Anex

Asus ROG Thor 1200 (#4)

Lab ID#: 620
Receipt Date: Mar 21, 2019
Test Date: Mar 31, 2019

Report: 19PS620A
Report Date: Apr 2, 2019

DUT INFORMATION

Brand	Asus ROG
Manufacturer (OEM)	Seasonic
Series	Rog Thor Platinum
Model Number	RTSS01-1200P1
Serial Number	J9YEKG0000137U6
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

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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RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

115V

Average Efficiency	89.445%
Efficiency With 10W (≤500W) or 2% (>500W)	73.105
Average Efficiency 5VSB	80.043%
Standby Power Consumption (W)	0.0573112
Average PF	0.993
Avg Noise Output	16.41 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A+

230V

Average Efficiency	91.709%
Average Efficiency 5VSB	79.203%
Standby Power Consumption (W)	0.0898757
Average PF	0.965
Avg Noise Output	15.67 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A+

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				

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

Hold-Up Time (ms)	23.6
AC Loss to PWR_OK Hold Up Time (ms)	20.5
PWR_OK Inactive to DC Loss Delay (ms)	3.1

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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	18AWG	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+120mm+120mm)	1	3	18AWG	No
FDD Adapter (+105mm)	1	1	22AWG	No
RGB Cable (800mm)	1	1	22AWG	No
RGB Sinc Cable (800mm)	1	1	24AWG	No
AC Power Cord Type (1380mm)	1	1	18AWG	-

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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 Shindengen LL25XB60C (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 CM69016X
Topology	Primary side: Full-Bridge & LLC Resonant Converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	8x Nexperia PSMN1R0-40YLD (40V, 200A @ 100°C, 1.4mOhm)
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), 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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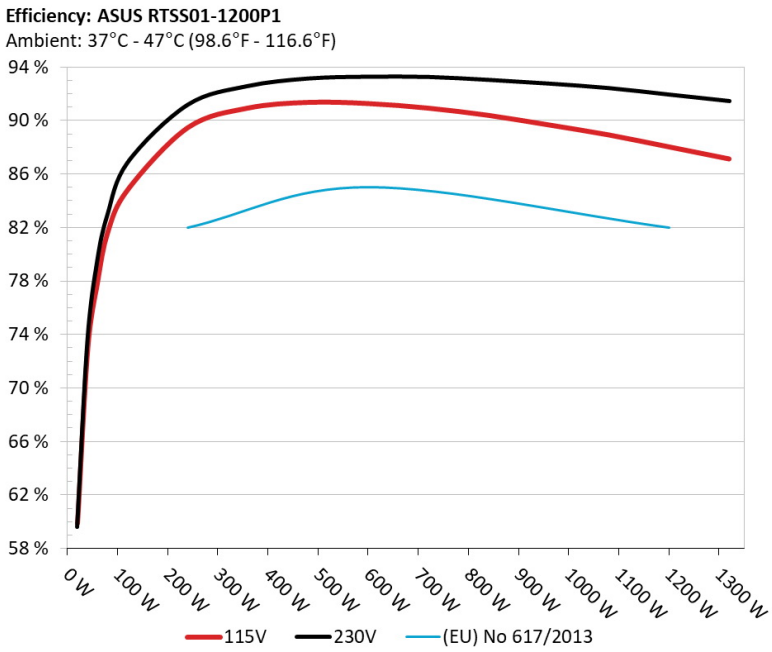
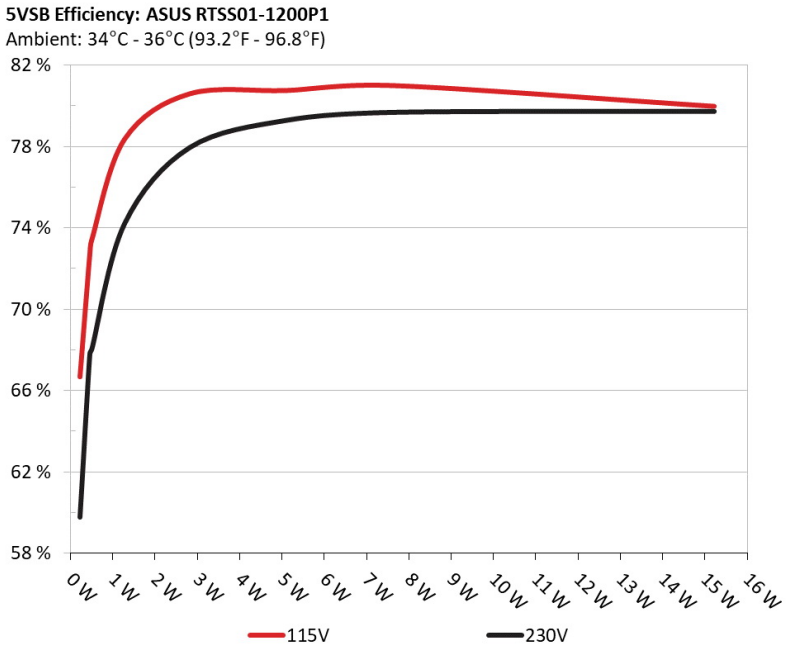
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.232	66.667%	0.037
	5.139V	0.348		115.11V
2	0.090A	0.463	72.684%	0.067
	5.138V	0.637		115.11V
3	0.550A	2.821	80.577%	0.277
	5.128V	3.501		115.11V
4	1.000A	5.119	80.741%	0.371
	5.118V	6.340		115.11V
5	1.500A	7.663	80.979%	0.424
	5.107V	9.463		115.11V
6	3.000A	15.225	79.963%	0.493
	5.075V	19.040		115.11V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.232	59.794%	0.013
	5.139V	0.388		230.29V
2	0.090A	0.463	67.789%	0.022
	5.138V	0.683		230.29V
3	0.550A	2.820	77.965%	0.110
	5.127V	3.617		230.29V
4	1.000A	5.118	79.312%	0.180
	5.117V	6.453		230.29V
5	1.500A	7.660	79.700%	0.240
	5.106V	9.611		230.29V
6	3.000A	15.215	79.747%	0.345
	5.071V	19.079		230.29V

