SILVERSTONE

# SilverStone GM600 Silver

Serial Number DXGM60SU22070001

Lab ID SL60001980

Certification ID 251980

Test Result Report ID: 22PS1980A

Certificate Issue Date: Feb 16, 2022

115V 230V

Scheme: ETA-EMI 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 | SilverStone |
| Model | GM600 Silver |
| OEM/ODM | TC Sure Star Computer Co. |
| Serial Number | DXGM60SU22070001 |
| Product Specifications | |
| Manufacturer-Provided Information | |
| Rated Voltage (Vrms) | 100-240 |
| Rated Current (Arms) | 10-5 |
| Rated Frequency (Hz) | 47-63 |

| | |
|---|---|
| Rated Power (W) | 600 |
| Operating Temperature (Continuous Full Load) (°C) | |
| Type | 1U |
| Cable Design | Fixed cables |
| Warranty | - |
| Cybenetics Measurements | |
| Dimensions (W x H x D) | |
| Weight | |
| Cooling | 40mm Magnetic Levitation Bearing Fan<br>(MF40201VX-10000-A99) |
| Semi-Passive Operation | ✗ |
| Cybenetics Testing Information | |
| Lab ID | SL60001980 |
| Date of receipt | - |
| Testing Date | Feb 16, 2022 |
| Report Issued Date | Feb 16, 2022 |
| Engineer Name | - |
| Authorized By the Laboratory Technical Manager | Aristeidis Bitziopoulos |
| Signature | |

## Cables and Connectors(Non-accredited measurements)

| Captive Cables | | | | |
|---|---|---|---|---|
| Description | Cable Count | Connector Count (Total) | Gauge | In Cable Capacitors |
| ATX connector 20+4 pin (490mm) | 1 | 1 | 18-20AWG | No |
| 8 pin EPS12V (490mm) | 2 | 2 | 18AWG | No |
| 6 pin PCIe (490mm) | 1 | 1 | 18AWG | No |
| 6 pin PCIe (430mm) | 1 | 1 | 18AWG | No |
| 4-pin Molex (490mm+150mm+150mm) | 3 | 9 | 18AWG | No |
| 4-pin Molex (490mm+150mm+150mm) / FDD (+150mm) | 1 | 3 / 1 | 18-22AWG | No |

### Power Specifications

| Rail | | 3.3V | 5V | 12V | 5VSB | -12V |
|---|---|---|---|---|---|---|
| Max. Power | Amps | NaN | NaN | 49 | 3.5 | NaN |
| | Watts | NaN | | 588 | 17.5 | NaN |
| Total Max. Power (W) | | 600 | | | | |

