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## Cooler Master XG 650

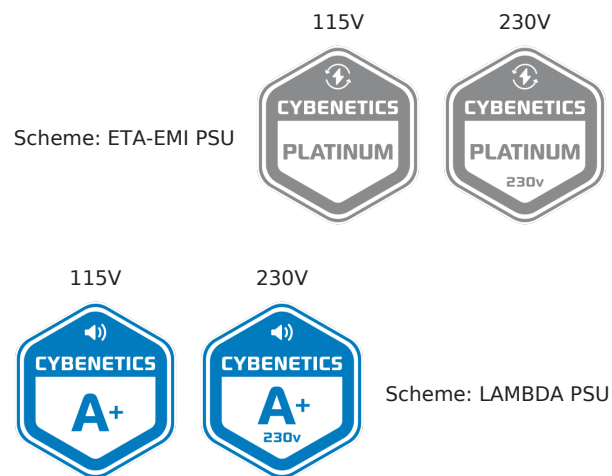
Serial Number

Lab ID CM65001890

Certification ID 251890

Test Result Report ID: 21PS1890A

Certificate Issue Date: Aug 31, 2021



A handwritten signature in blue ink, appearing to read "A. Bitziopoulos", is positioned above the name of the Certification Body General Manager.

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                             | Cooler Master                            |
| Model                             | XG 650                                   |
| OEM/ODM                           | Huizhou Xin Hui Yuan Tech (Fusion Power) |
| Serial Number                     |                                          |
| Product Specifications            |                                          |
| Manufacturer-Provided Information |                                          |
| Rated Voltage (Vrms)              | 100-240                                  |
| Rated Current (Arms)              | 8-4                                      |
| Rated Frequency (Hz)              | 50-60                                    |

|                                                   |                                                                                     |
|---------------------------------------------------|-------------------------------------------------------------------------------------|
| Rated Power (W)                                   | 650                                                                                 |
| Operating Temperature (Continuous Full Load) (°C) |                                                                                     |
| Type                                              | ATX12V                                                                              |
| Cable Design                                      | Fully Modular                                                                       |
| Warranty                                          | -                                                                                   |
| Cybenetics Measurements                           |                                                                                     |
| Dimensions (W x H x D)                            |                                                                                     |
| Weight                                            |                                                                                     |
| Cooling                                           | 140mm Fluid Dynamic Bearing Fan<br>(DWPH EFC-14E12D)                                |
| Semi-Passive Operation                            | ✓ (selectable)                                                                      |
| Cybenetics Testing Information                    |                                                                                     |
| Lab ID                                            | CM65001890                                                                          |
| Date of receipt                                   | Aug 3, 2021                                                                         |
| Testing Date                                      | Aug 30, 2021                                                                        |
| Report Issued Date                                | Aug 31, 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 (650mm)        | 1           | 1                       | 18AWG    | No                  |
| 4+4 pin EPS12V (650mm)                | 1           | 1                       | 18AWG    | No                  |
| 8 pin EPS12V (650mm)                  | 1           | 1                       | 18AWG    | No                  |
| 6+2 pin PCIe (550mm+125mm)            | 2           | 4                       | 16-18AWG | No                  |
| SATA (500mm+125mm+125mm+125mm)        | 2           | 8                       | 18AWG    | No                  |
| 4 pin Molex (500mm+125mm+125mm+125mm) | 1           | 4                       | 18AWG    | No                  |

Power Specifications

|                      |       |      |    |       |      |      |
|----------------------|-------|------|----|-------|------|------|
| Rail                 |       | 3.3V | 5V | 12V   | 5VSB | -12V |
| Max. Power           | Amps  | 20   | 20 | 54.1  | 3    | 0.3  |
|                      | Watts | 100  |    | 649.2 | 15   | 3.6  |
| Total Max. Power (W) |       | 650  |    |       |      |      |

Parts Description

|                      |                                                                                                                                                                                                           |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General Data         |                                                                                                                                                                                                           |
| Manufacturer (OEM)   | Huizhou Xin Hui Yuan Tech (Fusion Power)                                                                                                                                                                  |
| PCB Type             | Double Sided                                                                                                                                                                                              |
| Primary Side         |                                                                                                                                                                                                           |
| Transient Filter     | 4x Y caps, 2x X caps, 2x CM chokes, 1x MOV                                                                                                                                                                |
| Inrush Protection    | 1x NTC Thermistor MF72-5D15 (5 Ohm) & Relay                                                                                                                                                               |
| Bridge Rectifier(s)  | 2x MCC GBU15KL (800V, 15A @ 100°C)                                                                                                                                                                        |
| APFC MOSFETs         | 2x NCE Power NCE65TF130 (650V, 18A @ 100°C, Rds(on): 0.130Ohm)                                                                                                                                            |
| APFC Boost Diode     | 1x CDP0865G1                                                                                                                                                                                              |
| Bulk Cap(s)          | 1x TK (450V, 470uF, 2,000h @ 105°C, LGW)                                                                                                                                                                  |
| Main Switchers       | 4x NCE Power NCE65T180F (650V, 13.2A @ 100°C, Rds(on): 0.180Ohm)                                                                                                                                          |
| Digital Controllers  | Champion CM6500UNX                                                                                                                                                                                        |
| MCU                  | Champion CM6901T6X                                                                                                                                                                                        |
| Topology             | Primary side: APFC, Full-Bridge & LLC converter<br>Secondary side: Synchronous Rectification & DC-DC converters                                                                                           |
| Secondary Side       |                                                                                                                                                                                                           |
| +12V MOSFETs         | 4x Excelliance MOS EMP16N04HS (40V, 100A @ 100°C, Rds(on): 1.6mOhm)                                                                                                                                       |
| 5V & 3.3V            | DC-DC Converters: 2x Excelliance MOS EMB04N03A (30V, 55A @ 100°C, Rds(on): 4mOhm) &<br>2x Excelliance MOS EMB07N03 (30V, 17A @ 100°C, Rds(on): 7mOhm)<br>PWM Controller(s): ANPEC APW7159C                |
| Filtering Capacitors | Electrolytic: 2x Nippon Chemi-Con (105°C, W), 4x Nippon Chemi-Con (2-5,000h @ 105°C, KZE), 5x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 2x Nippon Chemi-Con (5-6,000h @ 105°C, KZH)<br>Polymer: 21x FPCAP |
| Supervisor IC        | IN1S313I-SAG                                                                                                                                                                                              |
| Fan Model            | DWPH EFC-14E12D (140mm, 12V, 0.80A, Fluid Dynamic Bearing Fan)                                                                                                                                            |
| 5VSB Circuit         |                                                                                                                                                                                                           |

|                        |                         |
|------------------------|-------------------------|
| Rectifier              | 1x 45R10C SBR           |
| 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 | ✓                 |

