Seasonic Prime Titanium 850W

R1606TA106460008

Lab ID 49

Certification ID 2549

Test Result Report ID:

Certificate Issue Date: Jan 24, 2018

Scheme: ETA-EMI PSU

115V



230V



Scheme: LAMBDA PSU

115V



230V





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 Titanium 850W
OEM/ODM	Seasonic
Serial Number	R1606TA106460008
Product Specifications	
Manufacturer-Provided Information	
□□□□ (Vrms)	100-240
□□□□ (Arms)	11-5.5
□□□□ (Hz)	50-60

□□□□ (W)	850
Operating Temperature (Continuous Full Load) (°C)	
□□	ATX12V
□□□□	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
□□	135mm Fluid Dynamic Bearing Fan (HA13525M12F-Z)
□□□□□	✓ (selectable)
Cybenetics Testing Information	
Lab ID	49
Date of receipt	Jan 15, 2018
Testing Date	Jan 22, 2018
Report Issued Date	Jan 24, 2018
□□□□□	Retested on 4/28/17
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

□□□□ (Non-accredited measurements)

□□□□□				
□□	□□□□	□□□□□□	Gauge	In Cable Capacitors
ATX □□ 20+4 pin (600mm)	1	1	18-22AWG	□
4+4 pin EPS 12V □□ (650mm)	2	2	18AWG	□
6+2pin PCIe□□ (750mm)	6	6	18AWG	□
SATA□□ (450mm+115mm+115mm+115mm)	2	8	18AWG	□
SATA□□ (350mm+115mm)	1	2	18AWG	□
□ 4pin Molex□□ (450mm+120mm+120mm)	1	3	18AWG	□
□ 4pin Molex□□ (350mm+120mm)	1	2	18AWG	□

□ 4pin □□ (+110mm)	1	1	22AWG	□
AC Power Cord (1350mm) - C13 coupler	1	1	18AWG	-

□□□□

□		3.3V	5V	12V	5VSB	-12V
□□□□	□□	20	20	70	3	0.3
	□	100		840	15	3.6
□□□□□ (W)		850				

Parts Description

Primary Side	
Transient Filter	6x Y caps, 3x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	2x Vishay LVB2560 (600V, 25A @ 105°C)
APFC MOSFETS	2x Infineon IPP60R099CP (650V, 19A @ 100°C, 0.099 Ohm)
APFC Boost Diode	1x SCS110AG (600V, 10A @ 117°C)
Hold-up Cap(s)	2x Nippon Chemi-Con (400V, 650uF & 450uF or 1100uF combined, 2000h @ 105°C, CE)
Main Switchers	4x Infineon IPP50R140CP (550V, 15A @ 100°C, 0.140 Ohm)
Drivers For Main Switchers	2x Silicon Labs Si8230BD
APFC Controller	ON Semiconductor NPC1654
Switching Controller	Champion CM6901
Topology	Primary side: Full-Bridge & LLC Resonant Converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	4x Infineon BSC014N04LS (40V, 100A @ 100°C, 1.4 mOhm)
5V & 3.3V	DC-DC Converters: 6x Infineon BSC0906NS PWM Controller: APW7159
Filtering Capacitors	Electrolytics: Nippon Chemi-Con (105°C, KZE, KZH) 1x Rubycon (5VSB circuit, 105°C, YXD) Polymers: FPCAP, Nippon Chemi-Con
Supervisor IC	WeltrendWT7527V (OVP, UVP, OCP, SCP, PG)
Fan Model	Hong Hua HA13525M12F-Z (135mm, 12V, 0.36A, 1800 RPM, Fluid Dynamic Bearing)

5VSB Circuit	
Buck Converter	Leadtrend LD7750R
Rectifiers	STMicroelectronics STU6N65K3 (650V, 3A @ 100°C, 1.3O), Infineon BSC0906NS(30V, 40A @ 100°C, 4.5 mOhm)
-12V Circuit	
Buck Converter	Lite-On LSP5523 (3A max output current)

Test Results

Temperature & Compliance Info

□□□□ (°C /°F)	28-32 / 82.4-89.6
□□ ErP Lot3/6□□	✓
□□ (EU) No 617/2013□□	✓

Performance Summary

115V

Accredited	
□□□□ (>1450 load combinations)	91.986%
Average Noise Output (>1450 Load Combinations)	16.40dBA
PF□□□ (>1450 Load Combinations)	0.990
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
□□□□□□	0.0574W
Non-Accredited	
12V Ripple (Full Load)	-
5V Ripple (Full Load)	-
3.3V Ripple (Full Load)	-
5VSB Ripple (Full Load)	-
12V Load Regulation	-
5V Load Regulation	-
3.3V Load Regulation	-

