

Anex

Seasonic SSR-550FX

Lab ID#: 133

Receipt Date: -

Test Date: -

Report: 19PS133A

Report Date: Jun 29, 2018

DUT INFORMATION		DUT SPECIFICATIONS	
Brand	Seasonic	Rated Voltage (Vrms)	100-240
Manufacturer (OEM)	Seasonic	Rated Current (Arms)	8-4
Series	FOCUS Plus Gold	Rated Frequency (Hz)	50-60
Model Number	SSR-550FX	Rated Power (W)	550
Serial Number	R1705AA135750743	Type	ATX12V
DUT Notes		Cooling	120mm Fluid Dynamic Bearing Fan (HA1225H12F-Z)
		Semi-Passive Operation	✓ (selectable)
		Cable Design	Fully Modular

POWER SPECIFICATIONS						
Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	45	3	0.3
	Watts	100		540	15	3.6
Total Max. Power (W)		550				

CABLES AND CONNECTORS			
Modular Cables			
Description	Cable Count	Connector Count (Total)	Gauge
ATX connector 20+4 pin (610mm)	1	1	18-22AWG
4+4 pin EPS12V (655mm)	1	1	18AWG
6+2 pin PCIe (680mm+80mm)	1	2	18AWG
SATA (460mm+115mm+115mm+115mm)	1	4	18AWG
SATA (460mm+120mm)	1	2	18AWG
4 pin Molex (460mm+120mm+120mm)	1	3	18AWG
FDD Adapter (+110mm)	1	1	22AWG

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General Data	
Manufacturer (OEM)	Seasonic
Platform Model	FX
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor & Diode
Bridge Rectifier(s)	2x GBU1506 (600V, 15A @ 100°C)
APFC MOSFETS	2x UTC GPT18N50DG (500V, 18A @ 100°C, 0.265Ohm)
APFC Boost Diode	1x STMicroelectronics STTH8S06D (600V, 8A @ 125°C)
Hold-up Cap(s)	1x Nippon Chemi-Con (400V, 560uF, 2000h @ 105°C, CE)
Main Switchers	4x UTC GBT10N50ADG (500V, 10A @ 25°C, 0.61Ohm)
APFC Controller	Champion CM6500UNX
Resonant Controller	Champion CM6901T6X
Topology	Primary side: Full-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	4x Nexperia PSMN2R6-40YS (40V, 100A @ 25°C, 2.8mOhm)
5V & 3.3V	DC-DC Converters: 6x Infineon BSC0906NS (30V, 40A @ 100°C, 4.5mOhm) PWM Controller: APW7159
Filtering Capacitors	Electrolytics: Chemi-Con (1-5,000 @ 105°C, KZE), Chemi-Con (4-10,000 @ 105°C, KY), W Polymers: Chemi-Con
Supervisor IC	Weltrend WT7527V (OVP, UVP, OCP, SCP, PG)
Fan Model	Hong Hua HA1225H12F-Z (120mm, 12V, 0.58A, 2200 RPM, Fluid Dynamic Bearing)
5VSB Circuit	
Standby PWM Controller	Excelliance EM8569

