SilverStone

SilverStone Strider Titanium 600W

Serial Number 155200448

Lab ID 128

Certification ID 25128

Test Result Report ID:

Certificate Issue Date: Jun 20, 2018

Scheme: ETA-EMI PSU

115V

230V

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	Strider Titanium 600W
OEM/ODM	Enhance Electronics
Serial Number	155200448
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	9-4.5
Rated Frequency (Hz)	50-60

Rated Power (W)	600
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	120mm Fluid Dymanic Bearing Fan (HA1225H12F-Z)
Semi-Passive Operation	✗
Cybenetics Testing Information	
Lab ID	128
Date of receipt	Jun 4, 2018
Testing Date	Jun 16, 2018
Report Issued Date	Jun 20, 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
ATX connector 20+4 pin (560mm)	1	1	18-22AWG
4+4 pin EPS12V (755mm)	1	1	18AWG
6 pin PCIe (560mm)	2	2	18AWG
6+2 pin PCIe (560mm)	2	2	18AWG
SATA (600mm+140mm+140mm+140mm)	2	8	18AWG
4 pin Molex (610mm+150mm+150mm)	1	3	18AWG
FDD Adapter (+105mm)	1	1	22AWG

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	49	2.5	0.3
	Watts	100		588	12.5	3.6
Total Max. Power (W)		600				

Parts Description

Primary Side	
Transient Filter	4x Y caps, 4x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor
Bridge Rectifier(s)	2x Vishay BU1506 (600V, 15A @ 150°C)
APFC MOSFETS	2x Infineon IPP50R140CP (550V, 15A @ 100°C, 0.14 Ohm)
APFC Boost Diode	1x CREE C3D08060A (600V, 8A @ 152°C)
Hold-up Cap(s)	1x Nippon Chemi-Con (450V, 470uF, 2000h @ 105°C, KMQ)
Main Switchers	2x Infineon IPP50R140CP (550V, 15A @ 100°C, 0.14 Ohm) Driver IC: 1x Silicon Labs Si8230BD
APFC Controller	Champion CM6502S & CM03X Green PFC controller
Switching Controller	Champion CM6901
Topology	Primary side: Half-Bridge & LLC Resonant Converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	8x Infineon BSC014N04LS (40V, 100A @ 100°C, 1.4 mOhm)
5V & 3.3V	DC-DC Converters: 2x BSC050NE2LS FETs (25V, 37A @ 100°C, 5.0mΩ) 2x BSC018NE2LS FETs (25V, 97A @ 100°C, 1.8mΩ) PWM Controller: 2x APW7073
Filtering Capacitors	Electrolytics: Nippon Chemi-Con (105°C, KY 4,000-10,000h, KZH 5,000-6,000h), Rubycon (105°C, ZLH 6,000-10,000h, YXG 3,000-6,000h) Polymers: Unicon (TW)
Supervisor IC	SITI PS223 (OVP, UVP, OCP, SCP, OTP)
Fan Model	Hong Hua HA1225H12F-Z (120mm, 12V, 0.58A, 2200RPM, Fluid Dynamic Bearing)
5VSB Circuit	
Rectifier	1x PFR10V45CT & 1x SG30N04D

Standby PWM Controller	Sanken STR-A6069H

Test Results

Temperature & Compliance Info

Temperature Range (°C /°F)	28-32 / 82.4-89.6
ErP Lot 3/6 Ready	ErP Lot 6 2010: ✓ ErP Lot 6 2013: ✓ ErP Lot 3 2014: Partially
(EU) No 617/2013 Compliance	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	91.801%
Average Noise Output (>1450 Load Combinations)	21.10dBA
Average PF (>1450 Load Combinations)	0.975
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
Standby Power Consumption	0.0587W
Non-Accredited	
12V Ripple (Full Load)	66.17mV
5V Ripple (Full Load)	18.81mV
3.3V Ripple (Full Load)	36.68mV
5VSB Ripple (Full Load)	15.79mV
12V Load Regulation	0.37%
5V Load Regulation	1.52%
3.3V Load Regulation	2.32%
5VSB Load Regulation	2.70%
Inrush Current	89.963A

230V		
Accredited		
Average Efficiency (>1450 load combinations)	92.961%	
Average Noise Output (>1450 Load Combinations)	20.79dBA	
Average PF (>1450 Load Combinations)	0.910	
Efficiency With 10W (≤500W) or 2% (>500W) Load	-	
Standby Power Consumption	0.0943W	
Non-Accredited		
12V Ripple (Full Load)	55.81mV	
5V Ripple (Full Load)	14.94mV	
3.3V Ripple (Full Load)	29.26mV	
5VSB Ripple (Full Load)	8.23mV	
12V Load Regulation	0.10%	
5V Load Regulation	1.30%	
3.3V Load Regulation	2.09%	
5VSB Load Regulation	2.59%	
Inrush Current	61.642A	
Hold-Up Time & PWR_OK Signal	14.30ms	
AC Loss to PWR_OK Hold Up Time	19.70ms	
PWR_OK Inactive to DC Loss Delay	-5.40ms	
OPP (0.00°C / 0.00°C)	-	-

