SILVERSTONE

SilverStone HELA 2050 Platinum

Serial Number DBHA2K50PT21390099

Lab ID SL20501928

Certification ID 251928

Test Result Report ID: 21PS1928A

Certificate Issue Date: Nov 2, 2021

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	HELA 2050 Platinum
OEM/ODM	Enhance Electronics
Serial Number	DBHA2K50PT21390099
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	200-240
Rated Current (Arms)	13
Rated Frequency (Hz)	50

Rated Power (W)	2050
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	135mm Double Ball Bearing Fan (RL4Z B1352512EH-3M)
Semi-Passive Operation	✓ (selectable)
Cybenetics Testing Information	
Lab ID	SL20501928
Date of receipt	Oct 26, 2021
Testing Date	Nov 1, 2021
Report Issued Date	Nov 2, 2021
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 (600mm)	1	1	16-22AWG	No
4+4 pin EPS12V (700mm)	2	2	16AWG	No
12 pin PCIe (560mm)	1	1	16AWG	No
6+2 pin PCIe (560mm)	4	4	16AWG	No
6+2 pin PCIe (560mm+150mm)	7	14	16-18AWG	No
SATA (500mm+125mm+125mm+125mm)	3	12	18AWG	No
4-pin Molex (500mm+125mm+125mm) / FDD (+120mm)	1	3 / 1	18-22AWG	No

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	25	22	170	3	0.3
	Watts	120		2040	15	3.6
Total Max. Power (W)		2050				

Parts Description

General Data	-
Manufacturer (OEM)	Enhance Electronics
PCB Type	Double Sided
Primary Side	-
Transient Filter	6x Y caps, 4x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor MF72-12D20 (12 Ohm) & Relay
Bridge Rectifier(s)	2x
APFC MOSFETs	2x Oriental Semiconductor OSG55R070HF (550V, 30A @ 100°C, Rds(on): 0.07Ohm)
APFC Boost Diode	2x CREE C3D10060A (600V, 10A @ 153°C)
Bulk Cap(s)	3x Nippon Chemi-Con (450V, 680uF each or 2,040uF, 2,000h @ 105°C, KMZ)
Main Switchers	4x Oriental Semiconductor OSG60R074FSZF (600V, 30A @ 100°C, Rds(on): 0.074Ohm)
IC Driver(s)	2x Silicon Labs Si8230BD
APFC Controller	ATK AT6201ZSPF
Resonant Controller	ATK AT6301ZTSF
Topology	Primary side: Interleaved PFC, Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	-
+12V MOSFETs	no info
5V & 3.3V	DC-DC Converters
Filtering Capacitors	Electrolytic: 5x Unicon (2,000h @ 125°C, UPL), 1x Rubycon (3-6,000h @ 105°C, YXG), 2x Rubycon (4-10,000h @ 105°C, YXF) Polymer: 21x Unicon
Supervisor IC	Weltrend WT7527RA (OCP, OVP, UVP, SCP, PG)
Fan Controller	ATK AT1051ZSP8
Fan Model	Globe Fan RL4Z B1352512EH-3M (135mm, 12V, 0.50A, Double Ball Bearing Fan)

5VSB Circuit	-
Rectifier	1x 45R10S SBR
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	✓
ALPM (Alternative Low Power Mode) compatible	✓

Performance Summary 230V

Accredited	
Average Efficiency (>1450 load combinations)	92.084%
Average Noise Output (>1450 Load Combinations)	42.32dBA
Average PF (>1450 Load Combinations)	0.957
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
Standby Power Consumption	0.1440W
Non-Accredited	
12V Ripple (Full Load)	44.25mV
5V Ripple (Full Load)	19.40mV
3.3V Ripple (Full Load)	18.53mV
5VSB Ripple (Full Load)	10.07mV
12V Load Regulation	1.73%
5V Load Regulation	2.37%
3.3V Load Regulation	3.63%
5VSB Load Regulation	4.84%
Inrush Current	28.490A
Hold-Up Time & PWR_OK Signal	11.40ms
AC Loss to PWR_OK Hold Up Time	10.20ms

