SilverStone

SilverStone Nightjar 450W (#2)

Serial Number DB18160814J450SXL0

Lab ID 441

Certification ID 25441

Test Result Report ID: 19PS441A

Certificate Issue Date: Jul 27, 2018

115V 230V

Scheme: ETA-EMI PSU

115V 230V

Scheme: LAMBDA PSU

Aristeidis Bitziopoulos, Certification Body General Manager

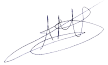
General Information

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	Nightjar 450W (#2)
OEM/ODM	Enhance Electronics
Serial Number	DB18160814J450SXL0
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	8-4
Rated Frequency (Hz)	50-60

Rated Power (W)	450
Operating Temperature (Continuous Full Load) (°C)	
Type	SFX-L
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	Fanless
Semi-Passive Operation	
Cybenetics Testing Information	
Lab ID	441
Date of receipt	Jul 17, 2018
Testing Date	Jul 23, 2018
Report Issued Date	Jul 27, 2018
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	16-22AWG	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	-

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				

Parts Description

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

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	✓

Performance Summary 115V

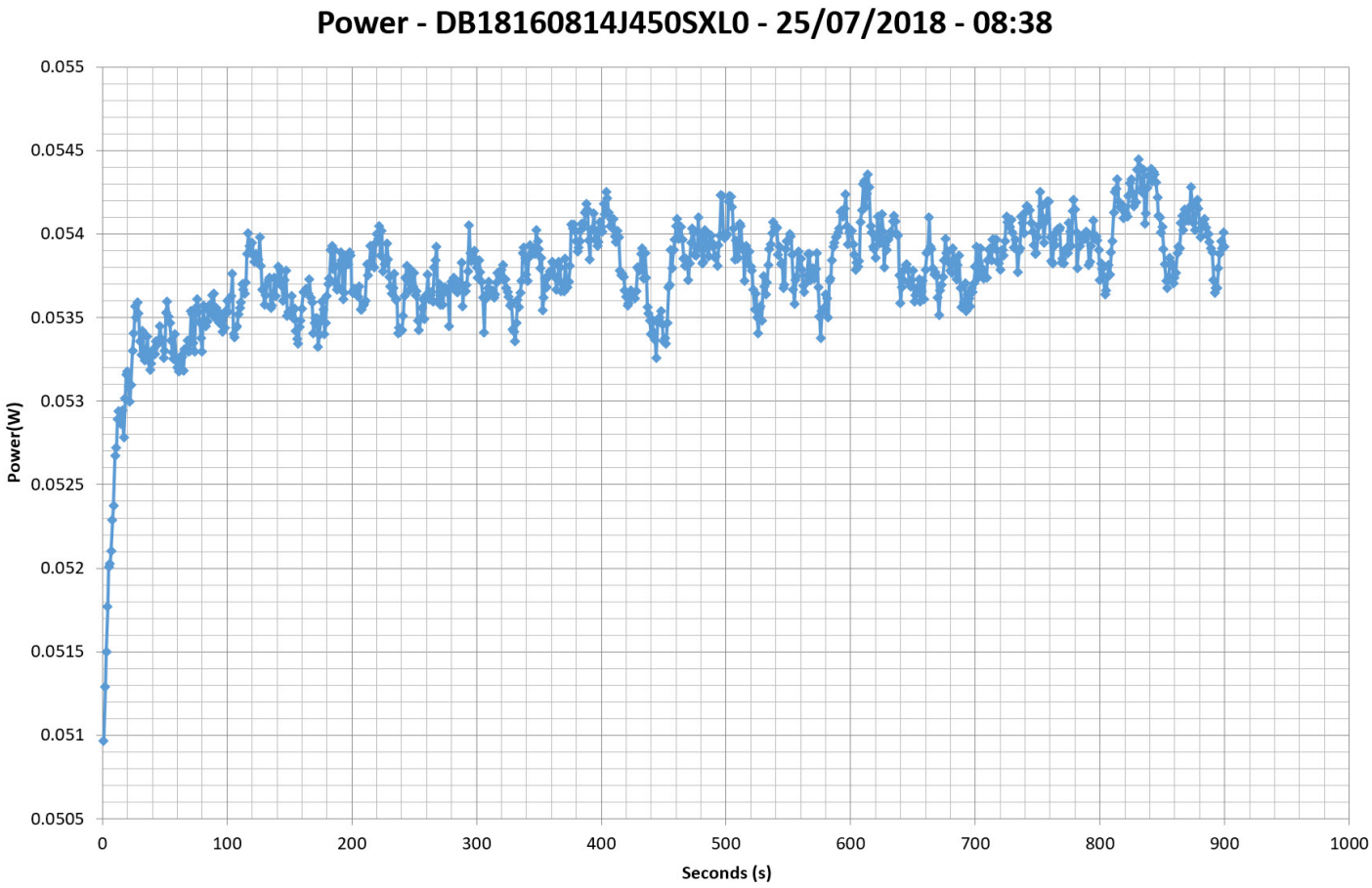
Accredited	
Average Efficiency (>1450 load combinations)	91.600%
Average Noise Output (>1450 Load Combinations)	6.00dBA
Average PF (>1450 Load Combinations)	0.952
Efficiency With 10W (≤500W) or 2% (>500W) Load	63.235%
Standby Power Consumption	0.0539W
Non-Accredited	
12V Ripple (Full Load)	20.31mV
5V Ripple (Full Load)	18.55mV
3.3V Ripple (Full Load)	23.49mV
5VSB Ripple (Full Load)	19.53mV
12V Load Regulation	0.20%
5V Load Regulation	1.37%
3.3V Load Regulation	1.87%
5VSB Load Regulation	2.83%
Inrush Current	84.947A

