# MSI MAG A650GL

Lab ID MS65002422

Certification ID 252422

Test Result Report ID: 24PS2422A

Certificate Issue Date: Apr 23, 2024

Scheme: ETA-EMI PSU

115V




230V




115V




230V




Scheme: LAMBDA PSU



Aristeidis Bitziopoulos, Certification Body General Manager

# General Information

## Test Equipment

| | |
|---|---|
| Electronic Loads | Chroma 63601-5 x2<br>Chroma 63600-2<br>Chroma 63640-80-80 x10<br>Chroma 63610-80-20 |
| AC Sources | Chroma 6530, APM SP300VAC4000W-P, GW Instek ASR-3500 |
| Power Analyzers | Rohde & Schwarz HMC8015 & NPA701 |
| Oscilloscopes | Picoscope 4444, Siglent SDS2104X PLUS |
| Sound Analyzer | Bruel & Kjaer 2270 G4 |
| Microphone | Bruel & Kjaer Type 4955-A |
| Temperature Logger | Picoscope TC-08 |
| Tachometer | UNI-T UT372 |
| Multimeters | Keysight 34465A |
| EMI Analyzer | TekBox TBMR-110M-EU |
| Isolation Transformer | 4kVA |
| UPS | FSP Champ Tower 3kVA, CyberPower OLS3000E 3kVA |
| Testing Methodology | Cybenetics PSU Test Protocol |

## DUT Information(Non-accredited measurements)

| | |
|---|---|
| Product Identification Details | |
| Brand | MSI |
| Model | MAG A650GL |
| OEM/ODM | CWT |
| Serial Number | |
| Product Specifications | |
| Manufacturer-Provided Information | |
| □□□□ (Vrms) | 100-240 |
| □□□□ (Arms) | 10 |
| □□□□ (Hz) | 47-63 |

| | |
|---|---|
| □□□□ (W) | 650 |
| Operating Temperature (Continuous Full Load) (°C) | |
| □□ | ATX12V |
| □□□□ | Fully Modular |
| Warranty | - |
| Cybenetics Measurements | |
| Dimensions (W x H x D) | |
| Weight | |
| □□ | 120mm Fluid Dynamic Bearing Fan<br>(DF1202512FDHN) |
| □□□□□ | ✗ |
| Cybenetics Testing Information | |
| Lab ID | MS65002422 |
| Date of receipt | Apr 4, 2024 |
| Testing Date | Apr 19, 2024 |
| Report Issued Date | Apr 23, 2024 |
| □□□□□ | CWT GPX PLATFORM |
| Engineer Name | - |
| Authorized By the Laboratory Technical Manager | Aristeidis Bitziopoulos |
| Signature |  |

## □□□□□ (Non-accredited measurements)

| □□□□□ | | | | |
|---|---|---|---|---|
| □□ | □□□□ | □□□□□□ | Gauge | In Cable Capacitors |
| ATX □□ 20+4 pin (600mm) | 1 | 1 | 18AWG | □ |
| 4+4 pin EPS 12V □□ (750mm) | 2 | 2 | 18AWG | □ |
| 6+2pin PCIe□□ (600mm+150mm) | 2 | 4 | 18AWG | □ |
| SATA□□ (500mm+150mm+150mm) | 2 | 6 | 18AWG | □ |
| 4-pin Molex (500mm+150mm+150mm) / FDD (+155mm) | 1 | 3 / 1 | 18-20AWG | □ |

□□□□

| □ | | 3.3V | 5V | 12V | 5VSB | -12V |
|---|---|---|---|---|---|---|
| □□□□ | □□ | 20 | 20 | 54 | 2.5 | 0.3 |
| | □ | 100 | | 648 | 12.5 | 3.6 |
| □□□□□ (W) | | 650 | | | | |

# Test Results

## Temperature & Compliance Info

| | |
|---|---|
| □□□□ (°C /°F) | 28-32 / 82.4-89.6 |
| □□ ErP Lot3/6□□ | ✓ |
| □□ (EU) No 617/2013□□ | ✓ |

## Performance Summary

### 115V

| | |
|---|---|
| Accredited | |
| □□□□ (>1450 load combinations) | 88.124% |
| Average Noise Output (>1450 Load Combinations) | 37.10dBA |
| PF□□□ (>1450 Load Combinations) | 0.979 |
| Efficiency With 10W (≤500W) or 2% (>500W) Load | 61.711% |
| □□□□□□ | 0.0434W |
| Non-Accredited | |
| 12V Ripple (Full Load) | 33.10mV |
| 5V Ripple (Full Load) | 16.67mV |
| 3.3V Ripple (Full Load) | 15.37mV |
| 5VSB Ripple (Full Load) | 18.06mV |
| 12V Load Regulation | 0.66% |
| 5V Load Regulation | 0.52% |
| 3.3V Load Regulation | 0.82% |

| | |
|---|---|
| 5VSB Load Regulation | 2.92% |
| Inrush Current | 23.570A |

## 230V

| | | |
|---|---|---|
| Accredited | | |
| □□□□ (>1450 load combinations) | | 90.376% |
| Average Noise Output (>1450 Load Combinations) | | 36.78dBA |
| PF□□□ (>1450 Load Combinations) | | 0.930 |
| Efficiency With 10W (≤500W) or 2% (>500W) Load | | - |
| □□□□□□ | | 0.1097W |
| Non-Accredited | | |
| 12V Ripple (Full Load) | | 32.96mV |
| 5V Ripple (Full Load) | | 17.15mV |
| 3.3V Ripple (Full Load) | | 15.34mV |
| 5VSB Ripple (Full Load) | | 18.57mV |
| 12V Load Regulation | | 0.68% |
| 5V Load Regulation | | 0.50% |
| 3.3V Load Regulation | | 0.79% |
| 5VSB Load Regulation | | 2.94% |
| Inrush Current | | 53.170A |
| □□□□ & PG□□ | | 14.50ms |
| AC Loss to PWR_OK Hold Up Time | | 13.30ms |
| PWR_OK Inactive to DC Loss Delay | | 1.20ms |
| PSU Timings: T1 (20% / 100%) | 52.0ms | 52.0ms |
| PSU Timings: T3 (20% / 100%) | 326.0ms | 324.0ms |
| OPP (26.89°C / 42.30°C) | 124.16% | 117.15% |

## □□□□ & PG□□

| | |
|---|---|
| Hold-Up Time (ms) | 14.5 |
| AC Loss to PWR_OK Hold Up Time (ms) | 13.3 |

