

Lab ID#: CG12002174
Receipt Date: May 4, 2023
Test Date: May 10, 2023

Report: 23PS2174A

Report Date: May 11, 2023

DUT INFORMATION

| | |
|--------------------|------------------|
| Brand | Cougar |
| Manufacturer (OEM) | XHY-Power |
| Series | Polar X2 |
| Model Number | CGR PRX2-1200 |
| Serial Number | 12BC03PX12000012 |
| DUT Notes | |

DUT SPECIFICATIONS

| | |
|------------------------|---|
| Rated Voltage (Vrms) | 100-240 |
| Rated Current (Arms) | 15-7 |
| Rated Frequency (Hz) | 47-63 |
| Rated Power (W) | 1200 |
| Type | ATX12V |
| Cooling | 135mm Hydraulic Dynamic Bearing Fan (DWPH EFF-14E12H) |
| Semi-Passive Operation | ✓ |
| Cable Design | Fully Modular |

TEST EQUIPMENT

| | |
|-----------------------|---|
| Electronic Loads | Chroma 63601-5 x2 Chroma 63600-2 63640-80-80 x10 63610-80-20 |
| AC Sources | Chroma 6530, APM SP300VAC4000W-P |
| Power Analyzers | RS HMC8015, N4L PPA1530, N4L PPA5530 |
| Oscilloscopes | Picoscope 4444, Rigol DS7014, 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, Keithley 2015 - THD |
| UPS | FSP Champ Tower 3kVA, CyberPower OLS3000E 3kVA |
| Isolation Transformer | 4kVA |

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RESULTS

| | |
|--|------------------------------------|
| Temperature Range (°C /°F) | 30-32 / 86-89.6 (+-2°C / +- 3.6°F) |
| ErP Lot 3/6 Ready | ✓ |
| (EU) No 617/2013 Compliance | ✓ |
| ALPM (Alternative Low Power Mode) compatible | ✓ |
| ATX v3.0 PSU Power Excursion | ✓ |

115V

| | |
|---|-------------|
| Average Efficiency | 89.750% |
| Efficiency With 10W (≤500W) or 2% (>500W) | 64.642 |
| Average Efficiency 5VSB | 80.947% |
| Standby Power Consumption (W) | 0.0093000 |
| Average PF | 0.981 |
| Avg Noise Output | 26.18 dB(A) |
| Efficiency Rating (ETA) | PLATINUM |
| Noise Rating (LAMBDA) | A- |

POWER SPECIFICATIONS

| Rail | | 3.3V | 5V | 12V | 5VSB | -12V |
|----------------------|-------|------|----|------|------|------|
| Max. Power | Amps | 20 | 20 | 100 | 3 | 0.3 |
| | Watts | 100 | | 1200 | 15 | 3.6 |
| Total Max. Power (W) | | 1200 | | | | |

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CABLES AND CONNECTORS

Modular Cables

| Description | Cable Count | Connector Count (Total) | Gauge | In Cable Capacitors |
|---------------------------------------|-------------|-------------------------|----------|---------------------|
| ATX connector 20+4 pin (650mm) | 1 | 1 | 18-22AWG | No |
| 4+4pin EPS12V (650mm) | 1 | 1 | 16AWG | No |
| 8 pin EPS12V (650mm) | 1 | 1 | 16AWG | No |
| 6+2 pin PCIe (650mm+100mm) | 3 | 6 | 16AWG | No |
| 6+2 pin PCIe (650mm) | 1 | 1 | 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 (510mm+120mm+120mm+120mm) | 1 | 4 | 18AWG | No |
| AC Power Cord (1400mm) - C13 coupler | 1 | 1 | 18AWG | - |