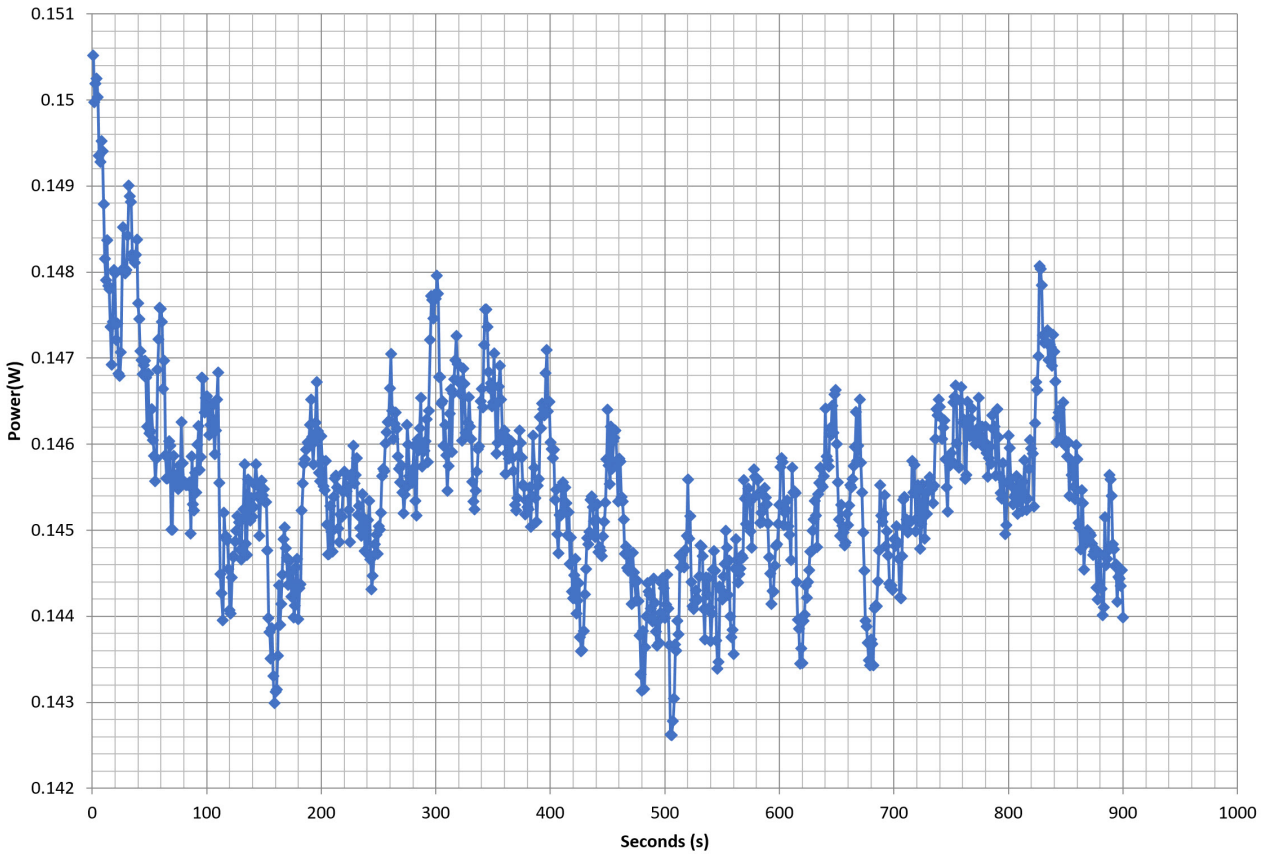
PWR_OK Inactive to DC Loss Delay		1.20ms
PSU Timings: T1 (20% / 100%)	100.0ms	92.0ms
PSU Timings: T3 (20% / 100%)	126.0ms	128.0ms
OPP (28.78°C / 41.29°C)	115.68%	115.68%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	11.4
AC Loss to PWR_OK Hold Up Time (ms)	10.2
PWR_OK Inactive to DC Loss Delay (ms)	1.2