| | |
|---|---|
| PWR_OK Inactive to DC Loss Delay (ms) | 1.2 |

## Tables

### 115V

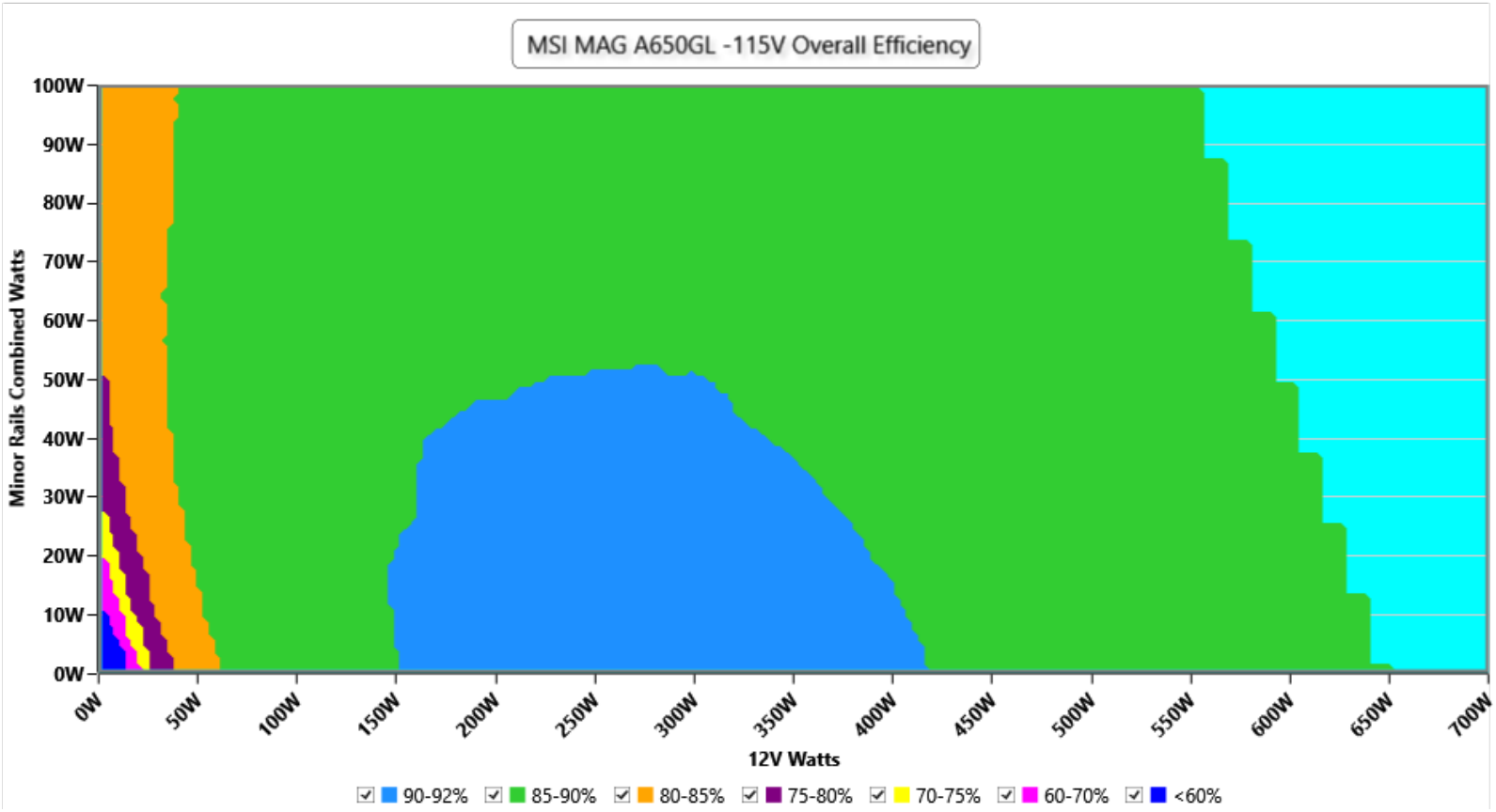
| Detailed Results | | | | | | |
|---|---|---|---|---|---|---|
| | Average | Min | Limit Min | Max | Limit Max | Result |
| Mains Voltage RMS: | 115.06 V | 115.03 V | 113.85 V | 115.11 V | 116.15 V | PASS |
| Mains Frequency: | 60.00 Hz | 59.99 Hz | 59.40 Hz | 60.01 Hz | 60.60 Hz | PASS |
| Mains Voltage 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: | 0.043 W | 0.012 W | N/A | 0.062 W | N/A | N/A |
| Apparent Power: | 10.235 W | 10.148 W | N/A | 10.336 W | N/A | N/A |
| Power Factor: | 0.006 | N/A | N/A | N/A | N/A | N/A |

### 230V

| Detailed Results | | | | | | |
|---|---|---|---|---|---|---|
| | Average | Min | Limit Min | Max | Limit Max | Result |
| Mains Voltage RMS: | 231.02 V | 230.91 V | 227.70 V | 231.08 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 % | 0.15 % | N/A | 0.27 % | 2.00 % | PASS |
| Real Power: | 0.110 W | 0.096 W | N/A | 0.136 W | N/A | N/A |
| Apparent Power: | 34.397 W | 34.117 W | N/A | 34.648 W | N/A | N/A |
| Power Factor: | 0.003 | N/A | N/A | N/A | N/A | N/A |

