



## 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

230V

Scheme: ETA-EMI PSU



115V

230V



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): 0.0990hm) |
| 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 |
|----------------|---------|

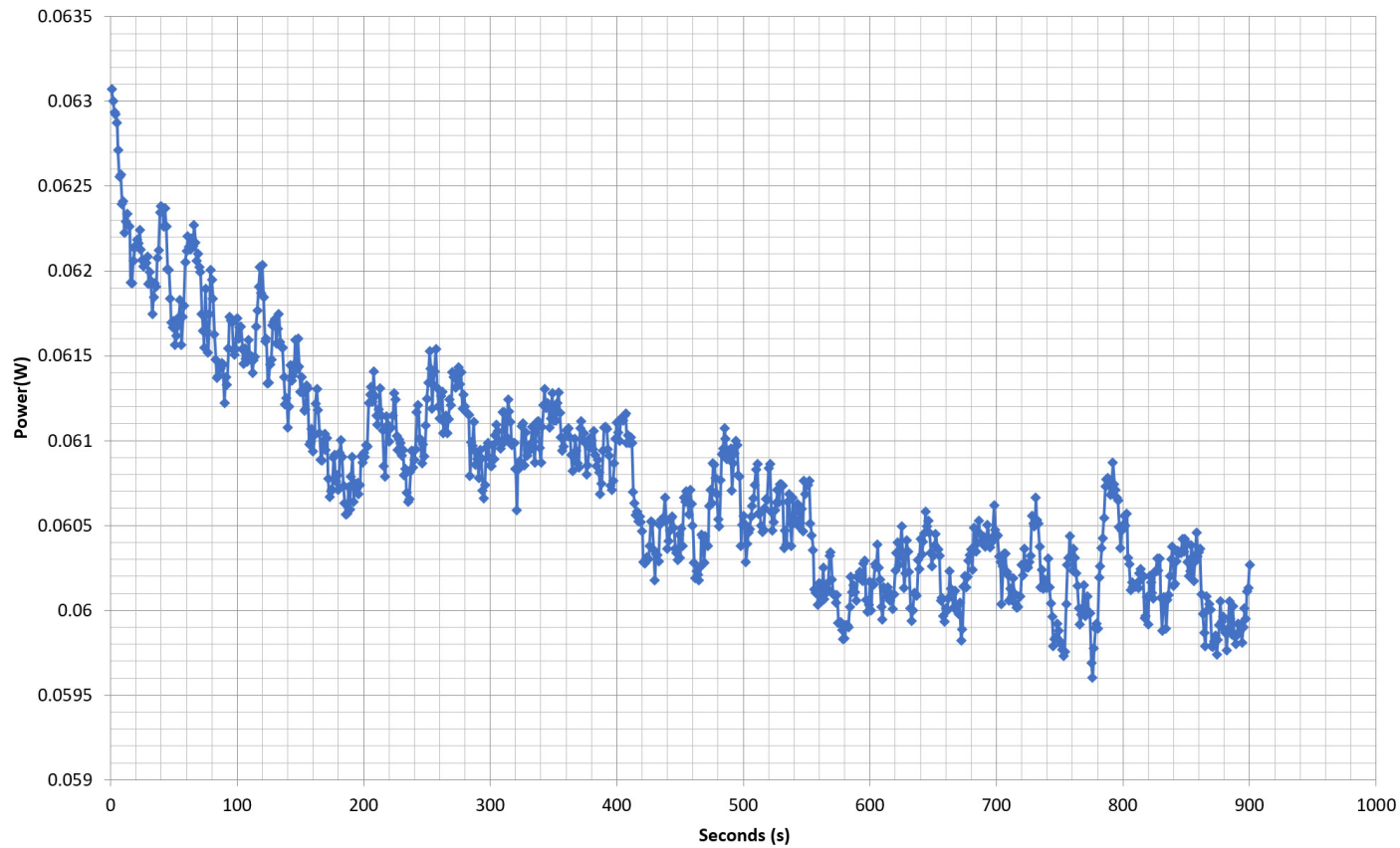
## Hold-Up Time & PWR\_OK Signal

|                                       |      |
|---------------------------------------|------|
| 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  |

