# MSI MPG A850GS PCIE5

Serial Number -

Lab ID MS85002705

Certification ID 252705

Test Result Report ID: 25PS2705A

Certificate Issue Date: Jan 13, 2025

Scheme: ETA-EMI PSU

115V




230V

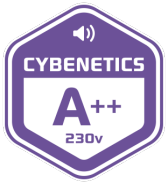



Scheme: LAMBDA PSU

115V




230V







Outside Validation Scope



# General Information

## Test Equipment

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

## DUT Information(Non-accredited measurements)

| | |
|---|---|
| Product Identification Details | |
| Brand | MSI |
| Model | MPG A850GS PCIE5 |
| OEM/ODM | CWT |
| Serial Number | - |
| Product Specifications | |
| Manufacturer-Provided Information | |
| Rated Voltage (Vrms) | 100-240 |
| Rated Current (Arms) | 10 |

| | |
|---|---|
| Rated Frequency (Hz) | 50-60 |
| Rated Power (W) | 850 |
| Operating Temperature (Continuous Full Load) (°C) | |
| Type | ATX12V |
| Cable Design | Fully Modular |
| Warranty | - |
| Cybenetics Measurements | |
| Dimensions (W x H x D) | |
| Weight | |
| Cooling | 135mm Fluid Dynamic Bearing Fan (ZFF132512H) |
| Semi-Passive Operation | ✓ (selectable) |
| Cybenetics Testing Information | |
| Lab ID | MS85002705 |
| Date of receipt | Dec 28, 2024 |
| Testing Date | Jan 10, 2025 |
| Report Issued Date | Jan 13, 2025 |
| Engineer Name | Georgios Theodoros Sarimpalas |
| 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 24 pin (600mm) | 1 | 1 | 16-20AWG | No |
| 4+4 pin EPS12V (750mm) | 2 | 2 | 18AWG | No |
| 6+2 pin PCIe (600mm) | 2 | 4 | 18AWG | No |
| 2x 6+2 pin PCIe (600mm) | 1 | 2 | 18AWG | No |
| 12+4 pin PCIe (600mm) (600W) | 1 | 1 | 16-24AWG | No |
| SATA (500mm+150mm+150mm+150mm) | 2 | 8 | 18AWG | No |
| 4-pin Molex (500mm+150mm+150mm+150mm) | 1 | 4 | 18AWG | No |

| | | | | |
|---|---|---|---|---|
| AC Power Cord (1380mm) - C13 coupler | 1 | 1 | 18AWG | - |

## Protection Features(Manufacturer)

| | |
|---|---|
| Over Power Protection | ✓ |
| Over Current (+12V) Protection | ✓ |
| Over Temperature Protection | ✓ |
| Short Circuit Protection | ✓ |
| Surge Protection | ✓ |
| Inrush Current Protection | ✓ |
| Fan Failure Protection | ✗ |

## Power Specifications

| Rail | | 3.3V | 5V | 12V | 5VSB | -12V |
|---|---|---|---|---|---|---|
| Max. Power | Amps | 22 | 22 | 70.8 | 3 | 0.3 |
| | Watts | 120 | | 849.6 | 15 | 3.6 |
| Total Max. Power (W) | | 850 | | | | |

## Parts Description

| | |
|---|---|
| **General Data** | |
| Manufacturer (OEM) | CWT |
| Platform | CTE |
| PCB Type | Double-Sided |
| **Primary Side** | |
| Transient Filter | 4x Y caps, 2x X caps, 2x CM chokes, 1x MOV |
| Inrush Protection | 1x NTC Thermistor SCK207R0 (7 Ohm) & Relay |
| Bridge Rectifier(s) | 1x GBJ2506 (1000V, 25A @ 100°C) |
| APFC MOSFETs | 2x Infineon IPA60R125P6 (650V, 19A @ 100°C, Rds(on): 0.125Ohm) |
| APFC Boost Diode | 1x Vishay VS-3C10ET07T-M3 (650V, 10A @ 140°C) |

| | |
|---|---|
| Bulk Cap(s) | 1x Rubycon (420V, 680uF, 2,000h @ 105°C, MXE) |
| Main Switchers | 2x Infineon IPA60R190P6 (650V, 12.7A @ 100°C, Rds(on): 0.190Ohm) |
| PFC / PWM Combo Controller | MPS HR1280 |
| Topology | Primary side: APFC, Half-Bridge, LLC Resonant Converter  Secondary side: Synchronous Rectification & DC-DC converters |
| **Secondary Side** | |
| +12V MOSFETs | 4x On Semiconductor NTMFS5C430N (40V, 131A @ 100°C, Rds(on): 1.7mOhm) |
| 5V & 3.3V | DC-DC Converters: 2x UBIQ QM3054M6 (30V, 61A @ 100°C, Rds(on): 4.8mOhm) & 2x UBIQ QN3107M6N (30V, 70A @ 100°C, Rds(on): 2.6mOhm) PWM Controller(s): |
| Filtering Capacitors | Electrolytic: 2x Nippon Chemi-Con (@ 105°C, W) 2x Nippon Chemi-Con (2-5,000h @ 105°C,KZE), 2x Rubycon (3-6,000h @ 105°C, YXS) 1x Rubycon (6-10,000h @ 105°C, ZLH) Polymer: 2x Nippon Chemi-Con, 23x FPCAP |
| Supervisor IC | - |
| Fan Controller | Nuvoton MS51FB9AE |
| Fan Model | ZIC ZFF132512H BAX3 (135mm, 12V, 0.45A, Fluid Dynamic Bearing Fan) |
| **5VSB Circuit** | |
| Rectifier | 1x Dongke Semiconductor DK5V45R10S (45V, 10A) |
| Standby PWM Controller | On Bright OB2365T |

## Test Results

### Temperature & Compliance Info

| | |
|---|---|
| Temperature Range (°C /°F) | 28-32 / 82.4-89.6 |
| ErP Lot 3/6 Ready | ✓ |
| (EU) No 617/2013 Compliance | ✓ |
| ALPM (Alternative Low Power Mode) compatible | ✓ |
| ATX v3.1 PSU Power Excursion | ✓ |

## Performance Summary

### 115V

| | |
|---|---|
| Accredited | |
| Average Efficiency (>1450 load combinations) | 88.097% |
| Average Noise Output (>1450 Load Combinations) | 12.92dBA |
| Average PF (>1450 Load Combinations) | 0.994 |
| Efficiency With 10W (≤500W) or 2% (>500W) Load | 72.749% |
| Standby Power Consumption | 0.0154W |
| Non-Accredited | |
| 12V Ripple (Full Load) | 29.82mV |
| 5V Ripple (Full Load) | 22.40mV |
| 3.3V Ripple (Full Load) | 24.79mV |
| 5VSB Ripple (Full Load) | 15.85mV |
| 12V Load Regulation | 0.58% |
| 5V Load Regulation | 0.54% |
| 3.3V Load Regulation | 0.70% |
| 5VSB Load Regulation | 1.47% |
| Inrush Current | 23.850A |