## □□□□□□

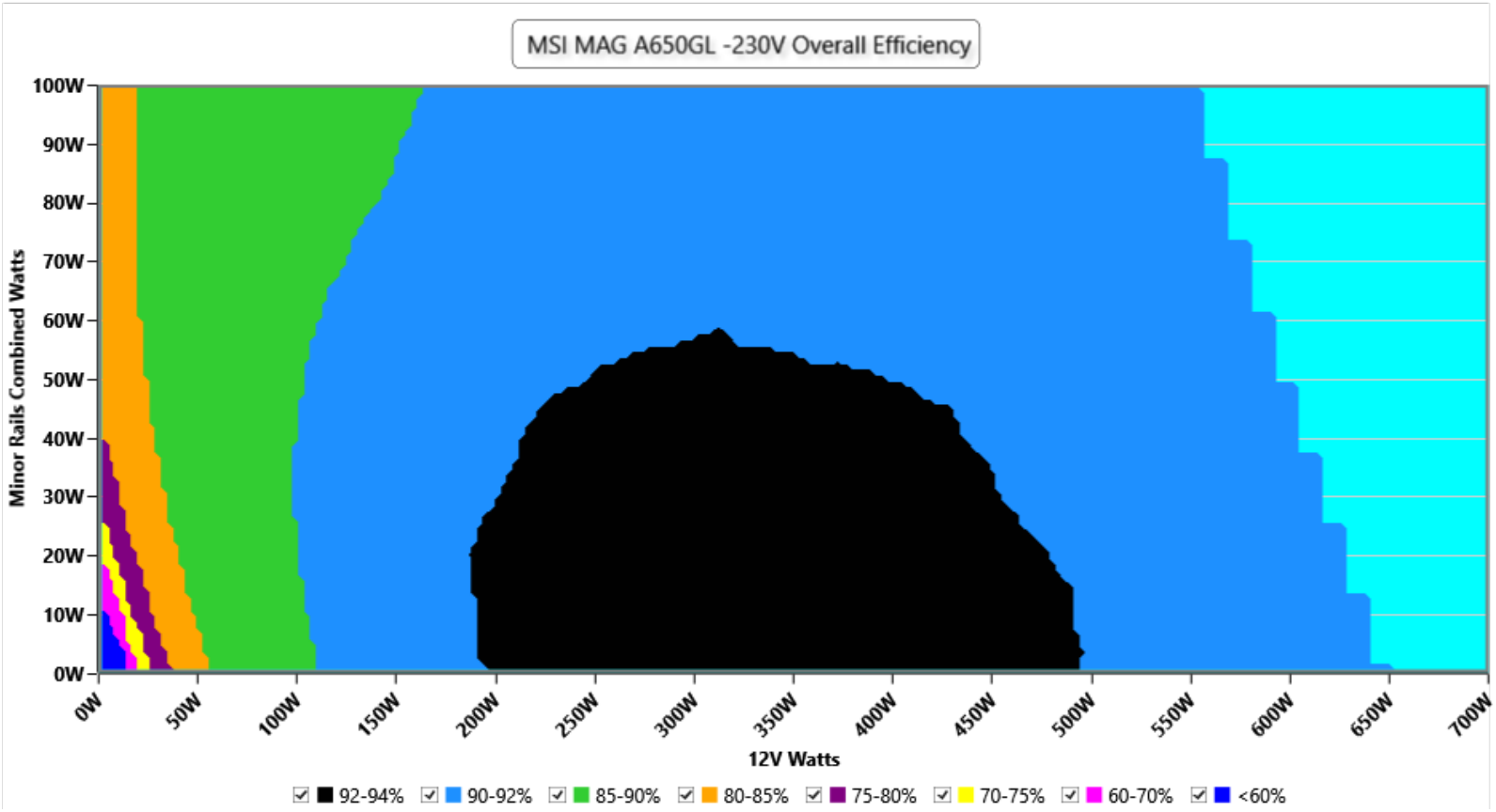
**115V**



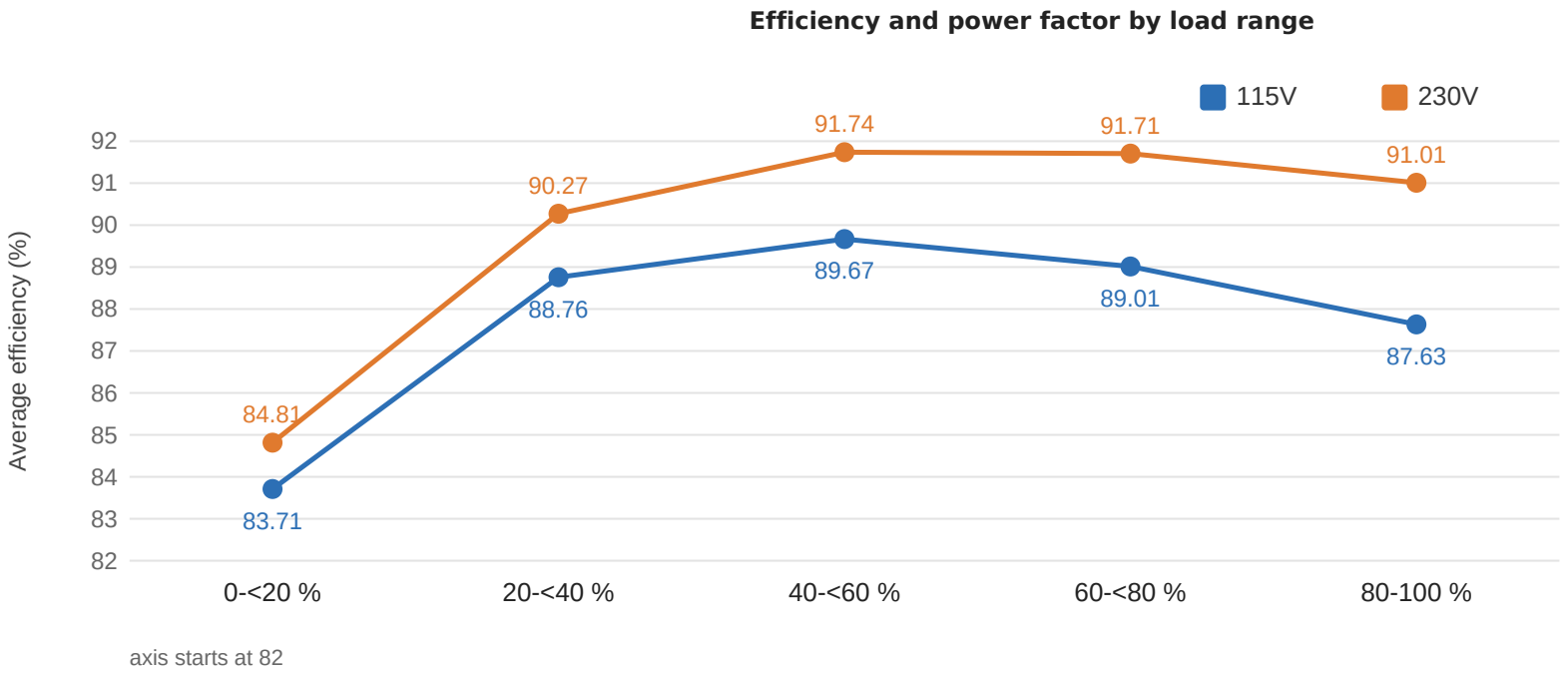

### □□

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

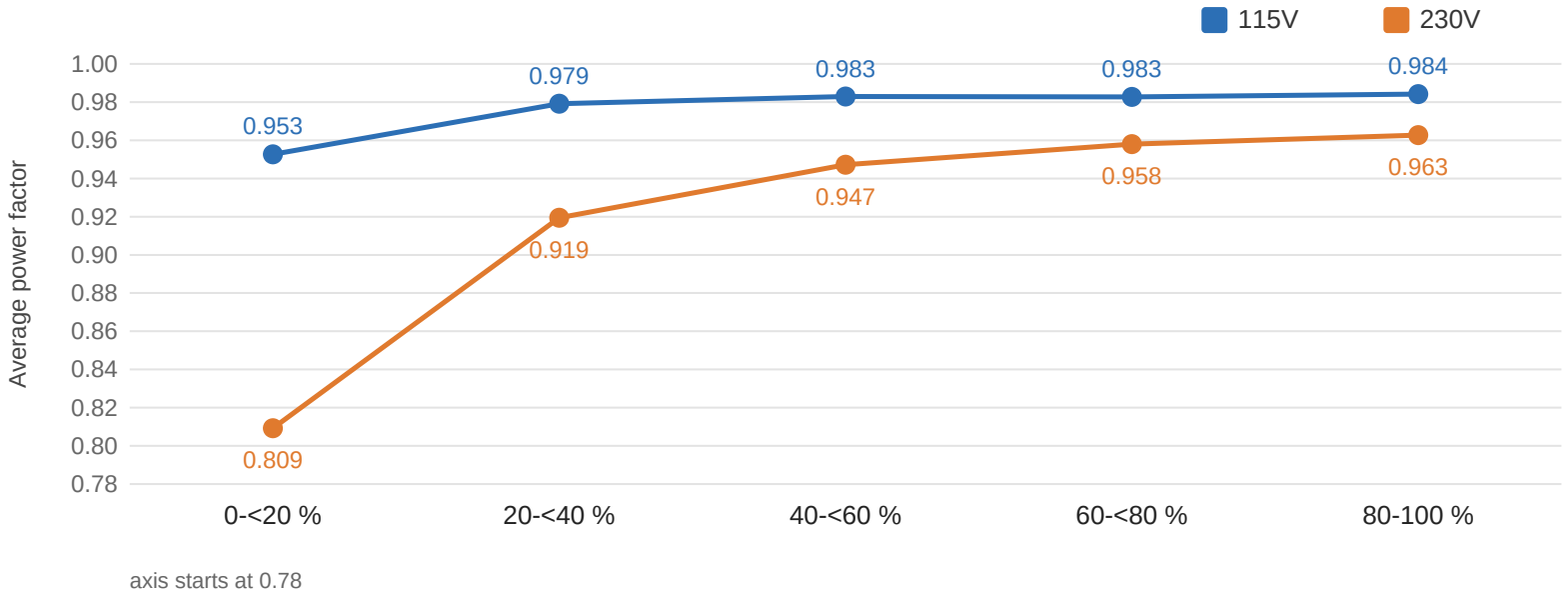
## 230V




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




axis starts at 82




axis starts at 0.78

| Load range | Points | Efficiency 115V | Efficiency 230V | PF 115V | PF 230V |
|---|---|---|---|---|---|
| 0-<20 % | 195 / 195 | 83.71% | 84.81% | 0.953 | 0.809 |
| 20-<40 % | 340 / 340 | 88.76% | 90.27% | 0.979 | 0.919 |
| 40-<60 % | 332 / 332 | 89.67% | 91.74% | 0.983 | 0.947 |
| 60-<80 % | 339 / 339 | 89.01% | 91.71% | 0.983 | 0.958 |
| 80-100 % | 343 / 343 | 87.63% | 91.01% | 0.984 | 0.963 |
| 70-100 % (High-Load) | 509 / 509 | 87.98% | 91.19% | 0.984 | 0.962 |
| All (published average) | 1549 / 1549 | 88.12% | 90.38% | 0.979 | 0.930 |