5VSB Load Regulation	-
Inrush Current	-

230V

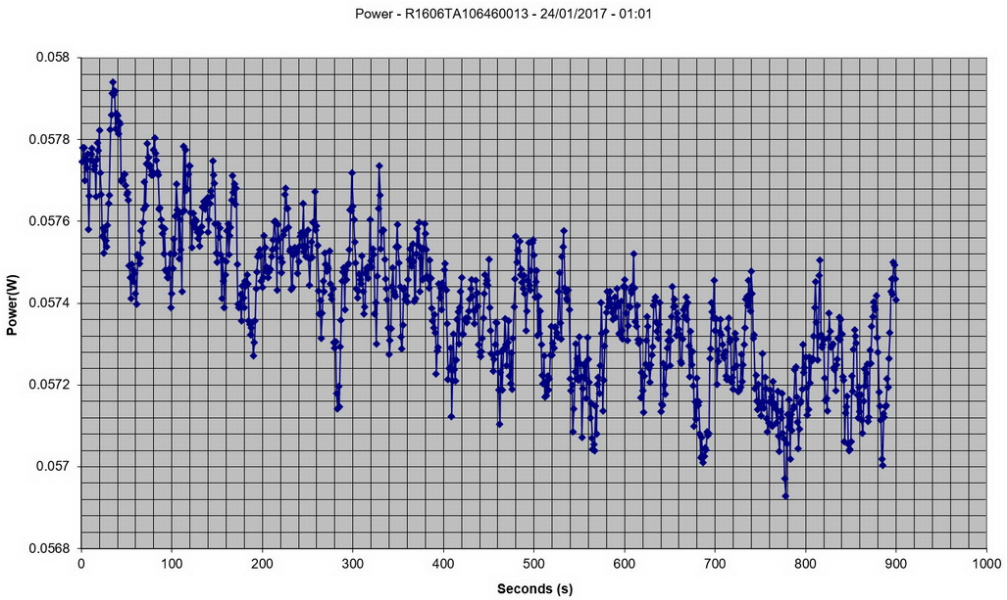
Accredited		
□□□□ (>1450 load combinations)		94.164%
Average Noise Output (>1450 Load Combinations)		15.02dBA
PF□□□ (>1450 Load Combinations)		0.952
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
□□□□□□		0.0988W
Non-Accredited		
12V Ripple (Full Load)		-
5V Ripple (Full Load)		-
3.3V Ripple (Full Load)		-
5VSB Ripple (Full Load)		-
12V Load Regulation		-
5V Load Regulation		-
3.3V Load Regulation		-
5VSB Load Regulation		-
Inrush Current		-
□□□□ & PG□□		0.00ms
AC Loss to PWR_OK Hold Up Time		0.00ms
PWR_OK Inactive to DC Loss Delay		0.00ms
OPP (0.00°C / 0.00°C)	-	-

□□□□ & PG□□

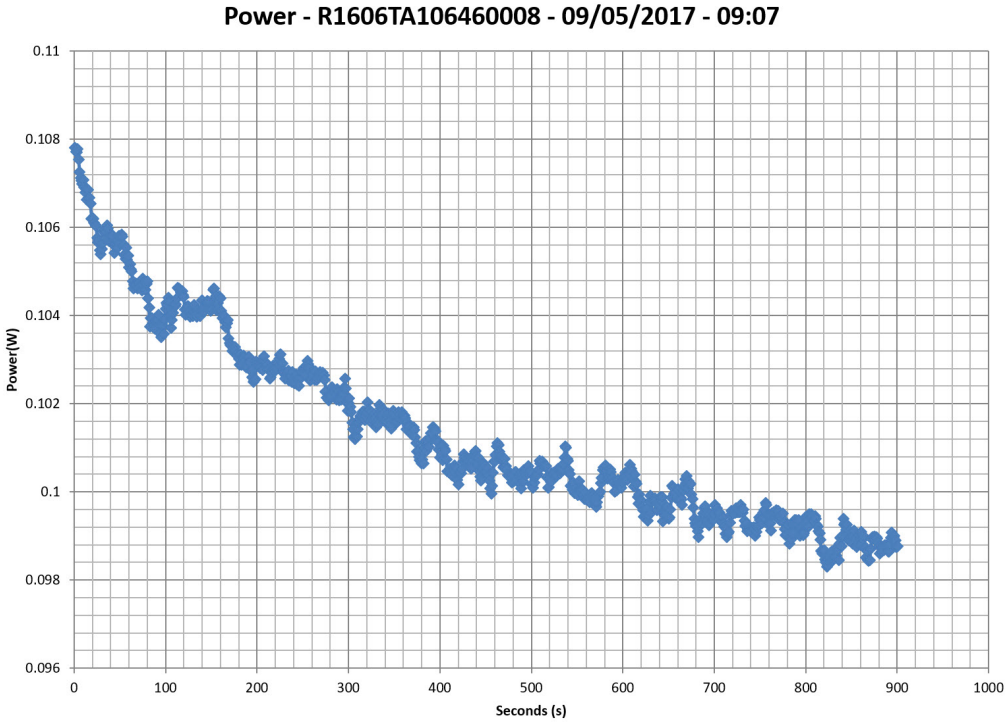
Hold-Up Time (ms)	31.34
AC Loss to PWR_OK Hold Up Time (ms)	30.10
PWR_OK Inactive to DC Loss Delay (ms)	1.24

