Seasonic Prime Titanium Ultra 750W

Serial Number R1709AA183710034

Lab ID 231

Certification ID 25231

Test Result Report ID:

Certificate Issue Date: Apr 12, 2018

Scheme: ETA-EMI PSU

115V



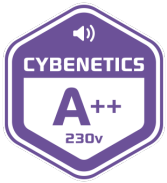
230V



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	Seasonic
Model	Prime Titanium Ultra 750W
OEM/ODM	Seasonic
Serial Number	R1709AA183710034
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	9.5-4.5
Rated Frequency (Hz)	50-60

Rated Power (W)	750
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 (HA13525L12F-Z)
Semi-Passive Operation	✓ (selectable)
Cybenetics Testing Information	
Lab ID	231
Date of receipt	Mar 30, 2018
Testing Date	Apr 10, 2018
Report Issued Date	Apr 12, 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	In Cable Capacitors
ATX connector 20+4 pin (600mm)	1	1	18-22AWG	No
4+4 pin EPS12V (660mm)	2	2	18AWG	No
6+2 pin PCIe (760mm)	4	4	18AWG	No
SATA (350mm+150mm+150mm+150mm)	1	4	18AWG	No
SATA (410mm+110mm+110mm+110mm)	1	4	18AWG	No
SATA (300mm+150mm)	1	2	18AWG	No
4 pin Molex (450mm+120mm+120mm)	1	3	18AWG	No
4 pin Molex (350mm+120mm)	1	2	18AWG	No

4-pin Molex Adapter / SATA (150mm+150mm)	1	2	18AWG	No
FDD Adapter (+100mm)	1	1	22AWG	No
AC Power Cord (1370mm) - C13 coupler	1	1	18AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	62	3	0.3
	Watts	100		744	15	3.6
Total Max. Power (W)		750				

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)	91.787%
Average Noise Output (>1450 Load Combinations)	11.73dBA
Average PF (>1450 Load Combinations)	0.988
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
Standby Power Consumption	0.0578W
Non-Accredited	
12V Ripple (Full Load)	16.17mV
5V Ripple (Full Load)	5.53mV
3.3V Ripple (Full Load)	7.64mV

5VSB Ripple (Full Load)	6.02mV
12V Load Regulation	0.10%
5V Load Regulation	0.08%
3.3V Load Regulation	0.24%
5VSB Load Regulation	1.09%
Inrush Current	24.793A

230V

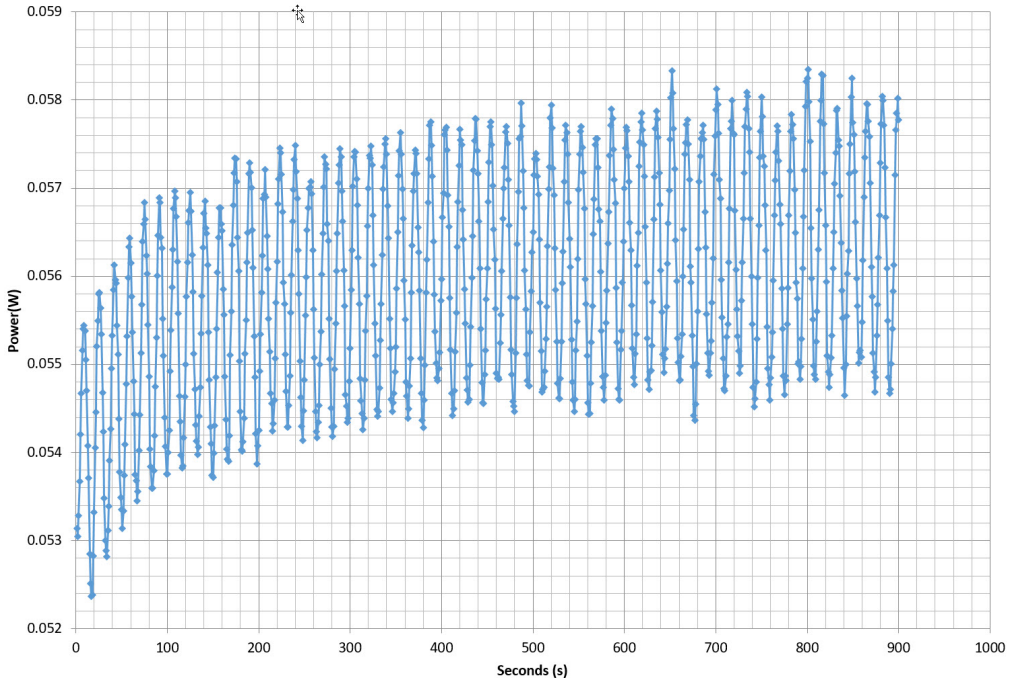
Accredited		
Average Efficiency (>1450 load combinations)		93.787%
Average Noise Output (>1450 Load Combinations)		10.26dBA
Average PF (>1450 Load Combinations)		0.941
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
Standby Power Consumption		0.0827W
Non-Accredited		
12V Ripple (Full Load)		16.60mV
5V Ripple (Full Load)		5.21mV
3.3V Ripple (Full Load)		7.72mV
5VSB Ripple (Full Load)		6.15mV
12V Load Regulation		0.10%
5V Load Regulation		0.08%
3.3V Load Regulation		0.24%
5VSB Load Regulation		1.11%
Inrush Current		60.084A
Hold-Up Time & PWR_OK Signal		28.10ms
AC Loss to PWR_OK Hold Up Time		23.40ms
PWR_OK Inactive to DC Loss Delay		4.70ms
OPP (0.00°C / 0.00°C)	-	-

