EFFICIENCY AND NOISE REPORT IN ACCORDANCE WITH
CYBENETICS ETA AND CYBENETICS LAMBDA PROCEDURE

SilverStone Extreme 850R Platinum

Lab ID#: SL85002071
Receipt Date: Sep 20, 2022
Test Date: Sep 30, 2022

Report: 22PS2071A
Report Date: Sep 30, 2022

DUT INFORMATION

Brand	SilverStone
Manufacturer (OEM)	High Power
Series	Extreme R Platinum
Model Number	SST-EX850R-PM
Serial Number	
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	12-6
Rated Frequency (Hz)	50-60
Rated Power (W)	850
Type	SFX
Cooling	92mm Fluid Dynamic Bearing Fan (S0921512HB)
Semi-Passive Operation	✓ (selectable)
Cable Design	Fully Modular

TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Keysight AC6804B
Power Analyzers	N4L PPA1530 x2
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2
Tachometer	UNI-T UT372 x2
Digital Multimeter	Keysight U1273AX, Fluke 289, Keithley 2015 - THD
UPS	CyberPower OLS3000E 3kVA x2
Transformer	3kVA x2

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SilverStone Extreme 850R Platinum

RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6 (+-2°C / +- 3.6°F)
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX v3.0 PSU Power Excursion	✓

115V

Average Efficiency	89.634%
Efficiency With 10W (≤500W) or 2% (>500W)	64.147
Average Efficiency 5VSB	83.484%
Standby Power Consumption (W)	0.0825000
Average PF	0.992
Avg Noise Output	29.85 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A-

230V

Average Efficiency	91.622%
Average Efficiency 5VSB	82.965%
Standby Power Consumption (W)	0.1317000
Average PF	0.965
Avg Noise Output	26.66 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A-

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				

CABLES AND CONNECTORS

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

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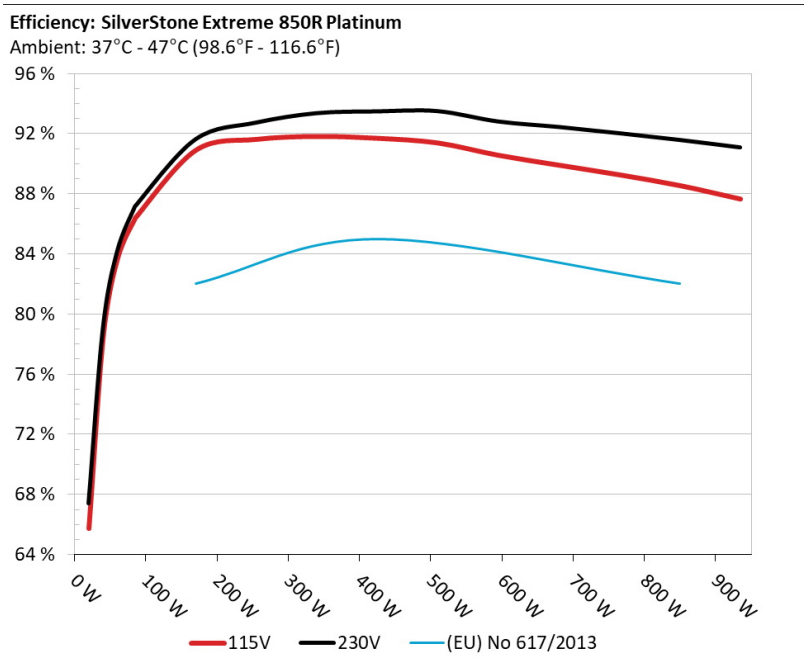
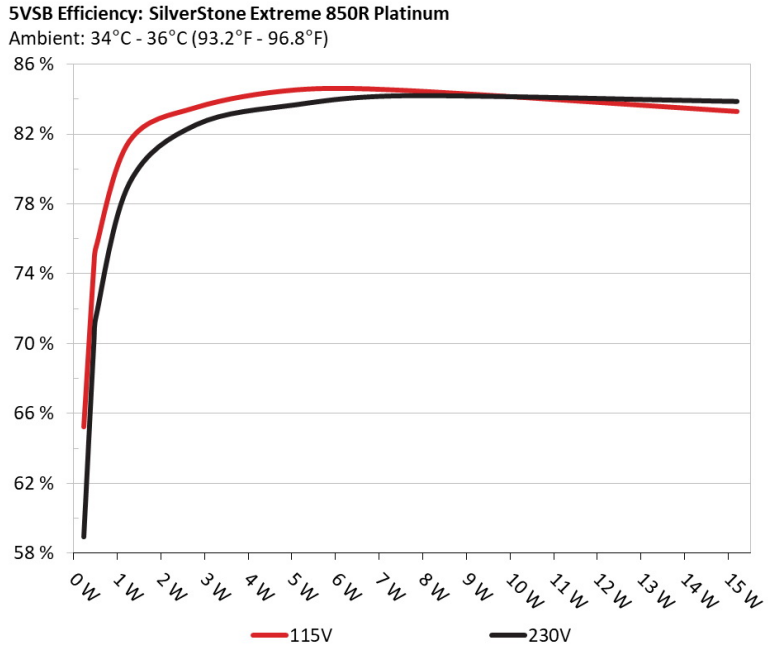
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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

