

Anex

SilverStone NJ450-SXL

Lab ID#: 440

Receipt Date: -

Test Date: -

Report: 19PS440A

Report Date: Jul 27, 2018

DUT INFORMATION		DUT SPECIFICATIONS	
Brand	SilverStone	Rated Voltage (Vrms)	100-240
Manufacturer (OEM)	Enhance Electronics	Rated Current (Arms)	8-4
Series	Nightjar	Rated Frequency (Hz)	50-60
Model Number	NJ450-SXL	Rated Power (W)	450
Serial Number	DB18160797J450SXL0	Type	SFX-L
DUT Notes		Cooling	Fanless
		Semi-Passive Operation	
		Cable Design	Fully Modular

POWER SPECIFICATIONS						
Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	16	15	37.5	2.5	0.3
	Watts	80		450	12.5	3.6
Total Max. Power (W)		450				

CABLES AND CONNECTORS				
Modular Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (300mm)	1	1	16-22AWG	No
4+4 pin EPS12V (400mm)	1	1	16AWG	No
6+2 pin PCIe (400mm+150mm)	2	4	16-18AWG	No
SATA (300mm+200mm+90mm+90mm)	2	8	18AWG	No
4 pin Molex (300mm+200mm+200mm)	1	3	18AWG	No
FDD Adapter (+105mm)	1	1	22AWG	No
AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

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General Data	
Manufacturer (OEM)	Enhance Electronics
Primary Side	
Transient Filter	4x Y caps, 3x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor
Bridge Rectifier(s)	2x GBU15J (600V, 15A @ 100°C)
APFC MOSFETS	2x Infineon IPL60R104C7 (650V, 15A @ 100°C, 0.104Ohm)
APFC Boost Diode	1x CREE C3D08060A (600V, 8A @ 152°C)
Hold-up Cap(s)	1x Hitachi (450V, 390uF, 2000h @ 105°C, HU)
Main Switchers	2x Infineon IPB50R140CP (550V, 15A @ 100°C, 0.14Ohm) Driver IC: Si8230BD
APFC Controller	ATK AT6101L
Resonant Controller	Champion CM6901T6X
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	DC-DC Converters: 4x Infineon BSC018NE2LS (25V, 97A @ 100°C, 1.4mOhm), 2x Infineon BSC050N04LS (40V, 54A @ 100°C, 5mOhm) PWM Controller: 2x Anpec APW7160A
Filtering Capacitors	Polymers: FPCAP, Suncon, Unicon (2000h @ 125°C, UPL, UPH)
Supervisor IC	SITI PS223 (OCP, OTP, OVP, UVP, SCP, PG)
5VSB Circuit	
Rectifiers	MOSPEC S10L45 (45V, 10A) , SVF2N70MJ (700V, 2A, 6.5Ohm)
Standby PWM Controller	ATK AT6002H

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RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	91.649
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	63.855
Average Efficiency 5VSB	82.179
Standby Power Consumption (W) -115V	0.0539478
Standby Power Consumption (W) -230V	0.0889980
Average PF	0.952
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	-
Efficiency Rating (ETA)	SILVER
Noise Rating (LAMBDA)	A++