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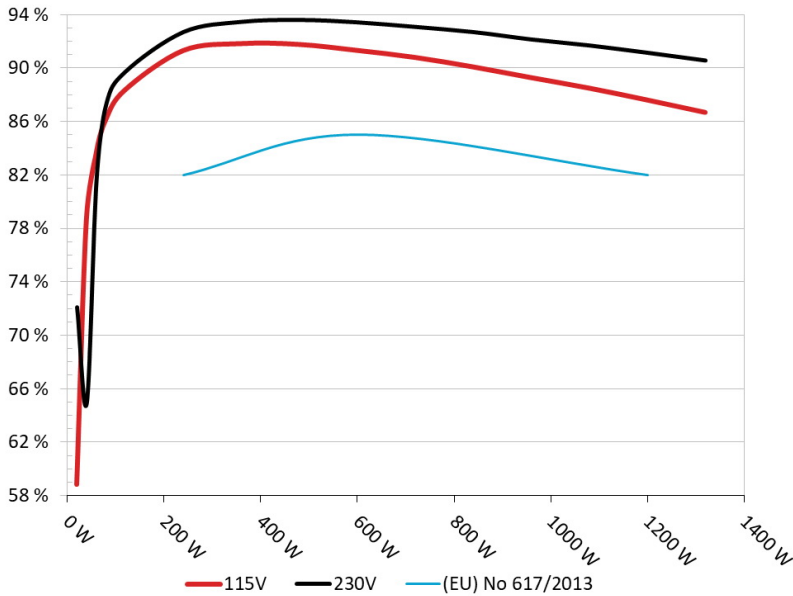
| | |
|------------------------|---|
| General Data | - |
| Manufacturer (OEM) | XHY-Power |
| PCB Type | Double Sided |
| Primary Side | - |
| Transient Filter | 4x Y caps, 2x X caps, 2x CM chokes, 1x MOV |
| Inrush Protection | NTC Thermistor MF72 5D15 & Relay HF46F-G |
| Bridge Rectifier(s) | 2x ALB1560U (600V, 15A @ 100°C) |
| APFC MOSFETs | 2x 65R078W |
| APFC Boost Diode | 1x G3S06510A (650V, 10A @ 155°C) |
| Bulk Cap(s) | 2x TK (420V, 680uF, 2000h @ 105°C, LGW) |
| Main Switchers | 4x Ncepower NCE65TF130 (650V, 18A @ 100°C, Rds(on): 0.130hm) |
| APFC Controller | Champion CM6500UNX |
| Resonant Controller | Champion CM6901T6 |
| Topology | Primary side: APFC, Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters |
| Secondary Side | - |
| +12V MOSFETs | 8x GR IGRO CRSM016N06L2 (60V, 136A @ 100°C, Rds(on): 1.8mOhm) |
| 5V & 3.3V | DC-DC Converters: 6x Excelliance MOS EMB07N03V (20V, 17A @ 100°C, Rds(on): 9mOhm) PWM Controller(s): uPI-Semi uP3861P |
| Filtering Capacitors | Electrolytic: 5x Nippon Chemi-Con (5-6.000h @ 105°C, KZH), 9x Nippon Chemi-Con (4-10,000h @ 105°C, KY) Polymer: 17x FPCAP, 4x no info |
| Supervisor IC | IN1S4241-SDG |
| Fan Model | DWPH EFF-14E12H (140mm, 12V, 0.30A, Hydraulic Bearing Fan) |
| 5VSB Circuit | - |
| Rectifier | 60R10S SBR |
| Standby PWM Controller | Excelliance MOS EM8569C |

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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Cougar Polar X2 1200W
Ambient: 37°C - 47°C (98.6°F - 116.6°F)

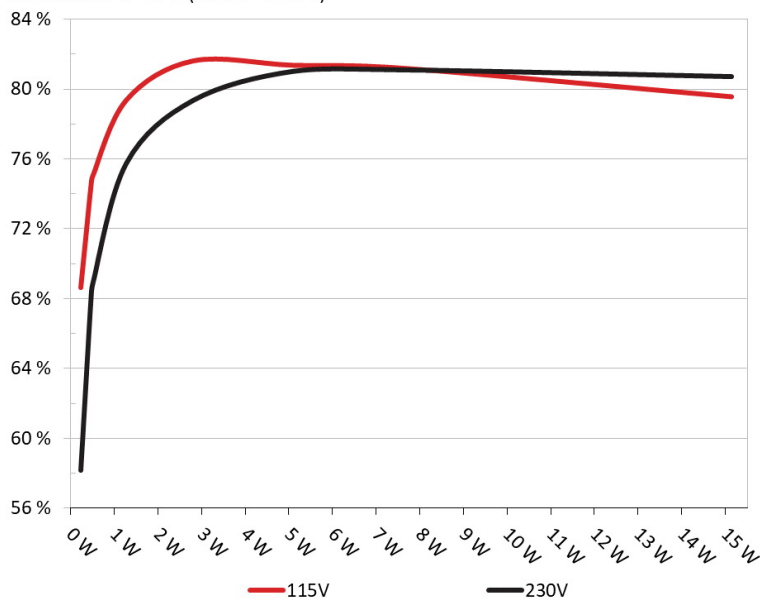


INFO

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: Cougar Polar X2 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