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	13.4
AC Loss to PWR_OK Hold Up Time (ms)	13.9
PWR_OK Inactive to DC Loss Delay (ms)	-0.5

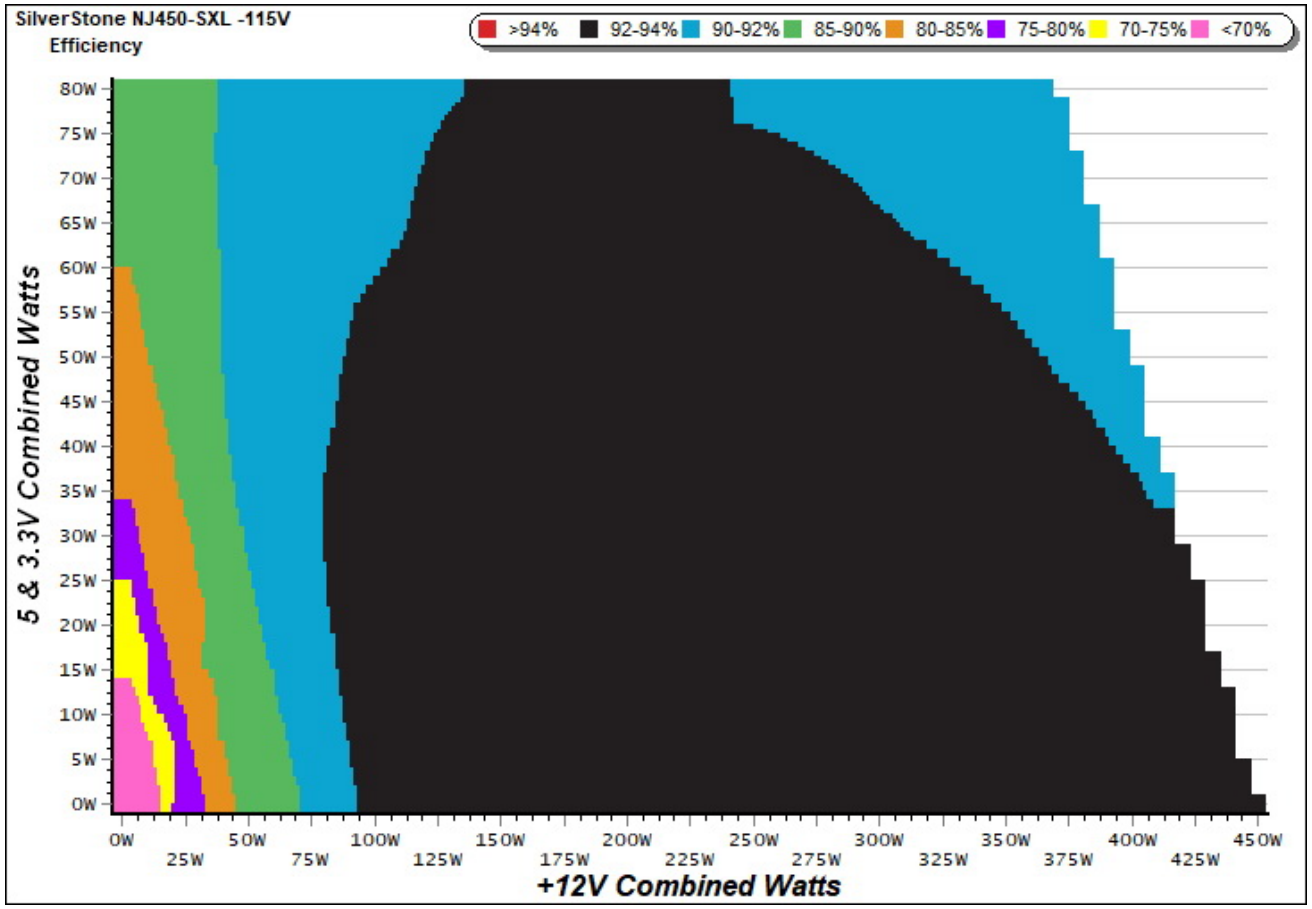
