# ASUS ROG-THOR-1200P2-GAMING

Serial Number

Lab ID  AS12001876

Certification ID  251876

Test Result Report ID: 21PS1876A

Certificate Issue Date: Jul 20, 2021

115V

Scheme: ETA-EMI PSU




115V




Scheme: LAMBDA PSU



Aristeidis Bitziopoulos, Certification Body General Manager

# General Information

## Test Equipment

| | |
|---|---|
| Electronic Loads | Chroma 63601-5 x2<br>Chroma 63600-2<br>Chroma 63640-80-80 x10<br>Chroma 63610-80-20 |
| AC Sources | Chroma 6530, APM SP300VAC4000W-P, GW Instek ASR-3500 |
| Power Analyzers | Rohde & Schwarz HMC8015 & NPA701 |
| Oscilloscopes | Picoscope 4444, Siglent SDS2104X PLUS |
| Sound Analyzer | Bruel & Kjaer 2270 G4 |
| Microphone | Bruel & Kjaer Type 4955-A |
| Temperature Logger | Picoscope TC-08 |
| Tachometer | UNI-T UT372 |
| Multimeters | Keysight 34465A |
| EMI Analyzer | TekBox TBMR-110M-EU |
| Isolation Transformer | 4kVA |
| UPS | FSP Champ Tower 3kVA, CyberPower OLS3000E 3kVA |
| Testing Methodology | Cybenetics PSU Test Protocol |

## DUT Information(Non-accredited measurements)

| | |
|---|---|
| Product Identification Details | |
| Brand | ASUS |
| Model | ROG-THOR-1200P2-GAMING |
| OEM/ODM | Seasonic |
| Serial Number | |
| Product Specifications | |
| Manufacturer-Provided Information | |
| Rated Voltage (Vrms) | 100-240 |
| Rated Current (Arms) | 15-7.5 |
| Rated Frequency (Hz) | 50-60 |

| | |
|---|---|
| Rated Power (W) | 1200 |
| Operating Temperature (Continuous Full Load) (°C) | |
| Type | ATX12V |
| Cable Design | Fully Modular |
| Warranty | - |
| Cybenetics Measurements | |
| Dimensions (W x H x D) | |
| Weight | |
| Cooling | 135mm Double Ball Bearing Fan<br>(CF1325H12D) |
| Semi-Passive Operation | ✓ (selectable) |
| Cybenetics Testing Information | |
| Lab ID | AS12001876 |
| Date of receipt | Jul 8, 2021 |
| Testing Date | Jul 20, 2021 |
| Report Issued Date | Jul 20, 2021 |
| Engineer Name | - |
| Authorized By the Laboratory Technical Manager | Aristeidis Bitziopoulos |
| Signature |  |

## Cables and Connectors(Non-accredited measurements)

| Modular Cables | | | | |
|---|---|---|---|---|
| Description | Cable Count | Connector Count (Total) | Gauge | In Cable Capacitors |
| ATX connector 20+4 pin (620mm) | 1 | 1 | 18-20AWG | No |
| 4+4 pin EPS12V (650mm) | 2 | 2 | 18AWG | No |
| 6+2 pin PCIe (680mm) | 4 | 4 | 16AWG | No |
| 6+2 pin PCIe (680mm+80mm) | 2 | 4 | 16-18AWG | No |
| SATA (460mm+125mm+125mm+125mm) | 3 | 12 | 18AWG | No |
| 4 pin Molex (460mm+155mm+155mm) | 2 | 6 | 18AWG | No |
| RGB Sync Cable (820mm) | 1 | 1 | 24AWG | No |

