Seasonic Prime Connect 750W

R1912AA1A4300060

Lab ID SS75001620

Certification ID 251620

Test Result Report ID: 20PS1620A

Certificate Issue Date: Mar 13, 2020

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 Connect 750W
OEM/ODM	Seasonic
Serial Number	R1912AA1A4300060
Product Specifications	
Manufacturer-Provided Information	
□□□□ (Vrms)	100-240
□□□□ (Arms)	10-5

□□□□ (Hz)	50-60
□□□□ (W)	750
Operating Temperature (Continuous Full Load) (°C)	
□□	ATX12V
□□□□	Semi Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
□□	135mm Fluid Dynamic Bearing Fan (HA13525H12F-Z)
□□□□□	✓ (selectable)
Cybenetics Testing Information	
Lab ID	SS75001620
Date of receipt	Mar 5, 2020
Testing Date	Mar 11, 2020
Report Issued Date	Mar 13, 2020
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

□□□□□
(Non-accredited measurements)

Native Cables				
□□	□□□□	□□□□□□	Gauge	In Cable Caps
Main connector 20 pin and 10 pin sense (220mm)	1	1	16-24AWG	□
□□□□□				
□□	□□□□	□□□□□□	Gauge	Gauge
ATX □□ 20+4 pin (210mm)	1	1	18AWG	□
4+4 pin EPS 12V □□ (240mm)	2	2	16AWG	□

6+2pin PCIe□□ (280mm)	2	2	16-18AWG	□
6+2pin PCIe□□ (320mm)	2	2	16-18AWG	□
SATA□□ (300mm+70mm+70mm+70mm)	1	4	18AWG	□
SATA□□ (200mm+40mm)	1	2	18AWG	□
SATA□□ (120mm+110mm)	1	2	18AWG	□
□ 4pin Molex□□ (450mm+120mm+120mm)	1	3	18AWG	□
□ 4pin Molex□□ to SATA□□ 3.3 Adapter (150mm+150mm)	1	2	18AWG	□
AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

□□□□

□		3.3V	5V	12V	5VSB	-12V
□□□□	□□	20	20	62	3	0.3
	□	100		744	15	3.6
□□□□□ (W)		750				

Parts Description

General Data	-
Manufacturer (OEM)	Seasonic
PCB Type	Double Sided
Primary Side	-
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x Discharge IC
Inrush Protection	NTC Thermistor (MF72 5D-20L) & Relay
Bridge Rectifier(s)	2x GBU1508 (800V, 15A @ 100°C)
APFC MOSFETs	2x Infineon IPA50R190CE (550V, 15.7A @ 100°C, 0.19Ohm)
APFC Boost Diode	1x STMicroelectronics STTH8S06D (600V, 8A @ 25°C)
Hold-up Cap(s)	1x Hitachi (400V, 820uF, 2,000h @ 105°C, HU)
Main Switchers	4x Great Power GPT10N50AD (500V, 9.7A, 0.7Ohm)
APFC Controller	Champion CM6500UNX
Resonant Controller	Champion CM6901T6X
Topology	Primary side: Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	-

+12V MOSFETs	4x Nexperia PSMN2R6-40YS (40V, 100A @ 100°C, 5.3mOhm @ 175°C)
5V & 3.3V	DC-DC Converters: 6x Nexperia PSMN4R0-30YLD (30V, 67A @ 100°C, 6.6mOhm @ 150°C) PWM Controllers: ANPEC APW7159C
Filtering Capacitors	Electrolytic: 7x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 4x Nippon Chemi-Con (105°C, W), 2x Nippon Chemi-Con (1-5,000h @ 105°C, KZE) Polymer: 28x FPCAP, 6x United Chemi-Con
Supervisor IC	Weltrend WT7527V (OCP, OVP, UVP, SCP, PG)
Fan Model	Hong Hua HA13525H12F-Z (135mm, 12V, 0.50A, 2,000rpm, Fluid Dynamic Bearing Fan)
5VSB Circuit	-
Rectifier	1xMCC MBR1045ULPS SBR (45V, 10A @ 90°C)
Standby PWM Controller	Excelliance MOS Corp EM8569

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)	88.396%
Average Noise Output (>1450 Load Combinations)	35.75dBA
PF□□□ (>1450 Load Combinations)	0.984
Efficiency With 10W (≤500W) or 2% (>500W) Load	61.248%
□□□□□□	0.0427W
Non-Accredited	
12V Ripple (Full Load)	20.75mV
5V Ripple (Full Load)	10.07mV
3.3V Ripple (Full Load)	17.97mV

5VSB Ripple (Full Load)	9.52mV
12V Load Regulation	0.23%
5V Load Regulation	0.64%
3.3V Load Regulation	0.84%
5VSB Load Regulation	3.99%
Inrush Current	27.430A

230V

Accredited		
□□□□ (>1450 load combinations)		90.634%
Average Noise Output (>1450 Load Combinations)		34.47dBA
PF□□□ (>1450 Load Combinations)		0.947
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
□□□□□□		0.0688W
Non-Accredited		
12V Ripple (Full Load)		20.86mV
5V Ripple (Full Load)		10.17mV
3.3V Ripple (Full Load)		19.50mV
5VSB Ripple (Full Load)		7.65mV
12V Load Regulation		0.22%
5V Load Regulation		0.62%
3.3V Load Regulation		0.84%
5VSB Load Regulation		3.95%
Inrush Current		85.810A
□□□□ & PG□□		26.90ms
AC Loss to PWR_OK Hold Up Time		22.50ms
PWR_OK Inactive to DC Loss Delay		4.40ms
PSU Timings: T1 (20% / 100%)	78.0ms	90.0ms
PSU Timings: T3 (20% / 100%)	314.0ms	314.0ms
OPP (0.00°C / 0.00°C)	140.05%	-