## Test Results

### Temperature & Compliance Info

| | |
|---|---|
| Temperature Range (°C /°F) | 28-32 / 82.4-89.6 |

### Performance Summary 230V

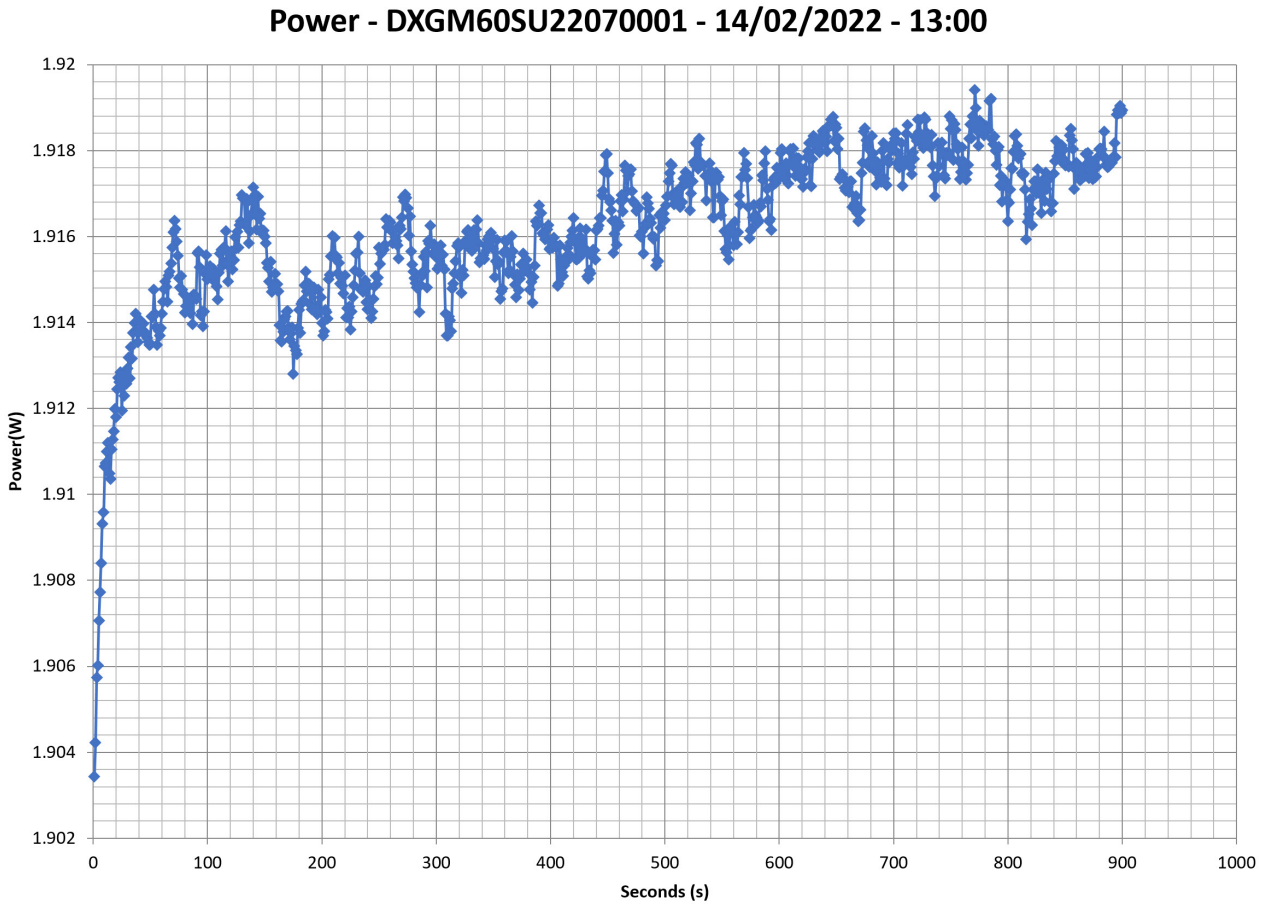
| | | |
|---|---|---|
| Accredited | | |
| Average Efficiency (>1450 load combinations) | | 85.820% |
| Average PF (>1450 Load Combinations) | | 0.930 |
| Efficiency With 10W (≤500W) or 2% (>500W) Load | | - |
| Standby Power Consumption | | 1.9189W |
| Non-Accredited | | |
| 12V Ripple (Full Load) | | 34.85mV |
| 5VSB Ripple (Full Load) | | 13.70mV |
| 12V Load Regulation | | 1.16% |
| 5VSB Load Regulation | | 5.10% |
| Inrush Current | | 58.700A |
| Hold-Up Time & PWR_OK Signal | | 13.90ms |
| AC Loss to PWR_OK Hold Up Time | | 12.10ms |
| PWR_OK Inactive to DC Loss Delay | | 1.80ms |
| PSU Timings: T1 (20% / 100%) | 132.0ms | 126.0ms |
| PSU Timings: T3 (20% / 100%) | 270.0ms | 274.0ms |

## Hold-Up Time & PWR_OK Signal

| | |
|---|---|
| Hold-Up Time (ms) | 13.9 |
| AC Loss to PWR_OK Hold Up Time (ms) | 12.1 |
| PWR_OK Inactive to DC Loss Delay (ms) | 1.8 |