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

| Test # | 5VSB | DC/AC (Watts) | Efficiency | PF/AC Volts |
|--------|--------|---------------|------------|-------------|
| 1 | 0.045A | 0.23W | 69.124% | 0.05 |
| | 5.106V | 0.333W | | 114.84V |
| 2 | 0.09A | 0.459W | 74.861% | 0.089 |
| | 5.105V | 0.613W | | 114.85V |
| 3 | 0.55A | 2.802W | 82.102% | 0.319 |
| | 5.096V | 3.413W | | 114.85V |
| 4 | 1A | 5.086W | 81.856% | 0.387 |
| | 5.087V | 6.213W | | 114.84V |
| 5 | 1.5A | 7.615W | 81.684% | 0.432 |
| | 5.076V | 9.322W | | 114.85V |
| 6 | 3A | 15.133W | 80.053% | 0.49 |
| | 5.045V | 18.904W | | 114.84V |

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

| Test # | 5VSB | DC/AC (Watts) | Efficiency | PF/AC Volts |
|--------|--------|---------------|------------|-------------|
| 1 | 0.045A | 0.23W | 58.654% | 0.017 |
| | 5.106V | 0.393W | | 229.85V |
| 2 | 0.09A | 0.459W | 68.306% | 0.029 |
| | 5.105V | 0.673W | | 229.86V |
| 3 | 0.55A | 2.802W | 79.83% | 0.139 |
| | 5.096V | 3.511W | | 229.85V |
| 4 | 1A | 5.086W | 81.494% | 0.218 |
| | 5.087V | 6.242W | | 229.85V |
| 5 | 1.5A | 7.615W | 81.579% | 0.273 |
| | 5.076V | 9.334W | | 229.85V |
| 6 | 3A | 15.136W | 81.196% | 0.362 |
| | 5.046V | 18.641W | | 229.86V |

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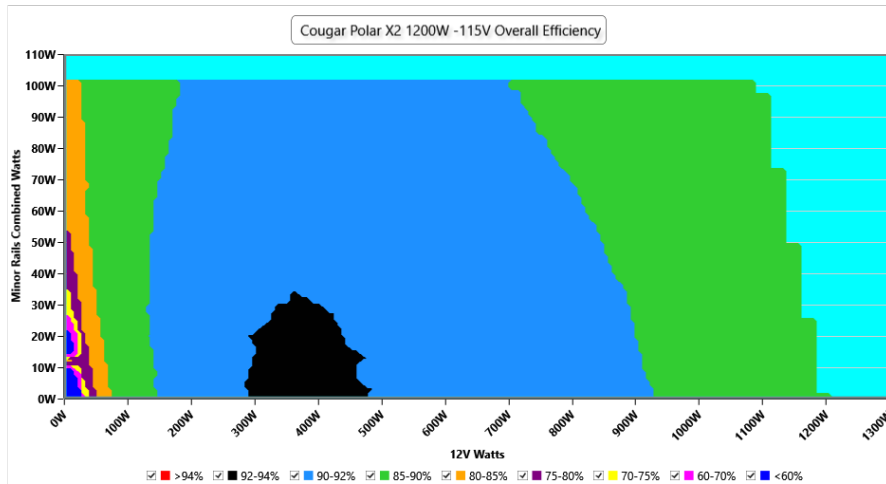
115V