### Performance Summary

#### 115V

|                                                       |          |
|-------------------------------------------------------|----------|
| Accredited                                            |          |
| Average Efficiency (>1450 load combinations)          | 89.745%  |
| Average Noise Output (>1450 Load Combinations)        | 17.49dBA |
| Average PF (>1450 Load Combinations)                  | 0.986    |
| Efficiency With 10W ( $\leq$ 500W) or 2% (>500W) Load | 64.732%  |
| Standby Power Consumption                             | 0.0476W  |
| Non-Accredited                                        |          |
| 12V Ripple (Full Load)                                | 23.28mV  |
| 5V Ripple (Full Load)                                 | 8.25mV   |
| 3.3V Ripple (Full Load)                               | 13.70mV  |
| 5VSB Ripple (Full Load)                               | 8.78mV   |
| 12V Load Regulation                                   | 0.05%    |
| 5V Load Regulation                                    | 0.26%    |
| 3.3V Load Regulation                                  | 0.42%    |
| 5VSB Load Regulation                                  | 2.55%    |
| Inrush Current                                        | 65.800A  |

## 230V

|                                                |          |         |
|------------------------------------------------|----------|---------|
| Accredited                                     |          |         |
| Average Efficiency (>1450 load combinations)   | 91.657%  |         |
| Average Noise Output (>1450 Load Combinations) | 16.68dBA |         |
| Average PF (>1450 Load Combinations)           | 0.943    |         |
| Efficiency With 10W (≤500W) or 2% (>500W) Load | -        |         |
| Standby Power Consumption                      | 0.0908W  |         |
| Non-Accredited                                 |          |         |
| 12V Ripple (Full Load)                         | 23.72mV  |         |
| 5V Ripple (Full Load)                          | 8.88mV   |         |
| 3.3V Ripple (Full Load)                        | 13.45mV  |         |
| 5VSB Ripple (Full Load)                        | 7.21mV   |         |
| 12V Load Regulation                            | 0.04%    |         |
| 5V Load Regulation                             | 0.26%    |         |
| 3.3V Load Regulation                           | 0.39%    |         |
| 5VSB Load Regulation                           | 2.53%    |         |
| Inrush Current                                 | 81.350A  |         |
| Hold-Up Time & PWR_OK Signal                   | 24.20ms  |         |
| AC Loss to PWR_OK Hold Up Time                 | 20.20ms  |         |
| PWR_OK Inactive to DC Loss Delay               | 4.00ms   |         |
| PSU Timings: T1 (20% / 100%)                   | 52.0ms   | 68.0ms  |
| PSU Timings: T3 (20% / 100%)                   | 124.0ms  | 124.0ms |
| OPP (32.80°C / 40.08°C)                        | 150.19%  | 145.88% |

## Hold-Up Time & PWR\_OK Signal

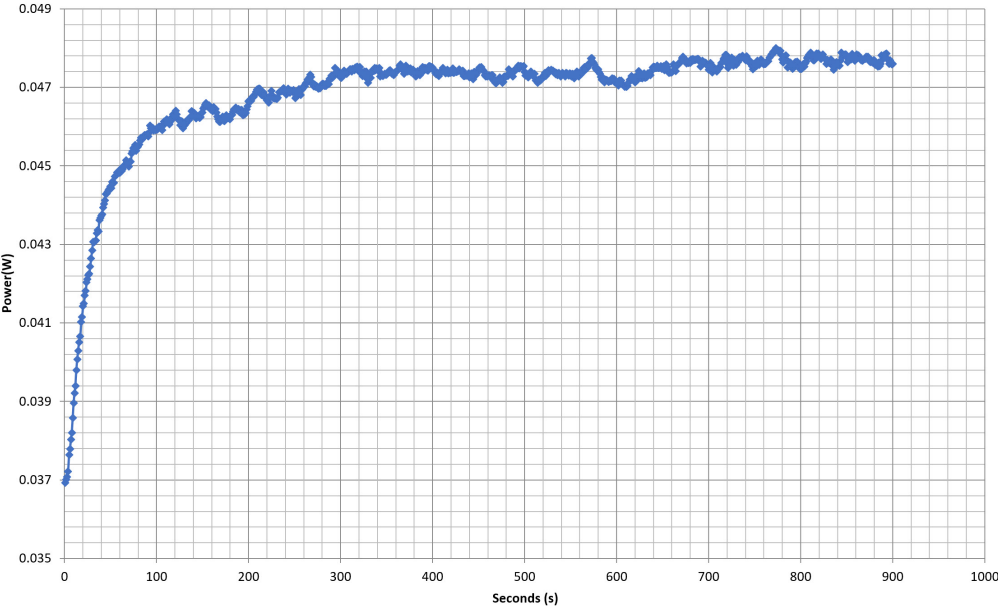
|                                       |      |
|---------------------------------------|------|
| Hold-Up Time (ms)                     | 24.2 |
| AC Loss to PWR_OK Hold Up Time (ms)   | 20.2 |
| PWR_OK Inactive to DC Loss Delay (ms) | 4    |

