SILVERSTONE

SilverStone HELA 2050R Platinum

Serial Number

Lab ID SL20502232

Certification ID 252232

Test Result Report ID: 23PS2232A

Certificate Issue Date: Sep 5, 2023

115V 230V

Scheme: ETA-EMI PSU

CYBENETICS PLATINUM 230v

115V 230V

CYBENETICS STANDARD 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 2050R Platinum
OEM/ODM	Enhance Electronics
Serial Number	
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	SL20502232
Date of receipt	Aug 30, 2023
Testing Date	Sep 5, 2023
Report Issued Date	Sep 5, 2023
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 (710mm)	2	2	16AWG	No
12+4 pin PCIe (400mm) (600W)	2	2	16-24AWG	No
6+2 pin PCIe (560mm)	4	4	16AWG	No
6+2 pin PCIe (560mm+150mm)	5	10	16-18AWG	No
SATA (510mm+130mm+130mm+130mm)	3	12	18AWG	No
4-pin Molex (510mm+125mm+125mm) / FDD (+135mm)	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				

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)	92.315%
Average Noise Output (>1450 Load Combinations)	41.82dBA
Average PF (>1450 Load Combinations)	0.973
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
Standby Power Consumption	0.1660W
Non-Accredited	
12V Ripple (Full Load)	47.36mV
5V Ripple (Full Load)	14.94mV
3.3V Ripple (Full Load)	14.83mV
5VSB Ripple (Full Load)	11.31mV
12V Load Regulation	1.25%
5V Load Regulation	2.07%
3.3V Load Regulation	1.47%
5VSB Load Regulation	4.29%

Inrush Current		27.140A
Hold-Up Time & PWR_OK Signal		16.80ms
AC Loss to PWR_OK Hold Up Time		15.40ms
PWR_OK Inactive to DC Loss Delay		1.40ms
PSU Timings: T1 (20% / 100%)	103.5ms	98.0ms
PSU Timings: T3 (20% / 100%)	122.0ms	123.0ms
OPP (27.83°C / 45.50°C)	125.83%	125.83%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	16.8
AC Loss to PWR_OK Hold Up Time (ms)	15.4
PWR_OK Inactive to DC Loss Delay (ms)	1.4