Hold-Up Time & PWR_OK Signal

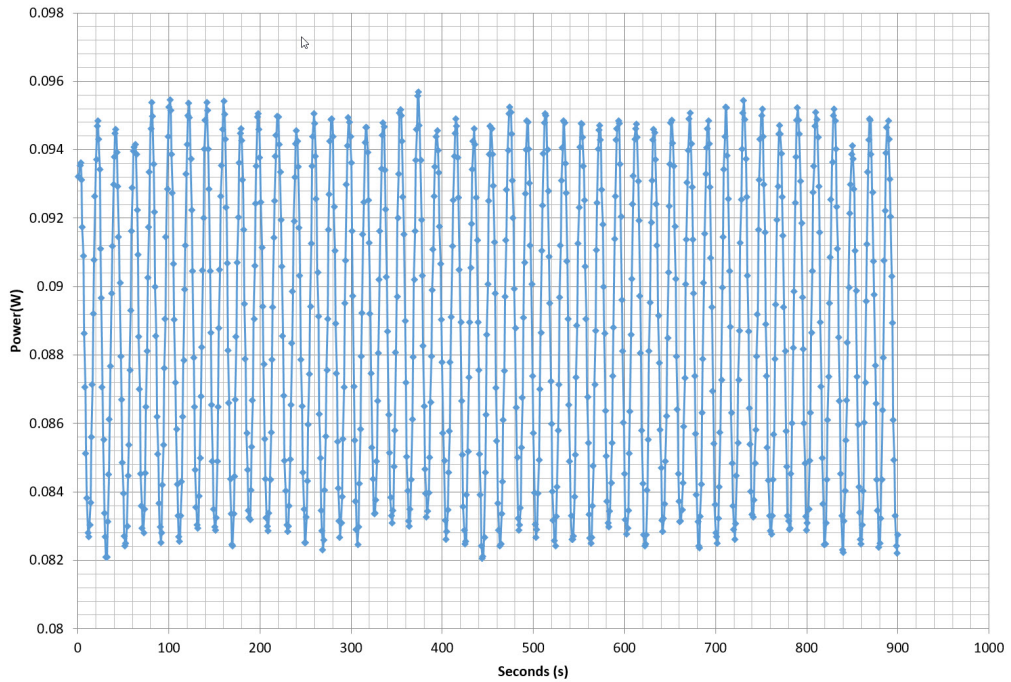
Hold-Up Time (ms)	28.1
AC Loss to PWR_OK Hold Up Time (ms)	23.4
PWR_OK Inactive to DC Loss Delay (ms)	4.7