## 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 | | | | |

## Parts Description

| | |
|---|---|
| General Data | - |
| Manufacturer (OEM) | Seasonic |
| PCB Type | Double Sided |
| Primary Side | - |
| Transient Filter | 6x Y caps, 3x X caps, 2x CM chokes, 1x MOV, 1x Champion CM02X (Discharge IC) |
| Inrush Protection | NTC Thermistor JNR20S100L (10 Ohm) & Relay |
| Bridge Rectifier(s) | 2x Vishay LVB2560 (600V, 25A @ 105°C) |
| APFC MOSFETs | 2x Infineon IPP60R060P7 (600V, 30A @ 100°C, Rds(on): 0.06Ohm) |
| APFC Boost Diode | 1x CREE C3D10060 (600V, 10A @ 153°C) |
| Bulk Cap(s) | 2x Nippon Chemi-Con (420V, 820uF & 470uF each or 1,290uF combined, 2,000h @ 105°C, KHE) |
| Main Switchers | 4x Infineon IPP60R120P7 (600V, 16A @ 100°C, Rds(on): 0.12Ohm) |
| IC Drivers | 2x Silicon Labs Si8230BD |
| APFC Controller | On Semiconductor NCP1654 |
| Resonant Controller | Champion CM6901T2X |
| Current Sensor IC | Allegro ACS725T |
| Topology | Primary side: APFC, Full-Bridge & LLC converter<br>Secondary side: Synchronous Rectification & DC-DC converters |
| Secondary Side | - |
| +12V MOSFETs | 8x Nexperia PSMN1R0-40YLD (40V, 198A @ 100°C, Rds(on): 1.93mOhm) |
| 5V & 3.3V | DC-DC Converters |
| Filtering Capacitors | Electrolytic: 2x Nippon Chemi-Con (105°C, W), 8x Nippon Chemi-Con (4-10,000h @ 105°C, KY),2x Rubycon (3-6,000h @ 105°C, ZLQ), 1x Rubycon (3-6,000h @ 105°C, YXG), 1x Rubycon (6-10,000h @ 105°C, ZLJ)<br>Polymer: 24x FPCAP, 8x Nippon Chemi-Con, 11x NIC |
| Supervisor IC | Weltrend WT7527V (OCP, OVP, UVP, SCP, PG) |

| | |
|---|---|
| Fan Model | Champion CF1325H12D (135mm, 12V, 0.60A, Double Ball Bearing Fan) |
| Fan Controller | Atmel SAM4N8 |
| Flash Memory | Microchip SST26VF016B |
| 5VSB Circuit | - |
| Rectifier | 1x MCC MBR1045ULPS SBR (45V, 10A) & 1x Infineon IPA60R099P6 FET (600V, 24A @ 100°C, Rds(on): 0.099Ohm) |
| Standby PWM Controller | Leadtrend LD7750R |

# Test Results

## Temperature & Compliance Info

| | |
|---|---|
| Temperature Range (°C /°F) | 28-32 / 82.4-89.6 |
| ErP Lot 3/6 Ready | ✓ |
| (EU) No 617/2013 Compliance | ✓ |