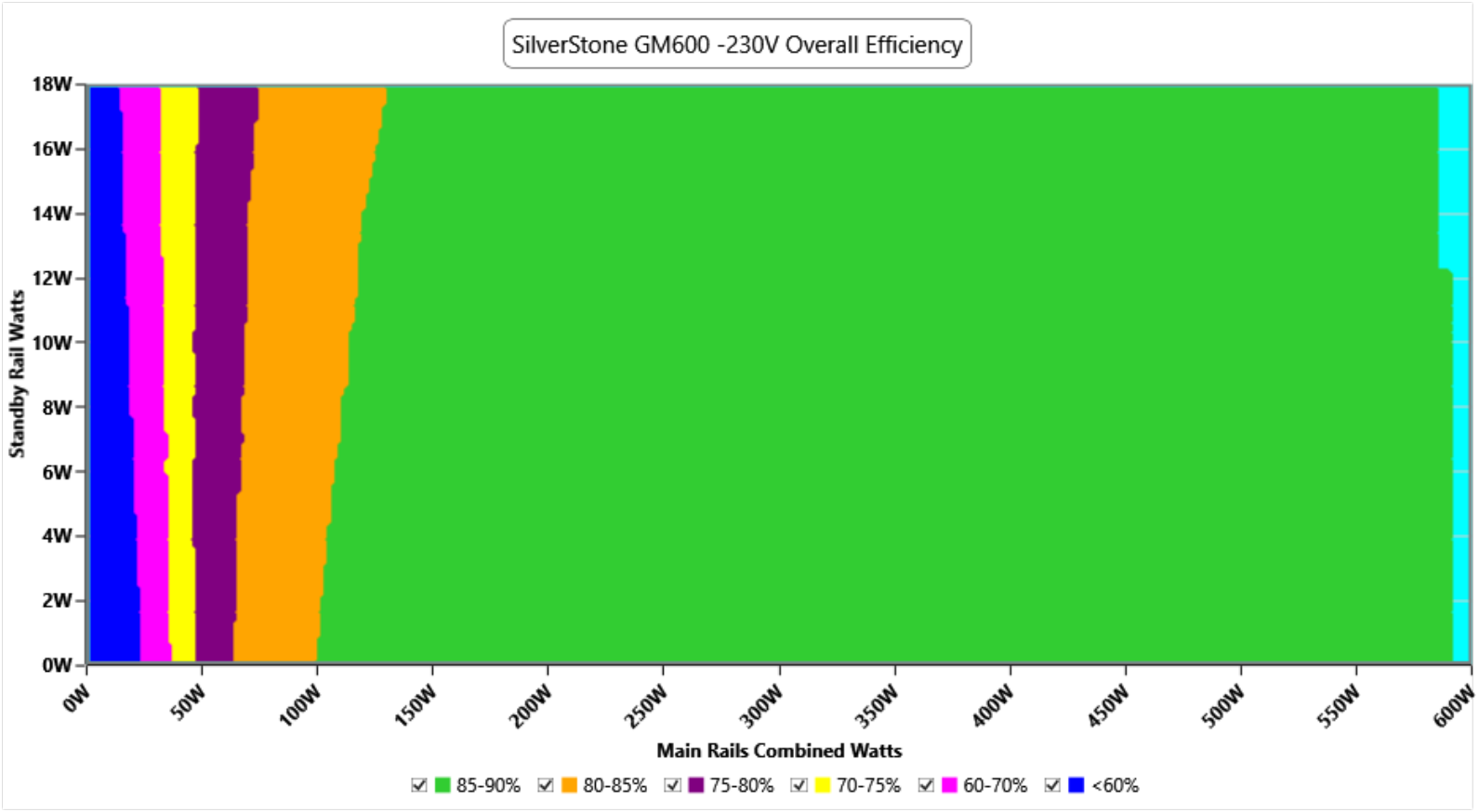
## Vampire Power

**Graphs 230V**



## Efficiency Graph

### 230V

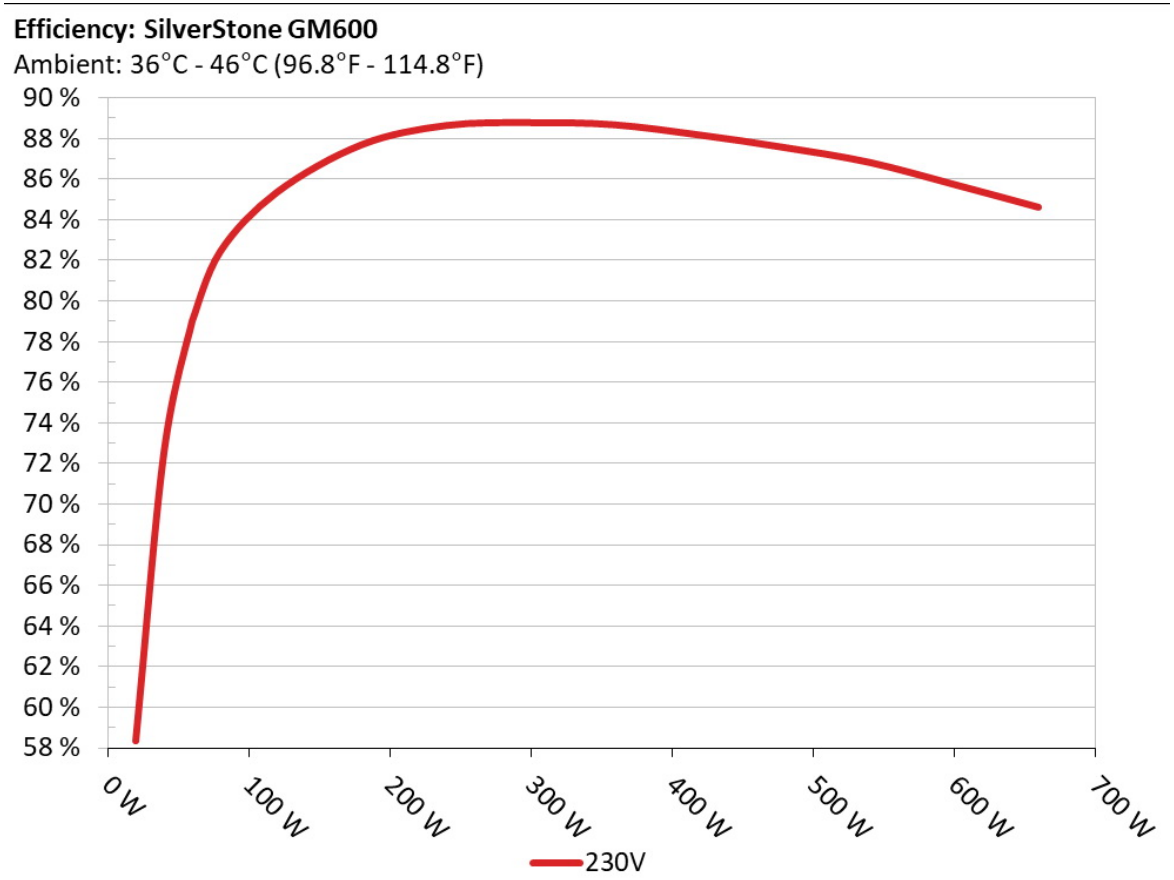



### INFO

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

## Indicative Performance

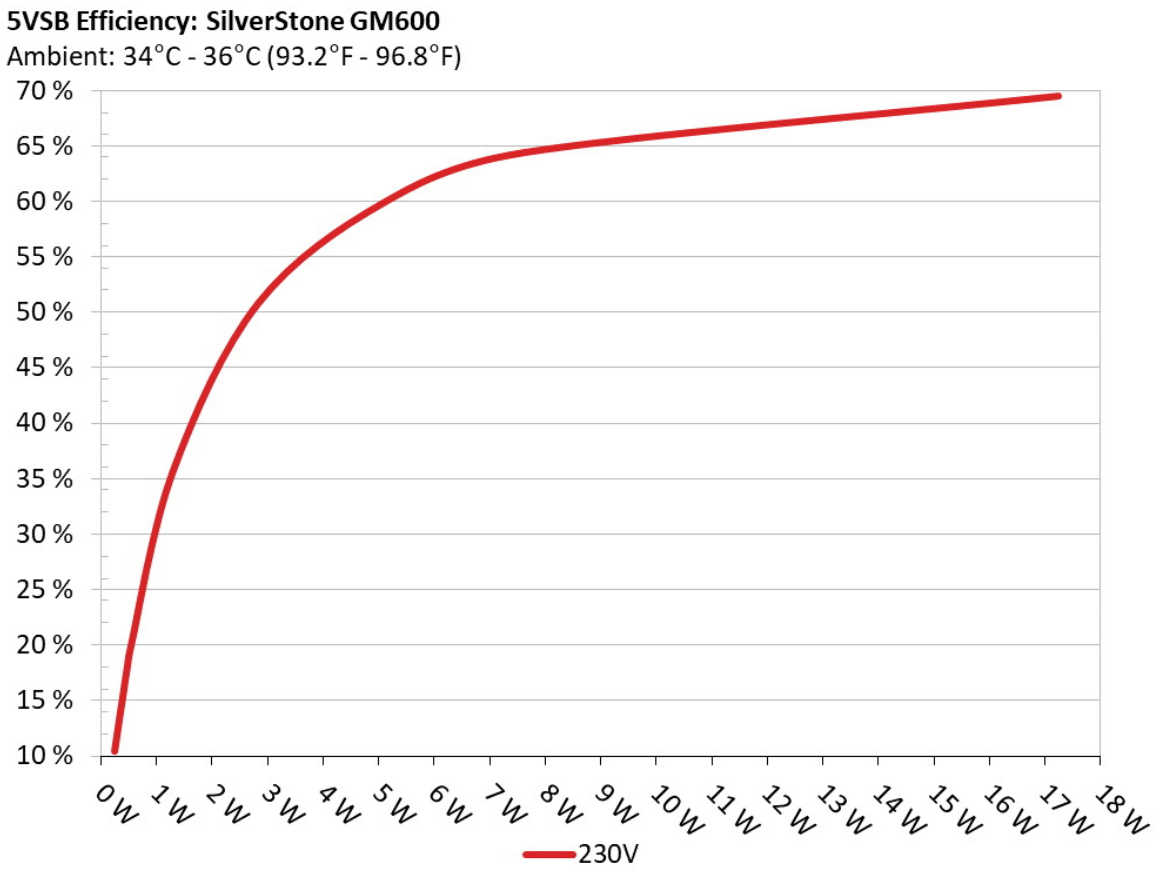
### Efficiency under high ambient temperature




**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) 230V

| Test # | 5VSB | DC/AC (Watts) | Efficiency | PF/AC Volts |
|---|---|---|---|---|
| 1 | 0.045A | 0.235W | 10.377% | 0.056 |
| | 5.23V | 2.265W | | 230.35V |

| | | | | |
|---|---|---|---|---|
| 2 | 0.09A | 0.468W | 18.165% | 0.063 |
| | 5.203V | 2.577W | | 230.35V |
| 3 | 0.55A | 2.818W | 50.762% | 0.128 |
| | 5.125V | 5.551W | | 230.33V |
| 4 | 1A | 5.087W | 59.881% | 0.182 |
| | 5.087V | 8.495W | | 230.33V |
| 5 | 1.5A | 7.58W | 64.359% | 0.231 |
| | 5.053V | 11.778W | | 230.34V |
| 6 | 3.5A | 17.23W | 69.475% | 0.344 |
| | 4.924V | 24.8W | | 230.34V |