Graphs

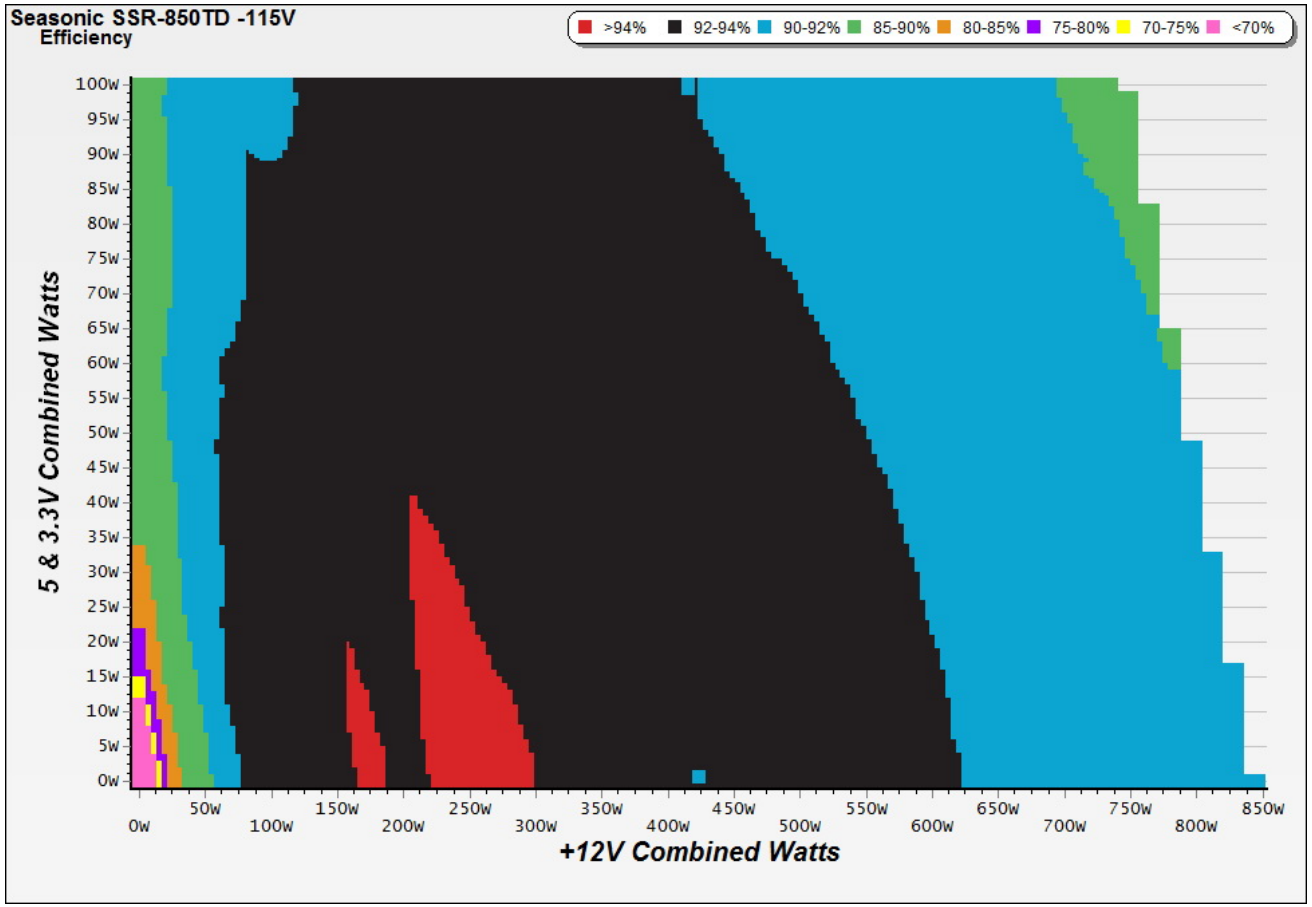
115V



230V



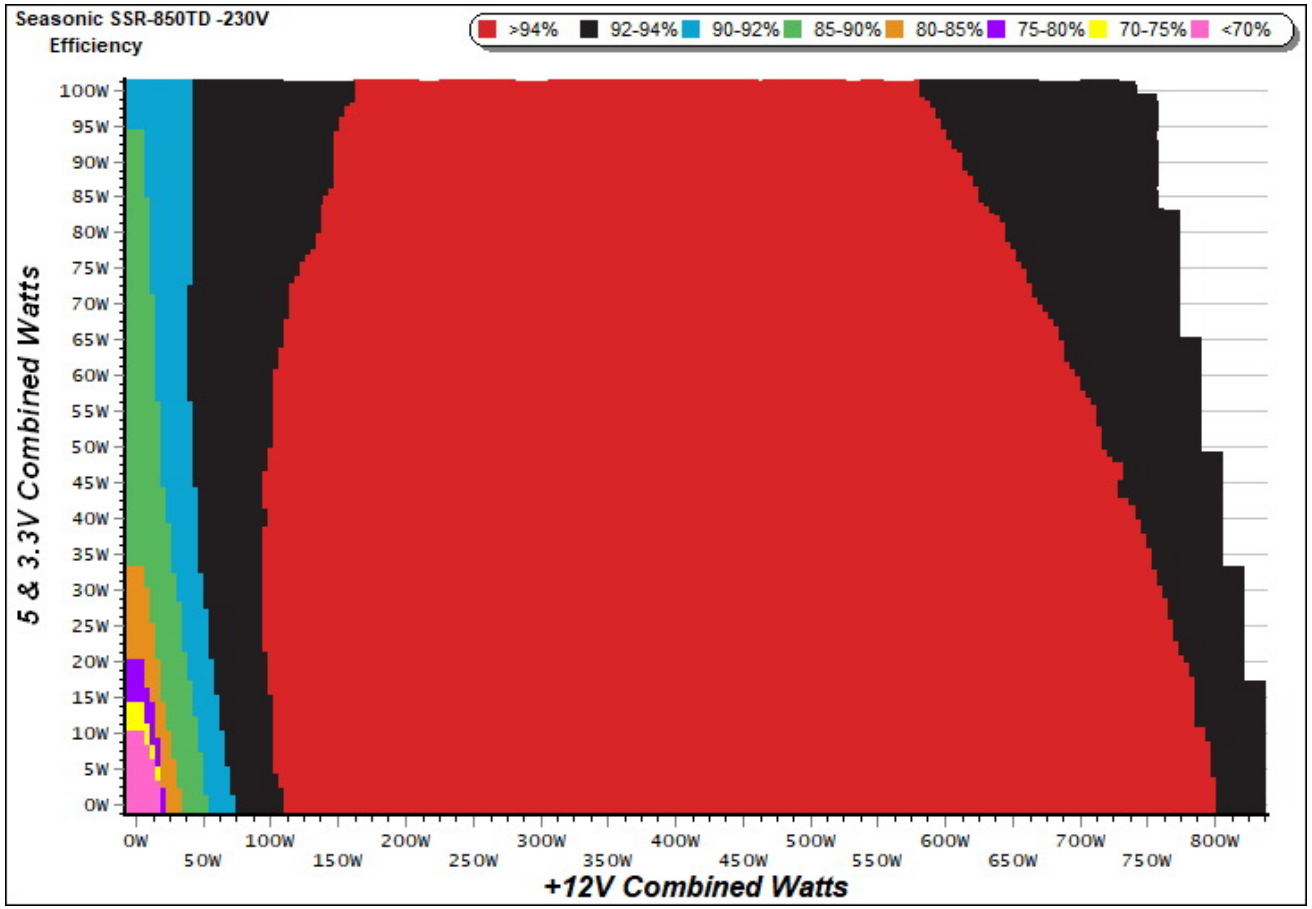
115V



□□

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.