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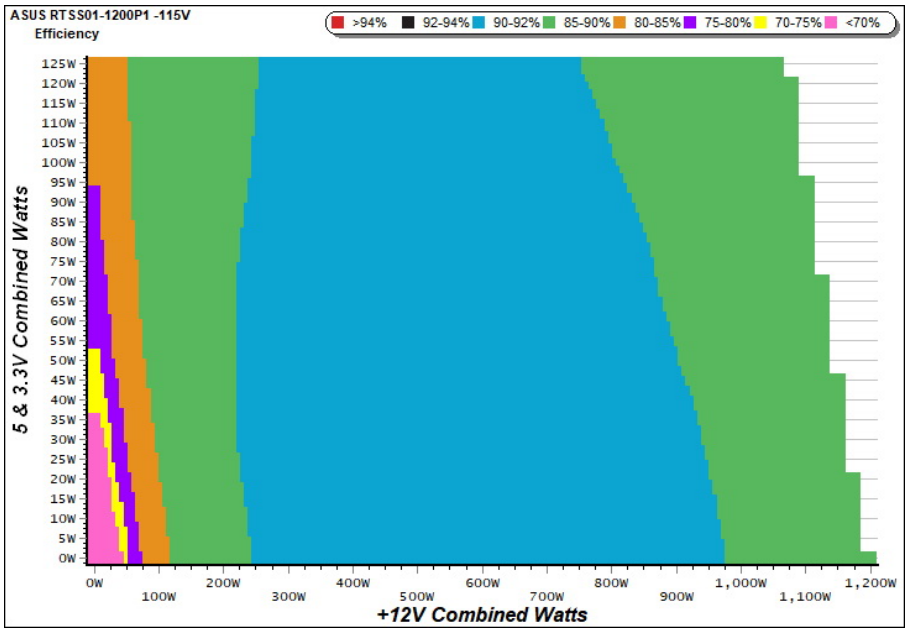
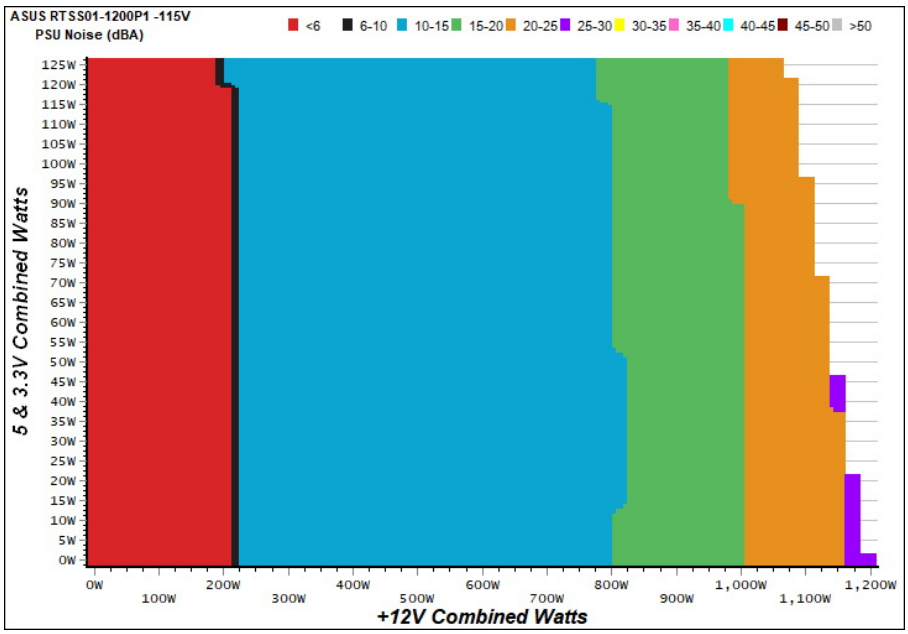
EFFICIENCY GRAPH 115V