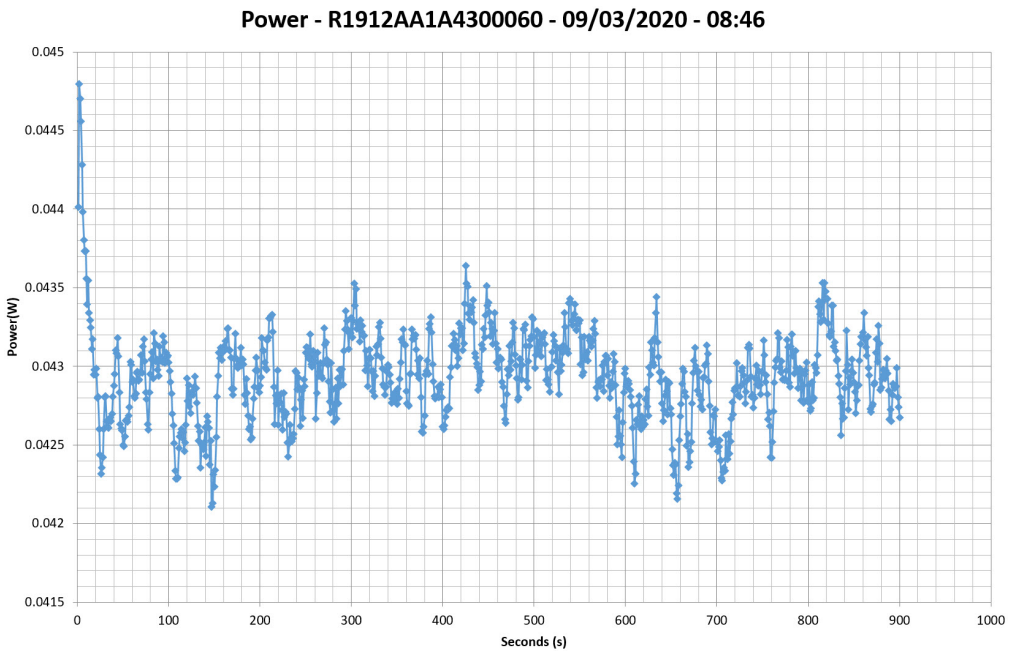
□□□□ & PG□□

Hold-Up Time (ms)	26.9
AC Loss to PWR_OK Hold Up Time (ms)	22.5
PWR_OK Inactive to DC Loss Delay (ms)	4.4

