# Sharkoon Rebel P20 750

Serial Number

Lab ID  SK75002392

Certification ID  252392

Test Result Report ID: 24PS2392A

Certificate Issue Date: Mar 15, 2024

Scheme: ETA-EMI PSU

115V




230V

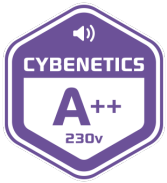



Scheme: LAMBDA PSU

115V




230V







Outside Validation Scope



# 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 | Sharkoon |
| Model | Rebel P20 750 |
| OEM/ODM | Andyson |
| Serial Number | |
| Product Specifications | |
| Manufacturer-Provided Information | |
| Rated Voltage (Vrms) | 100-240 |

| | |
|---|---|
| Rated Current (Arms) | 9-4.5 |
| Rated Frequency (Hz) | 50-60 |
| Rated Power (W) | 750 |
| Operating Temperature (Continuous Full Load) (°C) | |
| Type | ATX12V |
| Cable Design | Fully Modular |
| Warranty | - |
| Cybenetics Measurements | |
| Dimensions (W x H x D) | |
| Weight | |
| Cooling | 120mm Fluid Dynamic Bearing Fan<br>(HA1225M12F-Z) |
| Semi-Passive Operation | ✓ (selectable) |
| Cybenetics Testing Information | |
| Lab ID | SK75002392 |
| Date of receipt | Feb 12, 2024 |
| Testing Date | Mar 15, 2024 |
| Report Issued Date | Mar 15, 2024 |
| DUT Notes | Applicable to both black and white color models. |
| 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 (600mm) | 1 | 1 | 18AWG | No |
| 4+4 pin EPS12V (700mm) | 2 | 2 | 18AWG | No |
| 6+2 pin PCIe (550mm+150mm) | 2 | 4 | 18AWG | No |

| | | | | |
|---|---|---|---|---|
| 12+4 pin PCIe (600mm) (600W) | 1 | 1 | 16-26AWG | No |
| SATA (500mm+150mm+150mm) | 1 | 3 | 18AWG | No |
| SATA (500mm+150mm+150mm+150mm) | 2 | 8 | 18AWG | No |
| 4-pin Molex Adapter (+150mm) | 1 | 1 | 18AWG | No |
| AC Power Cord (1380mm) - C13 coupler | 1 | 1 | 18AWG | - |

## Power Specifications

| Rail | | 3.3V | 5V | 12V | 5VSB | -12V |
|---|---|---|---|---|---|---|
| Max. Power | Amps | 20 | 20 | 62.5 | 3 | 0.3 |
| | Watts | 100 | | 750 | 15 | 3.6 |
| Total Max. Power (W) | | 750 | | | | |

## Parts Description

| | |
|---|---|
| **General Data** | |
| Manufacturer (OEM) | Andyson |
| PCB Type | Double-Sided |
| **Primary Side** | |
| Transient Filter | 4x Y caps, 2x X caps, 2x CM chokes, 1x MOV |
| Inrush Protection | NTC Thermistor SCK205R0 (5 Ohm @ 25°C) & Relay |
| Bridge Rectifier(s) | 2x GBU1006 (420V, 15A @ 100°C) |
| APFC MOSFETs | 2x Wayon WML28N65F2 (650V, 13A @ 100°C, Rds(on): 0.19Ohm) |
| APFC Boost Diode | 1x WeEn BYC10-600P (600V, 20A @ 127°C) |
| Bulk Cap(s) | 2x Nippon Chemicon (420V, 330uF each or 660uf combined, 2000h @ 105°C,KMR) |
| Main Switchers | 4x Chongqing Pingwei 18N50MF (500V, 18A @ 25°C, Rds(on): 0.3Ohm) |
| APFC Controller | Champion CM6500UNX |
| Resonant Controller | Champion CU6901VPA |
| Topology | Primary side: APFC, Full-Bridge & LLC converter<br>Secondary side: Synchronous Rectification & DC-DC converters |
| **Secondary Side** | |
| +12V MOSFETs | 6x Allpower APG013N04G-AU (40V, 100A @ 100°C, Rds(on): 1.3mOhm) |
| 5V & 3.3V | DC-DC Converters: 6x Nexperia PSMN4R0-30YLD (30V, 95A @ 25°C, Rds(on): 4mOhm)<br>PWM Controller(s): ANPEC APW7159C |

| | |
|---|---|
| Filtering Capacitors | Electrolytic: 6x Nippon Chemi-Con (2-5,000 @ 105°C, KZE),<br>4x Rubycon (6-10000 @ 105°C, ZLH),<br>1x Nichicon (4-10,000 @ 105°C, HE),<br>Polymer: 24x Polycap, 5x FPCAP, 1x Nippon Chemi-Con LE |
| Supervisor IC | Weltrend WT7527RA (OCP, OTP, OVP, UVP, SCP, PG) |
| Micro Controller / Fan Controller | Weltrend WT51F104 |
| Fan Model | Hong Hua HA1225M12F-Z (120mm, 12V, 0.45A, Fluid Dynamic Bearing) |
| **5VSB Circuit** | |
| Rectifier | PJ335M |
| Standby PWM Controller | Excelliance MOS EM8569C |

# 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 | ✓ |
| ALPM (Alternative Low Power Mode) compatible | ✓ |
| ATX v3.1 PSU Power Excursion | ✓ |

## Performance Summary

### 115V

| | |
|---|---|
| Accredited | |
| Average Efficiency (>1450 load combinations) | 88.326% |
| Average Noise Output (>1450 Load Combinations) | 9.21dBA |
| Average PF (>1450 Load Combinations) | 0.980 |
| Efficiency With 10W (≤500W) or 2% (>500W) Load | 73.586% |
| Standby Power Consumption | 0.0624W |
| Non-Accredited | |
| 12V Ripple (Full Load) | 15.49mV |

| | |
|---|---|
| 5V Ripple (Full Load) | 13.89mV |
| 3.3V Ripple (Full Load) | 15.98mV |
| 5VSB Ripple (Full Load) | 23.91mV |
| 12V Load Regulation | 0.73% |
| 5V Load Regulation | 0.30% |
| 3.3V Load Regulation | 0.88% |
| 5VSB Load Regulation | 5.05% |
| Inrush Current | 34.280A |