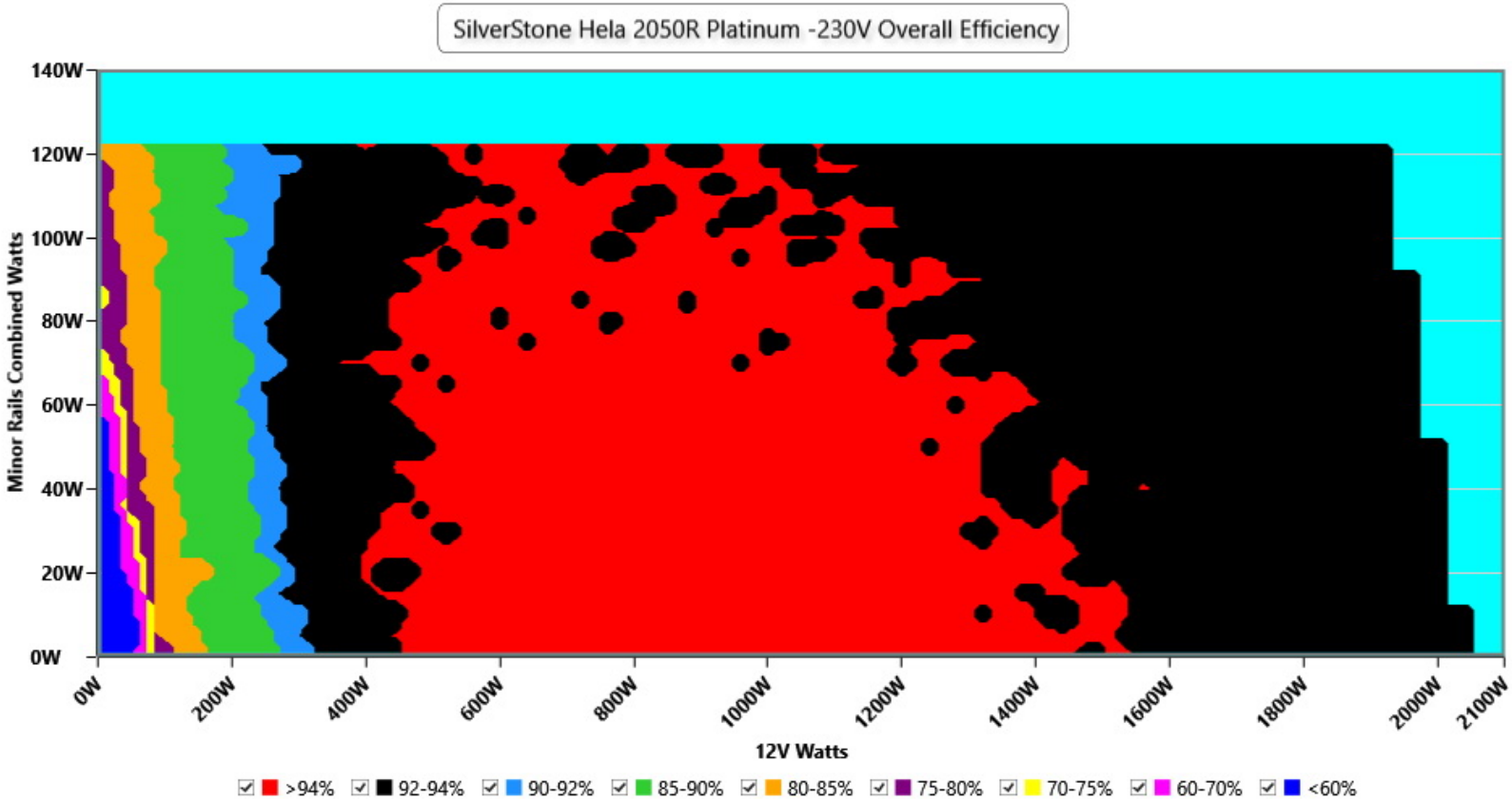
Stromverbrauch im Ruhezustand

Tables 230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	230.37 V	230.35 V	227.70 V	230.39 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	50.00 Hz	49.50 Hz	50.00 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.415	1.415	1.340	1.416	1.490	PASS
Mains Voltage THD:	0.15 %	0.13 %	N/A	0.16 %	2.00 %	PASS
Real Power:	0.166 W	0.147 W	N/A	0.195 W	N/A	N/A
Apparent Power:	54.874 W	54.861 W	N/A	54.886 W	N/A	N/A
Power Factor:	0.003	N/A	N/A	N/A	N/A	N/A

