



Seasonic Prime Platinum 650W

Serial Number R1701TA101410009

Lab ID 197

Certification ID 25197

Test Result Report ID:

Certificate Issue Date: Oct 17, 2018

115V

230V

Scheme: ETA-EMI PSU



115V

230V



Scheme: LAMBDA PSU

A handwritten signature in blue ink, appearing to be 'A. Bitziopoulos'.

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	Seasonic
Model	Prime Platinum 650W
OEM/ODM	Seasonic
Serial Number	R1701TA101410009
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	8.5-4
Rated Frequency (Hz)	50-60

Rated Power (W)	650
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	135mm Fluid Dynamic Bearing Fan (HA13525H12F-Z)
Semi-Passive Operation	✓ (selectable)
Cybenetics Testing Information	
Lab ID	197
Date of receipt	Oct 8, 2018
Testing Date	Oct 14, 2018
Report Issued Date	Oct 17, 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 (610mm)	1	1	18-22AWG
4+4 pin EPS12V (650mm)	1	1	18AWG
6+2 pin PCIe (680mm+80mm)	2	4	18AWG
SATA (460mm+110mm+110mm+110mm)	1	4	18AWG
SATA (360mm+110mm)	1	2	18AWG
4 pin Molex (460mm+130mm+130mm)	1	3	18AWG
FDD Adapter (+110mm)	1	1	22AWG

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	54	2.5	0.3
	Watts	100		648	12.5	3.6
Total Max. Power (W)		650				

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	✓

Performance Summary 115V

Accredited	
Average Efficiency (>1450 load combinations)	90.776%
Average Noise Output (>1450 Load Combinations)	33.19dBA
Average PF (>1450 Load Combinations)	0.987
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
Standby Power Consumption	0.0568W
Non-Accredited	
12V Ripple (Full Load)	28.27mV
5V Ripple (Full Load)	7.08mV
3.3V Ripple (Full Load)	9.16mV
5VSB Ripple (Full Load)	19.36mV
12V Load Regulation	0.02%
5V Load Regulation	0.36%
3.3V Load Regulation	0.36%
5VSB Load Regulation	3.62%
Inrush Current	29.701A

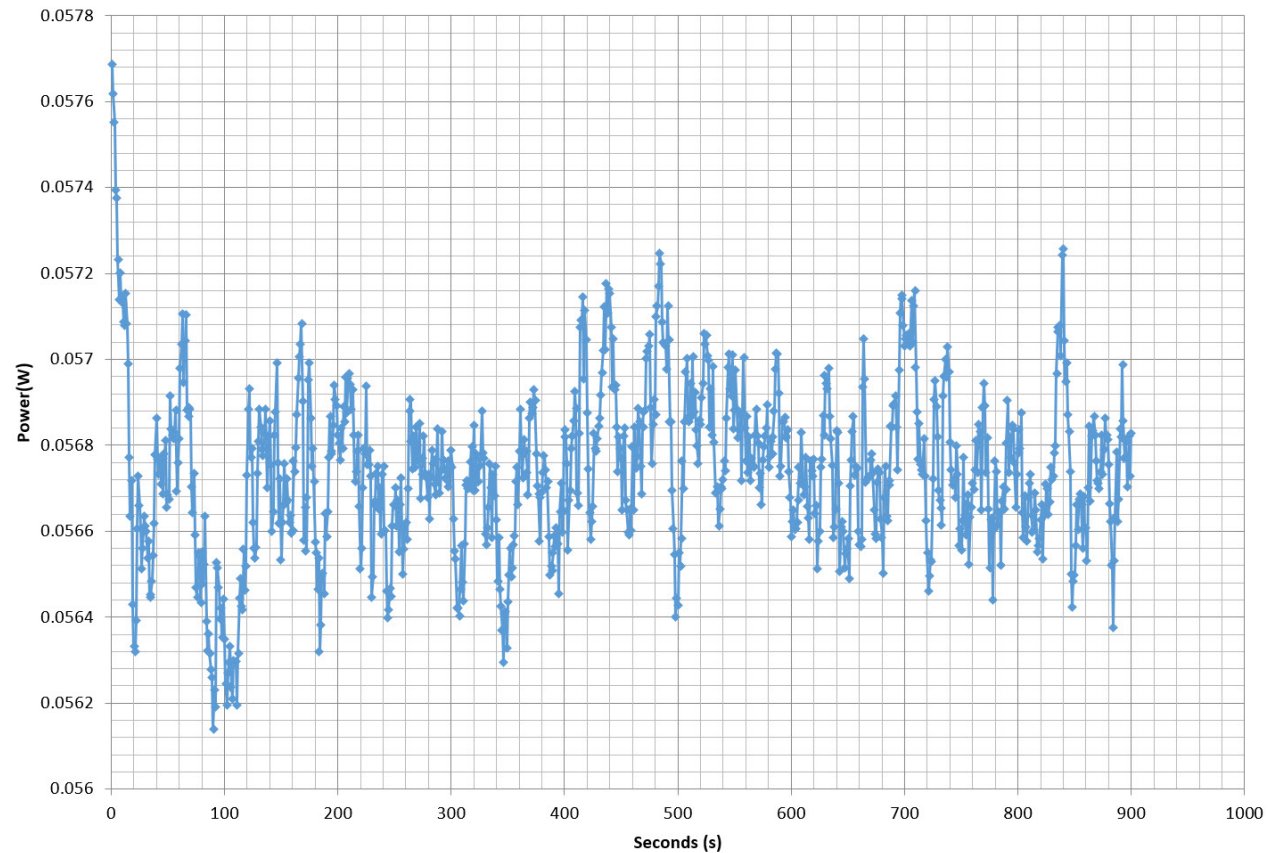
Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	21.2
AC Loss to PWR_OK Hold Up Time (ms)	16.5
PWR_OK Inactive to DC Loss Delay (ms)	4.7