## Performance Summary 115V

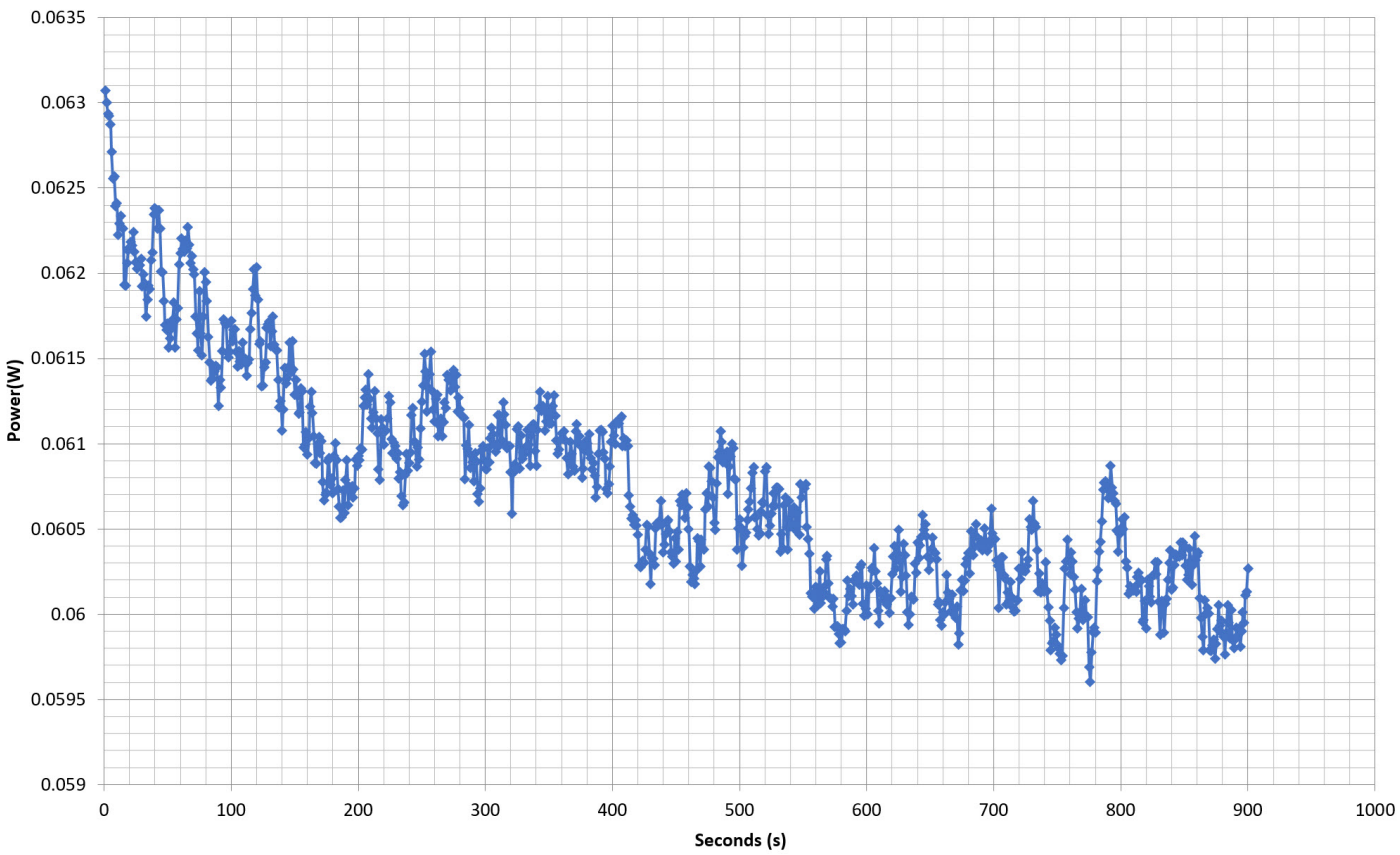
| | |
|---|---|
| Accredited | |
| Average Efficiency (>1450 load combinations) | 89.225% |
| Average Noise Output (>1450 Load Combinations) | 14.75dBA |
| Average PF (>1450 Load Combinations) | 0.986 |
| Efficiency With 10W (≤500W) or 2% (>500W) Load | 62.663% |
| Standby Power Consumption | 0.0603W |
| Non-Accredited | |
| 12V Ripple (Full Load) | 21.67mV |
| 5V Ripple (Full Load) | 6.39mV |
| 3.3V Ripple (Full Load) | 14.94mV |
| 5VSB Ripple (Full Load) | 11.02mV |
| 12V Load Regulation | 0.35% |
| 5V Load Regulation | 1.93% |
| 3.3V Load Regulation | 0.73% |
| 5VSB Load Regulation | 4.34% |