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5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

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

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

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

115V

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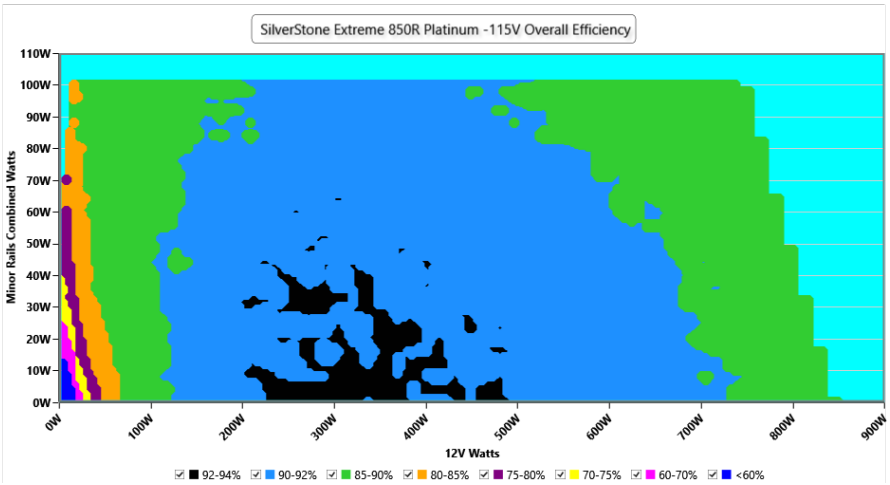
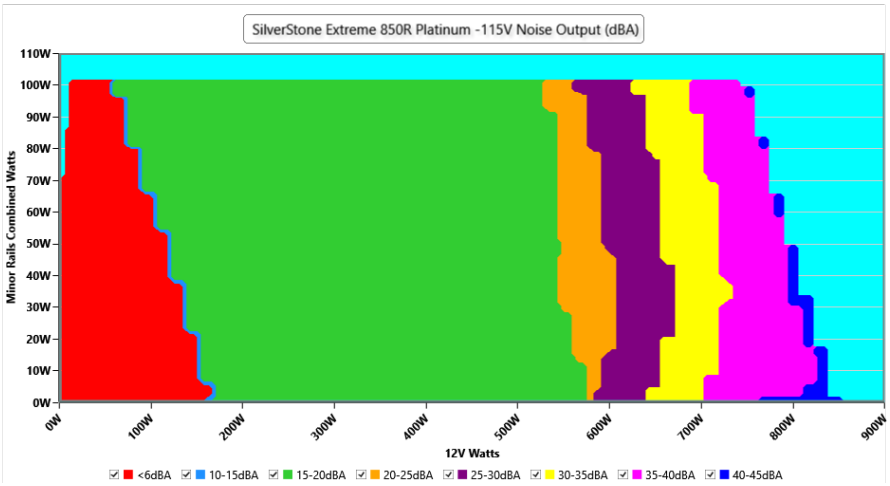
EFFICIENCY GRAPH 115V



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 (+-2 °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

VAMPIRE POWER -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

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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COMMISSION REGULATION (EU) NO 617/2013 TESTING 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
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
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