Vampire Power

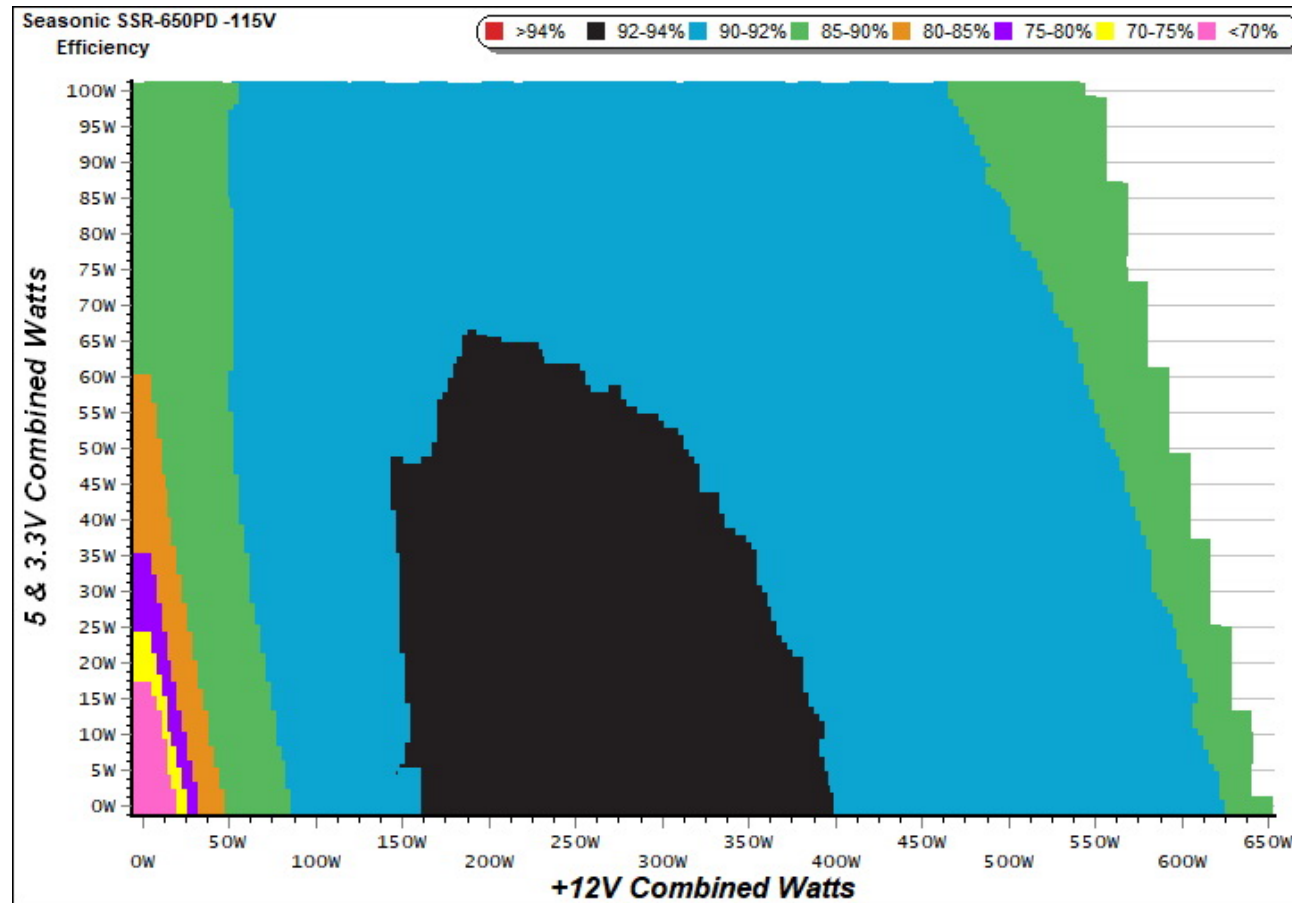
Graphs 115V

Power - R1701TA101410009 - 16/10/2017 - 11:36



Efficiency Graph

115V