230V



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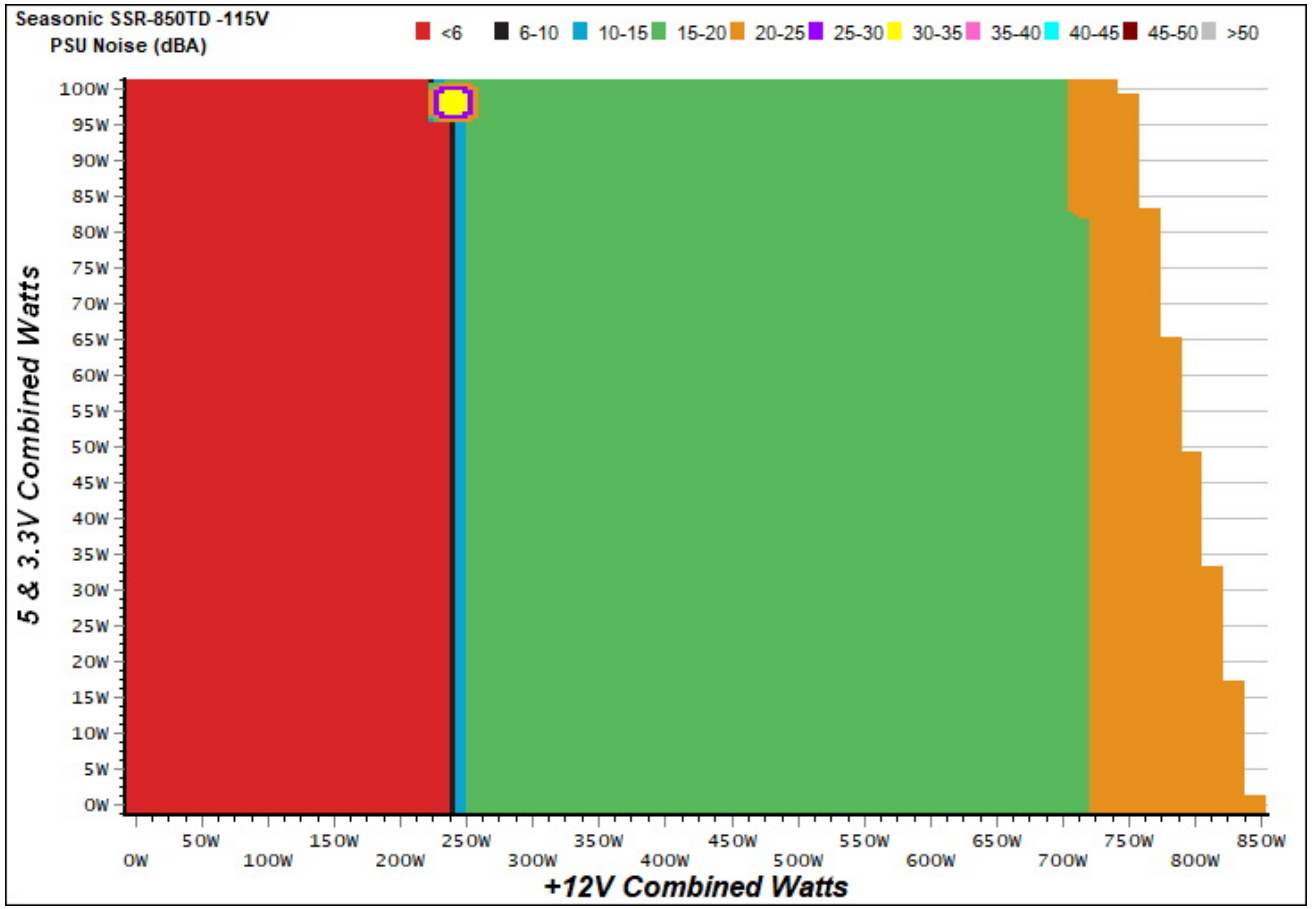
□□□□□