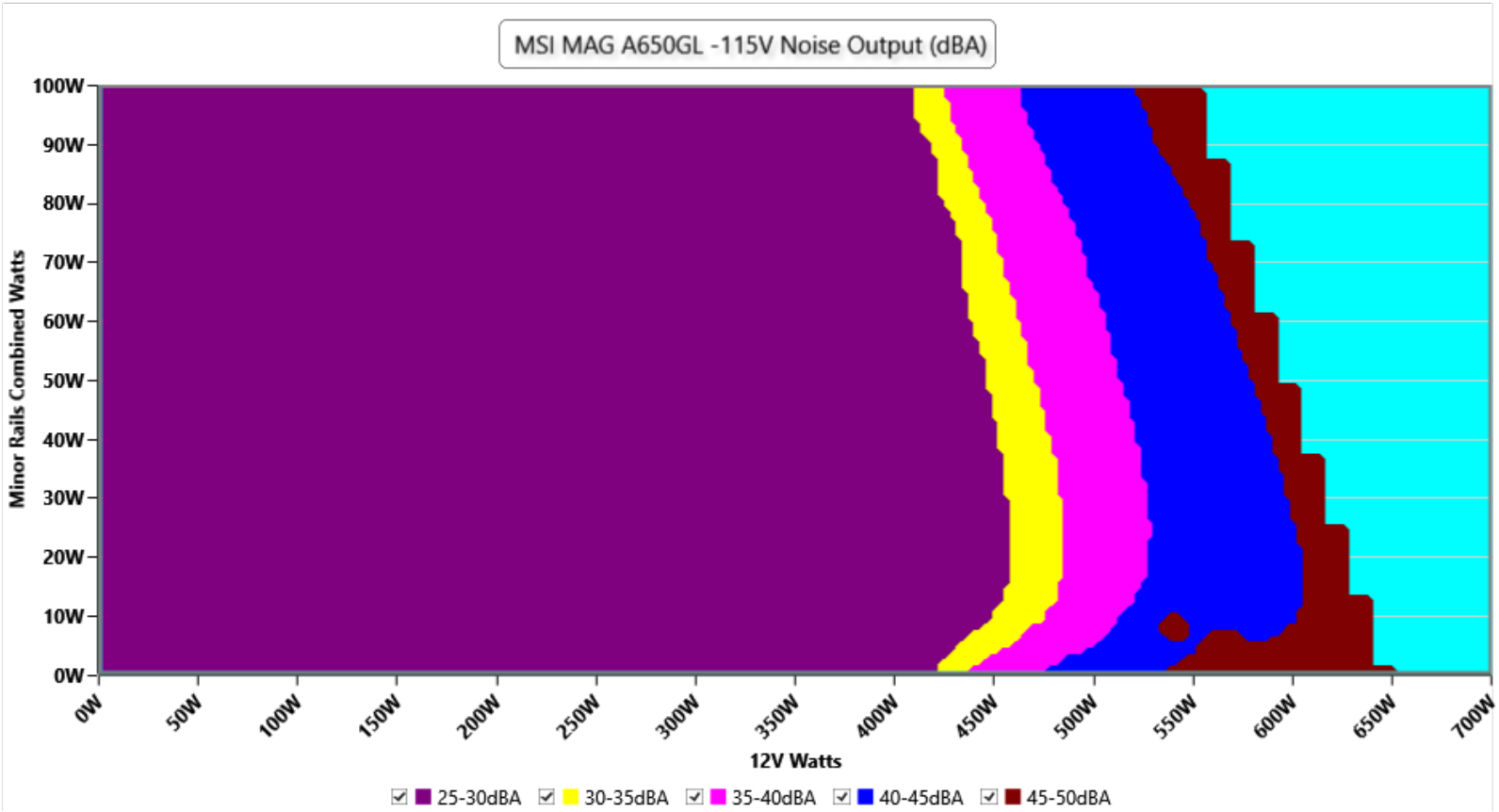
**INFO**

The average efficiency and power factor in five ranges of load. Calculated from the 1549 (115V) and 1549 (230V) load combinations of the certification sweep, the same data that ETA and LAMBDA use (test 0 excluded). Load is the total DC output as a share of the rated 650 W. These are plain averages of the valid readings, as for the ETA rating, so the ranges combined give back the published averages.