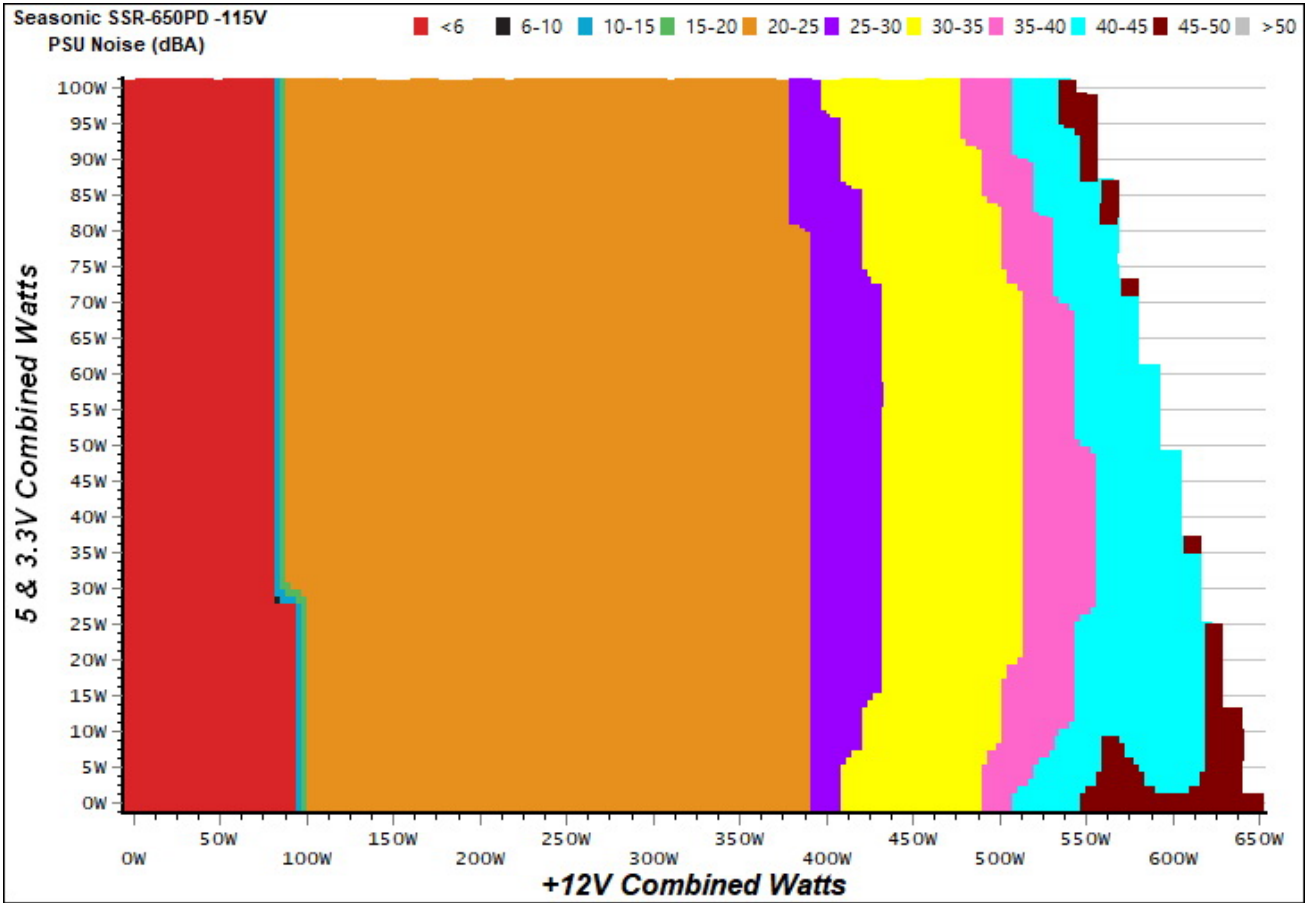


INFO

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

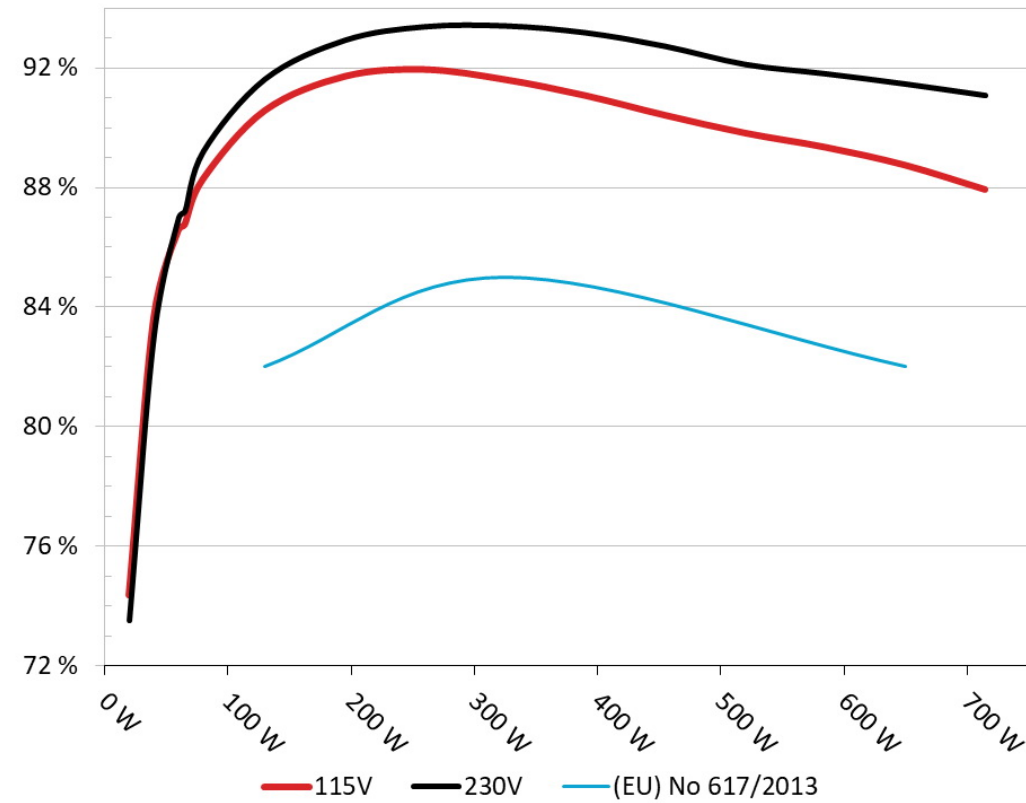
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

Indicative Performance

Efficiency under high ambient temperature

Efficiency: Seasonic SSR-650PD

Ambient: 37°C - 46°C (98.6°F - 114.8°F)