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 115V



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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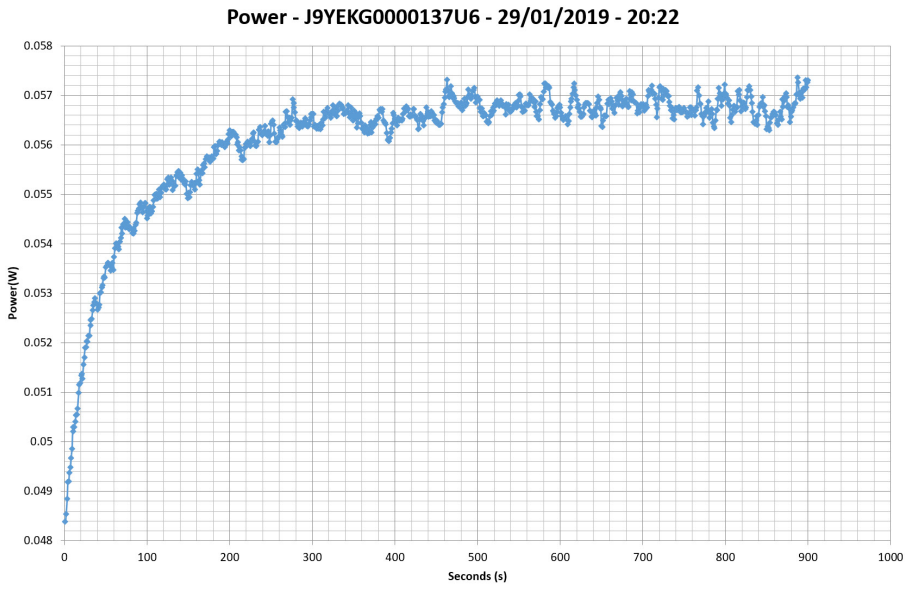
VAMPIRE POWER -115V



