Anex

Seasonic SSR-750FX (Sample #2)

Lab ID#: 165
Receipt Date: -
Test Date: -

Report:
Report Date: Aug 25, 2018

DUT INFORMATION

Brand	Seasonic
Manufacturer (OEM)	Seasonic
Series	FOCUS Plus Gold
Model Number	SSR-750FX (Sample #2)
Serial Number	R1705AA135880160
DUT Notes	

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 (HA1225H12F-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
ATX connector 20+4 pin (610mm)	1	1	18-22AWG
4+4 pin EPS12V (655mm)	2	2	18AWG
6+2 pin PCIe (680mm+80mm)	2	4	18AWG
SATA (455mm+115mm+115mm+115mm)	2	8	18AWG
4 pin Molex (460mm+125mm+125mm)	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	WeltrendWT7527V (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	88.261
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	0.000
Average Efficiency 5VSB	77.289
Standby Power Consumption (W) -115V	0.0459817
Standby Power Consumption (W) -230V	0.0719202
Average PF	0.986
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	34.75
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard++

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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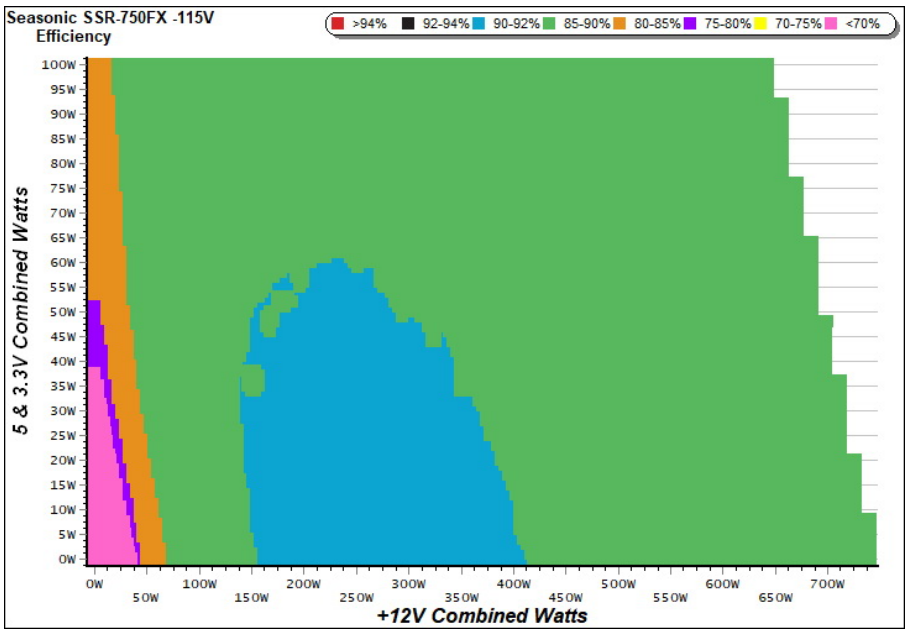
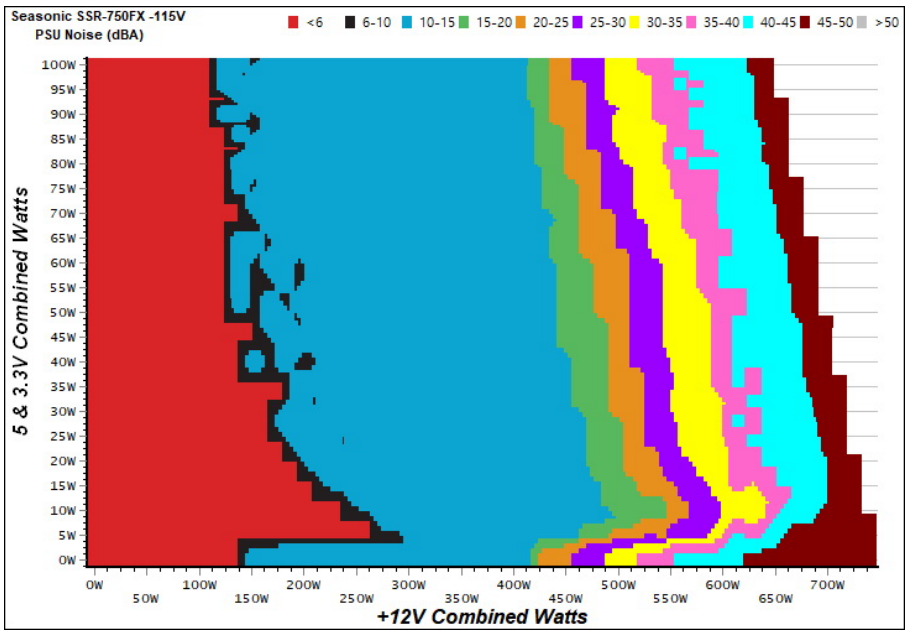
EFFICIENCY GRAPH



