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

SilverStone Strider Titanium 1500W

Lab ID#: SL15001662
Receipt Date: Dec 27, 2017
Test Date: Jun 3, 2020

Report: 20PS1662A
Report Date: Jun 18, 2020

DUT INFORMATION

Brand	SilverStone
Manufacturer (OEM)	Enhance Electronics
Series	Strider Titanium
Model Number	ST1500-TI
Serial Number	DB17250301STK50TI0
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	17.6-8.8
Rated Frequency (Hz)	50-60
Rated Power (W)	1500
Type	ATX12V
Cooling	140mm Double Ball-Bearing Fan (D14BH-12)
Semi-Passive Operation	✓
Cable Design	Fully Modular

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	25	22	125	3	0.3
	Watts	120		1500	15	3.6
Total Max. Power (W)		1500				

CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (550mm)	1	1	16-22AWG	No
4+4 pin EPS12V (750mm)	1	1	16AWG	No
4+4 pin EPS12V (550mm)	1	1	16AWG	No
6+2 pin PCIe (550mm)	8	8	16AWG	No
SATA (600mm+140mm+140mm140mm)	4	16	18AWG	No
4 pin Molex (600mm+150mm+150mm)	2	6	18AWG	No
FDD Adapter (+120mm)	1	1	22AWG	No
AC Power Cord (1380mm) - C19 coupler	1	1	16AWG	-

SilverStone Strider Titanium 1500W

General Data	
Manufacturer (OEM)	CWT
Primary Side	
Transient Filter	6x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor
Bridge Rectifier(s)	2x GBJ1510 (700V, 15A @ 100°C)
APFC MOSFETS	2x Vishay SiHF22N60E (650V, 13A @ 100°C, 0.18 Ohm)
APFC Boost Diode	1x Power Integrations QH08TZ600 (600V, 8A @ 150°C)
Hold-up Cap(s)	2x Nichicon (400V, 470uF each or 940uF combined, 2000h @ 105°C, GG)
Main Switchers	2x Vishay SiHG20N50C (560V, 11A @ 100°C, 0.27Ohm)
APFC Controller	Infineon ICE3PCS01G - CM03X
Switching Controller	Infineon ICE2HS01G
Topology	Primary side: Half-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	6xInte ational Rectifier IRFH7004TRPBF (40V, 164A @ 100°C, 1.4 mOhm)
5V & 3.3V	DC-DC Converters: 4x QM3004D (30V, 40A @ 100°C, 8.5 mOhm) 2x QM3006D (30V, 57A @ 100°C, 5.5 mOhm) PWM Controller: ANPEC APW7159
Filtering Capacitors	Electrolytics: Nippon Chemi-Con (1-5,000 @ 105°C, KZE), Nippon Chemi-Con (4-10,000 @ 105°C, KY), Nippon Chemi-Con (5-6,000 @ 105°C, KZH) Polymers: FPCAP
Supervisor IC	Weltrend WT7502 (OVP, UVP, SCP, PG), LM358
Fan Model	NR135L (12V, 0.22A, Rifle Bearing)
5VSB Circuit	
Rectifier	SD04N65A, QM3004D, MBRU2045CT SBR (45V, 20A @ 125°C)
Standby PWM Controller	On-Bright OB5269CP

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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 3/6 2010: ✓ ErP Lot 3/6 2013: ✓ ErP Lot 3/6 2014, CEC: Partially
(EU) No 617/2013 Compliance	✓

115V

Average Efficiency	90.955%
Efficiency With 10W (≤500W) or 2% (>500W)	69.988
Average Efficiency 5VSB	78.696%
Standby Power Consumption (W)	0.1094420
Average PF	0.981
Avg Noise Output	46.05 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	None

