EFFICIENCY AND NOISE LEVEL CERTIFICATIONS

Anex

Seasonic SSR-750PX

Lab ID#: 238
Receipt Date: -
Test Date: -

Report:
Report Date: Aug 12, 2018

DUT INFORMATION

Brand	Seasonic
Manufacturer (OEM)	Seasonic
Series	FOCUS Plus Platinum
Model Number	SSR-750PX
Serial Number	R1706AA160920046
DUT Notes	Retested on 04/10/2018

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	50-60
Rated Power (W)	750
Type	ATX12V
Cooling	120mm Fluid Dynamic Bearing Fan (HA1225M12F-Z)
Semi-Passive Operation	✓ (selectable)
Cable Design	Fully Modular

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				

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	Yes
4+4 pin EPS12V (650mm)	2	2	18AWG	Yes
6+2 pin PCIe (680mm+80mm)	2	4	18AWG	Yes
SATA (450mm+110mm+110mm+110mm)	2	8	18AWG	No
4 pin Molex (450mm+120mm+120mm)	1	3	18AWG	No
FDD Adapter (+105mm)	1	1	22AWG	No
AC Power Cord (1370mm) - C13 coupler	1	1	18AWG	No

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General Data	
Manufacturer (OEM)	Seasonic
Platform Model	PX
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV , 1x CM02X
Inrush Protection	NTC Thermistor & Diode
Bridge Rectifier(s)	2x GBU1506 (600V, 15A @ 100°C)
APFC MOSFETS	2x Infineon IPP50R140CP (550V, 15A @ 100°C, 0.14Ohm)
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 Infineon IPP50R250CP (550V, 9A @ 100°C, 0.25Ohm)
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 PSMN1R8-40YLC (40V, 100A @ 25°C, 1.8mOhm)
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 HA1225M12F-Z (120mm, 12V, 0.45A, 2050 RPM, Fluid Dynamic Bearing)
5VSB Circuit	
Standby PWM Controller	Excelliance EM8569
Rectifier	P10V45SP SBR (45V, 10A @ 50% Duty Cycle)

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RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	90.132
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	0.000
Average Efficiency 5VSB	77.245
Standby Power Consumption (W) -115V	0.0509048
Standby Power Consumption (W) -230V	0.0871141
Average PF	0.985
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	19.40
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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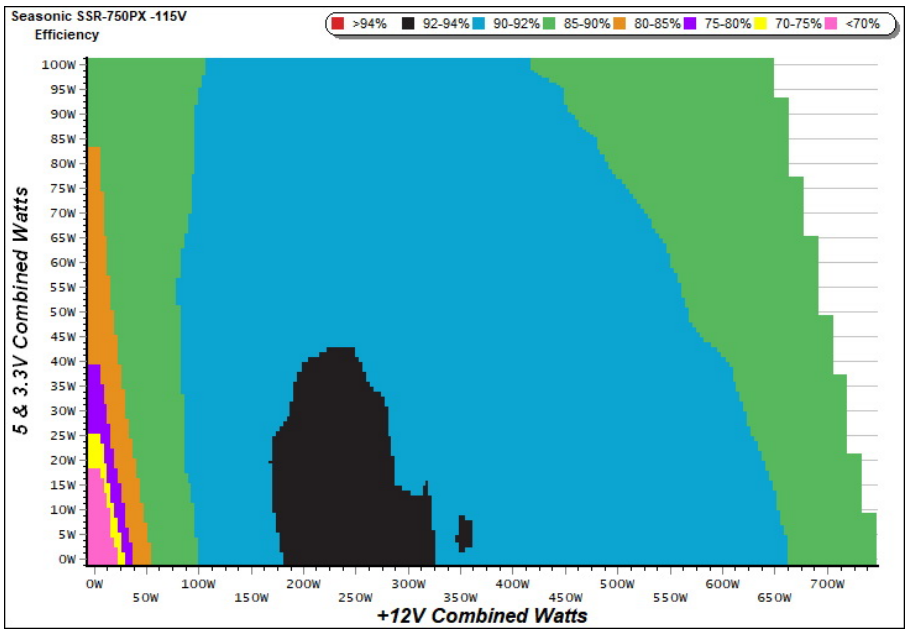
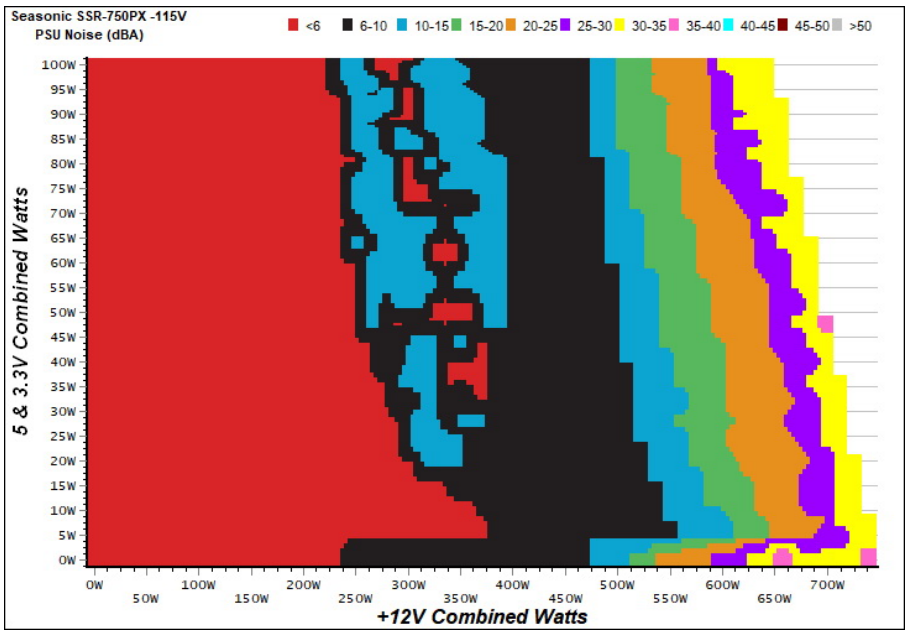
EFFICIENCY GRAPH