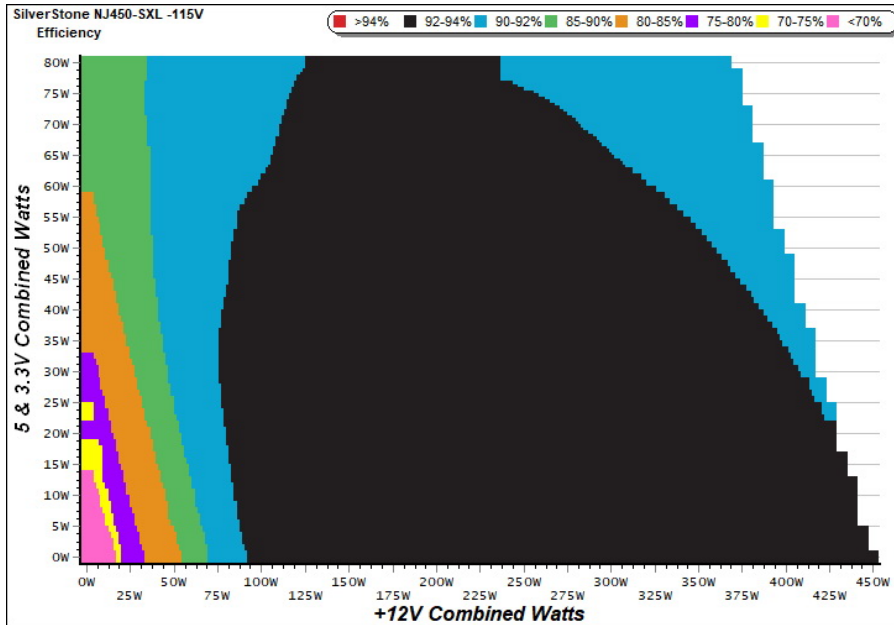
TEST EQUIPMENT

Electronic Loads	Chroma 6314A x2 63123A x6 63102A 63101A	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Chroma 61604, Keysight AC6804B	
Power Analyzers	N4L PPA1530 x2, 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 4955-A, 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

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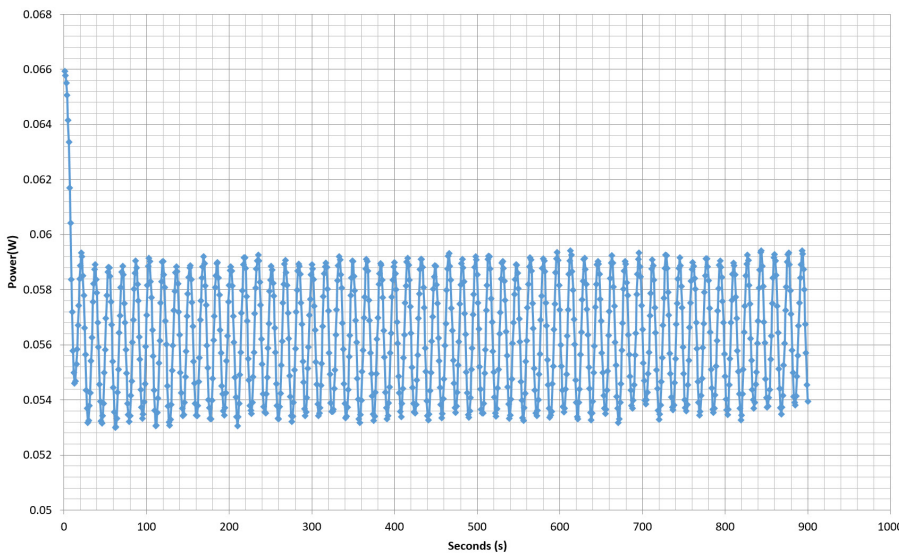
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5VSB EFFICIENCY (ERP LOT 3/6 & CEC)				
Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231	69.369%	0.019
	5.119V	0.333		115.38V
2	0.090A	0.461	76.073%	0.034
	5.118V	0.606		115.38V
3	0.550A	2.808	82.588%	0.171
	5.104V	3.400		115.38V
4	1.000A	5.092	82.729%	0.263
	5.091V	6.155		115.36V
5	1.500A	7.616	82.819%	0.327
	5.076V	9.196		115.38V
6	2.501A	12.619	82.091%	0.395
	5.046V	15.372		115.36V

5VSB EFFICIENCY -230V (ERP LOT 3/6 & CEC)				
Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231	62.432%	0.007
	5.119V	0.370		230.96V
2	0.090A	0.461	71.362%	0.011
	5.118V	0.646		230.95V
3	0.550A	2.808	80.829%	0.059
	5.104V	3.474		230.95V
4	1.000A	5.092	81.668%	0.103
	5.091V	6.235		230.95V
5	1.500A	7.616	82.016%	0.147
	5.076V	9.286		230.95V
6	2.500A	12.619	81.692%	0.219
	5.047V	15.447		230.95V

