

## Anex

Seasonic SSR-850TR Ultra

Lab ID#: 230

Receipt Date: -

Test Date: -

Report:

Report Date: Apr 12, 2018

DUT INFORMATION		DUT SPECIFICATIONS	
Brand	Seasonic	Rated Voltage (Vrms)	100-240
Manufacturer (OEM)	Seasonic	Rated Current (Arms)	11-5.5
Series	Prime Titanium Ultra	Rated Frequency (Hz)	50-60
Model Number	SSR-850TR Ultra	Rated Power (W)	850
Serial Number	R1709AA181110127	Type	ATX12V
DUT Notes		Cooling	135mm Fluid Dynamic Bearing Fan (HA13525L12F-Z)
		Semi-Passive Operation	✓ (selectable)
		Cable Design	Fully Modular

POWER SPECIFICATIONS						
Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	70	3	0.3
	Watts	100		840	15	3.6
Total Max. Power (W)		850				

CABLES AND CONNECTORS				
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)	6	6	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	-

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## Anex

## Seasonic SSR-850TR Ultra

### RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	92.223
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	0.000
Average Efficiency 5VSB	79.516
Standby Power Consumption (W) -115V	0.0560108
Standby Power Consumption (W) -230V	0.0869595
Average PF	0.989
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	10.68
Efficiency Rating (ETA)	TITANIUM
Noise Rating (LAMBDA)	A++

### TEST EQUIPMENT

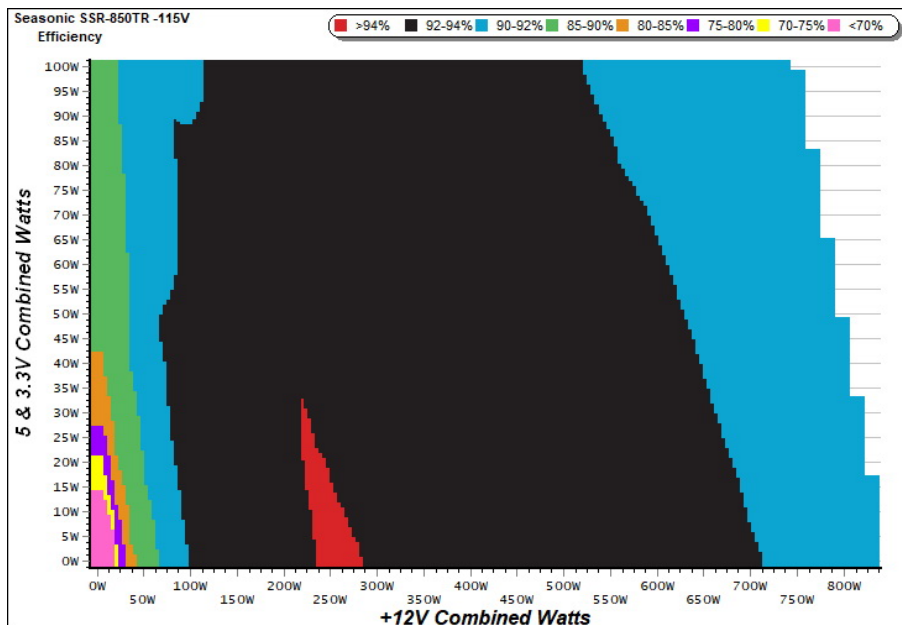
Electronic Loads	Chroma 6314A x2 63123A x6 63102A 63101A	Chroma 63601-5 x2 Chroma 63600-2 63640-80-80 x10 63610-80-20
AC Sources	Chroma 6530, Chroma 61604	
Power Analyzers	N4L PPA1530, N4L PPA5530	
Oscilloscopes	Picoscope 4444 & 3424, Keysight DSOX3024A, Rigol DS2072A	
Voltmeter	Keithley 2015 THD 6.5 Digit	
Sound Analyzer	Bruel & Kjaer 2250-L G4	
Microphone	Bruel & Kjaer Type 4955-A, Bruel & Kjaer Type 4189	
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2	