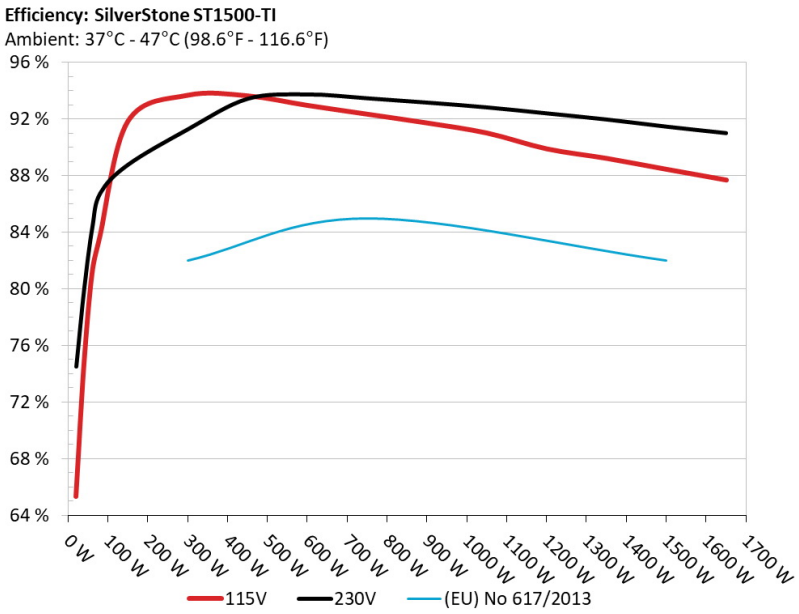
230V

Average Efficiency	91.870%
Average Efficiency 5VSB	76.574%
Standby Power Consumption (W)	0.1535890
Average PF	0.944
Avg Noise Output	46.51 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	None

TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Keysight AC6804B
Power Analyzers	N4L PPA1530 x2
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2
Tachometer	UNI-T UT372 x2
Digital Multimeter	Keysight U1273AX, Fluke 289, Keithley 2015 - THD
UPS	CyberPower OLS3000E 3kVA x2
Transformer	3kVA x2

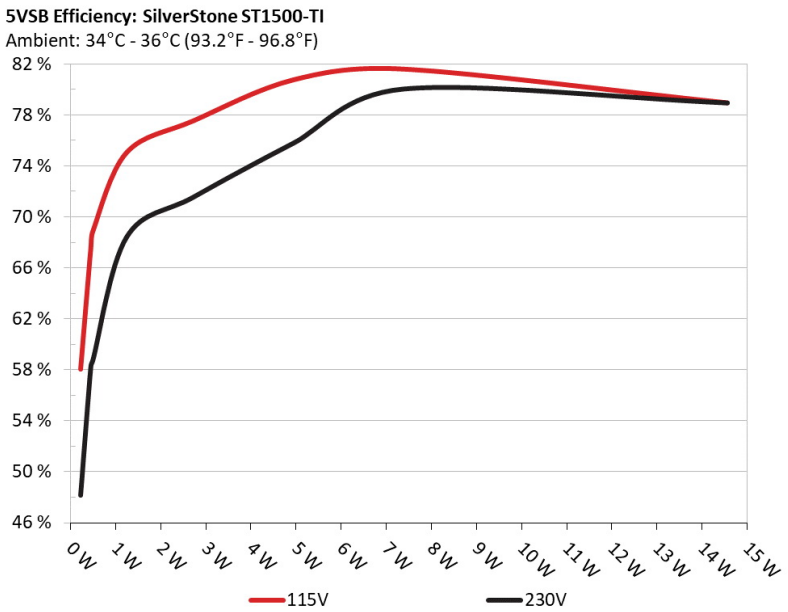
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.224	58.031%	0.019
	4.984V	0.386		115.14V
2	0.090A	0.449	67.519%	0.032
	4.981V	0.665		115.14V
3	0.550A	2.729	77.528%	0.159
	4.960V	3.520		115.14V
4	1.000A	4.942	80.738%	0.252
	4.941V	6.121		115.14V
5	1.500A	7.381	81.576%	0.331
	4.920V	9.048		115.14V
6	3.001A	14.558	78.931%	0.466
	4.851V	18.444		115.14V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.046A	0.224	48.172%	0.117
	4.921V	0.465		230.29V
2	0.090A	0.449	58.236%	0.011
	4.981V	0.771		230.29V
3	0.550A	2.729	71.571%	0.055
	4.960V	3.813		230.29V
4	1.000A	4.942	75.798%	0.092
	4.941V	6.520		230.29V
5	1.500A	7.381	80.046%	0.128
	4.920V	9.221		230.29V
6	3.001A	14.563	78.954%	0.231
	4.853V	18.445		230.29V

