

## Anex

Asus ROG Thor 1200 (Sample #1)

Lab ID#: 444

Receipt Date: -

Test Date: -

Report: 19PS444A

Report Date: Feb 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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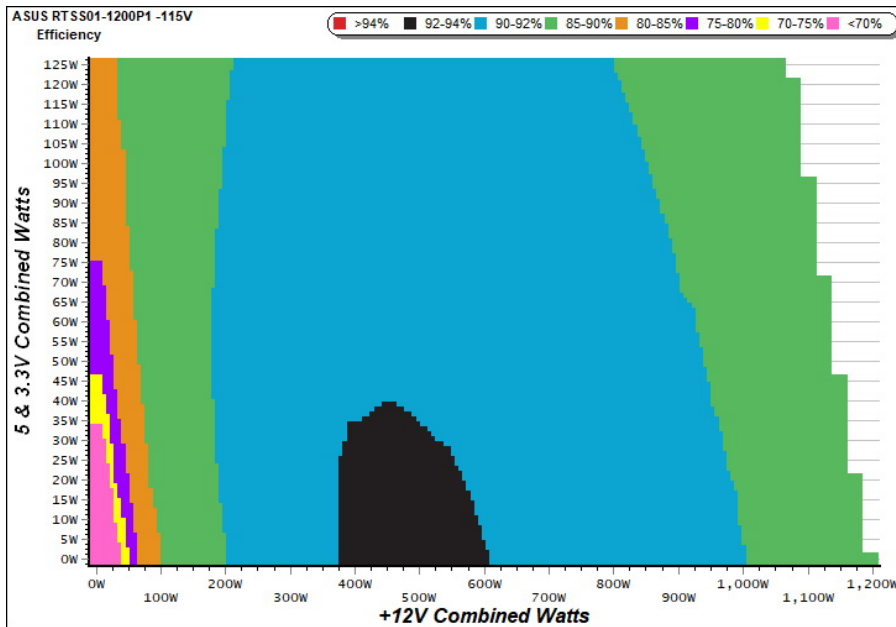
RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	89.868
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	64.175
Average Efficiency 5VSB	79.913
Standby Power Consumption (W) -115V	0.0622063
Standby Power Consumption (W) -230V	0.0971234
Average PF	0.992
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	15.58
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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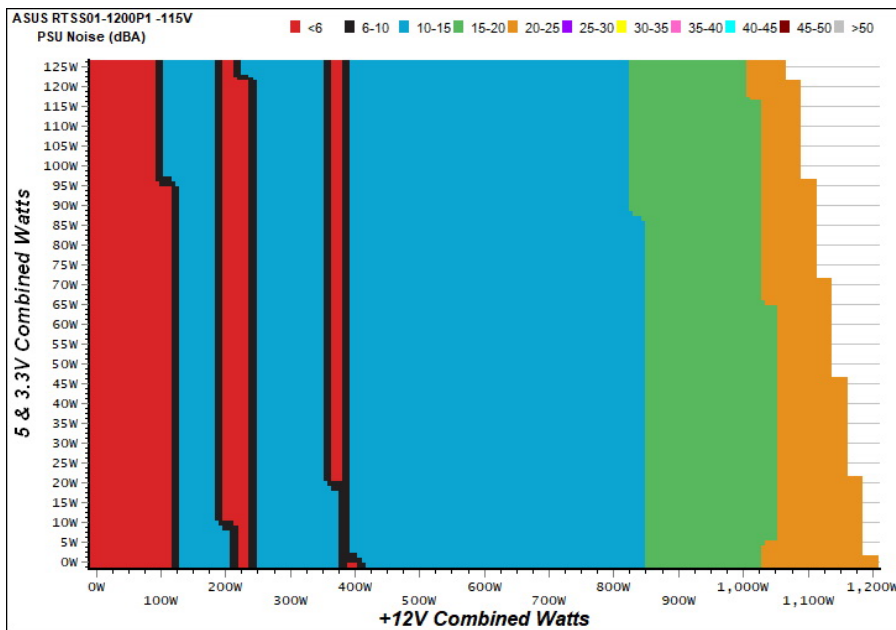
#### EFFICIENCY GRAPH