Graphs

115V

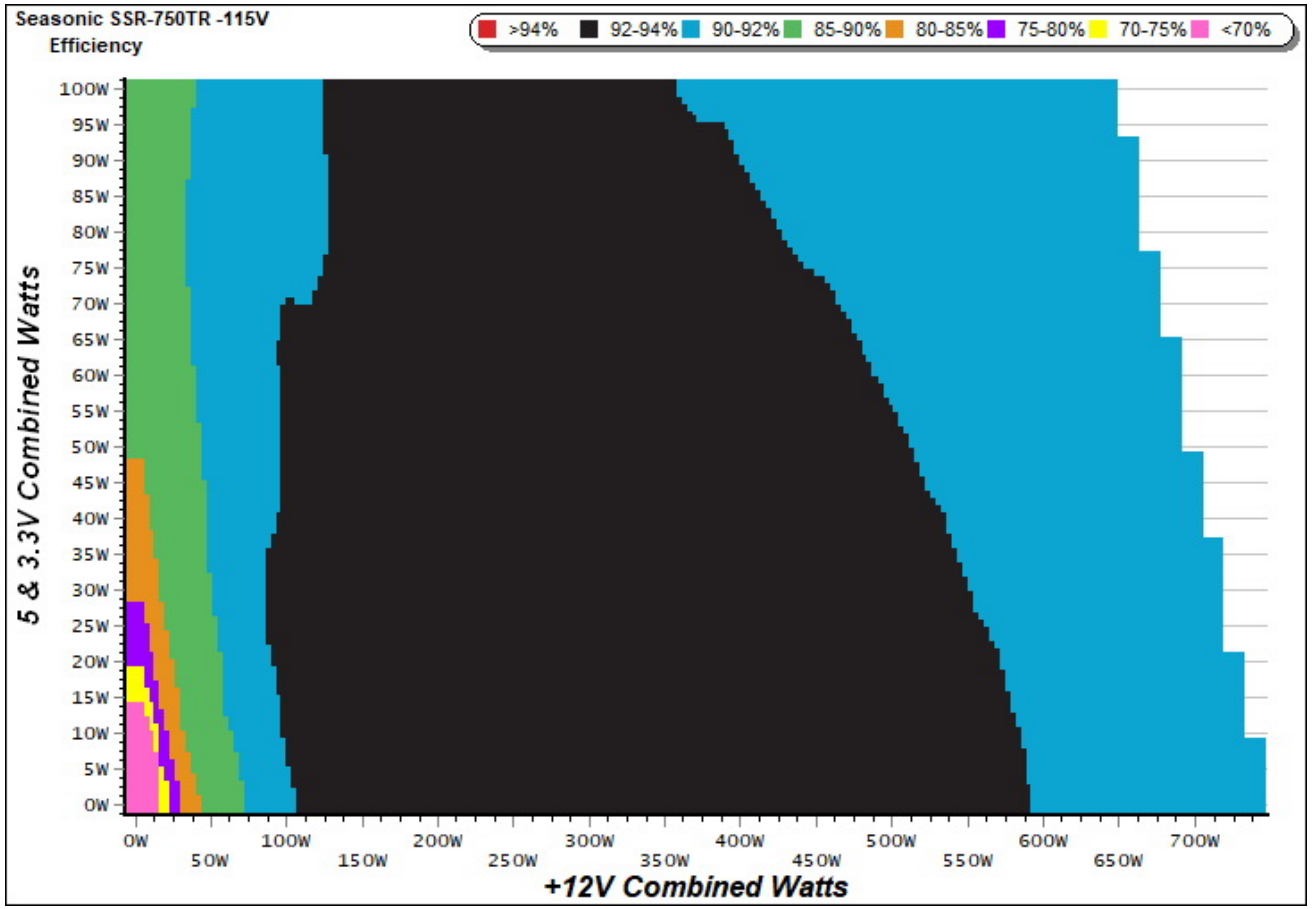


230V



Efficiency Graph