## 230V

| | |
|---|---|
| Accredited | |
| Average Efficiency (>1450 load combinations) | 90.737% |
| Average Noise Output (>1450 Load Combinations) | 10.00dBA |
| Average PF (>1450 Load Combinations) | 0.940 |
| Efficiency With 10W (≤500W) or 2% (>500W) Load | 71.180% |
| Standby Power Consumption | 0.1369W |
| Non-Accredited | |
| 12V Ripple (Full Load) | 15.74mV |
| 5V Ripple (Full Load) | 13.66mV |
| 3.3V Ripple (Full Load) | 16.21mV |
| 5VSB Ripple (Full Load) | 22.57mV |
| 12V Load Regulation | 0.96% |
| 5V Load Regulation | 0.38% |
| 3.3V Load Regulation | 0.73% |
| 5VSB Load Regulation | 4.70% |
| Inrush Current | 65.060A |
| 12V Transient Response (200%) | 11.58V |
| 5V Transient Response (200%) | 4.950V |
| 3.3V Transient Response (200%) | 3.172V |
| 5VSB Transient Response (200%) | 4.992V |
| Hold-Up Time & PWR_OK Signal | 22.90ms |
| AC Loss to PWR_OK Hold Up Time | 18.80ms |

| | | |
|---|---|---|
| PWR_OK Inactive to DC Loss Delay | | 4.10ms |
| PSU Timings: T1 (20% / 100%) | 89.0ms | 89.0ms |
| PSU Timings: T3 (20% / 100%) | 118.0ms | 121.0ms |
| OPP (28.47°C / 41.71°C) | 147.08% | 136.36% |

## Hold-Up Time & PWR_OK Signal

| | |
|---|---|
| Hold-Up Time (ms) | 22.9 |
| AC Loss to PWR_OK Hold Up Time (ms) | 18.8 |
| PWR_OK Inactive to DC Loss Delay (ms) | 4.1 |

## Stromverbrauch im Ruhezustand

### Tables

#### 115V

| Detailed Results | | | | | | |
|---|---|---|---|---|---|---|
| | Average | Min | Limit Min | Max | Limit Max | Result |
| Mains Voltage RMS: | 115.04 V | 115.01 V | 113.85 V | 115.09 V | 116.15 V | PASS |
| Mains Frequency: | 60.00 Hz | 59.96 Hz | 59.40 Hz | 60.01 Hz | 60.60 Hz | PASS |
| Mains Voltage CF: | 1.416 | 1.415 | 1.340 | 1.418 | 1.490 | PASS |
| Mains Voltage THD: | 0.13 % | 0.09 % | N/A | 0.19 % | 2.00 % | PASS |
| Real Power: | 0.062 W | 0.011 W | N/A | 0.083 W | N/A | N/A |
| Apparent Power: | 7.983 W | 7.794 W | N/A | 8.182 W | N/A | N/A |
| Power Factor: | 0.008 | N/A | N/A | N/A | N/A | N/A |

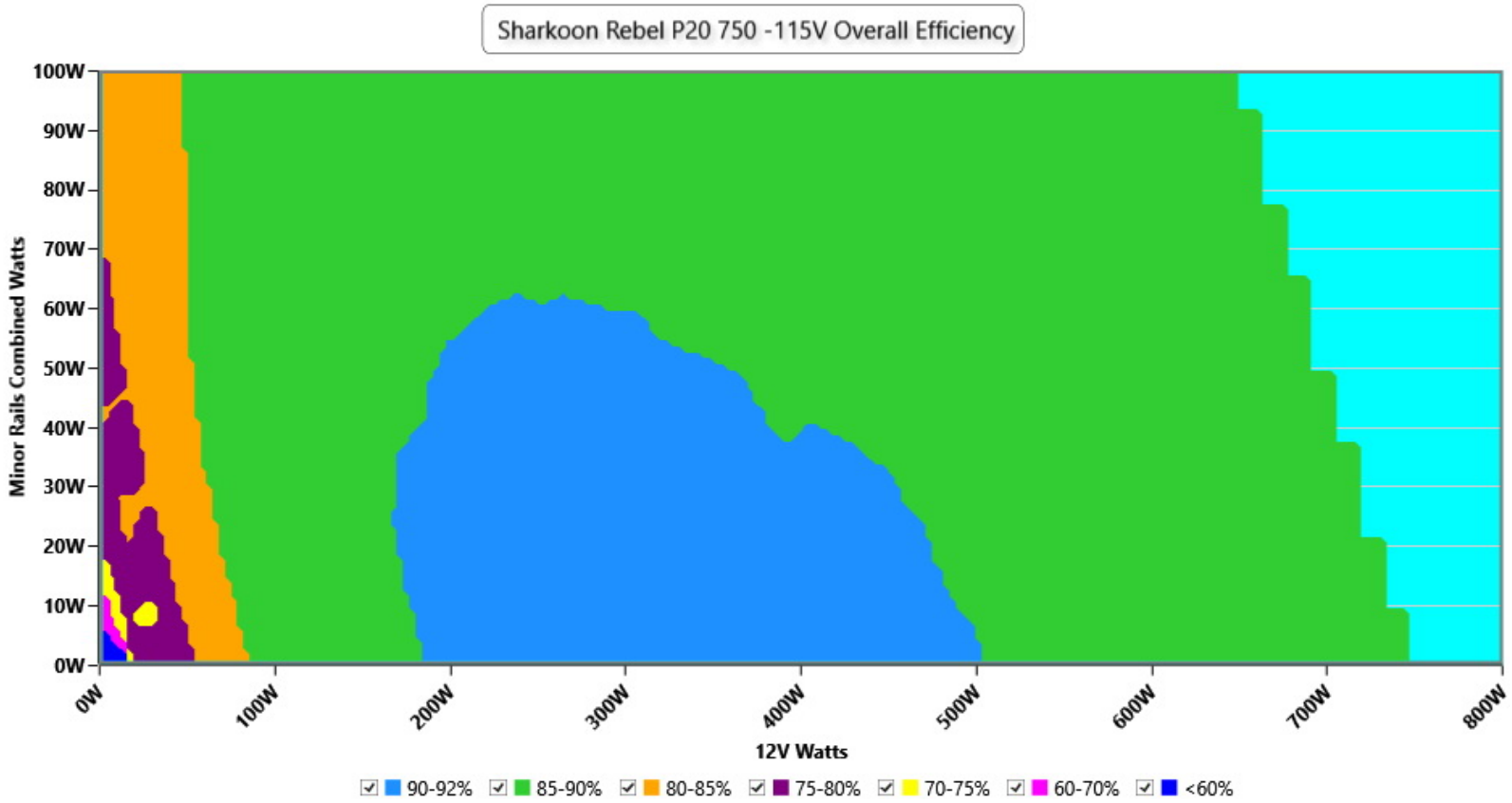
#### 230V

| Detailed Results | | | | | | |
|---|---|---|---|---|---|---|
| | Average | Min | Limit Min | Max | Limit Max | Result |
| Mains Voltage RMS: | 231.00 V | 230.89 V | 227.70 V | 231.06 V | 232.30 V | PASS |

| | | | | | | |
|---|---|---|---|---|---|---|
| Mains Frequency: | 50.00 Hz | 49.99 Hz | 49.50 Hz | 50.01 Hz | 50.50 Hz | PASS |
| Mains Voltage CF: | 1.417 | 1.416 | 1.340 | 1.419 | 1.490 | PASS |
| Mains Voltage THD: | 0.17 % | 0.14 % | N/A | 0.26 % | 2.00 % | PASS |
| Real Power: | 0.137 W | 0.118 W | N/A | 0.171 W | N/A | N/A |
| Apparent Power: | 26.154 W | 25.880 W | N/A | 26.442 W | N/A | N/A |
| Power Factor: | 0.005 | N/A | N/A | N/A | N/A | N/A |