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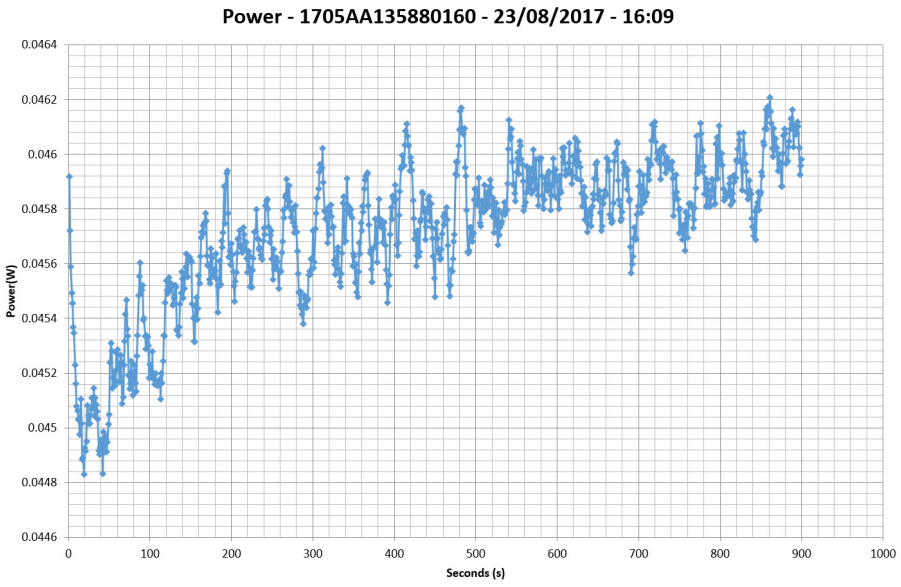
5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.041A	0.212	68.167%	0.050
	5.128V	0.311		115.21V
2	0.087A	0.445	73.920%	0.095
	5.126V	0.602		115.21V
3	0.542A	2.771	77.968%	0.329
	5.116V	3.554		115.38V
4	1.002A	5.113	78.085%	0.400
	5.105V	6.548		115.34V
5	1.501A	7.647	78.246%	0.436
	5.094V	9.773		115.34V
6	3.001A	15.153	76.176%	0.485
	5.049V	19.892		115.33V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.041A	0.212	60.920%	0.017
	5.127V	0.348		230.45V
2	0.087A	0.445	68.462%	0.032
	5.126V	0.650		230.45V
3	0.542A	2.771	76.189%	0.156
	5.115V	3.637		230.45V
4	1.002A	5.113	77.552%	0.238
	5.105V	6.593		230.45V
5	1.501A	7.646	77.139%	0.294
	5.093V	9.912		230.45V
6	3.001A	15.180	77.770%	0.371
	5.058V	19.519		230.45V

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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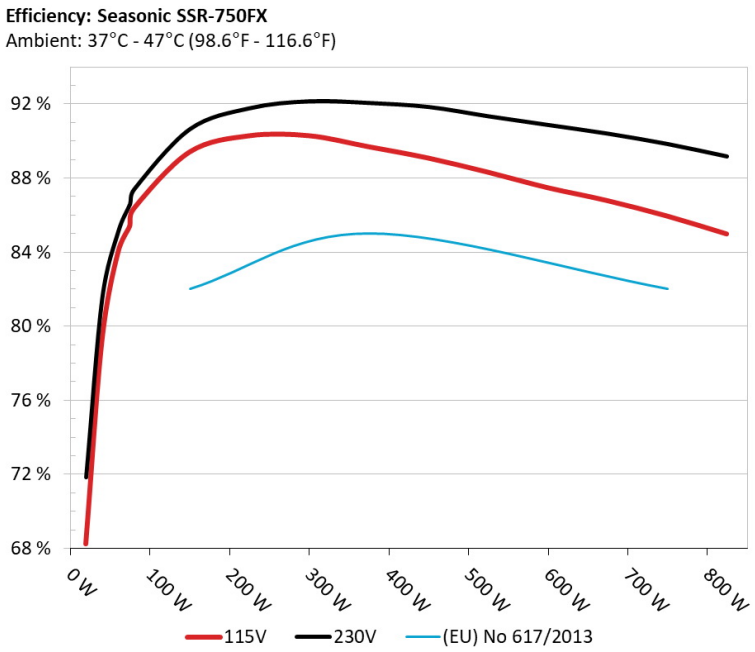
Seasonic SSR-750FX (Sample #2)

