



## Cougar Polar X2 1050W

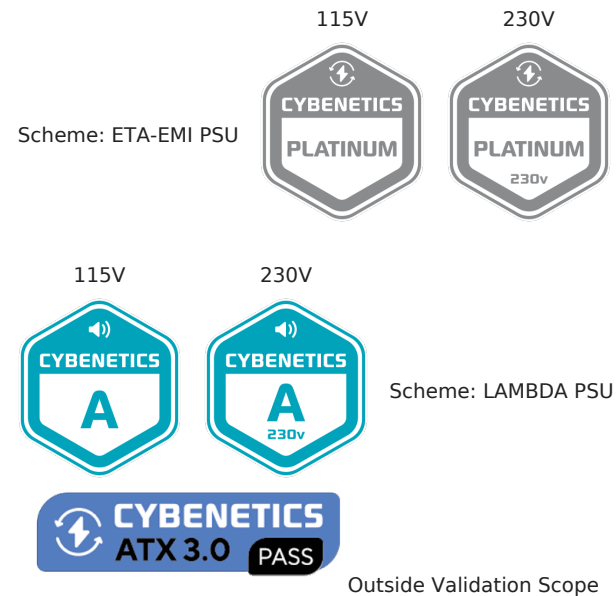
Serial Number 12BC02PX10500098

Lab ID CG10502176

Certification ID 252176

Test Result Report ID: 23PS2176A

Certificate Issue Date: May 16, 2023



## 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                             | Cougar           |
| Model                             | Polar X2 1050W   |
| OEM/ODM                           | XHY-Power        |
| Serial Number                     | 12BC02PX10500098 |
| Product Specifications            |                  |
| Manufacturer-Provided Information |                  |
| Rated Voltage (Vrms)              | 100-240          |
| Rated Current (Arms)              | 15-7             |

|                                                   |                                                                                     |
|---------------------------------------------------|-------------------------------------------------------------------------------------|
| Rated Frequency (Hz)                              | 47-63                                                                               |
| Rated Power (W)                                   | 1050                                                                                |
| Operating Temperature (Continuous Full Load) (°C) |                                                                                     |
| Type                                              | ATX12V                                                                              |
| Cable Design                                      | Fully Modular                                                                       |
| Warranty                                          | -                                                                                   |
| Cybenetics Measurements                           |                                                                                     |
| Dimensions (W x H x D)                            |                                                                                     |
| Weight                                            |                                                                                     |
| Cooling                                           | 135mm Hydraulic Dynamic Bearing Fan<br>(DWPH EFF-14E12H)                            |
| Semi-Passive Operation                            | ✓                                                                                   |
| Cybenetics Testing Information                    |                                                                                     |
| Lab ID                                            | CG10502176                                                                          |
| Date of receipt                                   | May 4, 2023                                                                         |
| Testing Date                                      | May 15, 2023                                                                        |
| Report Issued Date                                | May 16, 2023                                                                        |
| 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 (650mm) | 1           | 1                       | 18AWG    | No                  |
| 4+4 pin EPS12V (650mm)         | 1           | 1                       | 16AWG    | No                  |
| 8 pin EPS12V (650mm)           | 1           | 1                       | 16AWG    | No                  |
| 6+2 pin PCIe (650mm)           | 1           | 1                       | 16AWG    | No                  |
| 6+2 pin PCIe (650mm+100mm)     | 3           | 6                       | 16AWG    | No                  |
| 12+4 pin PCIe (750mm) (600W)   | 1           | 1                       | 16-26AWG | No                  |
| SATA (500mm+110mm+110mm+110mm) | 3           | 12                      | 18AWG    | No                  |

|                                       |   |   |       |    |
|---------------------------------------|---|---|-------|----|
| 4-pin Molex (500mm+120mm+120mm+120mm) | 1 | 4 | 18AWG | No |
| AC Power Cord (1360mm) - C13 coupler  | 1 | 1 | 18AWG | -  |

### Power Specifications

|                      |       |      |    |      |      |      |
|----------------------|-------|------|----|------|------|------|
| Rail                 |       | 3.3V | 5V | 12V  | 5VSB | -12V |
| Max. Power           | Amps  | 20   | 20 | 87.5 | 3    | 0.3  |
|                      | Watts | 100  |    | 1050 | 15   | 3.6  |
| Total Max. Power (W) |       | 1050 |    |      |      |      |

### 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 v3.0 Compliance                          | ✓                 |

#### Performance Summary

#### 115V

|                                                |          |
|------------------------------------------------|----------|
| Accredited                                     |          |
| Average Efficiency (>1450 load combinations)   | 90.182%  |
| Average Noise Output (>1450 Load Combinations) | 22.37dBA |
| Average PF (>1450 Load Combinations)           | 0.979    |
| Efficiency With 10W (≤500W) or 2% (>500W) Load | 67.679%  |
| Standby Power Consumption                      | 0.0536W  |
| Non-Accredited                                 |          |
| 12V Ripple (Full Load)                         | 43.53mV  |
| 5V Ripple (Full Load)                          | 15.69mV  |

|                         |         |
|-------------------------|---------|
| 3.3V Ripple (Full Load) | 14.89mV |
| 5VSB Ripple (Full Load) | 14.69mV |
| 12V Load Regulation     | 0.17%   |
| 5V Load Regulation      | 0.26%   |
| 3.3V Load Regulation    | 0.85%   |
| 5VSB Load Regulation    | 2.13%   |
| Inrush Current          | 43.650A |