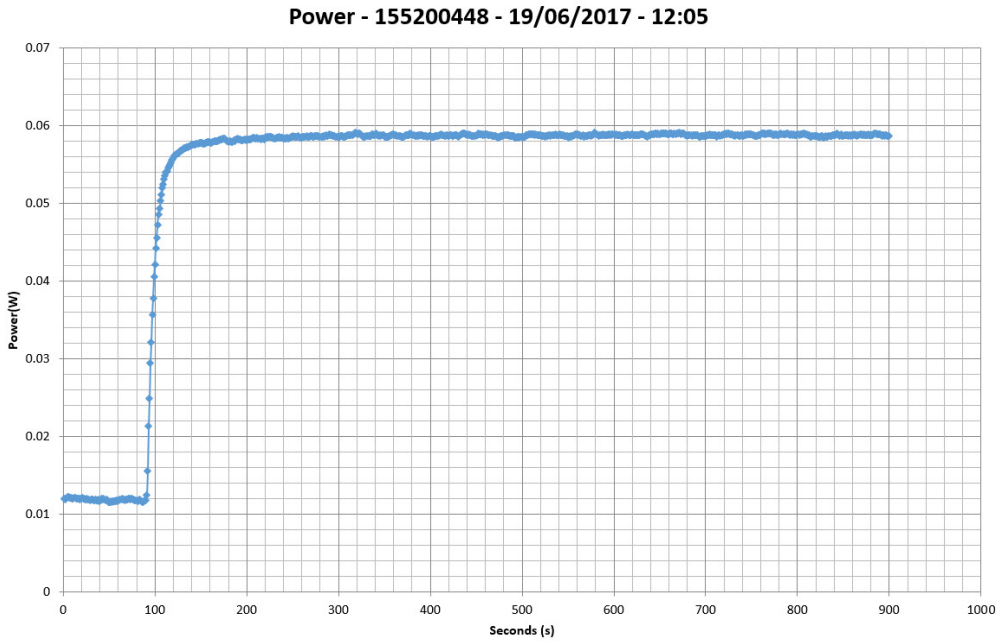
Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	14.3
AC Loss to PWR_OK Hold Up Time (ms)	19.7
PWR_OK Inactive to DC Loss Delay (ms)	-5.4

