Evaluation Report

Asus ROG RSSS04-750G1 (Sample #3)

DUT INFORMATION

Brand	Asus ROG
Manufacturer (OEM)	Seasonic
Series	Rog Strix
Model Number	RSSS04-750G1 (Sample #3)
Serial Number	K7YEKG007692KD3
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	47-63
Rated Power (W)	750
Type	ATX12V
Cooling	140mm Double Ball-Bearing Fan (FB14025BH)
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 (610mm)	1	1	18-22AWG	No
4+4 pin EPS12V (1000mm)	2	2	18AWG	No
6+2 pin PCIe (680mm+80mm)	2	4	18AWG	No
SATA (450mm+115mm+115mm+115mm)	1	4	18AWG	No
SATA (410mm+150mm+150mm+150mm)	1	4	18AWG	No
4 pin Molex (450mm+120mm+120mm)	1	3	18AWG	No
AC Power Cord (1400mm) - C13 coupler (EU)	1	1	18AWG	-
AC Power Cord (1370mm) - C13 coupler (British)	1	1	18AWG	-

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General Data	
Manufacturer (OEM)	Seasonic
PCB Type	Double Sided
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x Discharge IC
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	2x GBU1508 (800V, 15A @ 100°C)
APFC MOSFETS	2x Infineon IPP50R140CP (550V, 15A @ 100°C, 0.14Ohm)
APFC Boost Diode	1x STMicroelectronics STTH8S06 (600V, 8A @ 25°C)
Hold-up Cap(s)	1x Hitachi (400V, 560uF, 2,000h @ 105°C, HU)
Main Switchers	4x Champion GPT10N50ADG (500V, 9.7A, 0.7Ohm)
APFC Controller	Champion CM6500UNX
Resonant Controllers	Champion CM6901T6
Topology	Primary side: Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	4x Nexperia PSMN2R6-40YS (40V, 100A @ 100°C, 3.7mOhm @ 100°C)
5V & 3.3V	DC-DC Converters:4x ON Semiconductor NTMFS4C028N (30V, 12.3A @ 80°C, 4.73mOhm) PWM Controllers: ANPEC APW7159C
Filtering Capacitors	Electrolytics: 3x Nippon Chemi-Con (105°C, W), 5x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 5x Nichicon (4-10,000h @ 105°C, HE) Polymers: 27x FPCAP
Supervisor IC	Weltrend WT7527V (OCP, OVP, UVP, SCP, PG
Fan Model	Everflow FB14025BH (135mm, 12V, 0.60A, Ball Bearing Fan)
5VSB Circuit	
Rectifier	1x PFC P10V45SP (45V, 10A)
Standby PWM Controller	Excelliance MOS EM8569

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RESULTS

Test Date	08-30-2019
Certification Date	09-07-2019
Lab ID #	AS19750101
Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	90.952
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	62.528
Average Efficiency 5VSB	76.485
Standby Power Consumption (W) -115V	0.0549026
Standby Power Consumption (W) -230V	0.0807103
Average PF	0.937
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	21.54
Efficiency Rating (ETA)	ETA-A
Noise Rating (LAMBDA)	LAMBDA-A

TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Keysight AC6804B
Power Analyzers	N4L PPA1530 x2
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2
Tachometer	UNI-T UT372 x2
Digital Multimeter	Keysight U1273AX, Fluke 289, Keithley 2015 - THD
UPS	CyberPower OLS3000E 3kVA x2
Transformer	3kVA x2

