

## Anex

Seasonic SSR-500SGX

Lab ID#: SS19500001  
Receipt Date: Feb 22, 2019  
Test Date: Feb 22, 2019

Report:

Report Date: Feb 26, 2019

DUT INFORMATION	
Brand	Seasonic
Manufacturer (OEM)	Seasonic
Series	Focus Gold
Model Number	SSR-500SGX
Serial Number	R1901AA112430005
DUT Notes	

DUT SPECIFICATIONS	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	6-3
Rated Frequency (Hz)	50-60
Rated Power (W)	500
Type	SFX-L
Cooling	120mm Fluid Dynamic Bearing Fan (S1201512HB)
Semi-Passive Operation	✓
Cable Design	Fully Modular

POWER SPECIFICATIONS						
Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	41	3	0.3
	Watts	100		492	15	3.6
Total Max. Power (W)		500				

CABLES AND CONNECTORS				
Modular Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (360mm)	1	1	18AWG	No
4+4 pin EPS12V (400mm)	1	1	18AWG	No
6+2 pin PCIe (400mm+100mm)	1	2	18AWG	No
SATA (300mm+200mm+100mm)	1	3	18AWG	No
4 pin Molex (300mm+200mm+200mm)	1	3	18AWG	No
AC Power Cord (1370mm) - C13 coupler	1	1	18AWG	-

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PAGE 1/8

### RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	88.907
Efficiency With 10W ( $\leq 500W$ ) or 2% ( $> 500W$ ) Load -115V	60.452
Average Efficiency 5VSB	76.959
Standby Power Consumption (W) -115V	0.0444204
Standby Power Consumption (W) -230V	0.0677697
Average PF	0.981
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	31.11
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard++

### TEST EQUIPMENT

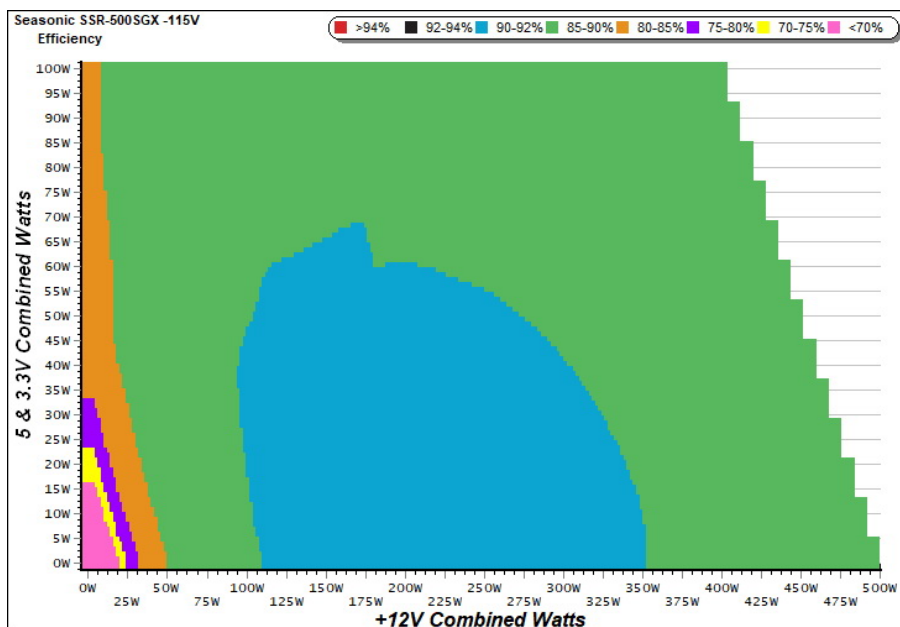
Electronic Loads	Chroma 6314A x2 63123A x6 63102A 63101A	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Chroma 61604, Keysight AC6804B	
Power Analyzers	N4L PPA1530 x2, N4L PPA5530	
Oscilloscopes	Picoscope 4444 & 3424, Keysight DSOX3024A, Rigol DS2072A	
Voltmeter	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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PAGE 2/8