## Stromverbrauch im Ruhezustand

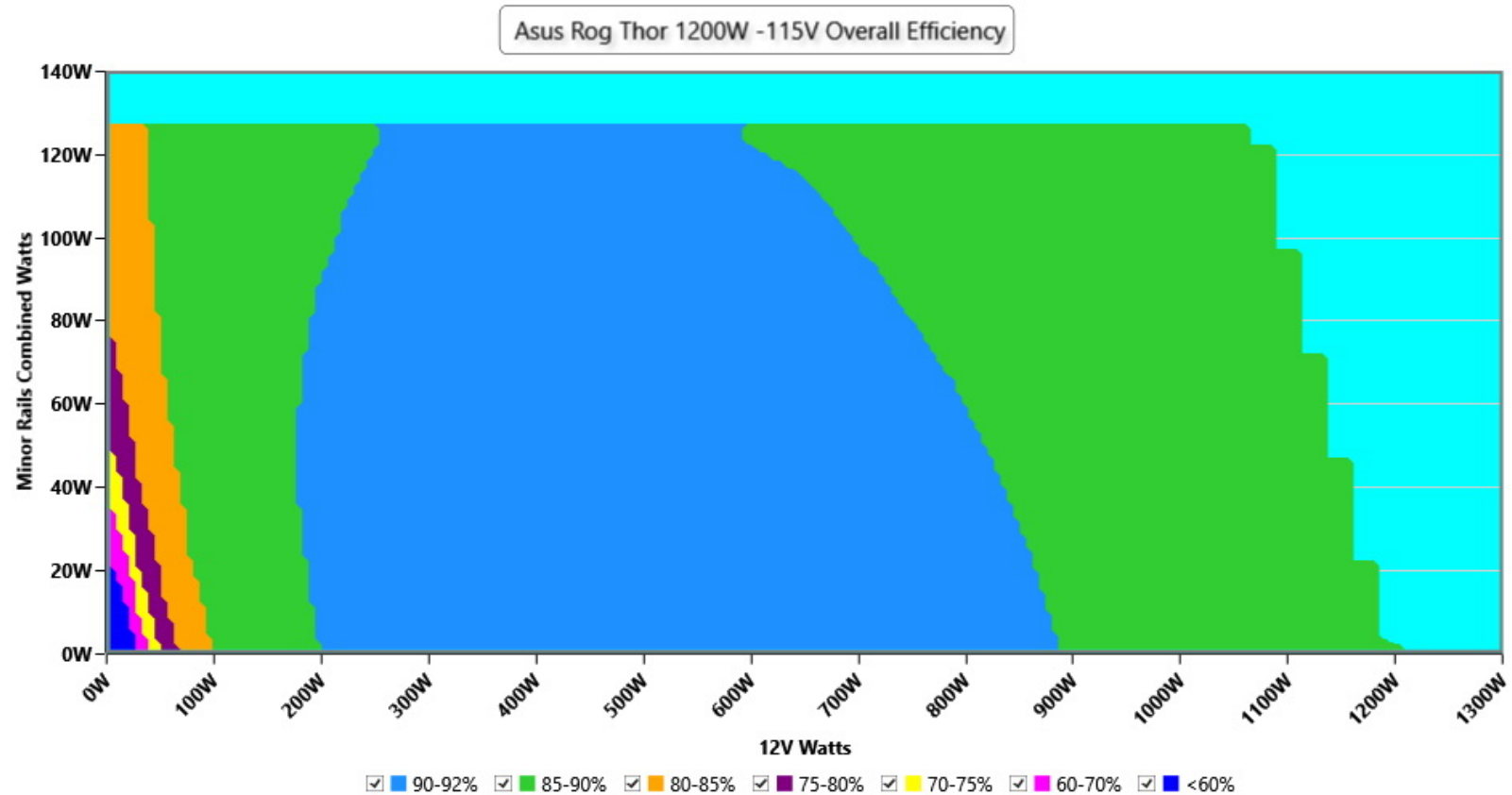
Graphs 115V

Power - 20/07/2021 - 09:05



## Efficiency Graph

115V