## Efficiency Graph

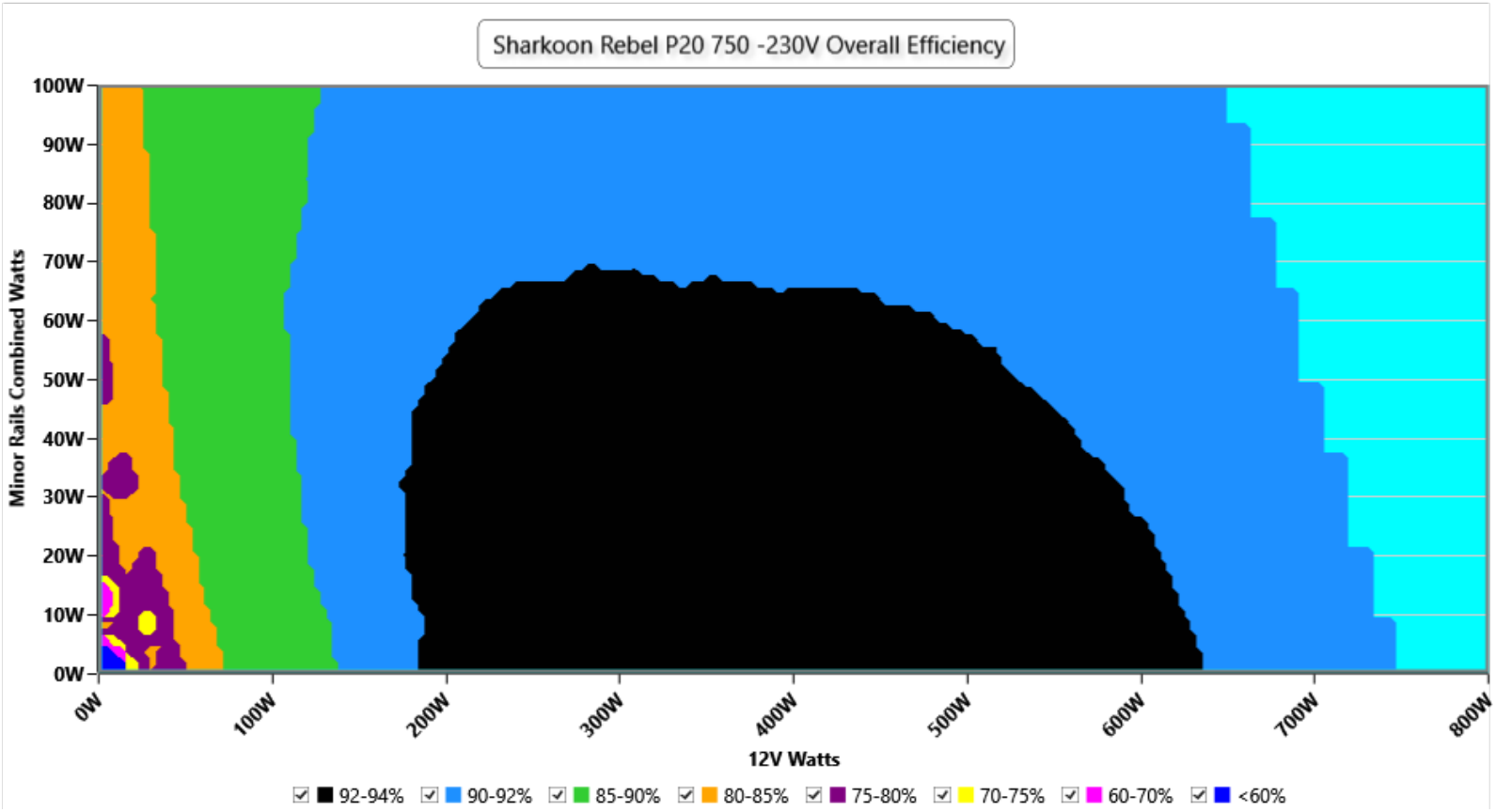
**115V**




**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

## 230V

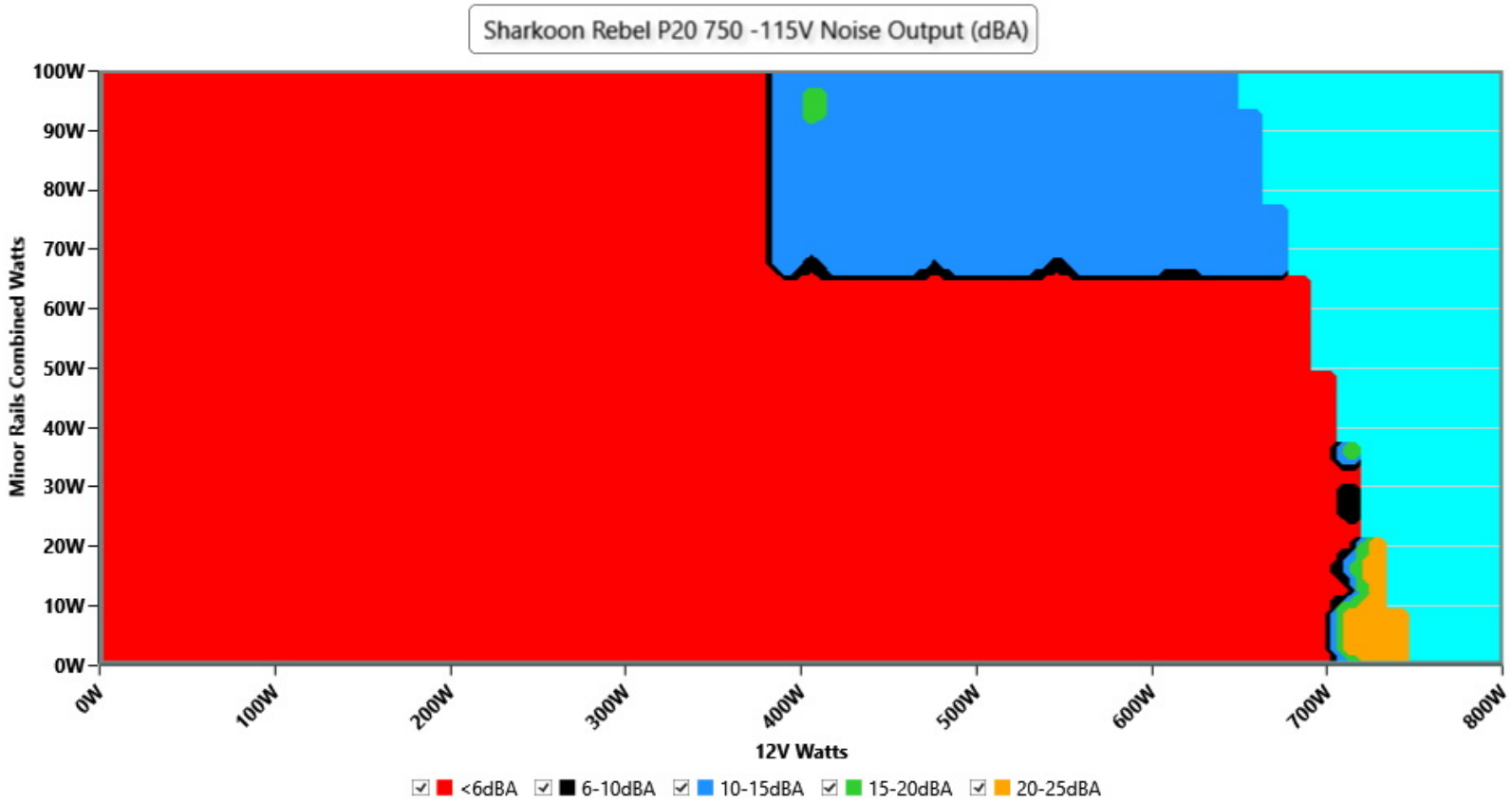



### INFO

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

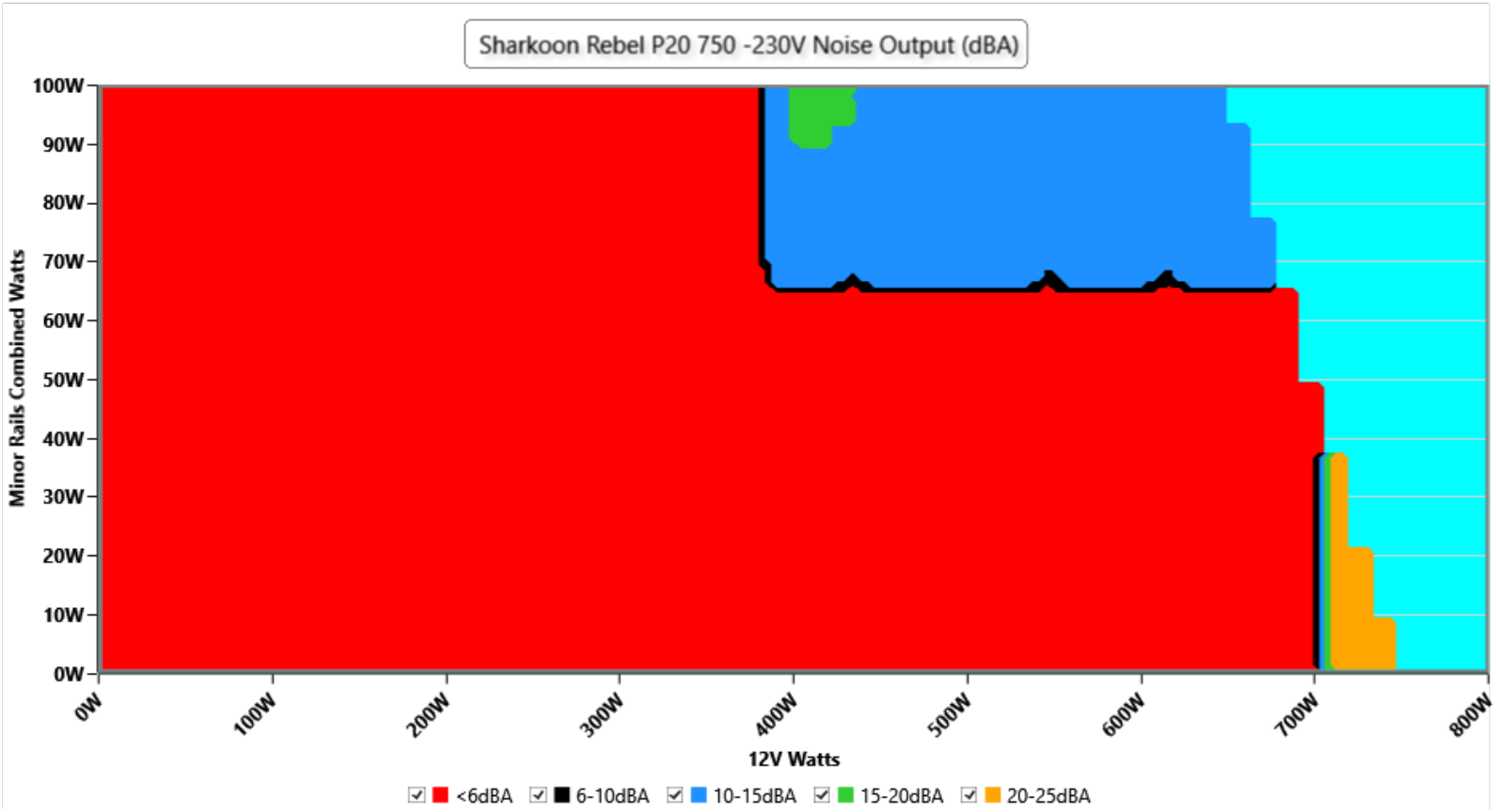
**115V**




**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

## 230V




### 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

## Noise under high ambient temperature (indicative)

### 115V

| Load | Normal ambient<br>fan · noise · intake | High ambient<br>fan · noise · intake | Noise change |
|---|---|---|---|
| 10% | 0 RPM · <6.0 dB(A) · 44.5 °C | 0 RPM · <6.0 dB(A) · 44.5 °C | fan off in both |
| 20% | 0 RPM · <6.0 dB(A) · 45.0 °C | 0 RPM · <6.0 dB(A) · 45.0 °C | fan off in both |
| 50% | 0 RPM · <6.0 dB(A) · 47.8 °C | 0 RPM · <6.0 dB(A) · 47.8 °C | fan off in both |
| 100% | 772 RPM · 14.6 dB(A) · 46.1 °C | 772 RPM · 14.6 dB(A) · 46.1 °C | **+0.0 dB(A)** |