Vampire Power

Graphs 115V



Efficiency Graph

115V

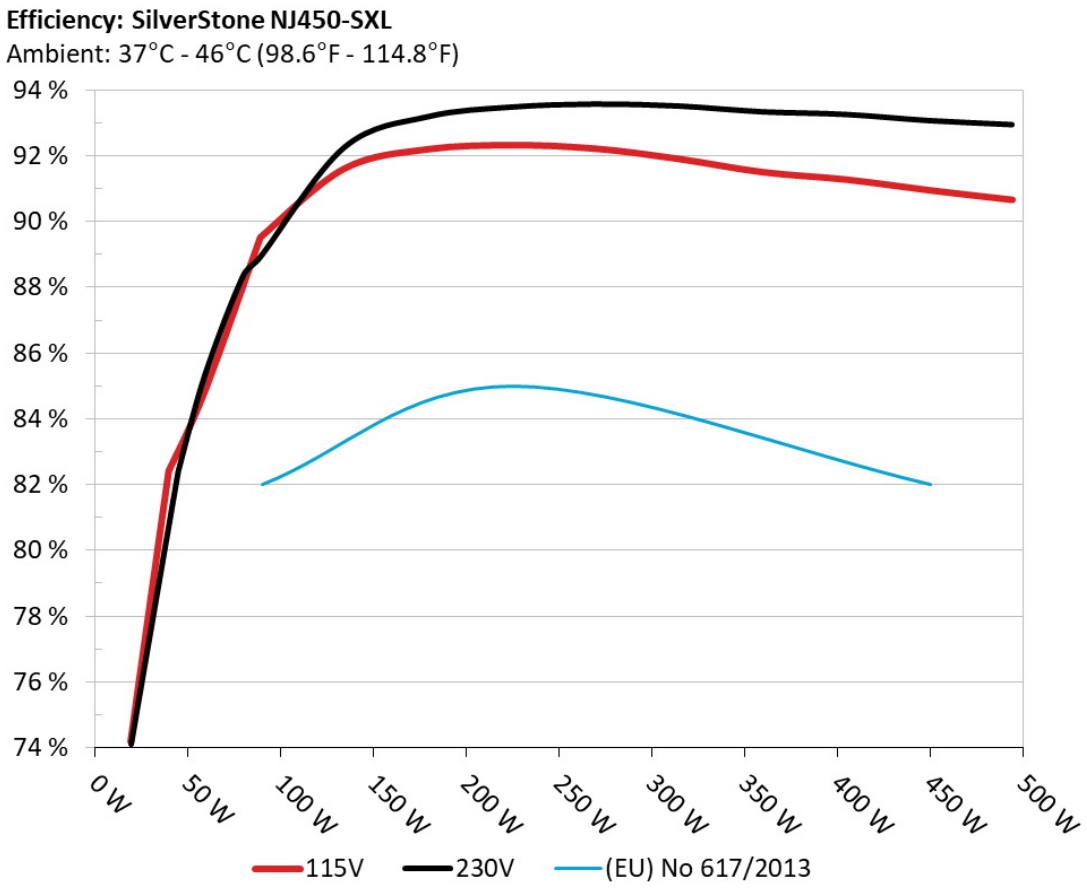


INFO

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.