| | |
|---|---|
| Inrush Current | 37.750A |

## Hold-Up Time & PWR_OK Signal

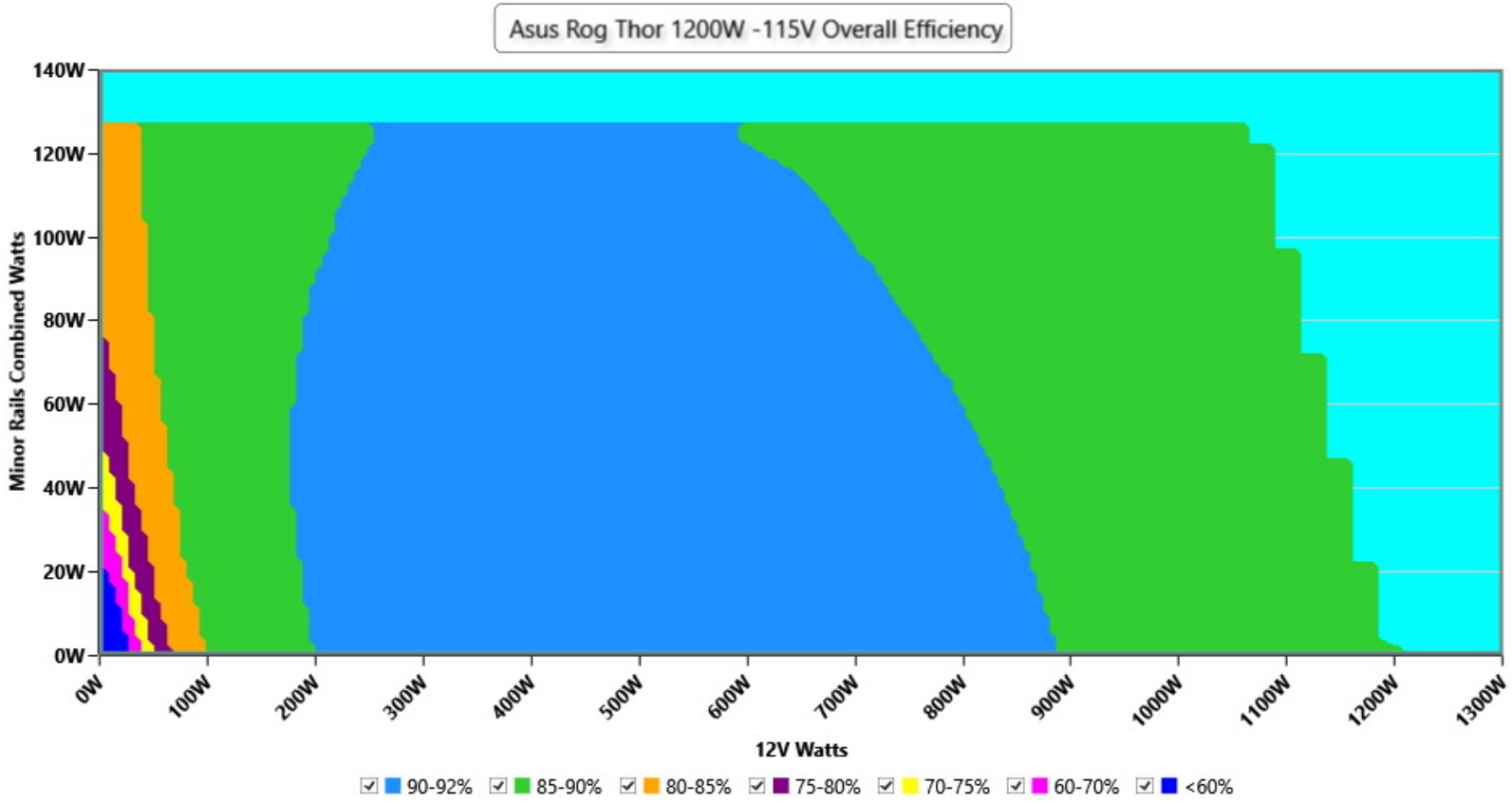
| | |
|---|---|
| Hold-Up Time (ms) | 27.4 |
| AC Loss to PWR_OK Hold Up Time (ms) | 23.8 |
| PWR_OK Inactive to DC Loss Delay (ms) | 3.6 |

## Graphs 115V


Power - 20/07/2021 - 09:05
Power(W)
0.0635
0.063
0.0625
0.062
0.0615
0.061
0.0605
0.06
0.0595
0.059
0
100
200
300
400
500
600
700
800
900
1000
Seconds (s)