## 230V

|                                                             |          |
|-------------------------------------------------------------|----------|
| Accredited                                                  |          |
| Average Efficiency (>1450 load combinations)                | 92.142%  |
| Average Noise Output (>1450 Load Combinations)              | 22.24dBA |
| Average PF (>1450 Load Combinations)                        | 0.952    |
| Efficiency With 10W ( $\leq 500W$ ) or 2% ( $> 500W$ ) Load | -        |
| Standby Power Consumption                                   | 0.0912W  |
| Non-Accredited                                              |          |
| 12V Ripple (Full Load)                                      | 44.27mV  |
| 5V Ripple (Full Load)                                       | 16.08mV  |
| 3.3V Ripple (Full Load)                                     | 15.27mV  |
| 5VSB Ripple (Full Load)                                     | 15.95mV  |
| 12V Load Regulation                                         | 0.27%    |
| 5V Load Regulation                                          | 0.24%    |
| 3.3V Load Regulation                                        | 0.85%    |
| 5VSB Load Regulation                                        | 2.11%    |
| Inrush Current                                              | 101.500A |
| 12V Transient Response (200%)                               | 11.38V   |
| 5V Transient Response (200%)                                | 4.939V   |
| 3.3V Transient Response (200%)                              | 3.241V   |
| 5VSB Transient Response (200%)                              | 4.938V   |
| Hold-Up Time & PWR_OK Signal                                | 27.40ms  |
| AC Loss to PWR_OK Hold Up Time                              | 23.00ms  |
| PWR_OK Inactive to DC Loss Delay                            | 4.40ms   |

|                              |         |         |
|------------------------------|---------|---------|
| PSU Timings: T1 (20% / 100%) | 82.0ms  | 81.0ms  |
| PSU Timings: T3 (20% / 100%) | 129.0ms | 130.0ms |
| OPP (28.93°C / 37.23°C)      | 123.50% | 123.50% |

Hold-Up Time & PWR\_OK Signal

|                                       |      |
|---------------------------------------|------|
| Hold-Up Time (ms)                     | 27.4 |
| AC Loss to PWR_OK Hold Up Time (ms)   | 23   |
| PWR_OK Inactive to DC Loss Delay (ms) | 4.4  |



Tables

115V

| Detailed Results   |          |          |           |          |           |        |
|--------------------|----------|----------|-----------|----------|-----------|--------|
|                    | Average  | Min      | Limit Min | Max      | Limit Max | Result |
| Mains Voltage RMS: | 114.88 V | 114.81 V | 113.85 V  | 114.95 V | 116.15 V  | PASS   |
| Mains Frequency:   | 60.00 Hz | 59.97 Hz | 59.40 Hz  | 60.03 Hz | 60.60 Hz  | PASS   |
| Mains Voltage CF:  | 1.419    | 1.417    | 1.340     | 1.421    | 1.490     | PASS   |
| Mains Voltage THD: | 0.21 %   | 0.16 %   | N/A       | 0.30 %   | 2.00 %    | PASS   |
| Real Power:        | 0.054 W  | 0.034 W  | N/A       | 0.075 W  | N/A       | N/A    |
| Apparent Power:    | 6.869 W  | 6.834 W  | N/A       | 6.910 W  | N/A       | N/A    |
| Power Factor:      | 0.009    | N/A      | N/A       | N/A      | N/A       | N/A    |