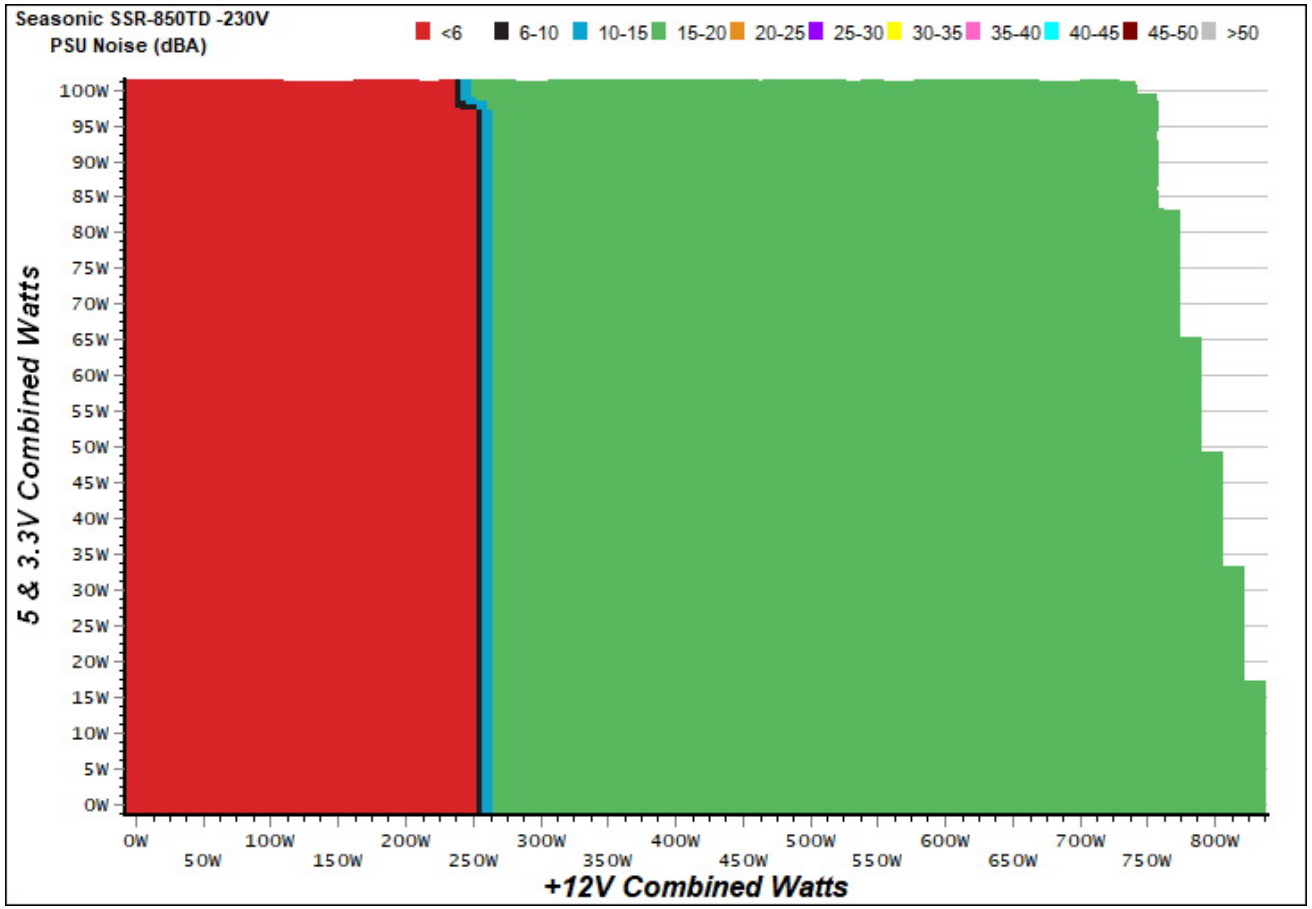
115V



□□

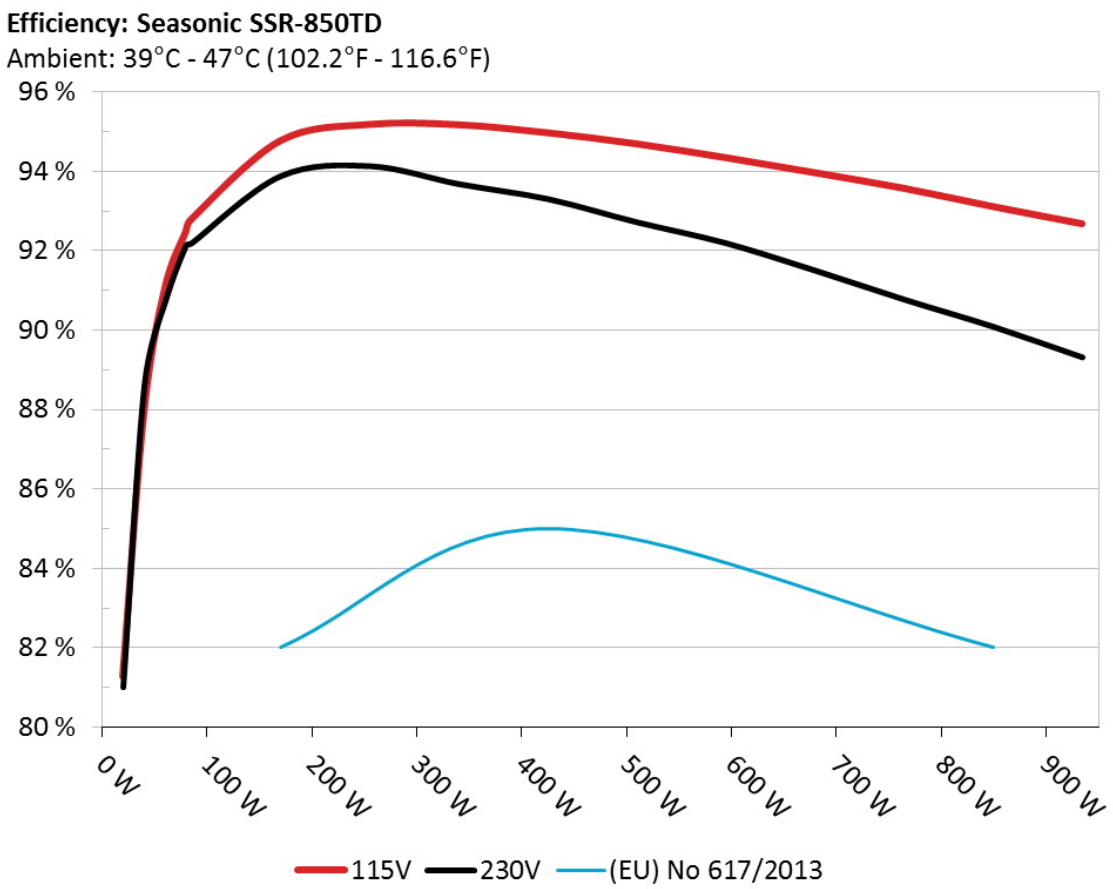
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