## Efficiency Graph

### 115V

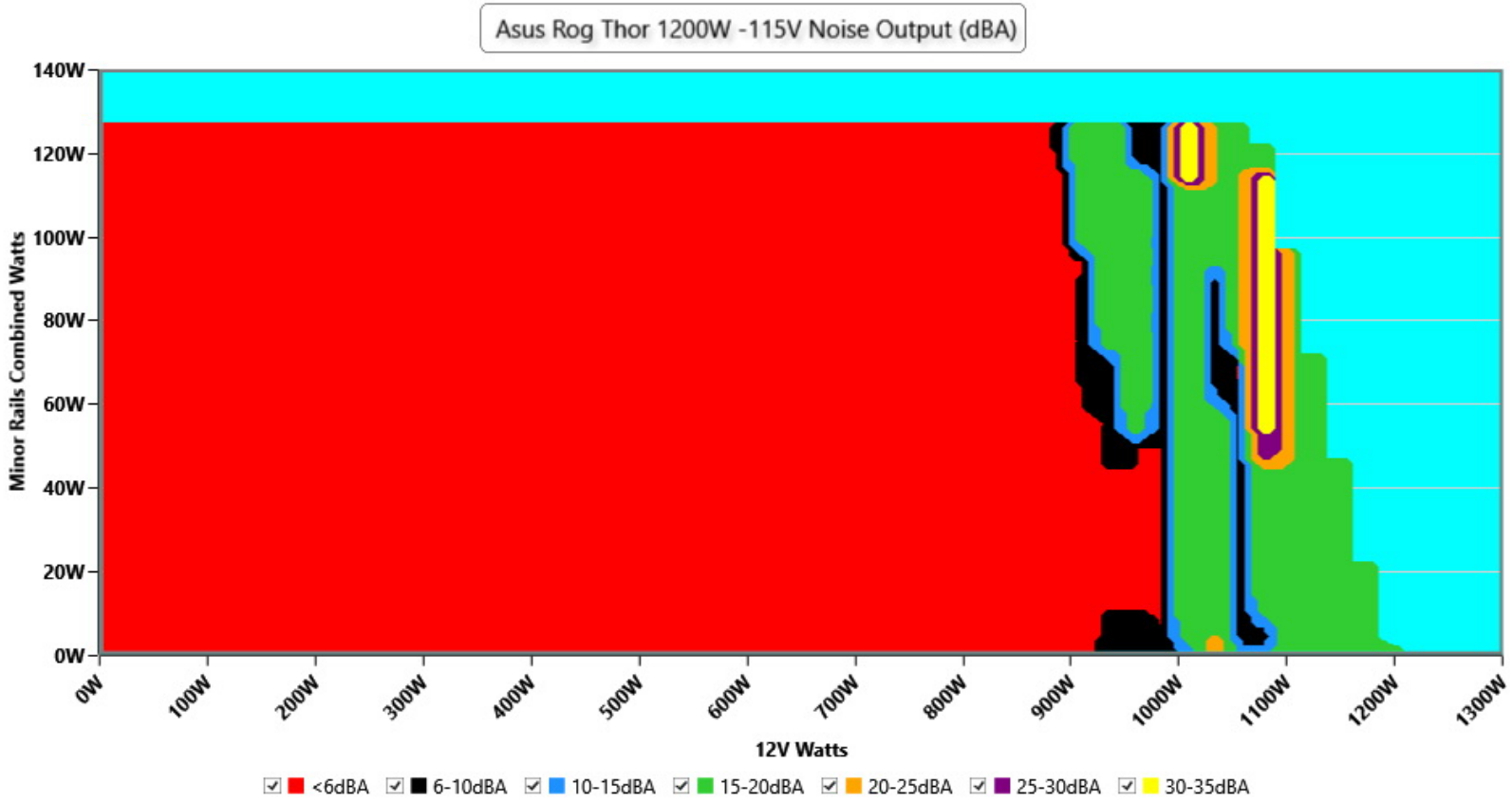



### INFO

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

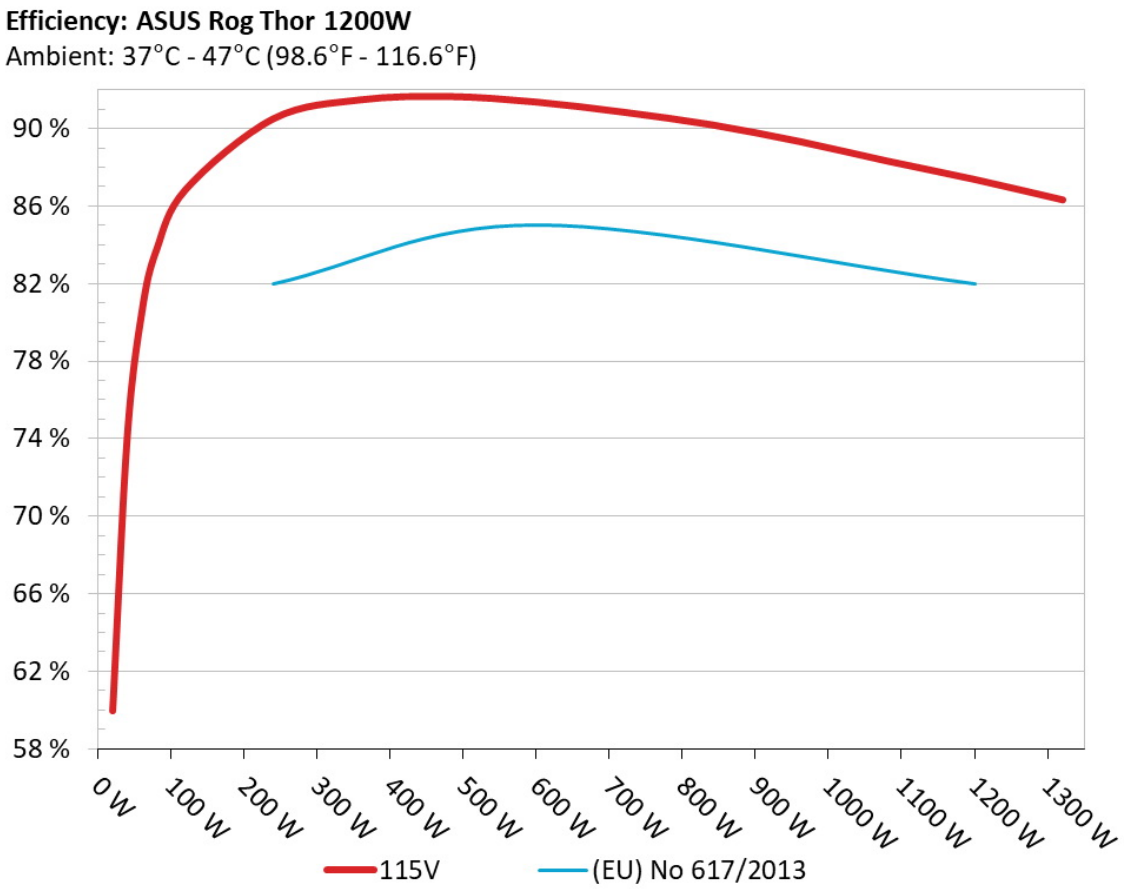



