zalman

# Zalman TeraMax II SE 1000W

Serial Number

Lab ID ZL10002567

Certification ID 252567

Test Result Report ID: 24PS2567A

Certificate Issue Date: Sep 13, 2024

Scheme: ETA-EMI PSU

115V: CYBENETICS PLATINUM

230V: CYBENETICS GOLD 230v

Scheme: LAMBDA PSU

115V: CYBENETICS A-

230V: CYBENETICS A- 230v

CYBENETICS ATX 3.1 PASS

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 | Zalman |
| Model | TeraMax II SE 1000W |
| OEM/ODM | Huizhou Jiumeng Electronics Technology Co., Ltd |
| Serial Number | |
| Product Specifications | |
| Manufacturer-Provided Information | |
| Rated Voltage (Vrms) | 100-240 |
| Rated Current (Arms) | 6-12 |

| | |
|---|---|
| Rated Frequency (Hz) | 50-60 |
| Rated Power (W) | 1000 |
| Operating Temperature (Continuous Full Load) (°C) | |
| Type | ATX12V |
| Cable Design | Fully Modular |
| Warranty | - |
| Cybenetics Measurements | |
| Dimensions (W x H x D) | |
| Weight | |
| Cooling | 120mm Fluid Dynamic Bearing Fan (PY-12225M12S) |
| Semi-Passive Operation | ✗ |
| Cybenetics Testing Information | |
| Lab ID | ZL10002567 |
| Date of receipt | Sep 6, 2024 |
| Testing Date | Sep 12, 2024 |
| Report Issued Date | Sep 13, 2024 |
| 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 (600mm) | 1 | 1 | 18AWG | No |
| 4+4 pin EPS12V (750mm) | 2 | 2 | 18AWG | No |
| 6+2 pin PCIe (550mm+150mm) | 1 | 2 | 18AWG | No |
| 6+2 pin PCIe (550mm) | 2 | 2 | 18AWG | No |
| 12+4 pin PCIe (610mm) (600W) | 1 | 1 | 16-26AWG | No |
| SATA (500mm+150mm+150mm+145mm) | 3 | 12 | 18AWG | No |
| 4-pin Molex (500mm+150mm+150mm) / FDD (+155mm) | 1 | 3 / 1 | 18-22AWG | No |

### 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 | 20 | 20 | 83.33 | 3 | 0.3 |
| | Watts | 120 | | 1000 | 15 | 3.6 |
| Total Max. Power (W) | | 1000 | | | | |

## 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) | 89.053% |

| | |
|---|---|
| Average Noise Output (>1450 Load Combinations) | 29.99dBA |
| Average PF (>1450 Load Combinations) | 0.988 |
| Efficiency With 10W (≤500W) or 2% (>500W) Load | 69.648% |
| Standby Power Consumption | 0.0128W |
| Non-Accredited | |
| 12V Ripple (Full Load) | 39.06mV |
| 5V Ripple (Full Load) | 34.40mV |
| 3.3V Ripple (Full Load) | 30.06mV |
| 5VSB Ripple (Full Load) | 24.92mV |
| 12V Load Regulation | 0.91% |
| 5V Load Regulation | 2.93% |
| 3.3V Load Regulation | 4.13% |
| 5VSB Load Regulation | 2.86% |
| Inrush Current | 38.200A |