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

## □□□□□

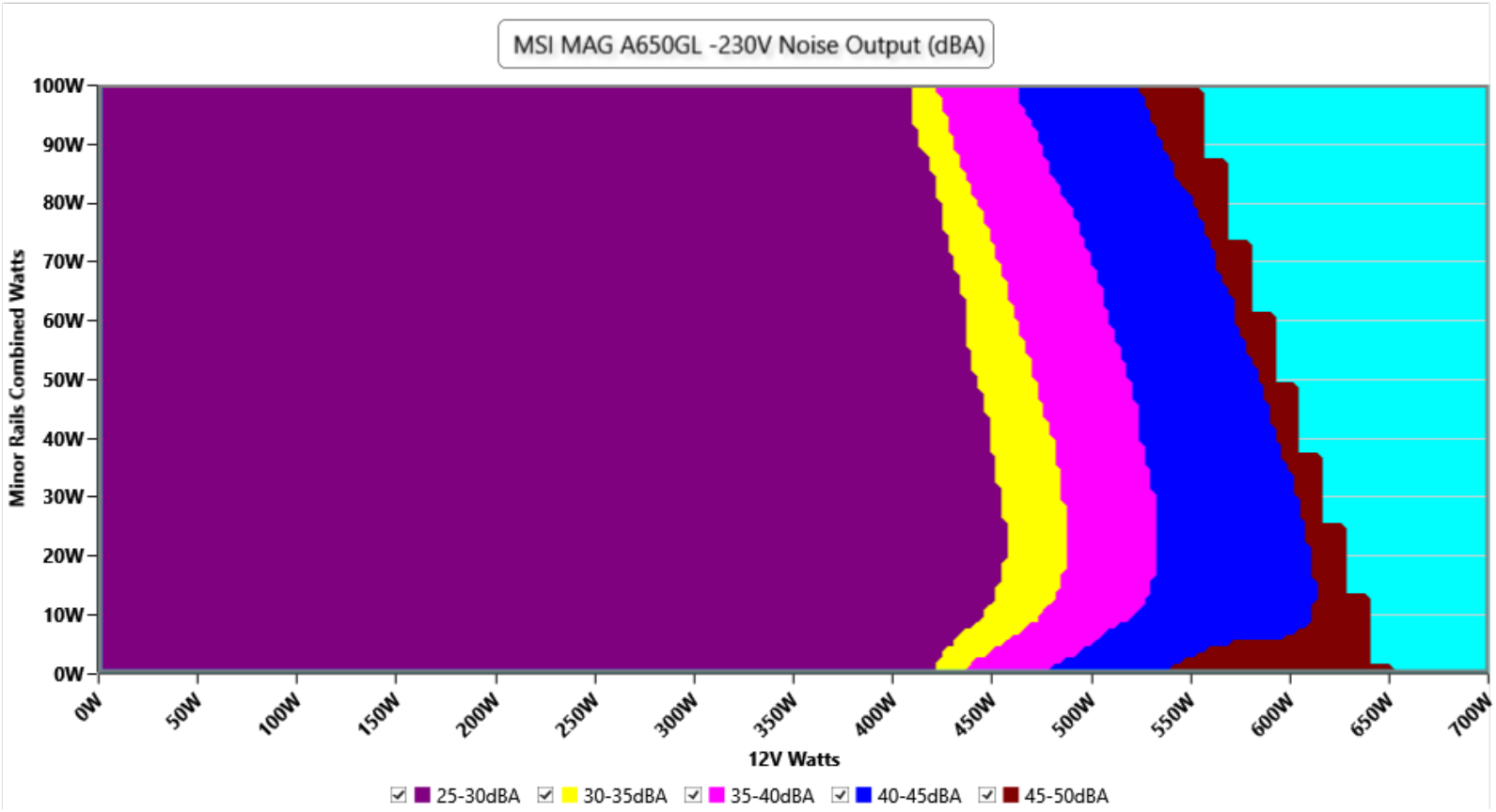
**115V**




□□

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



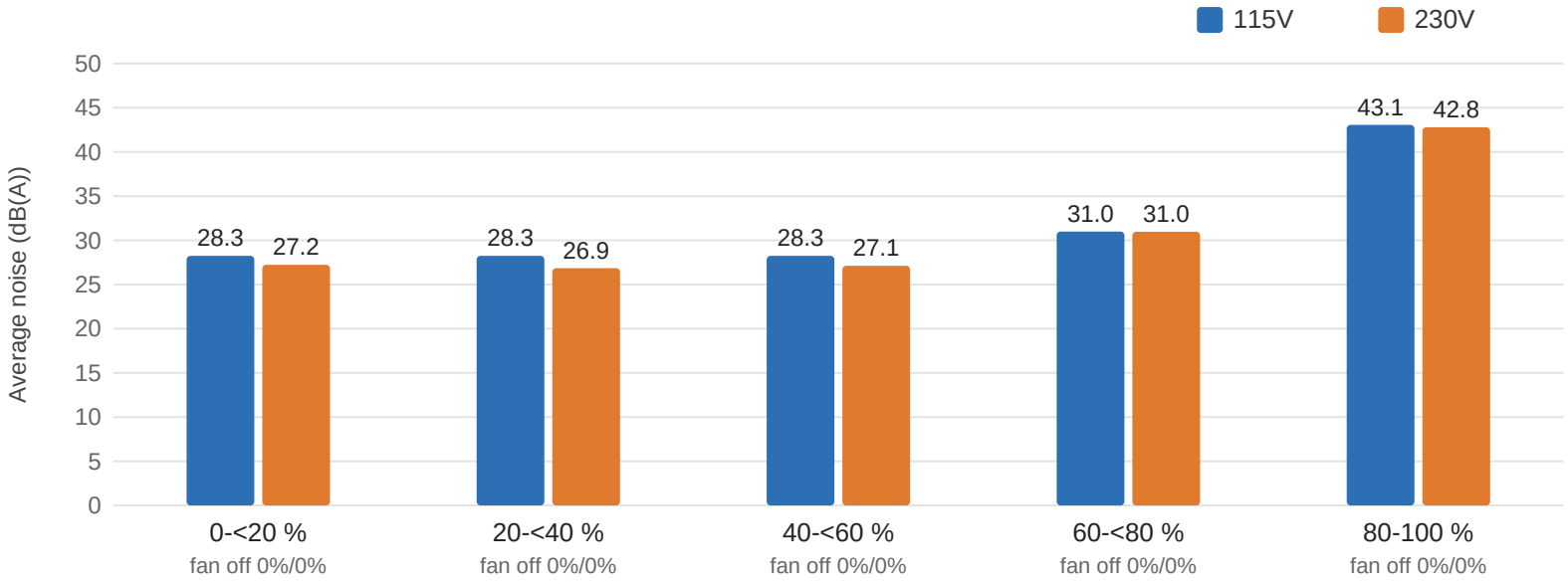

The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

### Noise by load range

**High-Load Index (70-100 % load)**

Noise **41.5 dB(A)** at 115V and **41.3 dB(A)** at 230V · loudest point 47.7 dB(A)

Efficiency 87.98% / 91.19% · power factor 0.984 / 0.962 (115V / 230V)




| Load range | Noise 115V<br>avg (loudest) | Noise 230V<br>avg (loudest) | Fan off<br>115V / 230V |
|---|---|---|---|
| 0-<20 % | 28.3 (28.3) | 27.2 (28.3) | 0% / 0% |
| 20-<40 % | 28.3 (28.3) | 26.9 (28.3) | 0% / 0% |
| 40-<60 % | 28.3 (28.3) | 27.1 (28.3) | 0% / 0% |
| 60-<80 % | 31.0 (44.1) | 31.0 (43.4) | 0% / 0% |
| 80-100 % | 43.1 (47.7) | 42.8 (46.2) | 0% / 0% |
| 70-100 % (High-Load) | 41.5 (47.7) | 41.3 (46.2) | 0% / 0% |
| All (published average) | 37.1 (47.7) | 36.8 (46.2) | 0% / 0% |

**INFO**

The average noise in five ranges of load, the share of points with the fan stopped (semi-passive operation), and the High-Load Index: the same figures for all points at 70 % of the rated output and above. Calculated from the 1549 (115V) and 1549 (230V) load combinations of the certification sweep, the same data that ETA and LAMBDA use (test 0 excluded). Load is the total DC output as a share of the rated 650 W. Noise is averaged on the energy scale, as for LAMBDA, so the ranges combined give back the published average noise. Each load combination is held for about five seconds; the stabilized readings at fixed loads are under "Noise under high ambient temperature".

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

## Noise under high ambient temperature (indicative)

### 115V

| Load | Normal ambient<br>fan · noise · intake | High ambient<br>fan · noise · intake | Noise change |
|---|---|---|---|
| 10% | 1139 RPM · 29.5 dB(A) · 40.1 °C | 1139 RPM · 29.5 dB(A) · 40.1 °C | **+0.0 dB(A)** |
| 20% | 1144 RPM · 29.6 dB(A) · 40.9 °C | 1144 RPM · 29.6 dB(A) · 40.9 °C | **+0.0 dB(A)** |
| 50% | 1154 RPM · 29.9 dB(A) · 42.4 °C | 1154 RPM · 29.9 dB(A) · 42.4 °C | **+0.0 dB(A)** |
| 100% | 2409 RPM · 48.5 dB(A) · 44.6 °C | 2409 RPM · 48.5 dB(A) · 44.6 °C | **+0.0 dB(A)** |