### INFO

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

## Indicative Performance

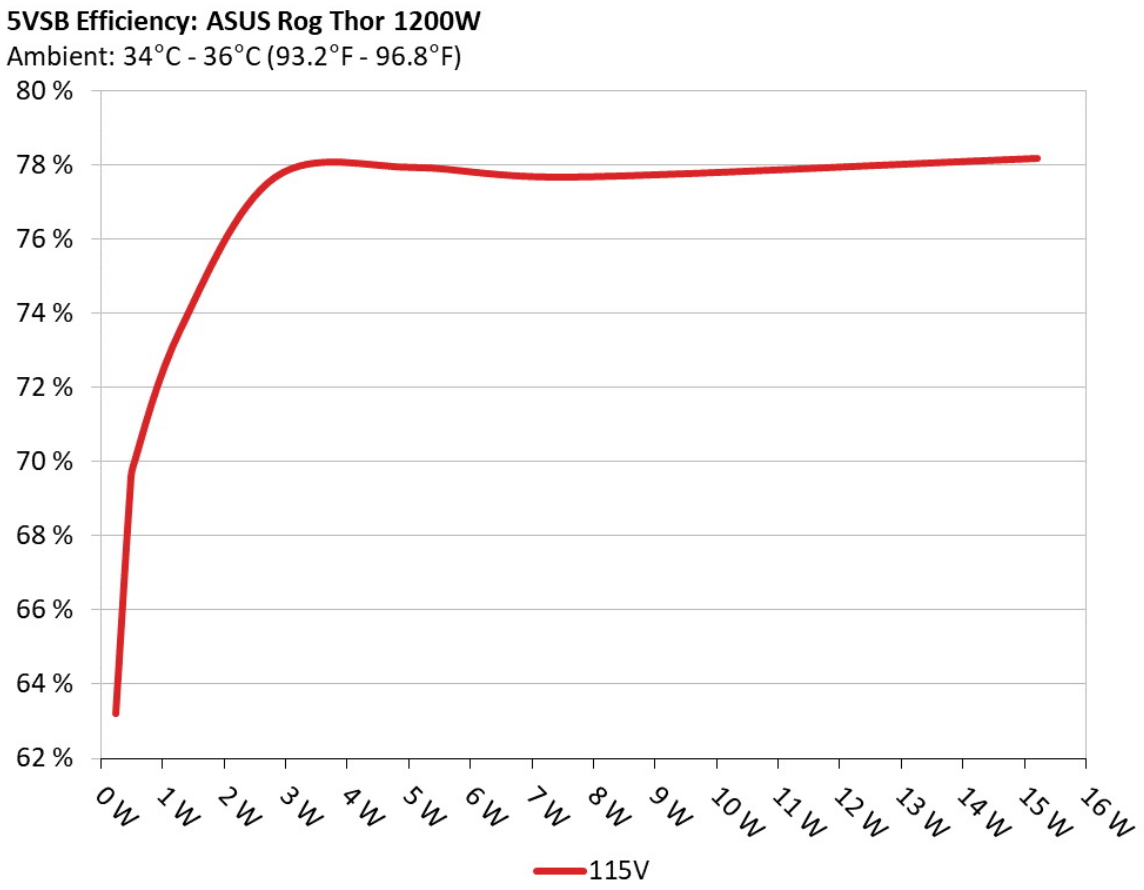
### Efficiency under high ambient temperature