#### 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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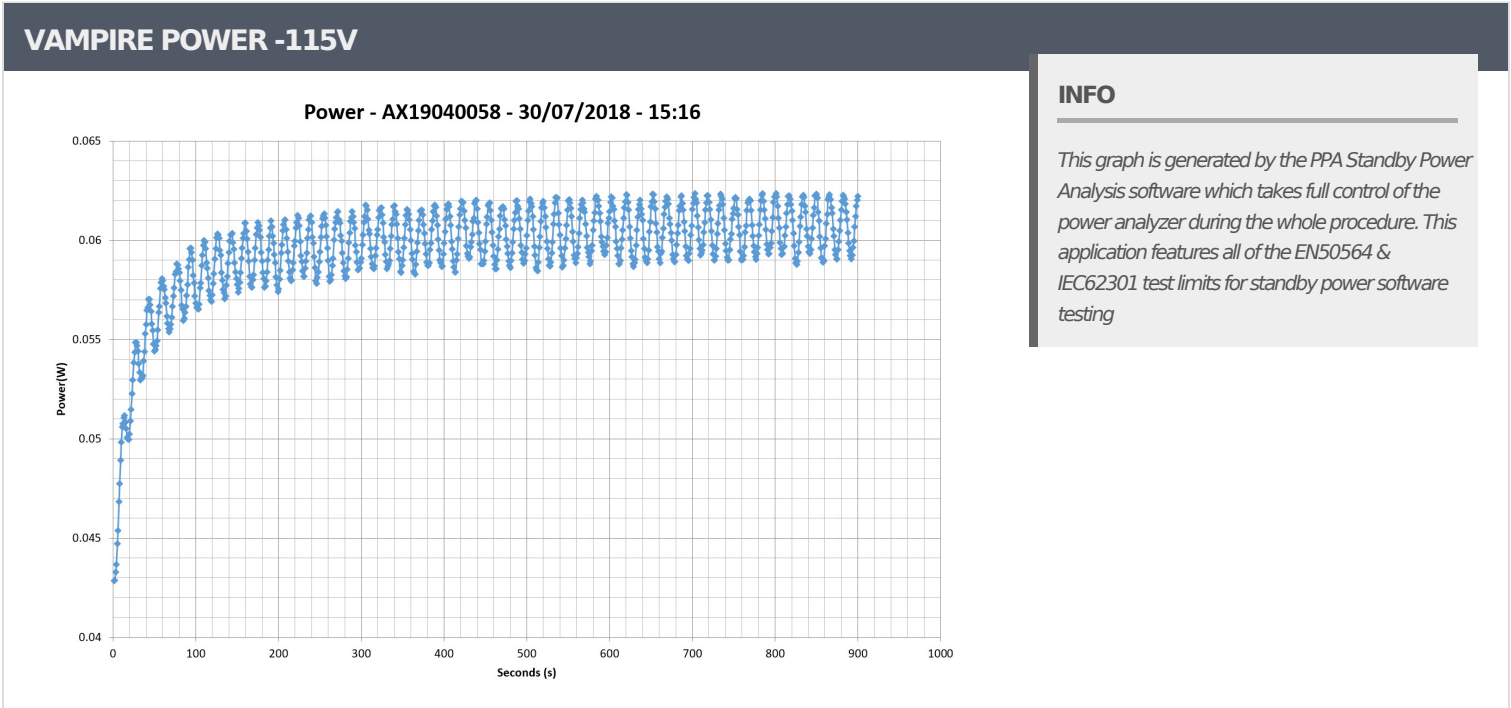
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5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)				
Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	66.092%	0.030
	5.112V	0.348		115.37V
2	0.090A	0.460	73.016%	0.054
	5.110V	0.630		115.37V
3	0.550A	2.804	80.947%	0.239
	5.097V	3.464		115.37V
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