Indicative Performance

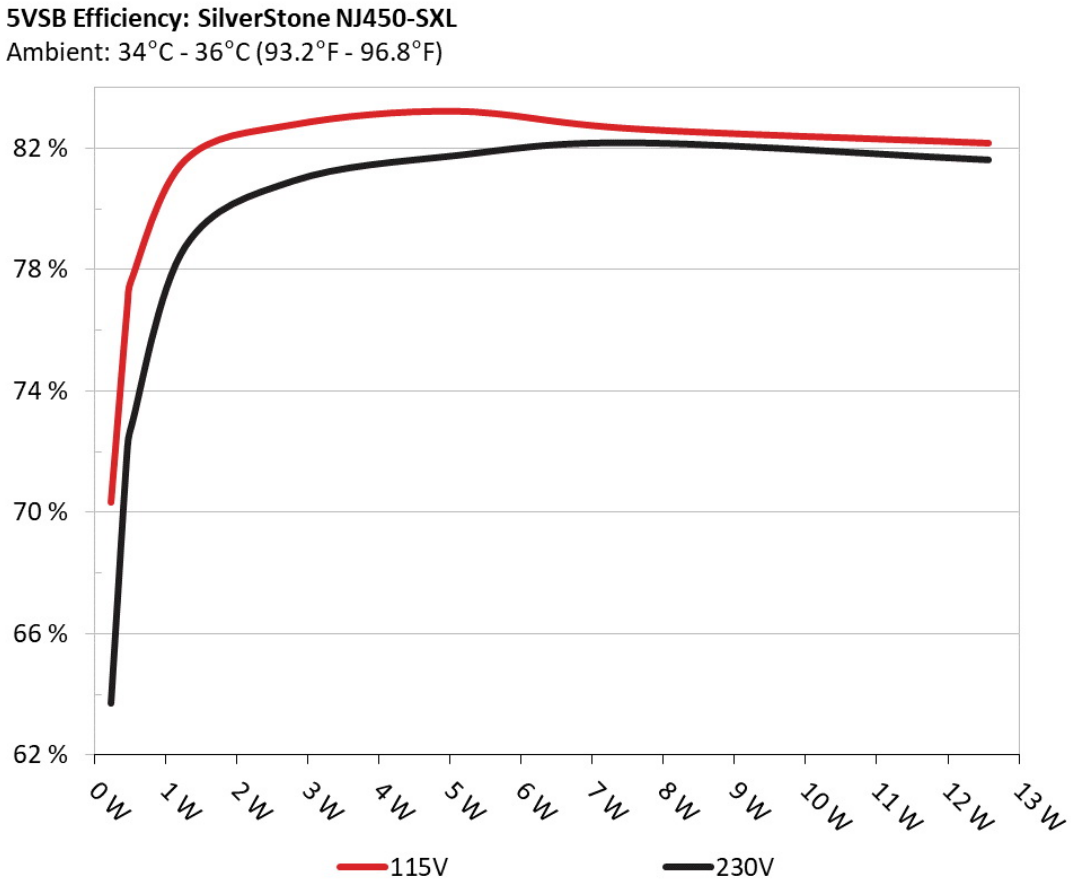
Efficiency under high ambient temperature



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	0.230	70.336%	0.020
	5.102V	0.327		115.15V

2	0.090A	0.460	76.795%	0.036
	5.101V	0.599		115.17V
3	0.550A	2.798	82.781%	0.178
	5.087V	3.380		115.11V
4	1.000A	5.074	83.221%	0.268
	5.074V	6.097		115.11V
5	1.500A	7.589	82.642%	0.329
	5.059V	9.183		115.11V
6	2.500A	12.572	82.170%	0.392
	5.028V	15.300		115.10V

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
1	1.926A	1.988A	1.996A	0.987A	44.764	82.402%	0	<6.0	43.17°C	0.879
	12.033V	5.029V	3.303V	5.065V	54.324				39.41°C	115.11V
2	4.847A	2.986A	3.002A	1.188A	89.240	89.735%	0	<6.0	43.92°C	0.941
	12.038V	5.021V	3.297V	5.052V	99.448				39.83°C	115.12V
3	8.172A	3.489A	3.492A	1.389A	134.331	91.587%	0	<6.0	44.73°C	0.958
	12.034V	5.015V	3.291V	5.040V	146.670				40.38°C	115.13V
4	11.500A	3.993A	4.015A	1.592A	179.569	92.180%	0	<6.0	45.42°C	0.960
	12.033V	5.008V	3.285V	5.027V	194.802				40.81°C	115.14V
5	14.496A	5.000A	5.032A	1.796A	224.855	92.303%	0	<6.0	46.49°C	0.962
	12.028V	5.000V	3.278V	5.013V	243.606				41.62°C	115.14V
6	17.429A	6.009A	6.054A	2.001A	269.386	92.200%	0	<6.0	47.51°C	0.962
	12.025V	4.992V	3.271V	4.999V	292.175				42.27°C	115.15V
7	20.427A	7.022A	7.075A	2.207A	314.693	91.887%	0	<6.0	48.73°C	0.961
	12.023V	4.985V	3.264V	4.985V	342.477				43.37°C	115.16V
8	23.428A	8.039A	8.105A	2.415A	360.008	91.484%	0	<6.0	49.94°C	0.962
	12.020V	4.976V	3.257V	4.970V	393.521				44.00°C	115.16V

