	0	<6.0	40.04°C	0.528
	12.180V	5.028V	3.319V	5.102V	29.69				36.99°C	229.89V
40W	2.686A	0.696A	0.696A	0.294A	40.012	79.029%	0	<6.0	40.98°C	0.676
	12.178V	5.028V	3.319V	5.099V	50.629				37.67°C	229.89V
60W	4.151A	0.895A	0.895A	0.393A	60.012	84.174%	0	<6.0	41.54°C	0.777
	12.176V	5.028V	3.318V	5.096V	71.285				38.01°C	229.88V
80W	5.614A	1.094A	1.094A	0.491A	79.972	87.175%	0	<6.0	42.97°C	0.834
	12.172V	5.027V	3.318V	5.094V	91.901				39.12°C	229.88V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	10.92mV	3.88mV	6.24mV	5.89mV	Pass
20% Load	14.81mV	4.03mV	6.49mV	5.88mV	Pass
30% Load	19.68mV	5.87mV	9.00mV	6.24mV	Pass
40% Load	22.70mV	5.16mV	8.80mV	6.91mV	Pass
50% Load	25.31mV	5.98mV	10.02mV	7.32mV	Pass
60% Load	26.48mV	6.34mV	11.40mV	7.78mV	Pass
70% Load	19.93mV	6.54mV	9.10mV	8.75mV	Pass
80% Load	21.72mV	7.51mV	11.15mV	9.47mV	Pass
90% Load	23.98mV	8.07mV	12.84mV	10.70mV	Pass
100% Load	35.96mV	8.41mV	12.58mV	12.79mV	Pass
110% Load	36.79mV	7.94mV	10.22mV	12.91mV	Pass
Crossload1	16.46mV	5.73mV	7.98mV	14.63mV	Pass
Crossload2	11.74mV	5.57mV	6.34mV	14.84mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	9.95mV	5.47mV	8.28mV	14.69mV	Pass
Crossload4	36.55mV	6.31mV	8.42mV	20.96mV	Pass

The results above are not used in the certification process

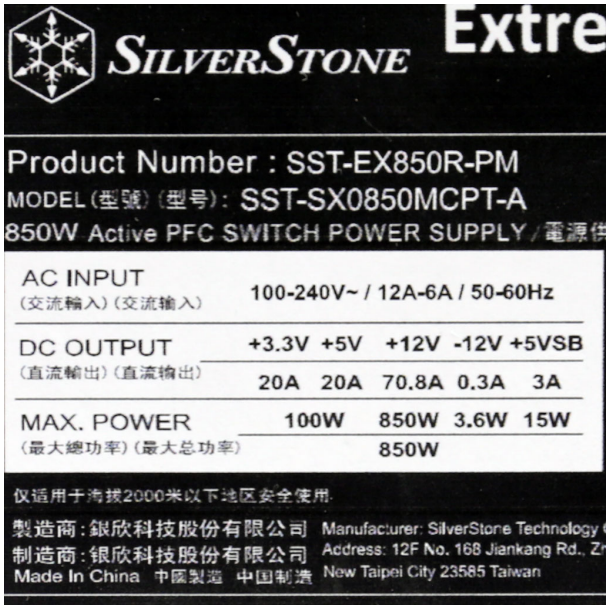
230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	11.13mV	3.93mV	6.34mV	5.58mV	Pass
20% Load	15.12mV	4.29mV	6.24mV	6.04mV	Pass
30% Load	18.65mV	5.57mV	8.18mV	6.60mV	Pass
40% Load	20.39mV	5.36mV	9.31mV	6.65mV	Pass
50% Load	21.62mV	5.51mV	11.45mV	7.11mV	Pass
60% Load	23.06mV	7.15mV	11.20mV	7.52mV	Pass
70% Load	19.27mV	6.18mV	9.77mV	8.09mV	Pass
80% Load	20.70mV	7.35mV	10.53mV	8.75mV	Pass
90% Load	23.21mV	8.17mV	11.96mV	9.47mV	Pass
100% Load	35.58mV	8.60mV	13.13mV	10.93mV	Pass
110% Load	36.73mV	8.00mV	9.76mV	11.69mV	Pass
Crossload1	17.47mV	5.74mV	8.02mV	15.91mV	Pass
Crossload2	11.74mV	5.36mV	6.55mV	14.58mV	Pass
Crossload3	10.10mV	5.62mV	7.88mV	14.89mV	Pass
Crossload4	35.77mV	6.74mV	10.18mV	20.84mV	Pass

The results above are not used in the certification process

SilverStone Extreme 850R Platinum

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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