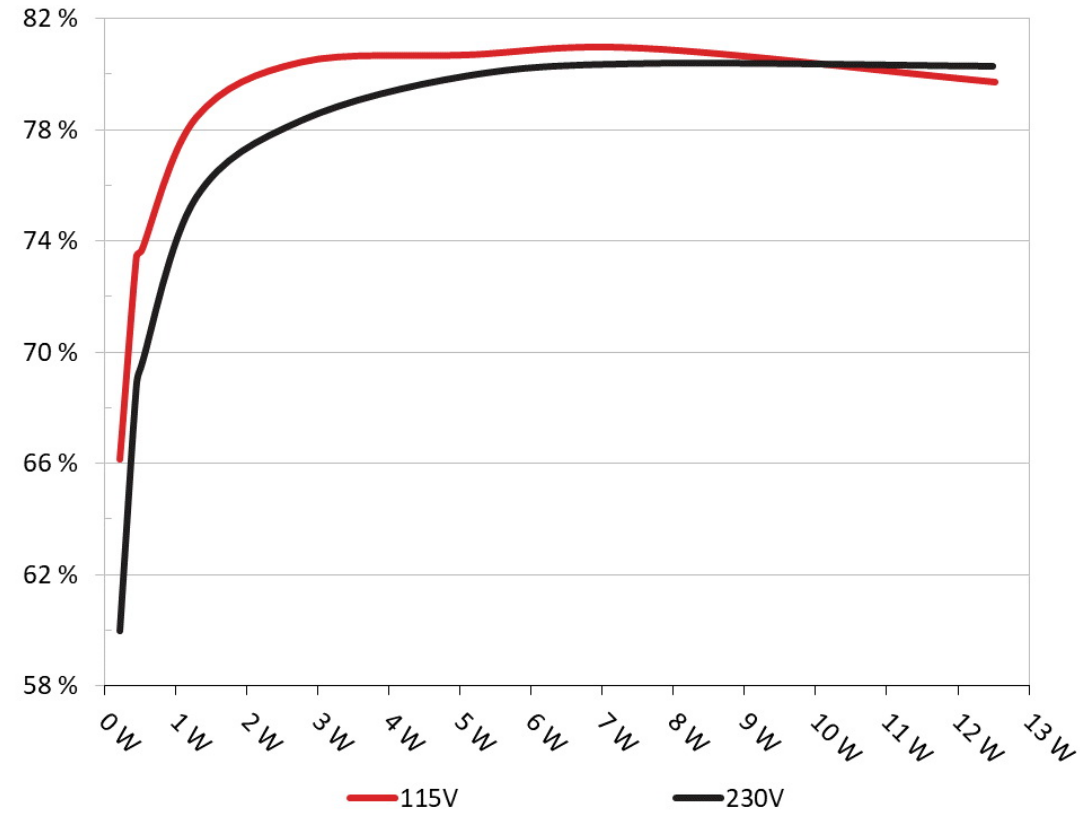
INFO

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: Seasonic SSR-650PD

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	0.042A	0.215	66.154%	0.036
	5.125V	0.325		115.10V

2	0.087A	0.448	73.443%	0.066
	5.123V	0.610		115.10V
3	0.542A	2.766	80.430%	0.278
	5.100V	3.439		115.09V
4	1.002A	5.089	80.688%	0.372
	5.077V	6.307		115.09V
5	1.502A	7.590	80.925%	0.422
	5.054V	9.379		115.09V
6	2.502A	12.524	79.715%	0.471
	5.006V	15.711		115.09V

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
1	3.563A	2.005A	1.979A	0.986A	64.809	86.765%	660	23.8	38.05°C	0.956
	12.128V	4.991V	3.332V	5.066V	74.695				40.86°C	115.10V
2	8.157A	3.001A	2.968A	1.186A	129.777	90.585%	660	23.8	38.30°C	0.985
	12.128V	4.990V	3.331V	5.049V	143.266				41.29°C	115.10V
3	13.096A	3.508A	3.477A	1.390A	194.901	91.733%	660	23.8	38.69°C	0.993
	12.128V	4.989V	3.329V	5.033V	212.466				41.86°C	115.10V
4	18.023A	4.009A	3.962A	1.593A	259.756	91.962%	812	26.7	39.17°C	0.996
	12.128V	4.988V	3.328V	5.016V	282.461				42.53°C	115.10V
5	22.611A	5.009A	4.958A	1.800A	324.691	91.627%	1172	34.8	39.60°C	0.993
	12.128V	4.986V	3.327V	4.997V	354.360				43.29°C	115.09V
6	27.202A	6.016A	5.951A	2.006A	389.673	91.096%	1650	46.1	40.54°C	0.990
	12.128V	4.985V	3.325V	4.980V	427.762				44.59°C	115.08V
7	31.790A	7.020A	6.946A	2.215A	454.609	90.434%	1975	48.5	41.37°C	0.991
	12.128V	4.983V	3.324V	4.962V	502.695				45.84°C	115.07V
8	36.378A	8.034A	7.939A	2.425A	519.620	89.836%	2123	51.2	42.15°C	0.992
	12.129V	4.981V	3.323V	4.945V	578.409				47.38°C	115.07V