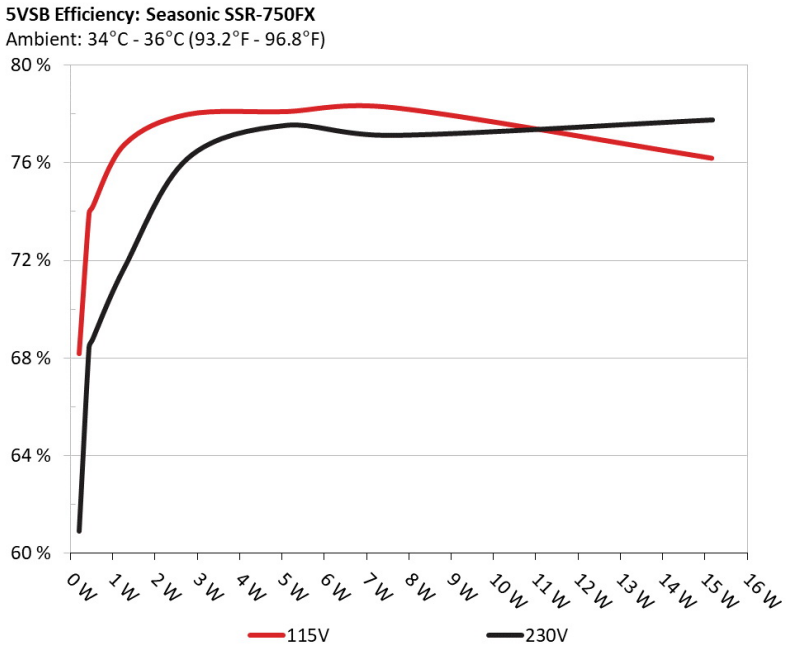
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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	4.380A	1.996A	1.994A	0.981A	74.721	85.411%	0	<6	42.05°C	0.955
	12.131V	5.012V	3.303V	5.095V	87.484				38.38°C	115.20V
2	9.797A	2.992A	2.999A	1.180A	149.732	89.414%	0	<6	42.62°C	0.983
	12.132V	5.008V	3.299V	5.083V	167.459				38.80°C	115.20V
3	15.560A	3.498A	3.517A	1.379A	224.860	90.296%	700	14.6	38.85°C	0.989
	12.132V	5.004V	3.295V	5.071V	249.026				52.18°C	115.19V
4	21.307A	4.004A	4.008A	1.580A	299.705	90.300%	550	10.4	39.00°C	0.991
	12.132V	5.000V	3.292V	5.059V	331.900				53.36°C	115.19V
5	26.716A	5.002A	5.014A	1.780A	374.628	89.703%	560	10.5	40.37°C	0.990
	12.134V	4.996V	3.288V	5.045V	417.633				55.25°C	115.27V
6	32.118A	6.016A	6.026A	1.985A	449.554	89.092%	735	15.4	40.60°C	0.991
	12.135V	4.990V	3.284V	5.034V	504.597				55.86°C	115.17V
7	37.534A	7.018A	7.042A	2.190A	524.474	88.327%	1325	31.4	42.34°C	0.991
	12.133V	4.986V	3.279V	5.019V	593.787				57.82°C	115.17V
8	42.959A	8.034A	8.062A	2.395A	599.416	87.492%	1960	41.4	43.07°C	0.992
	12.128V	4.981V	3.275V	5.006V	685.112				59.02°C	115.16V
9	48.809A	8.539A	8.586A	2.400A	674.436	86.791%	2310	45.1	44.06°C	0.992
	12.126V	4.977V	3.271V	4.998V	777.079				60.62°C	115.16V
10	54.388A	9.058A	9.085A	3.011A	749.284	85.960%	2320	45.2	45.87°C	0.993
	12.127V	4.973V	3.268V	4.977V	871.661				62.87°C	115.15V
11	60.564A	9.067A	9.093A	3.015A	824.135	84.992%	2320	45.2	47.30°C	0.993
	12.126V	4.970V	3.265V	4.970V	969.658				65.69°C	115.15V
CL1	0.099A	12.013A	12.004A	0.004A	100.757	84.378%	560	10.5	43.09°C	0.973
	12.145V	4.998V	3.290V	5.101V	119.412				55.37°C	115.21V
CL2	61.936A	1.005A	1.002A	1.001A	764.309	86.243%	2320	45.2	46.36°C	0.993
	12.125V	4.982V	3.279V	5.037V	886.231				62.78°C	115.16V