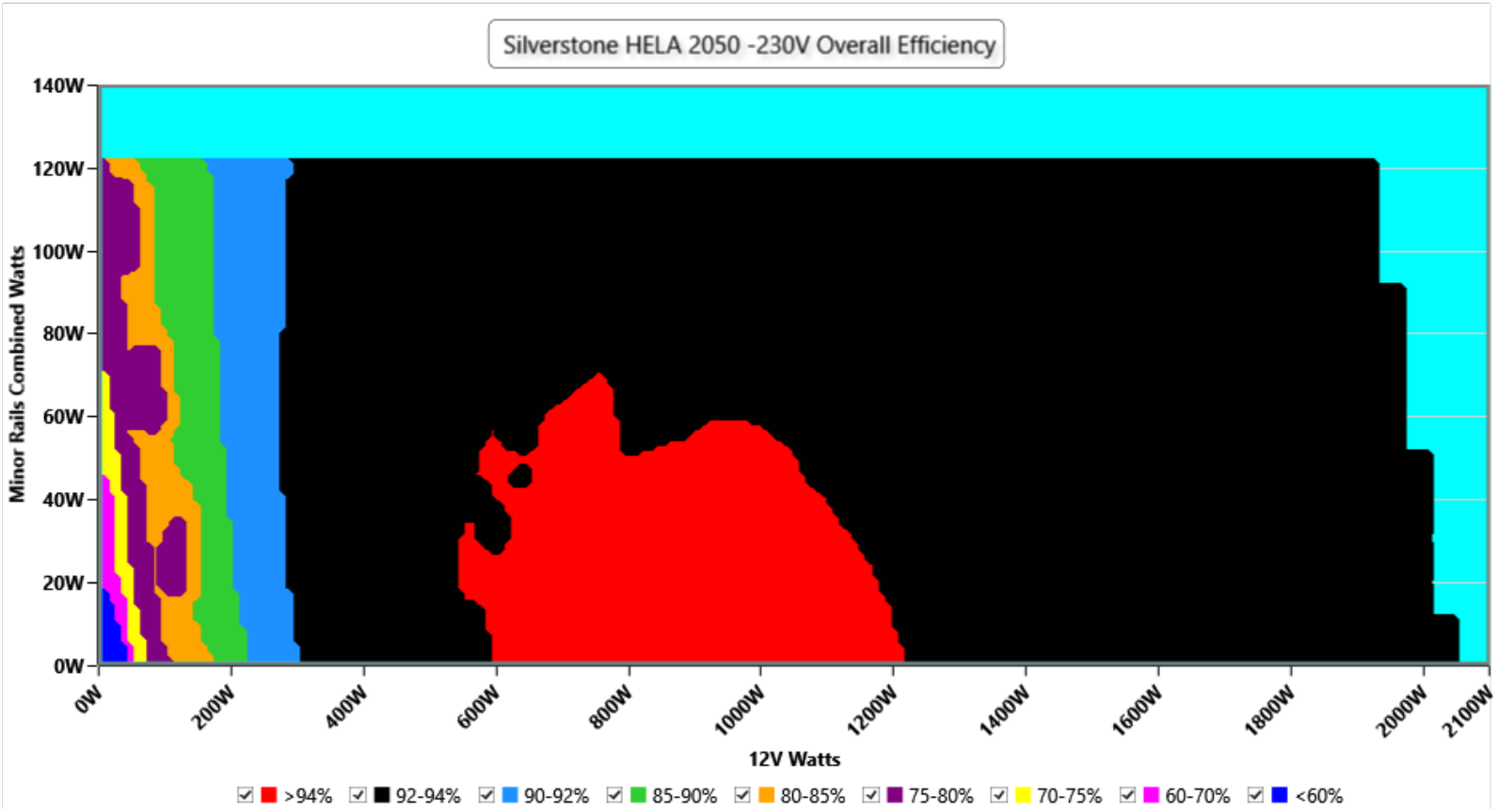
Vampire Power

Graphs 230V



Efficiency Graph

230V

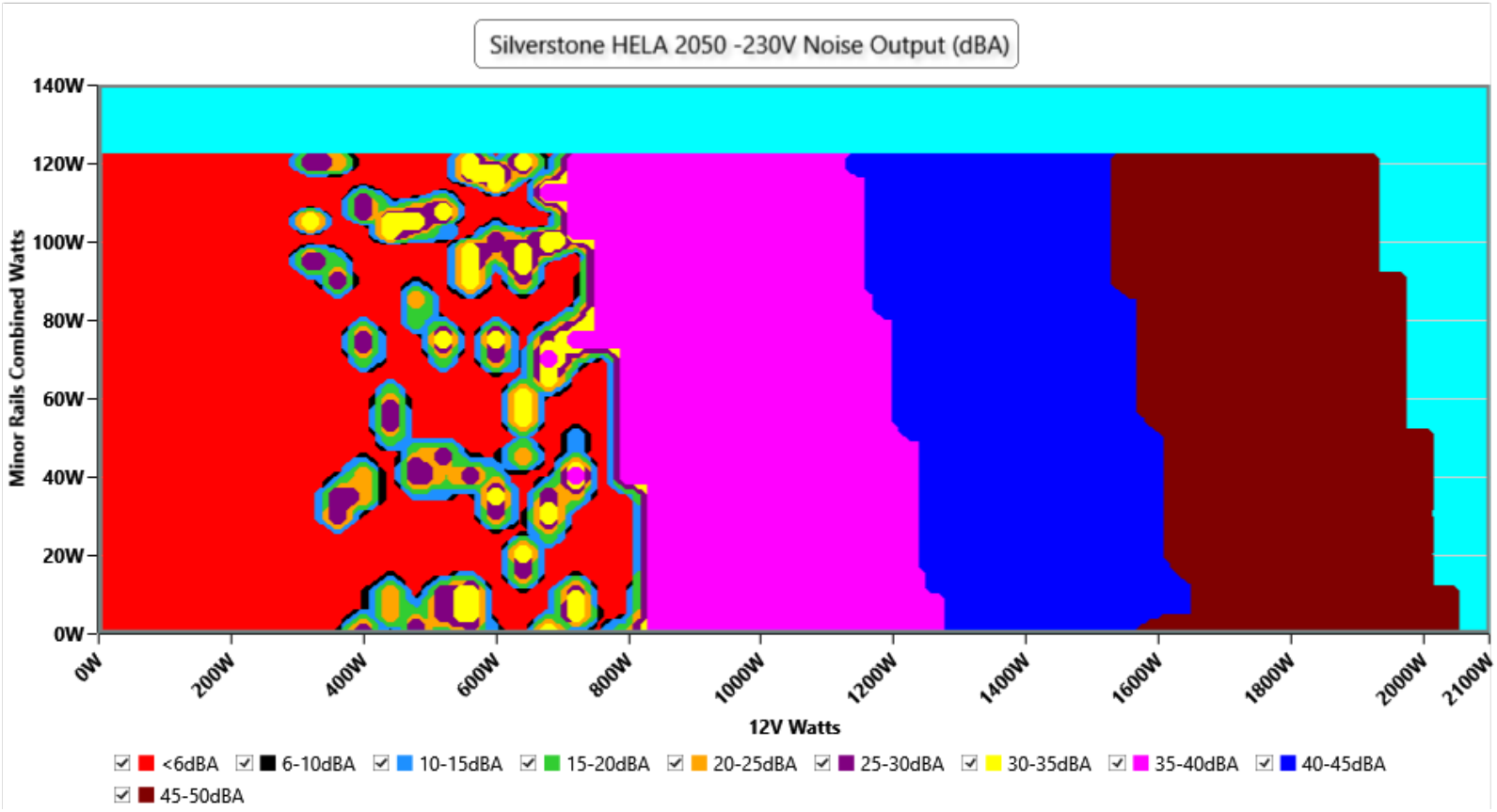


