Anex

Asus ROG Thor 1200 (Sample #1)

Lab ID#: 446
Receipt Date: -
Test Date: -

Report:
Report Date: Mar 8, 2018

DUT INFORMATION

Brand	Asus ROG
Manufacturer (OEM)	Seasonic
Series	Rog Thor Platinum
Model Number	Thor 1200 (Sample #1)
Serial Number	AX19040058
DUT Notes	RTSS01-1200P1

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	15-7.5
Rated Frequency (Hz)	50-60
Rated Power (W)	1200
Type	ATX12V
Cooling	135mm Double Ball Bearing Fan (PLA13525B12M)
Semi-Passive Operation	✓ (selectable)
Cable Design	Fully Modular

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	25	25	100	3	0.3
	Watts	125		1200	15	3.6
Total Max. Power (W)		1200				

CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (610mm)	1	1	18-20AWG	No
4+4 pin EPS12V (650mm)	2	2	18AWG	No
6+2 pin PCIe (680mm)	4	4	18AWG	No
6+2 pin PCIe (680mm+70mm)	2	4	18-20AWG	Yes
SATA (350mm+150mm+150mm+150mm)	1	4	18AWG	No
SATA (400mm+115mm+115mm+115mm)	2	8	18AWG	No
4 pin Molex to 2xSATA (150mm)	1	2	18AWG	No
4 pin Molex (350mm+120mm)	1	2	18AWG	No
4 pin Molex (450mm+115mm+115mm)	1	3	18AWG	No
FDD Adapter (+105mm)	1	1	22AWG	No
RGB Cable (800mm)	1	1	22AWG	No

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General Data	
Manufacturer (OEM)	Seasonic
Platform Model	Prime Ultra Platinum
Primary Side	
Transient Filter	6x Y caps, 3x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	2x Vishay LVB2560 (600V, 25A @ 105°C)
APFC MOSFETS	2x Infineon IPP60R099CP (650V, 19A @ 100°C, 0.099 Ohm)
APFC Boost Diode	1x STMicroelectronics STPSC10H065D (650V, 10A @ 135°C)
Hold-up Cap(s)	Hitachi (400V, 1x 820uF & 1x 470uF, 2000h @ 105°C, HU)
Main Switchers	4x Infineon IPP50R199CP (550V, 11A @ 100°C, 0.199 Ohm)
Drivers For Main Switchers	2x Silicon Labs Si8230BD
APFC Controller	ON Semiconductor NPC1654
Current Sensor IC	Allegro ACS725T
Switching Controller	Champion CM6901
Topology	Primary side: Full-Bridge & LLC Resonant Converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	8x Vishay SiR638DP (40V, 100A @ 70°C, 0.88mOhm)
5V & 3.3V	DC-DC Converters: 6x Infineon BSC0906NS PWM Controller: APW7159
Filtering Capacitors	Electrolytics: Chemi-Con (105°C, W), Chemi-Con (4,000-10,000h @ 105°C, KY, KYB), Rubycon (6,000-10,000h @ 105°C, ZLH), 1x Rubycon (5VSB circuit, 105°C, YXD) Polymers: FPCAP, Nippon Chemi-Con
Micro Controller	Microchip ATmega8A
Flash Memory	Microchip SST26VF016B
Supervisor IC	Weltrend WT7527V (OVP, UVP, OCP, SCP, PG) & AS393M
Fan Model	Power Logic PLA13525B12M (135mm, 12V, 0.40A, 2000 RPM, 111.1 CFM, 41.6 dB[A], Double Ball Bearing)
5VSB Circuit	
Buck Converter	Leadtrend LD7750R
Rectifiers	STMicroelectronics STU6N65K3 (650V, 3A @ 100°C, 1.3Ohm)
-12V Circuit	
Buck Converter	Lite-On LSP5523 (3A max output current)

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RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	92.135
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	64.175
Average Efficiency 5VSB	79.241
Standby Power Consumption (W) -115V	0.0622063
Standby Power Consumption (W) -230V	0.0971234
Average PF	0.964
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	15.37
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A+