# Vampire Power

## Graphs

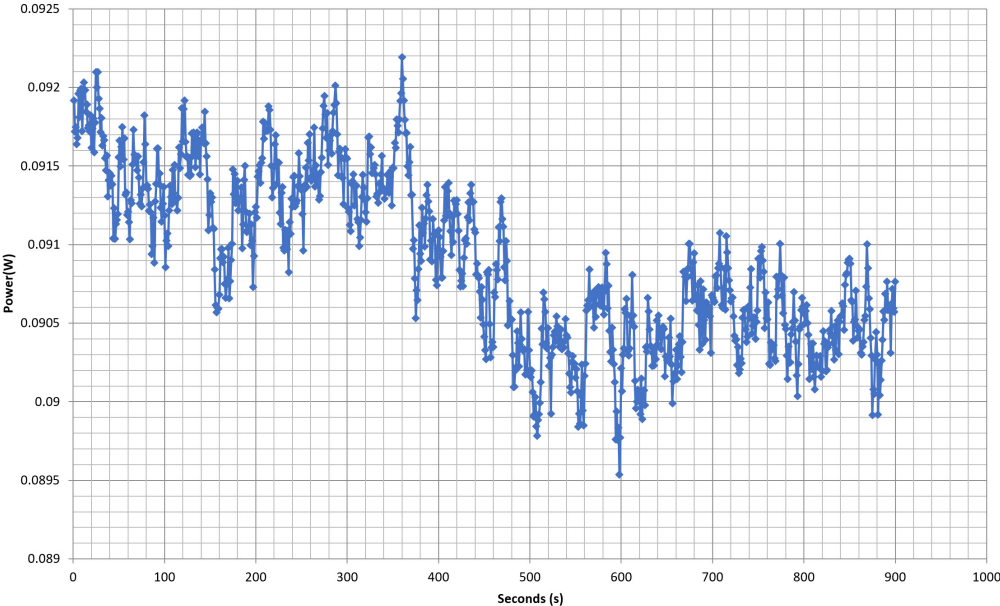
115V

Power - 25/08/2021 - 09:14



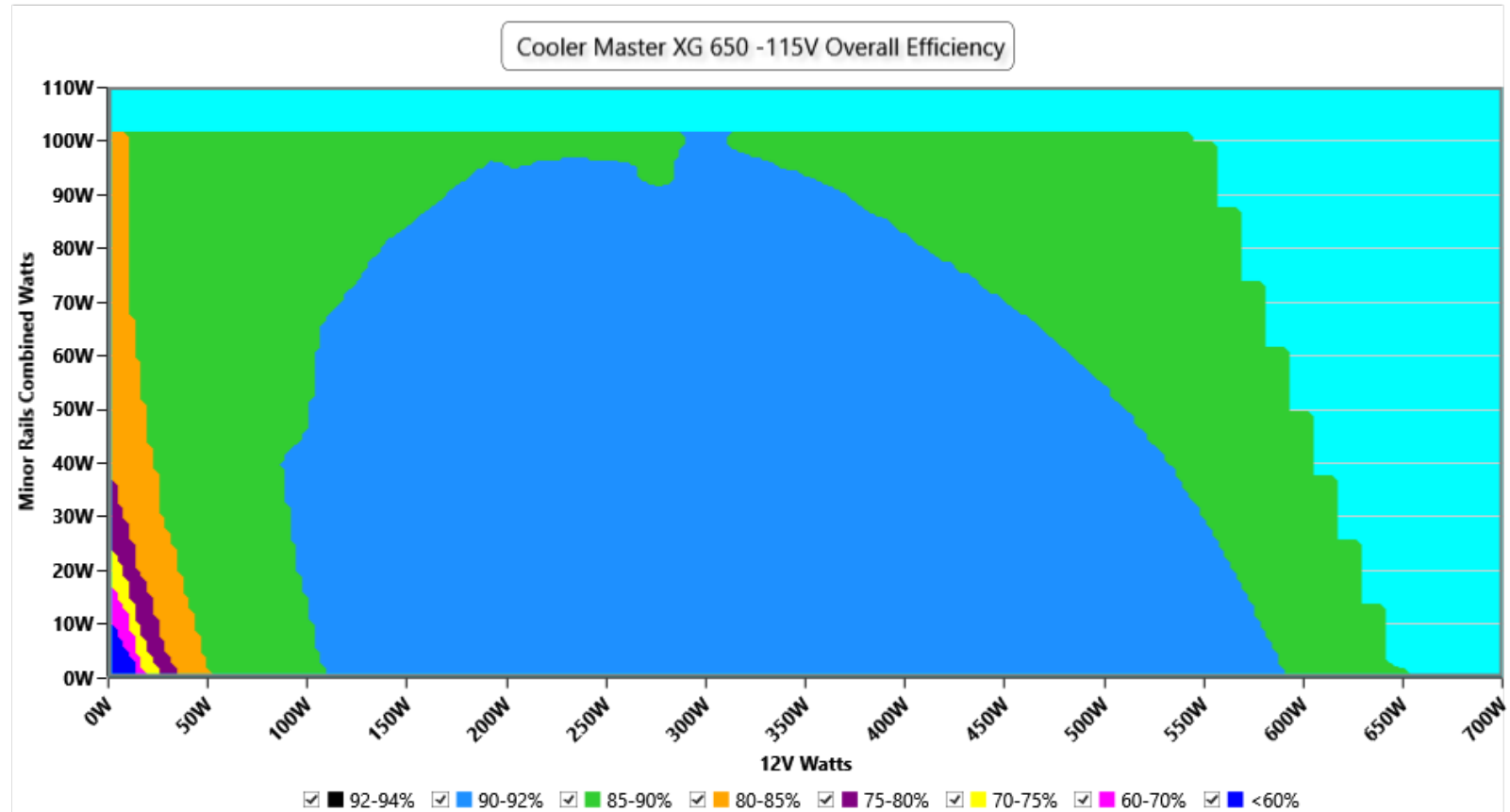
230V

Power - 25/08/2021 - 09:14



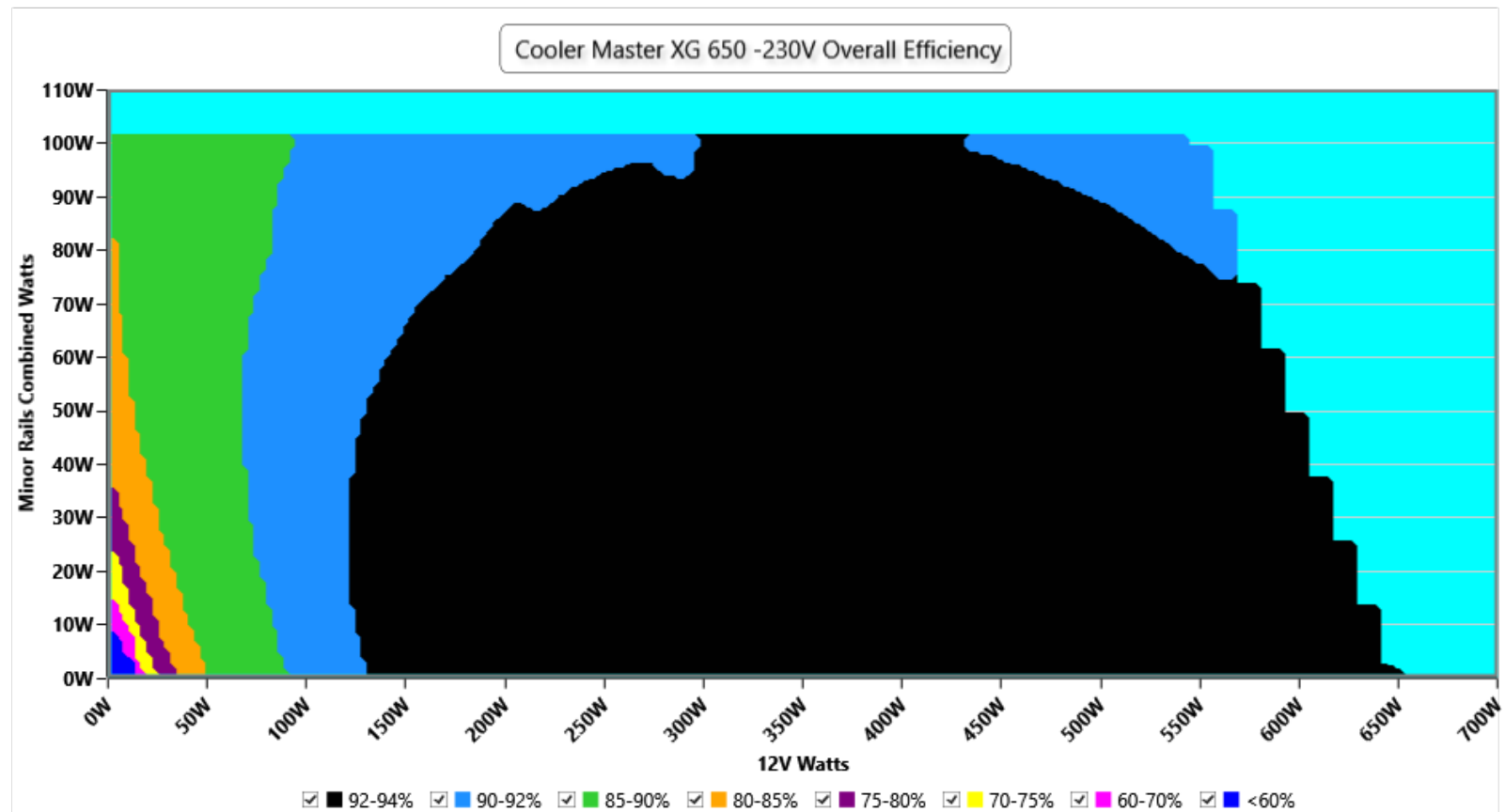