### 230V

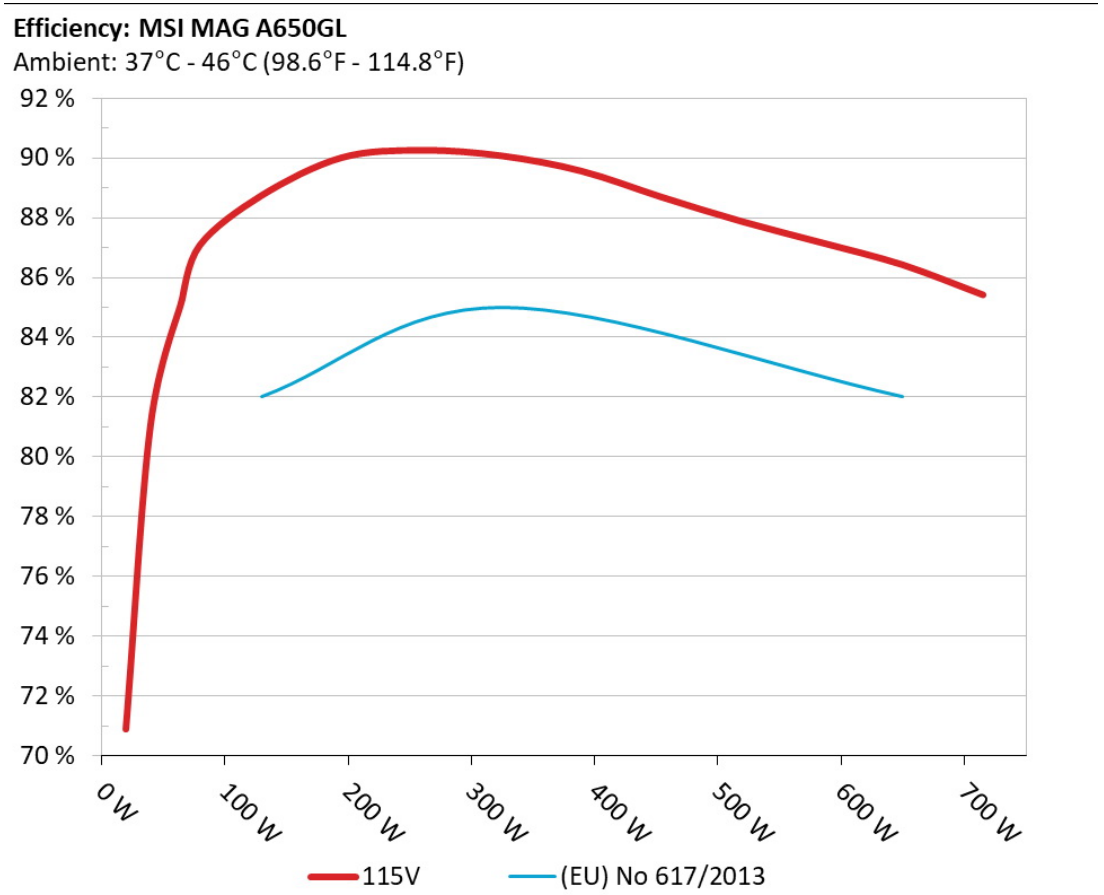
| Load | Normal ambient<br>fan · noise · intake | High ambient<br>fan · noise · intake | Noise change |
|---|---|---|---|
| 10% | 1144 RPM · 29.6 dB(A) · 40.3 °C | 1144 RPM · 29.6 dB(A) · 40.3 °C | **+0.0 dB(A)** |
| 20% | 1148 RPM · 29.8 dB(A) · 40.7 °C | 1148 RPM · 29.8 dB(A) · 40.7 °C | **+0.0 dB(A)** |
| 50% | 1157 RPM · 29.9 dB(A) · 42.1 °C | 1157 RPM · 29.9 dB(A) · 42.1 °C | **+0.0 dB(A)** |
| 100% | 2415 RPM · 48.7 dB(A) · 45.2 °C | 2415 RPM · 48.7 dB(A) · 45.2 °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, with the fan stopped; with the fan stopped, the intake sensor can read higher than the chamber air.

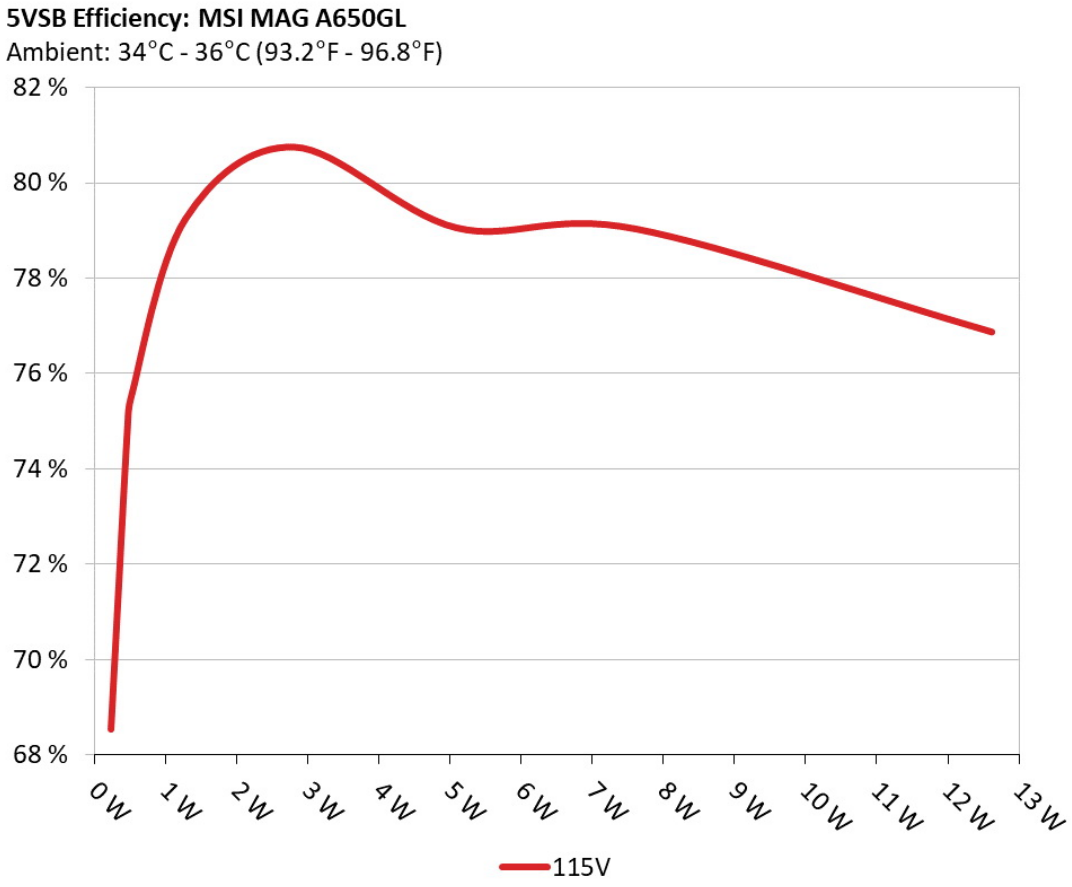
*Informational. Not part of the ETA or LAMBDA rating.*

## Indicative Performance




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□□□□**




□□

This graph depicts the efficiency levels of the 5VSB rail with 115V and 230V input

### □□□□ □□ 5Vsb □□ (ErP Lot3/6 & CEC)

**115V**

| □□ # | 5VSB | DC/AC (□ ) | □□ | PF/AC □□ |
|---|---|---|---|---|
| 1 | 0.045A | 0.23W | 68.55% | 0.033 |
| | 5.113V | 0.335W | | 114.94V |
| 2 | 0.09A | 0.46W | 74.842% | 0.06 |
| | 5.111V | 0.614W | | 114.94V |
| 3 | 0.55A | 2.804W | 80.762% | 0.263 |
| | 5.099V | 3.472W | | 114.92V |
| 4 | 1A | 5.087W | 79.068% | 0.352 |
| | 5.087V | 6.434W | | 114.91V |
| 5 | 1.5A | 7.61W | 79.045% | 0.407 |
| | 5.073V | 9.627W | | 114.91V |
| 6 | 2.5A | 12.613W | 76.884% | 0.462 |
| | 5.046V | 16.406W | | 114.9V |