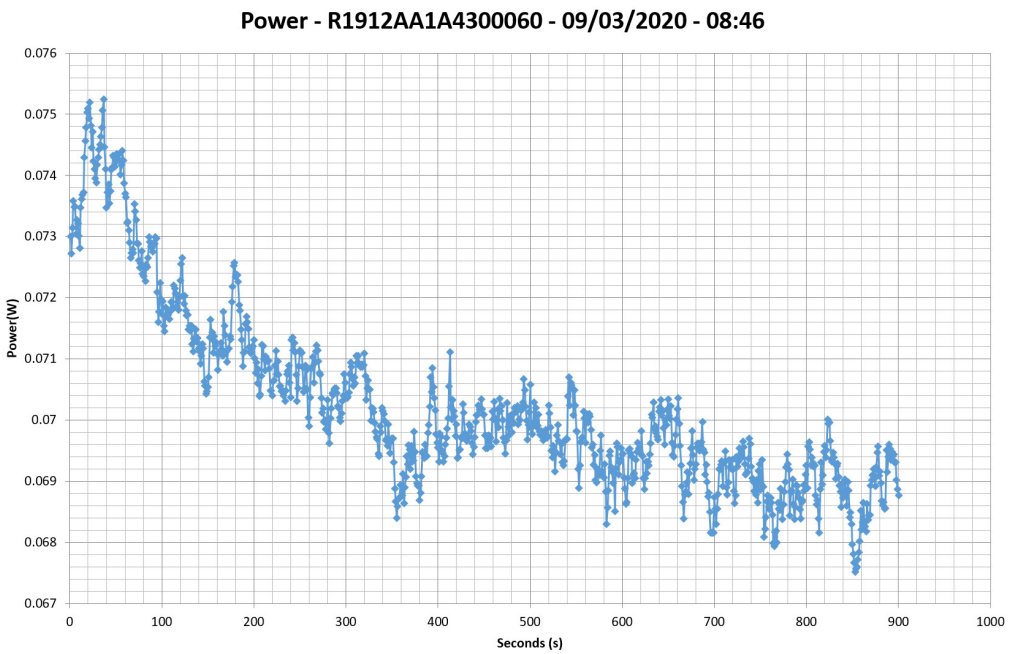
□□□□

Graphs

115V



230V



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