9	41.390A	8.532A	8.455A	2.428A	584.635	89.363%	2123	51.2	43.04°C	0.992
	12.130V	4.980V	3.323V	4.938V	654.224				48.53°C	115.07V
10	46.352A	9.048A	8.939A	2.534A	649.510	88.763%	2123	51.2	44.14°C	0.993
	12.131V	4.978V	3.321V	4.928V	731.732				50.48°C	115.07V
11	51.682A	9.050A	8.942A	2.537A	714.374	87.947%	2123	51.2	46.09°C	0.994
	12.135V	4.977V	3.320V	4.921V	812.277				52.73°C	115.07V
CL1	0.101A	12.012A	12.004A	0.005A	101.225	85.043%	2115	50.7	44.19°C	0.976
	12.135V	4.990V	3.335V	5.107V	119.028				47.40°C	115.10V
CL2	53.966A	1.003A	1.003A	1.002A	668.239	88.897%	2123	51.2	44.24°C	0.993
	12.135V	4.985V	3.322V	5.019V	751.697				50.04°C	115.08V

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])	PF/AC Volts
1	1.206A	0.501A	0.476A	0.196A	19.720	74.373%	0	<6.0	0.810
	12.127V	4.999V	3.335V	5.113V	26.515				115.10V
2	2.433A	1.000A	0.989A	0.391A	39.796	83.652%	0	<6.0	0.911
	12.129V	4.996V	3.333V	5.099V	47.573				115.10V
3	3.667A	1.497A	1.499A	0.586A	59.926	86.605%	660	23.8	0.951
	12.129V	4.991V	3.332V	5.088V	69.195				115.10V
4	4.884A	2.005A	1.978A	0.785A	79.813	88.298%	660	23.8	0.965
	12.128V	4.991V	3.331V	5.076V	90.390				115.10V

The results above are not used in the certification process

Ripple Measurements 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	8.0 mV	5.2 mV	5.9 mV	7.0 mV	Pass
20% Load	12.0 mV	5.0 mV	6.3 mV	7.4 mV	Pass
30% Load	14.6 mV	4.7 mV	6.4 mV	8.6 mV	Pass
40% Load	17.7 mV	4.3 mV	5.2 mV	8.8 mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
50% Load	20.5 mV	4.6 mV	5.3 mV	10.1 mV	Pass
60% Load	20.7 mV	4.9 mV	5.9 mV	12.0 mV	Pass
70% Load	19.7 mV	5.2 mV	6.3 mV	13.9 mV	Pass
80% Load	21.0 mV	5.8 mV	7.7 mV	15.6 mV	Pass
90% Load	24.0 mV	6.6 mV	8.2 mV	16.8 mV	Pass
100% Load	28.3 mV	7.1 mV	9.2 mV	19.4 mV	Pass
110% Load	30.8 mV	7.1 mV	9.7 mV	21.6 mV	Pass
Crossload 1	11.5 mV	7.6 mV	9.5 mV	6.2 mV	Pass
Crossload 2	28.1 mV	5.4 mV	6.6 mV	15.7 mV	Pass

The results above are not used in the certification process

Seasonic Prime Platinum 650W

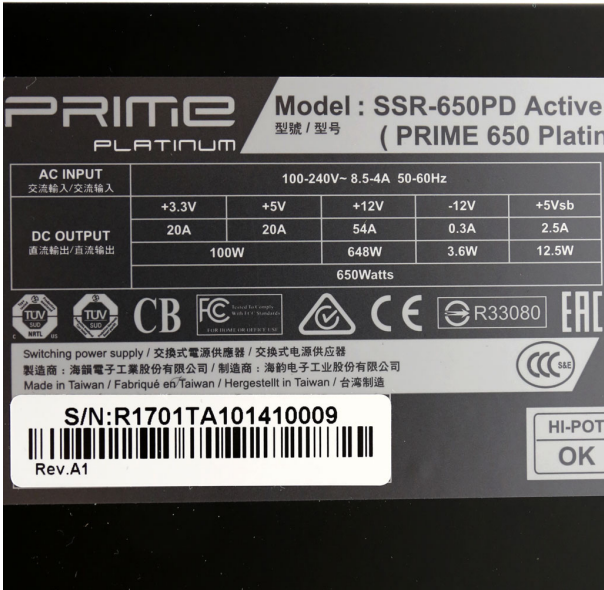


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All data and graphs included in this test report can be used by any individual on the following conditions:

- › 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 LTD Syrou 6, Latsia, 2231, Nicosia Cyprus



Power specifications label

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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