INFO

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

230V

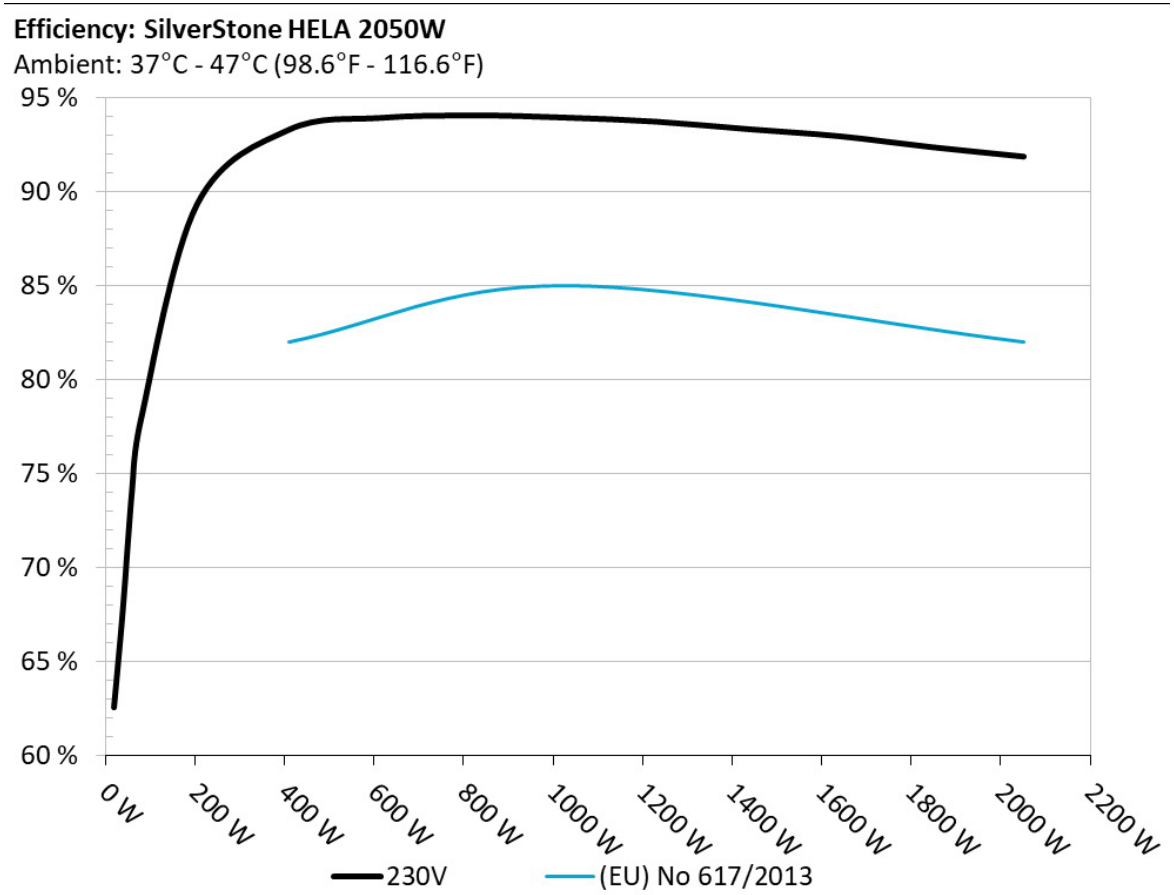


INFO