230V



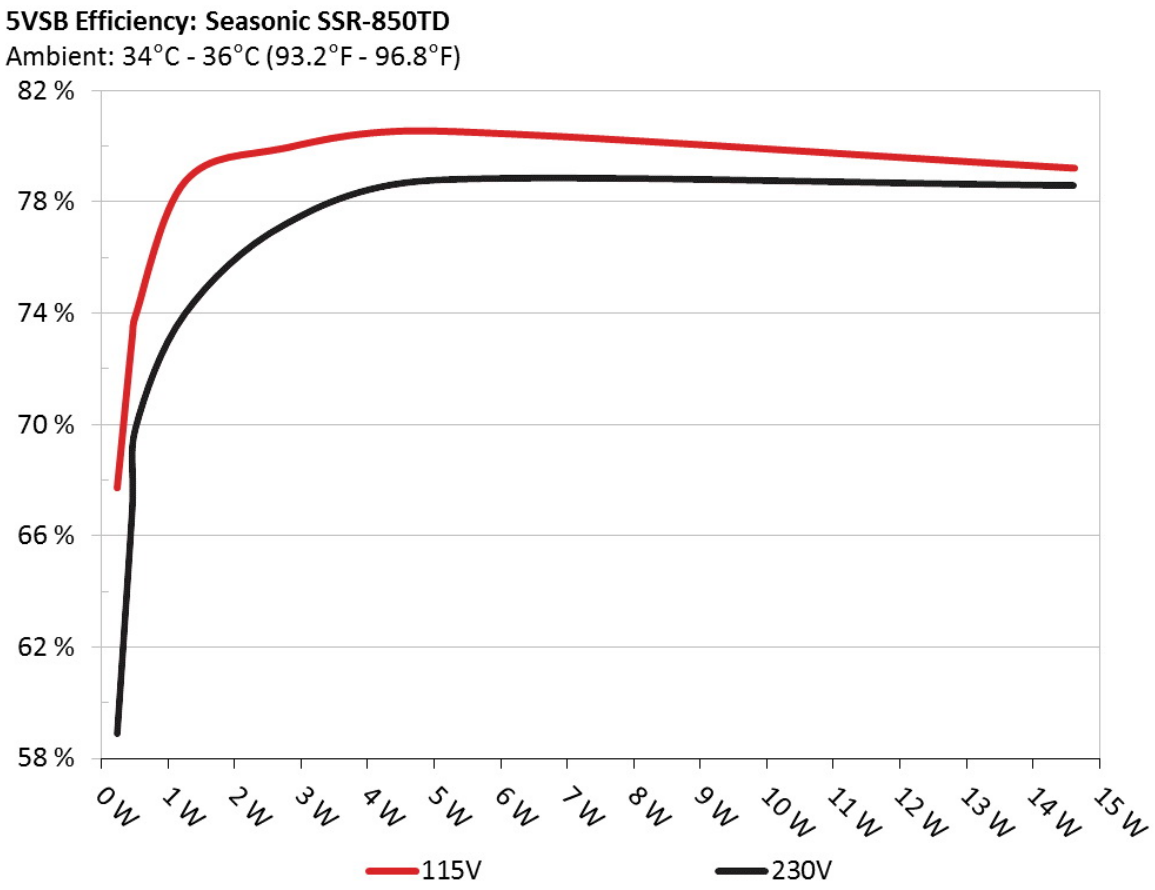
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

Indicative Performance



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□□□□



□□

This graph depicts the efficiency levels of the 5VSB rail with 115V and 230V input.

□□□□ □□ 5Vsb □□ (ErP Lot3/6 & CEC)

115V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.041A	0.208	64.596%	0.036
	5.013V	0.322		115.16V
2	0.087A	0.435	71.664%	0.067
	5.011V	0.607		115.12V
3	0.542A	2.707	79.900%	0.277
	4.991V	3.388		115.16V
4	1.003A	4.983	80.087%	0.373
	4.970V	6.222		115.16V
5	1.502A	7.429	79.676%	0.425
	4.947V	9.324		115.16V
6	3.002A	14.655	78.617%	0.490
	4.882V	18.641		115.16V

230V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.041A	0.208	57.778%	0.012
	5.013V	0.360		230.29V
2	0.087A	0.435	66.923%	0.022
	5.011V	0.650		230.29V
3	0.542A	2.702	77.002%	0.110
	4.989V	3.509		230.30V
4	1.002A	4.974	78.430%	0.182
	4.966V	6.342		230.30V
5	1.502A	7.422	79.312%	0.241
	4.943V	9.358		230.30V
6	3.001A	14.604	78.130%	0.344
	4.866V	18.692		230.30V

Supplementary Tests (For Reference)

10-110%□□□□

115V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	5.206A	1.985A	1.974A	0.995A	84.73	92.178%	395	16.4	38.67°C	0.968
	12.130V	5.041V	3.341V	5.005V	91.92				41.04°C	115.1V
2	11.444A	2.970A	2.961A	1.200A	169.61	93.868%	400	16.5	38.86°C	0.991
	12.125V	5.039V	3.340V	4.998V	180.69				41.35°C	115.1V
3	18.043A	3.478A	3.472A	1.400A	254.81	94.120%	405	16.5	39.48°C	0.996
	12.122V	5.036V	3.338V	4.990V	270.73				42.51°C	115.1V
4	24.629A	3.974A	3.954A	1.605A	339.70	93.669%	408	16.5	40.60°C	0.993
	12.120V	5.035V	3.335V	4.982V	362.66				43.86°C	115.1V
5	30.874A	4.969A	4.946A	1.805A	424.62	93.292%	435	15.0	41.37°C	0.992
	12.118V	5.034V	3.334V	4.975V	455.15				44.18°C	115.1V
6	37.126A	5.961A	5.939A	2.009A	509.58	92.708%	508	17.8	42.15°C	0.994
	12.116V	5.032V	3.332V	4.968V	549.66				45.22°C	115.1V
7	43.380A	6.959A	6.931A	2.214A	594.51	92.181%	395	15.2	43.00°C	0.995
	12.112V	5.032V	3.332V	4.960V	644.94				47.34°C	115.1V
8	49.638A	7.949A	7.922A	2.420A	679.48	91.492%	500	17.2	44.40°C	0.996
	12.110V	5.031V	3.331V	4.953V	742.67				48.87°C	115.1V
9	56.324A	8.455A	8.440A	2.420A	764.57	90.759%	590	21.6	45.44°C	0.997
	12.108V	5.029V	3.329V	4.950V	842.42				50.37°C	115.1V
10	62.760A	8.957A	8.927A	3.042A	849.30	90.078%	925	29.3	46.64°C	0.997
	12.103V	5.027V	3.327V	4.927V	942.85				51.93°C	115.1V
11	69.828A	8.965A	8.934A	3.049A	934.33	89.306%	1300	36.2	46.64°C	0.997
	12.096V	5.021V	3.323V	4.917V	1046.21				52.38°C	115.1V
CL1	0.098A	12.011A	12.005A	0.004A	102.84	89.582%	425	16.0	45.28°C	0.980
	12.139V	5.082V	3.381V	5.089V	114.80				50.51°C	115.2V