## Supplementary Tests (For Reference)

### 10-110%□□□□

**115V**

| □□ | 12V | 5V | 3.3V | 5VSB | DC/AC (□ ) | □□ | □□□□ (RPM) | □□□□□□□ (dB[A]) | □□ (□□ /□□ ) | PF/AC □□ |
|---|---|---|---|---|---|---|---|---|---|---|
| 10% | 3.612A | 1.994A | 1.981A | 0.985A | 64.997 | 85.059% | 1139 | 29.5 | 40.05°C | 0.955 |
| | 12.016V | 5.015V | 3.331V | 5.075V | 76.417 | | | | 44.33°C | 114.88V |
| 20% | 8.248A | 2.992A | 2.974A | 1.185A | 129.926 | 88.73% | 1144 | 29.6 | 40.9°C | 0.973 |
| | 12.007V | 5.012V | 3.328V | 5.062V | 146.428 | | | | 45.58°C | 114.86V |
| 30% | 13.240A | 3.493A | 3.472A | 1.387A | 194.925 | 89.999% | 1146 | 29.7 | 41.33°C | 0.978 |
| | 11.999V | 5.01V | 3.326V | 5.048V | 216.587 | | | | 46.33°C | 114.84V |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 40% | 18.247A | 3.993A | 3.971A | 1.589A | 260.007 | 90.248% | 1145 | 29.7 | 41.65°C | 0.981 |
| | 11.991V | 5.009V | 3.325V | 5.035V | 288.104 | | | | 47.27°C | 114.82V |
| 50% | 22.908A | 4.994A | 4.967A | 1.793A | 324.998 | 90.057% | 1154 | 29.9 | 42.36°C | 0.984 |
| | 11.982V | 5.006V | 3.322V | 5.021V | 360.878 | | | | 48.45°C | 114.8V |
| 60% | 27.520A | 5.995A | 5.966A | 1.997A | 389.308 | 89.551% | 1156 | 29.9 | 42.87°C | 0.983 |
| | 11.973V | 5.004V | 3.319V | 5.007V | 434.733 | | | | 49.39°C | 114.77V |
| 70% | 32.221A | 6.999A | 6.966A | 2.203A | 454.611 | 88.678% | 1706 | 40.8 | 43.24°C | 0.982 |
| | 11.965V | 5.002V | 3.316V | 4.992V | 512.653 | | | | 50.3°C | 114.74V |
| 80% | 36.930A | 8.001A | 7.968A | 2.308A | 519.44 | 87.862% | 2200 | 46.2 | 43.65°C | 0.982 |
| | 11.956V | 4.998V | 3.313V | 4.981V | 591.203 | | | | 51.68°C | 114.72V |
| 90% | 42.045A | 8.505A | 8.456A | 2.414A | 584.846 | 87.146% | 2407 | 48.5 | 44.35°C | 0.985 |
| | 11.948V | 4.996V | 3.311V | 4.971V | 671.109 | | | | 53.4°C | 114.69V |
| 100% | 47.102A | 9.009A | 8.975A | 2.52A | 649.578 | 86.417% | 2409 | 48.5 | 44.63°C | 0.987 |
| | 11.940V | 4.994V | 3.309V | 4.959V | 751.672 | | | | 54.79°C | 114.67V |
| 110% | 51.899A | 10.016A | 10.073A | 2.525A | 715.009 | 85.41% | 2411 | 48.6 | 42.81°C | 0.987 |
| | 11.931V | 4.991V | 3.306V | 4.951V | 837.152 | | | | 53.72°C | 114.65V |
| CL1 | 0.115A | 12.044A | 11.985A | 0A | 101.288 | 83.25% | 1153 | 29.9 | 40.46°C | 0.968 |
| | 12.001V | 4.998V | 3.313V | 5.085V | 121.669 | | | | 49.93°C | 114.86V |
| CL2 | 0.115A | 19.998A | 0A | 0A | 101.338 | 80.738% | 1152 | 29.9 | 41.14°C | 0.969 |
| | 12.004V | 4.998V | 3.326V | 5.09V | 125.515 | | | | 50.57°C | 114.87V |
| CL3 | 0.115A | 0A | 19.943A | 0A | 67.394 | 75.329% | 1127 | 29.1 | 40.12°C | 0.959 |
| | 12.003V | 5.01V | 3.31V | 5.091V | 89.466 | | | | 50.2°C | 114.89V |
| CL4 | 54.354A | 0A | 0A | 0A | 649.495 | 87.568% | 2400 | 48.4 | 42.85°C | 0.987 |
| | 11.949V | 5.014V | 3.328V | 5.037V | 741.707 | | | | 52.11°C | 114.68V |

The results above are not used in the certification process

**230V**

| □□ | 12V | 5V | 3.3V | 5VSB | DC/AC (□ ) | □□ | □□□□ (RPM) | □□□□□□□ (dB[A]) | □□ (□□ /□□ ) | PF/AC □□ |
|---|---|---|---|---|---|---|---|---|---|---|
| 10% | 3.612A | 1.994A | 1.981A | 0.985A | 64.998 | 86.095% | 1144 | 29.6 | 40.33°C | 0.775 |
| | 12.014V | 5.016V | 3.332V | 5.075V | 75.493 | | | | 44.57°C | 229.88V |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 20% | 8.248A | 2.992A | 2.974A | 1.185A | 129.929 | 90.167% | 1148 | 29.8 | 40.73°C | 0.888 |
| | 12.006V | 5.013V | 3.329V | 5.061V | 144.096 | | | | 45.34°C | 229.86V |
| 30% | 13.243A | 3.492A | 3.472A | 1.387A | 194.931 | 91.561% | 1152 | 29.9 | 41.24°C | 0.922 |
| | 11.998V | 5.011V | 3.327V | 5.047V | 212.905 | | | | 46.32°C | 229.86V |
| 40% | 18.249A | 3.993A | 3.971A | 1.589A | 260.012 | 92.103% | 1154 | 29.9 | 41.63°C | 0.938 |
| | 11.991V | 5.009V | 3.325V | 5.034V | 282.296 | | | | 47.21°C | 229.83V |
| 50% | 22.910A | 4.993A | 4.967A | 1.793A | 325.007 | 92.195% | 1157 | 29.9 | 42.11°C | 0.948 |
| | 11.982V | 5.007V | 3.322V | 5.02V | 352.528 | | | | 48.11°C | 229.83V |
| 60% | 27.522A | 5.995A | 5.965A | 1.997A | 389.318 | 91.967% | 1162 | 30.0 | 42.62°C | 0.954 |
| | 11.973V | 5.005V | 3.32V | 5.007V | 423.324 | | | | 49.16°C | 229.82V |
| 70% | 32.222A | 6.999A | 6.967A | 2.203A | 454.618 | 91.391% | 1719 | 41.0 | 43.11°C | 0.958 |
| | 11.964V | 5.002V | 3.316V | 4.992V | 497.462 | | | | 50.2°C | 229.81V |
| 80% | 36.931A | 8A | 7.967A | 2.308A | 519.433 | 90.919% | 2204 | 46.2 | 43.61°C | 0.961 |
| | 11.956V | 4.999V | 3.313V | 4.981V | 571.321 | | | | 51.66°C | 229.78V |
| 90% | 42.045A | 8.504A | 8.455A | 2.414A | 584.829 | 90.542% | 2415 | 48.7 | 44.33°C | 0.963 |
| | 11.948V | 4.997V | 3.311V | 4.97V | 645.921 | | | | 53.39°C | 229.79V |
| 100% | 47.107A | 9.008A | 8.975A | 2.521A | 649.599 | 90.129% | 2415 | 48.7 | 45.16°C | 0.965 |
| | 11.939V | 4.995V | 3.309V | 4.959V | 720.755 | | | | 55.27°C | 229.77V |
| 110% | 51.908A | 10.015A | 10.072A | 2.526A | 715.033 | 89.604% | 2414 | 48.6 | 43.78°C | 0.966 |
| | 11.930V | 4.992V | 3.306V | 4.949V | 798.001 | | | | 54.7°C | 229.76V |
| CL1 | 0.116A | 12.043A | 11.984A | 0A | 101.292 | 83.97% | 1168 | 30.4 | 41.77°C | 0.866 |
| | 12.000V | 4.998V | 3.313V | 5.085V | 120.633 | | | | 50.18°C | 229.87V |
| CL2 | 0.115A | 19.998A | 0A | 0A | 101.339 | 81.682% | 1168 | 30.4 | 40.55°C | 0.87 |
| | 12.003V | 4.998V | 3.326V | 5.089V | 124.067 | | | | 50.19°C | 229.87V |
| CL3 | 0.115A | 0A | 19.943A | 0A | 67.396 | 76.222% | 1143 | 29.6 | 40.27°C | 0.812 |
| | 12.003V | 5.01V | 3.31V | 5.091V | 88.423 | | | | 48.8°C | 229.87V |
| CL4 | 54.357A | 0A | 0A | 0A | 649.506 | 91.185% | 2417 | 48.7 | 43.86°C | 0.965 |
| | 11.949V | 5.014V | 3.328V | 5.036V | 712.303 | | | | 53.41°C | 229.78V |