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

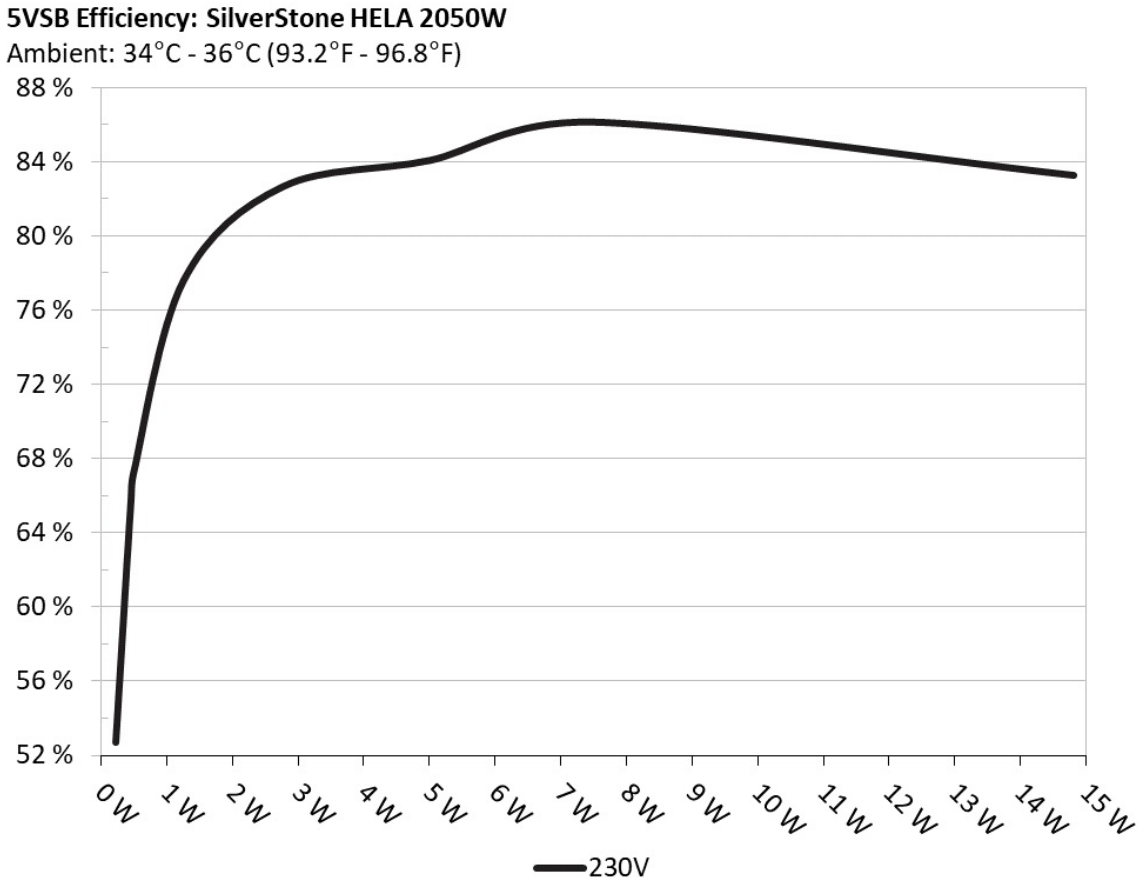
Efficiency under high ambient temperature