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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Asus ROG Thor 1200 (#4)

10-110% LOAD TESTS 115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	8.069A	1.997A	1.980A	0.979A	119.989	84.836%	574	11.4	40.28°C	0.983
	12.195V	5.005V	3.330V	5.106V	141.436				46.61°C	115.12V
2	17.127A	3.000A	2.971A	1.178A	239.688	89.464%	577	11.5	40.89°C	0.985
	12.191V	5.001V	3.329V	5.093V	267.916				47.67°C	115.11V
3	26.518A	3.501A	3.454A	1.378A	359.196	90.923%	580	11.6	41.23°C	0.990
	12.188V	4.998V	3.328V	5.081V	395.053				48.93°C	115.11V
4	35.982A	4.003A	3.967A	1.579A	479.632	91.352%	584	11.8	41.86°C	0.994
	12.185V	4.995V	3.326V	5.068V	525.037				50.25°C	115.11V
5	45.090A	5.009A	4.961A	1.781A	599.789	91.266%	618	13.0	42.23°C	0.996
	12.182V	4.992V	3.325V	5.054V	657.191				51.83°C	115.12V
6	54.203A	6.014A	5.957A	1.984A	719.939	90.921%	687	15.8	42.71°C	0.997
	12.179V	4.989V	3.323V	5.041V	791.827				53.18°C	115.12V
7	63.285A	7.020A	6.953A	2.188A	839.657	90.382%	766	18.9	43.49°C	0.997
	12.176V	4.986V	3.322V	5.027V	929.006				54.64°C	115.13V
8	72.436A	8.030A	7.950A	2.394A	960.163	89.669%	851	22.0	43.76°C	0.998
	12.173V	4.982V	3.320V	5.013V	1070.791				55.78°C	115.13V
9	81.923A	8.536A	8.434A	2.398A	1079.498	88.924%	953	25.3	44.94°C	0.998
	12.170V	4.979V	3.319V	5.005V	1213.953				57.51°C	115.13V
10	91.264A	9.044A	8.952A	3.012A	1199.945	88.028%	1423	37.9	45.69°C	0.998
	12.165V	4.977V	3.318V	4.981V	1363.136				59.24°C	115.14V
11	101.168A	9.048A	8.952A	3.017A	1320.008	87.128%	1799	44.5	46.74°C	0.998
	12.161V	4.974V	3.317V	4.974V	1515.023				60.84°C	115.14V
CL1	0.149A	15.001A	14.999A	0.000A	126.603	82.327%	769	18.9	42.80°C	0.989
	12.198V	4.997V	3.322V	5.111V	153.780				51.98°C	115.13V
CL2	100.020A	1.002A	0.997A	1.000A	1229.983	88.265%	1476	39.3	45.23°C	0.998
	12.164V	4.981V	3.322V	5.037V	1393.505				58.68°C	115.14V