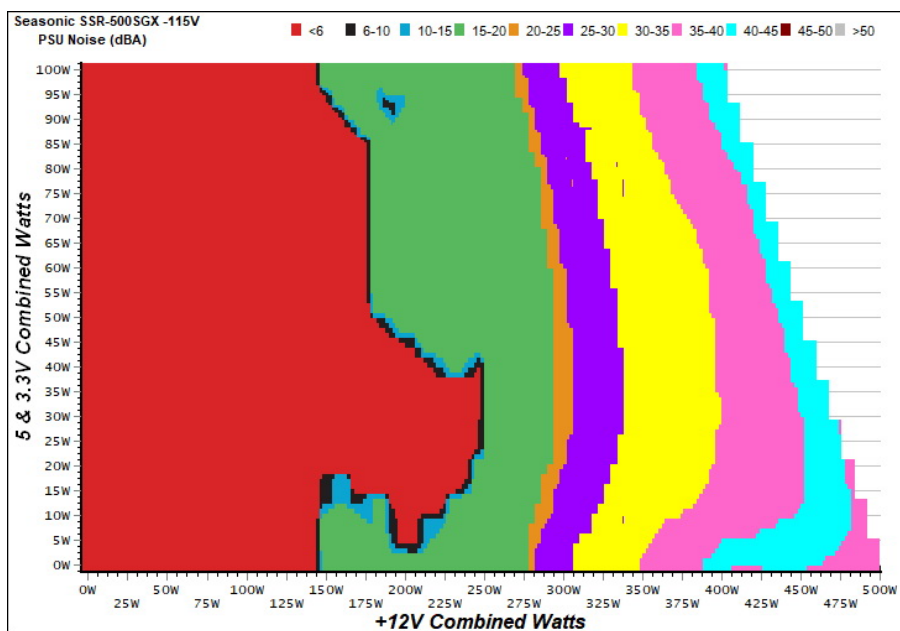
### EFFICIENCY GRAPH



#### 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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## Anex

## Seasonic SSR-500SGX

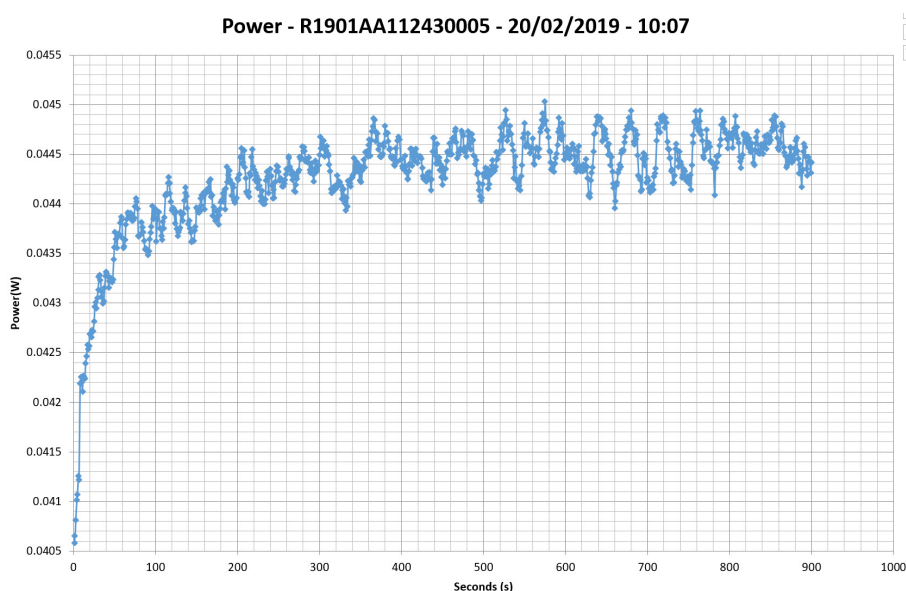
### 5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.232	68.843%	0.055
	5.152V	0.337		115.09V
2	0.090A	0.464	73.418%	0.100
	5.151V	0.632		115.09V
3	0.550A	2.829	77.528%	0.335
	5.143V	3.649		115.09V
4	1.000A	5.136	77.560%	0.403
	5.136V	6.622		115.09V
5	1.500A	7.692	77.799%	0.437
	5.127V	9.887		115.09V
6	3.000A	15.290	76.032%	0.481
	5.096V	20.110		115.08V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.232	62.534%	0.018
	5.152V	0.371		230.26V
2	0.090A	0.464	68.945%	0.033
	5.151V	0.673		230.26V
3	0.550A	2.829	76.171%	0.161
	5.142V	3.714		230.24V
4	1.000A	5.136	77.013%	0.242
	5.135V	6.669		230.24V
5	1.500A	7.690	76.977%	0.297
	5.126V	9.990		230.25V
6	3.001A	15.306	78.044%	0.371
	5.101V	19.612		230.25V