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) 230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.227W	52.676%	0.007
	5.049V	0.431W		230.24V

2	0.09A	0.454W	65.499%	0.012
	5.047V	0.693W		230.25V
3	0.55A	2.767W	82.648%	0.057
	5.03V	3.348W		230.25V
4	1A	5.014W	84.075%	0.1
	5.013V	5.964W		230.24V
5	1.5A	7.493W	86.139%	0.142
	4.994V	8.698W		230.24V
6	3A	14.816W	83.269%	0.256
	4.938V	17.792W		230.24V

Supplementary Tests (For Reference)

Typical Load Tests 230V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
10%	15.293A	2.001A	1.963A	1A	204.999	89.314%	0	<6.0	45.84°C	0.881
	11.992V	4.997V	3.362V	5.002V	229.525				40.27°C	230.24V
20%	31.613A	3.009A	2.955A	1.204A	409.439	93.295%	0	<6.0	46.88°C	0.964
	11.974V	4.985V	3.35V	4.983V	438.863				40.97°C	230.24V
30%	48.404A	3.519A	3.459A	1.41A	614.625	93.934%	1024	32.0	41.49°C	0.976
	11.953V	4.974V	3.339V	4.963V	654.317				47.88°C	230.24V
40%	65.227A	4.03A	3.966A	1.618A	819.802	94.067%	1140	35.1	41.89°C	0.974
	11.937V	4.963V	3.329V	4.944V	871.502				48.72°C	230.24V
50%	81.748A	5.051A	4.975A	1.828A	1025.107	93.951%	1255	37.8	42.13°C	0.973
	11.922V	4.95V	3.317V	4.924V	1091.113				49.46°C	230.24V
60%	98.287A	6.076A	5.993A	2A	1229.512	93.734%	1361	39.7	42.54°C	0.973
	11.902V	4.938V	3.304V	4.905V	1311.705				50.53°C	230.24V
70%	114.954A	7.107A	7.018A	2.253A	1435.017	93.336%	1459	41.8	43.2°C	0.973
	11.882V	4.926V	3.292V	4.883V	1537.466				51.54°C	230.24V
80%	131.674A	8.004A	8.05A	2.364A	1639.145	92.956%	1555	43.6	43.85°C	0.974
	11.862V	4.915V	3.279V	4.866V	1763.355				52.72°C	230.25V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
90%	148.807A	8.671A	8.569A	2.475A	1845.271	92.373%	2156	52.5	44.62°C	0.976
	11.846V	4.903V	3.268V	4.85V	1997.62				54.25°C	230.25V
100%	165.822A	9.202A	9.125A	3.118A	2050.125	91.875%	2144	52.5	45.71°C	0.978
	11.822V	4.892V	3.255V	4.811V	2231.431				55.75°C	230.25V
CL1	0.117A	14.558A	14.274A	0A	121.329	78.819%	896	27.7	42.08°C	0.829
	11.979V	4.961V	3.341V	5.036V	153.935				49.05°C	230.26V
CL2	0.117A	22.225A	0A	0A	111.431	77.315%	460	10.7	43.07°C	0.831
	11.988V	4.951V	3.36V	5.041V	144.13				50.39°C	230.25V
CL3	0.117A	0A	24.737A	0A	83.888	72.172%	518	12.8	44.35°C	0.794
	11.986V	5V	3.335V	5.036V	116.259				52.82°C	230.25V
CL4	173.101A	0A	0A	0A	2049.623	92.398%	2171	52.7	45.04°C	0.978
	11.841V	4.925V	3.276V	4.944V	2218.269				55.18°C	230.24V