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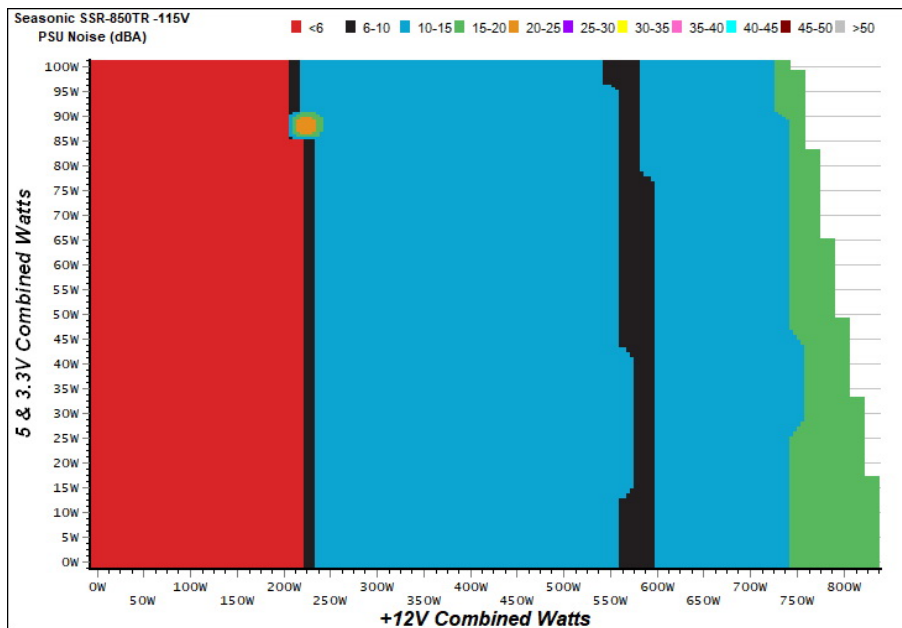
### EFFICIENCY GRAPH



#### 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



#### 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

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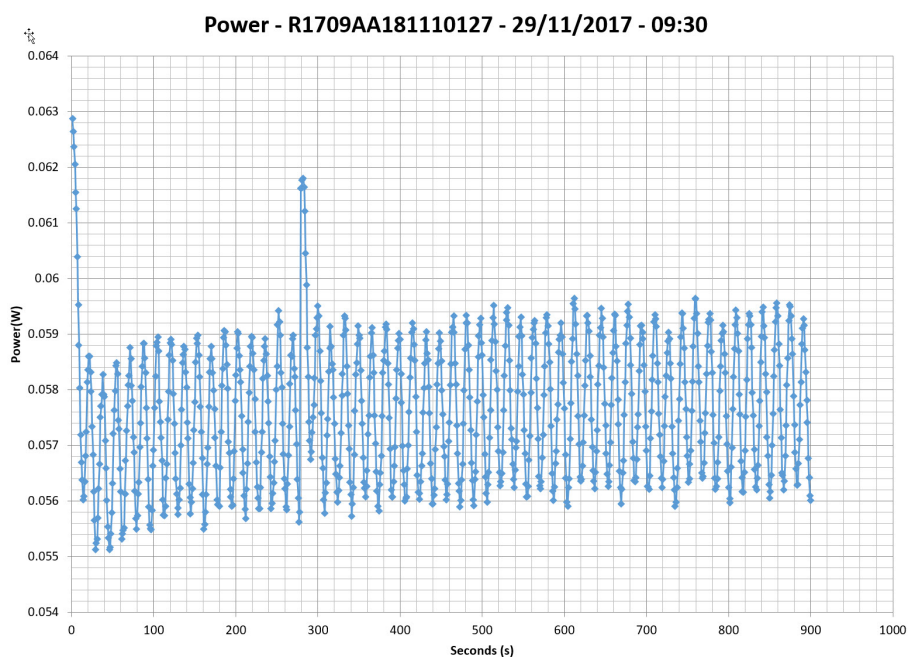
### 5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.224	66.272%	0.029
	4.973V	0.338		115.27V
2	0.090A	0.447	72.447%	0.052
	4.971V	0.617		115.28V
3	0.550A	2.723	79.994%	0.237
	4.951V	3.404		115.26V
4	1.000A	4.931	79.919%	0.341
	4.932V	6.170		115.26V
5	1.500A	7.366	80.065%	0.405
	4.911V	9.200		115.26V
6	2.999A	14.543	78.692%	0.490
	4.849V	18.481		115.24V

### 5VSB EFFICIENCY -230V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.224	59.259%	0.011
	4.973V	0.378		230.72V
2	0.090A	0.447	67.625%	0.018
	4.971V	0.661		230.72V
3	0.550A	2.722	77.794%	0.093
	4.949V	3.499		230.72V
4	1.000A	4.930	79.542%	0.155
	4.930V	6.198		230.72V
5	1.500A	7.360	79.559%	0.213
	4.907V	9.251		230.71V
6	3.000A	14.510	78.966%	0.324
	4.837V	18.375		230.71V