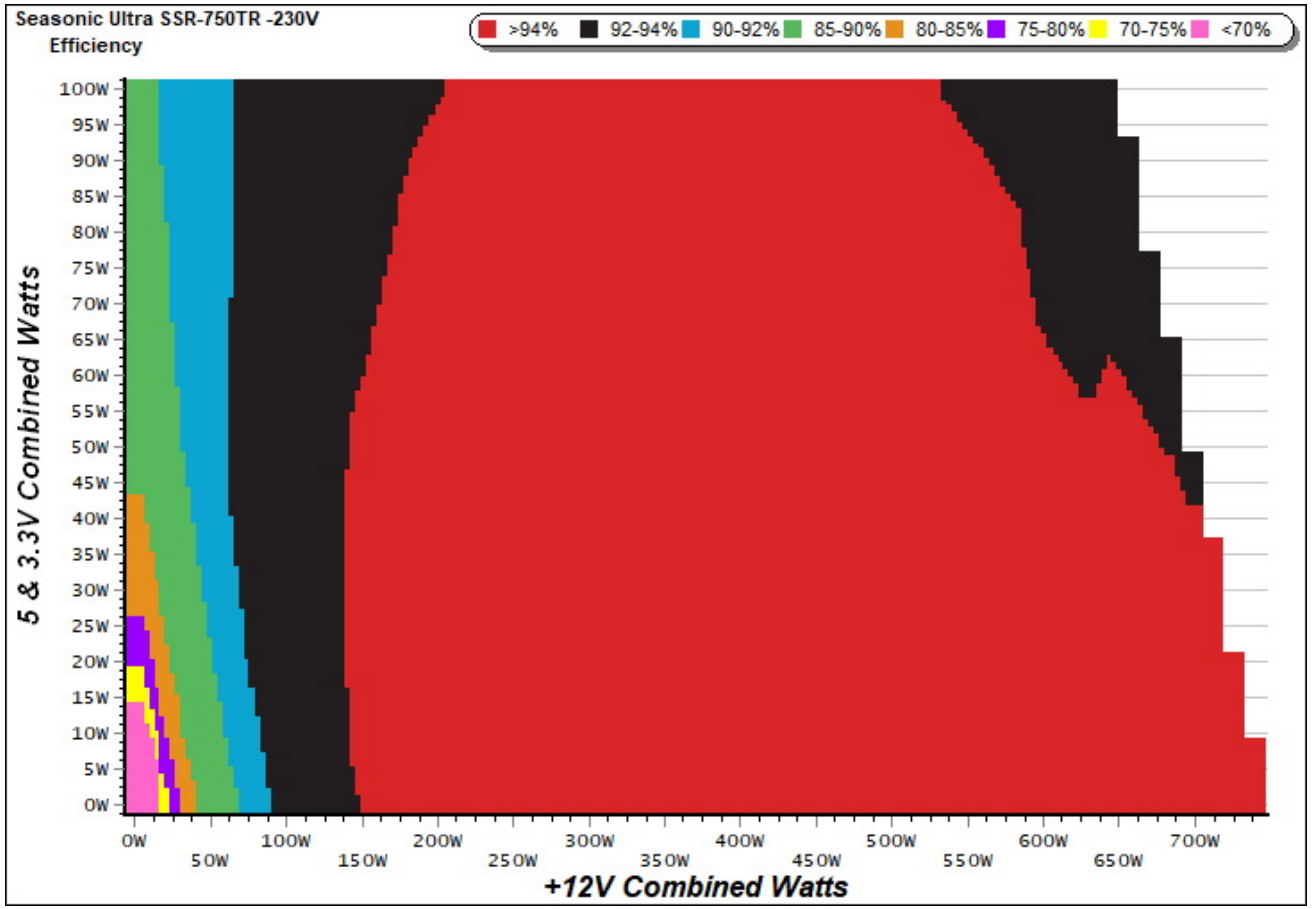
115V



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.