## 230V

| | |
|---|---|
| Accredited | |
| Average Efficiency (>1450 load combinations) | 91.106% |
| Average Noise Output (>1450 Load Combinations) | 29.67dBA |
| Average PF (>1450 Load Combinations) | 0.930 |
| Efficiency With 10W (≤500W) or 2% (>500W) Load | 67.059% |
| Standby Power Consumption | 0.0743W |
| Non-Accredited | |
| 12V Ripple (Full Load) | 36.51mV |
| 5V Ripple (Full Load) | 32.87mV |
| 3.3V Ripple (Full Load) | 29.86mV |
| 5VSB Ripple (Full Load) | 25.13mV |
| 12V Load Regulation | 0.88% |
| 5V Load Regulation | 2.91% |
| 3.3V Load Regulation | 4.09% |
| 5VSB Load Regulation | 2.82% |
| Inrush Current | 73.870A |

| | | |
|---|---|---|
| 12V Transient Response (200%) | 11.05V | |
| 5V Transient Response (200%) | 4.929V | |
| 3.3V Transient Response (200%) | 3.194V | |
| 5VSB Transient Response (200%) | 4.843V | |
| Hold-Up Time & PWR_OK Signal | 19.80ms | |
| AC Loss to PWR_OK Hold Up Time | 17.40ms | |
| PWR_OK Inactive to DC Loss Delay | 2.40ms | |
| PSU Timings: T1 (20% / 100%) | 66.0ms | 64.0ms |
| PSU Timings: T3 (20% / 100%) | 120.0ms | 120.0ms |
| 12V OCP (30.1°C / 43.8°C) | 123.40A (148.09%), 11.936V | 107.80A (129.37%), 11.947V |
| 5V OCP (30.1°C / 43.8°C) | 27.5A (137.50%), 5.002V | 27.3A (136.50%), 4.996V |
| 3.3V OCP (30.1°C / 43.8°C) | 28.2A (141.00%), 3.269V | 28.7A (143.50%), 3.261V |
| 5VSB OCP (30.1°C / 43.8°C) | 5A (166.67%), 5.012V | 5A (166.67%), 5.012V |
| OPP (29.13°C / 42.32°C) | 144.45% | 121.95% |

## Hold-Up Time & PWR_OK Signal

| | |
|---|---|
| Hold-Up Time (ms) | 19.8 |
| AC Loss to PWR_OK Hold Up Time (ms) | 17.4 |
| PWR_OK Inactive to DC Loss Delay (ms) | 2.4 |

## Vampire Power

### Tables

#### 115V

| Detailed Results | | | | | | |
|---|---|---|---|---|---|---|
| | Average | Min | Limit Min | Max | Limit Max | Result |
| Mains Voltage RMS: | 114.85 V | 114.80 V | 113.85 V | 114.88 V | 116.15 V | PASS |
| Mains Frequency: | 60.00 Hz | 59.98 Hz | 59.40 Hz | 60.02 Hz | 60.60 Hz | PASS |
| Mains Voltage CF: | 1.419 | 1.418 | 1.340 | 1.420 | 1.490 | PASS |

