Anex

SilverStone SX800-LTI

Lab ID#: 56
Receipt Date: -
Test Date: -

Report:

Report Date: Mar 3, 2018

DUT INFORMATION

Brand	SilverStone
Manufacturer (OEM)	Enhance Electronics
Series	SFX
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
Average Efficiency	91.198
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	0.000
Average Efficiency 5VSB	80.486
Standby Power Consumption (W) -115V	0.0896120
Standby Power Consumption (W) -230V	0.2180520
Average PF	0.981
ErP Lot 3/6 Ready	ErP Lot 6 2010: ✓ ErP Lot 6 2013: Partially ErP Lot 3 2014: ✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	34.97
Efficiency Rating (ETA)	TITANIUM
Noise Rating (LAMBDA)	Standard++

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	

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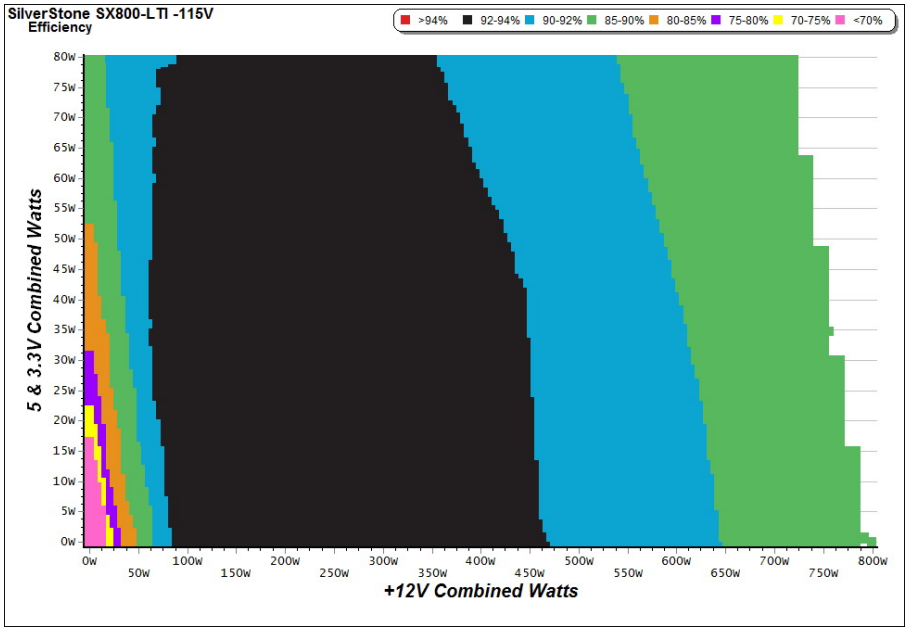
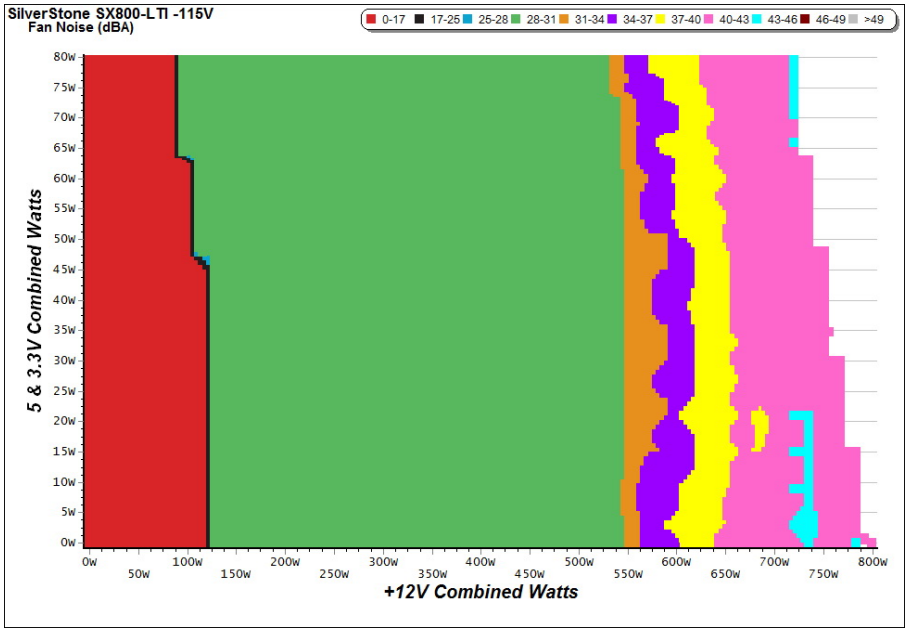
EFFICIENCY GRAPH