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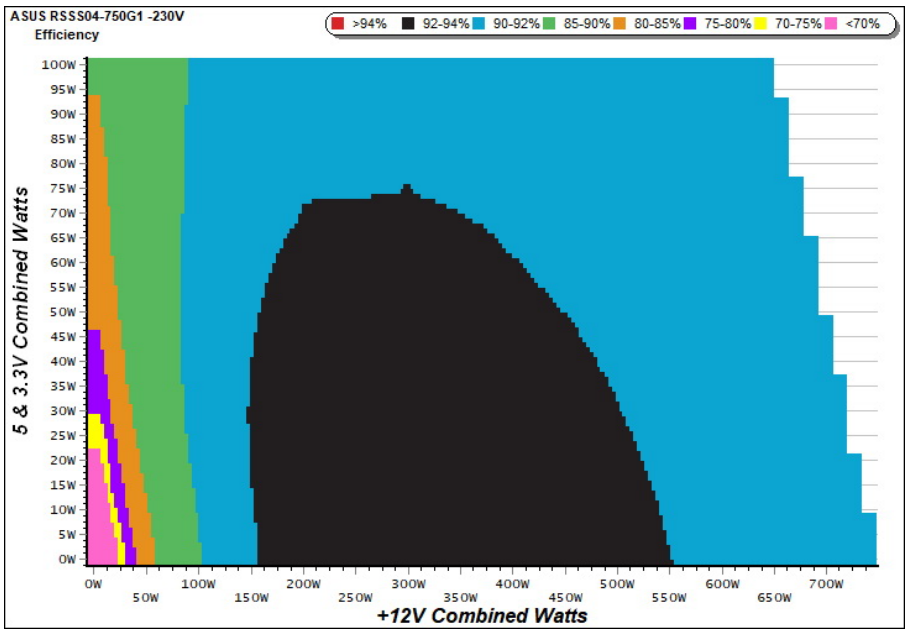
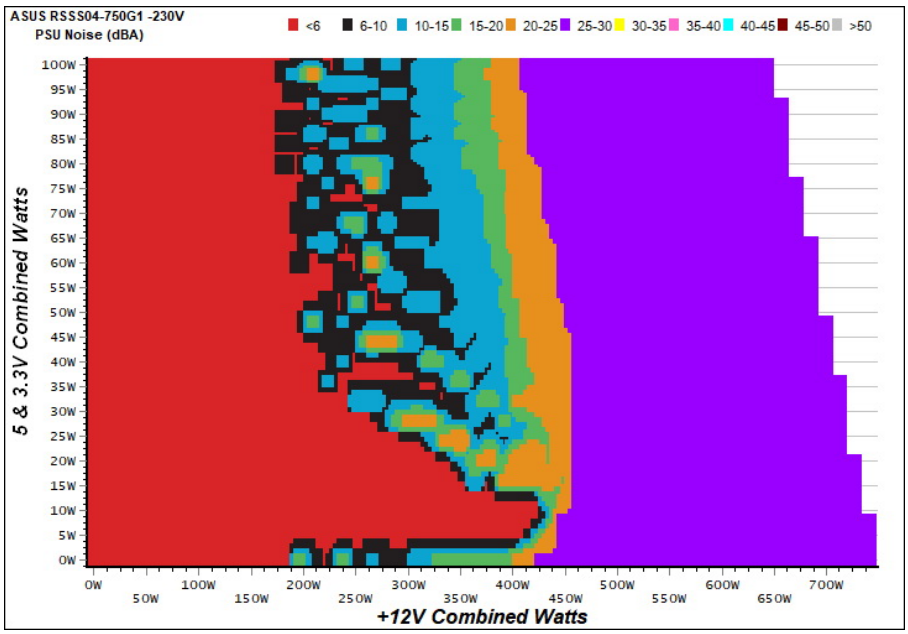
EFFICIENCY GRAPH



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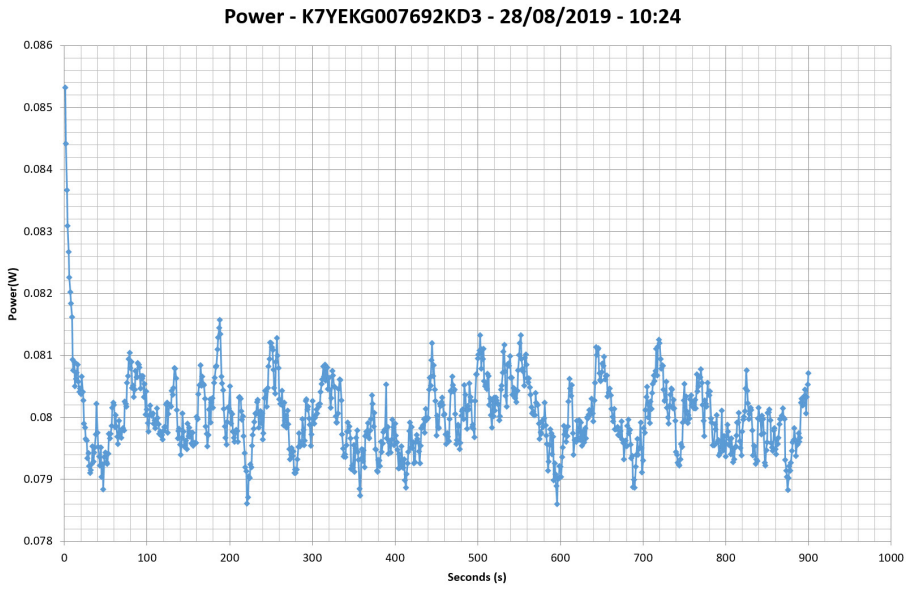
5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231	66.957%	0.062
	5.137V	0.345		115.16V
2	0.090A	0.463	72.457%	0.110
	5.136V	0.639		115.15V
3	0.550A	2.820	77.409%	0.345
	5.127V	3.643		115.16V
4	1.000A	5.118	77.769%	0.424
	5.117V	6.581		115.15V
5	1.500A	7.661	77.800%	0.465
	5.106V	9.847		115.13V
6	3.000A	15.214	75.922%	0.510
	5.071V	20.039		115.12V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231	60.789%	0.019
	5.137V	0.380		230.34V
2	0.090A	0.463	67.889%	0.034
	5.136V	0.682		230.34V
3	0.550A	2.820	76.196%	0.161
	5.127V	3.701		230.34V
4	1.000A	5.118	77.253%	0.242
	5.117V	6.625		230.34V
5	1.500A	7.660	77.008%	0.299
	5.106V	9.947		230.34V
6	3.000A	15.221	77.682%	0.384
	5.074V	19.594		230.34V