Efficiency Graph

230V

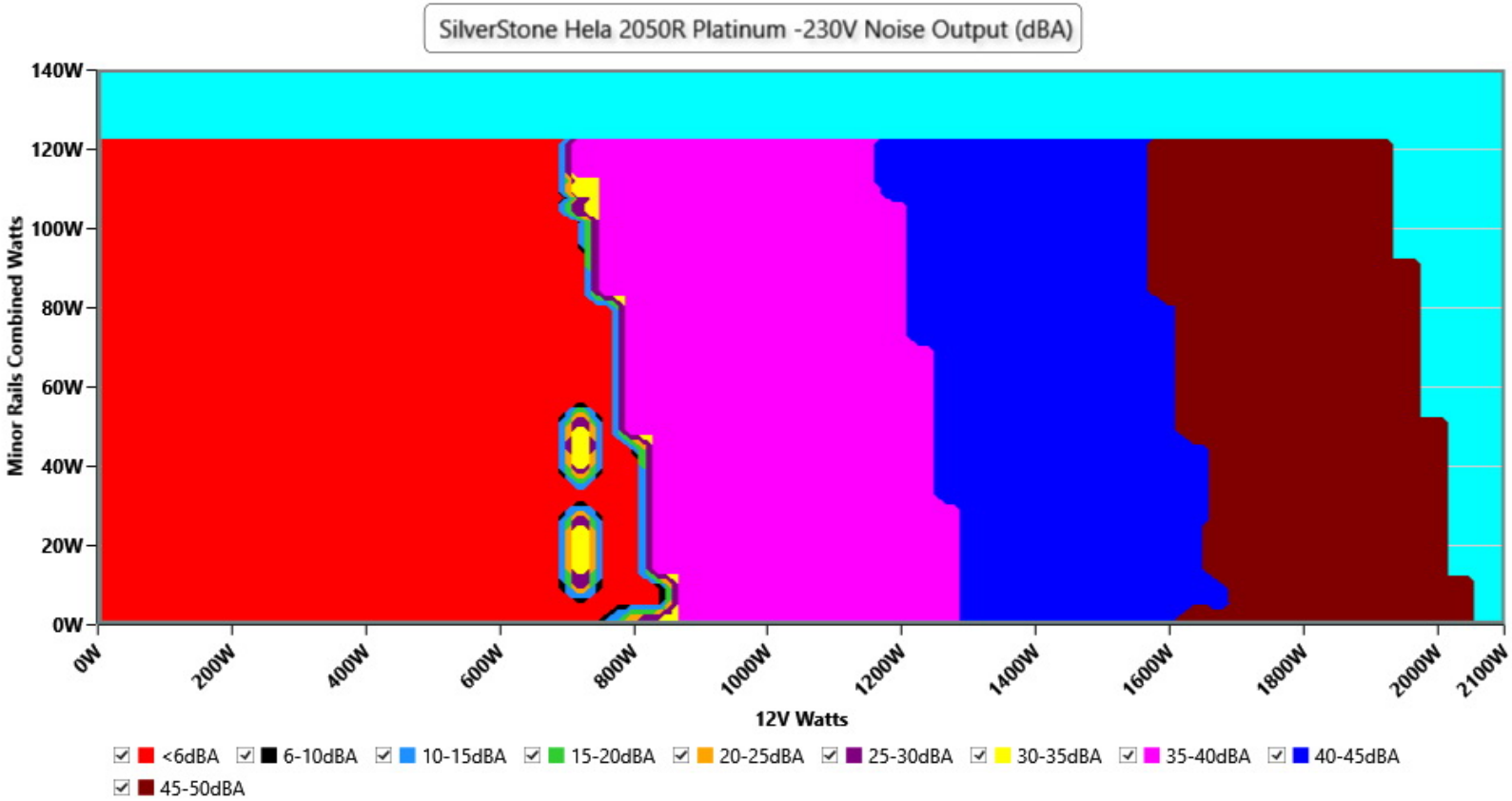


INFO

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

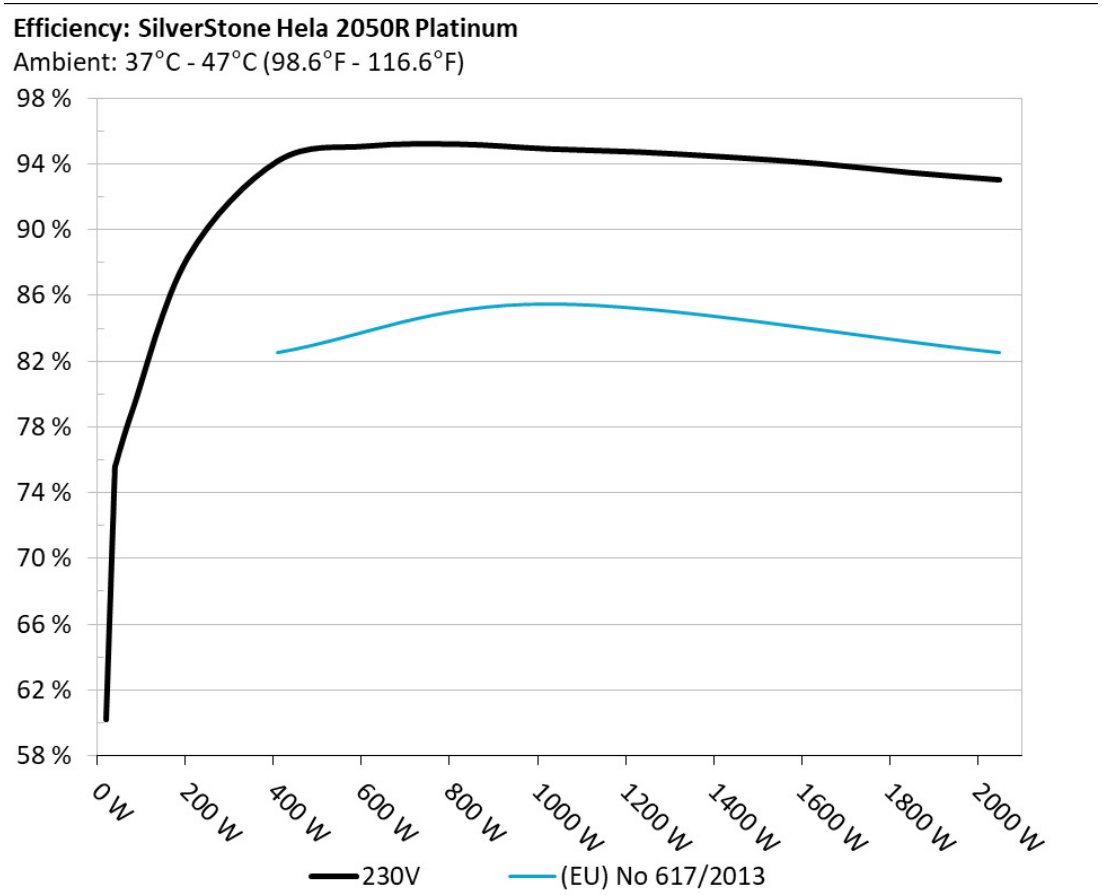