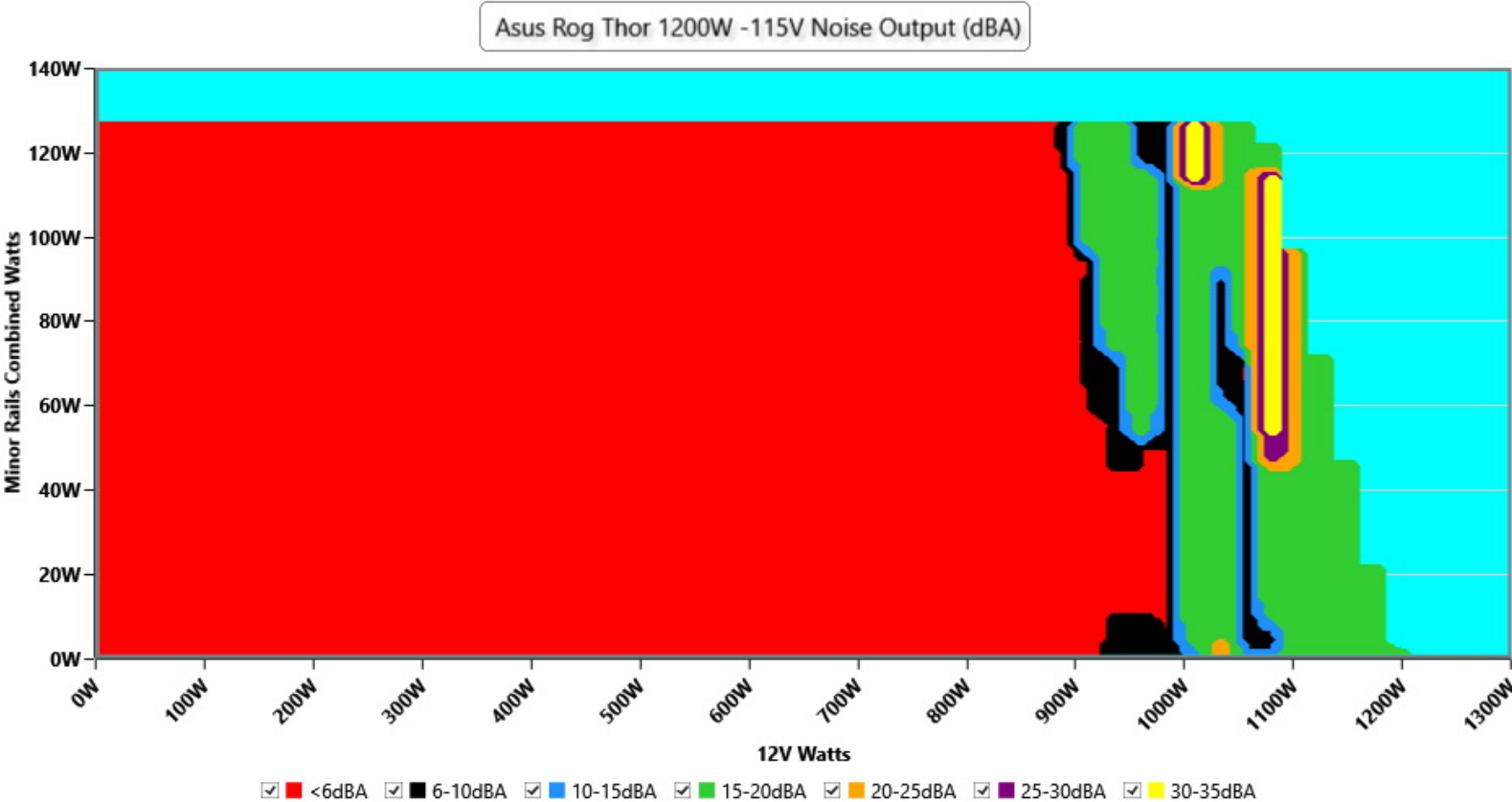


### INFO

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

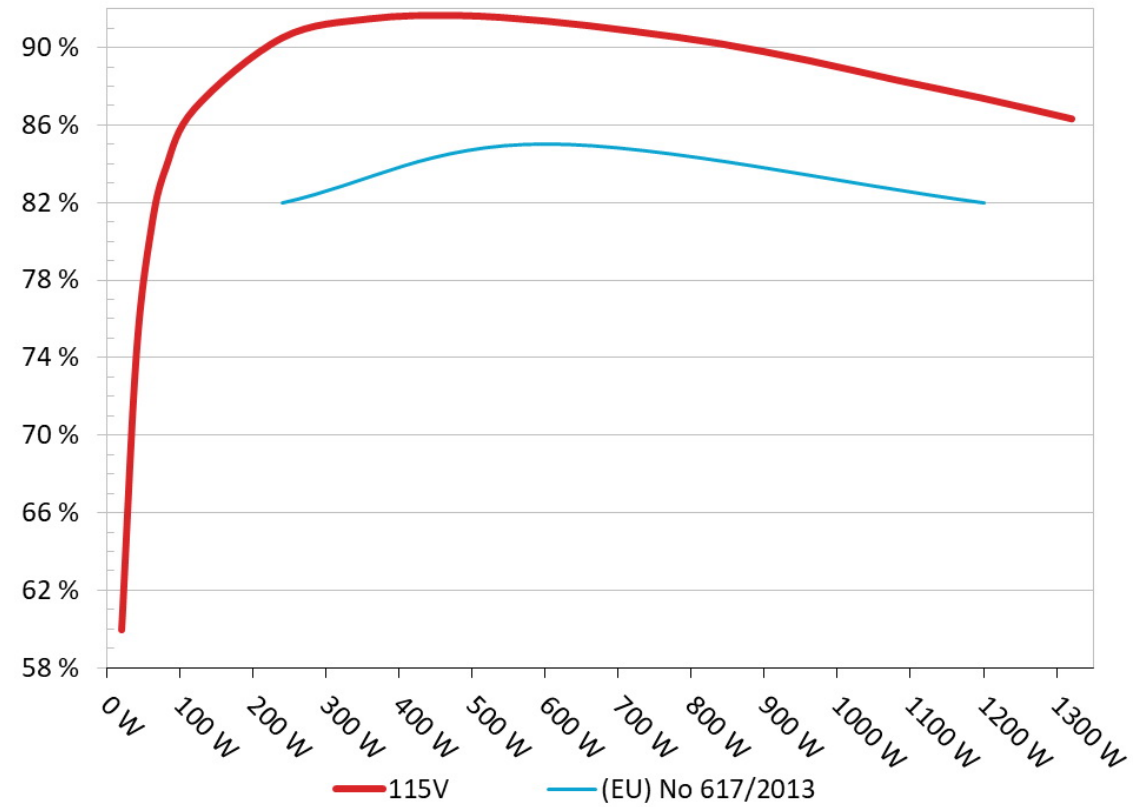
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

## Indicative Performance

### Efficiency under high ambient temperature

Efficiency: ASUS Rog Thor 1200W

Ambient: 37°C - 47°C (98.6°F - 116.6°F)