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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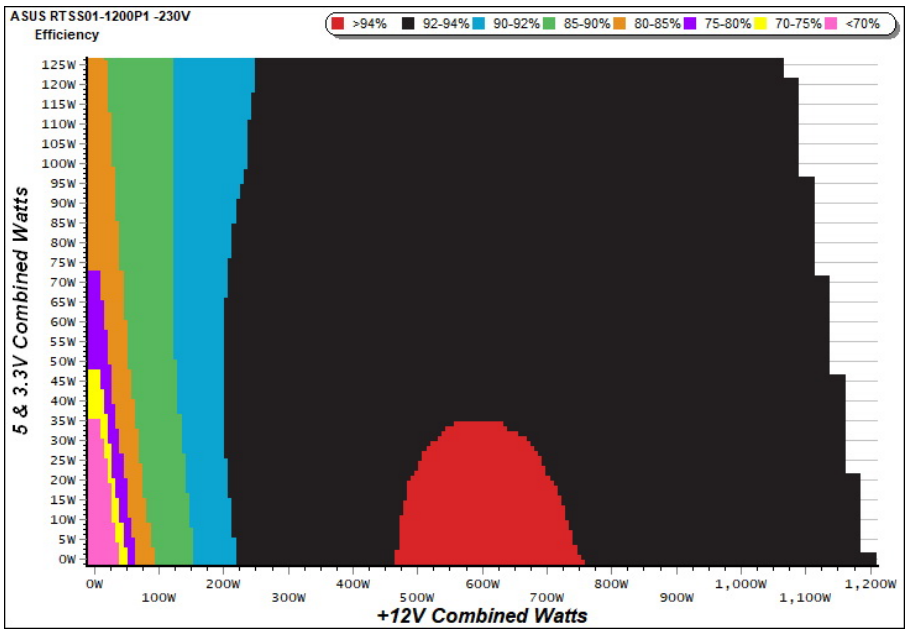
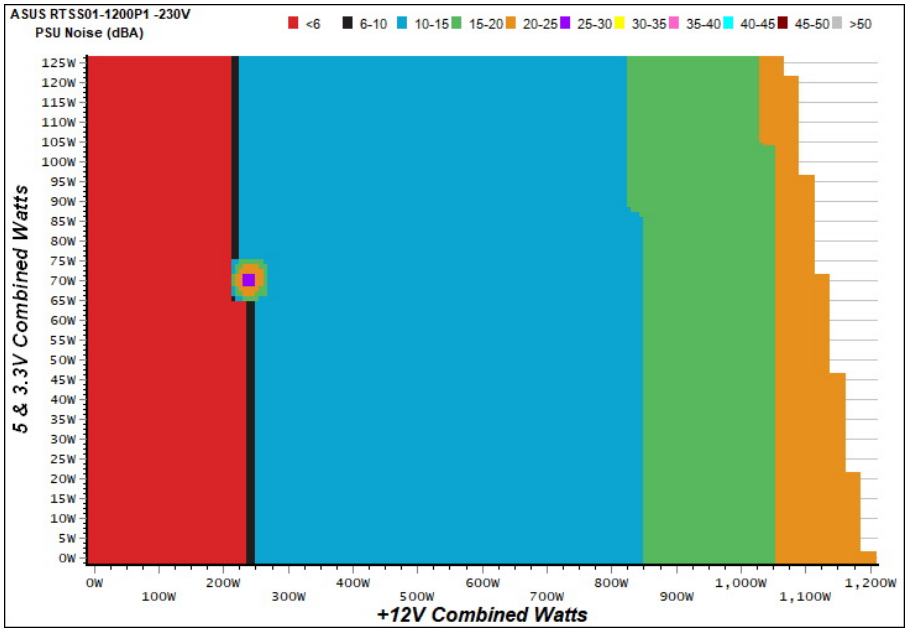
EFFICIENCY GRAPH



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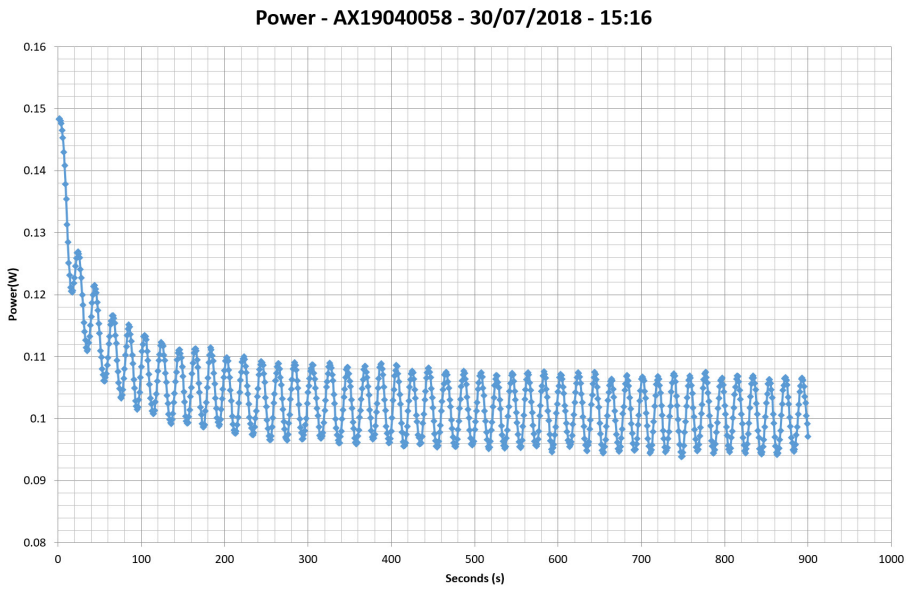
5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	66.092%	0.030
	5.112V	0.348		115.37V
2	0.090A	0.460	73.016%	0.054
	5.110V	0.630		115.37V
3	0.550A	2.804	80.947%	0.239
	5.097V	3.464		115.37V
4	1.000A	5.085	81.360%	0.334
	5.085V	6.250		115.37V
5	1.500A	7.607	81.306%	0.391
	5.071V	9.356		115.36V
6	3.000A	15.101	79.950%	0.468
	5.034V	18.888		115.36V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	58.673%	0.011
	5.112V	0.392		230.82V
2	0.090A	0.460	67.747%	0.020
	5.110V	0.679		230.82V
3	0.550A	2.803	78.362%	0.098
	5.096V	3.577		230.82V
4	1.000A	5.082	79.868%	0.162
	5.082V	6.363		230.82V
5	1.500A	7.599	80.057%	0.220
	5.065V	9.492		230.83V
6	3.000A	15.063	80.853%	0.324
	5.021V	18.630		230.81V