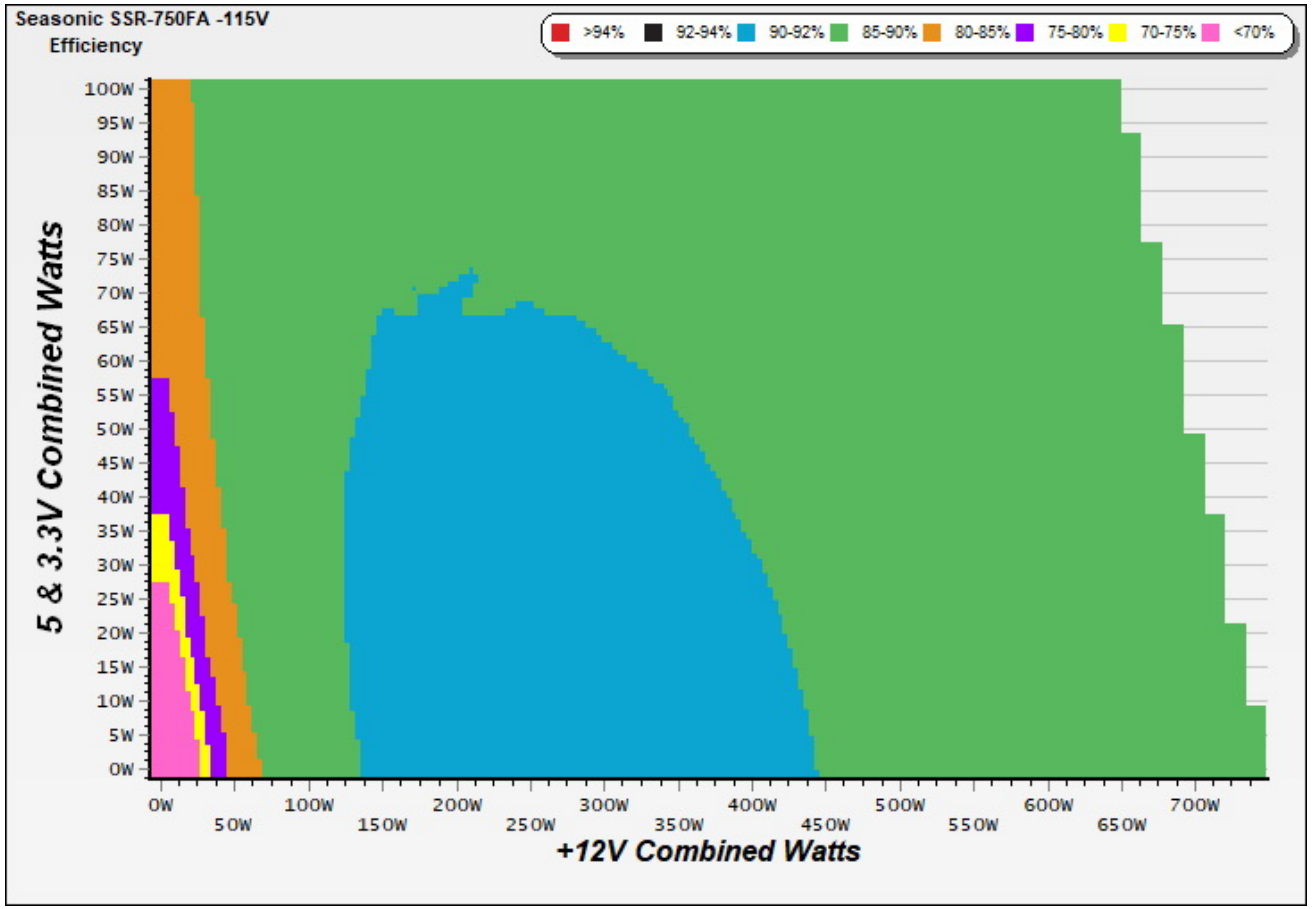
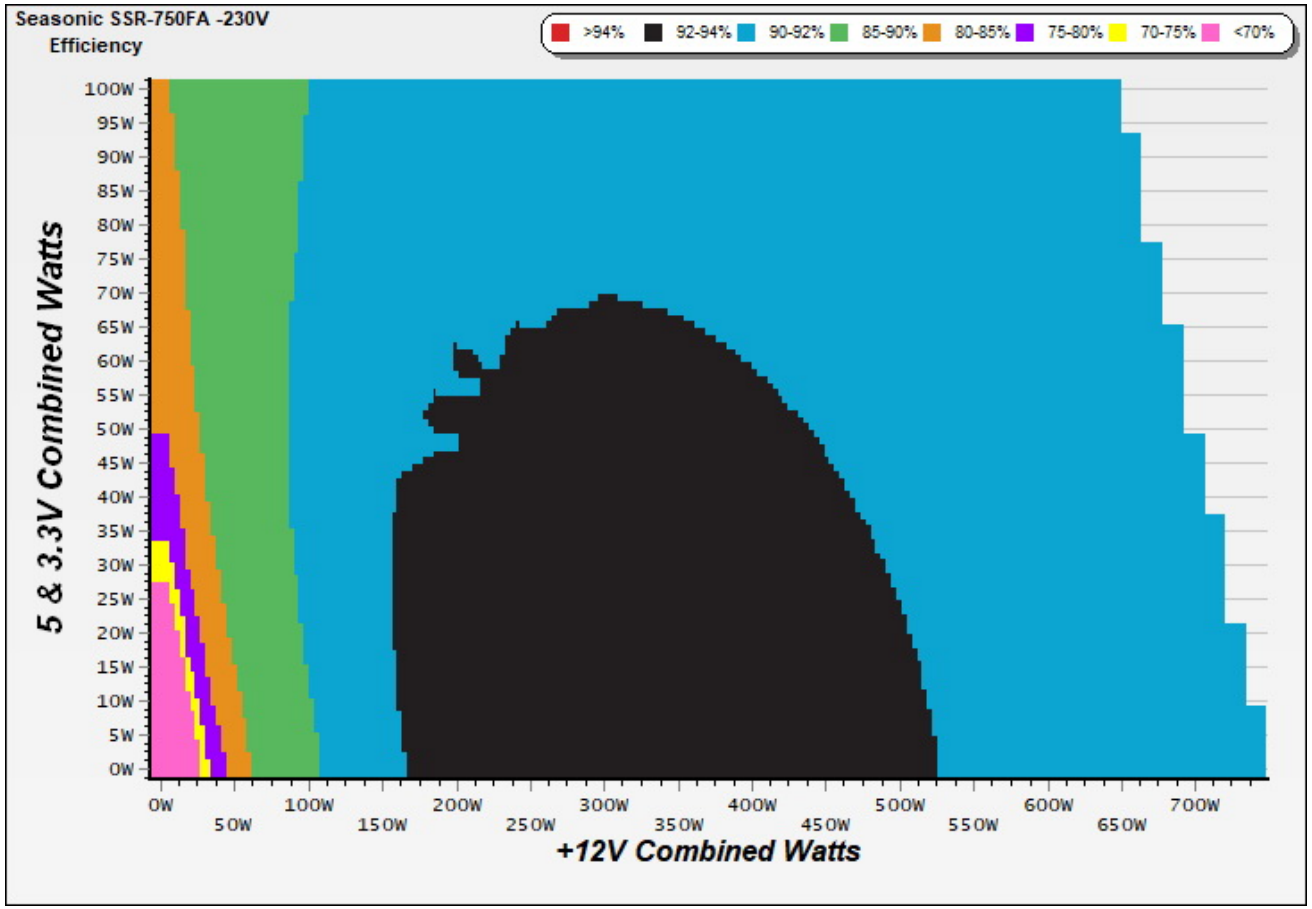
115V