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



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

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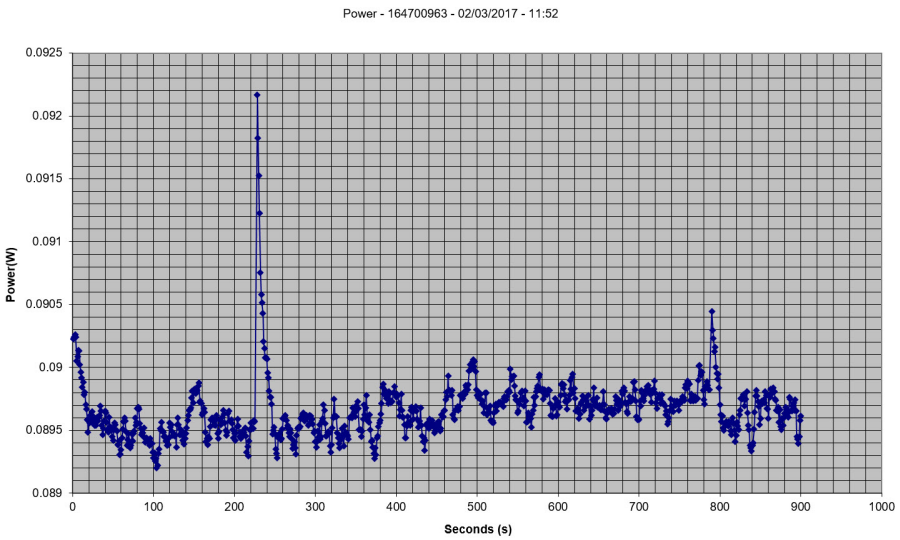
5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

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	0.206	40.792%	0.012
	4.921V	0.505		230.26V
2	0.087A	0.429	53.358%	0.019
	4.920V	0.804		230.26V
3	0.532A	2.610	70.541%	0.086
	4.906V	3.700		230.26V
4	2.502A	12.115	81.341%	0.267
	4.843V	14.894		230.27V

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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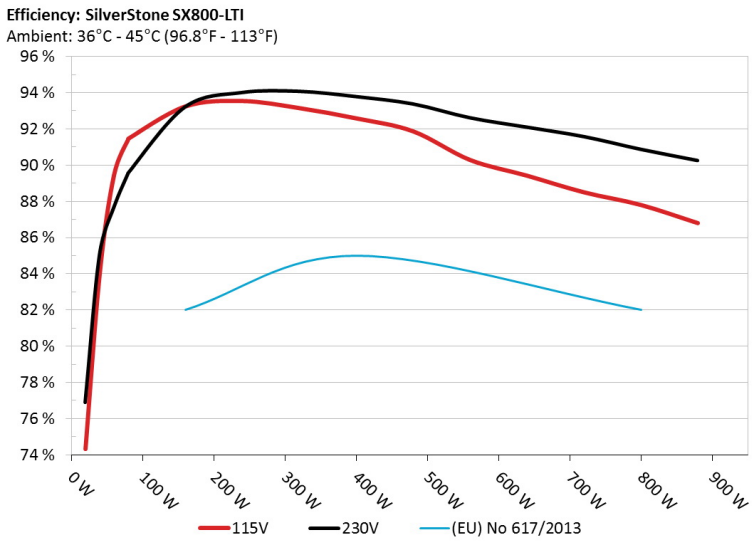
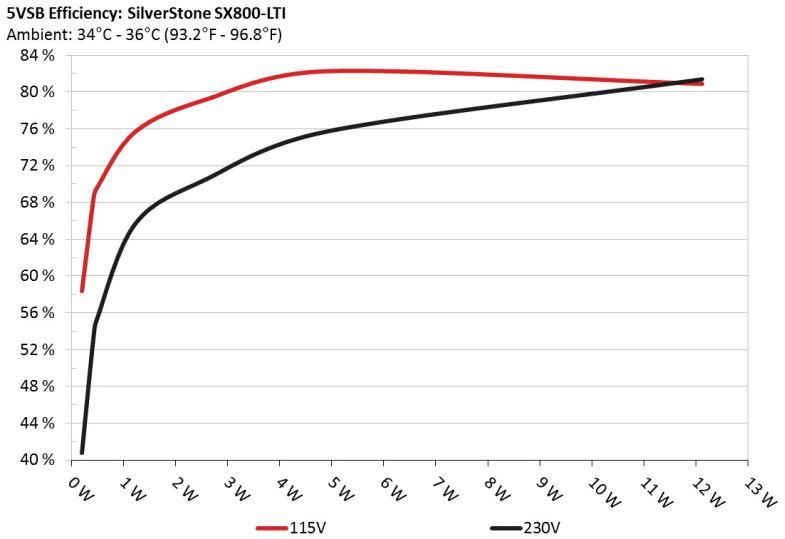
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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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10-110% LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	Fan Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	4.774A	1.965A	1.973A	0.986A	79.812	91.451%	0	0	45.75°C	0.943
	12.196V	5.092V	3.336V	5.071V	87.273				39.58°C	115.10V
2	10.573A	2.950A	2.973A	1.186A	159.677	93.230%	955	30.3	37.35°C	0.970
	12.183V	5.079V	3.325V	5.057V	171.272				43.18°C	115.09V
3	16.745A	3.456A	3.496A	1.386A	239.886	93.530%	955	30.3	37.80°C	0.982
	12.170V	5.069V	3.315V	5.044V	256.480				44.11°C	115.09V
4	22.917A	3.953A	3.989A	1.589A	319.793	93.140%	955	30.3	38.88°C	0.985
	12.157V	5.061V	3.307V	5.031V	343.347				46.46°C	115.09V
5	28.757A	4.952A	5.004A	1.790A	399.712	92.574%	955	30.3	39.45°C	0.988
	12.144V	5.052V	3.295V	5.018V	431.776				49.35°C	115.09V
6	34.614A	5.952A	6.027A	1.996A	479.651	91.859%	955	30.3	40.29°C	0.989
	12.130V	5.040V	3.285V	5.003V	522.162				52.15°C	115.09V
7	40.483A	6.961A	7.053A	2.200A	559.613	90.277%	1575	41.3	41.63°C	0.992
	12.117V	5.029V	3.275V	4.989V	619.882				54.14°C	115.09V
8	46.369A	7.973A	8.089A	2.411A	639.609	89.409%	1885	45.0	42.38°C	0.994
	12.103V	5.018V	3.264V	4.975V	715.375				55.58°C	115.09V
9	52.701A	8.483A	8.637A	2.416A	719.646	88.491%	2170	47.5	43.90°C	0.995
	12.088V	5.009V	3.254V	4.967V	813.238				58.13°C	115.10V
10	58.993A	9.012A	9.153A	2.520A	799.510	87.793%	2230	47.6	44.22°C	0.996
	12.074V	4.998V	3.245V	4.954V	910.677				60.37°C	115.11V
11	65.688A	9.028A	9.175A	2.525A	879.420	86.793%	2230	47.6	45.00°C	0.997
	12.060V	4.989V	3.236V	4.947V	1013.235				62.71°C	115.10V
CL1	0.099A	10.010A	10.004A	0.004A	85.132	89.034%	1885	45.0	42.52°C	0.949
	12.195V	5.071V	3.313V	5.088V	95.617				52.09°C	115.10V
CL2	65.957A	1.003A	1.004A	1.002A	809.892	87.936%	2230	47.6	44.34°C	0.996
	12.077V	5.020V	3.270V	5.002V	921.000				61.32°C	115.12V