230V

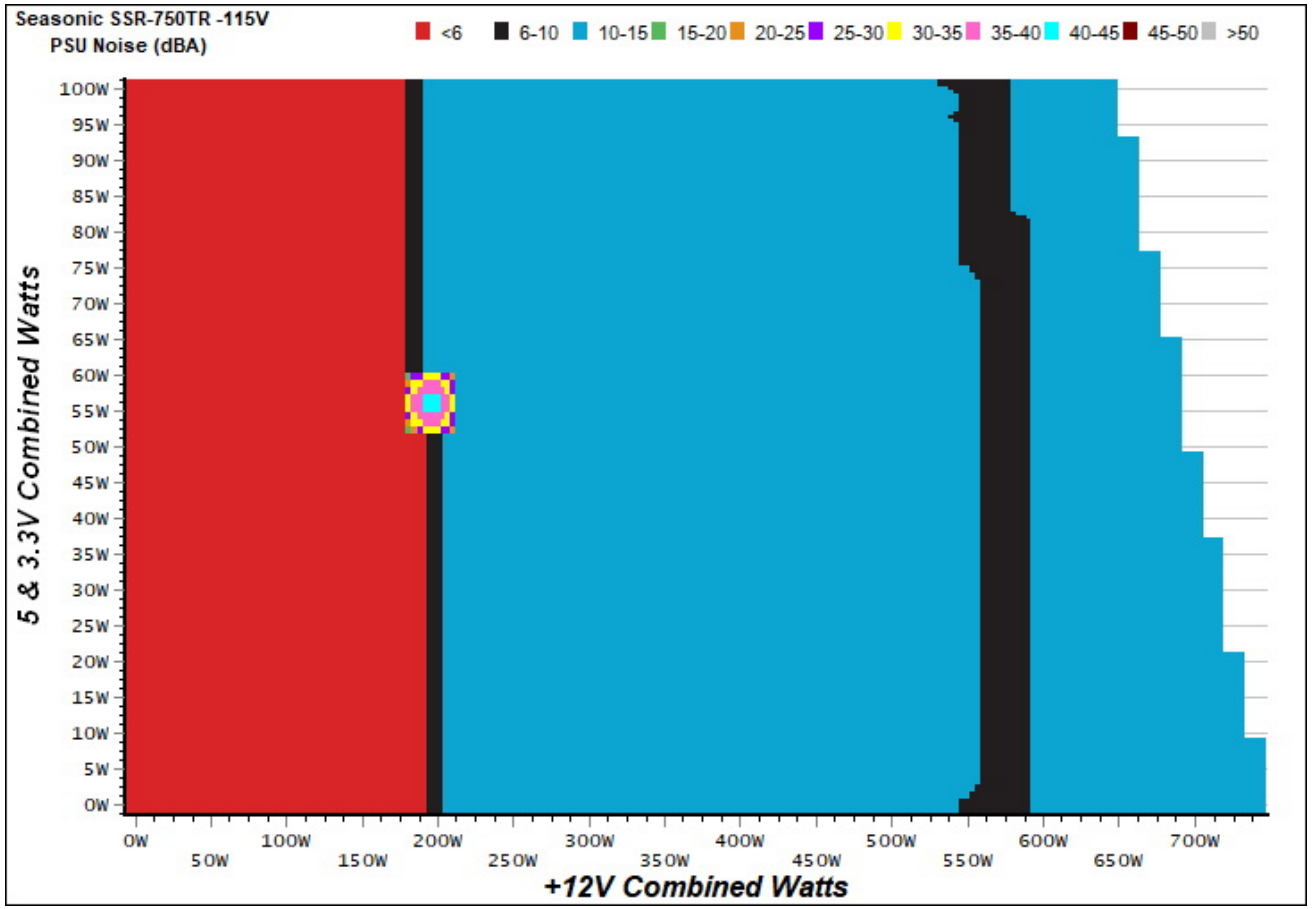


INFO

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Noise Graph

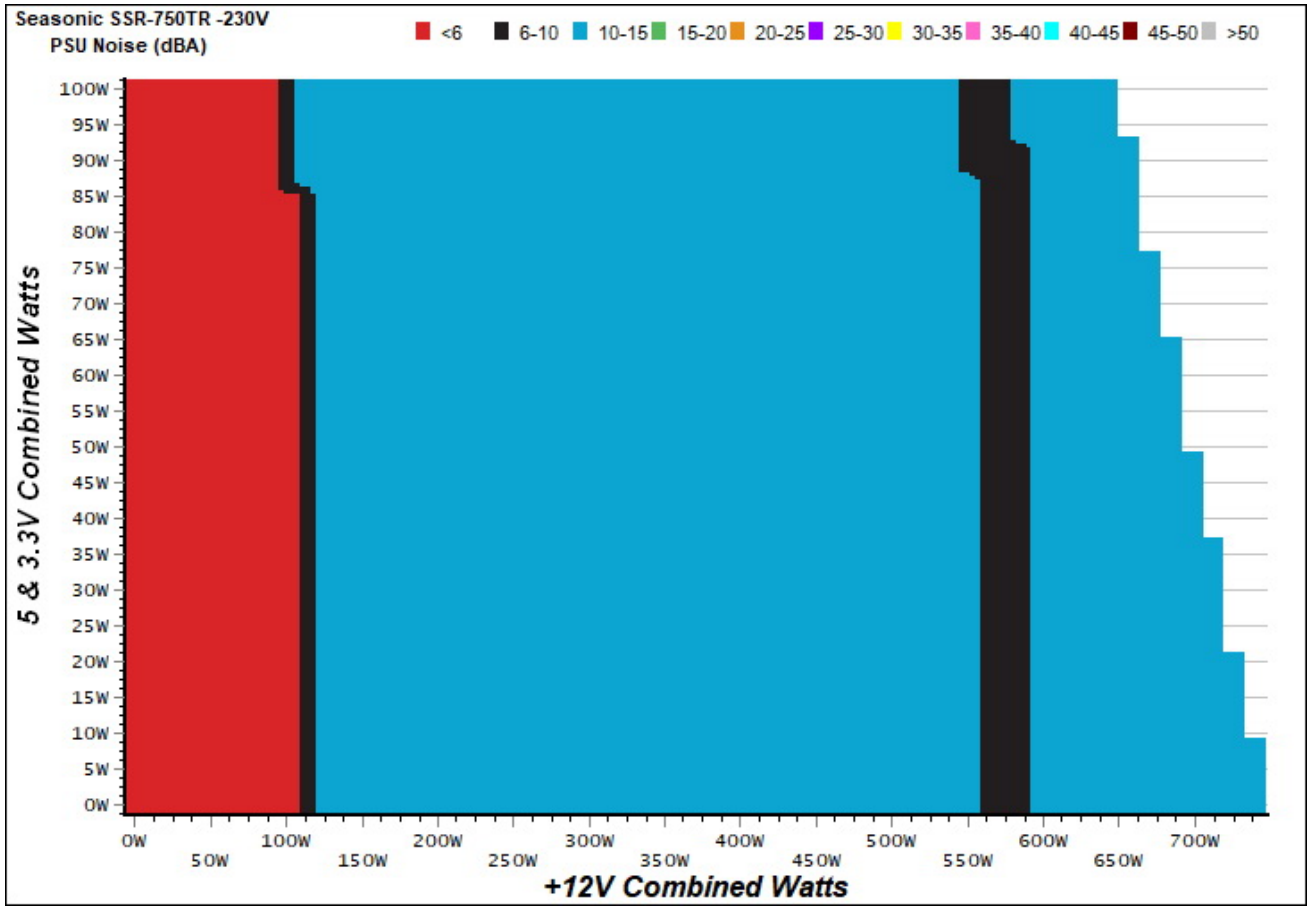
115V



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.