□□

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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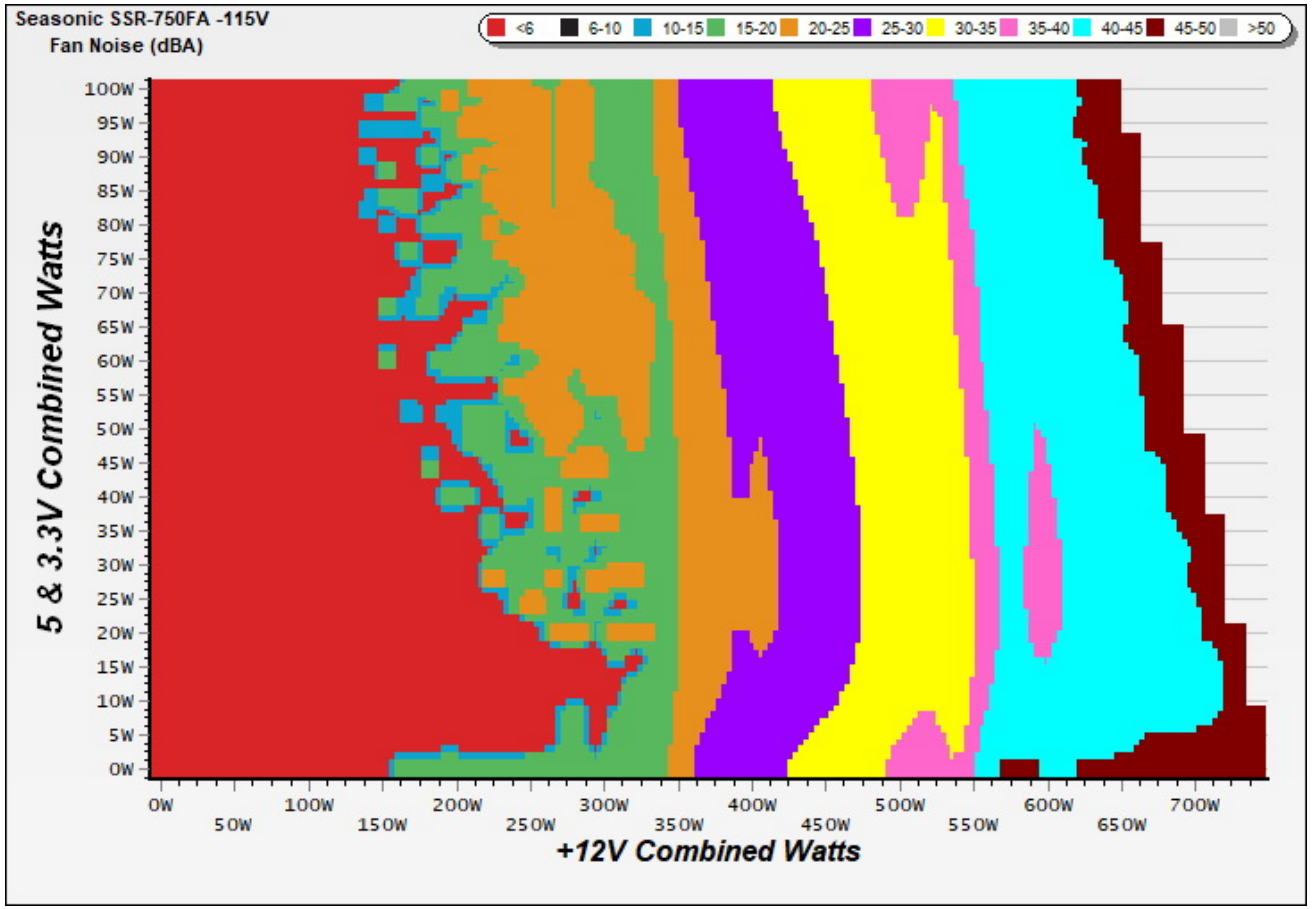
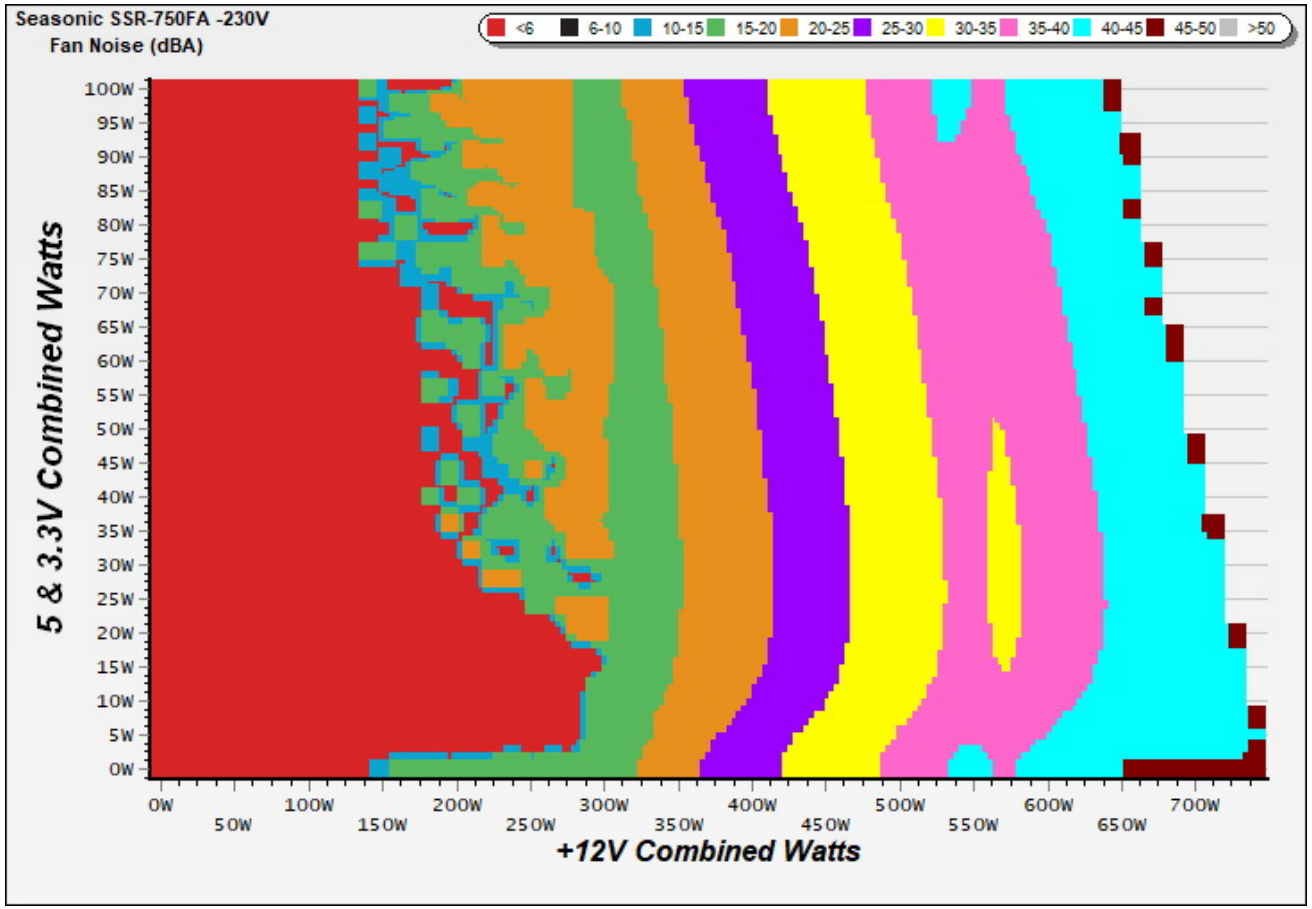
115V



□□

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

Noise under high ambient temperature (indicative)

115V

Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	0 RPM · <6.0 dB(A) · 45.6 °C	0 RPM · <6.0 dB(A) · 45.6 °C	fan off in both
20%	0 RPM · <6.0 dB(A) · 46.5 °C	0 RPM · <6.0 dB(A) · 46.5 °C	fan off in both
50%	872 RPM · 29.3 dB(A) · 42.6 °C	872 RPM · 29.3 dB(A) · 42.6 °C	**+0.0 dB(A)**
100%	1941 RPM · 51.1 dB(A) · 45.2 °C	1941 RPM · 51.1 dB(A) · 45.2 °C	**+0.0 dB(A)**