230V

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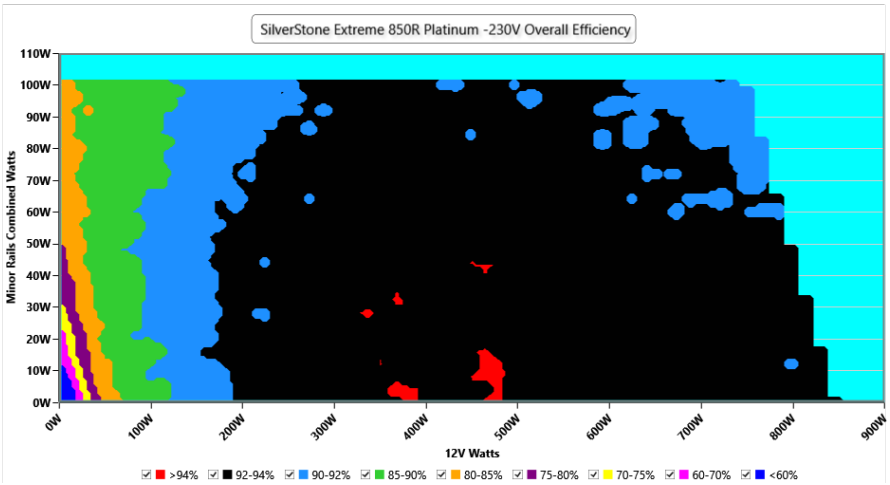
EFFICIENCY GRAPH 230V



INFO

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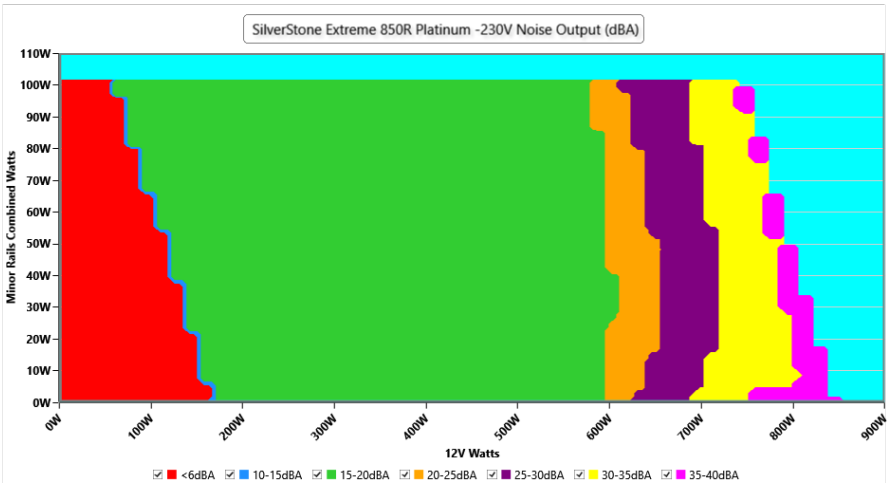
NOISE GRAPH 230V



INFO

The PSU's noise in its entire operational range and under 30-32 °C (+-2 °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

VAMPIRE POWER -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

INFO

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COMMISSION REGULATION (EU) NO 617/2013 TESTING 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
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
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

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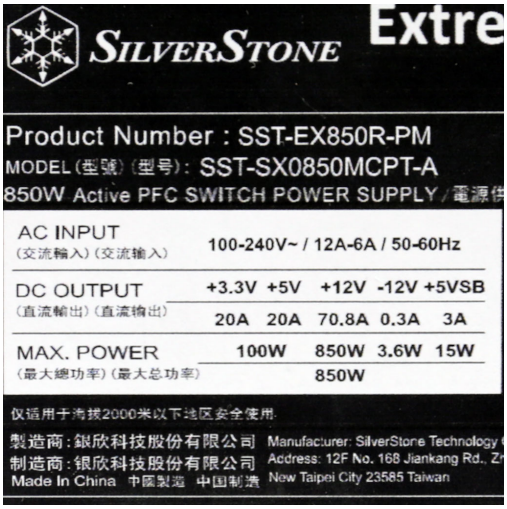
Top side



Power specifications label

CERTIFICATIONS 115V

CERTIFICATIONS 230V

Aristeidis Bitziopoulos
Lab Director