### 230V

| | |
|---|---|
| Accredited | |
| Average Efficiency (>1450 load combinations) | 90.407% |
| Average Noise Output (>1450 Load Combinations) | 12.49dBA |
| Average PF (>1450 Load Combinations) | 0.972 |
| Efficiency With 10W (≤500W) or 2% (>500W) Load | 64.609% |
| Standby Power Consumption | 0.0892W |
| Non-Accredited | |
| 12V Ripple (Full Load) | 26.67mV |
| 5V Ripple (Full Load) | 22.18mV |
| 3.3V Ripple (Full Load) | 23.94mV |

| | | |
|---|---|---|
| 5VSB Ripple (Full Load) | | 15.22mV |
| 12V Load Regulation | | 0.57% |
| 5V Load Regulation | | 0.52% |
| 3.3V Load Regulation | | 0.70% |
| 5VSB Load Regulation | | 1.43% |
| Inrush Current | | 46.830A |
| 12V Transient Response (200%) | | 11.46V |
| 5V Transient Response (200%) | | 4.925V |
| 3.3V Transient Response (200%) | | 3.180V |
| 5VSB Transient Response (200%) | | 4.903V |
| Hold-Up Time & PWR_OK Signal | | 16.60ms |
| AC Loss to PWR_OK Hold Up Time | | 14.40ms |
| PWR_OK Inactive to DC Loss Delay | | 2.20ms |
| PSU Timings: T1 (20% / 100%) | 91.0ms | 66.0ms |
| PSU Timings: T3 (20% / 100%) | 134.0ms | 134.0ms |
| 12V OCP (29.3°C / 44.2°C) | 91.20A (128.81%), 12.046V | 91.00A (128.53%), 12.040V |
| 5V OCP (29.3°C / 44.2°C) | 26A (118.18%), 5.019V | 25.9A (117.73%), 5.015V |
| 3.3V OCP (29.3°C / 44.2°C) | 27.3A (124.09%), 3.286V | 26.898A (122.26%), 3.284V |
| 5VSB OCP (29.3°C / 44.2°C) | 4.9A (163.33%), 5.037V | 4.9A (163.33%), 5.031V |
| OPP (29.85°C / 44.07°C) | 128.54% | 123.72% |

## Hold-Up Time & PWR_OK Signal

| | |
|---|---|
| Hold-Up Time (ms) | 16.6 |
| AC Loss to PWR_OK Hold Up Time (ms) | 14.4 |
| PWR_OK Inactive to DC Loss Delay (ms) | 2.2 |

## Stromverbrauch im Ruhezustand

### Tables

#### 115V

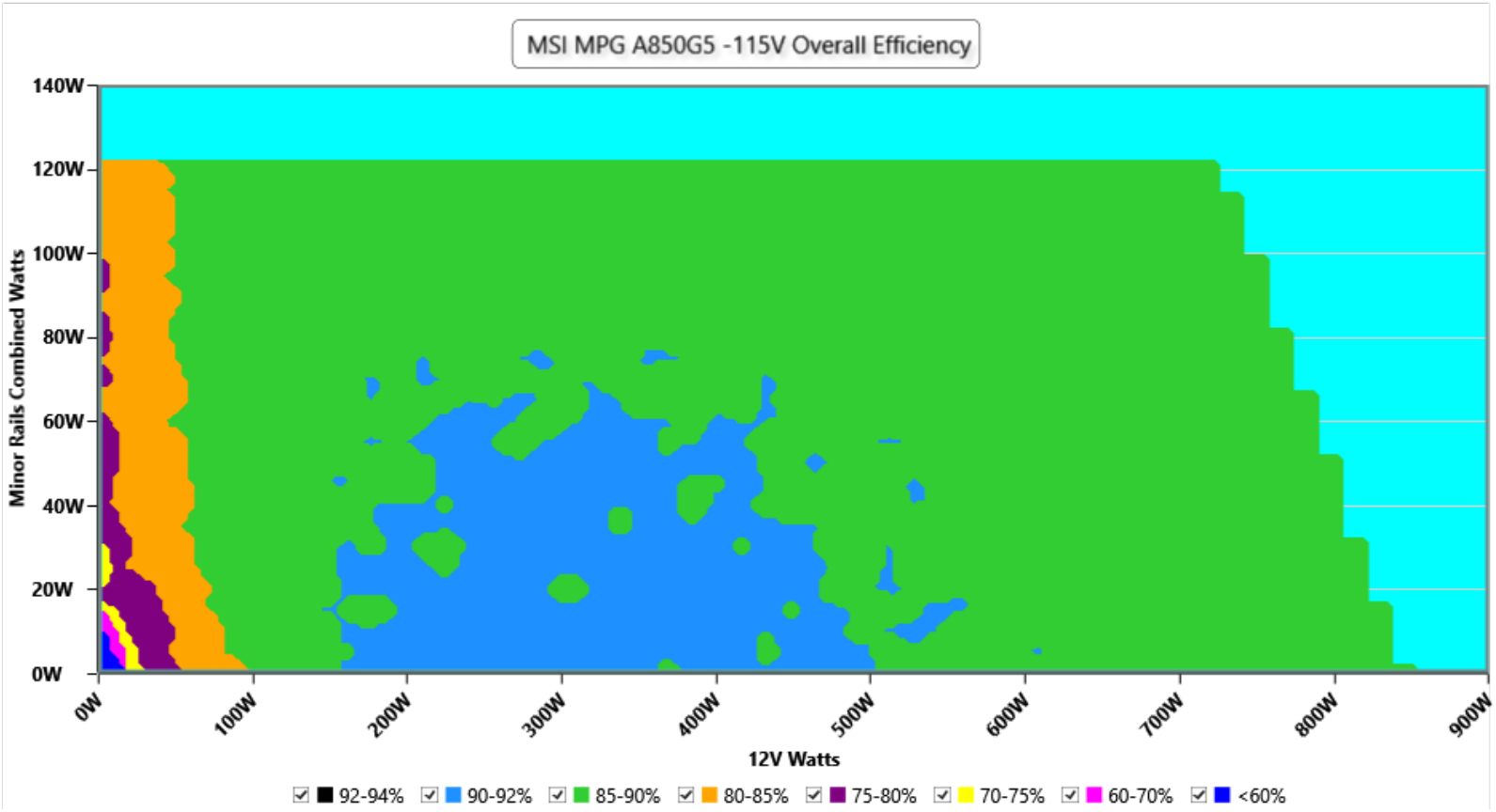
| Detailed Results | | | | | | |
|---|---|---|---|---|---|---|
| | Average | Min | Limit Min | Max | Limit Max | Result |
| Mains Voltage RMS: | 115.04 V | 115.00 V | 113.85 V | 115.08 V | 116.15 V | PASS |
| Mains Frequency: | 60.00 Hz | 59.99 Hz | 59.40 Hz | 60.01 Hz | 60.60 Hz | PASS |
| Mains Voltage CF: | 1.416 | 1.415 | 1.340 | 1.418 | 1.490 | PASS |
| Mains Voltage THD: | 0.13 % | 0.09 % | N/A | 0.18 % | 2.00 % | PASS |
| Real Power: | 0.015 W | -0.002 W | N/A | 0.056 W | N/A | N/A |
| Apparent Power: | 10.193 W | 10.134 W | N/A | 10.262 W | N/A | N/A |
| Power Factor: | 0.004 | N/A | N/A | N/A | N/A | N/A |