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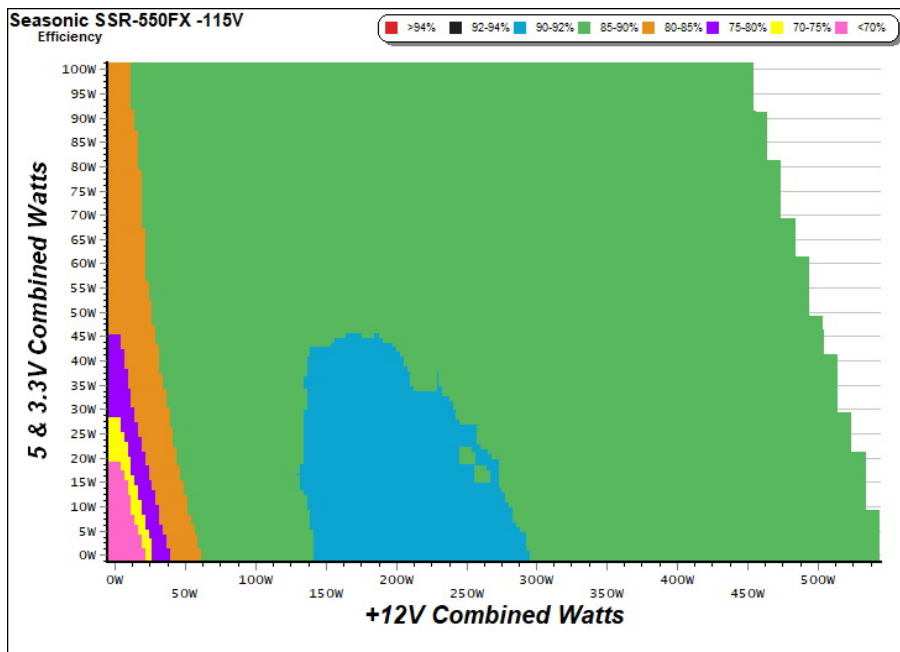
RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	88.048
Efficiency With 10W ($\leq 500W$) or 2% ($> 500W$) Load -115V	0.000
Average Efficiency 5VSB	76.352
Standby Power Consumption (W) -115V	0.0456356
Standby Power Consumption (W) -230V	0.0756219
Average PF	0.984
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	23.19
Efficiency Rating (ETA)	PLATINUM
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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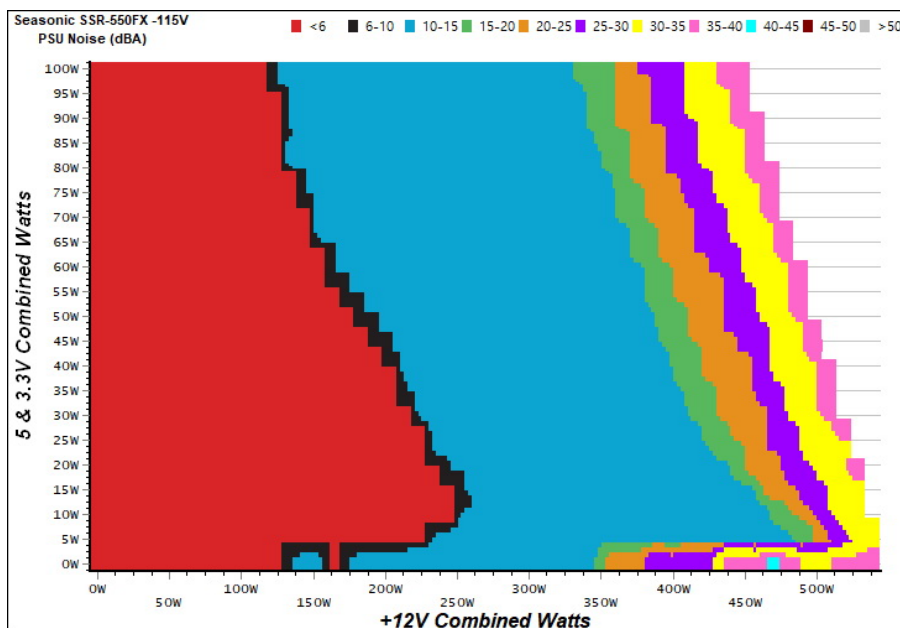
EFFICIENCY GRAPH



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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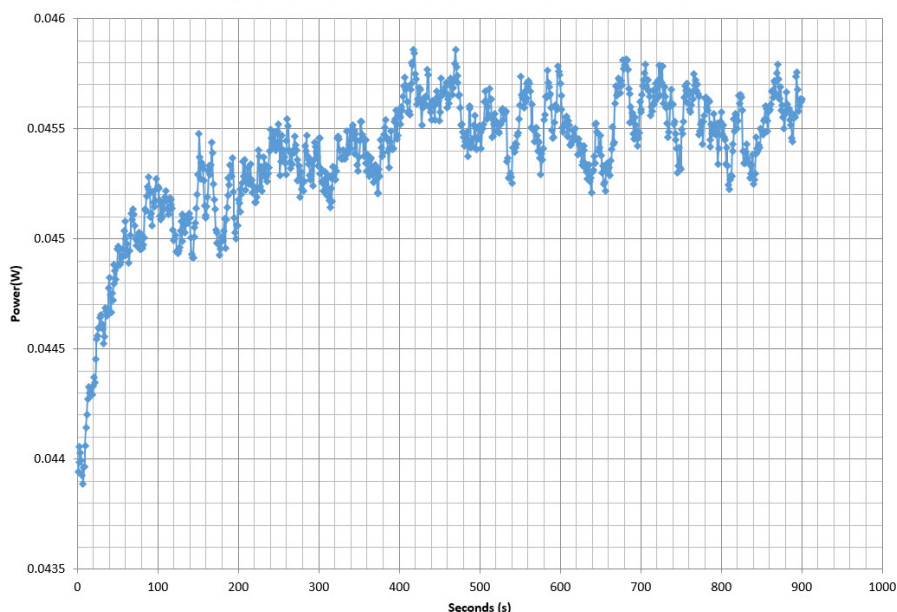
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5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)				
Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.214	67.722%	0.053
	5.133V	0.316		115.15V
2	0.087A	0.448	73.203%	0.099
	5.132V	0.612		115.16V
3	0.542A	2.776	77.133%	0.332
	5.120V	3.599		115.16V
4	1.002A	5.121	76.915%	0.401
	5.109V	6.658		115.16V
5	1.502A	7.655	77.276%	0.436
	5.098V	9.906		115.16V
6	3.002A	15.168	75.152%	0.483
	5.053V	20.183		115.16V