### 230V

| Load | Normal ambient<br>fan · noise · intake | High ambient<br>fan · noise · intake | Noise change |
|---|---|---|---|
| 10% | 0 RPM · <6.0 dB(A) · 44.5 °C | 0 RPM · <6.0 dB(A) · 44.5 °C | fan off in both |
| 20% | 0 RPM · <6.0 dB(A) · 45.2 °C | 0 RPM · <6.0 dB(A) · 45.2 °C | fan off in both |
| 50% | 0 RPM · <6.0 dB(A) · 47.9 °C | 0 RPM · <6.0 dB(A) · 47.9 °C | fan off in both |
| 100% | 772 RPM · 14.6 dB(A) · 45.4 °C | 772 RPM · 14.6 dB(A) · 45.4 °C | **+0.0 dB(A)** |

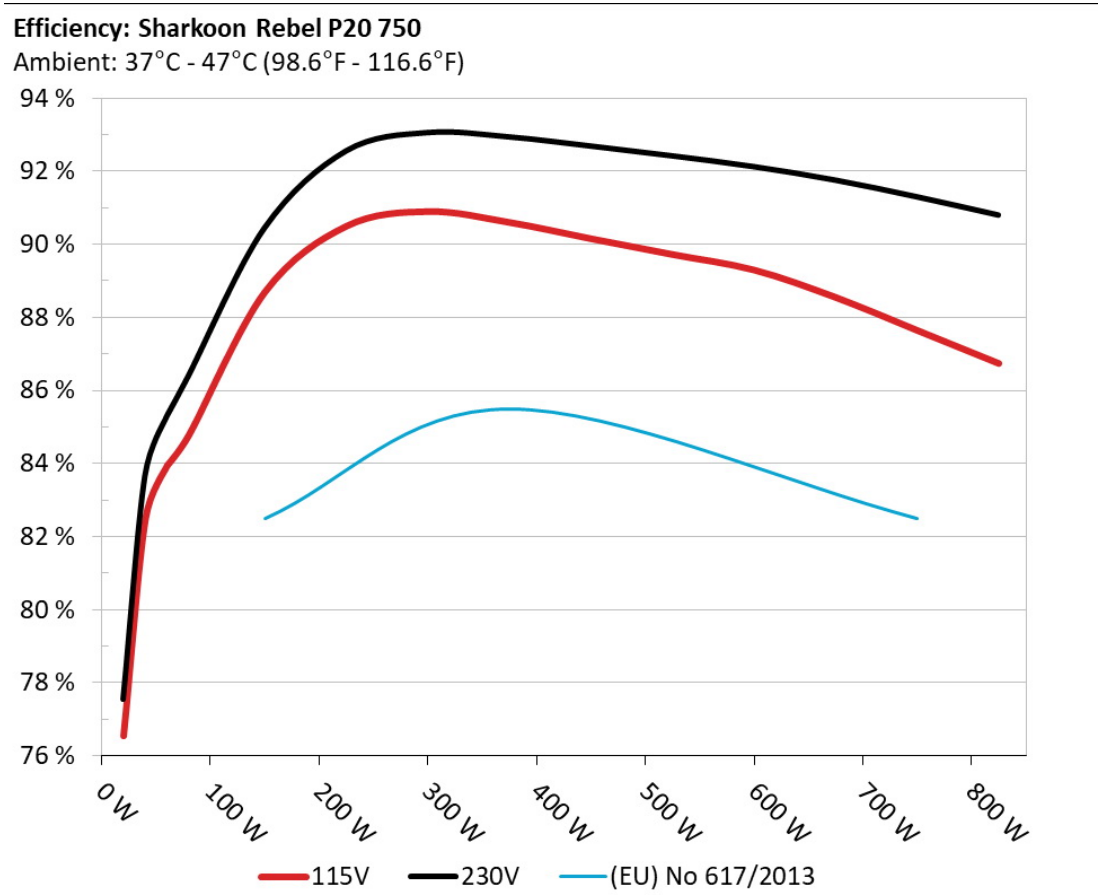
### INFO

Fan speed, noise and the measured intake temperature at 10, 20, 50 and 100 % load, from the two load regulation tests: at normal ambient (about 30-32 °C) and at high ambient (about 40-47 °C). These are stabilized readings at fixed loads, not averages over the certification sweep, so they are indicative of how the fan behaves when it is hot. "<6.0" is the floor of our sound meter: the fan is stopped or too quiet to measure (the fan speed column says which); with the fan stopped, the intake sensor can read higher than the chamber air.