#### 230V

| Detailed Results | | | | | | |
|---|---|---|---|---|---|---|
| | Average | Min | Limit Min | Max | Limit Max | Result |
| Mains Voltage RMS: | 230.99 V | 230.89 V | 227.70 V | 231.04 V | 232.30 V | PASS |
| Mains Frequency: | 50.00 Hz | 49.99 Hz | 49.50 Hz | 50.01 Hz | 50.50 Hz | PASS |
| Mains Voltage CF: | 1.417 | 1.416 | 1.340 | 1.419 | 1.490 | PASS |
| Mains Voltage THD: | 0.17 % | 0.14 % | N/A | 0.25 % | 2.00 % | PASS |
| Real Power: | 0.089 W | 0.050 W | N/A | 0.141 W | N/A | N/A |
| Apparent Power: | 34.975 W | 34.772 W | N/A | 35.201 W | N/A | N/A |
| Power Factor: | 0.003 | N/A | N/A | N/A | N/A | N/A |

## Efficiency Graph

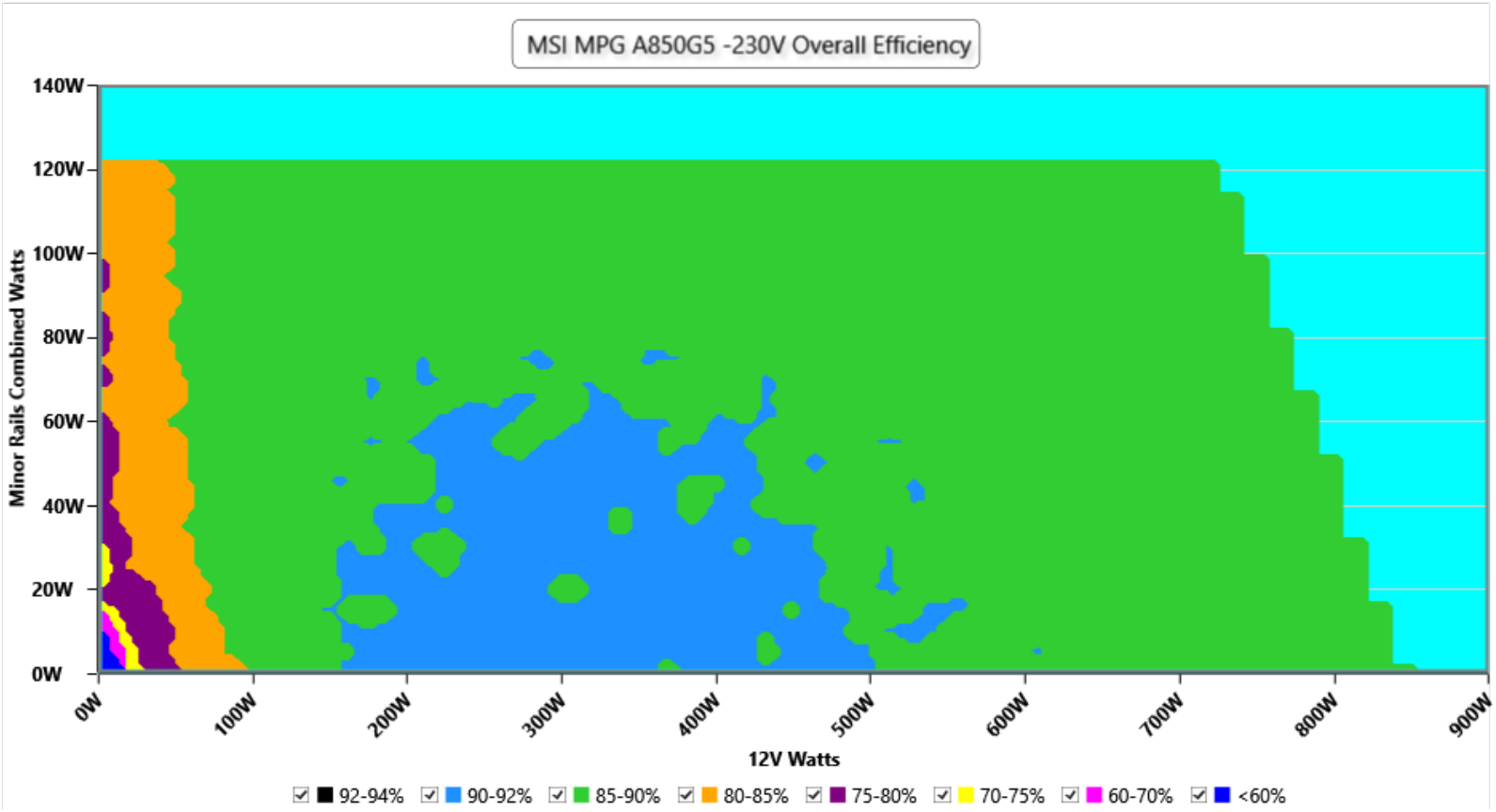
**115V**




**INFO**

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

## 230V

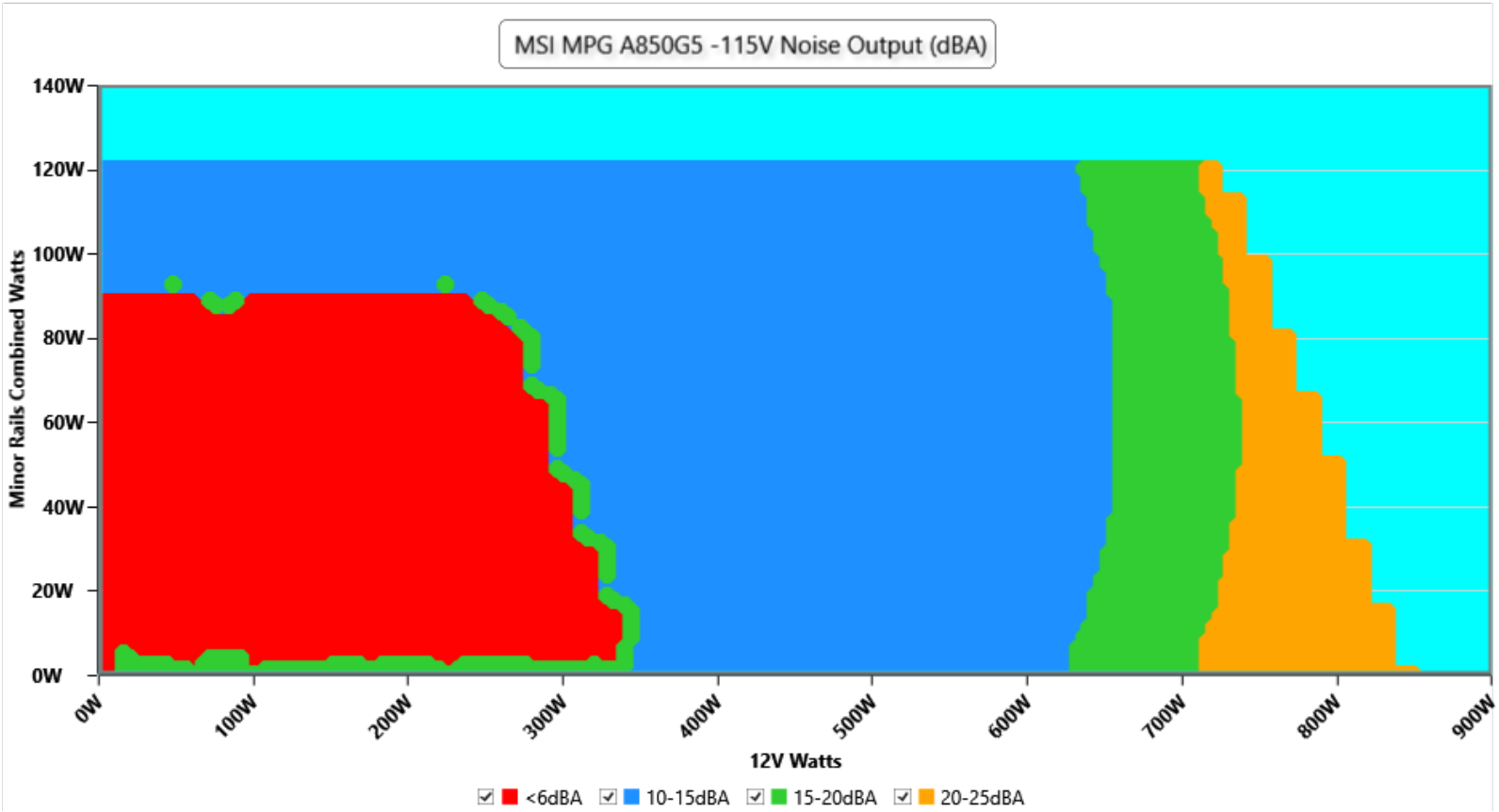



### INFO

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

## Noise Graph

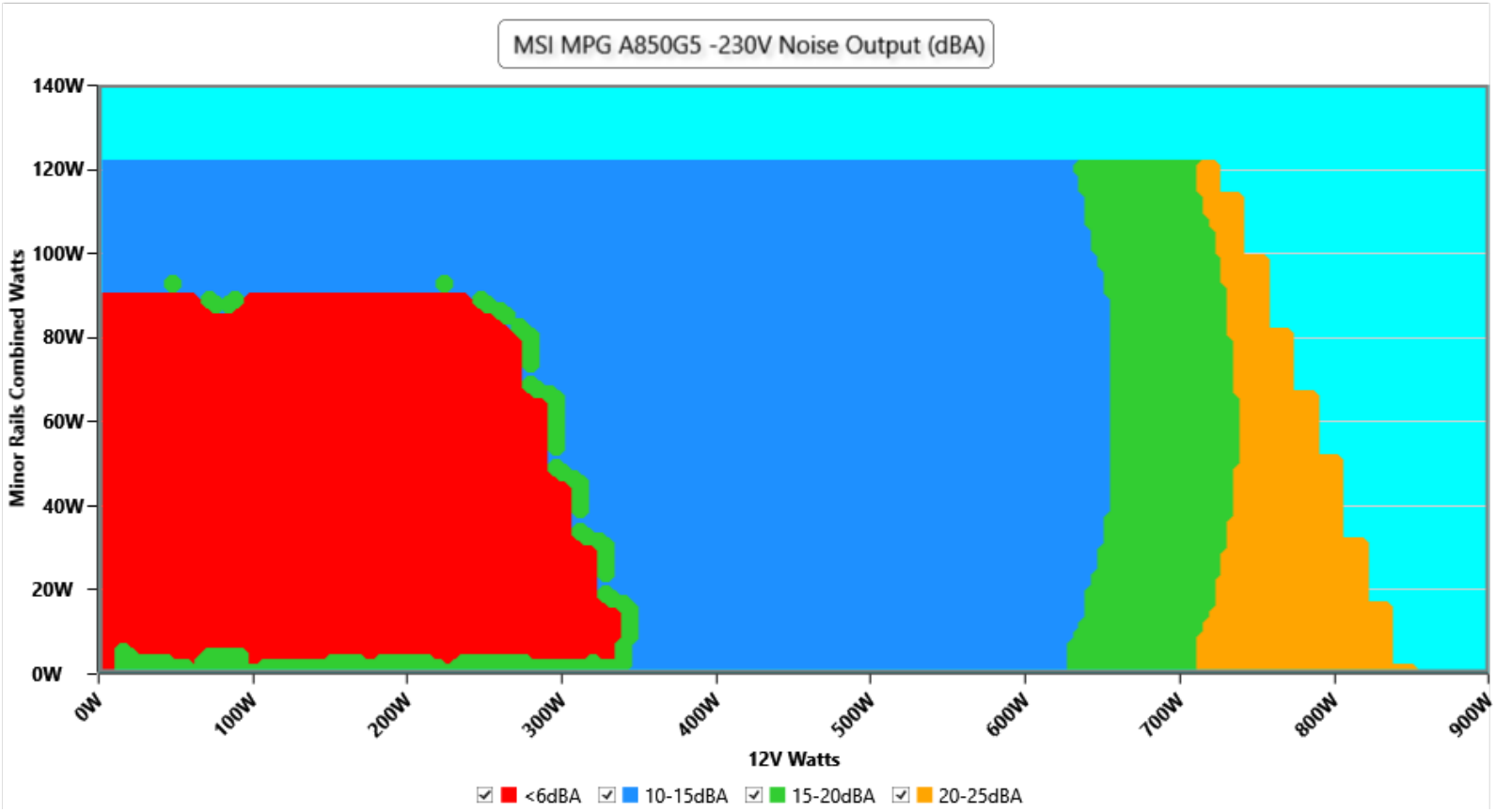
### 115V




**INFO**

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

## 230V




### INFO

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