### 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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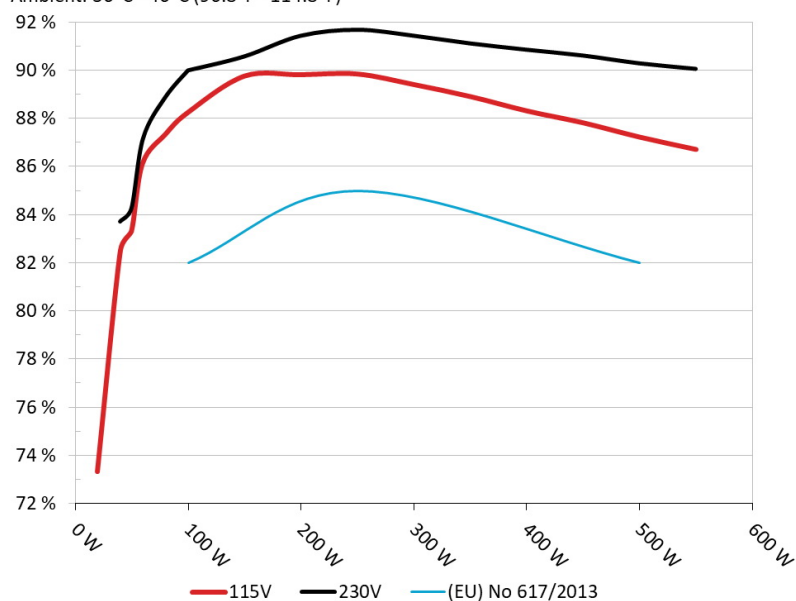
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PAGE 4/8

### EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

#### Efficiency: Seasonic SSR-500SGX

Ambient: 36°C - 46°C (96.8°F - 114.8°F)



