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

SilverStone SFX-L 800W

Lab ID#: 56
Receipt Date: Feb 20, 2018
Test Date: Feb 28, 2018

Report:
Report Date: Mar 3, 2018

DUT INFORMATION

Brand	SilverStone
Manufacturer (OEM)	Enhance Electronics
Series	SFX-L
Model Number	SX800-LTI
Serial Number	164700963
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	90-264
Rated Current (Arms)	12-6
Rated Frequency (Hz)	47-63
Rated Power (W)	800
Type	SFX-L
Cooling	120mm Sleeve Bearing Fan (S1201512HB)
Semi-Passive Operation	✓
Cable Design	Fully Modular

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	16	15	66	2.5	0.3
	Watts	80		792	12.5	3.6
Total Max. Power (W)		800				

CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge
ATX connector 20+4 pin (300mm)	1	1	16-22AWG
4+4 pin EPS12V (410mm)	1	1	16AWG
6+2 pin PCIe (400mm+150mm)	1	2	16-18AWG
6+2 pin PCIe (550mm+150mm)	1	2	16-18AWG
SATA (300mm+200mm+90mm+90mm)	3	12	18AWG
4 pin Molex (300mm+200mm+200mm)	1	3	18AWG
FDD Adapter (+110mm)	1	1	22AWG

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General Data	
Manufacturer (OEM)	Enhance Electronics
Platform Model	-
Primary Side	
Transient Filter	4x Y caps, 3x X caps, 2x CM chokes, 1x MOV, 2x CM02X
Inrush Protection	NTC Thermistor & Diode
Bridge Rectifier(s)	1x GBU15J (600V, 15A @ 100°C)
APFC MOSFETS	2x Infineon IPP50R140CP (550V, 15A @ 100°C, 0.14Ohm)
APFC Boost Diode	1x CREE C3D10060A (600V, 10A @ 153°C)
Hold-up Cap(s)	2x Rubycon USG (420V, 270uF each or 540uF combined, 3000h @ 85 °C)
Main Switchers	2x Infineon IPP50R140CP (550V, 15A @ 100°C, 0.14Ohm) Driver IC: Silicon Labs Si8230BD
APFC Controller	Champion CM6502S
LLC Resonant Controller	Champion CM6901
Topology	Primary side: Half-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	8x Infineon BSC014N04LS (40V, 100A @ 100°C, 1.4mOhm)
5V & 3.3V	4x Infineon BSC018NE2LS (25V, 97A @ 100°C, 1.8mOhm) PWM Controller: 2x ANPEC APW7073
Filtering Capacitors	Electrolytics: Nippon Chemi-Con (4-10,000 @ 105°C, KY), Nippon Chemi-Con (5-6,000h @ 105°C, KZH), Rubycon (3-6,000h @ 105°C, YXG), Unicon (2,000h @ 125°C, UPL) Polymers: FPCAP
Supervisor IC	SITI PS223 (OVP, UVP, SCP, PG,OTP)
Fan Model	Globe Fan S1201512HB (120mm, 12V, 0.45A, Sleeve Bearing)
5VSB Circuit	
Rectifier	1x PFR10V45CT SBR (45V, 10A) & 1x SG30N04D (60V, 56A @ 100°C, 8.4mOhm)
Standby PWM Controller	Sanken STR-A6069H
-12V Circuit	
Rectifier	STMicroelectronics L7912CV (-12V, 1.5A)

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RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6 (+-2°C / +- 3.6°F)
ErP Lot 3/6 Ready	ErP Lot 6 2010: ✓ ErP Lot 6 2013: Partially ErP Lot 3 2014: ✓
(EU) No 617/2013 Compliance	✓

115V

Average Efficiency	91.198%
Efficiency With 10W (≤500W) or 2% (>500W)	0.000
Average Efficiency 5VSB	80.486%
Standby Power Consumption (W)	0.0896120
Average PF	0.981
Avg Noise Output	34.97 dB(A)
Efficiency Rating (ETA)	TITANIUM
Noise Rating (LAMBDA)	S++