## Noise under high ambient temperature (indicative)

### 115V

| Load | Normal ambient<br>fan · noise · intake | High ambient<br>fan · noise · intake | Noise change |
|---|---|---|---|
| 10% | 0 RPM · <6.0 dB(A) · 34.2 °C | 0 RPM · <6.0 dB(A) · 48.3 °C | fan off in both |
| 20% | 0 RPM · <6.0 dB(A) · 35.1 °C | 0 RPM · <6.0 dB(A) · 51.2 °C | fan off in both |
| 50% | 386 RPM · 12.3 dB(A) · 30.1 °C | 409 RPM · 12.0 dB(A) · 42.1 °C | **-0.3 dB(A)** |
| 100% | 712 RPM · 15.7 dB(A) · 30.6 °C | 1413 RPM · 37.2 dB(A) · 45.2 °C | **+21.5 dB(A)** |

### 230V

| Load | Normal ambient<br>fan · noise · intake | High ambient<br>fan · noise · intake | Noise change |
|---|---|---|---|
| 10% | 0 RPM · <6.0 dB(A) · 34.9 °C | 0 RPM · <6.0 dB(A) · 49.0 °C | fan off in both |
| 20% | 0 RPM · <6.0 dB(A) · 36.7 °C | 0 RPM · <6.0 dB(A) · 49.9 °C | fan off in both |
| 50% | 386 RPM · 12.3 dB(A) · 30.4 °C | 407 RPM · 12.0 dB(A) · 42.5 °C | **-0.3 dB(A)** |
| 100% | 712 RPM · 15.7 dB(A) · 30.9 °C | 1331 RPM · 35.8 dB(A) · 45.5 °C | **+20.1 dB(A)** |