### VAMPIRE POWER -115V



#### INFO

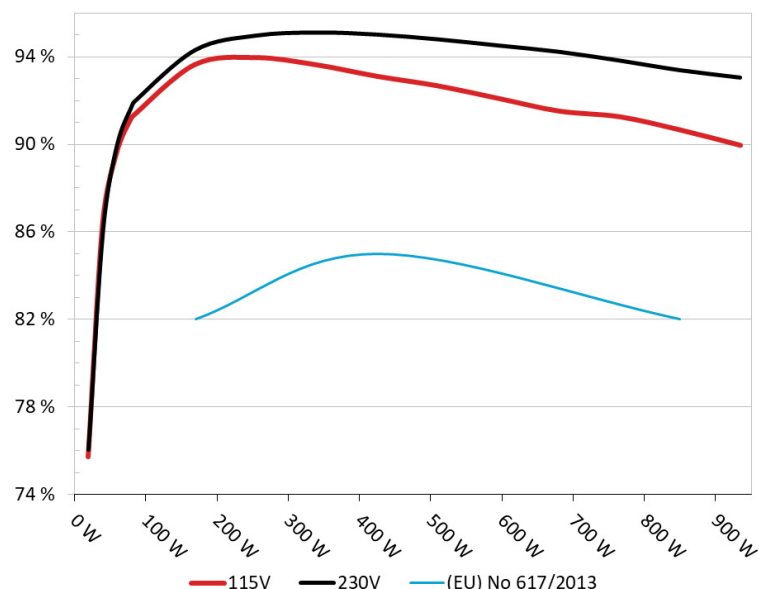
This graph is generated by the PPA Standby Power Analysis software which takes full control of the power analyzer during the whole procedure. This application features all of the EN50564 & IEC62301 test limits for standby power software testing

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### EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

**Efficiency: Seasonic Ultra SSR-850TR**  
Ambient: 37°C - 47°C (98.6°F - 116.6°F)

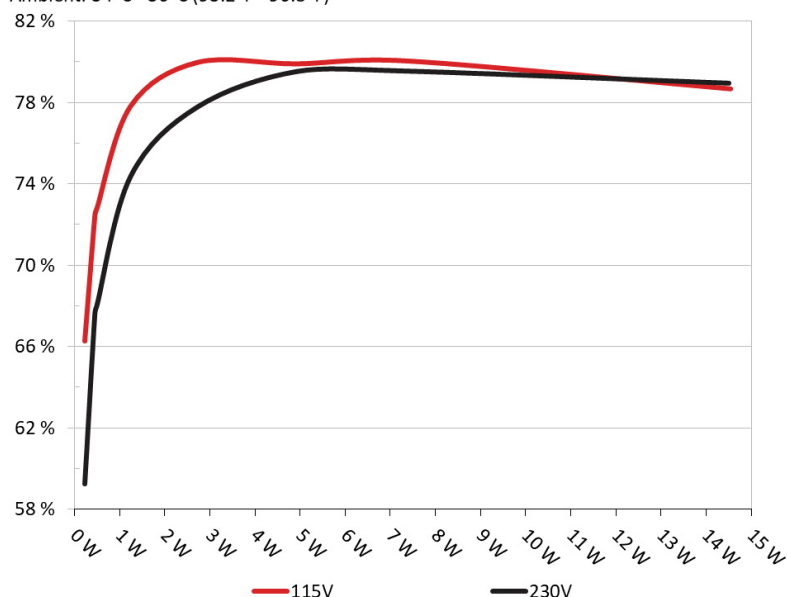


#### INFO

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 Ultra SSR-850TR**  
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

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### 10-110% LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	5.180A	1.986A	1.987A	0.998A	84.686	91.364%	0	<6.0	43.20°C	0.966
	12.180V	5.032V	3.321V	5.011V	92.691				38.07°C	115.27V
2	11.357A	2.979A	2.980A	1.198A	169.185	93.639%	0	<6.0	43.51°C	0.990
	12.178V	5.031V	3.320V	5.007V	180.678				38.18°C	115.16V
3	17.928A	3.478A	3.465A	1.399A	254.306	93.955%	395	10.5	38.54°C	0.996
	12.177V	5.031V	3.319V	5.003V	270.669				44.55°C	115.03V
4	24.503A	3.976A	3.977A	1.601A	339.521	93.626%	395	10.5	38.83°C	0.992
	12.175V	5.030V	3.318V	4.998V	362.636				44.93°C	115.02V
5	30.748A	4.971A	4.971A	1.802A	424.851	93.098%	435	10.7	38.98°C	0.992
	12.175V	5.030V	3.317V	4.995V	456.347				45.33°C	114.91V
6	36.933A	5.966A	5.968A	2.004A	509.381	92.667%	290	9.0	40.18°C	0.993
	12.173V	5.029V	3.316V	4.991V	549.688				46.75°C	114.80V
7	43.179A	6.961A	6.966A	2.206A	594.717	92.092%	415	10.0	41.44°C	0.995
	12.173V	5.028V	3.316V	4.987V	645.784				48.48°C	114.77V
8	49.430A	7.957A	7.963A	2.408A	680.069	91.510%	490	13.3	42.30°C	0.995
	12.172V	5.028V	3.315V	4.984V	743.166				49.76°C	114.64V
9	56.076A	8.455A	8.447A	2.408A	764.999	91.252%	590	17.4	43.92°C	0.996
	12.171V	5.027V	3.314V	4.984V	838.337				52.03°C	114.53V
10	62.465A	8.954A	8.962A	3.020A	849.855	90.651%	900	29.6	45.17°C	0.997
	12.169V	5.027V	3.314V	4.969V	937.498				53.52°C	114.49V
11	69.443A	8.954A	8.965A	3.020A	934.620	89.948%	1355	41.6	46.88°C	0.997
	12.167V	5.027V	3.312V	4.968V	1039.063				55.55°C	114.35V
CL1	0.737A	12.002A	11.999A	0.000A	109.245	89.765%	460	11.9	43.78°C	0.980
	12.181V	5.031V	3.324V	5.058V	121.701				47.82°C	115.22V
CL2	70.004A	1.001A	1.001A	1.000A	865.094	90.829%	900	29.6	45.20°C	0.997
	12.167V	5.029V	3.313V	5.004V	952.443				50.78°C	114.47V