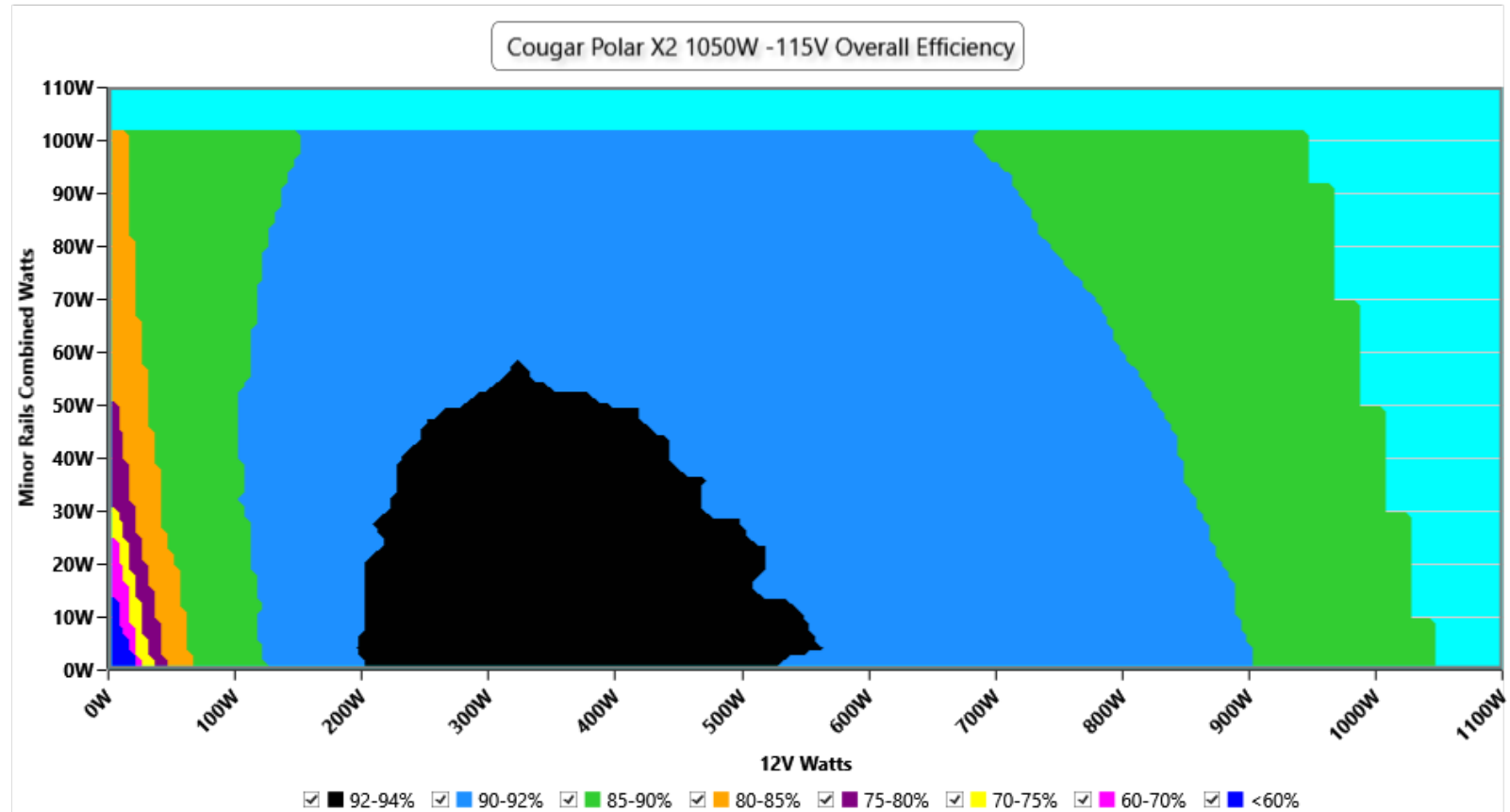
230V

| Detailed Results   |          |          |           |          |           |        |
|--------------------|----------|----------|-----------|----------|-----------|--------|
|                    | Average  | Min      | Limit Min | Max      | Limit Max | Result |
| Mains Voltage RMS: | 229.78 V | 229.72 V | 227.70 V  | 229.87 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 | 1.418    | 1.490  | PASS |
| Mains Voltage THD: | 0.17 %   | 0.14 %   | N/A   | 0.22 %   | 2.00 % | PASS |
| Real Power:        | 0.091 W  | 0.053 W  | N/A   | 0.149 W  | N/A    | N/A  |
| Apparent Power:    | 24.102 W | 24.043 W | N/A   | 24.182 W | N/A    | N/A  |
| Power Factor:      | 0.004    | N/A      | N/A   | N/A      | N/A    | N/A  |