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20-80W LOAD TESTS 115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.184A	0.498A	0.477A	0.195A	19.521	59.899%	0	<6.0	0.862
	12.192V	5.011V	3.335V	5.131V	32.590				115.13V
2	2.432A	0.999A	0.987A	0.390A	39.938	72.958%	570	11.2	0.937
	12.191V	5.007V	3.332V	5.125V	54.741				115.12V
3	3.611A	1.498A	1.469A	0.586A	59.410	77.914%	570	11.2	0.956
	12.190V	5.006V	3.331V	5.119V	76.251				115.12V
4	4.854A	1.998A	1.979A	0.782A	79.786	81.647%	572	11.3	0.975
	12.195V	5.005V	3.331V	5.113V	97.721				115.12V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	13.8 mV	6.5 mV	14.2 mV	10.6 mV	Pass
20% Load	13.6 mV	7.0 mV	14.7 mV	10.7 mV	Pass
30% Load	7.5 mV	6.6 mV	14.6 mV	10.8 mV	Pass
40% Load	7.7 mV	7.3 mV	15.9 mV	11.6 mV	Pass
50% Load	8.2 mV	7.7 mV	15.8 mV	12.7 mV	Pass
60% Load	9.3 mV	7.4 mV	15.7 mV	15.0 mV	Pass
70% Load	10.2 mV	8.4 mV	16.4 mV	16.1 mV	Pass
80% Load	11.1 mV	8.1 mV	18.4 mV	16.8 mV	Pass
90% Load	11.7 mV	8.5 mV	19.7 mV	19.4 mV	Pass
100% Load	19.2 mV	10.9 mV	21.8 mV	23.6 mV	Pass
110% Load	24.1 mV	12.5 mV	22.3 mV	25.9 mV	Pass
Crossload 1	17.6 mV	10.3 mV	21.4 mV	13.2 mV	Pass
Crossload 2	19.7 mV	8.5 mV	15.4 mV	22.0 mV	Pass

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230V

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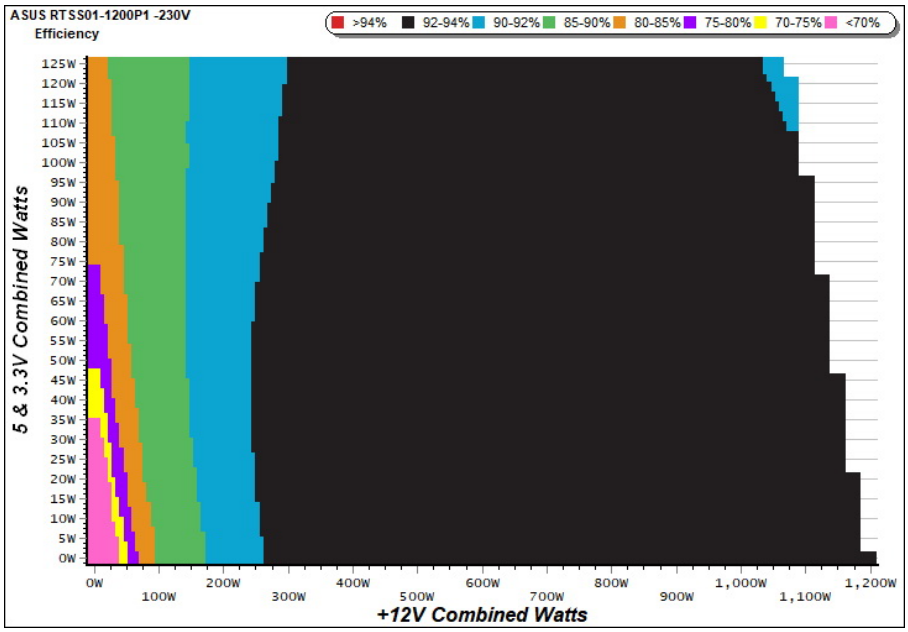
EFFICIENCY GRAPH 230V