INFO

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

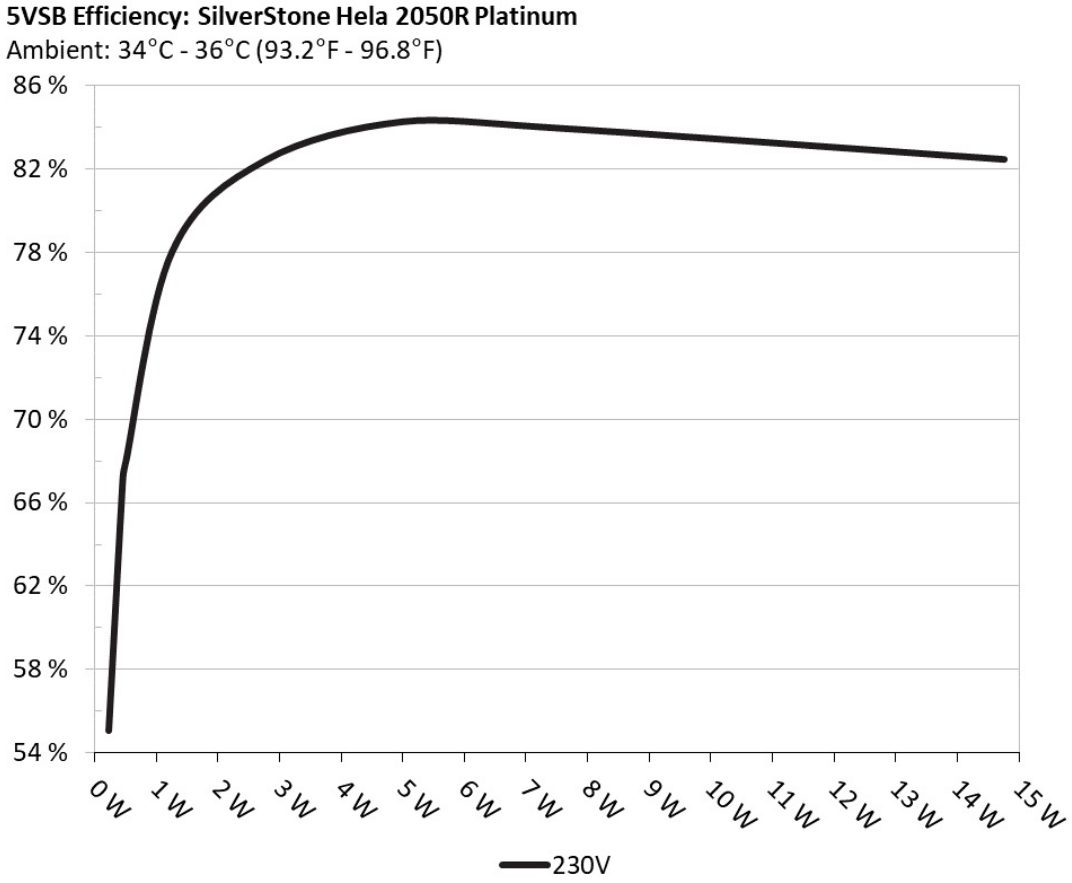
Efficiency under high ambient temperature