## Efficiency Graph

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

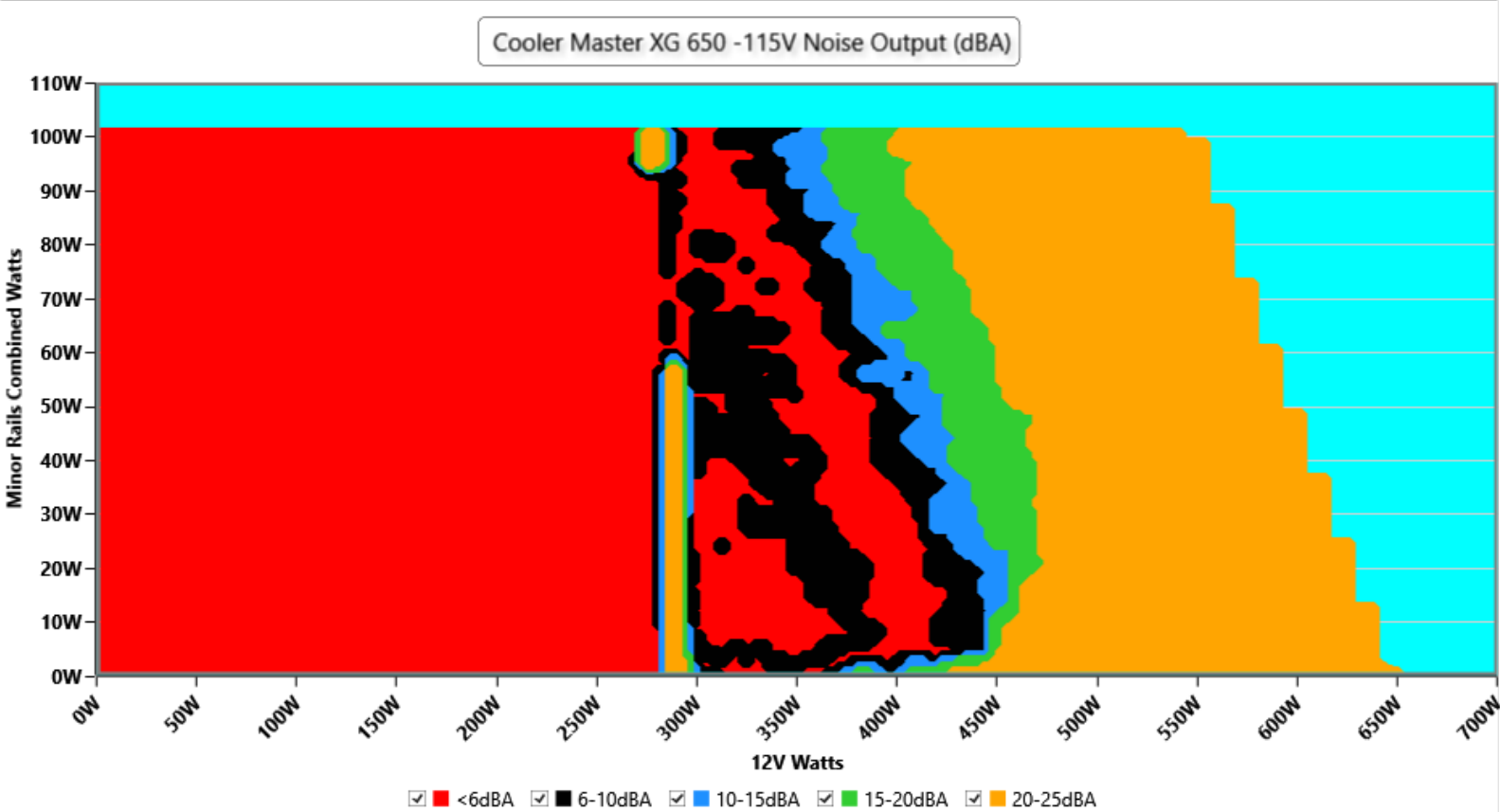


### INFO

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