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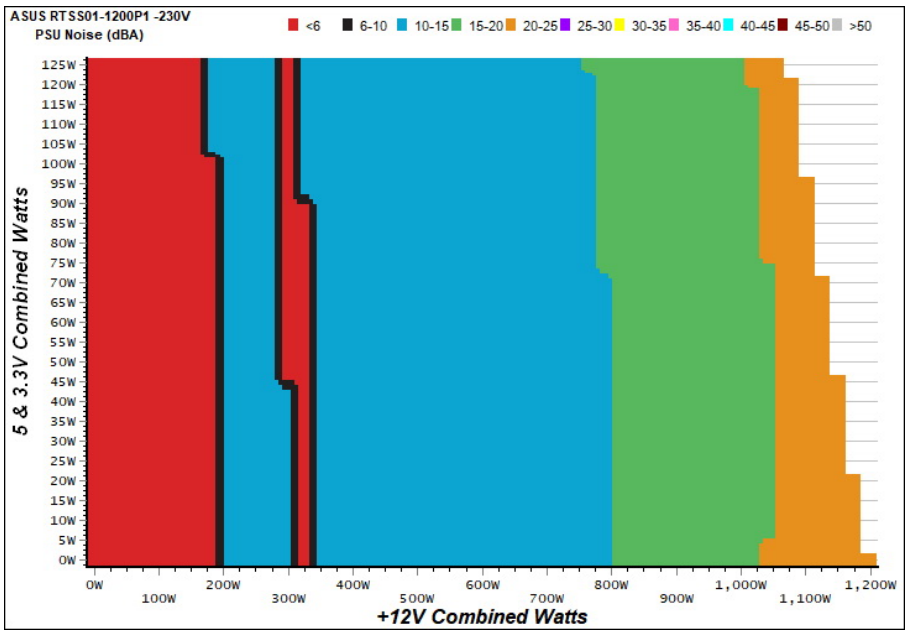
NOISE GRAPH 230V



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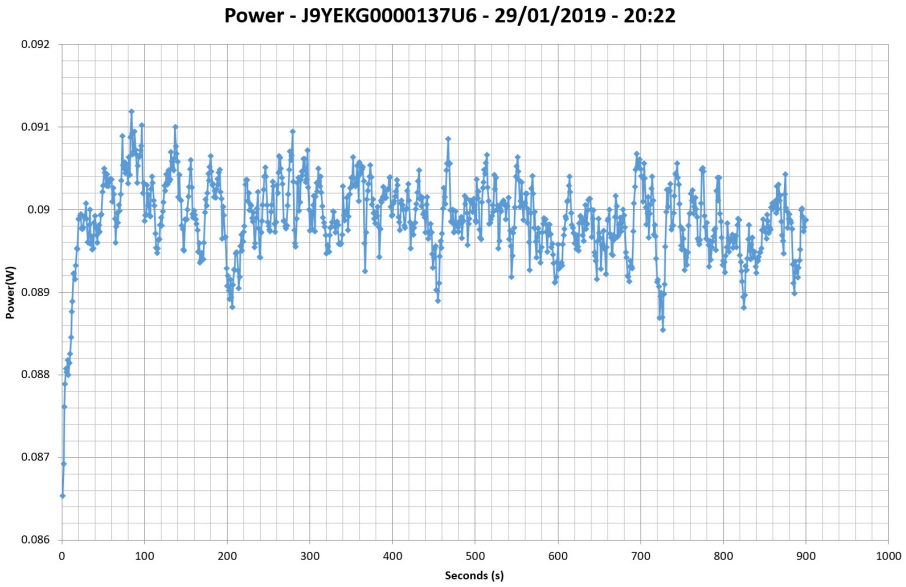
VAMPIRE POWER -230V