VAMPIRE POWER -230V



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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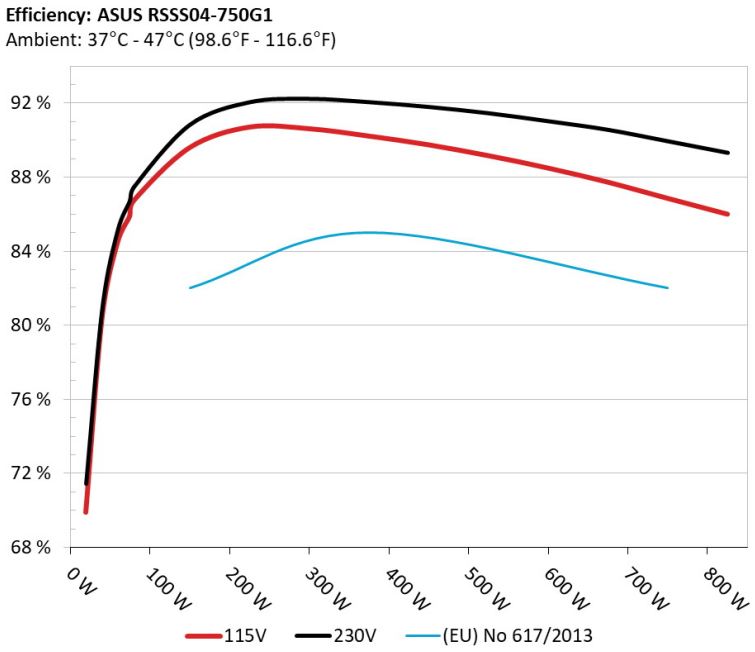
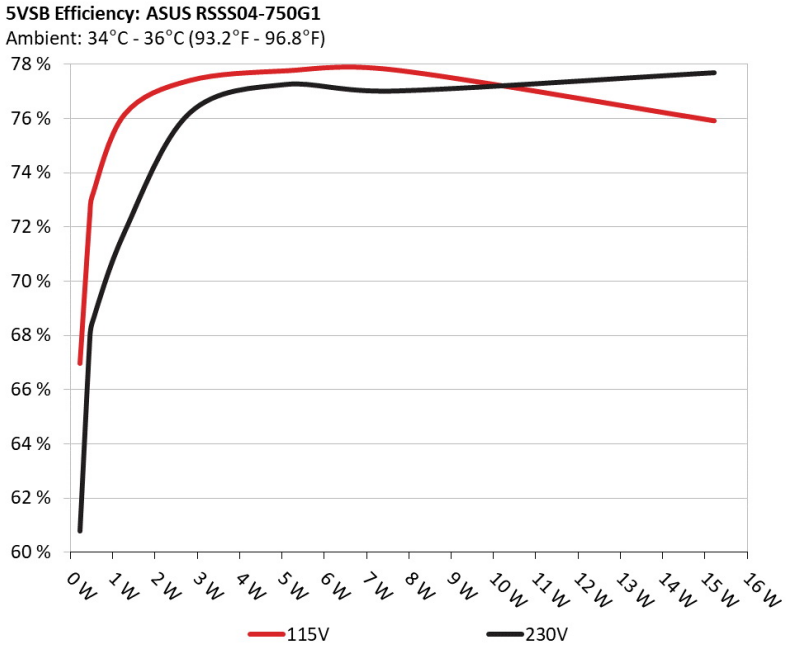
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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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Asus ROG RSSS04-750G1 (Sample #3)