VAMPIRE POWER -115V

Power - DB18160797J450SXL0 - 25/07/2018 - 08:59



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

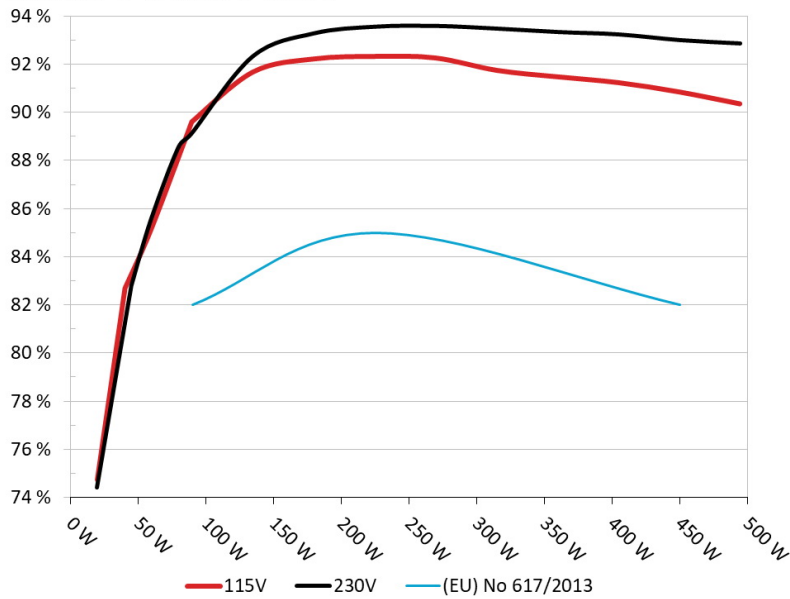
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: SilverStone NJ450-SXL

Ambient: 37°C - 46°C (98.6°F - 114.8°F)



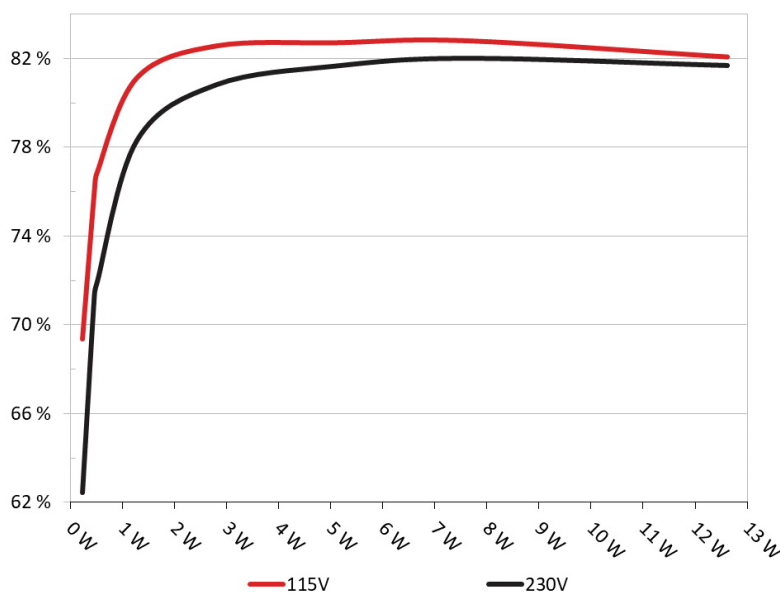
INFO

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

5VSB Efficiency: SilverStone NJ450-SXL

Ambient: 34°C - 36°C (93.2°F - 96.8°F)



INFO

This graph depicts the efficiency levels of the 5VSB rail with 115V and 230V input