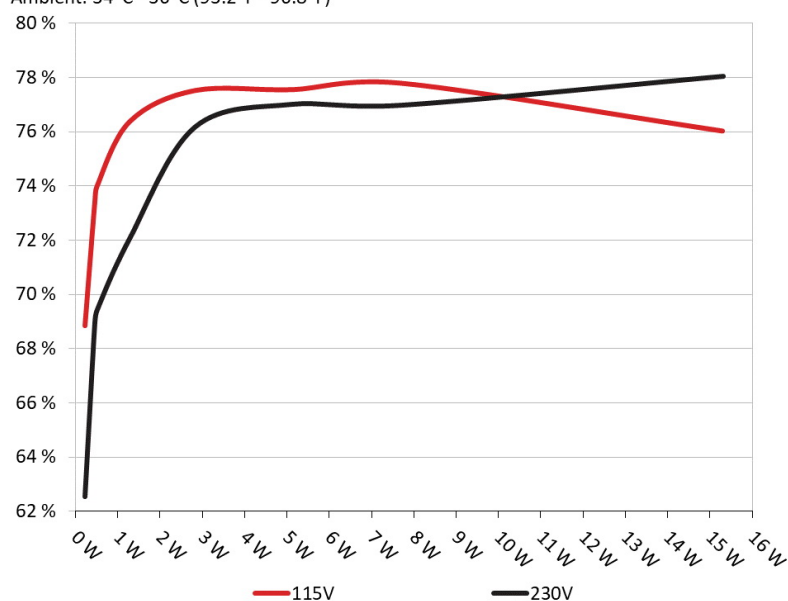
#### INFO

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-500SGX

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	2.333A	2.000A	1.984A	0.975A	49.518	83.324%	0	<6.0	43.89°C	0.934
	11.973V	4.999V	3.320V	5.128V	59.428				39.40°C	115.09V
2	5.739A	3.002A	2.980A	1.172A	99.611	88.256%	0	<6.0	44.38°C	0.972
	11.975V	4.996V	3.318V	5.119V	112.866				39.75°C	115.09V
3	9.480A	3.503A	3.465A	1.370A	149.523	89.764%	0	<6.0	45.16°C	0.981
	11.976V	4.995V	3.317V	5.110V	166.574				40.07°C	115.08V
4	13.223A	4.004A	3.980A	1.568A	199.550	89.821%	939	19.8	40.60°C	0.985
	11.976V	4.994V	3.316V	5.101V	222.163				45.94°C	115.09V
5	16.630A	5.007A	4.976A	1.768A	249.682	89.851%	1014	23.2	41.18°C	0.988
	11.977V	4.994V	3.315V	5.093V	277.886				46.78°C	115.09V
6	20.034A	6.007A	5.973A	1.967A	299.761	89.414%	1338	33.2	41.95°C	0.987
	11.978V	4.993V	3.315V	5.084V	335.249				47.87°C	115.09V
7	23.441A	7.010A	6.969A	2.168A	349.889	88.914%	1489	36.7	42.31°C	0.988
	11.979V	4.992V	3.314V	5.074V	393.514				48.36°C	115.09V
8	26.851A	8.016A	7.966A	2.370A	400.017	88.317%	1797	41.5	42.71°C	0.989
	11.978V	4.990V	3.313V	5.065V	452.931				48.86°C	115.09V
9	30.657A	8.523A	8.452A	2.373A	449.759	87.826%	2028	44.1	43.11°C	0.990
	11.979V	4.989V	3.312V	5.059V	512.105				49.77°C	115.12V
10	34.231A	9.024A	8.971A	2.975A	499.788	87.232%	2082	44.1	44.26°C	0.991
	11.980V	4.987V	3.310V	5.043V	572.942				51.03°C	115.13V
11	38.404A	9.027A	8.971A	2.978A	549.815	86.720%	2084	44.1	46.09°C	0.992
	11.981V	4.986V	3.309V	5.038V	634.013				53.27°C	115.12V
CL1	0.140A	12.000A	11.998A	0.000A	101.367	83.622%	1245	31.4	41.74°C	0.973
	11.977V	4.995V	3.313V	5.124V	121.220				46.13°C	115.18V
CL2	41.008A	1.004A	0.997A	1.000A	504.765	88.169%	2089	44.1	44.76°C	0.991
	11.982V	4.992V	3.317V	5.088V	572.496				51.15°C	115.10V

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PAGE 6/8

Anex

Seasonic SSR-500SGX

## 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	1.194A	0.499A	0.477A	0.194A	19.373	73.341%	0	<6.0	0.816
	11.967V	5.008V	3.326V	5.146V	26.415				115.08V
2	2.466A	0.997A	0.989A	0.389A	39.796	82.532%	0	<6.0	0.919
	11.971V	5.004V	3.324V	5.140V	48.219				115.08V
3	3.668A	1.499A	1.471A	0.584A	59.298	86.131%	0	<6.0	0.949
	11.973V	5.001V	3.321V	5.135V	68.846				115.08V
4	4.936A	2.000A	1.987A	0.780A	79.698	87.354%	0	<6.0	0.962
	11.974V	4.999V	3.320V	5.129V	91.236				115.08V

## RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	11.8 mV	9.2 mV	14.2 mV	9.8 mV	Pass
20% Load	13.5 mV	10.8 mV	15.1 mV	10.1 mV	Pass
30% Load	12.5 mV	11.9 mV	15.7 mV	10.4 mV	Pass
40% Load	12.6 mV	12.8 mV	16.0 mV	10.4 mV	Pass
50% Load	13.4 mV	14.7 mV	16.8 mV	10.7 mV	Pass
60% Load	14.8 mV	16.5 mV	17.8 mV	11.2 mV	Pass
70% Load	15.7 mV	17.7 mV	19.1 mV	11.6 mV	Pass
80% Load	17.1 mV	20.8 mV	21.6 mV	12.6 mV	Pass
90% Load	17.8 mV	22.7 mV	23.4 mV	12.8 mV	Pass
100% Load	26.3 mV	23.7 mV	23.9 mV	14.6 mV	Pass
110% Load	27.4 mV	24.7 mV	24.8 mV	15.6 mV	Pass
Crossload 1	22.0 mV	21.9 mV	23.2 mV	10.2 mV	Pass
Crossload 2	24.8 mV	14.5 mV	17.7 mV	13.4 mV	Pass

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PAGE 7/8



## Anex

## Seasonic SSR-500SGX

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

Hold-Up Time (ms)	23.50
AC Loss to PWR_OK Hold Up Time (ms)	21.10
PWR_OK Inactive to DC Loss Delay (ms)	2.40



Top side



Power specifications label

## CERTIFICATIONS



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