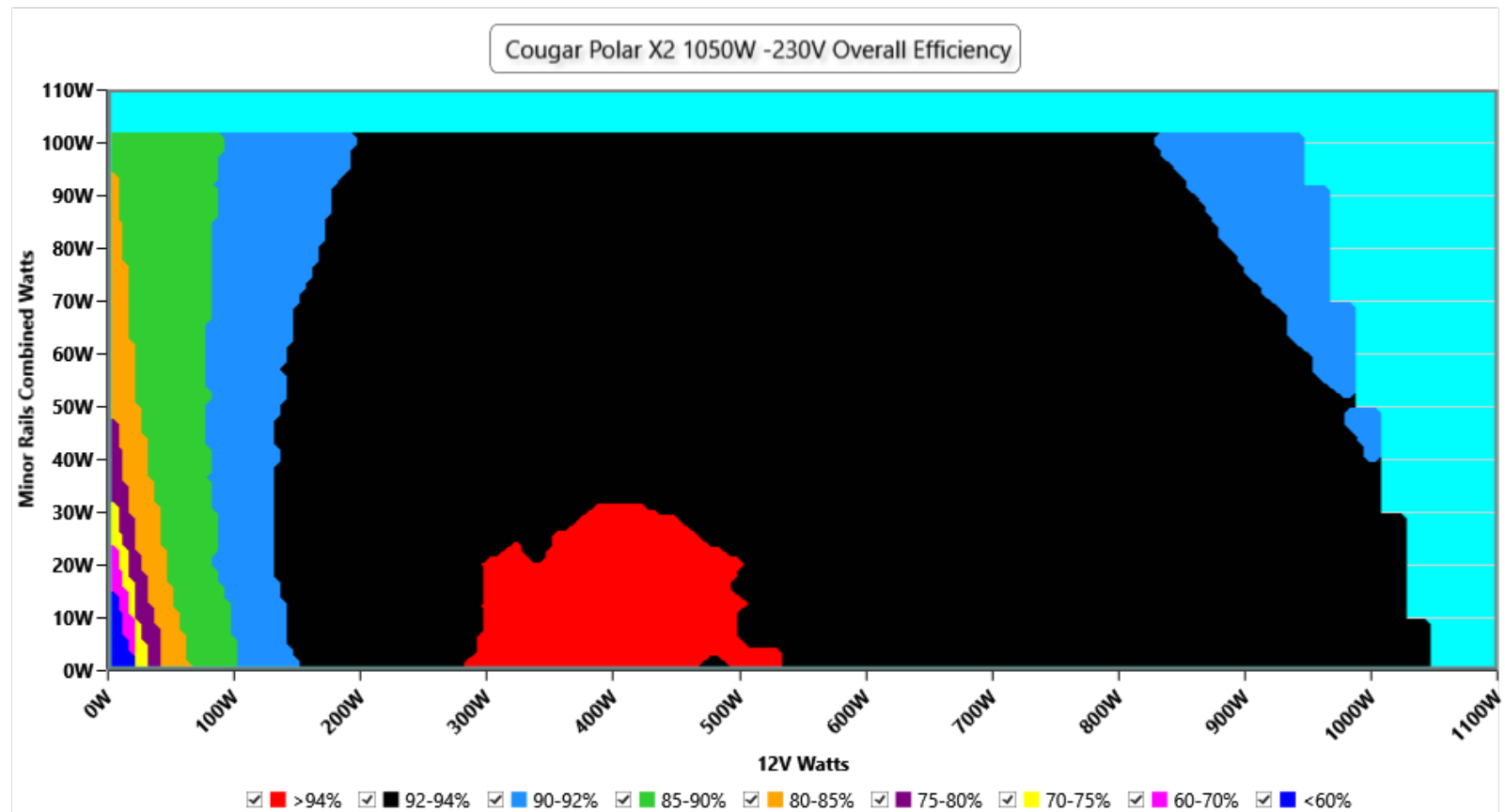
## Efficiency Graph

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

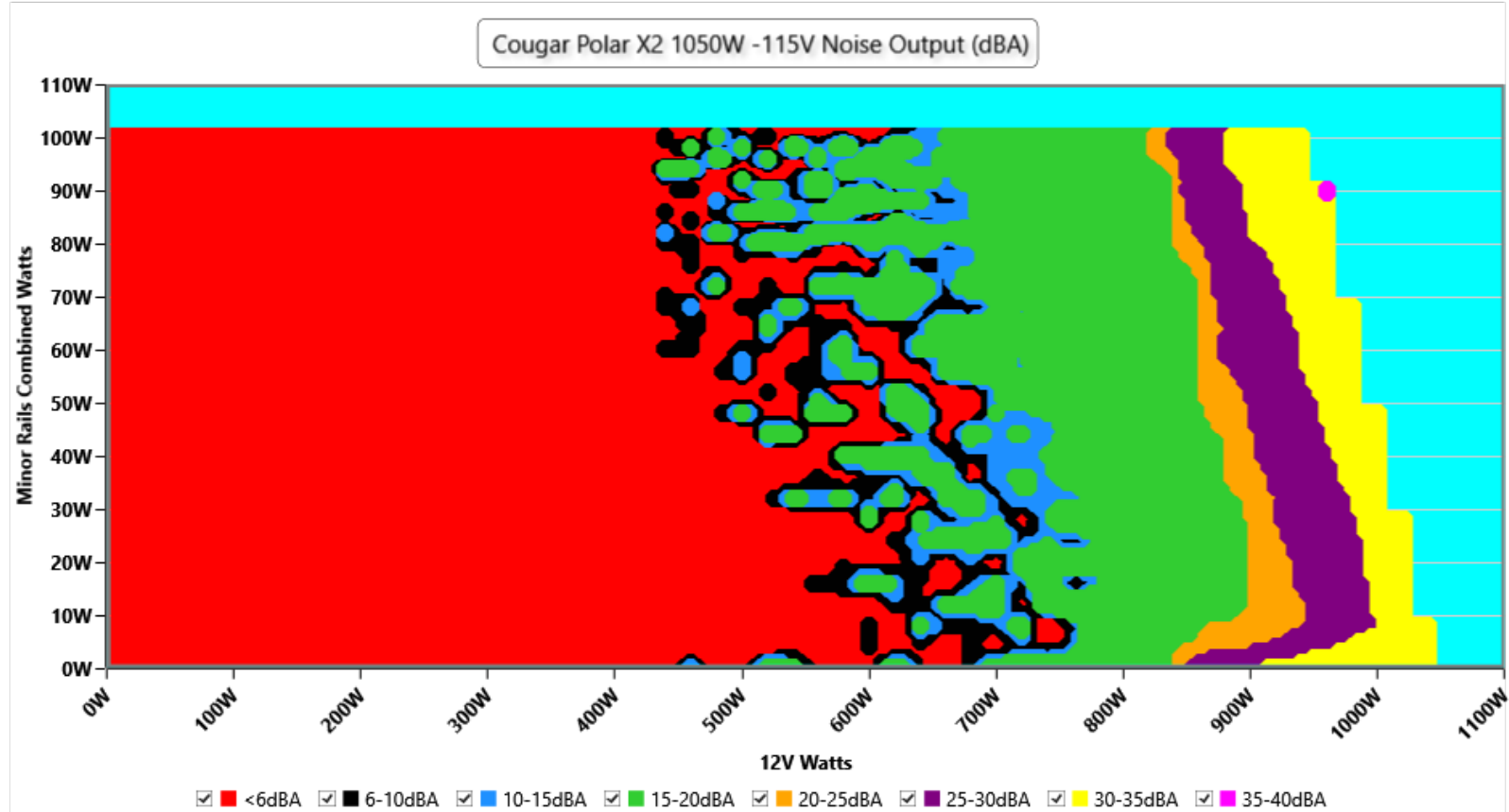


### INFO

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