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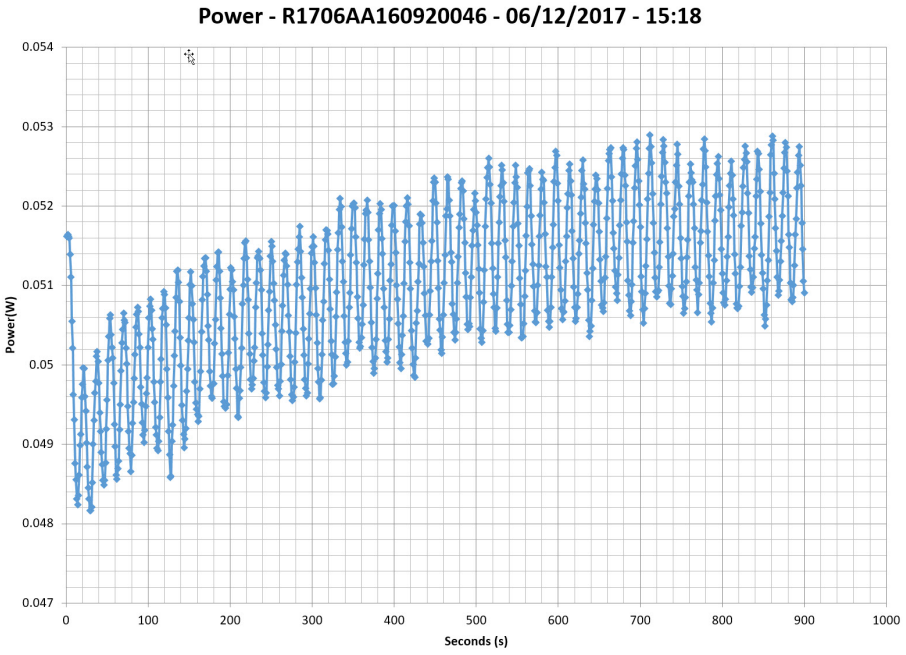
5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231	67.544%	0.031
	5.120V	0.342		115.38V
2	0.090A	0.461	72.713%	0.057
	5.118V	0.634		115.38V
3	0.550A	2.810	77.603%	0.255
	5.108V	3.621		115.37V
4	1.000A	5.099	78.038%	0.349
	5.098V	6.534		115.37V
5	1.500A	7.632	77.957%	0.404
	5.087V	9.790		115.36V
6	3.000A	15.131	76.234%	0.470
	5.043V	19.848		115.35V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231	58.333%	0.013
	5.120V	0.396		230.93V
2	0.090A	0.461	65.951%	0.022
	5.118V	0.699		230.94V
3	0.550A	2.810	75.762%	0.110
	5.107V	3.709		230.88V
4	1.000A	5.099	76.978%	0.179
	5.098V	6.624		230.93V
5	1.500A	7.631	77.276%	0.239
	5.086V	9.875		230.93V
6	3.001A	15.159	77.798%	0.339
	5.052V	19.485		230.93V