115V

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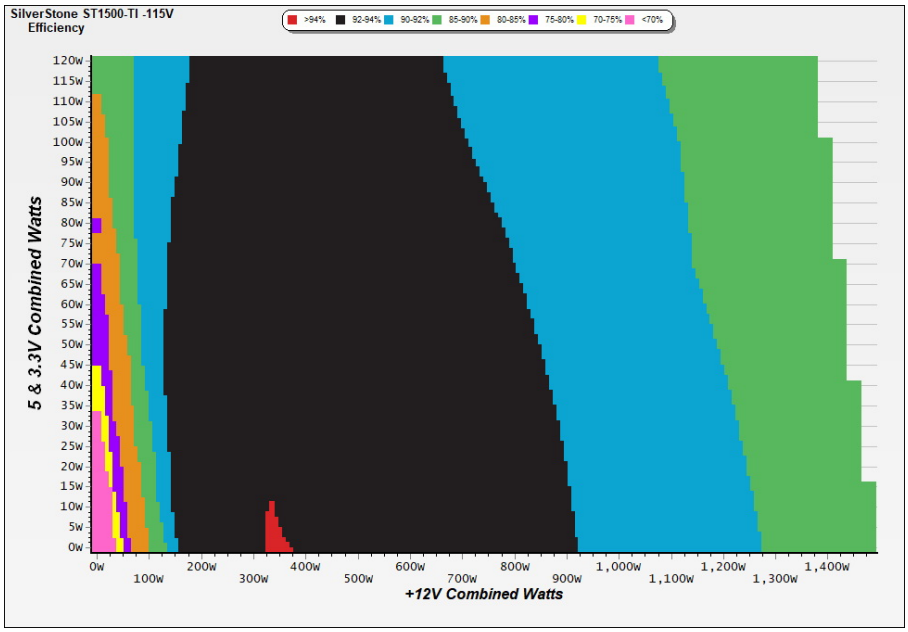
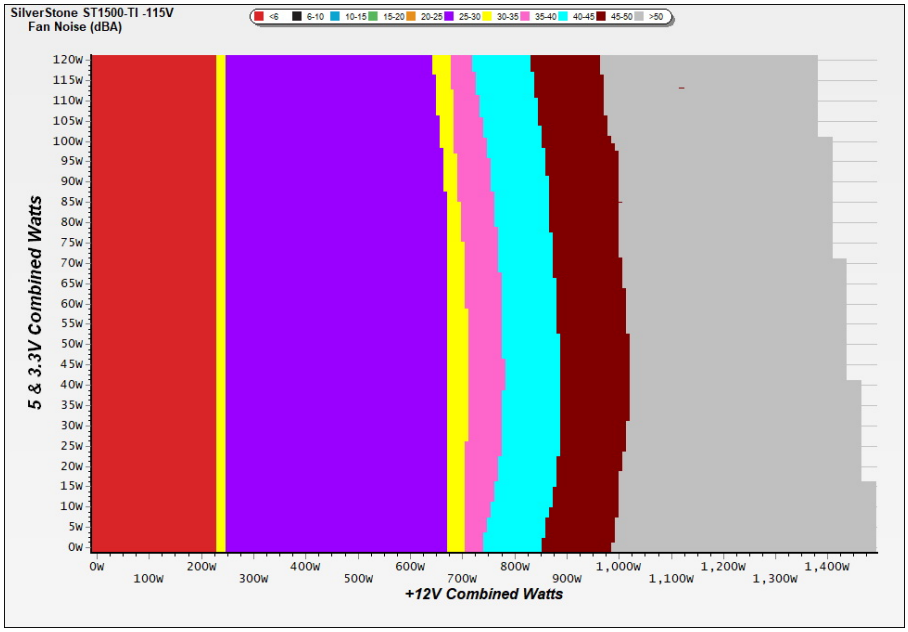
EFFICIENCY GRAPH 115V