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	0.226W	55.078%	0.007
	5.032V	0.411W		230.38V

2	0.09A	0.453W	67.075%	0.012
	5.03V	0.676W		230.38V
3	0.55A	2.757W	82.374%	0.06
	5.012V	3.348W		230.38V
4	1A	4.996W	84.241%	0.104
	4.995V	5.931W		230.38V
5	1.5A	7.466W	83.946%	0.151
	4.976V	8.893W		230.38V
6	3A	14.756W	82.436%	0.265
	4.918V	17.899W		230.37V

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%	15.264A	2.015A	1.996A	1.003A	204.998	87.774%	0	<6.0	44.33°C	0.899
	12.015V	4.963V	3.307V	4.989V	233.645				40.08°C	230.39V
20%	31.527A	3.029A	2.999A	1.207A	409.448	93.651%	0	<6.0	45.58°C	0.971
	12.007V	4.953V	3.302V	4.972V	437.247				40.97°C	230.37V
30%	48.247A	3.541A	3.503A	1.413A	614.673	94.569%	0	<6.0	46.26°C	0.986
	11.993V	4.944V	3.297V	4.955V	649.984				41.18°C	230.34V
40%	65.024A	4.054A	4.009A	1.621A	819.942	94.685%	1138	35.3	41.8°C	0.991
	11.976V	4.935V	3.293V	4.938V	865.906				47.39°C	230.32V
50%	81.443A	5.079A	5.021A	1.83A	1025.228	94.401%	1244	37.7	42.59°C	0.992
	11.968V	4.923V	3.286V	4.919V	1086.038				48.61°C	230.3V
60%	97.824A	6.109A	6.036A	2.001A	1229.608	94.21%	1348	39.5	42.62°C	0.993
	11.960V	4.913V	3.281V	4.904V	1305.204				49.21°C	230.27V
70%	114.333A	7.142A	7.053A	2.253A	1435.162	93.897%	1448	41.6	43.24°C	0.994
	11.948V	4.902V	3.276V	4.884V	1528.26				50.28°C	230.25V
80%	130.924A	8.179A	8.071A	2.362A	1640.009	93.508%	1539	43.4	43.59°C	0.994
	11.931V	4.891V	3.271V	4.87V	1753.847				51.69°C	230.23V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
90%	147.904A	8.708A	8.573A	2.471A	1845.454	92.962%	2122	52.5	44.11°C	0.995
	11.919V	4.882V	3.266V	4.857V	1985.162				53.15°C	230.21V
100%	164.688A	9.239A	9.106A	3.112A	2050.291	92.518%	2109	52.3	46.98°C	0.995
	11.905V	4.871V	3.262V	4.821V	2216.56				56.94°C	230.18V
CL1	0.119A	14.611A	14.486A	0A	121.323	78.85%	888	27.4	42.46°C	0.835
	11.981V	4.942V	3.293V	5.021V	153.958				48.01°C	230.4V
CL2	0.117A	22.254A	0A	0A	111.41	77.326%	896	27.7	41.13°C	0.824
	12.000V	4.943V	3.297V	5.033V	144.045				48.17°C	230.4V
CL3	0.117A	0A	25.002A	0A	83.9	73.303%	401	8.5	39.8°C	0.809
	12.001V	4.957V	3.3V	5.015V	114.506				48.82°C	230.4V
CL4	172.229A	0A	0A	0A	2050.198	92.688%	2100	52.3	47.03°C	0.995
	11.904V	4.892V	3.275V	4.958V	2211.734				57.01°C	230.19V

