



SilverStone HELA 2050 Platinum (1650W)

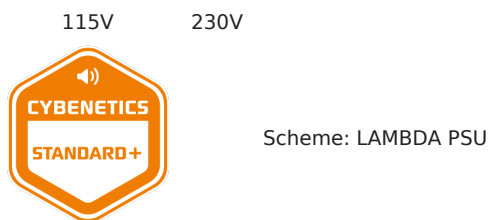
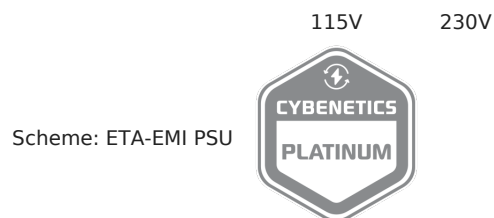
Serial Number DBHA2K50PT21390099

Lab ID SL16501930

Certification ID 251930

Test Result Report ID: 21PS1930A

Certificate Issue Date: Nov 3, 2021



A handwritten signature in blue ink, appearing to read "A. Bitziopoulos", is positioned above the name of the Certification Body General Manager.

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 (1650W)
OEM/ODM	Enhance Electronics
Serial Number	DBHA2K50PT21390099
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	115-240
Rated Current (Arms)	16-9
Rated Frequency (Hz)	60-50

Rated Power (W)	1650
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	SL16501930
Date of receipt	Oct 26, 2021
Testing Date	Nov 1, 2021
Report Issued Date	Nov 3, 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	137	3	0.3
	Watts	120		1644	15	3.6
Total Max. Power (W)		1650				

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): 0.070hm)
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): 0.0740hm)
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 115V

Accredited	
Average Efficiency (>1450 load combinations)	90.000%
Average Noise Output (>1450 Load Combinations)	37.99dBA
Average PF (>1450 Load Combinations)	0.989
Efficiency With 10W (≤500W) or 2% (>500W) Load	63.876%
Standby Power Consumption	0.1210W
Non-Accredited	
12V Ripple (Full Load)	40.72mV
5V Ripple (Full Load)	29.07mV
3.3V Ripple (Full Load)	29.85mV
5VSB Ripple (Full Load)	10.86mV
12V Load Regulation	1.42%
5V Load Regulation	2.02%
3.3V Load Regulation	2.99%
5VSB Load Regulation	4.37%
Inrush Current	13.440A