The results above are not used in the certification process

Light Load Tests 230V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
20W	1.236A	0.499A	0.489A	0.198A	20.01	62.529%	0	<6.0	39.83°C	0.36
	12.026V	5.008V	3.373V	5.044V	32.033				36.63°C	230.24V
40W	2.722A	0.699A	0.685A	0.298A	40.008	67.793%	0	<6.0	41.27°C	0.551
	12.013V	5.007V	3.372V	5.038V	59.062				37.41°C	230.24V
60W	4.208A	0.899A	0.881A	0.397A	60.008	74.023%	0	<6.0	43.16°C	0.659
	12.009V	5.006V	3.371V	5.034V	81.116				38.95°C	230.24V
80W	5.692A	1.099A	1.077A	0.497A	79.967	77.847%	0	<6.0	44.12°C	0.757
	12.004V	5.005V	3.37V	5.028V	102.766				39.37°C	230.24V

The results above are not used in the certification process

Ripple Measurements 230V

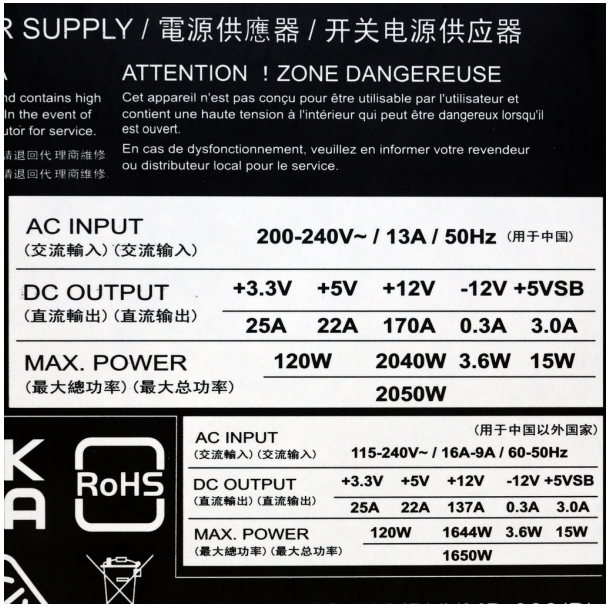
Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	10.54mV	13.53mV	14.16mV	5.22mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
20% Load	12.13mV	15.63mV	13.86mV	5.37mV	Pass
30% Load	15.45mV	14.71mV	14.68mV	5.83mV	Pass
40% Load	17.55mV	15.52mV	15.34mV	6.34mV	Pass
50% Load	20.78mV	15.83mV	14.93mV	6.24mV	Pass
60% Load	23.95mV	16.19mV	15.24mV	6.75mV	Pass
70% Load	29.94mV	17.26mV	16.57mV	8.49mV	Pass
80% Load	30.50mV	17.47mV	16.72mV	7.98mV	Pass
90% Load	34.70mV	17.26mV	17.23mV	8.29mV	Pass
100% Load	44.25mV	19.40mV	18.53mV	10.07mV	Pass
Crossload1	16.95mV	17.76mV	16.35mV	7.67mV	Pass
Crossload2	10.70mV	18.95mV	14.57mV	4.71mV	Pass
Crossload3	9.88mV	14.35mV	17.80mV	4.35mV	Pass
Crossload4	44.29mV	17.46mV	17.62mV	10.35mV	Pass

The results above are not used in the certification process

SilverStone HELA 2050 Platinum

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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