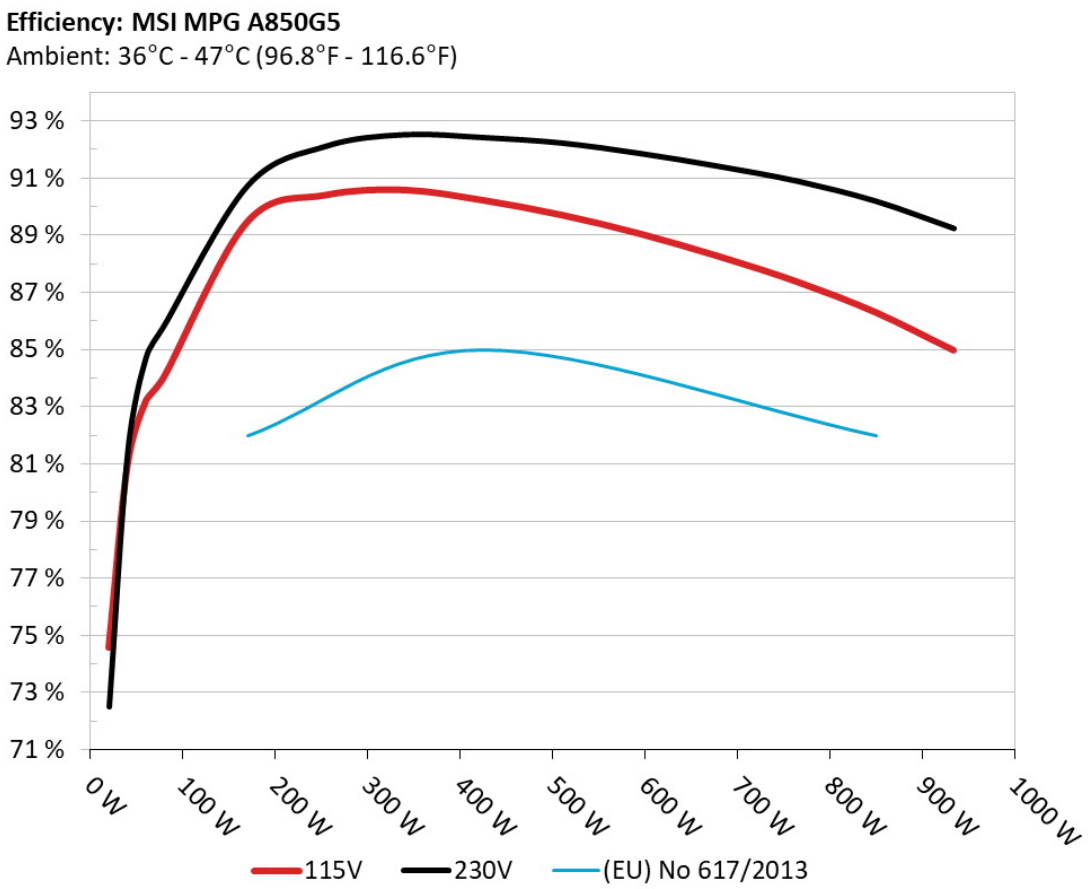
### INFO

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

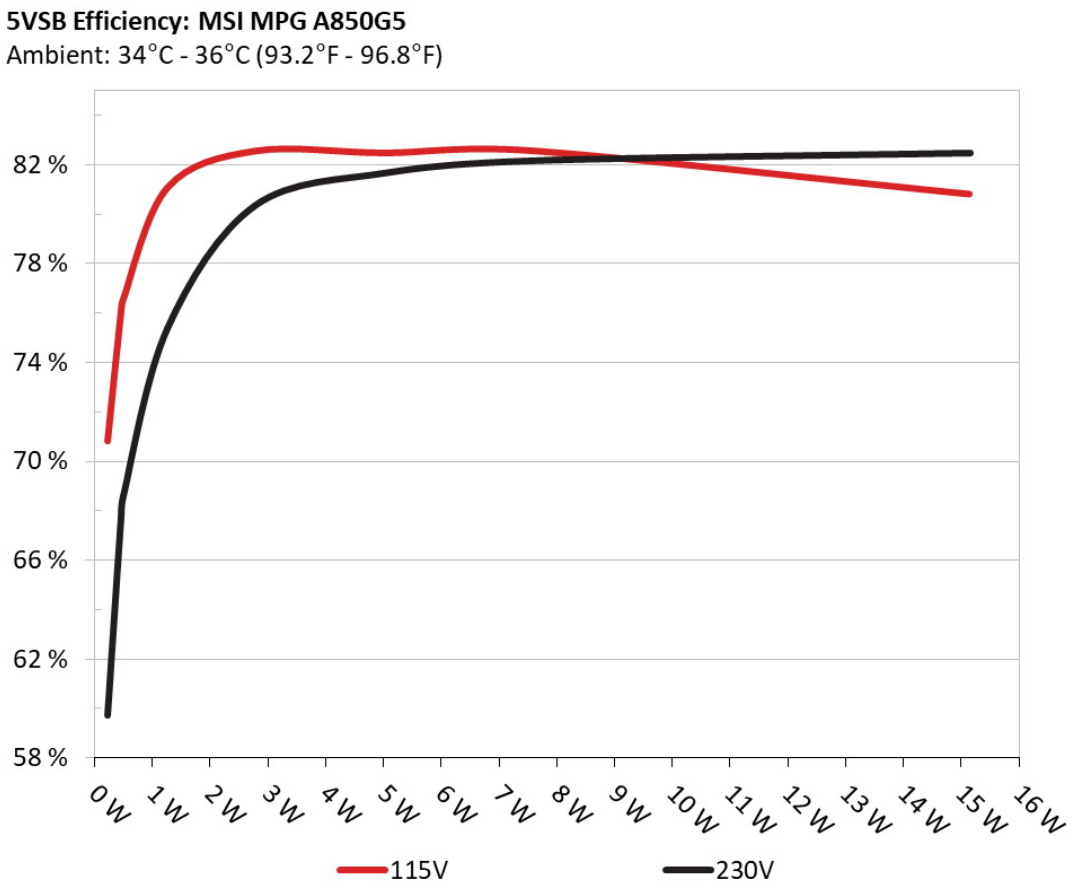
### Efficiency under high ambient temperature




**INFO**

The PSU`s efficiency under high ambient temperatures with 115V and 230V input. For this graph the results of the 10-110% load regulation table are used

## 5VSB Efficiency




**INFO**

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

### 5VSB Efficiency (ERP LOT 3/6 & CEC)

**115V**

| Test # | 5VSB | DC/AC (Watts) | Efficiency | PF/AC Volts |
|---|---|---|---|---|
| **1** | **0.045A** | 0.228W | 70.81% | 0.031 |
| | 5.057V | 0.322W | | 114.85V |
| **2** | **0.09A** | 0.455W | 75.926% | 0.057 |
| | 5.056V | 0.599W | | 114.84V |
| **3** | **0.55A** | 2.781W | 82.575% | 0.26 |
| | 5.056V | 3.368W | | 114.83V |
| **4** | **1A** | 5.055W | 82.496% | 0.368 |
| | 5.054V | 6.128W | | 114.83V |
| **5** | **1.5A** | 7.581W | 82.584% | 0.421 |
| | 5.053V | 9.18W | | 114.83V |
| **6** | **3A** | 15.147W | 80.827% | 0.503 |
| | 5.048V | 18.74W | | 114.83V |

## Protection Features

| | |
|---|---|
| OCP (Normal @ 29.3°C) | 12V: 91.20A (128.81%), 12.046V<br>5V: 26A (118.18%), 5.019V<br>3.3V: 27.3A (124.09%), 3.286V<br>5VSB: 4.9A (163.33%), 5.037V |
| OCP (Hot @ 44.2°C) | 12V: 91.00A (128.53%), 12.040V<br>5V: 25.9A (117.73%), 5.015V<br>3.3V: 26.898A (122.26%), 3.284V<br>5VSB: 4.9A (163.33%), 5.031V |
| OPP (Normal @ 29.9°C) | 1092.63W (128.54%) |
| OPP (Hot @ 44.1°C) | 1051.64W (123.72%) |
| OTP | ✓ (120°C @ Secondary Side) |

| | |
|---|---|