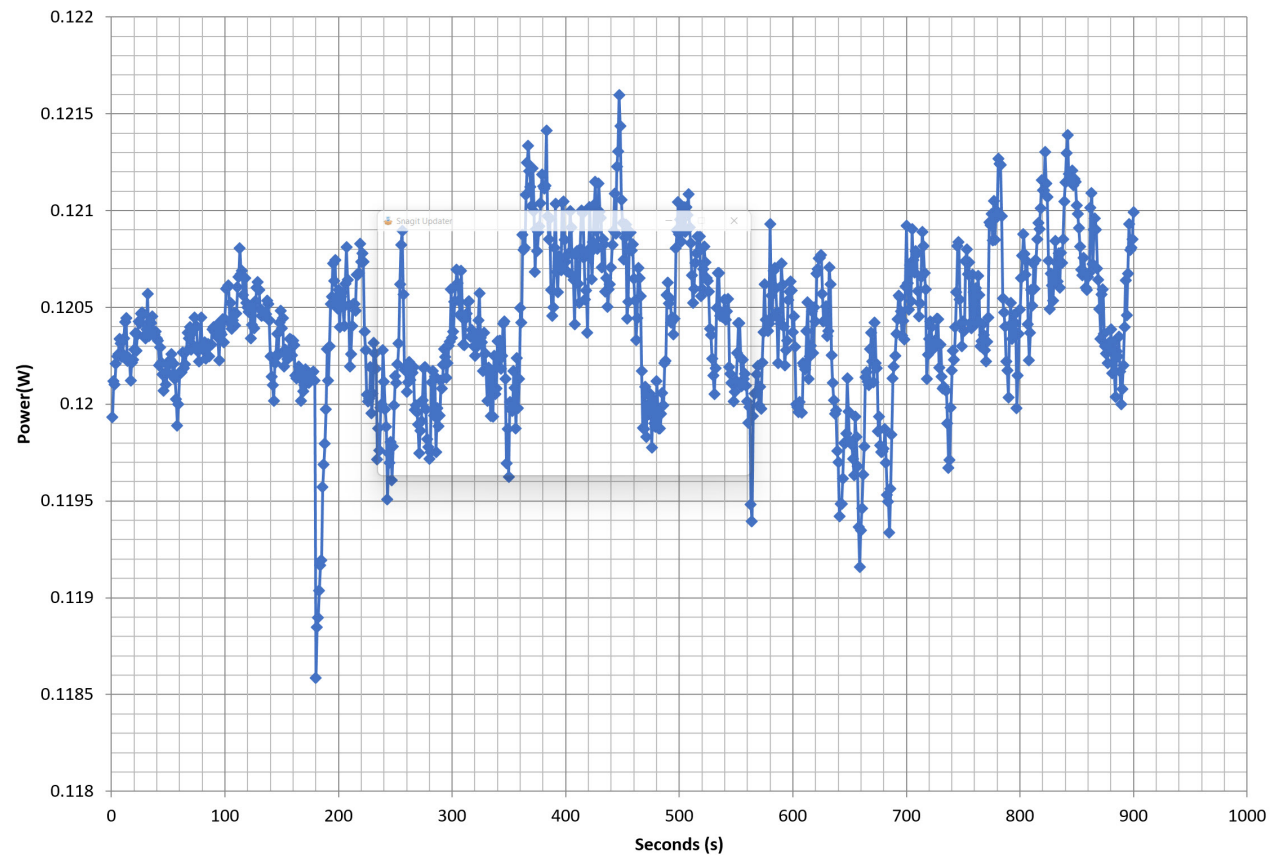
Hold-Up Time & PWR_OK Signal

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



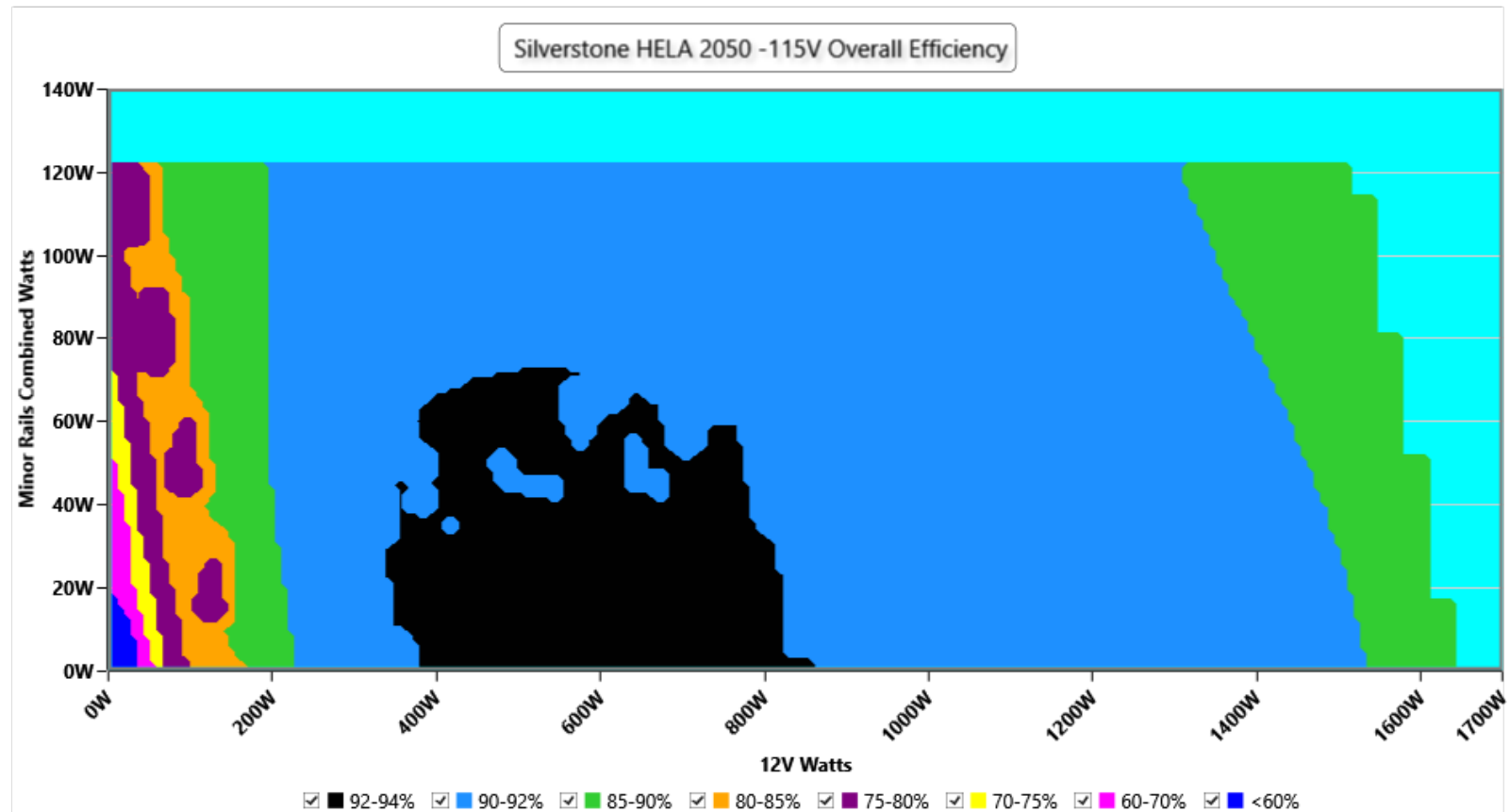