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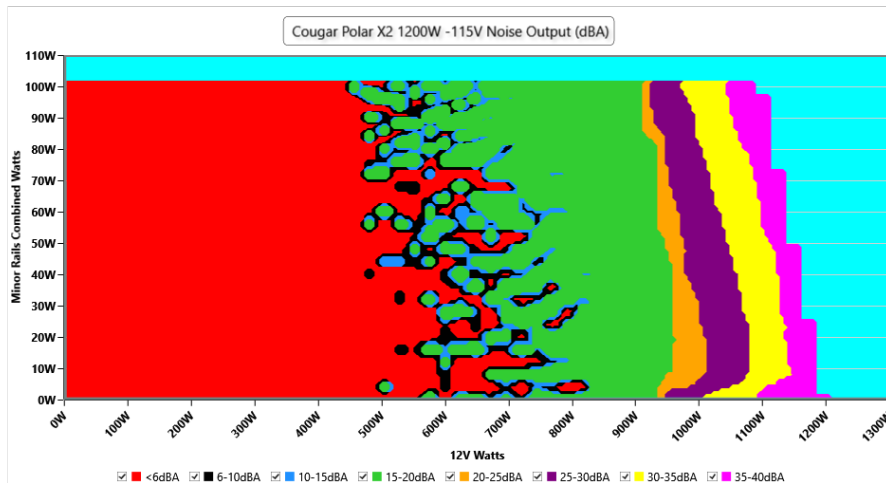
EFFICIENCY GRAPH 115V



INFO

This graph depicts the PSU's efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations

NOISE GRAPH 115V



INFO

The PSU's noise in its entire operational range and under 30-32 °C (+2 °C) ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -115V

Detailed Results

| | Average | Min | Limit Min | Max | Limit Max | Result |
|--------------------|----------|----------|-----------|----------|-----------|--------|
| Mains Voltage RMS: | 114.87 V | 114.82 V | 113.85 V | 114.90 V | 116.15 V | PASS |
| Mains Frequency: | 60.00 Hz | 59.98 Hz | 59.40 Hz | 60.02 Hz | 60.60 Hz | PASS |
| Mains Voltage CF: | 1.417 | 1.416 | 1.340 | 1.419 | 1.490 | PASS |
| Mains Voltage THD: | 0.14 % | 0.11 % | N/A | 0.19 % | 2.00 % | PASS |
| Real Power: | 0.009 W | -0.006 W | N/A | 0.024 W | N/A | N/A |
| Apparent Power: | 7.378 W | 7.348 W | N/A | 7.416 W | N/A | N/A |
| Power Factor: | 0.003 | N/A | N/A | N/A | N/A | N/A |

INFO

This graph is generated by the PPA Standby Power Analysis software which takes full control of the power analyzer during the whole procedure. This application features all of the EN50564 & IEC62301 test limits for standby power software testing

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COMMISSION REGULATION (EU) NO 617/2013 TESTING 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% | 8.050A | 1.981A | 1.973A | 0.984A | 119.972 | 88.361% | 0 | <6.0 | 44.49°C | 0.958 |
| | 12.220V | 5.046V | 3.345V | 5.08V | 135.777 | | | | 40.05°C | 114.81V |
| 20% | 17.109A | 2.973A | 2.962A | 1.184A | 239.919 | 91.299% | 0 | <6.0 | 45.69°C | 0.968 |
| | 12.218V | 5.045V | 3.342V | 5.069V | 262.787 | | | | 40.84°C | 114.77V |
| 50% | 44.919A | 4.962A | 4.95A | 1.788A | 599.256 | 91.32% | 703 | 19.5 | 42.42°C | 0.988 |
| | 12.216V | 5.039V | 3.333V | 5.035V | 656.217 | | | | 48.51°C | 114.66V |
| 100% | 90.924A | 8.942A | 8.946A | 3.018A | 1199.391 | 87.607% | 1713 | 45.9 | 45.49°C | 0.993 |
| | 12.205V | 5.033V | 3.32V | 4.971V | 1369.061 | | | | 55.59°C | 114.43V |

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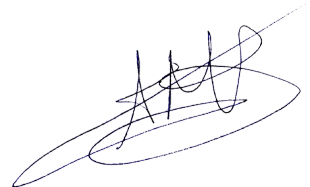


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Power specifications label

CERTIFICATIONS 115V

Aristeidis Bitziopoulos
Lab Director

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