5VSB EFFICIENCY -230V (ERP LOT 3/6 & CEC)				
Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.214	60.282%	0.018
	5.133V	0.355		230.40V
2	0.087A	0.447	67.727%	0.033
	5.131V	0.660		230.40V
3	0.542A	2.776	75.476%	0.162
	5.120V	3.678		230.39V
4	1.002A	5.119	76.187%	0.245
	5.109V	6.719		230.40V
5	1.502A	7.653	76.271%	0.299
	5.096V	10.034		230.40V
6	3.002A	15.186	76.736%	0.371
	5.059V	19.790		230.40V

VAMPIRE POWER -115V

Power - R1705AA135750743 - 28/06/2017 - 10:58



INFO

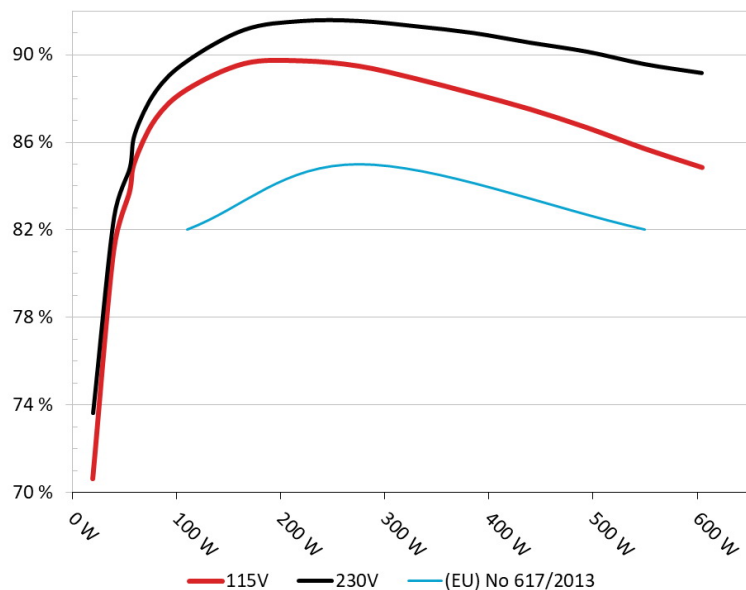
This graph is generated by the PPA Standby Power Analysis software which takes full control of the power analyzer during the whole procedure. This application features all of the EN50564 & IEC62301 test limits for standby power software testing

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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Seasonic SSR-550FX
Ambient: 37°C - 46°C (98.6°F - 114.8°F)

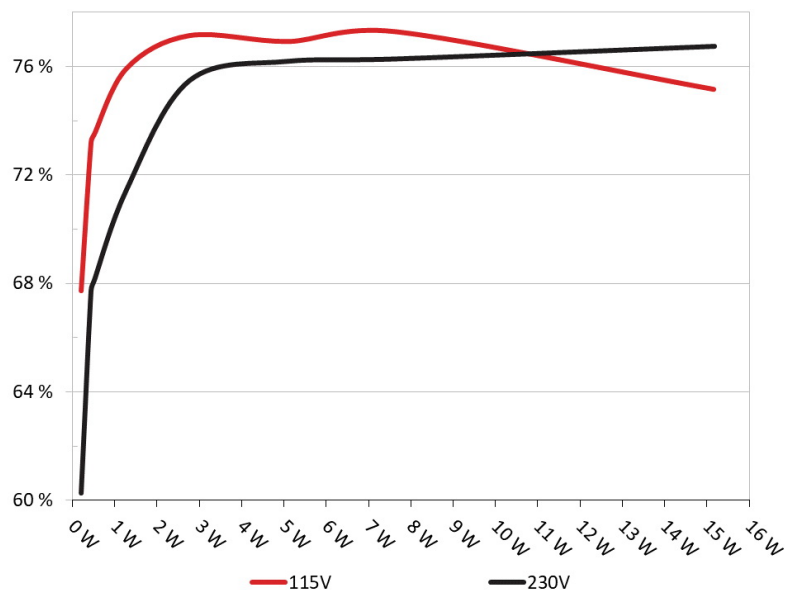


INFO

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-550FX
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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Seasonic SSR-550FX