*Informational. Not part of the ETA or LAMBDA rating.*

## Indicative Performance

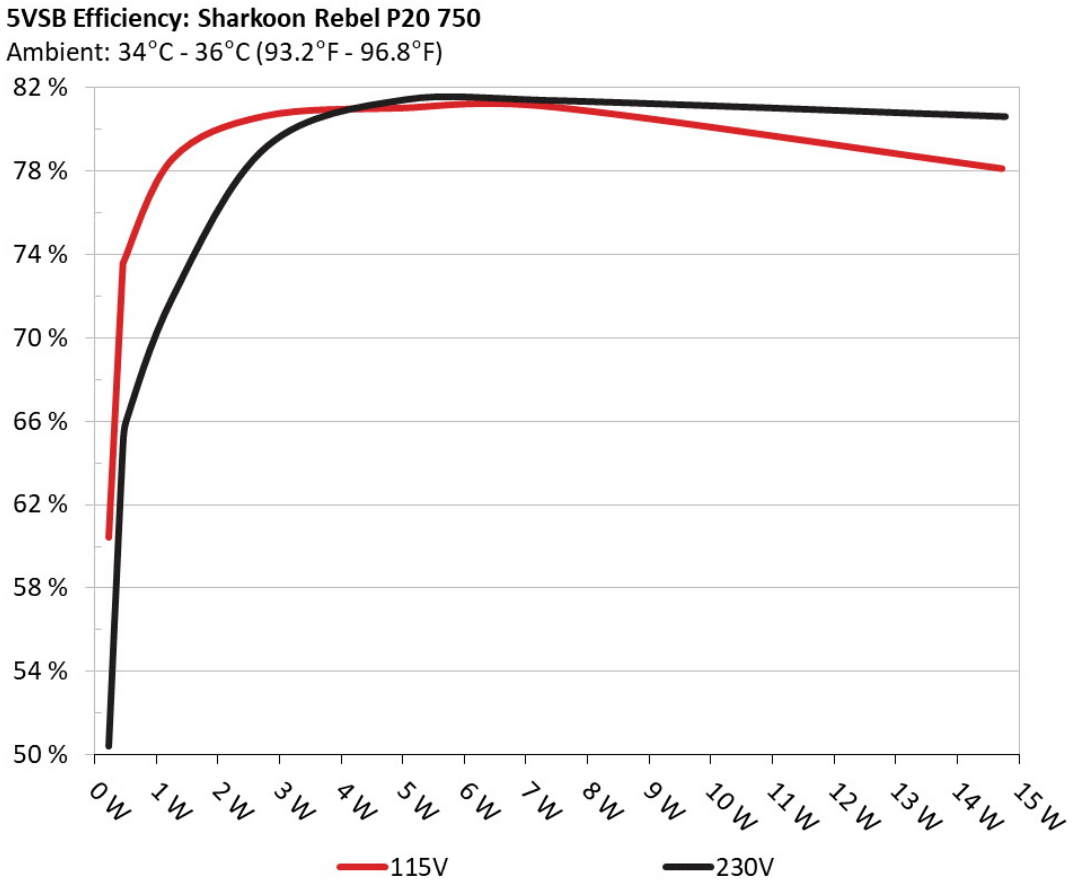
### Efficiency under high ambient temperature




**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

| Test # | 5VSB | DC/AC (Watts) | Efficiency | PF/AC Volts |
|---|---|---|---|---|
| 1 | 0.045A | 0.23W | 60.453% | 0.047 |
| | 5.116V | 0.381W | | 114.92V |
| 2 | 0.09A | 0.459W | 73.646% | 0.076 |
| | 5.104V | 0.623W | | 114.93V |
| 3 | 0.55A | 2.745W | 80.619% | 0.297 |
| | 4.991V | 3.404W | | 114.93V |
| 4 | 1A | 4.954W | 81.004% | 0.375 |
| | 4.954V | 6.115W | | 114.92V |
| 5 | 1.5A | 7.411W | 81.065% | 0.425 |
| | 4.94V | 9.142W | | 114.92V |
| 6 | 3A | 14.718W | 78.107% | 0.491 |
| | 4.906V | 18.843W | | 114.91V |

### 230V

| Test # | 5VSB | DC/AC (Watts) | Efficiency | PF/AC Volts |
|---|---|---|---|---|
| 1 | 0.045A | 0.231W | 50.42% | 0.017 |
| | 5.127V | 0.46W | | 229.9V |
| 2 | 0.09A | 0.461W | 64.803% | 0.026 |
| | 5.124V | 0.713W | | 229.9V |
| 3 | 0.55A | 2.802W | 79.168% | 0.121 |
| | 5.095V | 3.54W | | 229.9V |
| 4 | 1A | 5.067W | 81.409% | 0.194 |
| | 5.067V | 6.223W | | 229.9V |
| 5 | 1.5A | 7.553W | 81.349% | 0.239 |
| | 5.035V | 9.284W | | 229.9V |
| 6 | 3A | 14.787W | 80.587% | 0.343 |
| | 4.929V | 18.348W | | 229.9V |

## 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% | 4.376A | 1.981A | 1.979A | 0.988A | 75.002 | 83.433% | 0 | <6.0 | 44.45°C | 0.954 |
| | 12.205V | 5.048V | 3.334V | 5.061V | 89.895 | | | | 40.36°C | 114.89V |
| 20% | 9.755A | 2.972A | 2.972A | 1.191A | 149.942 | 88.192% | 0 | <6.0 | 45.01°C | 0.975 |
| | 12.203V | 5.048V | 3.331V | 5.039V | 170.016 | | | | 40.73°C | 114.86V |
| 30% | 15.495A | 3.467A | 3.469A | 1.395A | 224.949 | 89.994% | 0 | <6.0 | 45.95°C | 0.982 |
| | 12.191V | 5.047V | 3.33V | 5.018V | 249.957 | | | | 41.21°C | 114.84V |
| 40% | 21.241A | 3.964A | 3.967A | 1.601A | 300.038 | 90.395% | 0 | <6.0 | 46.7°C | 0.984 |
| | 12.186V | 5.046V | 3.328V | 4.998V | 331.921 | | | | 41.66°C | 114.8V |
| 50% | 26.580A | 4.956A | 4.962A | 1.809A | 374.484 | 90.099% | 0 | <6.0 | 47.79°C | 0.986 |
| | 12.189V | 5.045V | 3.326V | 4.977V | 415.637 | | | | 42.28°C | 114.79V |
| 60% | 31.977A | 5.952A | 5.963A | 2A | 449.318 | 89.653% | 787 | 15.2 | 42.86°C | 0.986 |
| | 12.183V | 5.041V | 3.321V | 4.959V | 501.171 | | | | 48.88°C | 114.75V |
| 70% | 37.387A | 6.949A | 6.968A | 2.228A | 524.32 | 89.222% | 786 | 15.1 | 43.26°C | 0.986 |
| | 12.175V | 5.038V | 3.316V | 4.938V | 587.656 | | | | 50.35°C | 114.72V |
| 80% | 42.863A | 7.941A | 7.971A | 2.334A | 599.676 | 88.794% | 784 | 15.1 | 44.97°C | 0.987 |
| | 12.175V | 5.036V | 3.312V | 4.928V | 675.222 | | | | 53.02°C | 114.7V |
| 90% | 48.598A | 8.438A | 8.459A | 2.442A | 674.538 | 88.046% | 777 | 14.8 | 45.45°C | 0.988 |
| | 12.182V | 5.036V | 3.31V | 4.914V | 766.116 | | | | 54.58°C | 114.67V |
| 100% | 54.140A | 8.934A | 8.976A | 3.078A | 749.757 | 87.141% | 772 | 14.6 | 46.11°C | 0.989 |
| | 12.192V | 5.036V | 3.309V | 4.873V | 860.398 | | | | 56.17°C | 114.64V |
| 110% | 59.590A | 9.929A | 10.074A | 3.079A | 824.78 | 86.235% | 1351 | 32.8 | 46.98°C | 0.99 |
| | 12.191V | 5.035V | 3.305V | 4.872V | 956.435 | | | | 57.95°C | 114.61V |
| CL1 | 0.114A | 11.913A | 11.962A | 0A | 101.296 | 81.431% | 789 | 15.3 | 41.28°C | 0.967 |
| | 12.240V | 5.053V | 3.319V | 5.113V | 124.395 | | | | 46.79°C | 114.87V |