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TYPICAL LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	1.941A	1.985A	1.989A	0.984A	44.879	82.690%	0	<6.0	43.50°C	0.878
	11.990V	5.040V	3.318V	5.084V	54.274				39.75°C	115.32V
2	4.872A	2.981A	2.990A	1.183A	89.340	89.813%	0	<6.0	44.16°C	0.943
	11.994V	5.034V	3.311V	5.072V	99.473				40.06°C	115.26V
3	8.212A	3.482A	3.477A	1.384A	134.467	91.673%	0	<6.0	45.46°C	0.959
	11.990V	5.028V	3.306V	5.060V	146.681				40.80°C	115.20V
4	11.553A	3.983A	3.999A	1.585A	179.689	92.219%	0	<6.0	46.68°C	0.961
	11.987V	5.023V	3.300V	5.047V	194.851				41.62°C	115.23V
5	14.562A	4.986A	5.009A	1.788A	224.988	92.324%	0	<6.0	47.49°C	0.962
	11.982V	5.016V	3.293V	5.034V	243.695				42.08°C	115.16V
6	17.506A	5.992A	6.023A	1.992A	269.494	92.260%	0	<6.0	48.50°C	0.962
	11.978V	5.009V	3.286V	5.021V	292.104				42.84°C	115.09V
7	20.521A	7.000A	7.044A	2.197A	314.810	91.743%	0	<6.0	49.37°C	0.959
	11.973V	5.002V	3.279V	5.007V	343.143				43.04°C	115.04V
8	23.535A	8.010A	8.067A	2.404A	360.100	91.473%	0	<6.0	50.95°C	0.962
	11.969V	4.995V	3.272V	4.994V	393.668				44.26°C	114.96V
9	26.953A	8.523A	8.571A	2.407A	405.001	91.231%	0	<6.0	52.13°C	0.963
	11.965V	4.988V	3.266V	4.987V	443.929				45.04°C	114.99V
10	30.308A	9.036A	9.109A	2.512A	449.729	90.847%	0	<6.0	53.76°C	0.964
	11.961V	4.982V	3.260V	4.977V	495.038				45.87°C	114.93V
11	34.064A	9.045A	9.127A	2.516A	494.535	90.353%	0	<6.0	54.72°C	0.966
	11.957V	4.977V	3.255V	4.971V	547.339				46.48°C	114.86V
CL1	0.137A	10.003A	10.001A	0.000A	84.853	87.793%	0	<6.0	50.00°C	0.944
	11.997V	5.019V	3.300V	5.095V	96.651				43.89°C	115.26V
CL2	37.511A	1.002A	0.999A	1.000A	462.176	91.585%	0	<6.0	53.90°C	0.964
	11.966V	5.001V	3.275V	5.036V	504.639				45.79°C	114.92V

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LIGHT LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.203A	0.496A	0.481A	0.196A	19.528	74.740%	0	<6.0	0.698
	11.990V	5.047V	3.323V	5.113V	26.128				115.35V
2	2.474A	0.992A	0.994A	0.392A	39.964	82.488%	0	<6.0	0.861
	11.989V	5.044V	3.320V	5.104V	48.448				115.33V
3	3.676A	1.487A	1.477A	0.589A	59.466	85.170%	0	<6.0	0.911
	11.989V	5.040V	3.317V	5.095V	69.820				115.30V
4	4.938A	1.987A	1.991A	0.786A	79.836	89.606%	0	<6.0	0.934
	11.995V	5.037V	3.314V	5.086V	89.097				115.28V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	5.0 mV	7.0 mV	9.5 mV	12.2 mV	Pass
20% Load	14.5 mV	8.4 mV	10.2 mV	13.2 mV	Pass
30% Load	10.4 mV	9.7 mV	10.6 mV	14.2 mV	Pass
40% Load	11.2 mV	10.4 mV	10.6 mV	15.0 mV	Pass
50% Load	12.7 mV	12.5 mV	11.1 mV	15.7 mV	Pass
60% Load	14.0 mV	13.9 mV	13.4 mV	16.5 mV	Pass
70% Load	14.9 mV	13.6 mV	11.9 mV	16.9 mV	Pass
80% Load	14.8 mV	17.1 mV	15.4 mV	17.7 mV	Pass
90% Load	16.5 mV	18.9 mV	14.6 mV	18.9 mV	Pass
100% Load	17.7 mV	19.6 mV	17.2 mV	19.4 mV	Pass
110% Load	18.3 mV	20.2 mV	15.2 mV	20.6 mV	Pass
Crossload 1	11.8 mV	9.0 mV	10.3 mV	6.5 mV	Pass
Crossload 2	18.7 mV	17.7 mV	13.6 mV	20.8 mV	Pass

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SilverStone NJ450-SXL

HOLD-UP TIME & POWER OK SIGNAL (230V)

Hold-Up Time (ms)	14.50
AC Loss to PWR_OK Hold Up Time (ms)	13.70
PWR_OK Inactive to DC Loss Delay (ms)	0.80

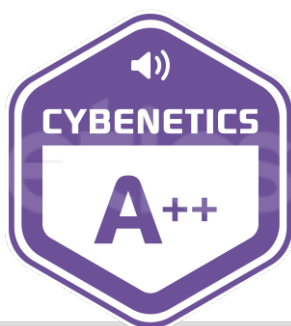


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Power specifications label

CERTIFICATIONS



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