10-110% LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	Fan Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	2.730A	1.994A	1.984A	0.980A	54.808	83.708%	0	< 6.0	45.00°C	0.939
	12.165V	5.024V	3.318V	5.098V	65.475				38.78°C	115.19V
2	6.486A	2.982A	2.978A	1.178A	109.739	88.402%	0	< 6.0	46.60°C	0.975
	12.164V	5.021V	3.318V	5.085V	124.136				39.53°C	115.20V
3	10.588A	3.488A	3.492A	1.379A	164.875	89.589%	0	< 6.0	47.93°C	0.984
	12.164V	5.019V	3.317V	5.071V	184.034				40.10°C	115.18V
4	14.685A	3.986A	3.975A	1.580A	219.771	89.716%	700	14.6	41.30°C	0.988
	12.162V	5.017V	3.316V	5.059V	244.963				50.56°C	115.18V
5	18.438A	4.981A	4.973A	1.780A	274.687	89.479%	550	10.4	41.47°C	0.990
	12.162V	5.014V	3.316V	5.044V	306.985				50.75°C	115.18V
6	22.196A	5.987A	5.967A	1.986A	329.709	88.901%	560	10.5	41.98°C	0.990
	12.161V	5.012V	3.316V	5.030V	370.872				52.26°C	115.18V
7	25.952A	6.990A	6.964A	2.190A	384.664	88.226%	880	20.6	43.32°C	0.990
	12.160V	5.009V	3.316V	5.015V	435.998				53.00°C	115.17V
8	29.705A	7.991A	7.961A	2.399A	439.578	87.505%	1325	31.4	43.51°C	0.991
	12.159V	5.007V	3.315V	4.999V	502.349				52.32°C	115.17V
9	33.891A	8.489A	8.474A	2.400A	494.604	86.656%	1880	40.2	44.10°C	0.992
	12.158V	5.005V	3.315V	4.991V	570.765				51.76°C	115.17V
10	37.824A	9.004A	8.961A	3.015A	549.515	85.704%	2310	45.1	44.97°C	0.992
	12.156V	5.003V	3.314V	4.969V	641.178				52.00°C	115.16V
11	42.344A	9.006A	8.962A	3.020A	604.455	84.852%	2320	45.2	46.06°C	0.992
	12.156V	5.002V	3.313V	4.961V	712.362				53.42°C	115.16V
CL1	0.098A	12.012A	12.003A	0.004A	101.375	85.128%	720	14.9	45.85°C	0.973
	12.165V	5.011V	3.330V	5.096V	119.086				48.74°C	115.20V
CL2	44.966A	1.004A	1.003A	1.002A	559.997	86.334%	2320	45.2	45.17°C	0.992
	12.156V	5.009V	3.306V	5.036V	648.643				52.51°C	115.18V

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20-80W LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	Fan Noise (dB[A])	PF/AC Volts
1	1.199A	0.493A	0.480A	0.195A	19.663	70.646%	0	< 6.0	0.776
	12.166V	5.033V	3.321V	5.125V	27.833				115.19V
2	2.422A	0.992A	0.992A	0.391A	39.740	81.049%	0	< 6.0	0.907
	12.165V	5.026V	3.317V	5.117V	49.032				115.19V
3	3.652A	1.488A	1.504A	0.585A	59.883	85.108%	0	< 6.0	0.948
	12.165V	5.025V	3.318V	5.109V	70.361				115.19V
4	4.864A	1.994A	1.988A	0.781A	79.767	87.060%	0	< 6.0	0.963
	12.165V	5.024V	3.318V	5.099V	91.623				115.19V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	8.7 mV	5.5 mV	6.9 mV	5.8 mV	Pass
20% Load	11.9 mV	6.8 mV	9.3 mV	6.3 mV	Pass
30% Load	13.8 mV	7.4 mV	9.6 mV	5.9 mV	Pass
40% Load	15.8 mV	7.3 mV	11.3 mV	5.6 mV	Pass
50% Load	17.2 mV	8.0 mV	9.7 mV	7.0 mV	Pass
60% Load	19.1 mV	9.5 mV	8.2 mV	6.0 mV	Pass
70% Load	20.5 mV	9.5 mV	8.2 mV	6.6 mV	Pass
80% Load	21.8 mV	10.9 mV	9.2 mV	7.7 mV	Pass
90% Load	23.6 mV	11.9 mV	9.7 mV	8.3 mV	Pass
100% Load	24.8 mV	12.5 mV	12.3 mV	9.3 mV	Pass
110% Load	26.3 mV	14.6 mV	12.4 mV	9.3 mV	Pass
Crossload 1	13.2 mV	10.9 mV	9.8 mV	8.0 mV	Pass
Crossload 2	24.4 mV	10.4 mV	11.6 mV	8.6 mV	Pass

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

Hold-Up Time (ms)	23.68
AC Loss to PWR_OK Hold Up Time (ms)	19.52
PWR_OK Inactive to DC Loss Delay (ms)	4.16



Top side



Power specifications label

CERTIFICATIONS



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