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

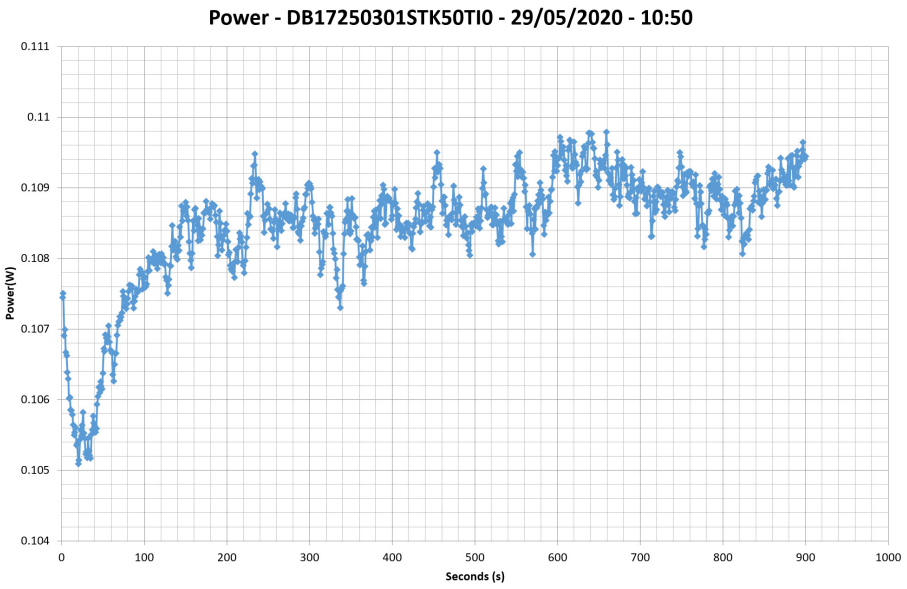
NOISE GRAPH 115V



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

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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COMMISSION REGULATION (EU) NO 617/2013 TESTING 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	10.628A	1.966A	1.972A	0.990A	150.030	91.842%	0	<6.0	43.59°C	0.957
	12.084V	5.088V	3.346V	5.050V	163.356				40.57°C	115.12V
2	22.327A	2.959A	2.974A	1.194A	300.099	93.688%	944	28.1	40.91°C	0.974
	12.057V	5.070V	3.328V	5.027V	320.317				44.68°C	115.12V
5	58.420A	4.979A	5.032A	1.816A	749.981	92.349%	1945	47.8	42.07°C	0.987
	11.973V	5.023V	3.280V	4.958V	812.113				47.72°C	115.11V
10	118.006A	9.119A	9.336A	3.111A	1500.131	88.452%	2076	50.1	45.86°C	0.993
	11.952V	4.937V	3.181V	4.823V	1695.979				54.96°C	115.09V

230V

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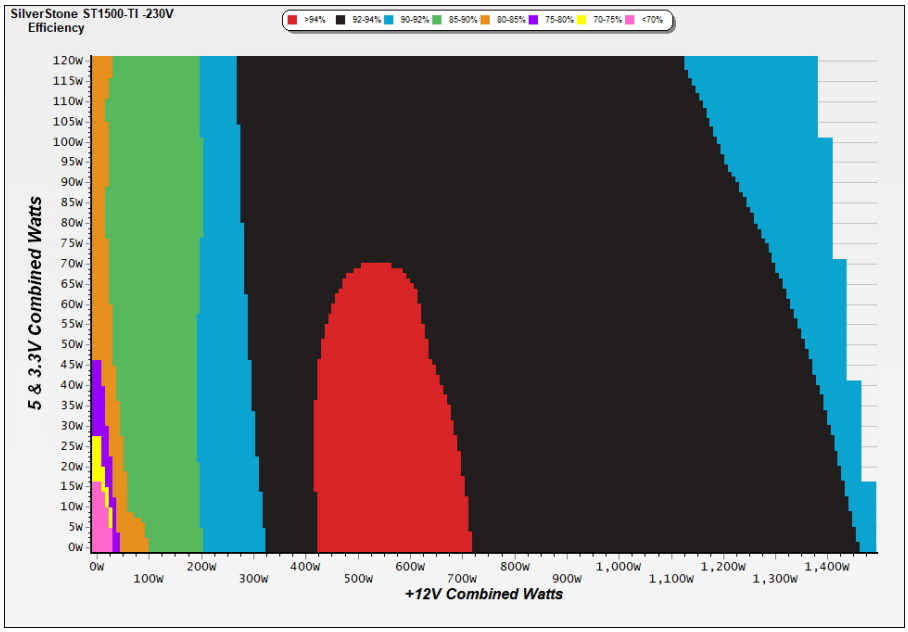
EFFICIENCY GRAPH 230V



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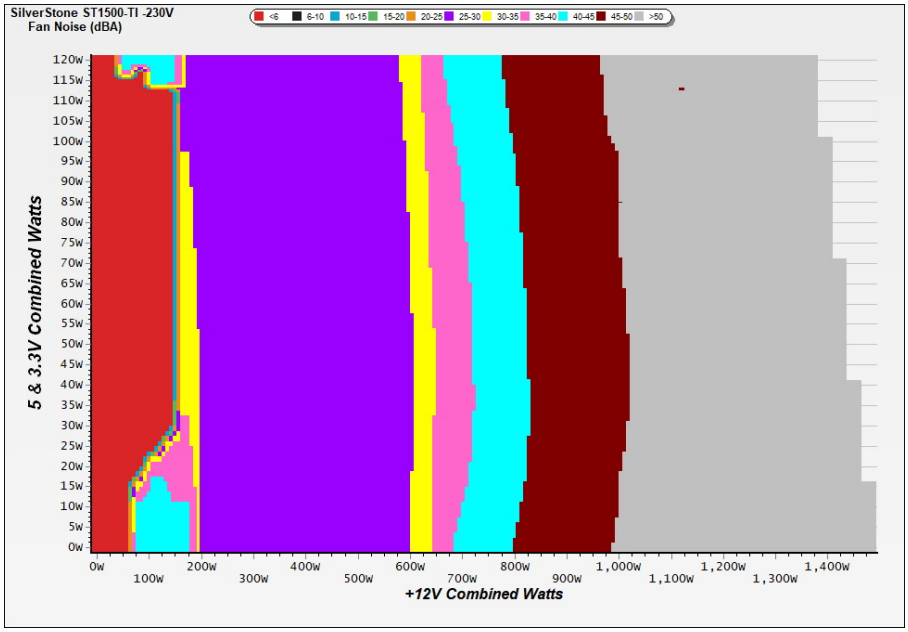
NOISE GRAPH 230V