| SCP | 12V to Earth: ✓<br>5V to Earth: ✓<br>3.3V to Earth: ✓<br>5VSB to Earth: ✓<br>-12V to Earth: ✓ |
| PWR_OK | Proper Operation |
| NLO | ✓ |
| Fan Failure Protection | ✗ |
| SIP | Surge: MOV<br>Inrush: NTC & Bypass Relay |

## 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%** | **5.242A** | **1.98A** | **1.991A** | **0.991A** | 84.998 | 84.522% | 0 | <6.0 | 48.25°C | 0.974 |
| | 12.094V | 5.049V | 3.314V | 5.047V | 100.62 | | | | 40.38°C | 114.96V |
| **20%** | **11.503A** | **2.972A** | **2.989A** | **1.191A** | 169.922 | 89.471% | 0 | <6.0 | 51.2°C | 0.99 |
| | 12.086V | 5.046V | 3.312V | 5.04V | 189.942 | | | | 40.6°C | 114.95V |
| **30%** | **18.117A** | **3.47A** | **3.489A** | **1.391A** | 254.926 | 90.407% | 0 | <6.0 | 57.91°C | 0.994 |
| | 12.081V | 5.043V | 3.31V | 5.033V | 281.667 | | | | 41.4°C | 114.73V |
| **40%** | **24.746A** | **3.968A** | **3.99A** | **1.592A** | 340.01 | 90.585% | 0 | <6.0 | 61.92°C | 0.997 |
| | 12.075V | 5.041V | 3.308V | 5.026V | 372.046 | | | | 40.87°C | 114.02V |
| **50%** | **31.014A** | **4.962A** | **4.992A** | **1.794A** | 424.77 | 90.226% | 409 | 12 | 42.1°C | 0.998 |
| | 12.068V | 5.038V | 3.306V | 5.018V | 470.529 | | | | 63.36°C | 114.75V |
| **60%** | **37.272A** | **5.958A** | **5.995A** | **1.996A** | 509.333 | 89.716% | 496 | 10.7 | 42.92°C | 0.998 |
| | 12.061V | 5.035V | 3.303V | 5.011V | 567.752 | | | | 64°C | 114.76V |
| **70%** | **43.600A** | **6.955A** | **7A** | **2.198A** | 594.644 | 89.057% | 668 | 14.3 | 43.19°C | 0.998 |
| | 12.053V | 5.033V | 3.301V | 5.004V | 667.74 | | | | 64.61°C | 114.79V |