Graphs 115V

Power - DBHA2K50PT21390099 - 29/10/2021 - 13:42



Efficiency Graph

115V

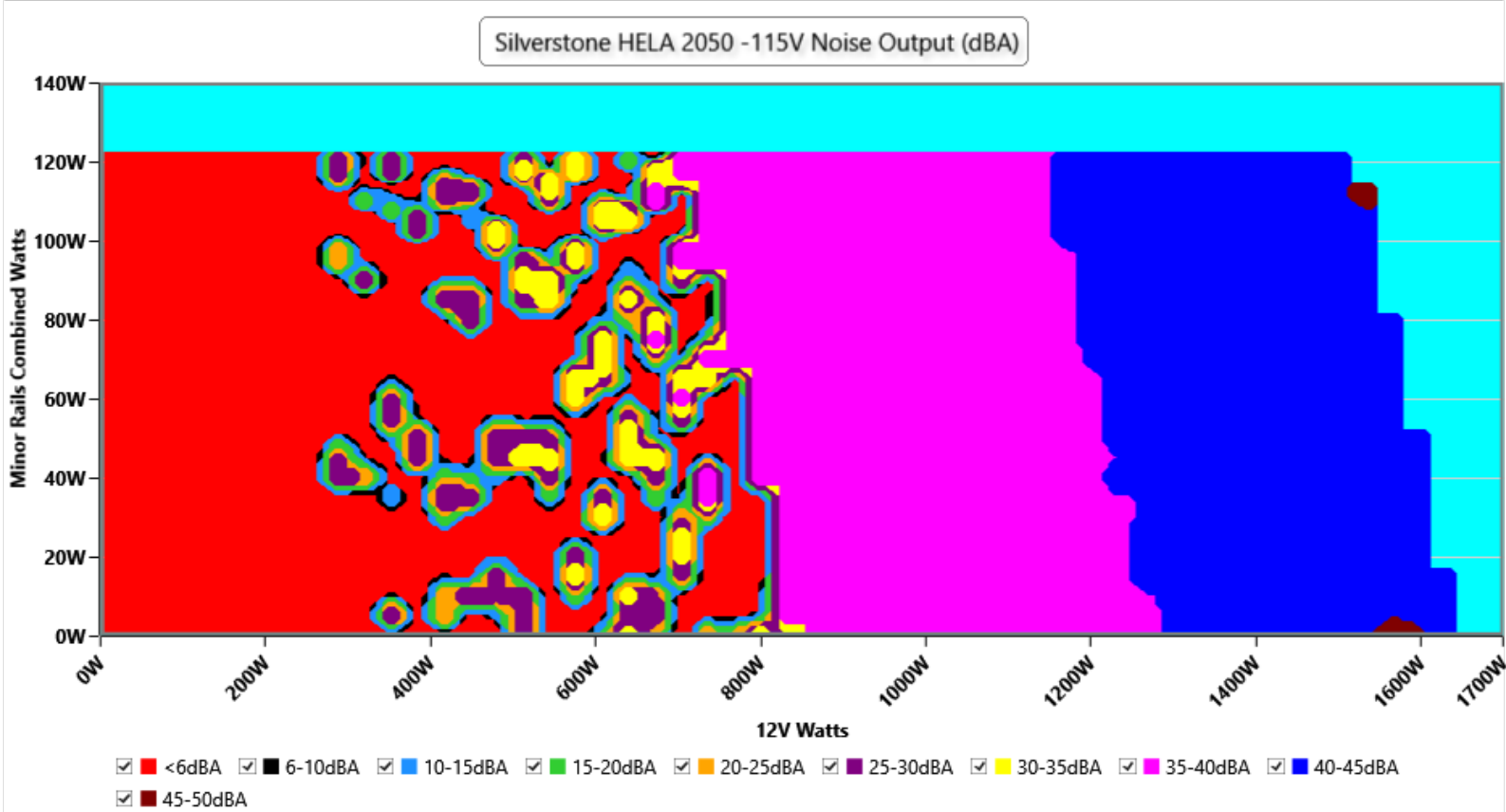


INFO