230V

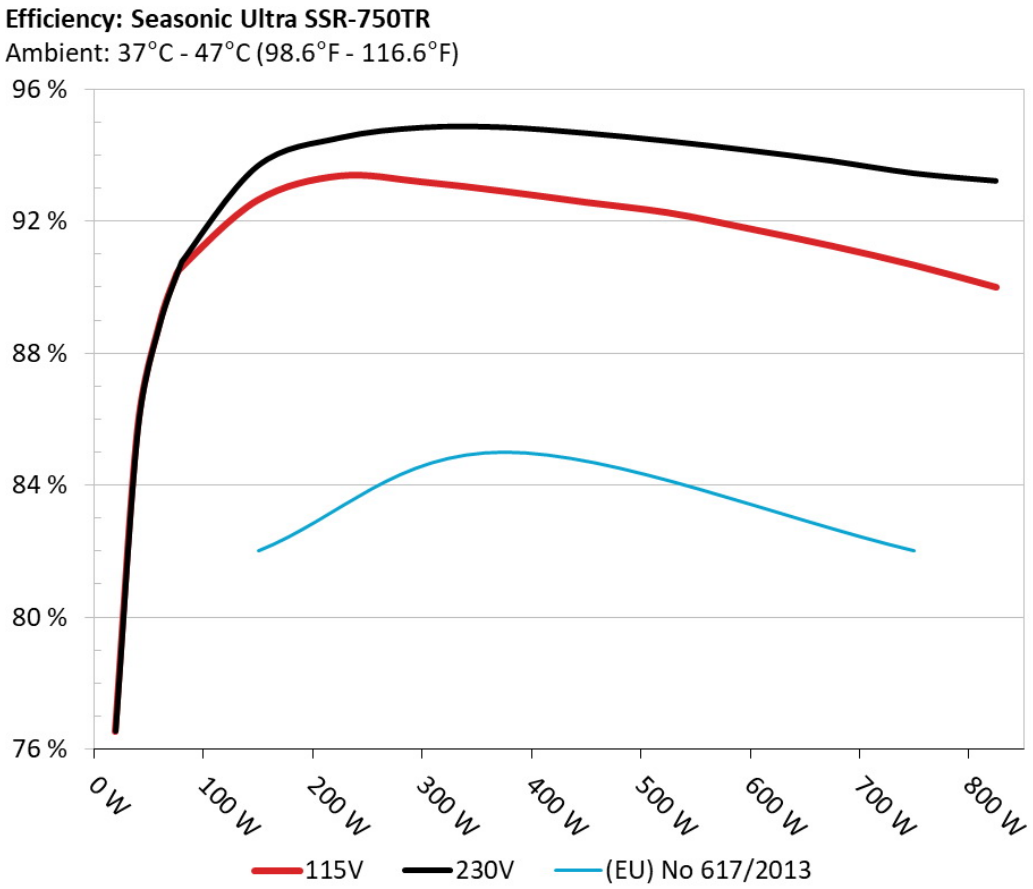


INFO

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

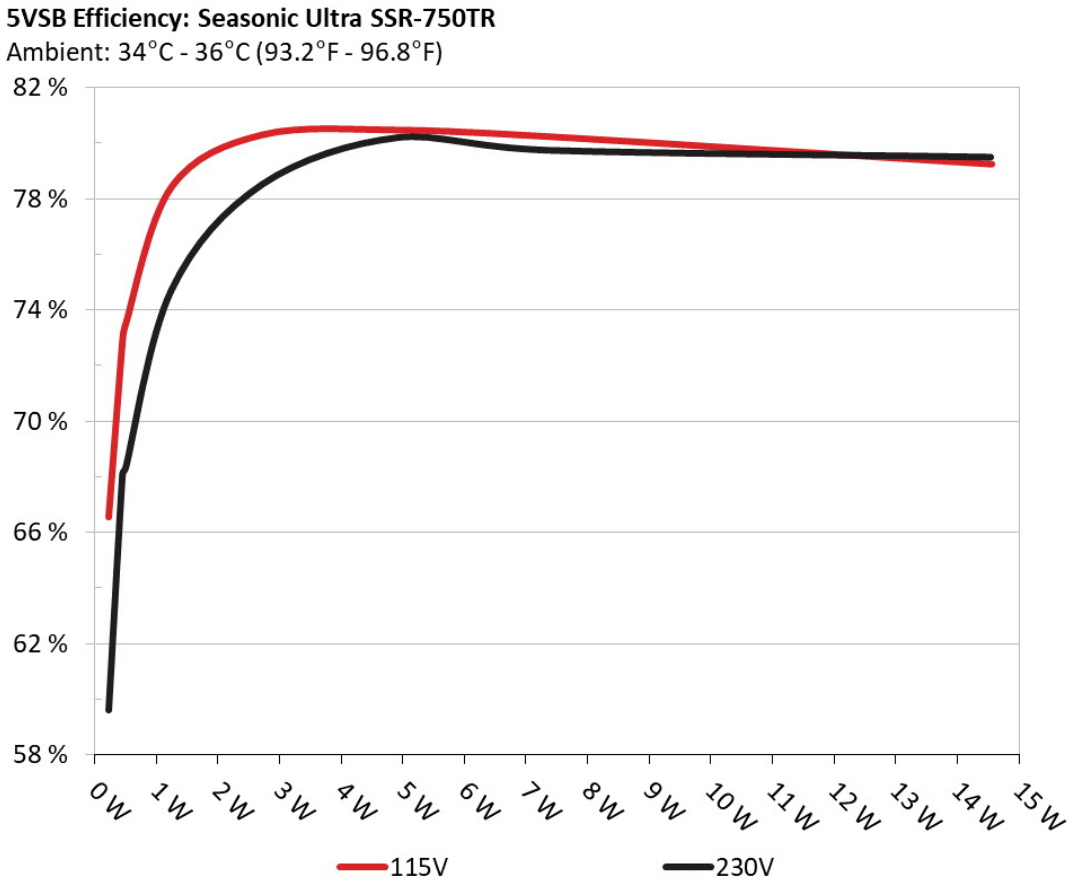
Efficiency under high ambient temperature



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)

115V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.223	66.567%	0.029
	4.960V	0.335		115.27V
2	0.090A	0.446	72.876%	0.052
	4.958V	0.612		115.27V
3	0.550A	2.717	80.290%	0.238
	4.941V	3.384		115.26V
4	1.000A	4.924	80.458%	0.342
	4.924V	6.120		115.26V
5	1.500A	7.359	80.225%	0.405
	4.906V	9.173		115.26V
6	3.000A	14.558	79.236%	0.484
	4.853V	18.373		115.24V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.223	59.626%	0.010
	4.960V	0.374		230.83V
2	0.090A	0.446	68.092%	0.018
	4.958V	0.655		230.84V
3	0.550A	2.717	78.526%	0.092
	4.940V	3.460		230.83V
4	1.000A	4.923	80.205%	0.154
	4.923V	6.138		230.83V
5	1.500A	7.355	79.746%	0.213
	4.903V	9.223		230.82V
6	3.000A	14.536	79.497%	0.325
	4.845V	18.285		230.82V