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	1.232A	0.503A	0.498A	0.199A	20.005	59.69%	0	<6.0	39.69°C	0.286
	12.053V	4.972V	3.31V	5.028V	33.515				36.58°C	230.39V
40W	2.714A	0.704A	0.698A	0.299A	40.003	82.111%	0	<6.0	40.37°C	0.523
	12.048V	4.971V	3.31V	5.023V	48.719				37.09°C	230.39V
60W	4.198A	0.906A	0.897A	0.399A	60.002	75.062%	0	<6.0	41.09°C	0.704
	12.037V	4.97V	3.31V	5.019V	79.937				37.62°C	230.38V
80W	5.680A	1.107A	1.097A	0.499A	79.965	78.523%	0	<6.0	42.19°C	0.808
	12.032V	4.969V	3.309V	5.014V	101.866				38.38°C	230.38V

The results above are not used in the certification process

Ripple Measurements 230V

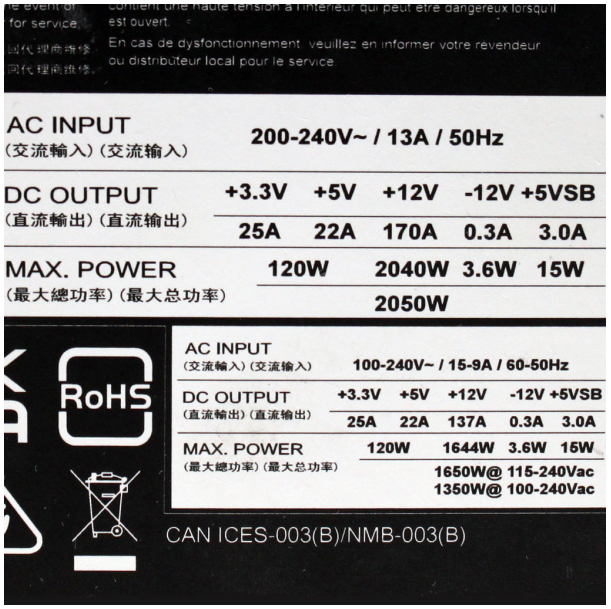
Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	14.86mV	9.20mV	8.34mV	7.19mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
20% Load	12.97mV	10.79mV	9.16mV	7.24mV	Pass
30% Load	16.29mV	13.81mV	11.82mV	7.60mV	Pass
40% Load	20.33mV	13.55mV	10.90mV	8.11mV	Pass
50% Load	26.71mV	13.81mV	11.67mV	9.28mV	Pass
60% Load	25.69mV	16.62mV	13.15mV	8.36mV	Pass
70% Load	32.13mV	15.44mV	13.41mV	9.48mV	Pass
80% Load	32.89mV	17.39mV	14.54mV	9.69mV	Pass
90% Load	35.80mV	14.68mV	14.48mV	9.74mV	Pass
100% Load	47.36mV	14.94mV	14.83mV	11.31mV	Pass
110% Load	0.00mV	0.00mV	0.00mV	0.00mV	Pass
Crossload1	16.14mV	12.43mV	14.06mV	13.83mV	Pass
Crossload2	15.48mV	14.11mV	8.80mV	13.87mV	Pass
Crossload3	11.80mV	10.17mV	17.40mV	13.76mV	Pass
Crossload4	47.83mV	13.43mV	12.47mV	18.82mV	Pass

The results above are not used in the certification process

SilverStone HELA 2050R Platinum

Top side



Power specifications label

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CYBENETICS LTD Syrou 6, Latsia, 2231, Nicosia Cyprus

www.cybenetics.com - info@cybenetics.com