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	4.376A	1.998A	1.978A	0.980A	74.547	86.726%	0	<6.0	45.20°C	0.764
	12.099V	5.008V	3.334V	5.104V	85.957				40.06°C	230.37V
2	9.799A	2.999A	2.968A	1.179A	149.455	90.824%	0	<6.0	46.47°C	0.891
	12.099V	5.004V	3.332V	5.090V	164.554				40.87°C	230.37V
3	15.618A	3.500A	3.452A	1.379A	224.979	92.058%	0	<6.0	47.31°C	0.932
	12.100V	5.001V	3.330V	5.078V	244.387				41.26°C	230.37V
4	21.367A	4.001A	3.965A	1.579A	299.765	92.239%	422	8.3	41.47°C	0.952
	12.101V	5.000V	3.329V	5.066V	324.986				48.51°C	230.37V
5	26.798A	5.004A	4.962A	1.781A	374.694	92.064%	778	23.2	42.00°C	0.962
	12.097V	4.998V	3.327V	5.054V	406.992				49.40°C	230.37V
6	32.222A	6.008A	5.956A	1.984A	449.605	91.804%	827	24.9	42.74°C	0.969
	12.097V	4.995V	3.325V	5.041V	489.742				50.71°C	230.37V
7	37.677A	7.014A	6.953A	2.188A	524.928	91.463%	838	25.1	43.33°C	0.973
	12.098V	4.992V	3.322V	5.028V	573.922				51.85°C	230.37V
8	43.124A	8.021A	7.952A	2.394A	600.255	91.030%	856	25.6	43.42°C	0.977
	12.101V	4.988V	3.320V	5.014V	659.406				52.42°C	230.36V
9	48.944A	8.527A	8.438A	2.397A	674.785	90.568%	1087	32.3	44.71°C	0.979
	12.101V	4.986V	3.318V	5.006V	745.063				54.18°C	230.36V
10	54.575A	9.034A	8.953A	3.010A	750.012	89.950%	1458	40.1	45.96°C	0.981
	12.099V	4.982V	3.317V	4.985V	833.813				56.11°C	230.36V
11	60.812A	9.039A	8.959A	3.014A	825.235	89.326%	1924	46.9	46.69°C	0.983
	12.095V	4.980V	3.315V	4.977V	923.844				58.33°C	230.36V
CL1	0.152A	12.000A	12.001A	0.000A	101.769	85.918%	392	8.1	42.20°C	0.839
	12.119V	5.001V	3.326V	5.103V	118.449				49.37°C	230.36V
CL2	62.018A	1.004A	0.999A	1.000A	763.417	90.420%	1527	40.9	45.68°C	0.981
	12.094V	4.989V	3.323V	5.042V	844.303				56.40°C	230.36V

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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	1.206A	0.500A	0.477A	0.195A	19.689	71.443%	0	<6.0	0.471
	12.096V	5.015V	3.339V	5.128V	27.559				230.37V
2	2.460A	0.999A	0.988A	0.391A	40.060	80.942%	0	<6.0	0.599
	12.096V	5.011V	3.336V	5.121V	49.492				230.39V
3	3.649A	1.498A	1.467A	0.587A	59.537	85.153%	0	<6.0	0.702
	12.096V	5.010V	3.335V	5.114V	69.918				230.37V
4	4.907A	1.997A	1.979A	0.783A	79.958	87.494%	0	<6.0	0.780
	12.097V	5.008V	3.334V	5.107V	91.387				230.37V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	9.9 mV	5.9 mV	11.1 mV	7.7 mV	Pass
20% Load	14.2 mV	6.0 mV	11.1 mV	7.8 mV	Pass
30% Load	17.1 mV	6.3 mV	11.3 mV	7.9 mV	Pass
40% Load	18.9 mV	6.4 mV	11.8 mV	8.1 mV	Pass
50% Load	16.5 mV	7.1 mV	12.2 mV	8.0 mV	Pass
60% Load	16.9 mV	7.0 mV	12.9 mV	8.1 mV	Pass
70% Load	18.0 mV	7.3 mV	14.2 mV	8.3 mV	Pass
80% Load	19.1 mV	7.5 mV	16.7 mV	9.2 mV	Pass
90% Load	20.5 mV	7.6 mV	16.0 mV	9.0 mV	Pass
100% Load	27.3 mV	8.8 mV	17.1 mV	9.5 mV	Pass
110% Load	30.3 mV	9.1 mV	16.4 mV	10.4 mV	Pass
Crossload 1	14.5 mV	8.7 mV	16.3 mV	9.1 mV	Pass
Crossload 2	27.2 mV	7.5 mV	12.8 mV	10.1 mV	Pass

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

Hold-Up Time (ms)	19.20
AC Loss to PWR_OK Hold Up Time (ms)	17.05
PWR_OK Inactive to DC Loss Delay (ms)	2.15

Top side

Power specifications label

CERTIFICATIONS

ETA A 230V

LAMBDA A 230V

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