CL2	69.946A	1.003A	1.003A	1.001A	859.43	90.329%	915	29.3	46.44°C	0.997
	12.097V	4.997V	3.300V	4.964V	951.44				52.04°C	115.1V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	5.208A	1.985A	1.974A	0.996A	84.751	92.898%	0	<6.0	47.75°C	0.806
	12.132V	5.034V	3.336V	5.010V	91.230				40.15°C	365.15V
2	11.441A	2.974A	2.965A	1.196A	169.629	94.865%	0	<6.0	48.77°C	0.910
	12.130V	5.034V	3.335V	5.009V	178.810				40.86°C	230.31V
3	18.039A	3.479A	3.478A	1.397A	254.835	95.265%	402	16.5	40.99°C	0.951
	12.127V	5.030V	3.332V	5.002V	267.500				49.18°C	230.32V
4	24.626A	3.975A	3.960A	1.600A	339.738	95.306%	405	16.5	41.73°C	0.969
	12.124V	5.029V	3.331V	4.995V	356.472				50.03°C	230.33V
5	30.865A	4.975A	4.954A	1.801A	424.670	95.159%	425	15.5	42.13°C	0.975
	12.123V	5.028V	3.328V	4.993V	446.272				50.95°C	230.32V
6	37.114A	5.972A	5.952A	2.002A	509.600	94.859%	490	16.3	42.65°C	0.982
	12.120V	5.025V	3.324V	4.988V	537.220				51.77°C	230.32V
7	43.358A	6.971A	6.948A	2.205A	594.557	94.530%	390	15.0	43.22°C	0.984
	12.119V	5.024V	3.323V	4.985V	628.962				52.60°C	230.33V
8	49.609A	7.964A	7.946A	2.405A	679.495	94.145%	490	18.4	43.91°C	0.988
	12.117V	5.024V	3.321V	4.982V	721.755				53.77°C	230.33V
9	56.289A	8.472A	8.466A	2.405A	764.557	93.764%	575	18.7	44.24°C	0.989
	12.115V	5.021V	3.319V	4.981V	815.410				54.54°C	230.34V
10	62.710A	8.971A	8.953A	3.019A	849.319	93.286%	870	27.9	45.33°C	0.990
	12.113V	5.020V	3.316V	4.965V	910.443				55.80°C	230.34V
11	69.747A	8.973A	8.953A	3.020A	934.261	92.855%	1280	35.2	46.34°C	0.991
	12.109V	5.018V	3.315V	4.963V	1006.148				57.61°C	230.34V
CL1	0.099A	12.013A	12.004A	0.004A	101.704	89.961%	360	14.6	43.43°C	0.841
	12.137V	5.035V	3.332V	5.072V	113.054				51.42°C	230.34V

CL2	69.941A	1.003A	1.004A	1.002A	860.437	93.645%	635	22.5	45.24°C	0.990
	12.111V	5.023V	3.322V	4.999V	918.824				55.66°C	230.35V

The results above are not used in the certification process

20-80□□□□□

115V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	PF/AC □□
1	1.200A	0.492A	0.477A	0.195A	19.610	81.000%	0	<6.0	0.799
	12.131V	5.039V	3.341V	5.031V	24.210				115.1V
2	2.429A	0.990A	0.986A	0.396A	39.740	88.587%	0	<6.0	0.912
	12.131V	5.038V	3.340V	5.024V	44.860				115.1V
3	3.662A	1.476A	1.493A	0.594A	59.830	90.720%	0	<6.0	0.952
	12.131V	5.039V	3.341V	5.019V	65.950				115.1V
4	4.880A	1.985A	1.974A	0.797A	79.790	92.136%	0	<6.0	0.966
	12.130V	5.040V	3.341V	5.012V	86.600				115.1V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	PF/AC □□
1	1.205A	0.491A	0.475A	0.196A	19.663	81.902%	0	<6.0	0.472
	12.131V	5.036V	3.340V	5.031V	24.008				230.29V
2	2.431A	0.990A	0.986A	0.396A	39.757	88.118%	0	<6.0	0.648
	12.131V	5.035V	3.338V	5.026V	45.118				230.29V
3	3.663A	1.477A	1.496A	0.595A	59.853	91.223%	0	<6.0	0.737
	12.131V	5.034V	3.338V	5.021V	65.612				165.16V
4	4.880A	1.985A	1.975A	0.796A	79.778	92.618%	0	<6.0	0.795
	12.131V	5.034V	3.337V	5.018V	86.137				230.30V