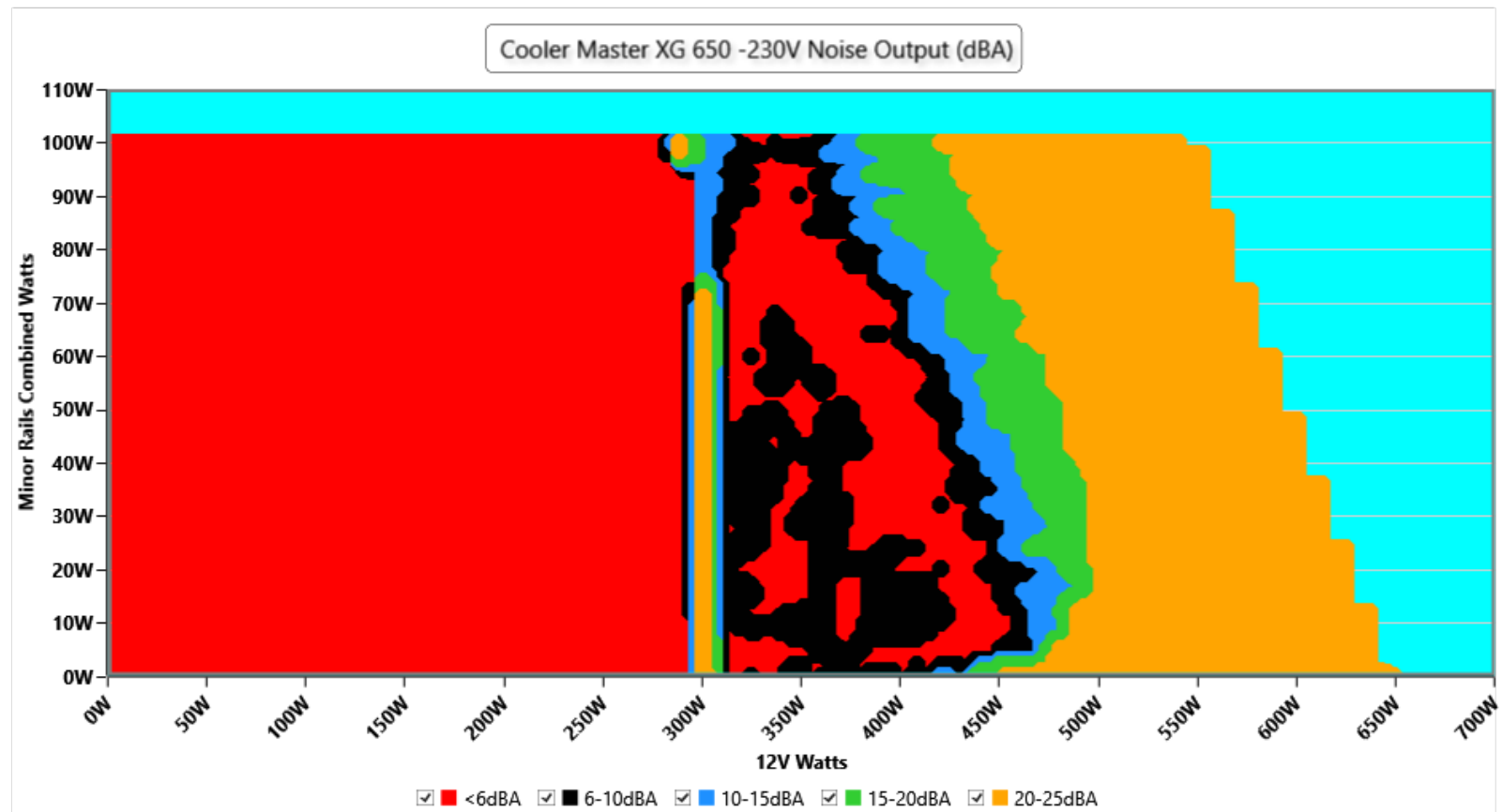
# Noise Graph

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

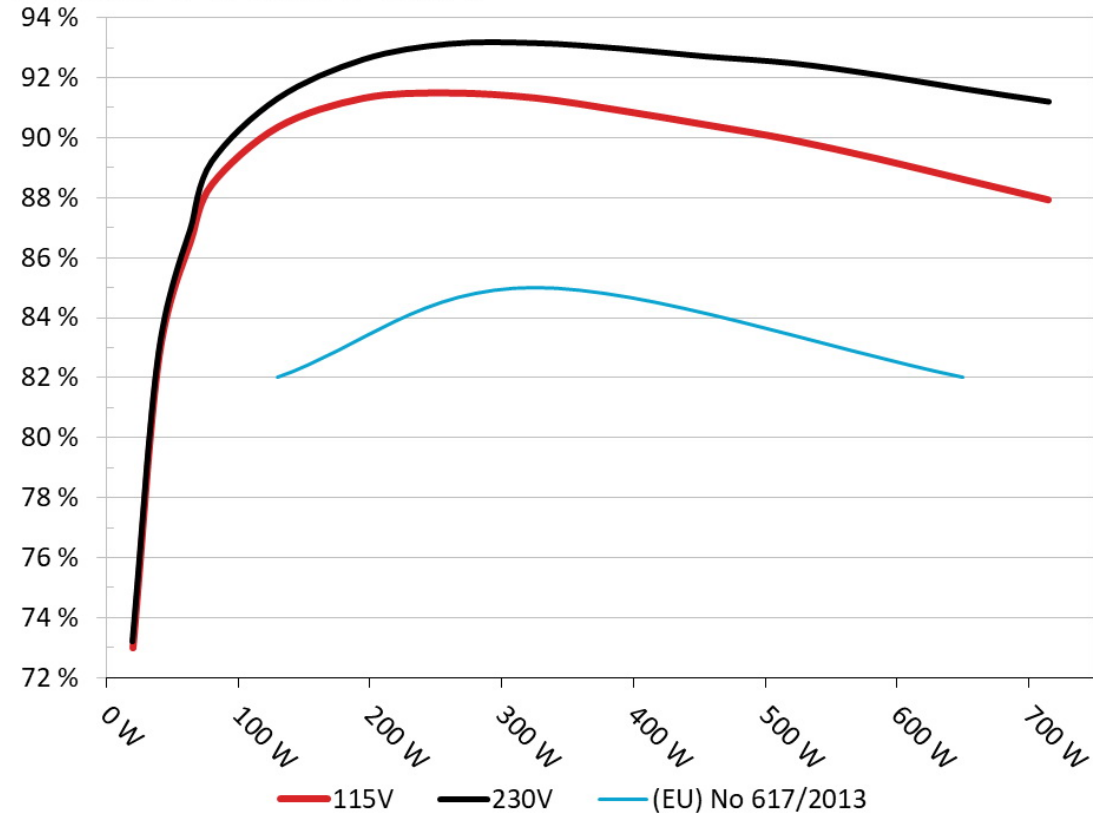
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