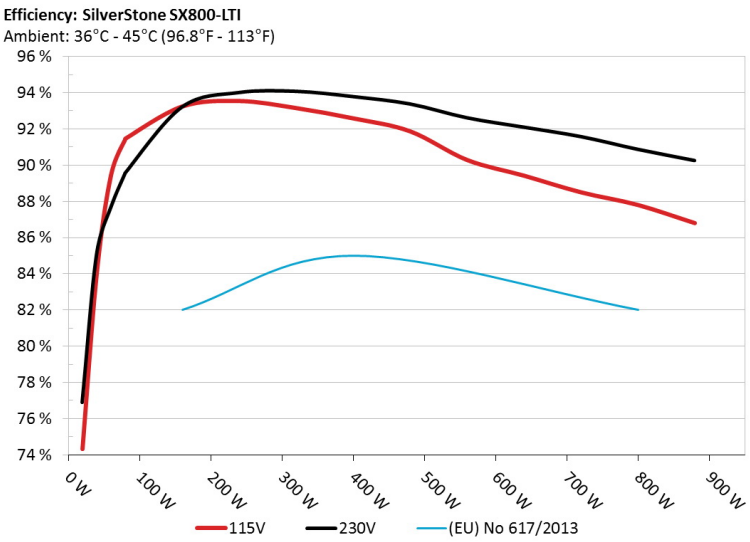
230V

Average Efficiency	93.049%
Average Efficiency 5VSB	75.839%
Standby Power Consumption (W)	0.2180520
Average PF	0.942
Avg Noise Output	35.10 dB(A)
Efficiency Rating (ETA)	SILVER
Noise Rating (LAMBDA)	S+

TEST EQUIPMENT

Electronic Loads	Chroma 6314A x2 63123A x6 63102A 63101A	Chroma 63601-5 x2 Chroma 63600-2 63640-80-80 x10 63610-80-20
AC Sources	Chroma 6530, Chroma 61604	
Power Analyzers	N4L PPA1530, N4L PPA5530	
Oscilloscopes	Picoscope 4444 & 3424, Keysight DSOX3024A, Rigol DS2072A	
Voltmeter	Keithley 2015 THD 6.5 Digit	
Sound Analyzer	Bruel & Kjaer 2250-L G4	
Microphone	Bruel & Kjaer Type 4189	
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2	

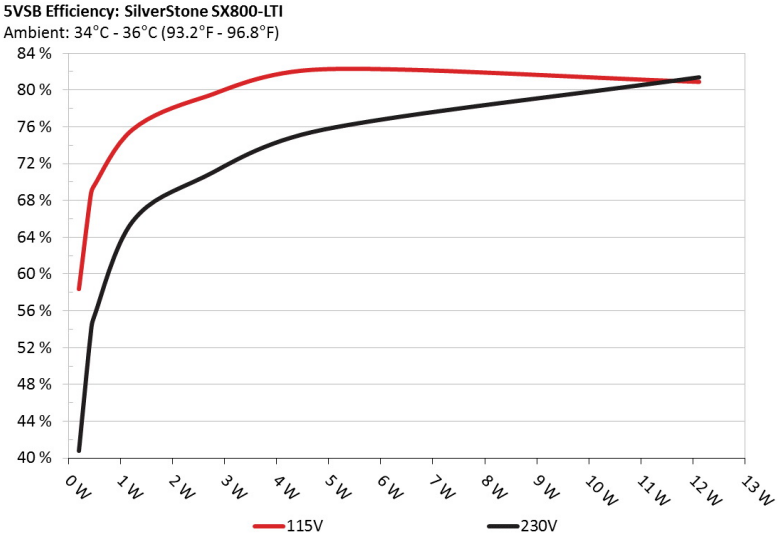
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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	0.042A	0.205	58.405%	0.028
	4.922V	0.351		115.11V
2	0.087A	0.429	68.530%	0.050
	4.920V	0.626		115.10V
3	0.532A	2.609	79.253%	0.221
	4.906V	3.292		115.11V
4	2.502A	12.114	80.911%	0.447
	4.843V	14.972		115.10V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.205	41.165%	0.012
	4.938V	0.498		230.43V
2	0.087A	0.429	53.692%	0.020
	4.937V	0.799		230.43V
3	0.542A	2.668	69.880%	0.091
	4.923V	3.818		230.42V
4	1.002A	4.918	77.085%	0.144
	4.910V	6.380		230.42V
5	1.501A	7.350	80.672%	0.193
	4.896V	9.111		230.42V
6	2.501A	12.172	81.298%	0.271
	4.866V	14.972		230.42V