230V

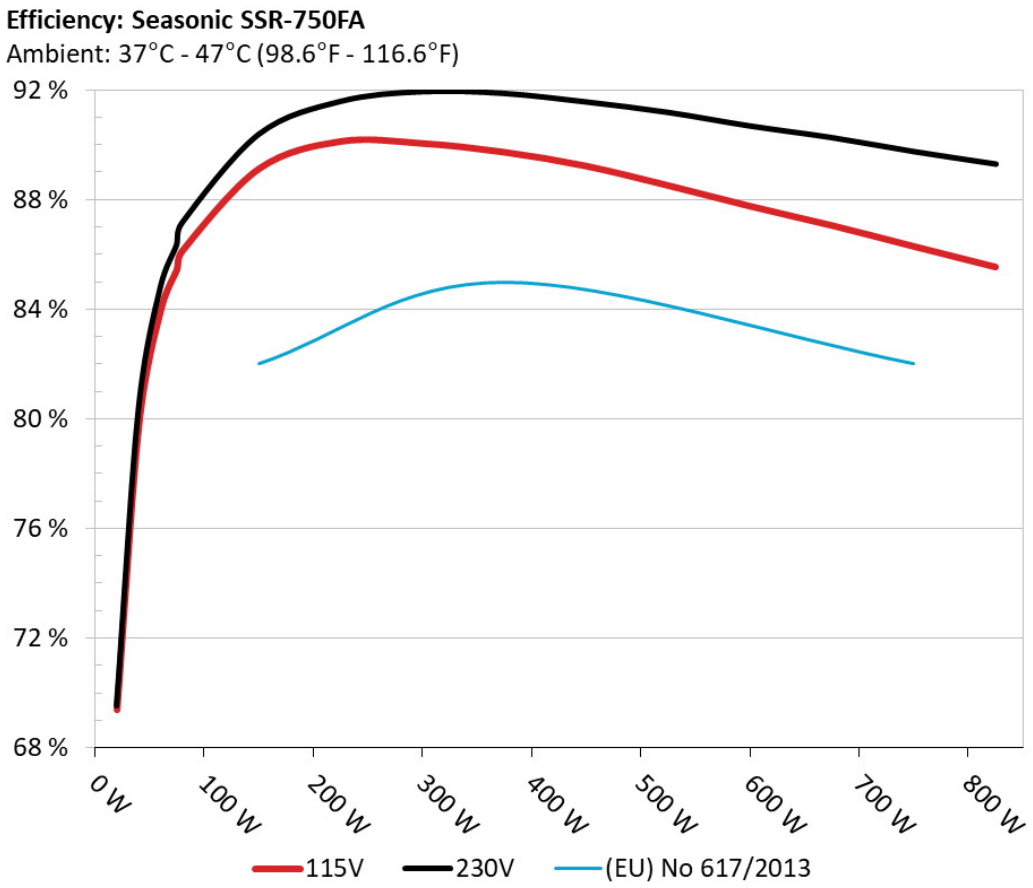
Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	0 RPM · <6.0 dB(A) · 45.2 °C	0 RPM · <6.0 dB(A) · 45.2 °C	fan off in both
20%	570 RPM · 18.9 dB(A) · 41.1 °C	570 RPM · 18.9 dB(A) · 41.1 °C	**+0.0 dB(A)**
50%	890 RPM · 29.7 dB(A) · 42.6 °C	890 RPM · 29.7 dB(A) · 42.6 °C	**+0.0 dB(A)**
100%	1942 RPM · 51.1 dB(A) · 45.6 °C	1942 RPM · 51.1 dB(A) · 45.6 °C	**+0.0 dB(A)**

INFO

Fan speed, noise and the measured intake temperature at 10, 20, 50 and 100 % load, from the two load regulation tests: at normal ambient (about 30-32 °C) and at high ambient (about 40-47 °C). These are stabilized readings at fixed loads, not averages over the certification sweep, so they are indicative of how the fan behaves when it is hot. "<6.0" is the floor of our sound meter: the fan is stopped or too quiet to measure (the fan speed column says which); with the fan stopped, the intake sensor can read higher than the chamber air.

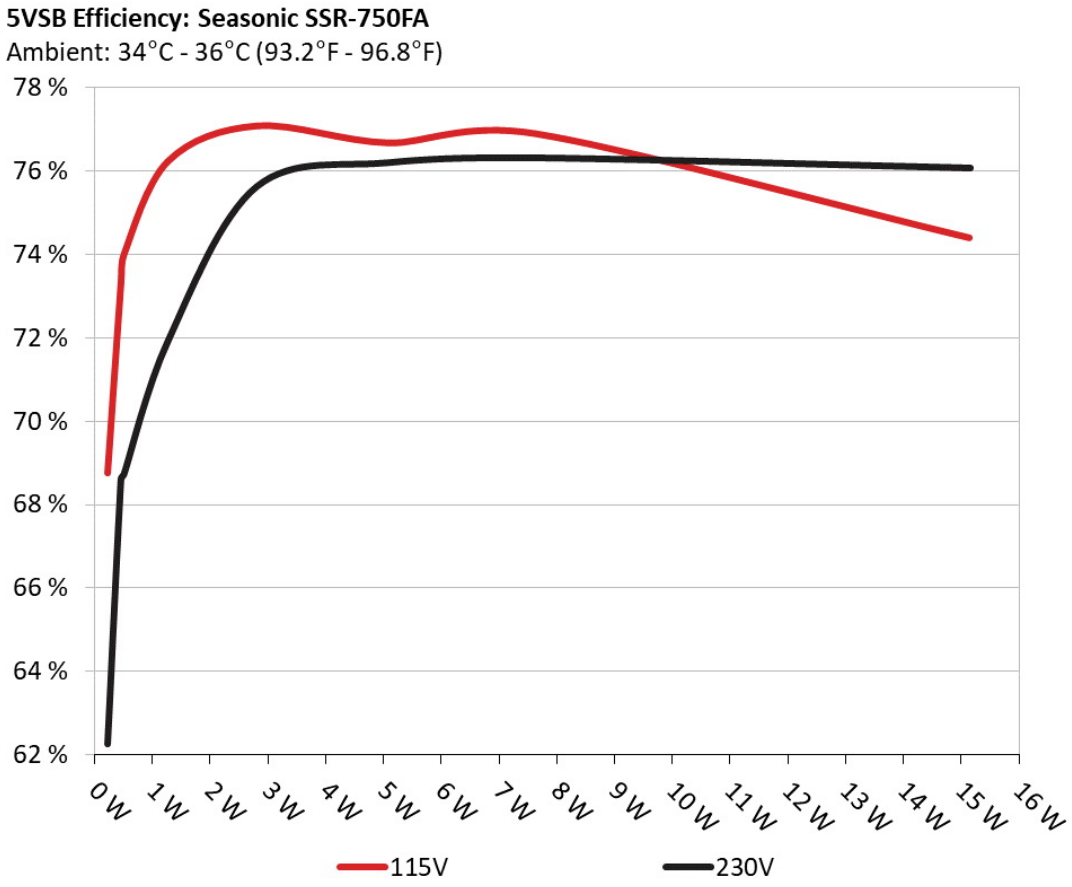
Informational. Not part of the ETA or LAMBDA rating.