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

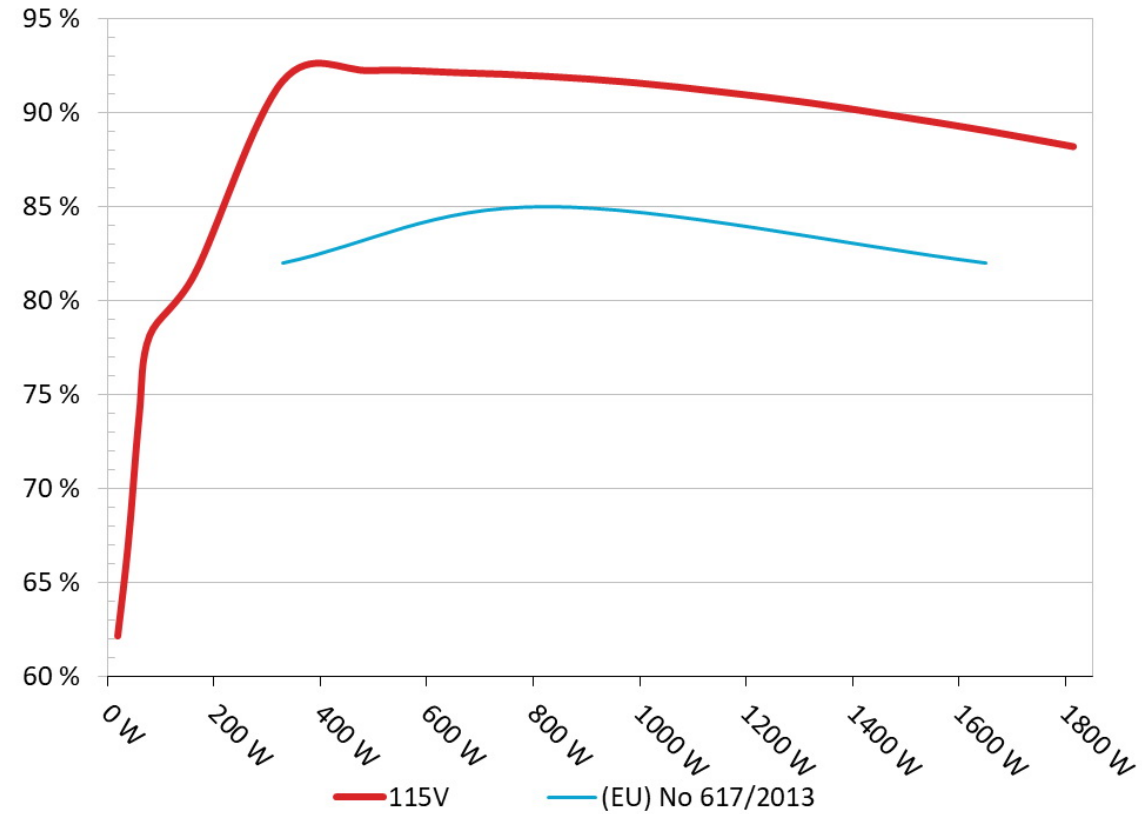
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Indicative Performance