## Indicative Performance

### Efficiency under high ambient temperature

Efficiency: Cooler Master XG 650W

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



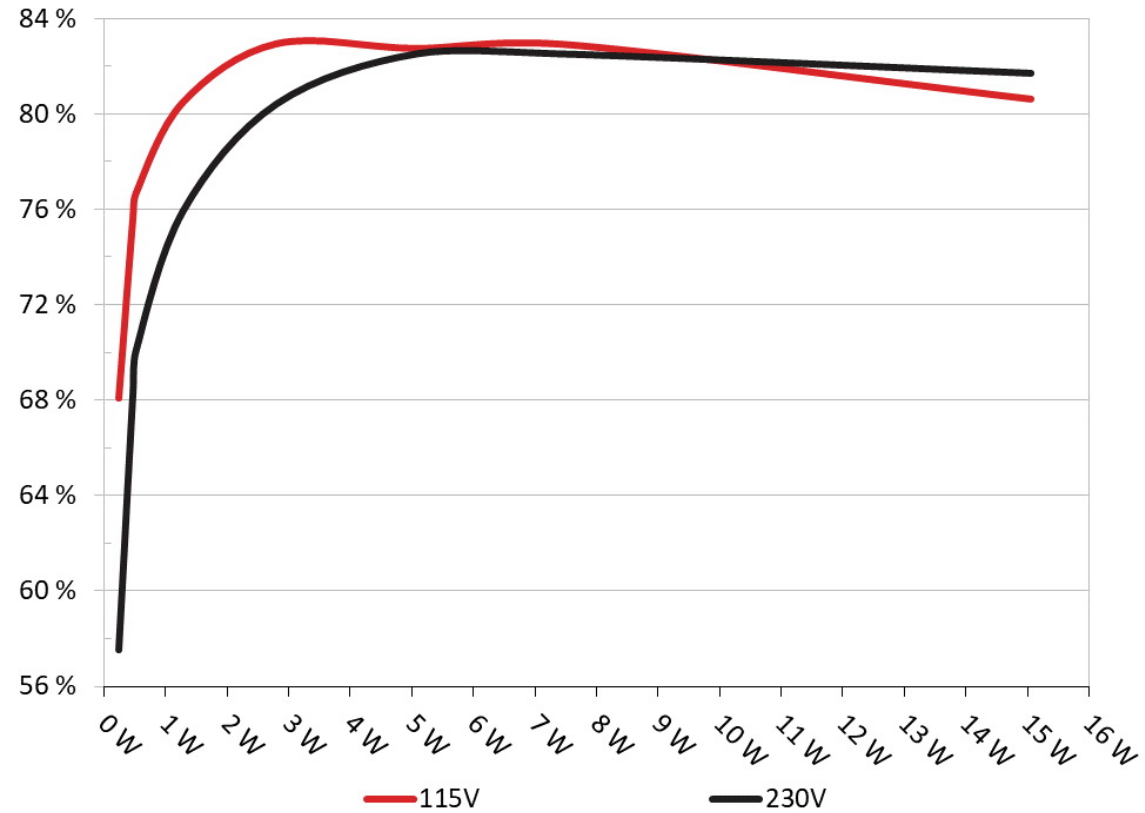
### INFO

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: Cooler Master XG 650W

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        | 0.23W      | 68.099%     | 0.055   |
|      | 5.099V        | 0.338W     |             | 115.14V |
| 2    | 0.09A         | 0.459W     | 75.618%     | 0.096   |
|      | 5.097V        | 0.607W     |             | 115.14V |
| 3    | 0.55A         | 2.798W     | 82.937%     | 0.326   |
|      | 5.085V        | 3.374W     |             | 115.14V |
| 4    | 1A            | 5.074W     | 82.735%     | 0.4     |
|      | 5.073V        | 6.133W     |             | 115.14V |
| 5    | 1.5A          | 7.591W     | 82.882%     | 0.439   |
|      | 5.059V        | 9.159W     |             | 115.14V |
| 6    | 3.001A        | 15.059W    | 80.617%     | 0.491   |
|      | 5.019V        | 18.68W     |             | 115.14V |

#### 230V

| 5VSB | DC/AC (Watts) | Efficiency | PF/AC Volts |         |
|------|---------------|------------|-------------|---------|
| 1    | 0.045A        | 0.23W      | 57.535%     | 0.019   |
|      | 5.099V        | 0.4W       |             | 230.28V |
| 2    | 0.09A         | 0.459W     | 68.24%      | 0.033   |
|      | 5.098V        | 0.673W     |             | 230.28V |
| 3    | 0.55A         | 2.798W     | 80.412%     | 0.15    |
|      | 5.085V        | 3.48W      |             | 230.28V |
| 4    | 1A            | 5.074W     | 82.504%     | 0.228   |
|      | 5.073V        | 6.15W      |             | 230.28V |
| 5    | 1.5A          | 7.591W     | 82.49%      | 0.286   |
|      | 5.06V         | 9.202W     |             | 230.28V |
| 6    | 3.001A        | 15.061W    | 81.692%     | 0.372   |
|      | 5.019V        | 18.436W    |             | 230.28V |

## 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%  | 3.622A  | 1.991A  | 1.987A  | 0.986A | 65.024        | 86.386%    | 0               | <6.0              | 44.8°C         | 0.959       |
|      | 11.991V | 5.023V  | 3.322V  | 5.074V | 75.271        |            |                 |                   | 39.65°C        | 115.16V     |
| 20%  | 8.264A  | 2.988A  | 2.982A  | 1.185A | 129.995       | 90.359%    | 0               | <6.0              | 45.92°C        | 0.985       |
|      | 11.990V | 5.022V  | 3.32V   | 5.064V | 143.865       |            |                 |                   | 40.04°C        | 115.15V     |
| 30%  | 13.258A | 3.486A  | 3.481A  | 1.385A | 195.013       | 91.326%    | 0               | <6.0              | 46.76°C        | 0.991       |
|      | 11.990V | 5.021V  | 3.319V  | 5.054V | 213.535       |            |                 |                   | 40.5°C         | 115.15V     |
| 40%  | 18.257A | 3.985A  | 3.979A  | 1.587A | 260.104       | 91.496%    | 0               | <6.0              | 48.58°C        | 0.992       |
|      | 11.990V | 5.02V   | 3.318V  | 5.044V | 284.279       |            |                 |                   | 41.63°C        | 115.14V     |
| 50%  | 22.905A | 4.983A  | 4.976A  | 1.789A | 325.124       | 91.332%    | 505             | 9.1               | 42.27°C        | 0.991       |
|      | 11.989V | 5.019V  | 3.317V  | 5.033V | 355.981       |            |                 |                   | 49.69°C        | 115.14V     |
| 60%  | 27.527A | 5.981A  | 5.974A  | 1.992A | 389.799       | 90.916%    | 750             | 22.8              | 42.46°C        | 0.989       |
|      | 11.987V | 5.018V  | 3.315V  | 5.022V | 428.748       |            |                 |                   | 50.22°C        | 115.14V     |
| 70%  | 32.200A | 6.98A   | 6.972A  | 2.196A | 455.107       | 90.436%    | 754             | 22.9              | 43.48°C        | 0.989       |
|      | 11.987V | 5.016V  | 3.314V  | 5.01V  | 503.235       |            |                 |                   | 51.77°C        | 115.14V     |
| 80%  | 36.877A | 7.98A   | 7.971A  | 2.3A   | 519.918       | 89.935%    | 768             | 23.4              | 43.82°C        | 0.99        |
|      | 11.986V | 5.015V  | 3.313V  | 5.002V | 578.107       |            |                 |                   | 52.76°C        | 115.14V     |
| 90%  | 41.952A | 8.481A  | 8.457A  | 2.404A | 585.339       | 89.306%    | 1010            | 31.6              | 44.56°C        | 0.99        |
|      | 11.985V | 5.014V  | 3.311V  | 4.994V | 655.43        |            |                 |                   | 53.75°C        | 115.13V     |
| 100% | 46.763A | 8.982A  | 8.974A  | 3.018A | 650.171       | 88.619%    | 1191            | 36.5              | 45.81°C        | 0.991       |
|      | 11.985V | 5.013V  | 3.31V   | 4.972V | 733.673       |            |                 |                   | 55.91°C        | 115.12V     |
| 110% | 51.440A | 9.983A  | 10.065A | 3.021A | 714.785       | 87.938%    | 1389            | 40.6              | 46.79°C        | 0.992       |
|      | 11.984V | 5.011V  | 3.309V  | 4.966V | 812.829       |            |                 |                   | 57.62°C        | 115.12V     |
| CL1  | 0.117A  | 12.016A | 11.984A | 0A     | 101.346       | 84.074%    | 0               | <6.0              | 49.45°C        | 0.98        |
|      | 11.991V | 5.012V  | 3.313V  | 5.09V  | 120.544       |            |                 |                   | 42.44°C        | 115.15V     |

| Test | 12V     | 5V     | 3.3V   | 5VSB   | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|------|---------|--------|--------|--------|---------------|------------|-----------------|-------------------|----------------|-------------|
| CL4  | 54.222A | 0A     | 0A     | 0A     | 649.91        | 89.589%    | 1110            | 34.4              | 45.52°C        | 0.991       |
|      | 11.986V | 5.022V | 3.317V | 5.064V | 725.44        |            |                 |                   | 55.41°C        | 115.12V     |