| Test | 12V | 5V | 3.3V | 5VSB | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|---|---|---|---|---|---|---|---|---|---|---|
| **80%** | **49.938A** | **7.951A** | **8.004A** | **2.301A** | 679.476 | 88.271% | 792 | 19.3 | 43.58°C | 0.998 |
| | 12.046V | 5.03V | 3.298V | 4.997V | 769.847 | | | | 64.84°C | 114.72V |
| **90%** | **56.681A** | **8.452A** | **8.494A** | **2.405A** | 764.91 | 87.378% | 974 | 26.3 | 44.46°C | 0.998 |
| | 12.039V | 5.028V | 3.296V | 4.99V | 875.478 | | | | 67.04°C | 114.69V |
| **100%** | **63.169A** | **8.953A** | **9.016A** | **3.011A** | 849.736 | 86.311% | 1413 | 37.2 | 45.22°C | 0.998 |
| | 12.032V | 5.026V | 3.294V | 4.982V | 984.651 | | | | 66.9°C | 114.8V |
| **110%** | **69.531A** | **9.954A** | **10.117A** | **3.016A** | 934.317 | 84.981% | 1959 | 47 | 46.35°C | 0.998 |
| | 12.024V | 5.023V | 3.291V | 4.974V | 1099.507 | | | | 67.66°C | 114.6V |
| **CL1** | **0.116A** | **14.371A** | **14.479A** | **0A** | 121.296 | 82.137% | 496 | 10.7 | 41.94°C | 0.987 |
| | 12.076V | 5.024V | 3.294V | 5.035V | 147.676 | | | | 57.86°C | 115.42V |
| **CL2** | **0.115A** | **21.913A** | **0A** | **0A** | 111.293 | 80.451% | 409 | 12 | 40.39°C | 0.984 |
| | 12.082V | 5.016V | 3.304V | 5.039V | 138.353 | | | | 56.86°C | 115.81V |
| **CL3** | **0.114A** | **0A** | **22.067A** | **0A** | 73.982 | 73.881% | 407 | 12 | 41.85°C | 0.974 |
| | 12.085V | 5.03V | 3.29V | 5.039V | 100.171 | | | | 54.81°C | 115.6V |
| **CL4** | **70.536A** | **0A** | **0A** | **0A** | 849.498 | 87.233% | 1192 | 32.6 | 45.22°C | 0.998 |
| | 12.043V | 5.038V | 3.307V | 4.995V | 973.858 | | | | 66.19°C | 114.92V |

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%** | **5.243A** | **1.98A** | **1.993A** | **0.991A** | 85.004 | 86.291% | 0 | <6.0 | 48.98°C | 0.868 |
| | 12.094V | 5.05V | 3.312V | 5.045V | 98.531 | | | | 40.26°C | 232.11V |
| **20%** | **11.503A** | **2.972A** | **2.992A** | **1.191A** | 169.933 | 90.718% | 0 | <6.0 | 49.93°C | 0.951 |
| | 12.086V | 5.047V | 3.309V | 5.038V | 187.262 | | | | 40.71°C | 231.91V |
| **30%** | **18.119A** | **3.469A** | **3.492A** | **1.391A** | 254.94 | 92.097% | 0 | <6.0 | 51.83°C | 0.975 |
| | 12.081V | 5.045V | 3.307V | 5.031V | 276.85 | | | | 41.11°C | 232.01V |
| **40%** | **24.748A** | **3.966A** | **3.993A** | **1.592A** | 340.025 | 92.5% | 0 | <6.0 | 53.6°C | 0.981 |
| | 12.074V | 5.042V | 3.305V | 5.025V | 367.611 | | | | 41.56°C | 231.96V |

| Test | 12V | 5V | 3.3V | 5VSB | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|---|---|---|---|---|---|---|---|---|---|---|
| **50%** | **31.017A** | **4.96A** | **4.996A** | **1.794A** | 424.807 | 92.397% | 407 | 12 | 42.46°C | 0.985 |
| | 12.067V | 5.04V | 3.303V | 5.018V | 459.756 | | | | 59.77°C | 231.69V |
| **60%** | **37.273A** | **5.955A** | **6A** | **1.996A** | 509.35 | 92.208% | 506 | 10.8 | 42.73°C | 0.989 |
| | 12.061V | 5.038V | 3.3V | 5.01V | 552.396 | | | | 59.71°C | 230.46V |
| **70%** | **43.600A** | **6.952A** | **7.005A** | **2.199A** | 594.655 | 91.84% | 648 | 13.2 | 43.31°C | 0.992 |
| | 12.053V | 5.035V | 3.298V | 5.003V | 647.562 | | | | 60.1°C | 230.32V |
| **80%** | **49.939A** | **7.947A** | **8.011A** | **2.302A** | 679.488 | 91.39% | 789 | 19.1 | 43.77°C | 0.993 |
| | 12.047V | 5.032V | 3.295V | 4.997V | 743.599 | | | | 60.87°C | 231.33V |
| **90%** | **56.682A** | **8.448A** | **8.501A** | **2.405A** | 764.921 | 90.872% | 980 | 26.6 | 44.64°C | 0.995 |
| | 12.039V | 5.03V | 3.293V | 4.99V | 841.836 | | | | 62.48°C | 231.69V |
| **100%** | **63.166A** | **8.949A** | **9.023A** | **3.011A** | 849.731 | 90.171% | 1331 | 35.8 | 45.52°C | 0.995 |
| | 12.032V | 5.028V | 3.291V | 4.982V | 942.33 | | | | 62.48°C | 231.5V |
| **110%** | **69.531A** | **9.95A** | **10.125A** | **3.016A** | 934.312 | 89.219% | 1900 | 46.3 | 46.72°C | 0.996 |
| | 12.024V | 5.025V | 3.289V | 4.974V | 1047.161 | | | | 63.56°C | 229.72V |
| **CL1** | **0.116A** | **14.364A** | **14.491A** | **0A** | 121.296 | 83.396% | 467 | 10.7 | 40.82°C | 0.929 |
| | 12.076V | 5.027V | 3.292V | 5.035V | 145.423 | | | | 56.29°C | 229.86V |
| **CL2** | **0.115A** | **21.902A** | **0A** | **0A** | 111.292 | 81.888% | 408 | 12 | 40.44°C | 0.92 |
| | 12.081V | 5.018V | 3.301V | 5.039V | 135.927 | | | | 55.39°C | 229.87V |
| **CL3** | **0.114A** | **0A** | **22.093A** | **0A** | 73.981 | 74.795% | 407 | 12 | 41.89°C | 0.873 |
| | 12.085V | 5.032V | 3.286V | 5.039V | 98.898 | | | | 54.66°C | 229.87V |
| **CL4** | **70.538A** | **0A** | **0A** | **0A** | 849.496 | 90.988% | 1190 | 32.6 | 46.46°C | 0.995 |
| | 12.043V | 5.04V | 3.304V | 4.995V | 933.648 | | | | 62.44°C | 229.69V |