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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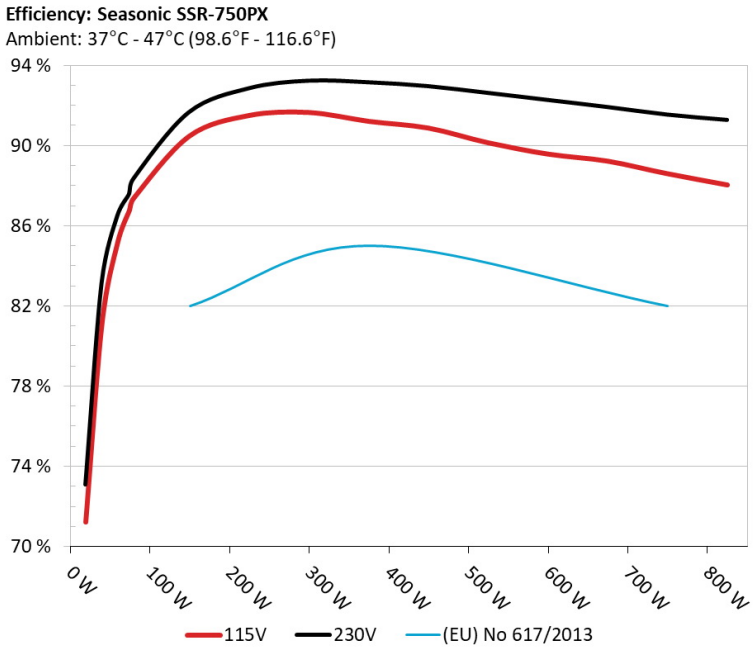
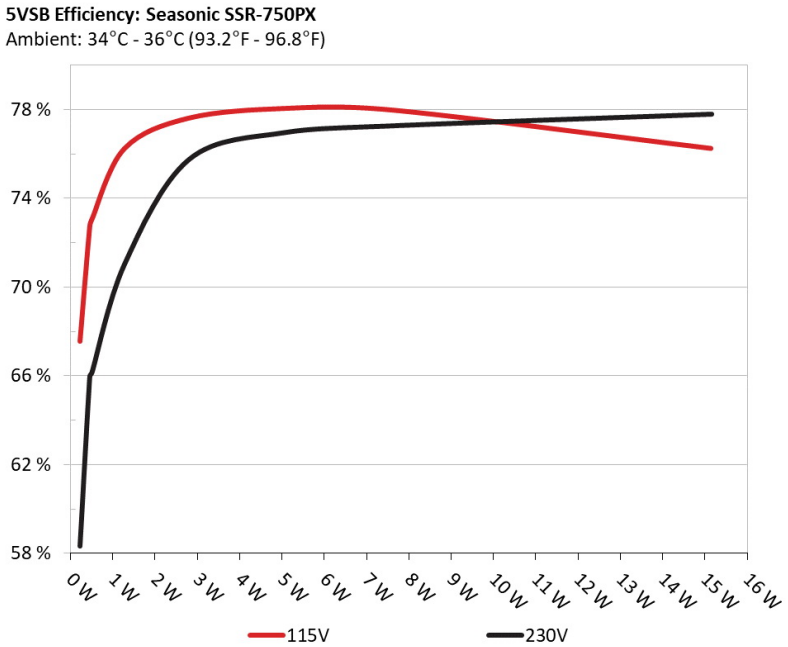
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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