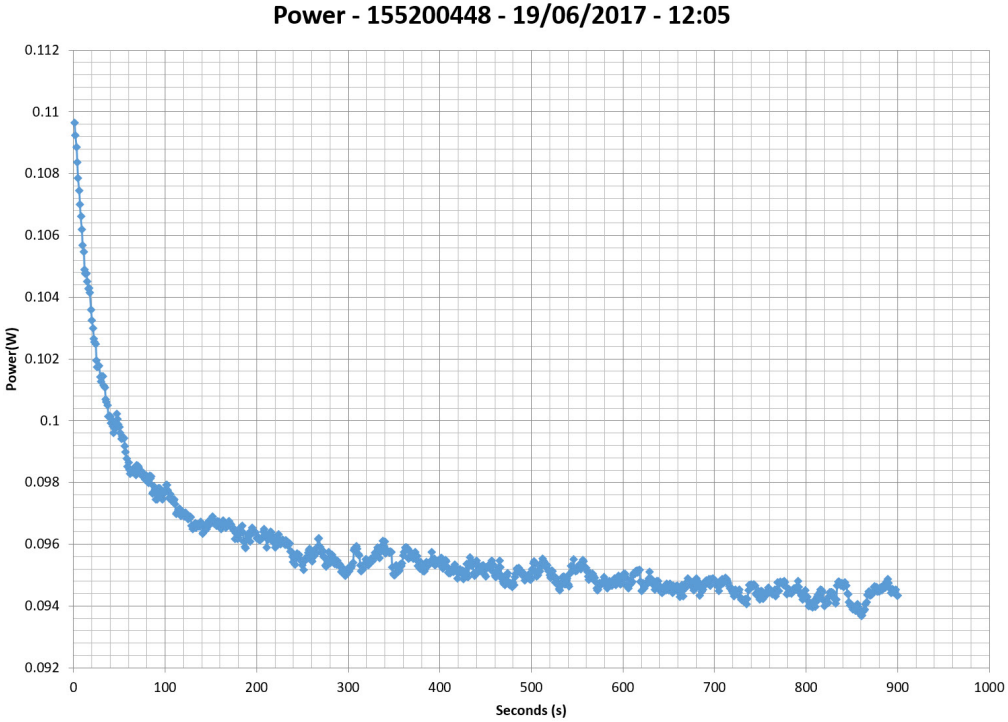
Vampire Power

Graphs

115V

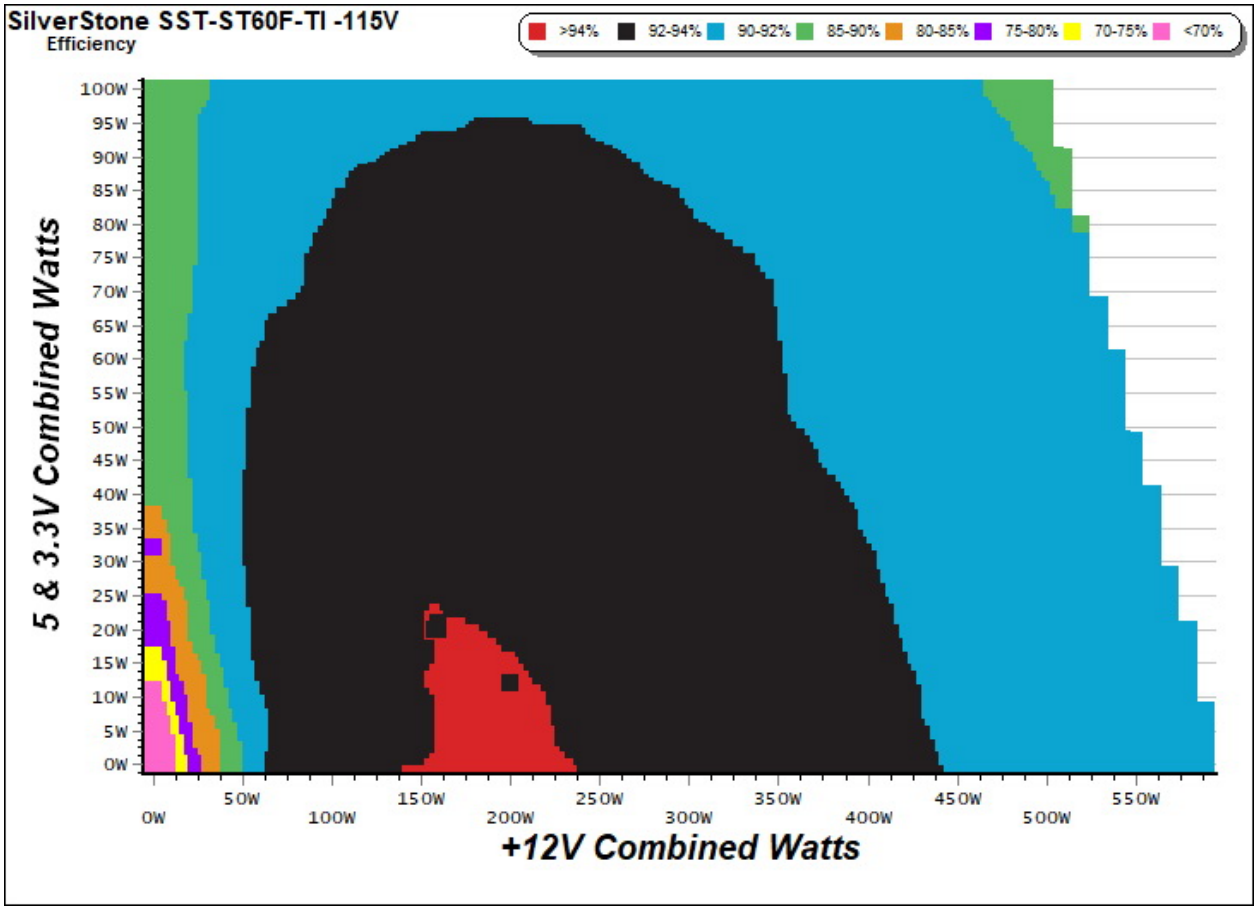


230V