115V

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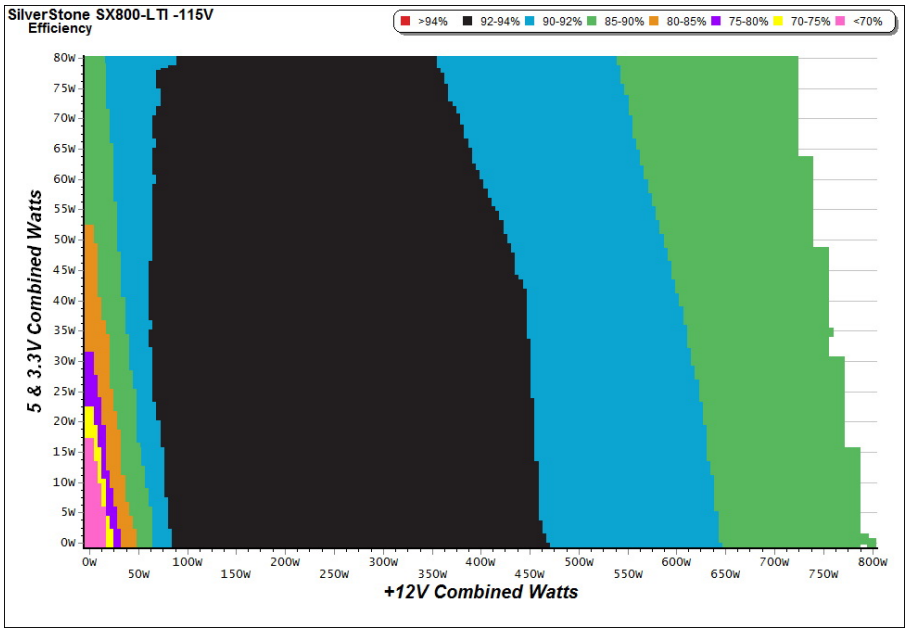
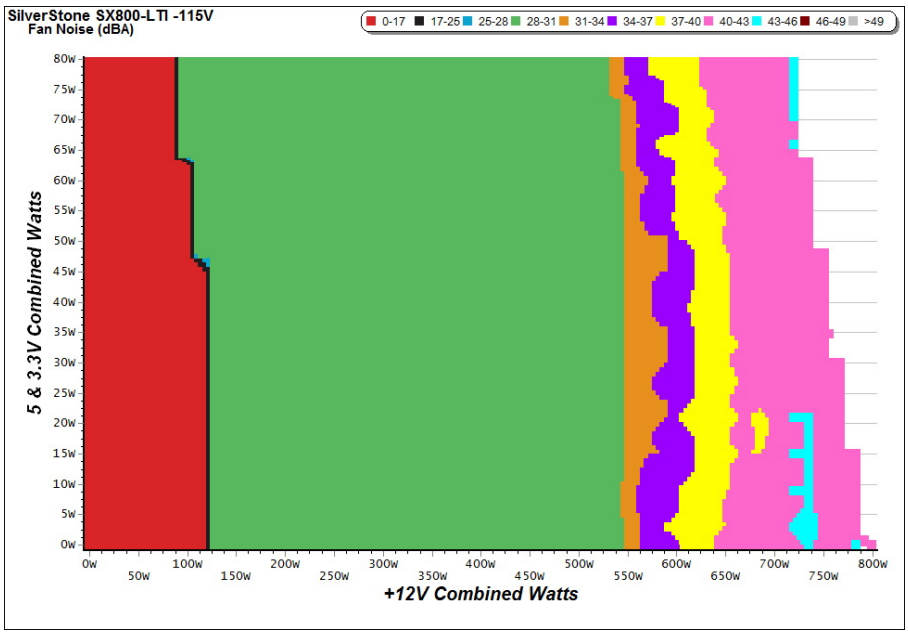
EFFICIENCY GRAPH 115V