| Test | 12V | 5V | 3.3V | 5VSB | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|---|---|---|---|---|---|---|---|---|---|---|
| CL2 | 0.113A | 19.771A | 0A | 0A | 101.351 | 79.978% | 1360 | 33 | 40.37°C | 0.968 |
| | 12.214V | 5.056V | 3.326V | 5.116V | 126.724 | | | | 47.46°C | 114.87V |
| CL3 | 0.113A | 0A | 19.9A | 0A | 67.398 | 74.304% | 1360 | 33 | 40.41°C | 0.955 |
| | 12.200V | 5.039V | 3.317V | 5.115V | 90.705 | | | | 49.51°C | 114.89V |
| CL4 | 61.629A | 0A | 0A | 0A | 749.611 | 88.146% | 1346 | 32.7 | 42.78°C | 0.989 |
| | 12.163V | 5.035V | 3.322V | 5.065V | 850.403 | | | | 53.76°C | 114.64V |

The results above are not used in the certification process

**230V**

| Test | 12V | 5V | 3.3V | 5VSB | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|---|---|---|---|---|---|---|---|---|---|---|
| 10% | 4.380A | 1.982A | 1.98A | 0.986A | 74.997 | 84.79% | 0 | <6.0 | 44.48°C | 0.788 |
| | 12.191V | 5.046V | 3.333V | 5.072V | 88.453 | | | | 40.42°C | 229.88V |
| 20% | 9.763A | 2.973A | 2.972A | 1.187A | 149.929 | 89.944% | 0 | <6.0 | 45.18°C | 0.899 |
| | 12.192V | 5.045V | 3.331V | 5.053V | 166.692 | | | | 40.89°C | 229.87V |
| 30% | 15.508A | 3.469A | 3.469A | 1.39A | 224.93 | 92.052% | 0 | <6.0 | 45.89°C | 0.936 |
| | 12.179V | 5.044V | 3.329V | 5.035V | 244.347 | | | | 41.18°C | 229.86V |
| 40% | 21.255A | 3.966A | 3.967A | 1.595A | 300.021 | 92.556% | 0 | <6.0 | 46.97°C | 0.953 |
| | 12.177V | 5.043V | 3.328V | 5.016V | 324.149 | | | | 41.93°C | 229.85V |
| 50% | 26.597A | 4.96A | 4.962A | 1.802A | 374.455 | 92.438% | 0 | <6.0 | 47.86°C | 0.963 |
| | 12.180V | 5.041V | 3.325V | 4.996V | 405.088 | | | | 42.41°C | 229.84V |
| 60% | 32.002A | 5.958A | 5.965A | 2A | 449.338 | 92.189% | 788 | 15.2 | 42.83°C | 0.969 |
| | 12.174V | 5.036V | 3.32V | 4.975V | 487.411 | | | | 48.93°C | 229.82V |
| 70% | 37.401A | 6.956A | 6.967A | 2.22A | 524.306 | 91.921% | 786 | 15.1 | 43.16°C | 0.972 |
| | 12.171V | 5.033V | 3.316V | 4.954V | 570.387 | | | | 50.18°C | 229.81V |
| 80% | 42.838A | 7.949A | 7.968A | 2.328A | 599.516 | 91.625% | 782 | 15 | 43.72°C | 0.975 |
| | 12.177V | 5.031V | 3.313V | 4.94V | 654.313 | | | | 51.73°C | 229.8V |
| 90% | 48.587A | 8.448A | 8.455A | 2.435A | 674.537 | 91.257% | 777 | 14.8 | 44.27°C | 0.977 |
| | 12.185V | 5.03V | 3.312V | 4.927V | 739.164 | | | | 53.38°C | 229.78V |

| Test | 12V | 5V | 3.3V | 5VSB | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|---|---|---|---|---|---|---|---|---|---|---|
| 100% | 54.115A | 8.947A | 8.972A | 3.068A | 749.748 | 90.799% | 772 | 14.6 | 45.38°C | 0.978 |
| | 12.197V | 5.029V | 3.31V | 4.889V | 825.723 | | | | 55.46°C | 229.76V |
| 110% | 59.562A | 9.946A | 10.071A | 3.071A | 824.77 | 90.298% | 1353 | 32.9 | 46.58°C | 0.979 |
| | 12.197V | 5.026V | 3.307V | 4.884V | 913.387 | | | | 57.55°C | 229.75V |
| CL1 | 0.114A | 11.939A | 11.96A | 0A | 101.292 | 82.982% | 790 | 15.3 | 40.04°C | 0.854 |
| | 12.241V | 5.041V | 3.32V | 5.113V | 122.065 | | | | 45.49°C | 229.87V |
| CL2 | 0.113A | 19.819A | 0A | 0A | 101.345 | 81.341% | 1362 | 33 | 40.92°C | 0.858 |
| | 12.214V | 5.043V | 3.326V | 5.116V | 124.591 | | | | 47.99°C | 229.87V |
| CL3 | 0.113A | 0A | 19.898A | 0A | 67.396 | 75.53% | 1360 | 33 | 40.02°C | 0.791 |
| | 12.201V | 5.04V | 3.318V | 5.115V | 89.23 | | | | 49.08°C | 229.88V |
| CL4 | 61.663A | 0A | 0A | 0A | 749.569 | 91.664% | 1348 | 32.7 | 45.03°C | 0.978 |
| | 12.156V | 5.035V | 3.323V | 5.065V | 817.738 | | | | 56.01°C | 229.76V |

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 | 1.226A | 0.495A | 0.494A | 0.195A | 20.001 | 76.036% | 0 | <6.0 | 39.72°C | 0.784 |
| | 12.116V | 5.051V | 3.338V | 5.119V | 26.306 | | | | 36.65°C | 114.91V |
| 40W | 2.698A | 0.693A | 0.692A | 0.293A | 40 | 81.97% | 0 | <6.0 | 41.12°C | 0.906 |
| | 12.120V | 5.051V | 3.338V | 5.11V | 48.799 | | | | 37.79°C | 114.9V |
| 60W | 4.142A | 0.891A | 0.89A | 0.392A | 59.999 | 81.313% | 0 | <6.0 | 42°C | 0.944 |
| | 12.199V | 5.051V | 3.337V | 5.102V | 73.788 | | | | 38.15°C | 114.89V |
| 80W | 5.598A | 1.089A | 1.088A | 0.491A | 79.945 | 84.266% | 0 | <6.0 | 43.23°C | 0.957 |
| | 12.204V | 5.05V | 3.336V | 5.094V | 94.876 | | | | 39.25°C | 114.88V |