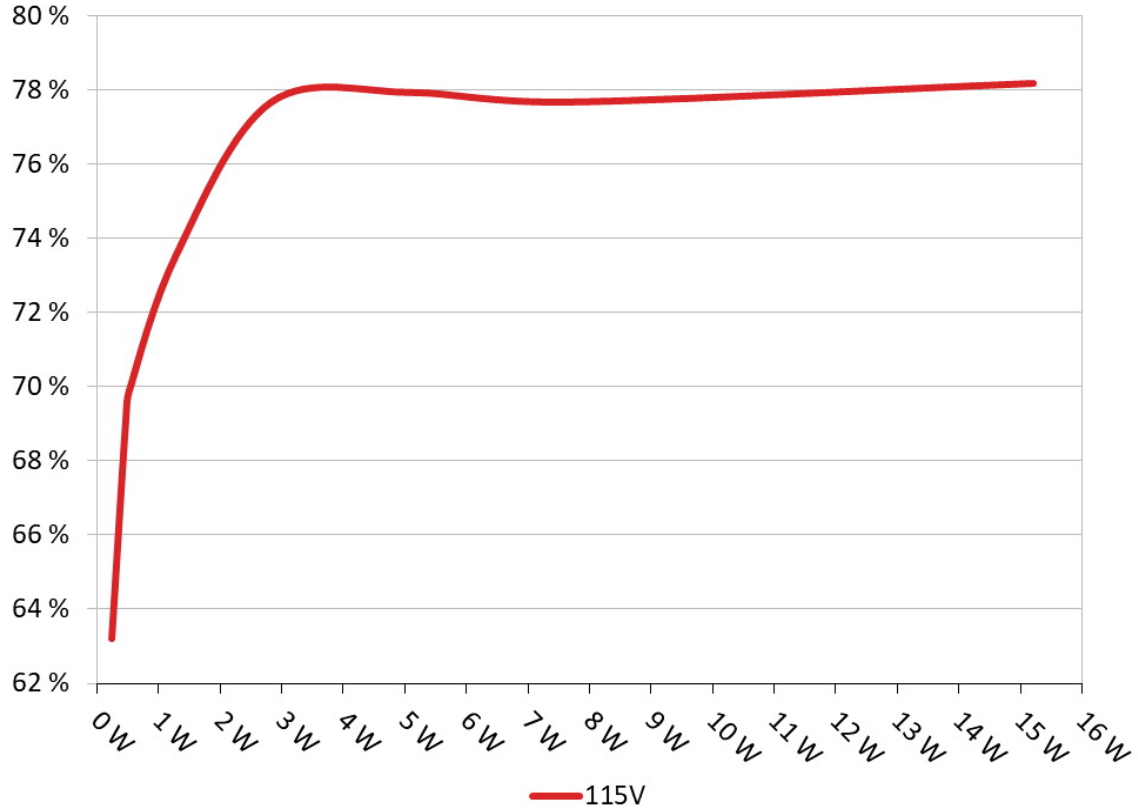
### INFO

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 Rog Thor 1200W

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

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

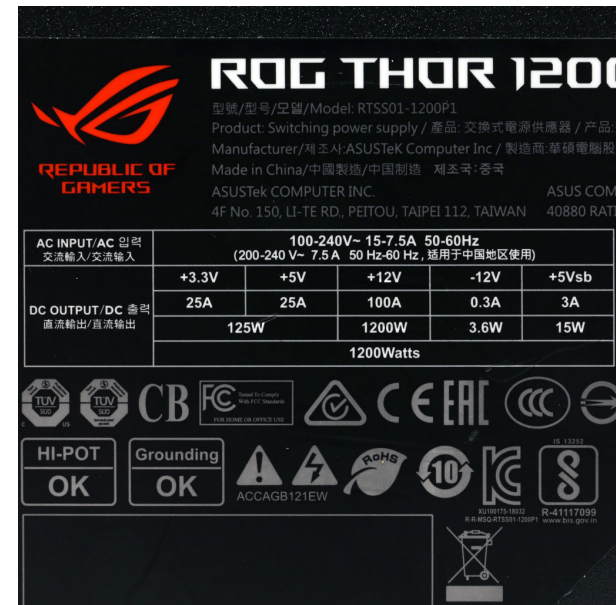
| Test       | 12V     | 5V     | 3.3V    | 5VSB    | Pass/Fail |
|------------|---------|--------|---------|---------|-----------|
| 10% Load   | 13.16mV | 4.86mV | 4.76mV  | 7.29mV  | Pass      |
| 20% Load   | 14.06mV | 5.06mV | 4.71mV  | 6.73mV  | Pass      |
| 30% Load   | 7.95mV  | 5.06mV | 5.17mV  | 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 bietet freiwillige Zertifizierungsprogramme für Netzteile - ETA für Effizienz, LAMBDA für Lautstärke und SAFE für Sicherheit und korrekten Betrieb - sowie für Kühlprodukte mit DELTA für die Schalldämmung von Gehäusen und PHI für Luftstrom und statischen Druck von Lüftern

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