The results above are not used in the certification process

115V

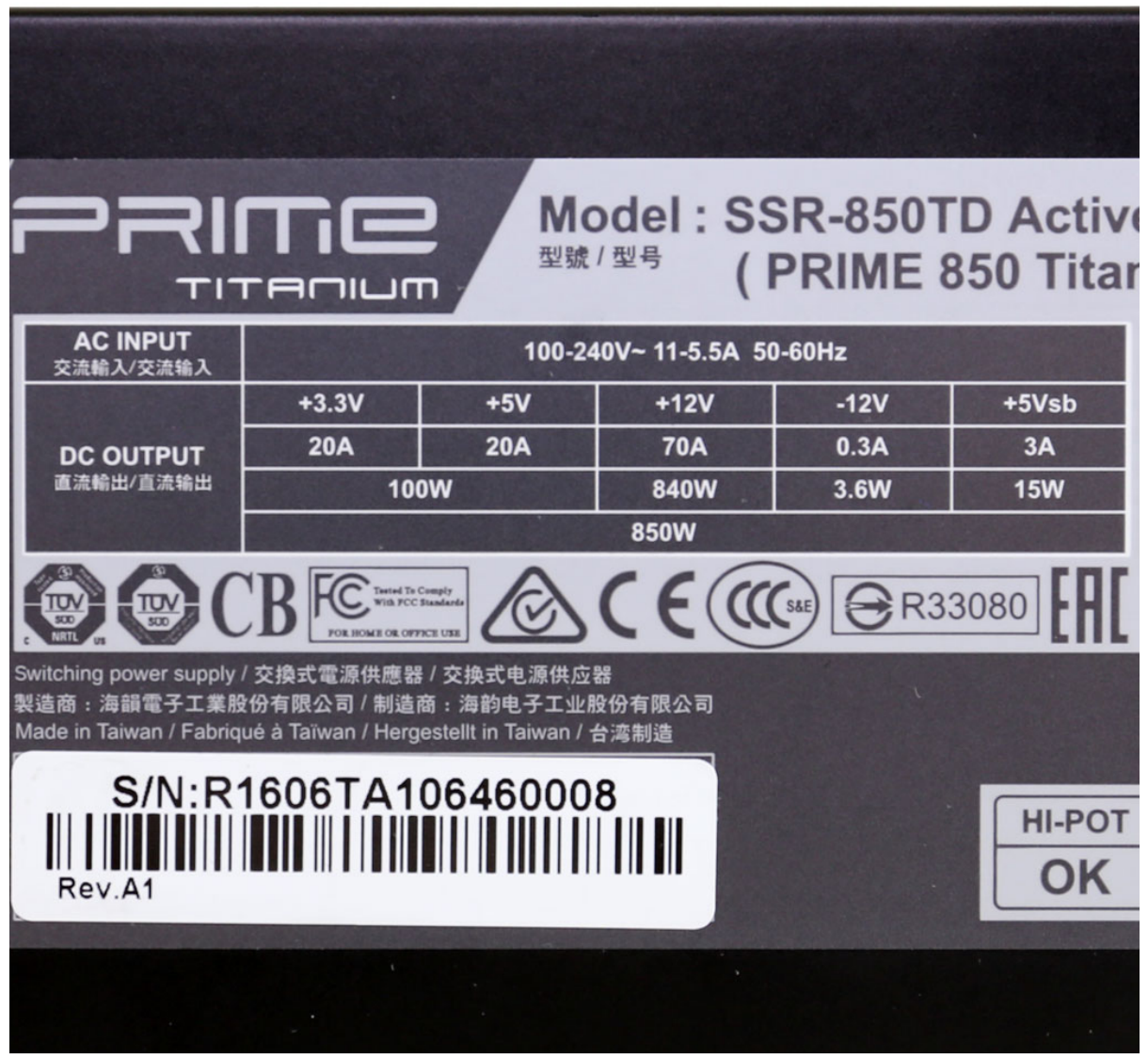
Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	7.4 mV	5.5 mV	7.3 mV	2.6 mV	Pass
20% Load	9.6 mV	5.5 mV	7.5 mV	3.7 mV	Pass
30% Load	11.5 mV	6.3 mV	7.8 mV	3.6 mV	Pass
40% Load	8.9 mV	6.8 mV	8.3 mV	4.6 mV	Pass
50% Load	8.8 mV	6.2 mV	9.6 mV	5.0 mV	Pass
60% Load	9.8 mV	6.3 mV	10.0 mV	5.2 mV	Pass
70% Load	10.9 mV	6.5 mV	10.8 mV	5.8 mV	Pass
80% Load	11.1 mV	6.6 mV	11.2 mV	6.3 mV	Pass
90% Load	12.6 mV	7.4 mV	12.6 mV	6.7 mV	Pass
100% Load	13.4 mV	7.5 mV	13.1 mV	7.6 mV	Pass
110% Load	13.8 mV	8.3 mV	14.5 mV	8.5 mV	Pass
Crossload 1	8.3 mV	6.6 mV	8.3 mV	3.6 mV	Pass
Crossload 2	13.4 mV	6.5 mV	12.1 mV	6.6 mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	8.1 mV	3.4 mV	8.6 mV	4.5 mV	Pass
20% Load	10.0 mV	3.8 mV	8.3 mV	4.8 mV	Pass
30% Load	11.3 mV	4.1 mV	9.2 mV	5.6 mV	Pass
40% Load	7.6 mV	4.1 mV	9.7 mV	6.7 mV	Pass
50% Load	8.3 mV	4.0 mV	9.5 mV	6.5 mV	Pass
60% Load	9.0 mV	4.6 mV	9.4 mV	7.8 mV	Pass
70% Load	10.0 mV	4.5 mV	10.5 mV	8.5 mV	Pass
80% Load	10.4 mV	4.7 mV	9.3 mV	9.5 mV	Pass





Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	11.0 mV	4.9 mV	10.5 mV	11.0 mV	Pass
100% Load	13.2 mV	5.5 mV	14.5 mV	12.7 mV	Pass
110% Load	12.5 mV	5.6 mV	15.6 mV	13.6 mV	Pass
Crossload 1	9.6 mV	4.8 mV	13.0 mV	5.9 mV	Pass
Crossload 2	13.1 mV	4.7 mV	13.0 mV	11.9 mV	Pass

The results above are not used in the certification process

Seasonic Prime Titanium 850W

Top side

Power specifications label

本测试报告中包含的所有数据和图表均可在以下条件下由任何人使用：使用过程需提及测试结果由 Cybenetics提供。
在任何情况下都应提供原始测试结果文档的网站链接

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