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%  | 3.622A  | 1.991A | 1.987A  | 0.986A | 65.019        | 87.129%    | 0               | <6.0              | 45.09°C        | 0.75        |
|      | 11.989V | 5.024V | 3.322V  | 5.074V | 74.624        |            |                 |                   | 40.02°C        | 230.29V     |
| 20%  | 8.264A  | 2.987A | 2.982A  | 1.185A | 129.981       | 91.315%    | 0               | <6.0              | 46.41°C        | 0.889       |
|      | 11.989V | 5.022V | 3.32V   | 5.063V | 142.343       |            |                 |                   | 40.56°C        | 230.29V     |
| 30%  | 13.257A | 3.486A | 3.48A   | 1.385A | 194.994       | 92.619%    | 0               | <6.0              | 47.26°C        | 0.937       |
|      | 11.989V | 5.022V | 3.32V   | 5.054V | 210.534       |            |                 |                   | 41.01°C        | 230.29V     |
| 40%  | 18.257A | 3.984A | 3.978A  | 1.587A | 260.086       | 93.139%    | 0               | <6.0              | 48.75°C        | 0.957       |
|      | 11.989V | 5.021V | 3.319V  | 5.044V | 279.245       |            |                 |                   | 41.94°C        | 230.29V     |
| 50%  | 22.904A | 4.982A | 4.975A  | 1.789A | 325.094       | 93.166%    | 453             | <6.0              | 42.13°C        | 0.969       |
|      | 11.988V | 5.019V | 3.317V  | 5.033V | 348.942       |            |                 |                   | 49.52°C        | 230.29V     |
| 60%  | 27.522A | 5.98A  | 5.973A  | 1.992A | 389.716       | 92.985%    | 746             | 22.8              | 42.59°C        | 0.974       |
|      | 11.987V | 5.018V | 3.316V  | 5.022V | 419.115       |            |                 |                   | 50.41°C        | 230.29V     |
| 70%  | 32.198A | 6.979A | 6.971A  | 2.196A | 455.044       | 92.718%    | 751             | 22.8              | 43.19°C        | 0.978       |
|      | 11.986V | 5.017V | 3.314V  | 5.011V | 490.782       |            |                 |                   | 51.53°C        | 230.29V     |
| 80%  | 36.871A | 7.978A | 7.969A  | 2.3A   | 519.828       | 92.495%    | 756             | 22.9              | 43.46°C        | 0.98        |
|      | 11.985V | 5.016V | 3.313V  | 5.003V | 562.007       |            |                 |                   | 52.29°C        | 230.29V     |
| 90%  | 41.948A | 8.48A  | 8.455A  | 2.403A | 585.274       | 92.104%    | 986             | 31.0              | 44.53°C        | 0.982       |
|      | 11.985V | 5.014V | 3.312V  | 4.995V | 635.451       |            |                 |                   | 53.87°C        | 230.29V     |
| 100% | 46.757A | 8.981A | 8.972A  | 3.017A | 650.104       | 91.641%    | 1199            | 36.7              | 45.6°C         | 0.984       |
|      | 11.985V | 5.013V | 3.311V  | 4.973V | 709.405       |            |                 |                   | 55.6°C         | 230.29V     |
| 110% | 51.437A | 9.98A  | 10.063A | 3.021A | 714.717       | 91.213%    | 1350            | 39.6              | 46.68°C        | 0.985       |
|      | 11.983V | 5.012V | 3.309V  | 4.967V | 783.573       |            |                 |                   | 57.57°C        | 230.29V     |

| Test | 12V     | 5V      | 3.3V    | 5VSB   | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|------|---------|---------|---------|--------|---------------|------------|-----------------|-------------------|----------------|-------------|
| CL1  | 0.117A  | 12.015A | 11.982A | 0A     | 101.337       | 85.186%    | 0               | <6.0              | 49.68°C        | 0.863       |
|      | 11.990V | 5.013V  | 3.313V  | 5.09V  | 118.961       |            |                 |                   | 42.65°C        | 230.29V     |
| CL4  | 54.219A | 0A      | 0A      | 0A     | 649.859       | 92.613%    | 1099            | 34.1              | 45.65°C        | 0.984       |
|      | 11.986V | 5.022V  | 3.317V  | 5.064V | 701.691       |            |                 |                   | 55.86°C        | 230.29V     |

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  | 1.240A  | 0.498A | 0.497A | 0.196A | 20.018        | 73.009%    | 0               | <6.0              | 40.53°C        | 0.799       |
|      | 11.991V | 5.026V | 3.324V | 5.099V | 27.418        |            |                 |                   | 37.36°C        | 115.16V     |
| 40W  | 2.728A  | 0.697A | 0.695A | 0.295A | 40.019        | 82.787%    | 0               | <6.0              | 41.71°C        | 0.915       |
|      | 11.991V | 5.025V | 3.323V | 5.095V | 48.34         |            |                 |                   | 37.95°C        | 115.16V     |
| 60W  | 4.216A  | 0.896A | 0.894A | 0.393A | 60.021        | 86.742%    | 0               | <6.0              | 42.54°C        | 0.952       |
|      | 11.991V | 5.025V | 3.323V | 5.091V | 69.195        |            |                 |                   | 38.17°C        | 115.16V     |
| 80W  | 5.702A  | 1.095A | 1.093A | 0.492A | 79.997        | 88.456%    | 0               | <6.0              | 44.08°C        | 0.966       |
|      | 11.991V | 5.024V | 3.322V | 5.087V | 90.437        |            |                 |                   | 39.16°C        | 115.16V     |

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  | 1.240A  | 0.498A | 0.496A | 0.196A | 20.012        | 73.227%    | 0               | <6.0              | 39.99°C        | 0.491       |
|      | 11.989V | 5.026V | 3.324V | 5.099V | 27.329        |            |                 |                   | 36.85°C        | 230.3V      |
| 40W  | 2.728A  | 0.697A | 0.695A | 0.295A | 40.014        | 82.903%    | 0               | <6.0              | 41.33°C        | 0.634       |
|      | 11.989V | 5.026V | 3.323V | 5.095V | 48.266        |            |                 |                   | 37.64°C        | 230.3V      |
| 60W  | 4.216A  | 0.896A | 0.894A | 0.393A | 60.015        | 87.146%    | 0               | <6.0              | 42.28°C        | 0.728       |
|      | 11.989V | 5.025V | 3.323V | 5.091V | 68.867        |            |                 |                   | 38.27°C        | 230.3V      |

| Test | 12V     | 5V     | 3.3V   | 5VSB   | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|------|---------|--------|--------|--------|---------------|------------|-----------------|-------------------|----------------|-------------|
| 80W  | 5.702A  | 1.095A | 1.093A | 0.492A | 79.984        | 89.212%    | 0               | <6.0              | 43.66°C        | 0.799       |
|      | 11.989V | 5.025V | 3.323V | 5.087V | 89.657        |            |                 |                   | 39.12°C        | 230.29V     |