Efficiency under high ambient temperature

Efficiency: SilverStone HELA 2050W

Ambient: 37°C - 47°C (98.6°F - 116.6°F)



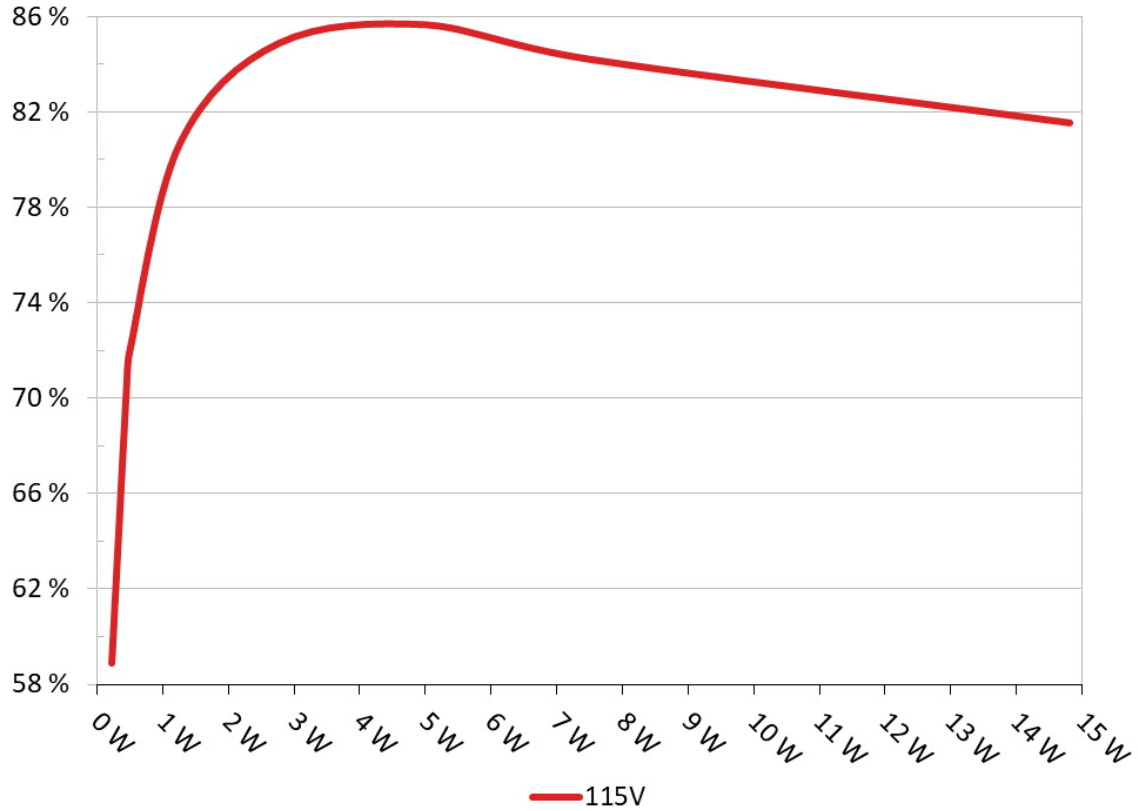
INFO

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 HELA 2050W

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

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.227W	58.872%	0.023
	5.05V	0.386W		115.11V