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	0.045A	0.231	68.750%	0.055
	5.124V	0.336		115.15V
2	0.090A	0.461	73.291%	0.099
	5.122V	0.629		115.15V
3	0.550A	2.811	77.077%	0.340
	5.110V	3.647		115.14V
4	1.000A	5.100	76.669%	0.413
	5.099V	6.652		115.14V
5	1.500A	7.633	76.891%	0.451
	5.088V	9.927		115.14V
6	3.000A	15.137	74.394%	0.505
	5.045V	20.347		115.12V

230V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.045A	0.231	62.264%	0.018
	5.123V	0.371		230.33V
2	0.090A	0.461	68.601%	0.033
	5.121V	0.672		230.33V
3	0.550A	2.811	75.626%	0.160
	5.109V	3.717		230.33V
4	1.000A	5.100	76.199%	0.243
	5.098V	6.693		230.33V
5	1.500A	7.632	76.312%	0.300
	5.087V	10.001		230.33V
6	3.000A	15.153	76.069%	0.380
	5.051V	19.920		230.33V

Supplementary Tests (For Reference)

10-110%□□□□

115V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	4.424A	1.989A	1.982A	0.983A	74.957	85.471%	0	<6.0	45.55°C	0.968
	12.059V	5.030V	3.330V	5.090V	87.699				40.57°C	115.14V
2	9.880A	2.985A	2.974A	1.184A	150.026	89.140%	0	<6.0	46.54°C	0.981
	12.057V	5.027V	3.327V	5.070V	168.304				41.24°C	115.11V
3	15.677A	3.484A	3.474A	1.385A	225.025	90.141%	582	19.2	41.65°C	0.987
	12.054V	5.024V	3.325V	5.053V	249.638				47.43°C	115.11V
4	21.475A	3.984A	3.974A	1.589A	300.031	90.068%	698	22.8	41.96°C	0.988
	12.052V	5.022V	3.323V	5.035V	333.117				48.23°C	115.11V
5	26.892A	4.984A	4.969A	1.794A	374.529	89.751%	872	29.3	42.61°C	0.988
	12.049V	5.018V	3.320V	5.017V	417.297				49.38°C	115.10V
6	32.350A	5.984A	5.970A	2.000A	449.457	89.244%	1086	36.3	42.72°C	0.988
	12.045V	5.014V	3.317V	4.997V	503.626				50.03°C	115.09V
7	37.842A	6.983A	6.972A	2.210A	524.792	88.532%	1495	44.4	43.14°C	0.988
	12.042V	5.011V	3.314V	4.978V	592.774				51.27°C	115.08V
8	43.334A	7.991A	7.976A	2.421A	600.112	87.773%	1701	46.9	43.72°C	0.989
	12.039V	5.007V	3.310V	4.958V	683.712				52.62°C	115.07V
9	49.199A	8.494A	8.464A	2.428A	674.613	87.075%	1934	50.7	45.01°C	0.990
	12.035V	5.004V	3.308V	4.943V	774.747				54.67°C	115.07V
10	54.861A	8.997A	8.983A	3.054A	749.847	86.308%	1941	51.1	45.21°C	0.991
	12.033V	5.002V	3.306V	4.913V	868.799				55.62°C	115.06V
11	61.122A	8.999A	8.984A	3.063A	825.067	85.553%	1949	51.5	46.50°C	0.992
	12.031V	5.001V	3.306V	4.898V	964.397				57.39°C	115.05V
CL1	0.116A	11.999A	12.000A	0.000A	101.052	84.152%	584	19.2	42.42°C	0.977
	12.049V	5.006V	3.299V	5.097V	120.082				49.15°C	115.12V