The results above are not used in the certification process

### Ripple Measurements

#### 115V

| Test        | 12V     | 5V     | 3.3V    | 5VSB   | Pass/Fail |
|-------------|---------|--------|---------|--------|-----------|
| 10% Load    | 15.3 mV | 5.8 mV | 10.3 mV | 5.4 mV | Pass      |
| 20% Load    | 17.4 mV | 5.9 mV | 10.1 mV | 5.8 mV | Pass      |
| 30% Load    | 18.6 mV | 6.0 mV | 10.3 mV | 5.6 mV | Pass      |
| 40% Load    | 14.6 mV | 6.6 mV | 11.6 mV | 6.3 mV | Pass      |
| 50% Load    | 12.9 mV | 6.4 mV | 10.6 mV | 6.1 mV | Pass      |
| 60% Load    | 12.4 mV | 6.4 mV | 10.3 mV | 6.5 mV | Pass      |
| 70% Load    | 12.9 mV | 7.1 mV | 11.1 mV | 6.5 mV | Pass      |
| 80% Load    | 13.9 mV | 7.3 mV | 12.4 mV | 7.0 mV | Pass      |
| 90% Load    | 15.2 mV | 8.0 mV | 13.5 mV | 6.7 mV | Pass      |
| 100% Load   | 23.3 mV | 8.3 mV | 13.7 mV | 8.8 mV | Pass      |
| 110% Load   | 24.3 mV | 8.5 mV | 14.3 mV | 8.9 mV | Pass      |
| Crossload 1 | 24.2 mV | 8.3 mV | 13.7 mV | 7.3 mV | Pass      |
| Crossload 4 | 23.0 mV | 6.7 mV | 12.4 mV | 6.9 mV | Pass      |

The results above are not used in the certification process

#### 230V

| Test     | 12V     | 5V     | 3.3V    | 5VSB   | Pass/Fail |
|----------|---------|--------|---------|--------|-----------|
| 10% Load | 14.3 mV | 5.9 mV | 10.8 mV | 5.2 mV | Pass      |
| 20% Load | 17.0 mV | 6.0 mV | 9.9 mV  | 5.8 mV | Pass      |
| 30% Load | 17.4 mV | 6.5 mV | 11.0 mV | 5.9 mV | Pass      |

| Test        | 12V     | 5V     | 3.3V    | 5VSB   | Pass/Fail |
|-------------|---------|--------|---------|--------|-----------|
| 40% Load    | 14.4 mV | 6.6 mV | 11.5 mV | 5.9 mV | Pass      |
| 50% Load    | 12.1 mV | 6.6 mV | 15.9 mV | 6.4 mV | Pass      |
| 60% Load    | 11.9 mV | 6.6 mV | 11.0 mV | 6.4 mV | Pass      |
| 70% Load    | 12.4 mV | 7.3 mV | 12.0 mV | 6.2 mV | Pass      |
| 80% Load    | 13.8 mV | 7.3 mV | 12.1 mV | 6.7 mV | Pass      |
| 90% Load    | 13.7 mV | 8.0 mV | 13.1 mV | 7.1 mV | Pass      |
| 100% Load   | 23.7 mV | 8.9 mV | 13.5 mV | 7.2 mV | Pass      |
| 110% Load   | 25.8 mV | 8.5 mV | 14.0 mV | 7.7 mV | Pass      |
| Crossload 1 | 22.8 mV | 8.5 mV | 12.8 mV | 7.1 mV | Pass      |
| Crossload 4 | 24.3 mV | 6.4 mV | 12.4 mV | 6.6 mV | Pass      |

The results above are not used in the certification process

Cooler Master XG 650



Top side

All data and graphs included in this test report can be used by any individual on the following conditions:

- › It should be mentioned that the test results are provided by Cybenetics
- › The link to the original test results document should be provided in any case

CYBENETICS LTD Syrou 6, Latsia, 2231, Nicosia Cyprus

650W

MODEL / 型號 / 型号 : MPG-6501-AFBAP  
Switching Power Supply 交換式電源供應器 / 开关电源

|             |                                            |       |        |      |       |
|-------------|--------------------------------------------|-------|--------|------|-------|
| AC INPUT    | 100-240V~, 8-4A, 50-60Hz                   |       |        |      |       |
| 交流輸入        | 200-240V~, 4A, 50-60Hz, For Korea Use Only |       |        |      |       |
| 交流輸入        | 200-240V~, 4A, 50-60Hz, 适用于中国地区使用          |       |        |      |       |
| DC OUTPUT   | +5V                                        | +3.3V | +12V   | -12V | +5VSB |
| 直流輸出/直流輸出   | 20A                                        | 20A   | 54.1A  | 0.3A | 3A    |
| TOTAL POWER | 100W                                       |       | 649.2W | 3.6W | 15W   |
| 總功率/总功率     | 650W                                       |       |        |      |       |

CAUTION! / 警告 / ATTENTION

■ HAZARDOUS VOLTAGE INSIDE. / 內有危險電壓 / 內有危險电压 / Tension dangereuse à l'intérieur

■ DO NOT OPEN POWER SUPPLY UNIT. / 請勿打開機殼 / 請勿打开机壳 / Ne pas ouvrir l'alimentation

■ SELECT THE RIGHT INPUT VOLTAGE. / 選擇正確的輸入電壓 / 选择正确的输入电压 / Sélectionnez la bonne tension d'entrée ■ WARRANTY VOID IF SECURITY SEAL IS DAMAGED, REMOVED OR LOST. / 如果封條貼紙被移動、遺失或損壞，本開關電源保固將失效 / 如果封条贴纸被移动、遗失或损坏，本开关电源保固将失效 / Annulation de la garantie si le sceau est endommagé, retiré ou perdu ■ attention ne pas ouvrir l'alimentation

MADE IN CHINA / 中國製造 / 中国制造 ■ Cooler Master Technology Inc.

製造商：酷碼科技股份有限公司 / 制造商：酷码科技股份有限公司

Power specifications label

Cybenetics runs voluntary certification programs for power supplies - ETA for efficiency, LAMBDA for noise and SAFE for safety and correct operation - and for cooling products, with DELTA for chassis soundproofing and PHI for fan airflow and static pressure. THETA rates cooler performance on AMD AM5 and Intel LGA1851 outside ISO 17065 and accreditation scope

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