Efficiency Graph

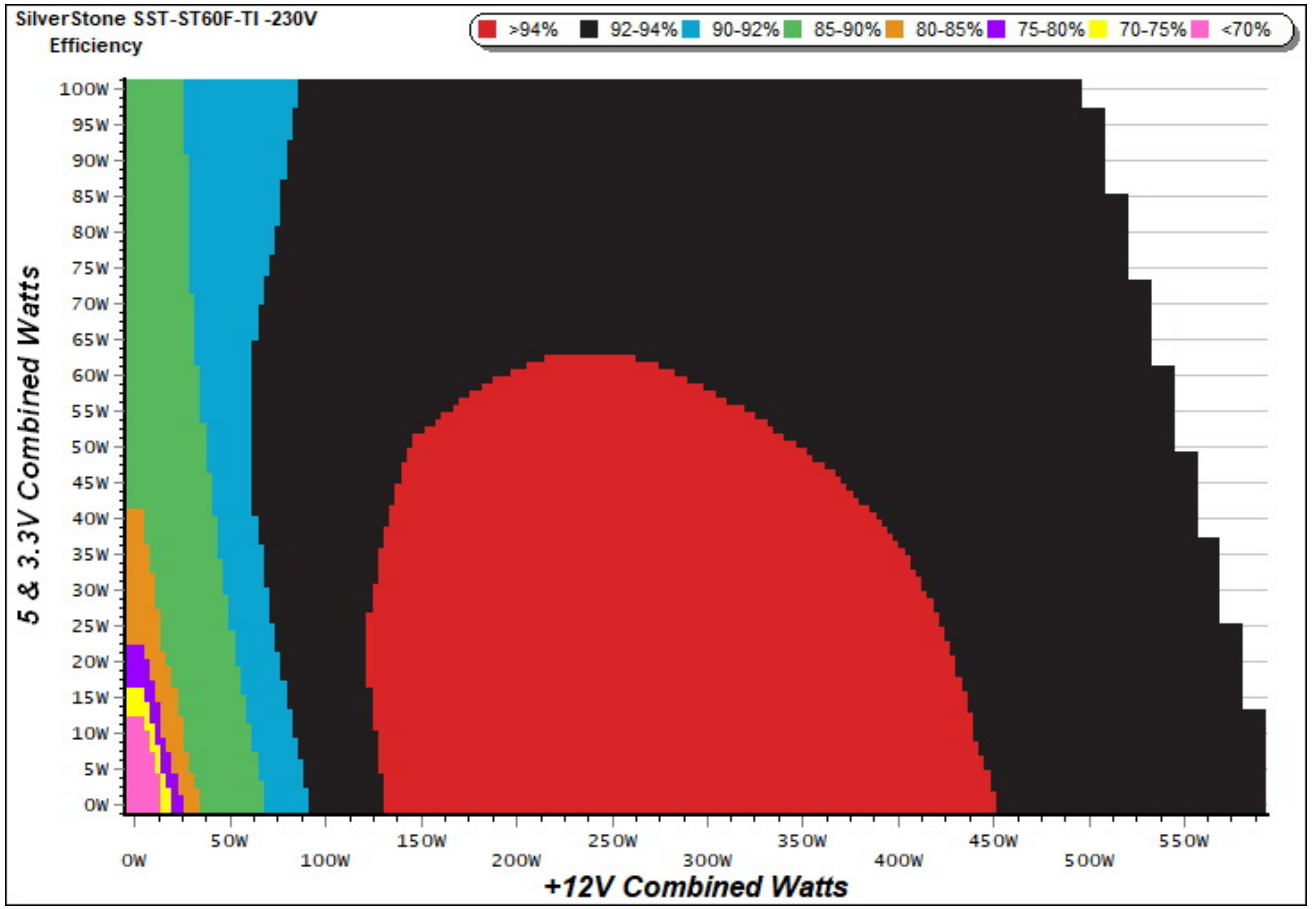
115V



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.