The results above are not used in the certification process

### 230V

| Test | 12V | 5V | 3.3V | 5VSB | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|---|---|---|---|---|---|---|---|---|---|---|
| 20W | 1.228A | 0.495A | 0.495A | 0.195A | 19.993 | 77.05% | 0 | <6.0 | 39.73°C | 0.449 |
| | 12.081V | 5.048V | 3.334V | 5.119V | 25.95 | | | | 36.65°C | 229.9V |
| 40W | 2.704A | 0.693A | 0.693A | 0.293A | 39.993 | 83.156% | 0 | <6.0 | 40.81°C | 0.621 |
| | 12.086V | 5.047V | 3.334V | 5.112V | 48.094 | | | | 37.49°C | 229.89V |
| 60W | 4.152A | 0.891A | 0.891A | 0.392A | 59.993 | 82.611% | 0 | <6.0 | 41.82°C | 0.74 |
| | 12.171V | 5.048V | 3.334V | 5.105V | 72.62 | | | | 38.33°C | 229.88V |
| 80W | 5.608A | 1.09A | 1.089A | 0.49A | 79.935 | 85.895% | 0 | <6.0 | 42.89°C | 0.8 |
| | 12.179V | 5.047V | 3.333V | 5.098V | 93.062 | | | | 39.08°C | 229.88V |

The results above are not used in the certification process

## Ripple Measurements

### 115V

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| 10% Load | 12.38mV | 11.19mV | 9.72mV | 16.01mV | Pass |
| 20% Load | 11.76mV | 11.55mV | 10.23mV | 16.93mV | Pass |
| 30% Load | 12.28mV | 11.14mV | 10.28mV | 16.62mV | Pass |
| 40% Load | 11.77mV | 10.98mV | 11.10mV | 16.83mV | Pass |
| 50% Load | 11.56mV | 13.18mV | 12.07mV | 17.65mV | Pass |
| 60% Load | 12.13mV | 11.60mV | 11.30mV | 18.88mV | Pass |
| 70% Load | 12.59mV | 11.85mV | 11.76mV | 20.00mV | Pass |
| 80% Load | 12.84mV | 12.57mV | 13.76mV | 19.34mV | Pass |
| 90% Load | 11.97mV | 13.03mV | 14.22mV | 20.41mV | Pass |
| 100% Load | 15.49mV | 13.89mV | 15.98mV | 23.91mV | Pass |
| 110% Load | 15.40mV | 13.57mV | 16.81mV | 23.59mV | Pass |
| Crossload1 | 11.61mV | 12.06mV | 12.33mV | 15.76mV | Pass |
| Crossload2 | 12.63mV | 14.92mV | 10.54mV | 15.86mV | Pass |

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| Crossload3 | 11.46mV | 11.29mV | 13.56mV | 13.20mV | Pass |
| Crossload4 | 15.16mV | 12.96mV | 14.54mV | 19.35mV | Pass |

The results above are not used in the certification process

**230V**

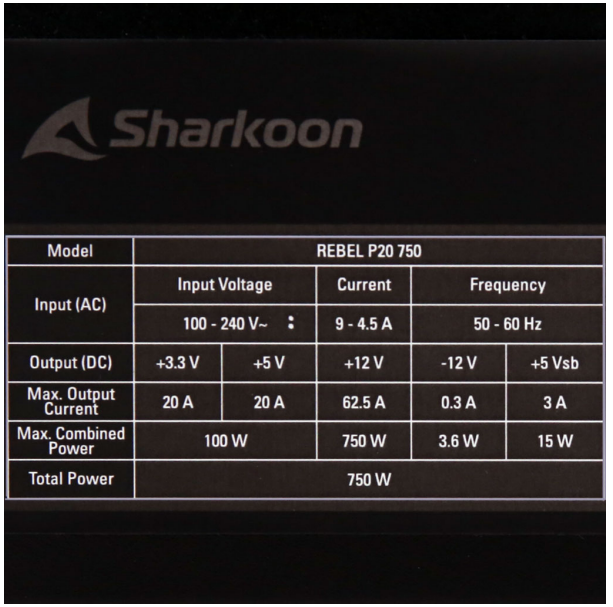
| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| 10% Load | 12.28mV | 10.88mV | 9.72mV | 15.75mV | Pass |
| 20% Load | 15.76mV | 11.34mV | 12.58mV | 16.88mV | Pass |
| 30% Load | 13.16mV | 11.29mV | 11.26mV | 17.39mV | Pass |
| 40% Load | 11.41mV | 11.50mV | 10.90mV | 17.65mV | Pass |
| 50% Load | 11.15mV | 12.57mV | 11.97mV | 19.23mV | Pass |
| 60% Load | 11.66mV | 12.06mV | 11.61mV | 18.72mV | Pass |
| 70% Load | 11.51mV | 11.65mV | 12.38mV | 19.49mV | Pass |
| 80% Load | 13.20mV | 12.72mV | 14.37mV | 19.75mV | Pass |
| 90% Load | 11.72mV | 12.88mV | 14.37mV | 21.74mV | Pass |
| 100% Load | 15.74mV | 13.66mV | 16.21mV | 22.57mV | Pass |
| 110% Load | 15.51mV | 13.93mV | 16.98mV | 22.58mV | Pass |
| Crossload1 | 13.19mV | 13.56mV | 13.44mV | 15.94mV | Pass |
| Crossload2 | 13.30mV | 16.50mV | 10.39mV | 15.45mV | Pass |
| Crossload3 | 11.56mV | 11.49mV | 14.88mV | 14.22mV | Pass |
| Crossload4 | 16.64mV | 14.45mV | 14.63mV | 18.94mV | Pass |

The results above are not used in the certification process

## Sharkoon Rebel P20 750



Top side




| Model | REBEL P20 750 | | | | |
|---|---|---|---|---|---|
| Input (AC) | Input Voltage | | Current | Frequency | |
| | 100 - 240 V~ | | 9 - 4.5 A | 50 - 60 Hz | |
| Output (DC) | +3.3 V | +5 V | +12 V | -12 V | +5 Vsb |
| Max. Output Current | 20 A | 20 A | 62.5 A | 0.3 A | 3 A |
| Max. Combined Power | 100 W | | 750 W | 3.6 W | 15 W |
| Total Power | 750 W | | | | |

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

CYBENETICS LTD Syrou 6, Latsia, 2231, Nicosia Cyprus

www.cybenetics.com - info@cybenetics.com