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	4.349A	1.985A	1.984A	0.997A	74.359	90.309%	380	9.6	38.09°C	0.959
	12.133V	5.035V	3.325V	5.015V	82.338				43.03°C	115.28V
2	9.749A	2.980A	2.978A	1.198A	149.282	92.638%	380	9.6	38.38°C	0.987
	12.143V	5.034V	3.323V	5.011V	161.146				43.38°C	115.18V
3	15.551A	3.478A	3.460A	1.398A	224.804	93.378%	380	9.6	38.74°C	0.993
	12.141V	5.033V	3.322V	5.007V	240.745				44.79°C	115.07V
4	21.283A	3.974A	3.973A	1.599A	299.588	93.197%	395	10.5	38.99°C	0.992
	12.141V	5.032V	3.321V	5.003V	321.458				45.85°C	115.07V
5	26.692A	4.970A	4.968A	1.800A	374.544	92.913%	435	10.7	39.89°C	0.991
	12.140V	5.032V	3.320V	5.000V	403.112				46.96°C	114.98V
6	32.095A	5.963A	5.965A	2.002A	449.442	92.580%	485	12.8	40.56°C	0.992
	12.140V	5.032V	3.319V	4.997V	485.461				47.86°C	114.88V
7	37.534A	6.957A	6.959A	2.203A	524.761	92.264%	370	10.4	41.09°C	0.993
	12.140V	5.031V	3.319V	4.994V	568.758				48.69°C	114.86V
8	42.966A	7.951A	7.957A	2.405A	600.065	91.773%	460	11.9	42.50°C	0.994
	12.141V	5.032V	3.318V	4.991V	653.860				50.25°C	114.75V
9	48.773A	8.449A	8.440A	2.404A	674.607	91.256%	540	15.8	43.61°C	0.995
	12.140V	5.031V	3.317V	4.992V	739.246				51.74°C	114.64V
10	54.376A	8.946A	8.954A	3.014A	749.837	90.675%	635	19.6	45.07°C	0.996
	12.140V	5.031V	3.317V	4.978V	826.954				53.50°C	114.63V
11	60.582A	8.948A	8.957A	3.014A	825.067	90.005%	1020	32.2	46.78°C	0.996
	12.138V	5.031V	3.316V	4.978V	916.691				55.69°C	114.51V
CL1	0.735A	12.003A	12.000A	0.000A	109.269	89.256%	440	11.6	43.62°C	0.980
	12.139V	5.036V	3.325V	5.063V	122.422				50.82°C	115.22V

CL2	62.011A	1.003A	0.999A	1.000A	765.999	90.858%	635	19.6	44.93°C	0.996
	12.137V	5.033V	3.317V	5.010V	843.072				53.14°C	114.61V

The results above are not used in the certification process

230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	4.356A	1.986A	1.983A	0.997A	74.427	90.778%	380	9.6	38.11°C	0.763
	12.130V	5.034V	3.324V	5.015V	81.988				43.85°C	230.64V
2	9.754A	2.980A	2.979A	1.198A	149.316	93.684%	380	9.6	38.48°C	0.883
	12.140V	5.034V	3.323V	5.011V	159.383				44.32°C	230.76V
3	15.555A	3.478A	3.462A	1.398A	224.812	94.539%	380	9.6	38.74°C	0.933
	12.138V	5.033V	3.322V	5.007V	237.797				45.01°C	230.82V
4	21.288A	3.973A	3.973A	1.599A	299.584	94.851%	395	10.5	39.20°C	0.955
	12.138V	5.033V	3.321V	5.003V	315.846				45.74°C	230.76V
5	26.697A	4.969A	4.968A	1.800A	374.520	94.857%	435	10.7	39.76°C	0.966
	12.137V	5.032V	3.320V	5.000V	394.825				46.36°C	230.71V
6	32.101A	5.962A	5.967A	2.002A	449.419	94.681%	485	12.8	40.57°C	0.974
	12.137V	5.032V	3.319V	4.997V	474.667				47.55°C	230.65V
7	37.537A	6.956A	6.960A	2.203A	524.729	94.442%	370	10.4	41.18°C	0.979
	12.138V	5.032V	3.319V	4.994V	555.608				48.73°C	230.59V
8	42.975A	7.950A	7.957A	2.405A	600.043	94.155%	460	11.9	42.29°C	0.982
	12.138V	5.032V	3.318V	4.992V	637.294				50.04°C	230.46V
9	48.779A	8.447A	8.440A	2.404A	674.573	93.839%	525	13.8	43.79°C	0.986
	12.138V	5.031V	3.317V	4.992V	718.861				51.83°C	230.58V
10	54.387A	8.947A	8.955A	3.014A	749.806	93.463%	625	19.5	45.07°C	0.987
	12.137V	5.031V	3.316V	4.978V	802.253				53.22°C	230.52V
11	60.585A	8.946A	8.956A	3.014A	825.029	93.234%	945	31.6	46.18°C	0.987
	12.137V	5.031V	3.316V	4.978V	884.897				54.69°C	230.29V
CL1	0.734A	12.002A	11.999A	0.000A	109.247	89.781%	460	11.9	44.28°C	0.839
	12.137V	5.036V	3.325V	5.063V	121.682				50.28°C	230.97V

CL2	62.008A	1.001A	0.999A	1.000A	765.894	93.783%	625	19.5	45.56°C	0.987
	12.136V	5.034V	3.317V	5.011V	816.666				51.88°C	230.51V