230V

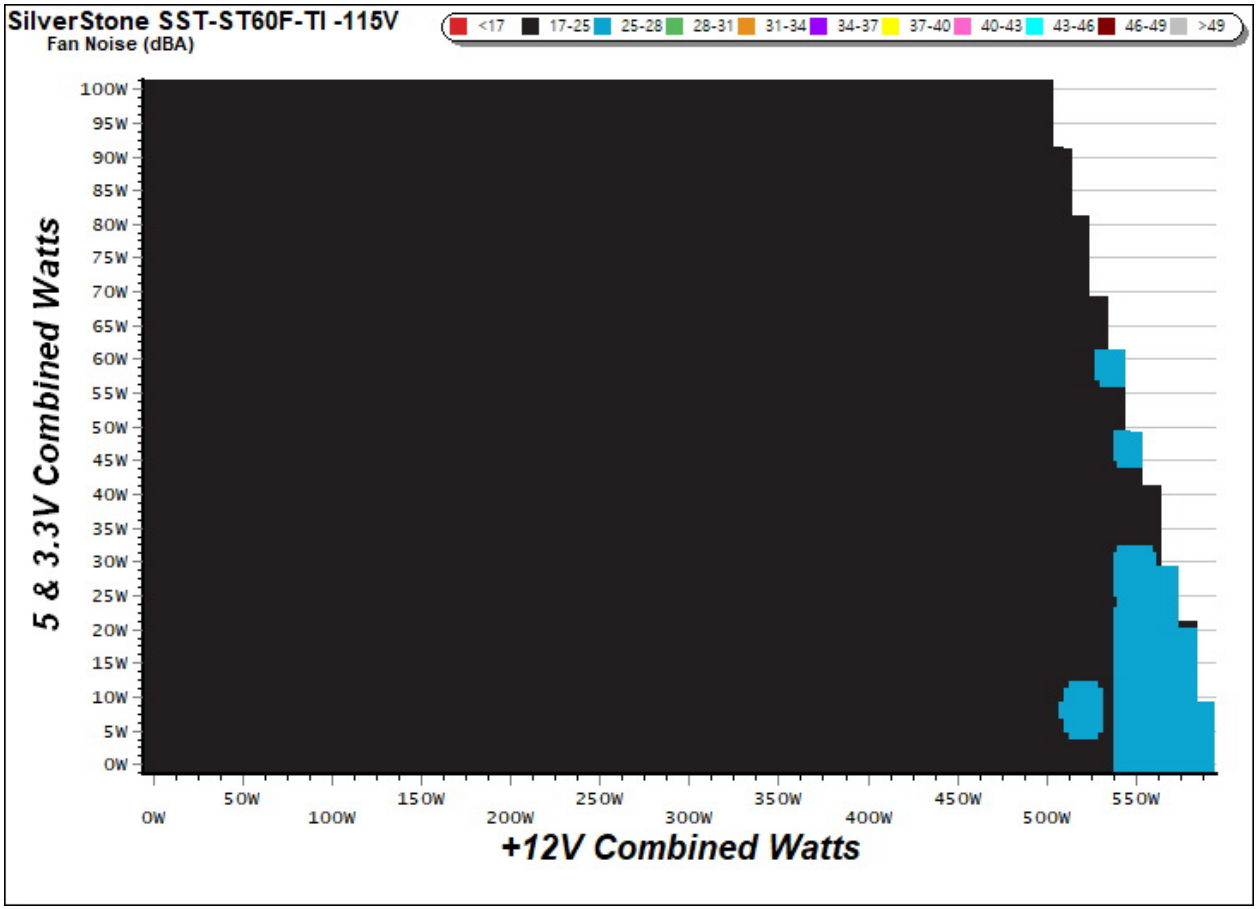


INFO

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

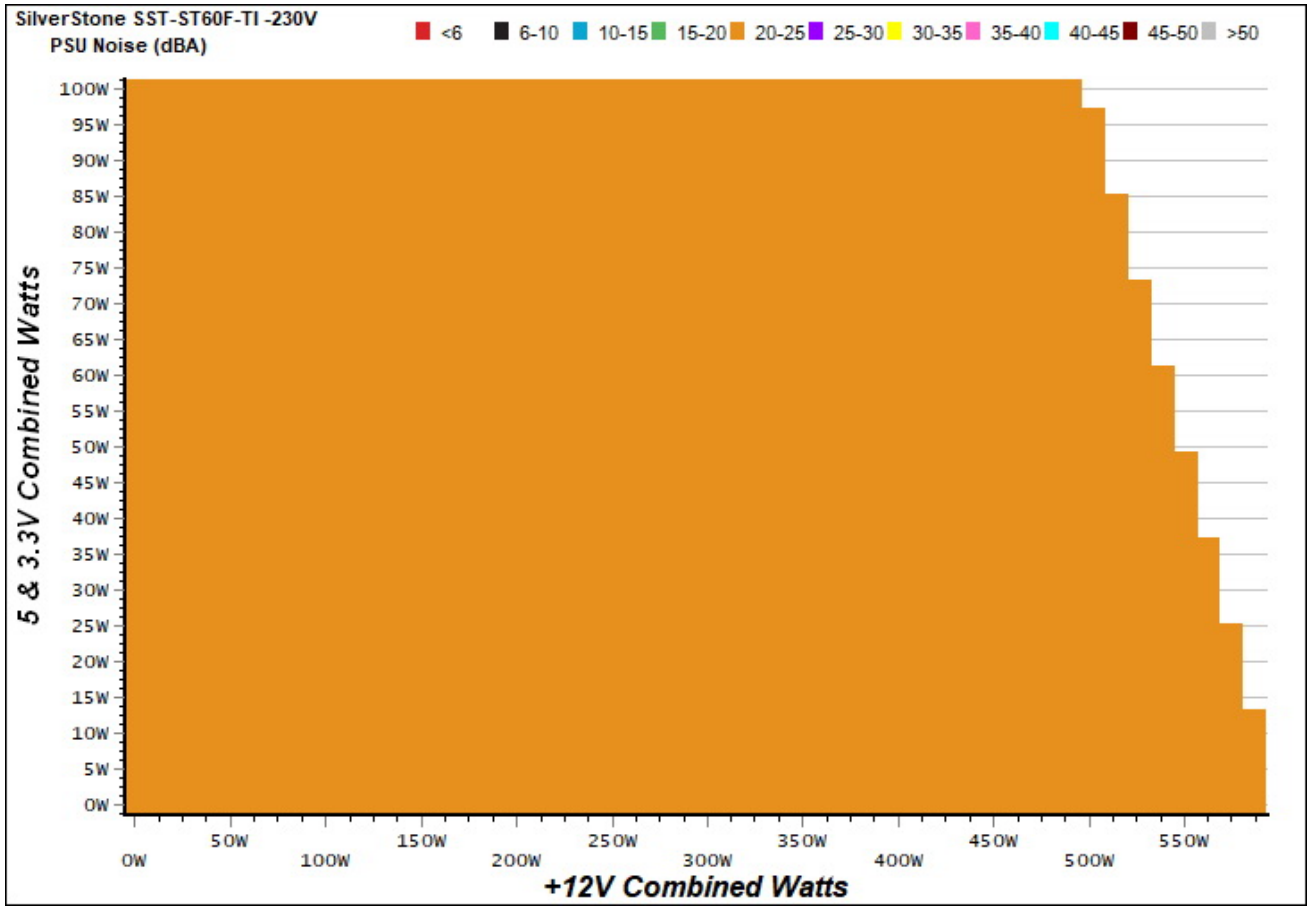
115V



INFO

The PSU`s noise in its entire operational range and under 30-32 °C 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.