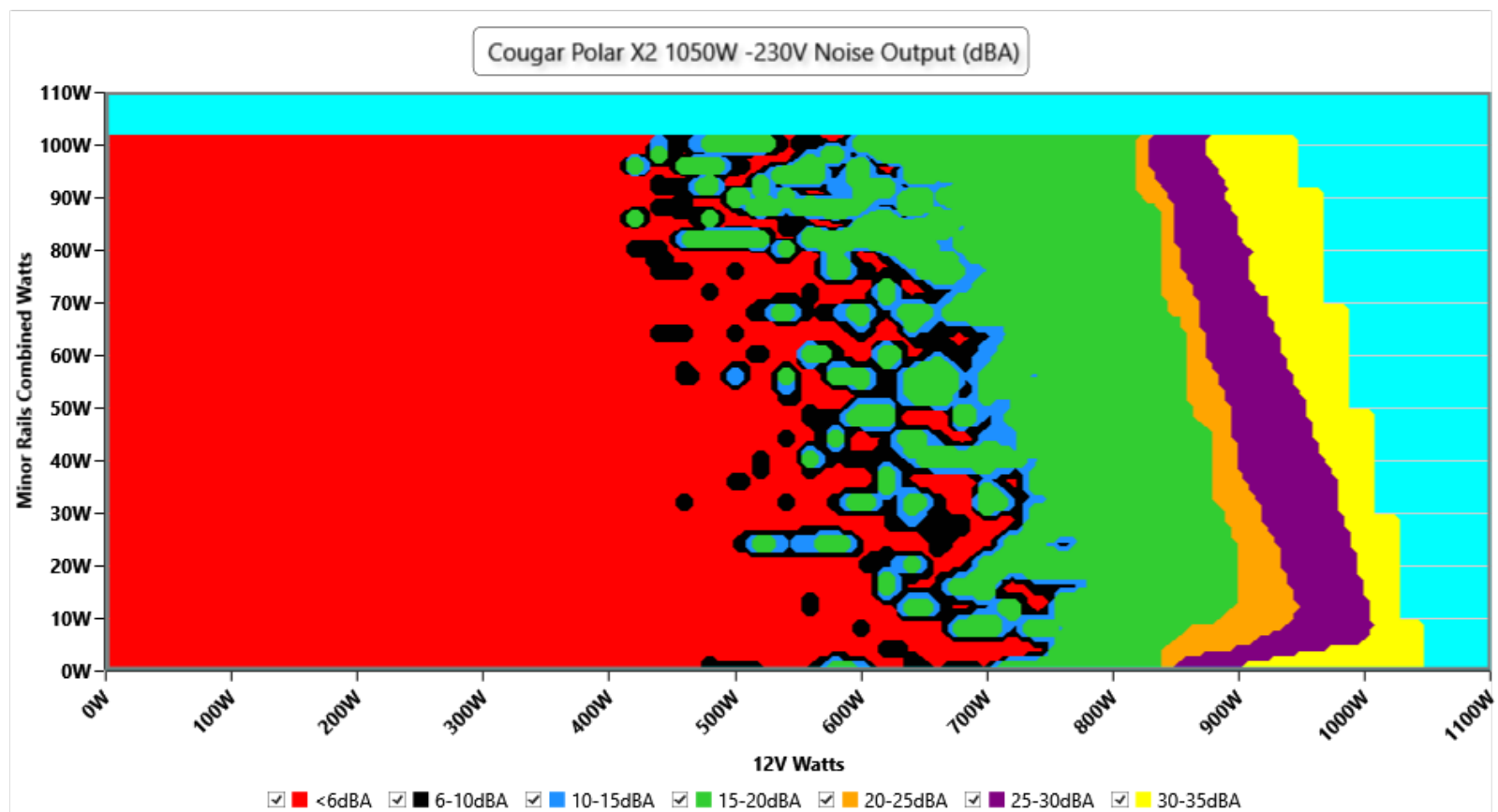
# Noise Graph

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



### INFO

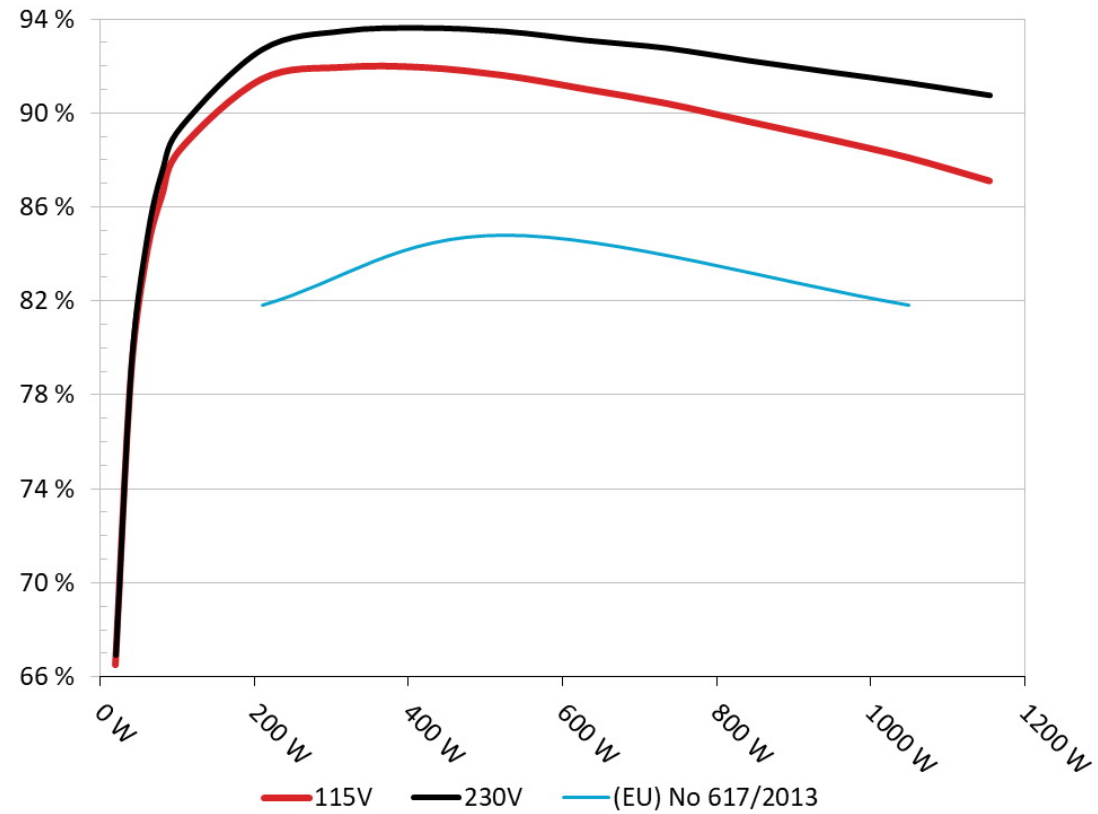
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