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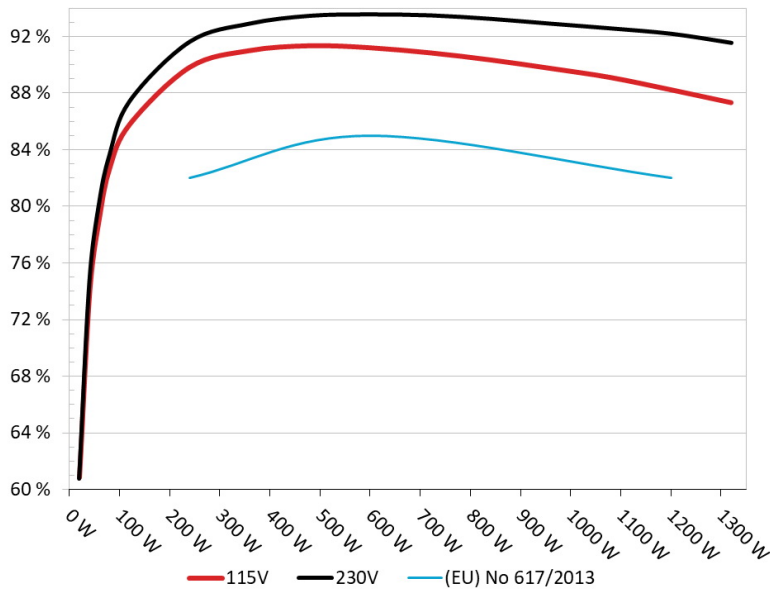
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## Asus ROG Thor 1200 (Sample #1)

### EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

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

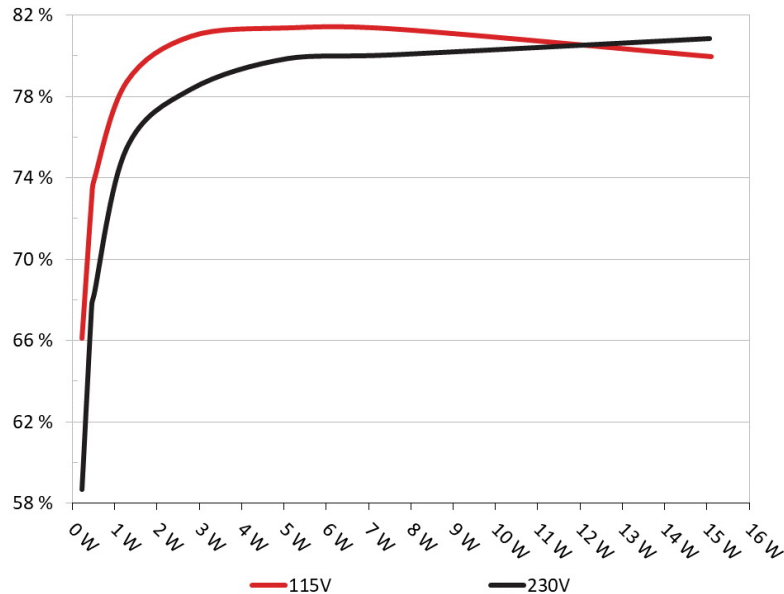


#### INFO

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	8.091A	1.992A	1.981A	0.986A	120.127	85.802%	560	10.7	40.02°C	0.982
	12.179V	5.013V	3.331V	5.073V	140.005				47.42°C	115.21V
2	17.156A	2.994A	2.973A	1.186A	239.793	89.827%	563	10.9	40.52°C	0.985
	12.176V	5.011V	3.329V	5.060V	266.951				48.44°C	115.16V
3	26.560A	3.493A	3.455A	1.387A	359.285	90.997%	565	11.0	41.08°C	0.990
	12.172V	5.010V	3.328V	5.046V	394.830				49.13°C	115.00V
4	36.040A	3.994A	3.967A	1.590A	479.705	91.340%	567	11.1	41.65°C	0.994
	12.167V	5.010V	3.326V	5.033V	525.187				50.81°C	114.94V
5	45.161A	4.992A	4.961A	1.793A	599.843	91.198%	578	11.6	42.19°C	0.996
	12.164V	5.010V	3.325V	5.019V	657.737				51.60°C	114.77V
6	54.290A	5.991A	5.958A	1.998A	719.979	90.834%	640	14.0	42.92°C	0.997
	12.160V	5.009V	3.324V	5.005V	792.634				52.90°C	114.64V
7	63.398A	6.991A	6.951A	2.204A	839.719	90.340%	717	16.9	43.12°C	0.997
	12.155V	5.009V	3.323V	4.991V	929.507				53.51°C	114.51V
8	72.576A	7.988A	7.945A	2.411A	960.206	89.737%	825	20.8	43.62°C	0.998
	12.150V	5.009V	3.322V	4.978V	1070.027				54.68°C	114.43V
9	82.092A	8.489A	8.432A	2.415A	1079.536	89.096%	918	24.1	44.73°C	0.998
	12.145V	5.009V	3.321V	4.971V	1211.658				56.35°C	114.23V
10	91.446A	8.990A	8.946A	3.035A	1199.974	88.228%	1340	35.7	45.79°C	0.998
	12.141V	5.008V	3.320V	4.944V	1360.089				57.75°C	114.13V
11	101.359A	8.991A	8.949A	3.039A	1320.009	87.324%	1785	44.6	46.75°C	0.998
	12.138V	5.007V	3.318V	4.937V	1511.628				59.27°C	113.91V
CL1	0.150A	15.004A	14.999A	0.000A	127.079	83.469%	738	17.8	43.21°C	0.987
	12.172V	5.015V	3.334V	5.093V	152.247				53.78°C	115.17V
CL2	100.014A	1.003A	1.002A	1.000A	1227.334	88.447%	1362	36.2	45.57°C	0.998
	12.138V	5.009V	3.319V	5.014V	1387.656				57.49°C	114.10V

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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	1.196A	0.500A	0.482A	0.196A	19.686	60.859%	0	<6.0	0.848
	12.184V	5.015V	3.333V	5.104V	32.347				115.34V
2	2.442A	0.999A	0.991A	0.393A	40.060	73.950%	0	<6.0	0.927
	12.182V	5.012V	3.331V	5.096V	54.172				115.32V
3	3.622A	1.497A	1.470A	0.590A	59.523	79.208%	0	<6.0	0.953
	12.180V	5.014V	3.332V	5.089V	75.148				115.29V
4	4.870A	1.996A	1.981A	0.787A	79.916	82.699%	560	10.7	0.975
	12.179V	5.014V	3.331V	5.081V	96.635				115.26V

### RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	10.9 mV	7.5 mV	7.9 mV	6.9 mV	Pass
20% Load	13.2 mV	7.0 mV	8.5 mV	8.0 mV	Pass
30% Load	8.6 mV	7.5 mV	8.7 mV	8.4 mV	Pass
40% Load	9.0 mV	7.4 mV	9.1 mV	9.1 mV	Pass
50% Load	10.1 mV	8.5 mV	14.0 mV	10.5 mV	Pass
60% Load	11.4 mV	8.6 mV	10.1 mV	11.6 mV	Pass
70% Load	13.4 mV	8.8 mV	10.7 mV	12.4 mV	Pass
80% Load	14.6 mV	9.3 mV	11.7 mV	14.2 mV	Pass
90% Load	34.2 mV	9.5 mV	12.6 mV	15.4 mV	Pass
100% Load	29.0 mV	10.3 mV	13.7 mV	19.4 mV	Pass
110% Load	23.2 mV	12.5 mV	14.9 mV	21.8 mV	Pass
Crossload 1	12.0 mV	10.1 mV	12.8 mV	5.8 mV	Pass
Crossload 2	26.3 mV	7.2 mV	9.2 mV	15.4 mV	Pass

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## Asus ROG Thor 1200 (Sample #1)

### 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



## CERTIFICATIONS



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