230V

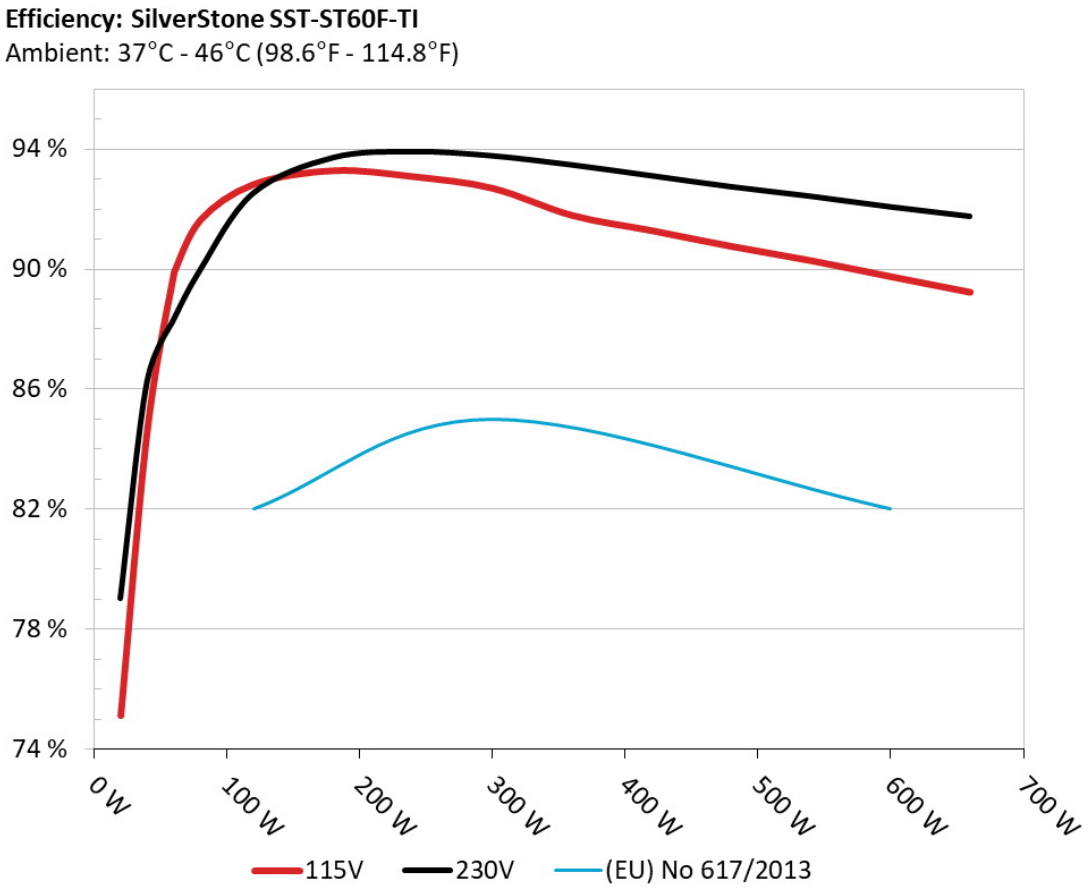


INFO

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.

Indicative Performance

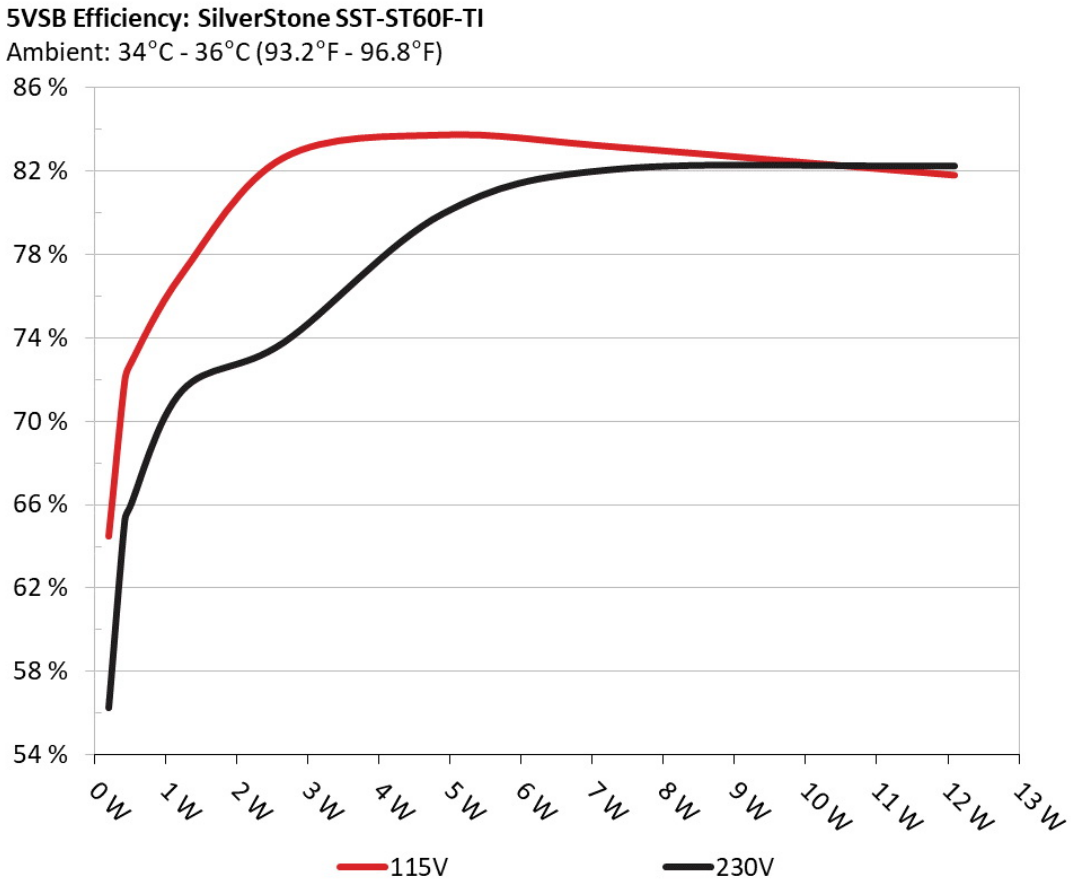
Efficiency under high ambient temperature