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10-110% LOAD TESTS 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	8.069A	1.998A	1.979A	0.979A	119.991	86.865%	574	11.4	40.29°C	0.868
	12.195V	5.005V	3.330V	5.106V	138.135				46.93°C	230.30V
2	17.125A	2.999A	2.970A	1.178A	239.658	91.184%	578	11.6	40.84°C	0.940
	12.191V	5.002V	3.329V	5.093V	262.830				47.83°C	230.29V
3	26.514A	3.501A	3.453A	1.378A	359.148	92.583%	580	11.7	41.49°C	0.964
	12.188V	4.999V	3.328V	5.081V	387.919				49.05°C	230.28V
4	35.979A	4.004A	3.966A	1.579A	479.602	93.152%	584	11.8	41.91°C	0.977
	12.185V	4.996V	3.326V	5.068V	514.859				50.14°C	230.28V
5	45.089A	5.008A	4.963A	1.781A	599.778	93.289%	621	13.2	42.11°C	0.983
	12.182V	4.992V	3.325V	5.055V	642.927				51.33°C	230.29V
6	54.202A	6.014A	5.957A	1.984A	719.925	93.270%	688	15.8	42.79°C	0.987
	12.179V	4.989V	3.323V	5.041V	771.873				52.65°C	230.29V
7	63.293A	7.019A	6.953A	2.188A	839.686	93.054%	766	18.8	43.02°C	0.988
	12.175V	4.986V	3.322V	5.027V	902.367				53.65°C	230.29V
8	72.447A	8.028A	7.952A	2.394A	960.167	92.775%	834	21.2	43.93°C	0.989
	12.171V	4.983V	3.321V	5.014V	1034.939				55.43°C	230.30V
9	81.930A	8.535A	8.435A	2.398A	1079.507	92.439%	927	24.4	44.56°C	0.990
	12.169V	4.980V	3.319V	5.005V	1167.806				57.09°C	230.30V
10	91.266A	9.043A	8.950A	3.012A	1199.957	91.951%	1406	37.6	45.49°C	0.990
	12.165V	4.977V	3.318V	4.981V	1305.001				58.61°C	230.31V
11	101.169A	9.048A	8.954A	3.017A	1320.037	91.468%	1775	44.4	46.65°C	0.991
	12.161V	4.975V	3.317V	4.974V	1443.172				60.70°C	230.31V
CL1	0.147A	15.001A	14.999A	0.000A	126.581	84.299%	754	18.3	42.78°C	0.880
	12.198V	4.997V	3.322V	5.110V	150.157				51.22°C	230.32V
CL2	100.016A	1.002A	0.999A	1.000A	1229.944	92.192%	1416	37.8	45.44°C	0.991
	12.164V	4.982V	3.323V	5.037V	1334.115				58.44°C	230.32V

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20-80W LOAD TESTS 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.186A	0.499A	0.477A	0.195A	19.547	59.627%	568	11.1	0.552
	12.188V	5.013V	3.335V	5.132V	32.782				230.32V
2	2.434A	1.000A	0.989A	0.390A	39.969	73.516%	569	11.2	0.690
	12.188V	5.008V	3.332V	5.126V	54.368				230.32V
3	3.614A	1.499A	1.469A	0.586A	59.457	79.481%	570	11.2	0.761
	12.191V	5.007V	3.331V	5.120V	74.807				230.32V
4	4.859A	1.999A	1.978A	0.782A	79.845	82.961%	572	11.3	0.812
	12.194V	5.006V	3.331V	5.113V	96.244				230.32V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	16.7 mV	6.5 mV	13.5 mV	9.3 mV	Pass
20% Load	15.4 mV	7.0 mV	14.6 mV	10.0 mV	Pass
30% Load	7.9 mV	7.0 mV	15.4 mV	9.9 mV	Pass
40% Load	7.1 mV	7.2 mV	15.0 mV	11.3 mV	Pass
50% Load	7.7 mV	7.5 mV	16.3 mV	11.8 mV	Pass
60% Load	9.2 mV	7.6 mV	15.7 mV	13.1 mV	Pass
70% Load	10.2 mV	7.9 mV	16.4 mV	16.2 mV	Pass
80% Load	11.1 mV	8.2 mV	19.7 mV	15.4 mV	Pass
90% Load	11.9 mV	10.2 mV	30.0 mV	31.1 mV	Pass
100% Load	18.9 mV	11.1 mV	20.4 mV	20.3 mV	Pass
110% Load	24.4 mV	12.1 mV	22.0 mV	20.9 mV	Pass
Crossload 1	20.3 mV	10.2 mV	21.6 mV	12.0 mV	Pass
Crossload 2	19.4 mV	7.7 mV	15.0 mV	18.9 mV	Pass

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Anex

Asus ROG Thor 1200 (#4)

Top side

Power specifications label

CERTIFICATIONS 115V

CYBENETICS PLATINUM

CYBENETICS A+

CERTIFICATIONS 230V

CYBENETICS PLATINUM 230v

CYBENETICS A+ 230v

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