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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	1.205A	0.493A	0.482A	0.195A	19.665	68.239%	0	<6.0	0.750
	12.115V	5.017V	3.308V	5.121V	28.818				115.20V
2	2.433A	0.991A	0.997A	0.391A	39.753	79.148%	0	<6.0	0.884
	12.120V	5.015V	3.305V	5.114V	50.226				115.20V
3	3.665A	1.487A	1.509A	0.585A	59.862	83.966%	0	<6.0	0.938
	12.124V	5.013V	3.304V	5.106V	71.293				115.20V
4	4.880A	1.996A	1.995A	0.780A	79.756	86.353%	0	<6.0	0.959
	12.128V	5.012V	3.303V	5.099V	92.360				115.21V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	8.9 mV	6.0 mV	8.2 mV	5.7 mV	Pass
20% Load	12.7 mV	6.1 mV	8.5 mV	5.9 mV	Pass
30% Load	15.2 mV	6.3 mV	8.5 mV	6.1 mV	Pass
40% Load	17.1 mV	7.8 mV	10.4 mV	6.5 mV	Pass
50% Load	18.3 mV	7.8 mV	9.1 mV	6.5 mV	Pass
60% Load	20.2 mV	10.4 mV	10.6 mV	7.2 mV	Pass
70% Load	21.9 mV	11.4 mV	11.6 mV	8.4 mV	Pass
80% Load	23.0 mV	11.6 mV	11.8 mV	9.4 mV	Pass
90% Load	26.2 mV	13.1 mV	13.1 mV	9.8 mV	Pass
100% Load	27.9 mV	13.2 mV	14.6 mV	11.6 mV	Pass
110% Load	28.6 mV	15.4 mV	15.9 mV	12.2 mV	Pass
Crossload 1	12.3 mV	11.3 mV	9.4 mV	8.2 mV	Pass
Crossload 2	27.2 mV	10.6 mV	12.8 mV	9.2 mV	Pass

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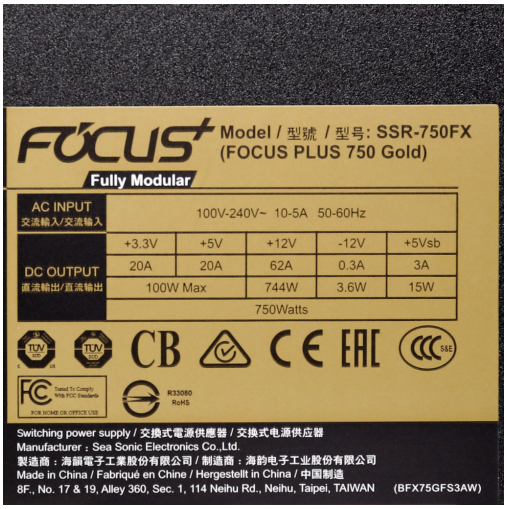
HOLD-UP TIME & POWER OK SIGNAL (230V)	
Hold-Up Time (ms)	23.38
AC Loss to PWR_OK Hold Up Time (ms)	19.96
PWR_OK Inactive to DC Loss Delay (ms)	3.42

Top side



Power specifications label

CERTIFICATIONS

CYBENETICS PLATINUM

CYBENETICS STANDARD++