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	0.042A	0.205	64.465%	0.021
	4.935V	0.318		115.14V
2	0.086A	0.426	71.838%	0.040
	4.933V	0.593		115.13V
3	0.542A	2.663	82.651%	0.185
	4.913V	3.222		115.12V
4	1.002A	4.903	83.740%	0.274
	4.894V	5.855		115.12V
5	1.502A	7.317	83.167%	0.330
	4.873V	8.798		115.13V
6	2.502A	12.088	81.808%	0.387
	4.832V	14.776		115.13V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.206	56.284%	0.007
	4.935V	0.366		230.35V
2	0.087A	0.430	65.250%	0.013
	4.933V	0.659		230.36V
3	0.542A	2.664	73.795%	0.071
	4.914V	3.610		230.35V
4	1.002A	4.905	79.977%	0.115
	4.895V	6.133		230.35V
5	1.502A	7.321	82.102%	0.159
	4.875V	8.917		230.35V
6	2.501A	12.093	82.260%	0.229
	4.835V	14.701		230.35V

Supplementary Tests (For Reference)

Typical Load Tests

115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	Fan Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	3.211A	1.994A	1.969A	1.006A	59.812	89.896%	964	24.4	38.43°C	0.919
	11.904V	5.010V	3.350V	4.972V	66.535				40.45°C	115.14V
2	7.475A	2.993A	2.959A	1.206A	119.776	92.816%	1133	25.5	38.68°C	0.952
	11.898V	5.002V	3.341V	4.960V	129.047				41.01°C	115.13V
3	12.093A	3.508A	3.472A	1.414A	179.911	93.272%	1268	27.2	38.95°C	0.970
	11.893V	4.993V	3.335V	4.946V	192.889				42.07°C	115.13V
4	16.706A	4.015A	3.964A	1.621A	239.806	93.075%	1488	32.4	39.49°C	0.975
	11.888V	4.985V	3.328V	4.934V	257.647				42.98°C	115.12V
5	20.976A	5.020A	4.971A	1.826A	299.737	92.687%	1712	37.9	39.90°C	0.980
	11.884V	4.976V	3.318V	4.921V	323.385				44.02°C	115.12V
6	25.251A	6.039A	5.978A	2.036A	359.739	91.782%	1979	40.4	40.21°C	0.984
	11.879V	4.968V	3.310V	4.908V	391.951				45.23°C	115.12V
7	29.528A	7.053A	6.996A	2.246A	419.679	91.275%	2124	43.5	41.19°C	0.986
	11.874V	4.960V	3.300V	4.895V	459.797				46.57°C	115.12V
8	33.808A	8.080A	8.016A	2.456A	479.699	90.753%	2156	44.1	42.41°C	0.988
	11.870V	4.951V	3.293V	4.885V	528.576				48.35°C	115.12V
9	38.529A	8.597A	8.551A	2.456A	539.781	90.276%	2156	44.1	43.40°C	0.989
	11.866V	4.945V	3.285V	4.883V	597.922				49.88°C	115.12V
10	43.200A	9.112A	9.060A	2.561A	599.624	89.744%	2156	44.1	44.81°C	0.990
	11.862V	4.939V	3.278V	4.874V	668.150				53.14°C	115.13V
11	48.273A	9.124A	9.073A	2.566A	659.613	89.223%	2226	43.9	45.96°C	0.991
	11.858V	4.932V	3.273V	4.870V	739.288				56.04°C	115.13V
CL1	0.099A	12.012A	12.006A	0.004A	100.865	86.502%	2156	44.1	42.81°C	0.950
	11.901V	4.980V	3.319V	5.049V	116.604				49.95°C	115.13V

CL2	48.963A	1.003A	1.002A	1.002A	594.172	90.417%	2226	43.9	43.76°C	0.990
	11.865V	4.964V	3.306V	4.926V	657.143				52.24°C	115.14V

The results above are not used in the certification process

230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	3.212A	1.994A	1.966A	1.006A	59.791	87.179%	1547	33.6	39.28°C	0.704
	11.894V	5.011V	3.353V	4.973V	68.584				42.63°C	230.79V
2	7.444A	2.996A	2.955A	1.209A	119.466	92.050%	1595	33.7	40.03°C	0.840
	11.901V	5.004V	3.345V	4.961V	129.784				43.68°C	230.76V
3	12.052A	3.500A	3.444A	1.415A	179.398	93.373%	1730	37.2	40.54°C	0.894
	11.899V	4.998V	3.338V	4.948V	192.130				44.64°C	230.71V
4	16.663A	4.007A	3.959A	1.621A	239.424	93.659%	1950	39.1	40.82°C	0.920
	11.897V	4.991V	3.331V	4.934V	255.635				45.54°C	230.67V
5	20.936A	5.013A	4.963A	1.829A	299.508	93.640%	2105	42.4	41.10°C	0.935
	11.895V	4.983V	3.323V	4.922V	319.852				46.20°C	230.63V
6	25.208A	6.028A	5.972A	2.036A	359.618	93.431%	2166	43.7	41.82°C	0.945
	11.894V	4.976V	3.315V	4.912V	384.902				47.24°C	230.59V
7	29.454A	7.043A	6.982A	2.244A	419.386	93.172%	2200	44.1	42.98°C	0.951
	11.893V	4.969V	3.307V	4.904V	450.119				48.62°C	230.53V
8	33.762A	8.062A	8.001A	2.454A	479.858	92.879%	2226	43.9	43.45°C	0.956
	11.891V	4.961V	3.299V	4.891V	516.649				49.55°C	230.49V
9	38.410A	8.576A	8.504A	2.455A	539.187	92.579%	2226	43.9	43.90°C	0.960
	11.890V	4.955V	3.292V	4.889V	582.406				50.84°C	230.55V
10	43.124A	9.096A	9.040A	2.562A	599.907	92.228%	2226	43.9	44.76°C	0.963
	11.889V	4.948V	3.285V	4.880V	650.462				51.95°C	230.51V
11	48.176A	9.103A	9.056A	2.564A	659.955	91.914%	2226	43.9	45.68°C	0.965
	11.889V	4.943V	3.279V	4.875V	718.012				53.44°C	230.47V
CL1	0.128A	11.999A	11.998A	0.000A	101.302	86.425%	2145	43.4	40.83°C	0.825
	11.891V	4.988V	3.328V	5.053V	117.214				46.85°C	230.85V