**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

## 5VSB Efficiency (ERP LOT 3/6 & CEC) 115V

| 5VSB | DC/AC (Watts) | Efficiency | PF/AC Volts | |
|---|---|---|---|---|
| 1 | 0.045A | 0.232W | 63.206% | 0.04 |
| | 5.148V | 0.367W | | 115.17V |

| | | | | |
|---|---|---|---|---|
| 2 | 0.09A | 0.463W | 69.194% | 0.072 |
| | 5.147V | 0.669W | | 115.17V |
| 3 | 0.55A | 2.825W | 77.663% | 0.297 |
| | 5.135V | 3.638W | | 115.16V |
| 4 | 1A | 5.124W | 77.92% | 0.402 |
| | 5.123V | 6.576W | | 115.16V |
| 5 | 1.5A | 7.667W | 77.666% | 0.462 |
| | 5.11V | 9.872W | | 115.16V |
| 6 | 3A | 15.214W | 78.168% | 0.527 |
| | 5.071V | 19.463W | | 115.15V |

## Supplementary Tests (For Reference)

### Typical 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 10% | 8.174A | 1.96A | 1.99A | 0.978A | 120.013 | 86.856% | 0 | <6.0 | 44.11°C | 0.974 |
| | 12.039V | 5.103V | 3.316V | 5.114V | 138.174 | | | | 40.53°C | 115.2V |
| 20% | 17.371A | 2.946A | 2.987A | 1.178A | 239.98 | 90.497% | 0 | <6.0 | 45.27°C | 0.975 |
| | 12.035V | 5.092V | 3.314V | 5.095V | 265.179 | | | | 41.13°C | 115.09V |
| 30% | 26.880A | 3.442A | 3.488A | 1.379A | 359.454 | 91.474% | 0 | <6.0 | 46.26°C | 0.978 |
| | 12.031V | 5.085V | 3.311V | 5.077V | 392.955 | | | | 41.69°C | 115.1V |
| 40% | 36.467A | 3.94A | 3.99A | 1.582A | 479.842 | 91.645% | 0 | <6.0 | 47.62°C | 0.984 |
| | 12.028V | 5.078V | 3.309V | 5.058V | 523.588 | | | | 42.45°C | 115.11V |
| 50% | 45.660A | 4.934A | 4.99A | 1.787A | 599.591 | 91.358% | 0 | <6.0 | 48.29°C | 0.989 |
| | 12.025V | 5.068V | 3.307V | 5.039V | 656.306 | | | | 42.64°C | 115.15V |
| 60% | 54.920A | 5.932A | 5.992A | 1.993A | 720.131 | 90.831% | 0 | <6.0 | 49.78°C | 0.991 |
| | 12.023V | 5.058V | 3.305V | 5.019V | 792.827 | | | | 43.46°C | 115.14V |
| 70% | 64.147A | 6.936A | 6.995A | 2.201A | 839.845 | 90.186% | 316 | <6.0 | 43.8°C | 0.993 |
| | 12.015V | 5.048V | 3.303V | 4.998V | 931.24 | | | | 50.87°C | 115.16V |
| 80% | 73.419A | 7.942A | 7.999A | 2.31A | 959.883 | 89.325% | 317 | <6.0 | 44.14°C | 0.994 |
| | 12.013V | 5.038V | 3.301V | 4.98V | 1074.602 | | | | 52.13°C | 115.18V |