The results above are not used in the certification process

## 20-80□□□□□

### 115V

| □□ | 12V | 5V | 3.3V | 5VSB | DC/AC (□ ) | □□ | □□□□ (RPM) | □□□□□□□ (dB[A]) | □□ (□□ /□□ ) | PF/AC □□ |
|---|---|---|---|---|---|---|---|---|---|---|
| 20W | 1.236A | 0.498A | 0.495A | 0.196A | 19.995 | 70.878% | 1089 | 28.0 | 36°C | 0.842 |
| | 12.014V | 5.02V | 3.336V | 5.104V | 28.21 | | | | 39.05°C | 114.9V |
| 40W | 2.720A | 0.697A | 0.693A | 0.294A | 39.995 | 81.057% | 1124 | 29.0 | 37.88°C | 0.924 |
| | 12.016V | 5.018V | 3.335V | 5.099V | 49.342 | | | | 41.19°C | 114.89V |
| 60W | 4.204A | 0.897A | 0.891A | 0.393A | 59.995 | 85.178% | 1128 | 29.1 | 38.19°C | 0.953 |
| | 12.018V | 5.018V | 3.334V | 5.094V | 70.434 | | | | 41.74°C | 114.88V |
| 80W | 5.685A | 1.096A | 1.089A | 0.491A | 79.937 | 87.07% | 1134 | 29.4 | 39.59°C | 0.959 |
| | 12.015V | 5.017V | 3.333V | 5.088V | 91.808 | | | | 43.44°C | 114.88V |

The results above are not used in the certification process

### 230V

| □□ | 12V | 5V | 3.3V | 5VSB | DC/AC (□ ) | □□ | □□□□ (RPM) | □□□□□□□ (dB[A]) | □□ (□□ /□□ ) | PF/AC □□ |
|---|---|---|---|---|---|---|---|---|---|---|
| 20W | 1.236A | 0.498A | 0.495A | 0.196A | 19.996 | 70.768% | 1117 | 28.8 | 36.51°C | 0.471 |
| | 12.014V | 5.02V | 3.335V | 5.105V | 28.256 | | | | 39.58°C | 229.88V |
| 40W | 2.720A | 0.697A | 0.693A | 0.294A | 39.996 | 81.725% | 1129 | 29.1 | 37.7°C | 0.648 |
| | 12.016V | 5.019V | 3.335V | 5.098V | 48.941 | | | | 40.95°C | 229.88V |
| 60W | 4.204A | 0.897A | 0.891A | 0.393A | 59.995 | 85.823% | 1132 | 29.3 | 38.75°C | 0.755 |
| | 12.018V | 5.018V | 3.334V | 5.093V | 69.907 | | | | 42.27°C | 229.88V |
| 80W | 5.682A | 1.096A | 1.089A | 0.491A | 79.93 | 87.119% | 1074 | 27.5 | 39.2°C | 0.817 |
| | 12.020V | 5.015V | 3.332V | 5.093V | 91.75 | | | | 42.88°C | 229.91V |

The results above are not used in the certification process

## □□□□

### 115V

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| 10% Load | 30.01mV | 17.11mV | 17.14mV | 18.11mV | Pass |
| 20% Load | 35.95mV | 17.01mV | 16.88mV | 18.52mV | Pass |
| 30% Load | 34.93mV | 17.11mV | 17.24mV | 20.82mV | Pass |
| 40% Load | 25.31mV | 12.92mV | 12.23mV | 17.03mV | Pass |
| 50% Load | 17.48mV | 13.39mV | 12.58mV | 16.88mV | Pass |
| 60% Load | 16.61mV | 13.23mV | 13.35mV | 18.82mV | Pass |
| 70% Load | 19.63mV | 13.74mV | 13.50mV | 16.88mV | Pass |
| 80% Load | 20.24mV | 14.61mV | 14.99mV | 17.08mV | Pass |
| 90% Load | 21.16mV | 16.40mV | 15.09mV | 18.21mV | Pass |
| 100% Load | 33.10mV | 16.67mV | 15.37mV | 18.06mV | Pass |
| 110% Load | 34.67mV | 17.56mV | 16.06mV | 19.82mV | Pass |
| Crossload1 | 44.66mV | 15.65mV | 17.56mV | 15.19mV | Pass |
| Crossload2 | 38.41mV | 21.76mV | 12.74mV | 15.14mV | Pass |
| Crossload3 | 35.39mV | 12.82mV | 17.60mV | 14.37mV | Pass |
| Crossload4 | 32.97mV | 15.80mV | 14.20mV | 18.44mV | Pass |

The results above are not used in the certification process

### 230V

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| 10% Load | 34.06mV | 12.11mV | 11.77mV | 13.86mV | Pass |
| 20% Load | 36.56mV | 12.41mV | 12.63mV | 14.07mV | Pass |
| 30% Load | 35.33mV | 12.01mV | 12.23mV | 15.55mV | Pass |
| 40% Load | 20.02mV | 10.63mV | 11.15mV | 15.19mV | Pass |
| 50% Load | 17.02mV | 12.21mV | 11.82mV | 15.55mV | Pass |
| 60% Load | 17.74mV | 13.74mV | 13.30mV | 18.57mV | Pass |





| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| 70% Load | 15.36mV | 12.16mV | 10.79mV | 12.79mV | Pass |
| 80% Load | 18.86mV | 15.12mV | 12.53mV | 15.09mV | Pass |
| 90% Load | 22.29mV | 15.94mV | 13.86mV | 20.36mV | Pass |
| 100% Load | 32.96mV | 17.15mV | 15.34mV | 18.57mV | Pass |
| 110% Load | 35.42mV | 19.04mV | 16.04mV | 19.24mV | Pass |
| Crossload1 | 43.98mV | 15.53mV | 15.57mV | 15.92mV | Pass |
| Crossload2 | 37.23mV | 22.74mV | 12.02mV | 14.99mV | Pass |
| Crossload3 | 36.72mV | 12.67mV | 17.60mV | 14.32mV | Pass |
| Crossload4 | 32.86mV | 15.91mV | 14.50mV | 17.58mV | Pass |

The results above are not used in the certification process

## MSI MAG A650GL

Top side

Power specifications label

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