CL2	48.997A	1.000A	0.997A	1.000A	595.956	92.913%	2226	43.9	44.40°C	0.964
	11.894V	4.967V	3.303V	4.926V	641.410				51.02°C	230.51V

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)	Fan Noise (dB[A])	PF/AC Volts
1	1.230A	0.491A	0.473A	0.196A	19.669	75.124%	765	19.8	0.807
	11.898V	5.019V	3.359V	5.009V	26.182				115.14V
2	2.478A	0.990A	0.982A	0.399A	39.758	84.667%	765	19.8	0.891
	11.906V	5.015V	3.356V	4.999V	46.958				115.14V
3	3.732A	1.487A	1.489A	0.601A	59.871	90.639%	788	20.2	0.919
	11.904V	5.012V	3.353V	4.990V	66.054				115.14V
4	4.974A	1.995A	1.969A	0.801A	79.776	91.634%	924	22.3	0.935
	11.902V	5.009V	3.349V	4.980V	87.059				115.13V

The results above are not used in the certification process

230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.193A	0.496A	0.472A	0.200A	19.268	78.909%	765	19.8	0.388
	11.894V	5.019V	3.361V	5.012V	24.418				230.81V
2	2.471A	0.995A	0.982A	0.400A	39.679	86.626%	765	19.8	0.586
	11.894V	5.016V	3.358V	5.001V	45.805				230.80V
3	3.679A	1.493A	1.458A	0.601A	59.135	88.081%	998	24.3	0.697
	11.894V	5.014V	3.355V	4.992V	67.137				230.79V
4	4.958A	1.993A	1.967A	0.803A	79.546	89.706%	1133	25.5	0.769
	11.894V	5.010V	3.351V	4.981V	88.674				230.77V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	19.4 mV	7.5 mV	15.0 mV	6.1 mV	Pass
20% Load	20.0 mV	7.7 mV	16.5 mV	5.7 mV	Pass
30% Load	25.7 mV	8.6 mV	23.3 mV	6.8 mV	Pass
40% Load	31.5 mV	9.1 mV	20.2 mV	7.0 mV	Pass
50% Load	37.3 mV	10.2 mV	22.1 mV	8.8 mV	Pass
60% Load	43.8 mV	11.8 mV	25.6 mV	8.3 mV	Pass
70% Load	51.0 mV	21.5 mV	42.0 mV	17.7 mV	Pass
80% Load	55.4 mV	21.6 mV	45.7 mV	17.3 mV	Pass
90% Load	60.0 mV	15.5 mV	38.1 mV	11.2 mV	Pass
100% Load	66.2 mV	18.8 mV	36.7 mV	15.8 mV	Pass
110% Load	72.1 mV	20.6 mV	37.1 mV	15.3 mV	Pass
Crossload 1	21.2 mV	9.7 mV	18.1 mV	7.0 mV	Pass
Crossload 2	64.8 mV	18.8 mV	33.7 mV	13.3 mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	11.3 mV	4.9 mV	14.9 mV	4.1 mV	Pass
20% Load	23.5 mV	6.2 mV	24.7 mV	5.2 mV	Pass
30% Load	25.8 mV	7.3 mV	19.4 mV	5.1 mV	Pass
40% Load	29.8 mV	7.7 mV	19.4 mV	5.2 mV	Pass
50% Load	34.4 mV	8.9 mV	21.2 mV	6.0 mV	Pass
60% Load	38.4 mV	10.8 mV	22.7 mV	5.7 mV	Pass
70% Load	43.4 mV	21.2 mV	39.1 mV	15.7 mV	Pass
80% Load	47.9 mV	22.7 mV	42.6 mV	16.7 mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	50.5 mV	14.1 mV	38.9 mV	7.7 mV	Pass
100% Load	55.8 mV	14.9 mV	29.3 mV	8.2 mV	Pass
110% Load	60.4 mV	16.6 mV	29.4 mV	8.7 mV	Pass
Crossload 1	33.3 mV	9.1 mV	20.5 mV	7.4 mV	Pass
Crossload 2	55.5 mV	12.6 mV	25.2 mV	7.8 mV	Pass

The results above are not used in the certification process

SilverStone Strider Titanium 600W

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

CYBENETICS LTD Syrou 6, Latsia, 2231, Nicosia Cyprus

www.cybenetics.com - info@cybenetics.com