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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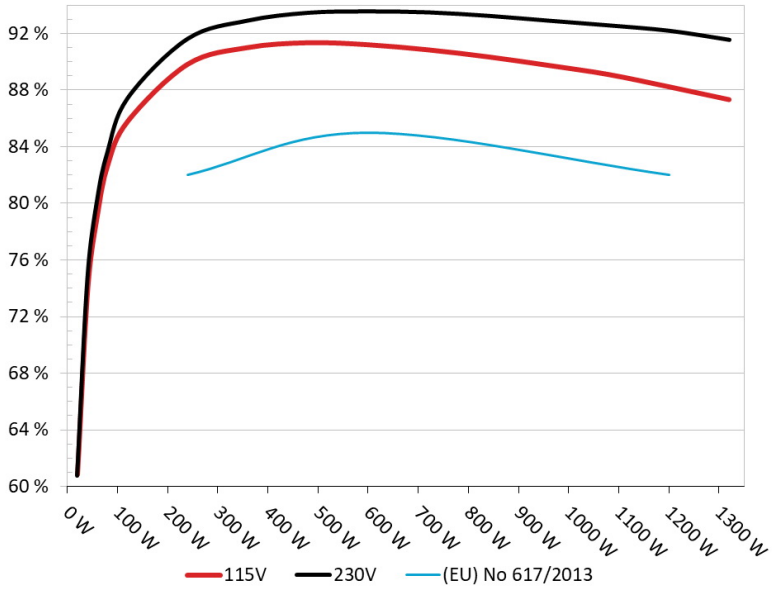
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: ASUS RTSS01-1200P1
Ambient: 37°C - 47°C (98.6°F - 116.6°F)