| Test | 12V | 5V | 3.3V | 5VSB | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|---|---|---|---|---|---|---|---|---|---|---|
| 90% | 83.081A | 8.454A | 8.491A | 2.419A | 1079.729 | 88.322% | 755 | 18.7 | 44.23°C | 0.994 |
| | 12.003V | 5.028V | 3.298V | 4.962V | 1222.492 | | | | 52.78°C | 115.14V |
| 100% | 92.527A | 8.969A | 9.017A | 3.042A | 1199.791 | 87.368% | 1092 | 31.1 | 45.7°C | 0.994 |
| | 11.997V | 5.018V | 3.294V | 4.931V | 1373.256 | | | | 54.86°C | 115.16V |
| 110% | 101.921A | 9.993A | 10.12A | 3.053A | 1320.354 | 86.318% | 1765 | 45.4 | 46.82°C | 0.995 |
| | 11.990V | 5.004V | 3.29V | 4.915V | 1529.65 | | | | 56.58°C | 115.18V |
| CL1 | 0.116A | 14.937A | 14.854A | 0A | 126.305 | 83.709% | 0 | <6.0 | 49.25°C | 0.975 |
| | 12.047V | 5.041V | 3.339V | 5.111V | 150.887 | | | | 42.97°C | 115.17V |
| CL2 | 0.116A | 25.008A | 0A | 0A | 126.397 | 80.898% | 0 | <6.0 | 50.36°C | 0.979 |
| | 12.054V | 4.999V | 3.3V | 5.125V | 156.244 | | | | 43.39°C | 115.17V |
| CL3 | 0.116A | 0A | 24.394A | 0A | 83.897 | 78.221% | 0 | <6.0 | 52.39°C | 0.969 |
| | 12.054V | 5.117V | 3.382V | 5.111V | 107.255 | | | | 44.42°C | 115.17V |
| CL4 | 100.015A | 0A | 0A | 0A | 1200.297 | 88.079% | 757 | 18.8 | 45.58°C | 0.994 |
| | 12.001V | 5.071V | 3.279V | 5.022V | 1362.747 | | | | 55.03°C | 115.15V |

The results above are not used in the certification process

## Light 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 20W | 1.236A | 0.489A | 0.497A | 0.194A | 20.006 | 59.976% | 0 | <6.0 | 38.16°C | 0.849 |
| | 12.025V | 5.115V | 3.318V | 5.145V | 33.357 | | | | 36.81°C | 115.18V |
| 40W | 2.718A | 0.685A | 0.696A | 0.292A | 40.004 | 74.121% | 0 | <6.0 | 39.13°C | 0.919 |
| | 12.026V | 5.113V | 3.318V | 5.141V | 53.971 | | | | 37.12°C | 115.16V |
| 60W | 4.201A | 0.881A | 0.896A | 0.39A | 60.002 | 80.547% | 0 | <6.0 | 41.05°C | 0.959 |
| | 12.028V | 5.11V | 3.316V | 5.136V | 74.493 | | | | 38.31°C | 115.15V |
| 80W | 5.679A | 1.077A | 1.095A | 0.487A | 79.962 | 83.738% | 0 | <6.0 | 42.85°C | 0.954 |
| | 12.032V | 5.108V | 3.315V | 5.131V | 95.491 | | | | 39.84°C | 115.16V |

The results above are not used in the certification process

## Ripple Measurements 115V

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| 10% Load | 13.16mV | 4.86mV | 4.76mV | 7.29mV | Pass |
| 20% Load | 14.06mV | 5.06mV | 4.71mV | 6.73mV | Pass |
| 30% Load | 7.95mV | 5.06mV | 5.17mV | 7.04mV | Pass |
| 40% Load | 8.92mV | 5.17mV | 5.12mV | 7.60mV | Pass |
| 50% Load | 10.20mV | 6.24mV | 5.99mV | 7.50mV | Pass |
| 60% Load | 11.22mV | 5.47mV | 5.43mV | 7.90mV | Pass |
| 70% Load | 11.73mV | 5.11mV | 5.48mV | 8.01mV | Pass |
| 80% Load | 12.14mV | 5.88mV | 13.00mV | 8.92mV | Pass |
| 90% Load | 13.14mV | 5.98mV | 13.00mV | 9.02mV | Pass |
| 100% Load | 21.67mV | 6.39mV | 14.94mV | 11.02mV | Pass |
| 110% Load | 23.84mV | 8.40mV | 15.94mV | 15.64mV | Pass |
| Crossload1 | 14.85mV | 6.73mV | 15.29mV | 11.42mV | Pass |
| Crossload2 | 11.07mV | 6.19mV | 5.42mV | 10.40mV | Pass |
| Crossload3 | 12.75mV | 5.73mV | 19.09mV | 11.06mV | Pass |
| Crossload4 | 20.45mV | 5.27mV | 7.34mV | 14.36mV | Pass |

The results above are not used in the certification process

## ASUS ROG-THOR-1200P2-GAMING




Top side




Power specifications label

Cybenetics □□□□□□□□□□□□□□□□□□□□ ETA□□□□□ LAMBDA□□□□□ SAFE□□□□□□□□□□□□□□□□□□ DELTA□□□□□□□ PHI□□□□□□□□□

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