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

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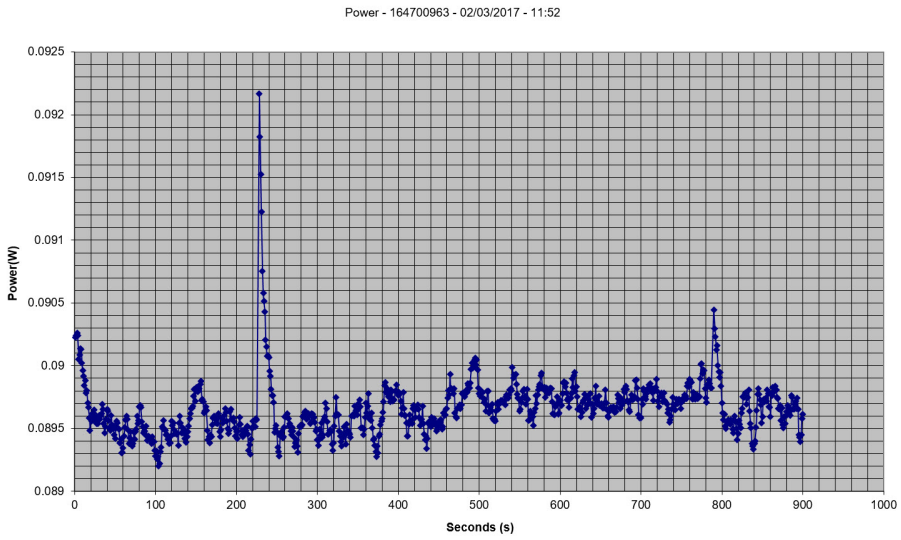
VAMPIRE POWER -115V



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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230V

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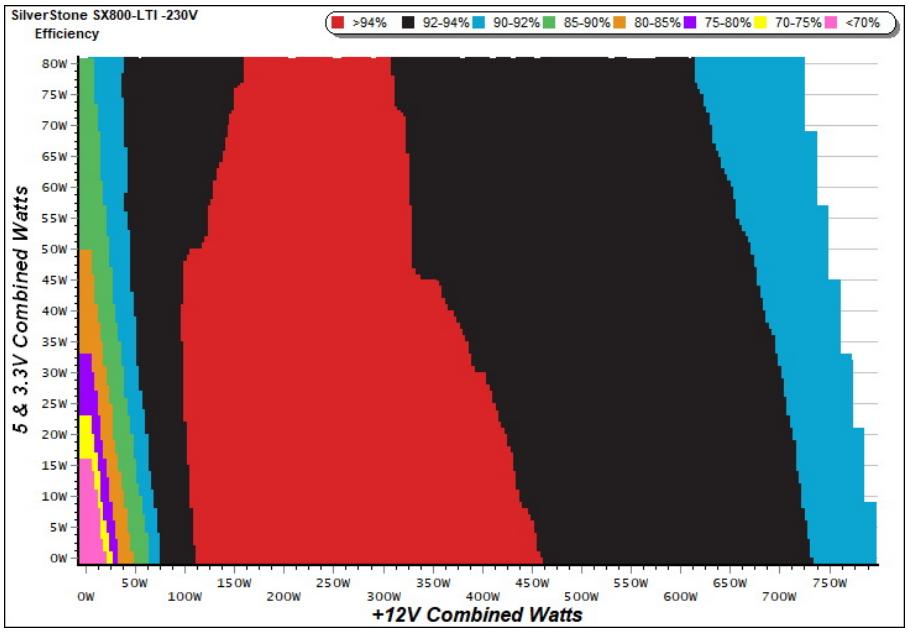
EFFICIENCY GRAPH 230V