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	1.178A	0.494A	0.480A	0.199A	19.377	76.550%	0	<6.0	0.779
	12.130V	5.037V	3.327V	5.033V	25.313				115.35V
2	2.432A	0.991A	0.991A	0.398A	39.787	85.707%	0	<6.0	0.899
	12.131V	5.034V	3.325V	5.027V	46.422				115.32V
3	3.623A	1.487A	1.473A	0.597A	59.334	88.834%	0	<6.0	0.945
	12.131V	5.035V	3.325V	5.023V	66.792				115.30V
4	4.875A	1.985A	1.983A	0.797A	79.733	90.603%	0	<6.0	0.961
	12.132V	5.035V	3.325V	5.020V	88.003				115.29V

The results above are not used in the certification process

230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.190A	0.495A	0.479A	0.199A	19.522	76.653%	0	<6.0	0.461
	12.128V	5.038V	3.327V	5.034V	25.468				230.84V
2	2.441A	0.993A	0.993A	0.398A	39.909	85.785%	0	<6.0	0.628
	12.129V	5.035V	3.325V	5.027V	46.522				230.83V
3	3.631A	1.488A	1.473A	0.597A	59.432	89.374%	0	<6.0	0.719
	12.130V	5.035V	3.324V	5.024V	66.498				230.82V
4	4.882A	1.986A	1.984A	0.797A	79.809	91.162%	380	9.6	0.775
	12.129V	5.035V	3.324V	5.020V	87.546				230.81V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	4.4 mV	2.5 mV	3.6 mV	2.6 mV	Pass
20% Load	21.2 mV	3.2 mV	4.7 mV	3.1 mV	Pass
30% Load	10.2 mV	3.2 mV	4.8 mV	2.9 mV	Pass
40% Load	10.2 mV	3.6 mV	4.7 mV	3.4 mV	Pass
50% Load	11.6 mV	4.1 mV	5.3 mV	3.8 mV	Pass
60% Load	12.2 mV	4.7 mV	5.9 mV	4.5 mV	Pass
70% Load	13.8 mV	4.8 mV	6.4 mV	5.0 mV	Pass
80% Load	14.9 mV	4.6 mV	7.1 mV	5.1 mV	Pass
90% Load	14.8 mV	4.5 mV	7.0 mV	5.0 mV	Pass
100% Load	16.2 mV	5.5 mV	7.6 mV	6.0 mV	Pass
110% Load	17.4 mV	5.7 mV	8.3 mV	6.6 mV	Pass
Crossload 1	21.0 mV	5.2 mV	7.1 mV	3.1 mV	Pass
Crossload 2	16.7 mV	3.3 mV	5.0 mV	5.1 mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	4.2 mV	2.5 mV	3.6 mV	2.4 mV	Pass
20% Load	23.3 mV	3.3 mV	5.0 mV	3.3 mV	Pass
30% Load	10.4 mV	3.0 mV	4.6 mV	2.9 mV	Pass
40% Load	10.5 mV	3.4 mV	4.9 mV	3.3 mV	Pass
50% Load	11.9 mV	3.9 mV	5.4 mV	3.8 mV	Pass
60% Load	12.4 mV	4.7 mV	5.9 mV	4.6 mV	Pass
70% Load	13.7 mV	4.5 mV	6.1 mV	4.8 mV	Pass
80% Load	15.5 mV	4.3 mV	6.9 mV	4.9 mV	Pass

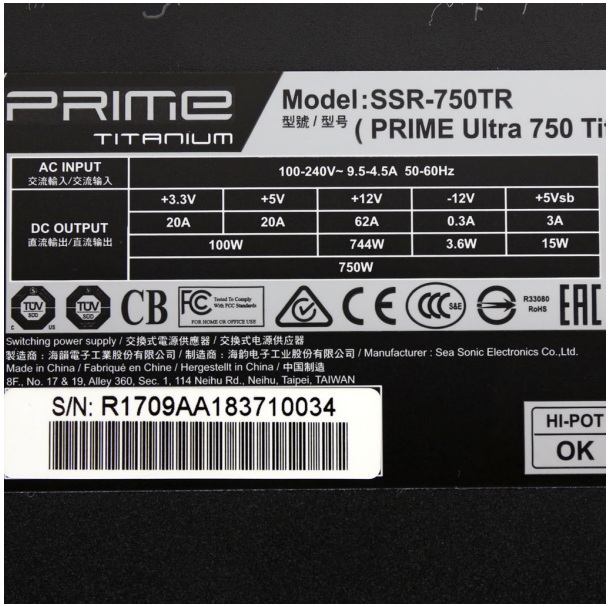
Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	15.5 mV	4.7 mV	7.5 mV	5.4 mV	Pass
100% Load	16.6 mV	5.2 mV	7.7 mV	6.2 mV	Pass
110% Load	17.6 mV	5.4 mV	8.1 mV	6.4 mV	Pass
Crossload 1	25.0 mV	5.3 mV	7.3 mV	3.3 mV	Pass
Crossload 2	16.5 mV	2.8 mV	4.7 mV	5.3 mV	Pass

The results above are not used in the certification process

Seasonic Prime Titanium Ultra 750W



Top side



Power specifications label

Cybenetics □□□□□□□□□□□□□□□□□□□ ETA□□□□□ LAMBDA□□□□□ SAFE□□□□□□□□□□□□□□□□□□ DELTA□□□□□□□ PHI□□□□□□□□□

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