## Supplementary Tests (For Reference)

### Typical Load Tests 230V

| Test | Main Rail | Standby Rail | DC/AC (Watts) | Efficiency | Temps (In/Out) | PF/AC Volts |
|---|---|---|---|---|---|---|
| 10% | 2.756A | 0.982A | 38.408 | 68.681% | 34.56°C | 0.683 |
| | 12.123V | 5.093V | 55.922 | | 38.73°C | 230.24V |
| 20% | 5.845A | 1.183A | 76.819 | 78.986% | 34.57°C | 0.818 |
| | 12.117V | 5.07V | 97.256 | | 39.01°C | 230.24V |
| 30% | 8.939A | 1.387A | 115.188 | 82.852% | 35.2°C | 0.892 |
| | 12.102V | 5.048V | 139.029 | | 39.89°C | 230.24V |
| 40% | 12.045A | 1.592A | 153.641 | 84.614% | 35.57°C | 0.928 |
| | 12.091V | 5.026V | 181.579 | | 40.51°C | 230.25V |
| 50% | 15.154A | 1.798A | 192.023 | 85.57% | 35.96°C | 0.947 |
| | 12.077V | 5.006V | 224.403 | | 41.52°C | 230.25V |
| 60% | 18.281A | 2A | 230.447 | 86.006% | 36.42°C | 0.96 |
| | 12.060V | 4.985V | 267.943 | | 42.72°C | 230.25V |
| 70% | 21.412A | 2.217A | 268.858 | 86.216% | 36.9°C | 0.965 |
| | 12.043V | 4.964V | 311.842 | | 44.24°C | 230.25V |
| 80% | 24.596A | 2.324A | 307.298 | 86.202% | 37.43°C | 0.968 |
| | 12.026V | 4.95V | 356.486 | | 45.85°C | 230.25V |

| | | | | | | |
|---|---|---|---|---|---|---|
| 90% | 27.808A | 2.432A | 345.841 | 85.975% | 38.57°C | 0.973 |
| | 12.005V | 4.935V | 402.256 | | 47.58°C | 230.25V |
| 100% | 30.977A | 2.539A | 383.913 | 85.572% | 39.01°C | 0.975 |
| | 11.990V | 4.924V | 448.641 | | 49.44°C | 230.25V |
| 110% | 34.224A | 2.541A | 422.287 | 85.035% | 40.45°C | 0.975 |
| | 11.974V | 4.919V | 496.605 | | 51.71°C | 230.24V |

The results above are not used in the certification process

## Light Load Tests 230V

| Test | Main Rail | Standby Rail | DC/AC (Watts) | Efficiency | Temps (In/Out) | PF/AC Volts |
|---|---|---|---|---|---|---|
| 20W | 1.566A | 0.193A | 20.001 | 56.274% | 31.36°C | 0.569 |
| | 12.128V | 5.175V | 35.542 | | 34.4°C | 230.22V |
| 40W | 3.176A | 0.291A | 40.007 | 71.01% | 32.65°C | 0.686 |
| | 12.126V | 5.156V | 56.339 | | 35.83°C | 230.22V |
| 60W | 4.785A | 0.389A | 60.005 | 77.005% | 33.55°C | 0.763 |
| | 12.123V | 5.141V | 77.924 | | 36.98°C | 230.22V |
| 80W | 6.392A | 0.488A | 79.95 | 80.372% | 33.62°C | 0.826 |
| | 12.116V | 5.127V | 99.476 | | 37.31°C | 230.23V |

The results above are not used in the certification process

## Ripple Measurements 230V

| Test | 12V | VSB | Pass/Fail |
|---|---|---|---|
| 10% Load | 8.61mV | 7.84mV | Pass |
| 20% Load | 9.32mV | 7.54mV | Pass |
| 30% Load | 10.68mV | 7.79mV | Pass |
| 40% Load | 12.30mV | 7.49mV | Pass |
| 50% Load | 14.38mV | 8.04mV | Pass |
| 60% Load | 18.84mV | 9.46mV | Pass |
| 70% Load | 22.03mV | 9.87mV | Pass |
| 80% Load | 24.35mV | 10.42mV | Pass |

| | | | |
|---|---|---|---|
| 90% Load | 28.45mV | 11.84mV | Pass |
| 100% Load | 34.85mV | 13.70mV | Pass |
| 110% Load | 39.13mV | 14.07mV | Pass |

The results above are not used in the certification process

## SilverStone GM600 Silver

Top side

Power specifications label

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 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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