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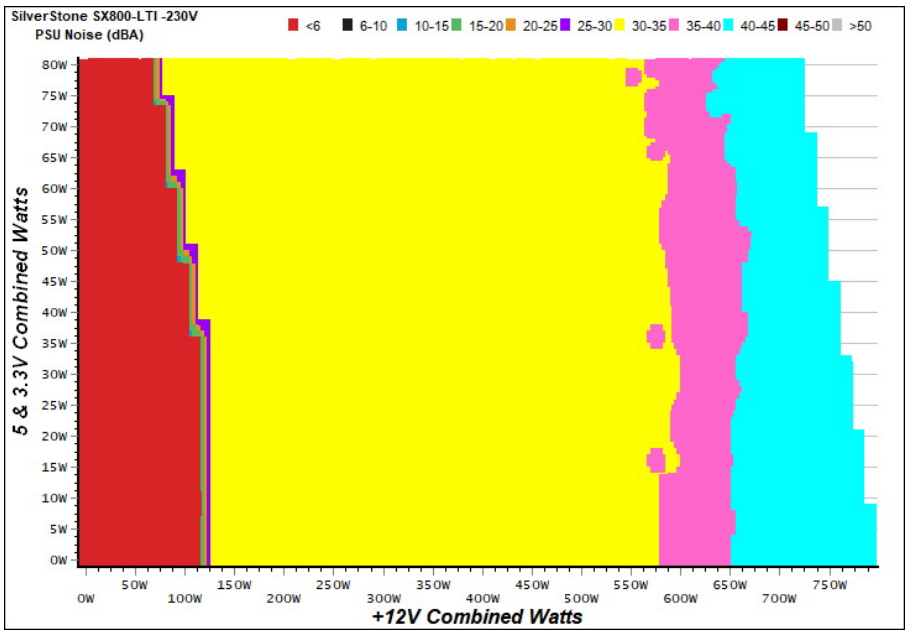
NOISE GRAPH 230V



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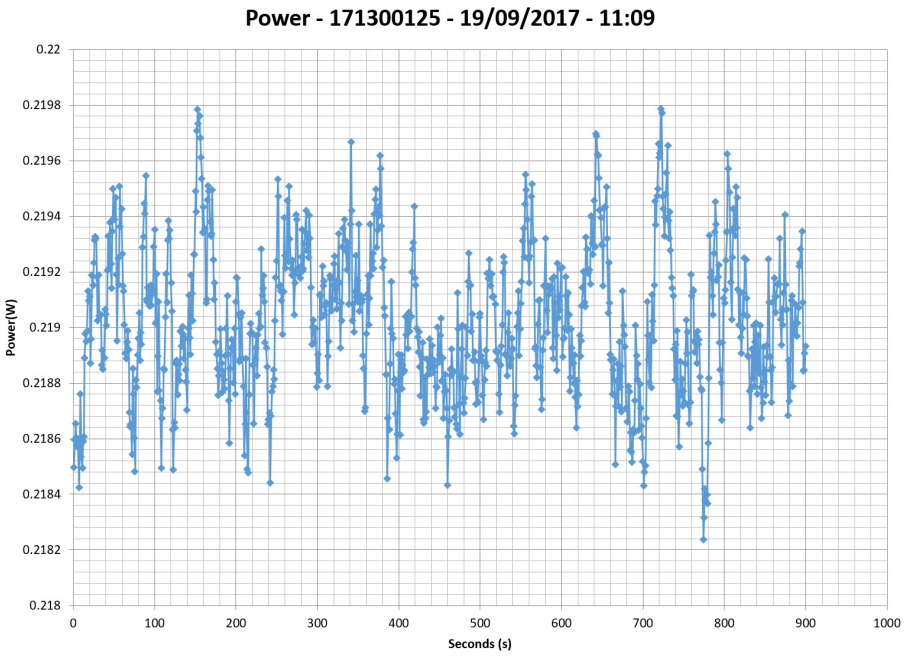
VAMPIRE POWER -230V



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Top side

Serial number

CERTIFICATIONS 115V

CYBENETICS TITANIUM

CYBENETICS STANDARD++

CERTIFICATIONS 230V

CYBENETICS SILVER 230v

CYBENETICS STANDARD+ 230v

Aris Mpitsiopoulos
Lab Director