## Indicative Performance

### Efficiency under high ambient temperature

Efficiency: Cougar Polar X2 1050W

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



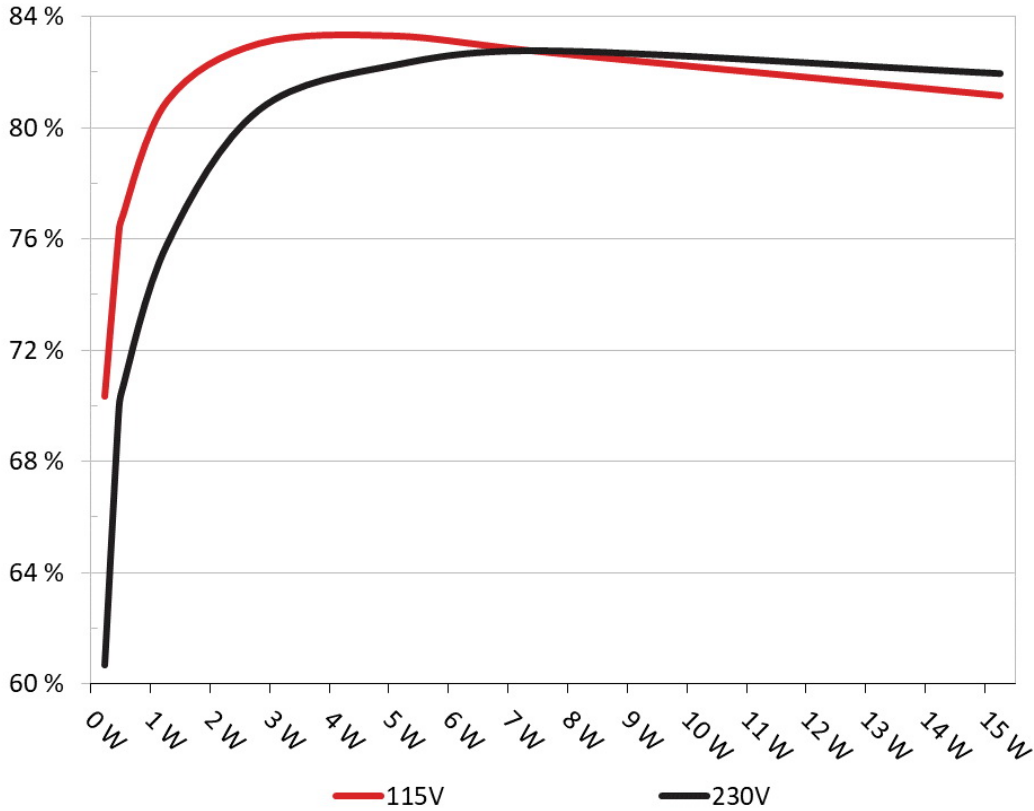
### INFO

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: Cougar Polar X2 1050W

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

| Test # | 5VSB   | DC/AC (Watts) | Efficiency | PF/AC Volts |
|--------|--------|---------------|------------|-------------|
| 1      | 0.045A | 0.231W        | 69.858%    | 0.05        |
|        | 5.135V | 0.331W        |            | 114.89V     |
| 2      | 0.09A  | 0.462W        | 75.616%    | 0.09        |
|        | 5.134V | 0.611W        |            | 114.88V     |
| 3      | 0.55A  | 2.819W        | 82.525%    | 0.324       |
|        | 5.126V | 3.416W        |            | 114.88V     |
| 4      | 1A     | 5.118W        | 82.799%    | 0.395       |
|        | 5.118V | 6.181W        |            | 114.88V     |
| 5      | 1.5A   | 7.664W        | 82.207%    | 0.439       |
|        | 5.11V  | 9.323W        |            | 114.87V     |
| 6      | 3A     | 15.244W       | 80.657%    | 0.492       |
|        | 5.082V | 18.9W         |            | 114.88V     |

#### 230V

| Test # | 5VSB   | DC/AC (Watts) | Efficiency | PF/AC Volts |
|--------|--------|---------------|------------|-------------|
| 1      | 0.045A | 0.231W        | 60.168%    | 0.017       |
|        | 5.135V | 0.385W        |            | 229.77V     |
| 2      | 0.09A  | 0.462W        | 69.2%      | 0.029       |
|        | 5.134V | 0.668W        |            | 229.78V     |
| 3      | 0.55A  | 2.819W        | 80.152%    | 0.141       |
|        | 5.126V | 3.517W        |            | 229.77V     |
| 4      | 1A     | 5.118W        | 81.772%    | 0.221       |
|        | 5.118V | 6.259W        |            | 229.78V     |
| 5      | 1.5A   | 7.664W        | 82.279%    | 0.274       |
|        | 5.109V | 9.315W        |            | 229.78V     |
| 6      | 3A     | 15.246W       | 81.462%    | 0.369       |
|        | 5.083V | 18.715W       |            | 229.77V     |

## 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%  | 6.838A  | 1.99A   | 1.98A   | 0.978A | 104.926       | 88.69%     | 0               | <6.0              | 44.32°C        | 0.957       |
|      | 12.186V | 5.025V  | 3.332V  | 5.114V | 118.306       |            |                 |                   | 40.1°C         | 114.83V     |
| 20%  | 14.680A | 2.985A  | 2.973A  | 1.175A | 209.908       | 91.654%    | 0               | <6.0              | 45.31°C        | 0.973       |
|      | 12.194V | 5.024V  | 3.33V   | 5.105V | 229.02        |            |                 |                   | 40.68°C        | 114.78V     |
| 30%  | 22.872A | 3.484A  | 3.471A  | 1.374A | 314.905       | 92.159%    | 0               | <6.0              | 46.29°C        | 0.977       |
|      | 12.192V | 5.022V  | 3.327V  | 5.096V | 341.702       |            |                 |                   | 41.29°C        | 114.74V     |
| 40%  | 31.022A | 3.983A  | 3.97A   | 1.573A | 419.401       | 92.152%    | 0               | <6.0              | 47.39°C        | 0.977       |
|      | 12.191V | 5.021V  | 3.324V  | 5.087V | 455.119       |            |                 |                   | 41.99°C        | 114.71V     |
| 50%  | 38.902A | 4.981A  | 4.967A  | 1.773A | 524.753       | 91.808%    | 0               | <6.0              | 48.41°C        | 0.981       |
|      | 12.191V | 5.019V  | 3.322V  | 5.078V | 571.572       |            |                 |                   | 42.4°C         | 114.67V     |
| 60%  | 46.711A | 5.979A  | 5.966A  | 1.973A | 629.297       | 91.232%    | 586             | 14.1              | 42.6°C         | 0.984       |
|      | 12.192V | 5.018V  | 3.319V  | 5.068V | 689.781       |            |                 |                   | 49.21°C        | 114.64V     |
| 70%  | 54.595A | 6.976A  | 6.965A  | 2.175A | 734.64        | 90.621%    | 849             | 25.0              | 43.33°C        | 0.986       |
|      | 12.190V | 5.017V  | 3.317V  | 5.058V | 810.666       |            |                 |                   | 50.43°C        | 114.6V      |
| 80%  | 62.489A | 7.975A  | 7.965A  | 2.277A | 839.474       | 89.862%    | 1233            | 35.8              | 43.65°C        | 0.988       |
|      | 12.187V | 5.016V  | 3.314V  | 5.05V  | 934.182       |            |                 |                   | 51.73°C        | 114.56V     |
| 90%  | 70.784A | 8.474A  | 8.455A  | 2.38A  | 944.862       | 89.107%    | 1695            | 45.0              | 44.23°C        | 0.989       |
|      | 12.184V | 5.015V  | 3.311V  | 5.042V | 1060.368      |            |                 |                   | 53.26°C        | 114.53V     |
| 100% | 78.811A | 8.976A  | 8.976A  | 2.984A | 1049.707      | 88.304%    | 1711            | 45.3              | 45.16°C        | 0.99        |
|      | 12.182V | 5.013V  | 3.309V  | 5.026V | 1188.746      |            |                 |                   | 55.25°C        | 114.48V     |
| 110% | 86.693A | 9.98A   | 10.074A | 2.989A | 1154.338      | 87.318%    | 1725            | 45.7              | 46.6°C         | 0.99        |
|      | 12.181V | 5.01V   | 3.305V  | 5.019V | 1322          |            |                 |                   | 57.52°C        | 114.45V     |
| CL1  | 0.114A  | 11.996A | 11.931A | 0A     | 101.292       | 83.865%    | 0               | <6.0              | 45.39°C        | 0.959       |
|      | 12.197V | 5.019V  | 3.327V  | 5.123V | 120.791       |            |                 |                   | 39.9°C         | 114.81V     |