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20-80W LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	Fan Noise (dB[A])	PF/AC Volts
1	1.198A	0.492A	0.476A	0.196A	19.708	74.322%	0	0	0.836
	12.194V	5.099V	3.345V	5.094V	26.517				115.11V
2	2.419A	0.981A	0.985A	0.390A	39.768	84.037%	0	0	0.905
	12.190V	5.098V	3.343V	5.090V	47.322				115.10V
3	3.641A	1.467A	1.495A	0.590A	59.881	89.459%	0	0	0.932
	12.199V	5.095V	3.339V	5.082V	66.937				115.10V
4	4.852A	1.965A	1.975A	0.785A	79.754	91.420%	0	0	0.943
	12.196V	5.092V	3.336V	5.076V	87.239				115.10V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	17.0 mV	7.0 mV	11.9 mV	5.5 mV	Pass
20% Load	14.0 mV	8.9 mV	13.4 mV	6.7 mV	Pass
30% Load	17.0 mV	11.0 mV	14.8 mV	8.6 mV	Pass
40% Load	18.0 mV	12.7 mV	16.7 mV	10.5 mV	Pass
50% Load	20.4 mV	14.8 mV	21.4 mV	12.0 mV	Pass
60% Load	23.3 mV	16.7 mV	23.0 mV	14.3 mV	Pass
70% Load	23.5 mV	19.4 mV	22.9 mV	16.5 mV	Pass
80% Load	26.4 mV	21.6 mV	24.7 mV	18.5 mV	Pass
90% Load	28.5 mV	23.5 mV	25.9 mV	21.1 mV	Pass
100% Load	31.1 mV	25.9 mV	29.2 mV	23.3 mV	Pass
110% Load	33.6 mV	28.8 mV	38.7 mV	26.0 mV	Pass
Crossload 1	13.9 mV	6.6 mV	11.8 mV	4.8 mV	Pass
Crossload 2	31.0 mV	26.5 mV	27.6 mV	23.3 mV	Pass

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HOLD-UP TIME & POWER OK SIGNAL (230V)	
Hold-Up Time (ms)	11.8
AC Loss to PWR_OK Hold Up Time (ms)	13.7
PWR_OK Inactive to DC Loss Delay (ms)	-1.9

Top side

Serial number

CERTIFICATIONS

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