2	0.09A	0.454W	70.539%	0.038
	5.048V	0.644W		115.11V
3	0.55A	2.767W	84.849%	0.177
	5.03V	3.261W		115.11V
4	1A	5.014W	85.632%	0.281
	5.013V	5.855W		115.11V
5	1.5A	7.493W	84.191%	0.366
	4.994V	8.9W		115.11V
6	3A	14.816W	81.519%	0.492
	4.938V	18.174W		115.11V

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
10%	11.960A	2A	1.962A	0.999A	164.992	81.43%	612	16.3	40.21°C	0.978
	11.989V	4.999V	3.363V	5.003V	202.616				45.21°C	115.12V
20%	24.971A	3.007A	2.952A	1.203A	330.014	91.673%	848	26.3	40.87°C	0.992
	11.978V	4.988V	3.354V	4.986V	359.991				46.58°C	115.12V
30%	38.323A	3.515A	3.453A	1.409A	494.575	92.227%	979	30.4	41.38°C	0.991
	11.964V	4.979V	3.345V	4.969V	536.257				47.46°C	115.11V
40%	51.756A	4.024A	3.957A	1.616A	659.767	92.113%	1010	31.1	41.92°C	0.985
	11.951V	4.97V	3.336V	4.952V	716.256				48.87°C	115.11V
50%	64.883A	5.042A	4.961A	1.824A	825.105	91.918%	1141	35.1	42.41°C	0.989
	11.938V	4.959V	3.326V	4.934V	897.655				49.83°C	115.11V
60%	77.964A	6.064A	5.972A	2A	989.432	91.581%	1259	37.9	42.82°C	0.994
	11.926V	4.948V	3.316V	4.918V	1080.387				50.79°C	115.1V
70%	91.159A	7.091A	6.99A	2.246A	1154.95	91.081%	1364	39.8	43.07°C	0.996
	11.912V	4.937V	3.305V	4.898V	1268.051				51.28°C	115.08V
80%	104.401A	8.003A	8.012A	2.355A	1319.207	90.508%	1465	41.7	43.71°C	0.998
	11.895V	4.927V	3.295V	4.884V	1457.561				52.48°C	115.07V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
90%	118.108A	8.644A	8.523A	2.465A	1485.206	89.79%	1561	43.8	44.6°C	0.999
	11.876V	4.918V	3.285V	4.869V	1654.084				53.8°C	115.06V
100%	131.623A	9.168A	9.069A	3.104A	1650.038	89.031%	1559	43.8	45.7°C	0.999
	11.855V	4.91V	3.275V	4.833V	1853.32				55.85°C	115.05V
110%	144.949A	10.209A	10.203A	3.111A	1814.669	88.184%	2160	52.6	46.91°C	1
	11.841V	4.899V	3.263V	4.822V	2057.816				57.77°C	115.03V
CL1	0.118A	14.555A	14.275A	0A	121.331	79.118%	896	27.7	42.41°C	0.966
	11.969V	4.962V	3.341V	5.035V	153.354				49.46°C	115.13V
CL2	0.117A	22.226A	0A	0A	111.431	77.494%	744	21.6	43.09°C	0.962
	11.987V	4.951V	3.36V	5.041V	143.792				50.81°C	115.13V
CL3	0.117A	0A	24.737A	0A	83.887	72.847%	330	<6.0	44.12°C	0.948
	11.987V	4.999V	3.335V	5.036V	115.16				53.67°C	115.12V
CL4	138.858A	0A	0A	0A	1649.577	89.698%	1557	43.6	45.33°C	0.999
	11.880V	4.943V	3.296V	4.965V	1839.032				55.64°C	115.04V