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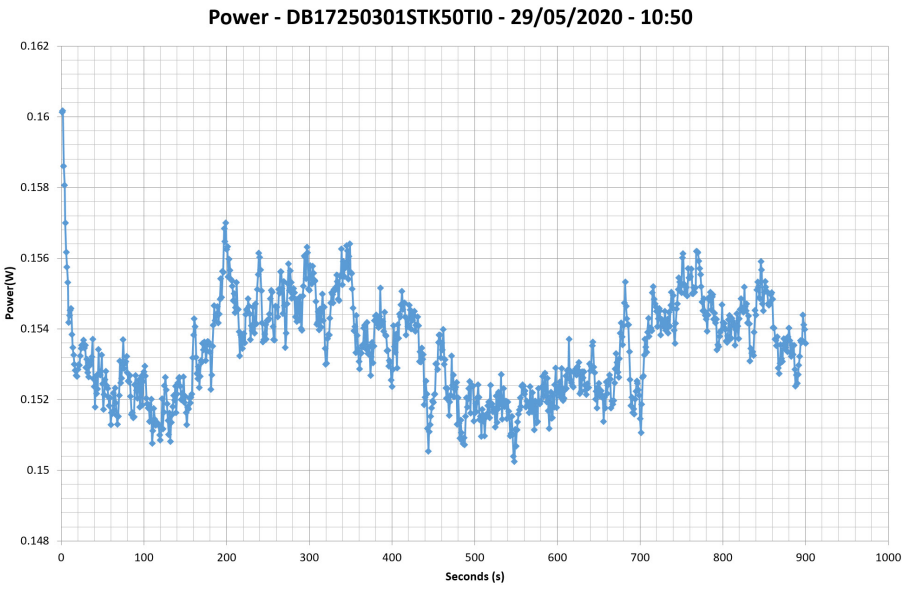
VAMPIRE POWER -230V



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COMMISSION REGULATION (EU) NO 617/2013 TESTING 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	10.638A	1.965A	1.974A	0.991A	150.022	88.770%	0	<6.0	43.33°C	0.860
	12.072V	5.087V	3.343V	5.050V	169.001				40.26°C	230.25V
2	22.346A	2.959A	2.979A	1.194A	300.087	91.269%	1052	30.6	40.94°C	0.925
	12.046V	5.070V	3.324V	5.027V	328.793				44.67°C	230.26V
5	58.419A	4.979A	5.043A	1.816A	749.967	93.457%	2084	50.3	42.11°C	0.965
	11.973V	5.023V	3.273V	4.957V	802.469				47.60°C	230.26V
10	117.976A	9.118A	9.350A	3.111A	1500.131	91.457%	2065	49.9	45.96°C	0.984
	11.955V	4.937V	3.177V	4.824V	1640.260				55.12°C	230.27V

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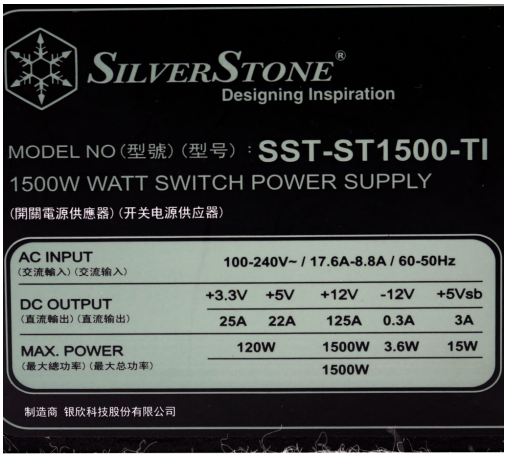
Top side



Power specifications label

CERTIFICATIONS 115V

CYBENETICS PLATINUM

CERTIFICATIONS 230V

CYBENETICS PLATINUM 230v

Aris Mpitsiopoulos
Lab Director