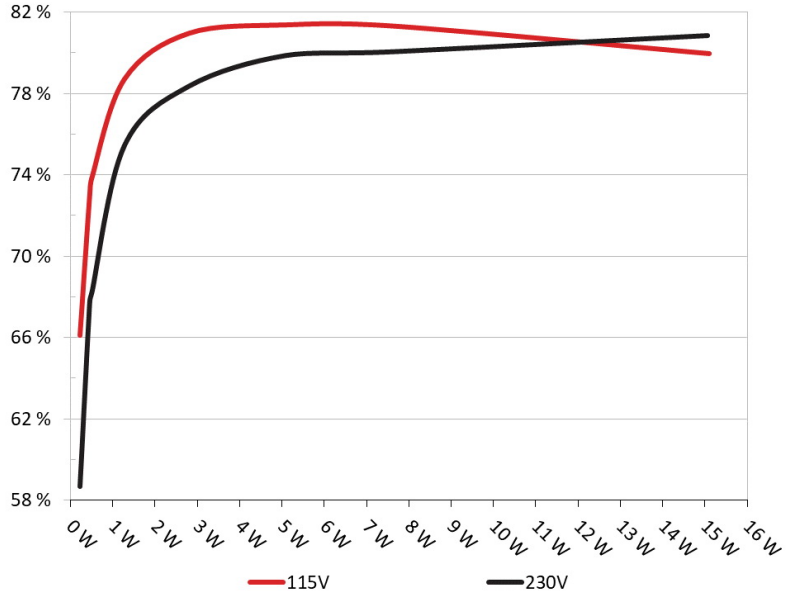


INFO

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: ASUS RTSS01-1200P1
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	8.084A	1.995A	1.982A	0.986A	120.048	87.434%	560	10.7	39.57°C	0.864
	12.178V	5.012V	3.330V	5.073V	137.302				47.67°C	230.87V
2	17.154A	2.993A	2.974A	1.186A	239.732	91.628%	563	10.9	40.24°C	0.938
	12.174V	5.011V	3.329V	5.060V	261.637				48.59°C	230.78V
3	26.559A	3.497A	3.455A	1.387A	359.240	92.914%	565	11.0	41.19°C	0.964
	12.170V	5.010V	3.328V	5.046V	386.636				49.80°C	230.70V
4	36.039A	3.995A	3.966A	1.590A	479.659	93.466%	566	11.1	41.73°C	0.978
	12.166V	5.010V	3.326V	5.033V	513.193				50.76°C	230.70V
5	45.164A	4.993A	4.961A	1.793A	599.791	93.565%	572	11.3	42.12°C	0.983
	12.162V	5.009V	3.325V	5.020V	641.039				51.56°C	230.61V
6	54.295A	5.990A	5.956A	1.998A	719.922	93.495%	640	14.0	42.81°C	0.987
	12.158V	5.009V	3.324V	5.006V	770.012				52.81°C	230.52V
7	63.400A	6.990A	6.950A	2.204A	839.675	93.252%	722	17.3	43.23°C	0.988
	12.154V	5.009V	3.323V	4.992V	900.440				53.60°C	230.52V
8	72.578A	7.988A	7.945A	2.411A	960.160	92.908%	825	20.8	43.76°C	0.989
	12.149V	5.009V	3.322V	4.979V	1033.449				54.87°C	230.42V
9	82.096A	8.491A	8.431A	2.414A	1079.498	92.576%	915	24.1	44.54°C	0.990
	12.144V	5.008V	3.321V	4.972V	1166.066				55.82°C	230.34V
10	91.444A	8.989A	8.947A	3.034A	1199.942	92.199%	1260	35.2	45.47°C	0.991
	12.141V	5.008V	3.320V	4.944V	1301.464				57.26°C	230.17V
11	101.364A	8.991A	8.951A	3.039A	1319.978	91.556%	1705	43.0	46.45°C	0.991
	12.137V	5.007V	3.318V	4.938V	1441.711				58.73°C	230.23V
CL1	0.144A	15.003A	14.999A	0.000A	127.000	85.001%	680	15.6	42.95°C	0.876
	12.172V	5.015V	3.334V	5.093V	149.410				52.72°C	230.75V
CL2	100.010A	1.001A	0.999A	1.000A	1227.266	92.335%	1180	32.4	45.65°C	0.991
	12.138V	5.009V	3.319V	5.015V	1329.149				57.46°C	230.34V

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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	1.184A	0.500A	0.478A	0.196A	19.523	60.774%	0	<6.0	0.525
	12.180V	5.016V	3.334V	5.104V	32.124				230.93V
2	2.432A	0.998A	0.989A	0.393A	39.923	74.692%	0	<6.0	0.672
	12.178V	5.016V	3.333V	5.096V	53.450				230.92V
3	3.613A	1.497A	1.470A	0.590A	59.409	80.252%	558	10.6	0.749
	12.179V	5.013V	3.332V	5.090V	74.028				230.91V
4	4.863A	1.995A	1.980A	0.787A	79.822	83.613%	560	10.7	0.802
	12.179V	5.013V	3.331V	5.082V	95.466				230.89V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	13.1 mV	7.5 mV	8.5 mV	6.9 mV	Pass
20% Load	13.7 mV	7.4 mV	9.1 mV	7.9 mV	Pass
30% Load	8.6 mV	7.4 mV	9.6 mV	8.3 mV	Pass
40% Load	9.0 mV	7.4 mV	10.3 mV	9.1 mV	Pass
50% Load	9.9 mV	8.7 mV	10.2 mV	10.7 mV	Pass
60% Load	11.2 mV	8.4 mV	15.8 mV	12.2 mV	Pass
70% Load	14.2 mV	8.8 mV	11.4 mV	12.6 mV	Pass
80% Load	29.3 mV	9.5 mV	13.2 mV	14.2 mV	Pass
90% Load	34.0 mV	9.4 mV	12.4 mV	15.2 mV	Pass
100% Load	28.4 mV	10.6 mV	14.2 mV	19.1 mV	Pass
110% Load	23.6 mV	12.8 mV	15.2 mV	20.2 mV	Pass
Crossload 1	13.9 mV	10.0 mV	13.6 mV	5.7 mV	Pass
Crossload 2	26.3 mV	6.6 mV	9.9 mV	14.8 mV	Pass

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HOLD-UP TIME & POWER OK SIGNAL (230V)	
Hold-Up Time (ms)	23.10
AC Loss to PWR_OK Hold Up Time (ms)	20.50
PWR_OK Inactive to DC Loss Delay (ms)	2.60

Top side

Power specifications label

CERTIFICATIONS

CYBENETICS PLATINUM 230v

CYBENETICS A+ 230v