CL2	62.005A	1.000A	1.001A	1.000A	759.994	86.960%	1943	51.2	45.78°C	0.991
	12.042V	5.023V	3.333V	4.971V	873.959				55.99°C	115.04V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	4.425A	1.988A	1.981A	0.983A	74.961	86.357%	0	<6.0	45.19°C	0.822
	12.059V	5.030V	3.331V	5.089V	86.804				40.19°C	230.35V
2	9.881A	2.985A	2.976A	1.184A	150.036	90.386%	570	18.9	41.05°C	0.913
	12.056V	5.027V	3.327V	5.071V	165.994				46.34°C	230.34V
3	15.679A	3.485A	3.474A	1.386A	225.041	91.592%	554	18.3	41.90°C	0.944
	12.053V	5.024V	3.325V	5.052V	245.700				47.76°C	230.34V
4	21.478A	3.984A	3.974A	1.590A	300.052	91.947%	685	22.4	42.41°C	0.959
	12.051V	5.022V	3.324V	5.034V	326.333				48.60°C	230.34V
5	26.901A	4.982A	4.970A	1.795A	374.606	91.882%	890	29.7	42.59°C	0.967
	12.048V	5.018V	3.320V	5.015V	407.702				49.50°C	230.34V
6	32.358A	5.986A	5.971A	2.000A	449.537	91.573%	1172	38.4	43.00°C	0.973
	12.044V	5.015V	3.317V	4.996V	490.905				50.81°C	230.33V
7	37.851A	6.987A	6.974A	2.211A	524.882	91.190%	1355	40.5	43.17°C	0.976
	12.041V	5.011V	3.313V	4.976V	575.589				51.39°C	230.31V
8	43.345A	7.991A	7.975A	2.422A	600.199	90.693%	1733	47.4	43.32°C	0.979
	12.038V	5.007V	3.310V	4.956V	661.793				52.33°C	230.31V
9	49.205A	8.495A	8.464A	2.429A	674.701	90.272%	1927	50.5	44.44°C	0.981
	12.035V	5.005V	3.308V	4.941V	747.406				54.19°C	230.31V
10	54.873A	8.998A	8.984A	3.055A	749.944	89.762%	1942	51.1	45.64°C	0.982
	12.032V	5.002V	3.306V	4.911V	835.478				55.81°C	230.30V
11	61.135A	9.000A	8.986A	3.065A	825.169	89.306%	1949	51.5	46.63°C	0.983
	12.030V	5.001V	3.305V	4.896V	923.979				57.44°C	230.30V
CL1	0.117A	12.000A	11.998A	0.000A	101.063	85.200%	615	20.3	42.82°C	0.873
	12.048V	5.006V	3.299V	5.096V	118.619				49.01°C	230.35V

CL2	62.015A	1.000A	0.999A	1.000A	760.046	90.406%	1942	51.1	45.24°C	0.982
	12.041V	5.023V	3.333V	4.970V	840.705				55.97°C	230.30V

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	1.231A	0.496A	0.494A	0.195A	19.992	69.371%	0	<6.0	0.860
	12.062V	5.037V	3.337V	5.117V	28.819				115.14V
2	2.461A	0.993A	0.989A	0.392A	39.980	79.764%	0	<6.0	0.935
	12.061V	5.034V	3.334V	5.109V	50.123				115.14V
3	3.694A	1.492A	1.486A	0.588A	60.008	83.966%	0	<6.0	0.958
	12.060V	5.032V	3.332V	5.101V	71.467				115.14V
4	4.922A	1.989A	1.980A	0.786A	79.957	86.147%	0	<6.0	0.970
	12.059V	5.030V	3.331V	5.093V	92.815				115.14V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	PF/AC □□
1	1.231A	0.495A	0.495A	0.195A	19.991	69.536%	0	<6.0	0.547
	12.062V	5.037V	3.337V	5.117V	28.749				230.34V
2	2.461A	0.993A	0.989A	0.392A	39.980	80.344%	0	<6.0	0.691
	12.061V	5.033V	3.334V	5.109V	49.761				230.34V
3	3.695A	1.491A	1.486A	0.588A	60.010	84.797%	0	<6.0	0.778
	12.059V	5.032V	3.332V	5.101V	70.769				230.34V
4	4.922A	1.989A	1.981A	0.786A	79.959	87.159%	0	<6.0	0.831
	12.059V	5.030V	3.330V	5.093V	91.739				230.35V

The results above are not used in the certification process

□□□□

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	8.40mV	7.50mV	15.10mV	5.10mV	Pass
20% Load	12.20mV	7.60mV	15.70mV	5.30mV	Pass
30% Load	14.20mV	7.60mV	15.80mV	5.30mV	Pass
40% Load	15.40mV	7.60mV	15.50mV	5.60mV	Pass
50% Load	12.30mV	7.80mV	15.80mV	6.00mV	Pass
60% Load	11.00mV	8.20mV	17.00mV	6.00mV	Pass
70% Load	12.00mV	8.50mV	16.20mV	6.10mV	Pass
80% Load	12.70mV	9.20mV	17.00mV	8.80mV	Pass
90% Load	13.40mV	9.40mV	17.00mV	9.20mV	Pass
100% Load	20.80mV	10.10mV	18.00mV	9.50mV	Pass
110% Load	22.40mV	10.40mV	20.40mV	9.50mV	Pass
Crossload1	19.40mV	11.00mV	19.00mV	7.90mV	Pass
Crossload2	18.00mV	8.40mV	15.90mV	7.80mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	8.30mV	7.30mV	15.60mV	5.10mV	Pass
20% Load	11.80mV	7.70mV	16.70mV	6.00mV	Pass
30% Load	14.60mV	8.10mV	15.90mV	5.40mV	Pass
40% Load	15.40mV	7.40mV	16.20mV	5.50mV	Pass
50% Load	12.70mV	8.10mV	16.00mV	5.90mV	Pass
60% Load	11.10mV	8.50mV	16.50mV	6.00mV	Pass
70% Load	11.20mV	8.80mV	17.30mV	6.20mV	Pass
80% Load	12.30mV	9.10mV	17.10mV	6.80mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	12.70mV	9.30mV	18.20mV	7.20mV	Pass
100% Load	20.90mV	10.20mV	19.50mV	7.70mV	Pass
110% Load	22.60mV	10.30mV	18.10mV	7.90mV	Pass
Crossload1	18.70mV	10.40mV	19.20mV	7.30mV	Pass
Crossload2	17.50mV	8.40mV	17.80mV	6.90mV	Pass

The results above are not used in the certification process

Seasonic Prime Connect 750W

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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