| 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  | 20.006A | 0A      | 0A     | 101.326       | 82.216%    | 465             | 7.9               | 41.15°C        | 0.96        |
|      | 12.200V | 4.996V  | 3.335V  | 5.127V | 123.24        |            |                 |                   | 48.16°C        | 114.81V     |
| CL3  | 0.113A  | 0A      | 19.922A | 0A     | 67.381        | 76.169%    | 0               | <6.0              | 51.65°C        | 0.944       |
|      | 12.200V | 5.019V  | 3.313V  | 5.122V | 88.463        |            |                 |                   | 42.63°C        | 114.83V     |
| CL4  | 86.117A | 0A      | 0A      | 0A     | 1049.469      | 88.889%    | 1706            | 45.2              | 45°C           | 0.99        |
|      | 12.186V | 5.01V   | 3.313V  | 5.082V | 1180.656      |            |                 |                   | 55.98°C        | 114.49V     |

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%  | 6.836A  | 1.99A  | 1.98A  | 0.978A | 104.926       | 89.637%    | 0               | <6.0              | 44.36°C        | 0.87        |
|      | 12.190V | 5.024V | 3.333V | 5.114V | 117.059       |            |                 |                   | 40.13°C        | 229.84V     |
| 20%  | 14.677A | 2.986A | 2.973A | 1.175A | 209.908       | 92.917%    | 0               | <6.0              | 45.39°C        | 0.928       |
|      | 12.197V | 5.023V | 3.33V  | 5.105V | 225.912       |            |                 |                   | 40.67°C        | 229.82V     |
| 30%  | 22.866A | 3.484A | 3.471A | 1.374A | 314.911       | 93.704%    | 0               | <6.0              | 46.51°C        | 0.952       |
|      | 12.195V | 5.022V | 3.327V | 5.096V | 336.078       |            |                 |                   | 41.42°C        | 229.81V     |
| 40%  | 31.016A | 3.984A | 3.97A  | 1.573A | 419.403       | 93.833%    | 0               | <6.0              | 47.35°C        | 0.961       |
|      | 12.194V | 5.02V  | 3.324V | 5.087V | 446.969       |            |                 |                   | 41.82°C        | 229.78V     |
| 50%  | 38.897A | 4.981A | 4.968A | 1.773A | 524.76        | 93.687%    | 0               | <6.0              | 48.36°C        | 0.967       |
|      | 12.193V | 5.019V | 3.321V | 5.077V | 560.124       |            |                 |                   | 42.44°C        | 229.77V     |
| 60%  | 46.712A | 5.978A | 5.965A | 1.974A | 629.322       | 93.31%     | 627             | 16.3              | 42.57°C        | 0.971       |
|      | 12.192V | 5.019V | 3.32V  | 5.067V | 674.451       |            |                 |                   | 49.14°C        | 229.76V     |
| 70%  | 54.600A | 6.976A | 6.965A | 2.175A | 734.657       | 92.974%    | 898             | 26.7              | 43.27°C        | 0.974       |
|      | 12.189V | 5.017V | 3.317V | 5.058V | 790.177       |            |                 |                   | 50.3°C         | 229.74V     |
| 80%  | 62.497A | 7.975A | 7.965A | 2.277A | 839.503       | 92.453%    | 1348            | 38.5              | 43.69°C        | 0.976       |
|      | 12.186V | 5.016V | 3.314V | 5.05V  | 908.034       |            |                 |                   | 51.77°C        | 229.72V     |
| 90%  | 70.787A | 8.474A | 8.454A | 2.38A  | 944.892       | 91.965%    | 1696            | 45.0              | 44.4°C         | 0.979       |
|      | 12.183V | 5.015V | 3.312V | 5.042V | 1027.445      |            |                 |                   | 53.47°C        | 229.7V      |

| Test | 12V     | 5V      | 3.3V    | 5VSB   | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|------|---------|---------|---------|--------|---------------|------------|-----------------|-------------------|----------------|-------------|
| 100% | 78.813A | 8.976A  | 8.976A  | 2.984A | 1049.734      | 91.496%    | 1712            | 45.4              | 45.02°C        | 0.98        |
|      | 12.181V | 5.013V  | 3.309V  | 5.026V | 1147.305      |            |                 |                   | 55.04°C        | 229.68V     |
| 110% | 86.699A | 9.98A   | 10.074A | 2.989A | 1154.352      | 90.965%    | 1724            | 45.6              | 46.52°C        | 0.981       |
|      | 12.180V | 5.01V   | 3.305V  | 5.019V | 1269.012      |            |                 |                   | 57.42°C        | 229.66V     |
| CL1  | 0.114A  | 11.997A | 11.931A | 0A     | 101.295       | 85.104%    | 379             | <6.0              | 40.42°C        | 0.872       |
|      | 12.196V | 5.018V  | 3.327V  | 5.123V | 119.024       |            |                 |                   | 45.96°C        | 229.83V     |
| CL2  | 0.113A  | 20.009A | 0A      | 0A     | 101.329       | 83.061%    | 0               | <6.0              | 47.78°C        | 0.874       |
|      | 12.200V | 4.995V  | 3.335V  | 5.127V | 121.993       |            |                 |                   | 40.7°C         | 229.83V     |
| CL3  | 0.113A  | 0A      | 19.923A | 0A     | 67.382        | 77%        | 375             | <6.0              | 41.6°C         | 0.841       |
|      | 12.199V | 5.019V  | 3.313V  | 5.122V | 87.507        |            |                 |                   | 50.62°C        | 229.85V     |
| CL4  | 86.140A | 0A      | 0A      | 0A     | 1049.525      | 92%        | 1707            | 45.3              | 44.41°C        | 0.98        |
|      | 12.184V | 5.012V  | 3.314V  | 5.082V | 1140.785      |            |                 |                   | 55.37°C        | 229.68V     |