The results above are not used in the certification process

## Light Load Tests

### 115V

| Test | 12V | 5V | 3.3V | 5VSB | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|---|---|---|---|---|---|---|---|---|---|---|
| **20W** | **1.226A** | **0.495A** | **0.497A** | **0.198A** | 19.989 | 74.591% | 0 | <6.0 | 40.72°C | 0.858 |
| | 12.101V | 5.053V | 3.317V | 5.055V | 26.814 | | | | 36.25°C | 114.88V |

| Test | 12V | 5V | 3.3V | 5VSB | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|---|---|---|---|---|---|---|---|---|---|---|
| **40W** | **2.702A** | **0.693A** | **0.696A** | **0.297A** | 39.991 | 80.931% | 0 | <6.0 | 42.59°C | 0.934 |
| | 12.098V | 5.052V | 3.316V | 5.053V | 49.423 | | | | 37.61°C | 114.9V |
| **60W** | **4.178A** | **0.89A** | **0.895A** | **0.396A** | 59.992 | 83.199% | 0 | <6.0 | 43.82°C | 0.96 |
| | 12.091V | 5.051V | 3.316V | 5.051V | 72.131 | | | | 38.16°C | 114.94V |
| **80W** | **5.646A** | **1.089A** | **1.095A** | **0.495A** | 79.927 | 84.061% | 0 | <6.0 | 45.99°C | 0.973 |
| | 12.095V | 5.051V | 3.316V | 5.049V | 95.085 | | | | 39.48°C | 114.92V |

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** | **1.227A** | **0.495A** | **0.498A** | **0.198A** | 19.998 | 72.489% | 0 | <6.0 | 43.46°C | 0.472 |
| | 12.101V | 5.054V | 3.314V | 5.053V | 26.235 | | | | 36.27°C | 232.17V |
| **40W** | **2.702A** | **0.693A** | **0.697A** | **0.297A** | 39.999 | 81.399% | 0 | <6.0 | 44.84°C | 0.685 |
| | 12.099V | 5.053V | 3.314V | 5.051V | 49.128 | | | | 37.38°C | 231.27V |
| **60W** | **4.178A** | **0.89A** | **0.896A** | **0.396A** | 59.999 | 84.722% | 0 | <6.0 | 46.27°C | 0.792 |
| | 12.094V | 5.053V | 3.314V | 5.049V | 70.792 | | | | 38.41°C | 231.42V |
| **80W** | **5.648A** | **1.089A** | **1.096A** | **0.495A** | 79.941 | 85.85% | 0 | <6.0 | 47.74°C | 0.856 |
| | 12.096V | 5.052V | 3.313V | 5.047V | 93.113 | | | | 39.46°C | 232.12V |

The results above are not used in the certification process

## Ripple Measurements

### 115V

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| 10% Load | 19.39mV | 16.01mV | 16.57mV | 10.78mV | Pass |
| 20% Load | 20.15mV | 16.83mV | 17.14mV | 10.67mV | Pass |
| 30% Load | 20.00mV | 16.78mV | 17.03mV | 10.67mV | Pass |
| 40% Load | 20.25mV | 17.45mV | 17.34mV | 10.88mV | Pass |

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| 50% Load | 20.30mV | 18.78mV | 18.98mV | 11.44mV | Pass |
| 60% Load | 22.30mV | 18.63mV | 19.29mV | 11.55mV | Pass |
| 70% Load | 22.25mV | 20.38mV | 19.86mV | 11.85mV | Pass |
| 80% Load | 23.22mV | 19.71mV | 21.49mV | 13.24mV | Pass |
| 90% Load | 22.55mV | 20.32mV | 22.83mV | 13.29mV | Pass |
| 100% Load | 29.82mV | 22.40mV | 24.79mV | 15.85mV | Pass |
| 110% Load | 29.80mV | 21.45mV | 24.26mV | 15.72mV | Pass |
| Crossload1 | 22.10mV | 20.90mV | 21.79mV | 13.89mV | Pass |
| Crossload2 | 20.15mV | 24.94mV | 20.27mV | 13.39mV | Pass |
| Crossload3 | 21.17mV | 21.25mV | 23.55mV | 12.01mV | Pass |
| Crossload4 | 26.36mV | 20.50mV | 19.44mV | 14.24mV | Pass |

The results above are not used in the certification process

**230V**

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| **10% Load** | 15.7 mV | 16.1 mV | 16.0 mV | 10.3 mV | Pass |
| **20% Load** | 18.2 mV | 16.0 mV | 16.4 mV | 10.0 mV | Pass |
| **30% Load** | 18.6 mV | 16.3 mV | 16.6 mV | 10.8 mV | Pass |
| **40% Load** | 20.0 mV | 18.2 mV | 18.4 mV | 11.3 mV | Pass |
| **50% Load** | 27.3 mV | 18.1 mV | 18.5 mV | 11.8 mV | Pass |
| **60% Load** | 22.3 mV | 19.7 mV | 19.6 mV | 11.9 mV | Pass |
| **70% Load** | 22.0 mV | 19.1 mV | 20.9 mV | 12.7 mV | Pass |
| **80% Load** | 21.7 mV | 19.4 mV | 20.2 mV | 12.7 mV | Pass |
| **90% Load** | 22.1 mV | 19.4 mV | 20.9 mV | 12.6 mV | Pass |
| **100% Load** | 26.7 mV | 22.2 mV | 23.9 mV | 15.2 mV | Pass |
| **110% Load** | 31.4 mV | 23.1 mV | 25.8 mV | 17.0 mV | Pass |
| **Crossload 1** | 19.8 mV | 19.8 mV | 21.9 mV | 13.2 mV | Pass |
| **Crossload 2** | 18.9 mV | 22.3 mV | 20.9 mV | 12.3 mV | Pass |
| **Crossload 3** | 14.6 mV | 20.7 mV | 23.8 mV | 11.9 mV | Pass |

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| **Crossload 4** | 27.6 mV | 19.2 mV | 20.5 mV | 14.3 mV | Pass |

The results above are not used in the certification process

## MSI MPG A850GS PCIE5



Top side




Power specifications label

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