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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	4.354A	1.987A	1.986A	0.982A	74.416	86.788%	0	<6.0	45.15°C	0.940
	12.134V	5.027V	3.321V	5.092V	85.745				38.29°C	115.28V
2	9.761A	2.984A	2.982A	1.181A	149.342	90.468%	0	<6.0	45.58°C	0.984
	12.134V	5.027V	3.320V	5.082V	165.078				38.41°C	115.18V
3	15.563A	3.481A	3.463A	1.380A	224.853	91.505%	0	<6.0	46.44°C	0.992
	12.135V	5.027V	3.320V	5.072V	245.728				38.79°C	115.13V
4	21.296A	3.980A	3.977A	1.581A	299.637	91.651%	0	<6.0	47.71°C	0.995
	12.135V	5.027V	3.319V	5.062V	326.931				39.39°C	115.07V
5	26.703A	4.976A	4.971A	1.782A	374.572	91.213%	445	9.6	39.69°C	0.993
	12.136V	5.026V	3.318V	5.051V	410.657				50.85°C	114.96V
6	32.106A	5.973A	5.970A	1.984A	449.483	90.876%	445	9.6	40.18°C	0.993
	12.137V	5.024V	3.317V	5.041V	494.614				51.59°C	114.95V
7	37.543A	6.967A	6.967A	2.188A	524.798	90.141%	590	15.2	41.44°C	0.994
	12.138V	5.024V	3.315V	5.029V	582.196				53.11°C	114.84V
8	42.984A	7.965A	7.968A	2.392A	600.108	89.578%	1130	29.9	42.81°C	0.994
	12.137V	5.022V	3.314V	5.019V	669.925				54.83°C	114.73V
9	48.788A	8.467A	8.451A	2.394A	674.652	89.227%	1655	37.0	44.76°C	0.995
	12.137V	5.021V	3.313V	5.013V	756.111				57.40°C	114.72V
10	54.401A	8.967A	8.971A	3.005A	749.870	88.598%	2005	41.1	45.51°C	0.995
	12.135V	5.019V	3.311V	4.994V	846.370				58.68°C	114.60V
11	60.595A	8.968A	8.974A	3.008A	825.100	88.041%	2025	41.2	46.73°C	0.995
	12.136V	5.019V	3.310V	4.988V	937.176				60.09°C	114.49V
CL1	0.740A	12.001A	11.999A	0.000A	109.173	86.549%	485	9.3	46.91°C	0.973
	12.139V	5.026V	3.323V	5.102V	126.140				49.95°C	115.22V
CL2	62.013A	1.001A	1.000A	1.000A	765.974	89.018%	2025	41.2	45.82°C	0.995
	12.136V	5.022V	3.312V	5.046V	860.471				54.78°C	114.59V

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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	1.187A	0.496A	0.481A	0.196A	19.496	71.234%	0	<6.0	0.662
	12.131V	5.030V	3.324V	5.114V	27.369				115.35V
2	2.439A	0.994A	0.994A	0.392A	39.886	81.142%	0	<6.0	0.830
	12.132V	5.024V	3.320V	5.108V	49.156				115.33V
3	3.628A	1.490A	1.475A	0.588A	59.404	85.146%	0	<6.0	0.908
	12.133V	5.025V	3.321V	5.102V	69.767				115.30V
4	4.881A	1.989A	1.986A	0.785A	79.813	87.384%	0	<6.0	0.946
	12.133V	5.026V	3.321V	5.096V	91.336				115.27V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.8 mV	4.2 mV	3.4 mV	4.7 mV	Pass
20% Load	10.0 mV	5.0 mV	4.1 mV	5.2 mV	Pass
30% Load	12.8 mV	5.5 mV	4.5 mV	5.7 mV	Pass
40% Load	15.4 mV	6.1 mV	5.5 mV	6.4 mV	Pass
50% Load	16.2 mV	7.7 mV	6.2 mV	6.7 mV	Pass
60% Load	15.3 mV	8.5 mV	7.1 mV	8.7 mV	Pass
70% Load	13.2 mV	9.0 mV	7.5 mV	8.9 mV	Pass
80% Load	13.5 mV	8.8 mV	8.5 mV	9.9 mV	Pass
90% Load	15.3 mV	10.1 mV	9.2 mV	11.0 mV	Pass
100% Load	16.3 mV	11.4 mV	9.6 mV	11.5 mV	Pass
110% Load	17.7 mV	10.8 mV	9.8 mV	11.4 mV	Pass
Crossload 1	8.6 mV	9.4 mV	8.2 mV	4.8 mV	Pass
Crossload 2	17.2 mV	7.3 mV	5.5 mV	9.7 mV	Pass

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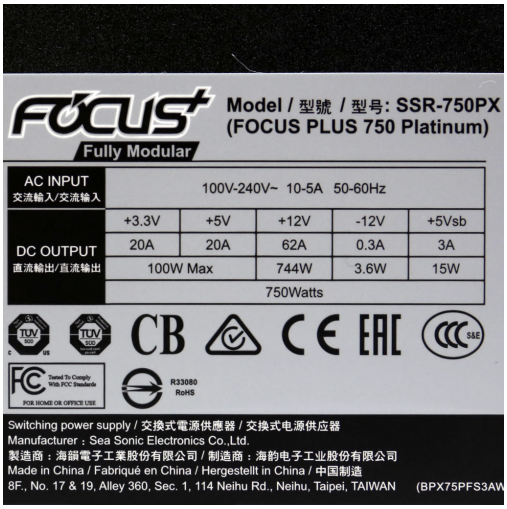
HOLD-UP TIME & POWER OK SIGNAL (230V)	
Hold-Up Time (ms)	25.20
AC Loss to PWR_OK Hold Up Time (ms)	20.70
PWR_OK Inactive to DC Loss Delay (ms)	4.50

Top side



Power specifications label

CERTIFICATIONS

CYBENETICS PLATINUM

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