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  | 1.216A  | 0.497A | 0.494A | 0.195A | 19.988        | 66.717%    | 0               | <6.0              | 39.61°C        | 0.881       |
|      | 12.202V | 5.025V | 3.337V | 5.133V | 29.96         |            |                 |                   | 36.53°C        | 114.85V     |
| 40W  | 2.681A  | 0.696A | 0.692A | 0.292A | 39.989        | 78.955%    | 0               | <6.0              | 40.31°C        | 0.921       |
|      | 12.189V | 5.025V | 3.336V | 5.13V  | 50.646        |            |                 |                   | 37.03°C        | 114.85V     |
| 60W  | 4.146A  | 0.895A | 0.89A  | 0.39A  | 59.988        | 84.108%    | 0               | <6.0              | 42.69°C        | 0.938       |
|      | 12.186V | 5.025V | 3.335V | 5.127V | 71.331        |            |                 |                   | 38.95°C        | 114.84V     |
| 80W  | 5.604A  | 1.094A | 1.089A | 0.488A | 79.918        | 86.66%     | 0               | <6.0              | 43.22°C        | 0.946       |
|      | 12.186V | 5.026V | 3.334V | 5.124V | 92.228        |            |                 |                   | 39.31°C        | 114.83V     |

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  | 1.215A  | 0.497A | 0.494A | 0.195A | 19.987        | 67.141%    | 0               | <6.0              | 39.92°C        | 0.625       |
|      | 12.214V | 5.025V | 3.337V | 5.132V | 29.772        |            |                 |                   | 36.85°C        | 229.85V     |
| 40W  | 2.680A  | 0.697A | 0.692A | 0.292A | 39.989        | 79.4%      | 0               | <6.0              | 34.67°C        | 0.75        |
|      | 12.196V | 5.025V | 3.336V | 5.13V  | 50.366        |            |                 |                   | 37.99°C        | 229.85V     |
| 60W  | 4.144A  | 0.895A | 0.89A  | 0.39A  | 59.989        | 84.771%    | 0               | <6.0              | 41.82°C        | 0.811       |
|      | 12.190V | 5.024V | 3.335V | 5.127V | 70.767        |            |                 |                   | 38.36°C        | 229.84V     |
| 80W  | 5.602A  | 1.094A | 1.088A | 0.488A | 79.918        | 87.729%    | 0               | <6.0              | 42.87°C        | 0.845       |
|      | 12.189V | 5.025V | 3.334V | 5.124V | 91.097        |            |                 |                   | 39.03°C        | 229.84V     |

The results above are not used in the certification process

## Ripple Measurements

## 115V

| Test       | 12V     | 5V      | 3.3V    | 5VSB    | Pass/Fail |
|------------|---------|---------|---------|---------|-----------|
| 10% Load   | 15.09mV | 9.14mV  | 9.13mV  | 9.29mV  | Pass      |
| 20% Load   | 35.70mV | 10.98mV | 9.54mV  | 9.23mV  | Pass      |
| 30% Load   | 34.83mV | 9.60mV  | 9.80mV  | 9.44mV  | Pass      |
| 40% Load   | 32.02mV | 9.70mV  | 9.54mV  | 10.37mV | Pass      |
| 50% Load   | 32.38mV | 11.08mV | 10.00mV | 10.32mV | Pass      |
| 60% Load   | 31.10mV | 11.44mV | 10.82mV | 11.19mV | Pass      |
| 70% Load   | 26.75mV | 11.29mV | 10.67mV | 11.49mV | Pass      |
| 80% Load   | 27.93mV | 12.83mV | 13.64mV | 11.80mV | Pass      |
| 90% Load   | 28.28mV | 14.16mV | 13.75mV | 12.27mV | Pass      |
| 100% Load  | 43.53mV | 15.69mV | 14.89mV | 14.69mV | Pass      |
| 110% Load  | 46.21mV | 16.90mV | 15.89mV | 14.35mV | Pass      |
| Crossload1 | 13.87mV | 12.24mV | 14.25mV | 12.92mV | Pass      |
| Crossload2 | 11.51mV | 21.35mV | 14.83mV | 11.91mV | Pass      |

| Test       | 12V     | 5V      | 3.3V    | 5VSB    | Pass/Fail |
|------------|---------|---------|---------|---------|-----------|
| Crossload3 | 9.72mV  | 9.45mV  | 16.21mV | 11.90mV | Pass      |
| Crossload4 | 43.09mV | 13.42mV | 11.30mV | 16.18mV | Pass      |

The results above are not used in the certification process

## 230V

| Test       | 12V     | 5V      | 3.3V    | 5VSB    | Pass/Fail |
|------------|---------|---------|---------|---------|-----------|
| 10% Load   | 9.16mV  | 9.39mV  | 8.98mV  | 8.77mV  | Pass      |
| 20% Load   | 41.89mV | 9.19mV  | 9.39mV  | 9.03mV  | Pass      |
| 30% Load   | 36.01mV | 9.44mV  | 9.13mV  | 9.34mV  | Pass      |
| 40% Load   | 33.91mV | 9.80mV  | 9.90mV  | 10.57mV | Pass      |
| 50% Load   | 33.86mV | 10.52mV | 10.57mV | 11.39mV | Pass      |
| 60% Load   | 33.20mV | 11.24mV | 9.90mV  | 11.60mV | Pass      |
| 70% Load   | 29.26mV | 11.60mV | 11.39mV | 12.01mV | Pass      |
| 80% Load   | 29.16mV | 12.11mV | 14.00mV | 11.70mV | Pass      |
| 90% Load   | 44.40mV | 33.87mV | 40.74mV | 35.40mV | Pass      |
| 100% Load  | 44.27mV | 16.08mV | 15.27mV | 15.95mV | Pass      |
| 110% Load  | 46.04mV | 16.51mV | 15.49mV | 14.73mV | Pass      |
| Crossload1 | 14.17mV | 12.83mV | 15.17mV | 12.34mV | Pass      |
| Crossload2 | 12.22mV | 20.94mV | 14.93mV | 12.21mV | Pass      |
| Crossload3 | 9.26mV  | 9.34mV  | 15.70mV | 12.06mV | Pass      |
| Crossload4 | 43.81mV | 14.21mV | 11.05mV | 16.24mV | Pass      |

The results above are not used in the certification process

Cougar Polar X2 1050W



Top side



Power specifications label

Cybenetics

ETA

LAMBDA

SAFE

DELTA

PHI

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