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### 20-80W LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.165A	0.491A	0.479A	0.199A	19.242	75.711%	0	<6.0	0.784
	12.168V	5.037V	3.323V	5.032V	25.415				115.35V
2	2.414A	0.991A	0.990A	0.398A	39.677	86.416%	0	<6.0	0.902
	12.179V	5.034V	3.321V	5.025V	45.914				115.32V
3	3.598A	1.486A	1.473A	0.598A	59.197	89.620%	0	<6.0	0.947
	12.180V	5.033V	3.321V	5.021V	66.053				115.30V
4	4.848A	1.985A	1.987A	0.797A	79.633	91.190%	0	<6.0	0.962
	12.180V	5.032V	3.321V	5.016V	87.326				115.28V

### RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	11.8 mV	3.2 mV	3.8 mV	2.5 mV	Pass
20% Load	14.1 mV	3.2 mV	4.1 mV	2.7 mV	Pass
30% Load	8.9 mV	3.4 mV	4.3 mV	3.1 mV	Pass
40% Load	9.9 mV	3.5 mV	4.7 mV	3.4 mV	Pass
50% Load	10.6 mV	4.2 mV	5.4 mV	4.3 mV	Pass
60% Load	12.1 mV	4.9 mV	5.8 mV	4.3 mV	Pass
70% Load	13.5 mV	5.1 mV	5.8 mV	4.5 mV	Pass
80% Load	14.9 mV	4.9 mV	6.6 mV	4.7 mV	Pass
90% Load	16.4 mV	5.0 mV	7.3 mV	5.4 mV	Pass
100% Load	16.9 mV	5.4 mV	7.5 mV	6.0 mV	Pass
110% Load	17.7 mV	5.8 mV	8.2 mV	6.6 mV	Pass
Crossload 1	13.0 mV	5.4 mV	7.2 mV	3.2 mV	Pass
Crossload 2	17.2 mV	3.4 mV	5.0 mV	5.3 mV	Pass

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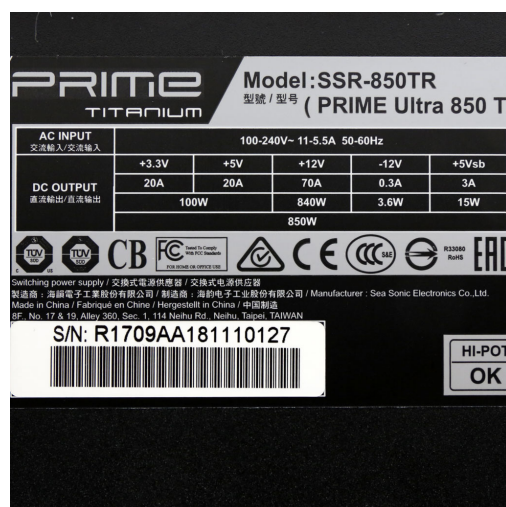
Seasonic SSR-850TR Ultra

## HOLD-UP TIME & POWER OK SIGNAL (230V)

Hold-Up Time (ms)	26.20
AC Loss to PWR_OK Hold Up Time (ms)	21.40
PWR_OK Inactive to DC Loss Delay (ms)	4.80

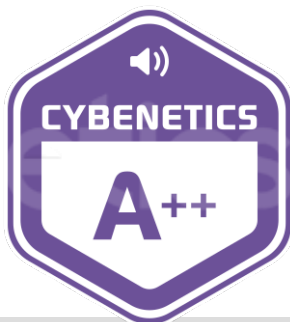


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Power specifications label

## CERTIFICATIONS



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