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])	Temps (In/Out)	PF/AC Volts
20W	1.236A	0.499A	0.489A	0.198A	20.008	62.169%	0	<6.0	40.21°C	0.644
	12.023V	5.009V	3.373V	5.044V	32.35				36.87°C	115.13V
40W	2.722A	0.699A	0.685A	0.298A	40.008	67.177%	0	<6.0	41.4°C	0.841
	12.013V	5.007V	3.372V	5.039V	59.556				37.65°C	115.13V
60W	4.208A	0.899A	0.881A	0.397A	60.01	73.797%	0	<6.0	42.01°C	0.902
	12.008V	5.006V	3.371V	5.033V	81.317				38.01°C	115.13V
80W	5.694A	1.099A	1.077A	0.497A	79.972	78.142%	0	<6.0	44.59°C	0.939
	12.003V	5.005V	3.369V	5.028V	102.342				39.97°C	115.13V

The results above are not used in the certification process

Ripple Measurements 115V

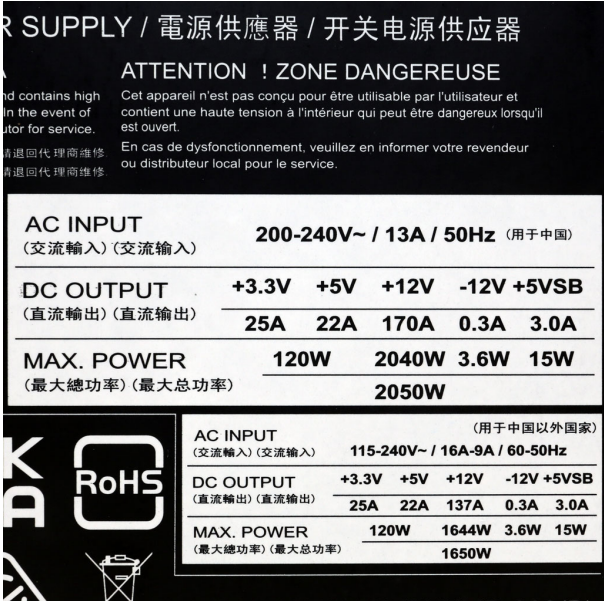
Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	19.58mV	13.48mV	14.78mV	4.91mV	Pass
20% Load	12.49mV	14.30mV	14.67mV	5.12mV	Pass
30% Load	13.72mV	13.64mV	14.98mV	5.42mV	Pass
40% Load	15.45mV	14.51mV	14.42mV	5.78mV	Pass
50% Load	17.55mV	14.71mV	15.09mV	6.14mV	Pass
60% Load	18.93mV	15.22mV	14.73mV	5.94mV	Pass
70% Load	21.49mV	15.63mV	15.96mV	6.70mV	Pass
80% Load	24.97mV	15.99mV	16.16mV	6.70mV	Pass
90% Load	37.97mV	31.97mV	30.88mV	10.70mV	Pass
100% Load	40.72mV	29.07mV	29.85mV	10.86mV	Pass
110% Load	44.06mV	33.30mV	34.01mV	11.74mV	Pass
Crossload1	9.88mV	16.58mV	17.43mV	4.99mV	Pass
Crossload2	14.48mV	17.77mV	14.17mV	5.84mV	Pass
Crossload3	11.92mV	13.84mV	18.00mV	4.15mV	Pass
Crossload4	35.57mV	24.89mV	26.48mV	8.90mV	Pass

The results above are not used in the certification process

SilverStone HELA 2050 Platinum (1650W)



Top side



Power specifications label

Cybenetics

ETA

LAMBDA

SAFE

DELTA

PHI

CYBENETICS LTD Syrou 6, Latsia, 2231, Nicosia Cyprus

www.cybenetics.com - info@cybenetics.com