9	26.827A	8.553A	8.612A	2.419A	404.917	91.259%	0	<6.0	51.62°C	0.963
	12.018V	4.970V	3.251V	4.963V	443.700				45.40°C	115.17V
10	30.162A	9.067A	9.153A	2.525A	449.629	90.935%	0	<6.0	52.75°C	0.964
	12.016V	4.963V	3.245V	4.951V	494.451				46.24°C	115.22V
11	33.894A	9.081A	9.165A	2.529A	494.449	90.642%	0	<6.0	53.45°C	0.966
	12.015V	4.957V	3.240V	4.944V	545.497				46.44°C	115.18V
CL1	0.136A	9.998A	9.999A	0.000A	84.456	87.652%	0	<6.0	47.53°C	0.941
	12.054V	5.003V	3.280V	5.073V	96.354				42.25°C	115.12V
CL2	37.510A	1.001A	0.998A	1.000A	464.393	91.811%	0	<6.0	52.00°C	0.965
	12.027V	4.982V	3.265V	5.014V	505.813				45.97°C	115.18V

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])	PF/AC Volts
1	1.189A	0.496A	0.481A	0.196A	19.397	74.187%	0	<6.0	0.722
	12.034V	5.036V	3.310V	5.095V	26.146				115.10V
2	2.458A	0.993A	0.997A	0.393A	39.872	82.117%	0	<6.0	0.864
	12.034V	5.032V	3.307V	5.086V	48.555				115.11V
3	3.651A	1.491A	1.479A	0.591A	59.321	84.822%	0	<6.0	0.910
	12.034V	5.029V	3.303V	5.077V	69.936				115.11V
4	4.912A	1.990A	1.998A	0.789A	79.730	89.502%	0	<6.0	0.932
	12.040V	5.025V	3.300V	5.067V	89.082				115.12V

The results above are not used in the certification process

Ripple Measurements 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	7.2 mV	7.7 mV	13.1 mV	12.5 mV	Pass
20% Load	12.8 mV	7.7 mV	14.1 mV	13.6 mV	Pass
30% Load	8.9 mV	8.8 mV	14.7 mV	13.9 mV	Pass
40% Load	10.3 mV	10.1 mV	14.4 mV	14.9 mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
50% Load	11.7 mV	11.8 mV	15.8 mV	16.0 mV	Pass
60% Load	12.7 mV	12.8 mV	17.9 mV	15.8 mV	Pass
70% Load	13.8 mV	13.4 mV	17.6 mV	17.2 mV	Pass
80% Load	15.0 mV	17.0 mV	20.1 mV	17.5 mV	Pass
90% Load	16.4 mV	17.7 mV	18.5 mV	18.3 mV	Pass
100% Load	20.3 mV	18.6 mV	23.5 mV	19.5 mV	Pass
110% Load	21.8 mV	19.7 mV	23.8 mV	20.9 mV	Pass
Crossload 1	15.2 mV	9.0 mV	16.5 mV	9.2 mV	Pass
Crossload 2	20.4 mV	18.5 mV	20.1 mV	21.8 mV	Pass

The results above are not used in the certification process

SilverStone Nightjar 450W (#2)

Top side

Power specifications label

All data and graphs included in this test report can be used by any individual on the following conditions:

› It should be mentioned that the test results are provided by Cybenetics

› The link to the original test results document should be provided in any case

Cybenetics runs voluntary certification programs for power supplies - ETA for efficiency, LAMBDA for noise and SAFE for safety and correct operation - and for cooling products, with DELTA for chassis soundproofing and PHI for fan airflow and static pressure. THETA rates cooler performance on AMD AM5 and Intel LGA1851 outside ISO 17065 and accreditation scope

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