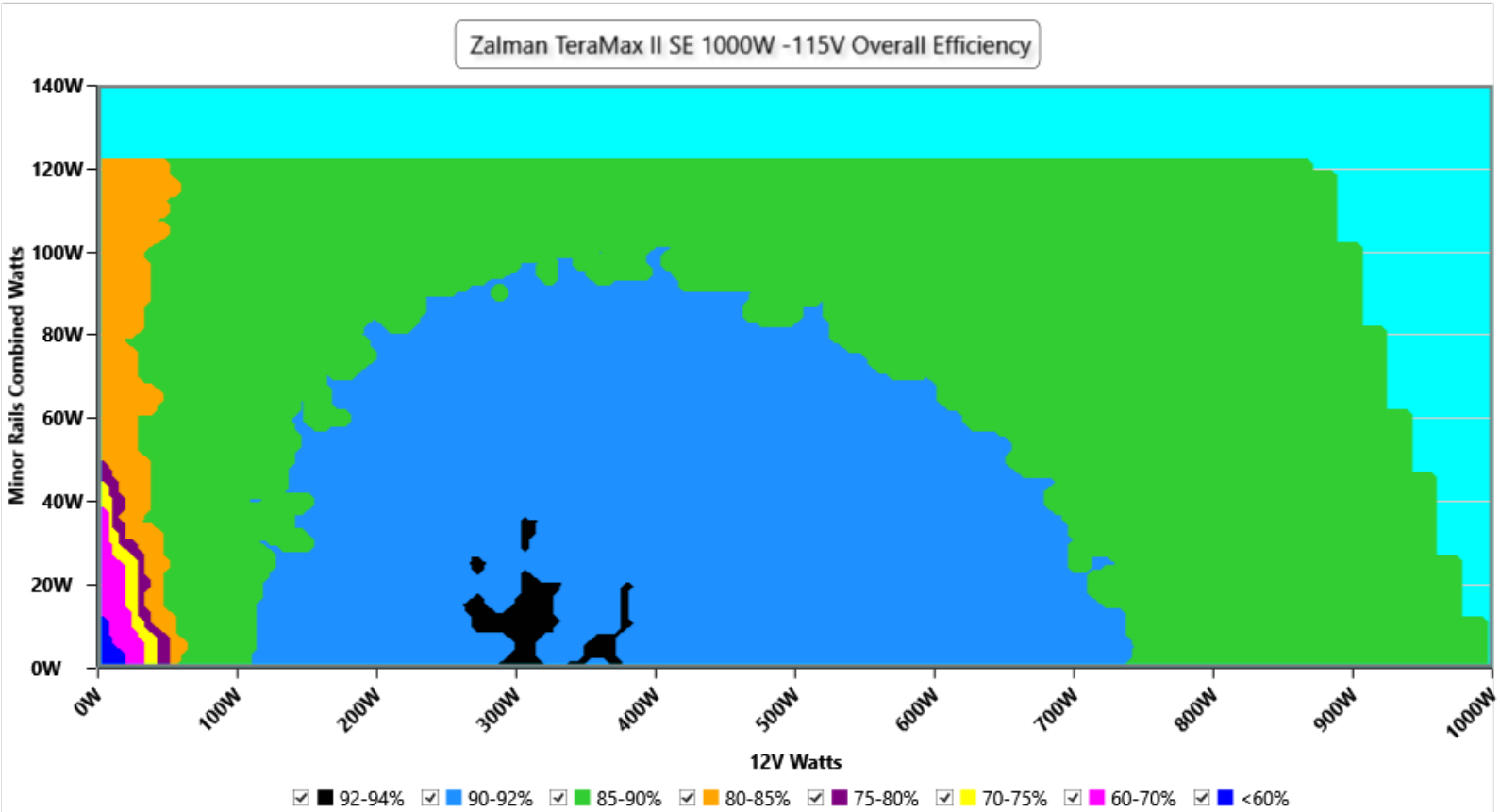
| | | | | | | |
|---|---|---|---|---|---|---|
| Mains Voltage THD: | 0.14 % | 0.11 % | N/A | 0.19 % | 2.00 % | PASS |
| Real Power: | 0.013 W | 0.011 W | N/A | 0.015 W | N/A | N/A |
| Apparent Power: | 10.307 W | 10.283 W | N/A | 10.329 W | N/A | N/A |
| Power Factor: | 0.001 | N/A | N/A | N/A | N/A | N/A |

## 230V

| Detailed Results | | | | | | |
|---|---|---|---|---|---|---|
| | Average | Min | Limit Min | Max | Limit Max | Result |
| Mains Voltage RMS: | 229.85 V | 229.80 V | 227.70 V | 229.91 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: | 1.419 | 1.418 | 1.340 | 1.420 | 1.490 | PASS |
| Mains Voltage THD: | 0.17 % | 0.15 % | N/A | 0.20 % | 2.00 % | PASS |
| Real Power: | 0.074 W | 0.037 W | N/A | 0.111 W | N/A | N/A |
| Apparent Power: | 34.565 W | 34.496 W | N/A | 34.608 W | N/A | N/A |
| Power Factor: | 0.003 | N/A | N/A | N/A | N/A | N/A |

## Efficiency Graph

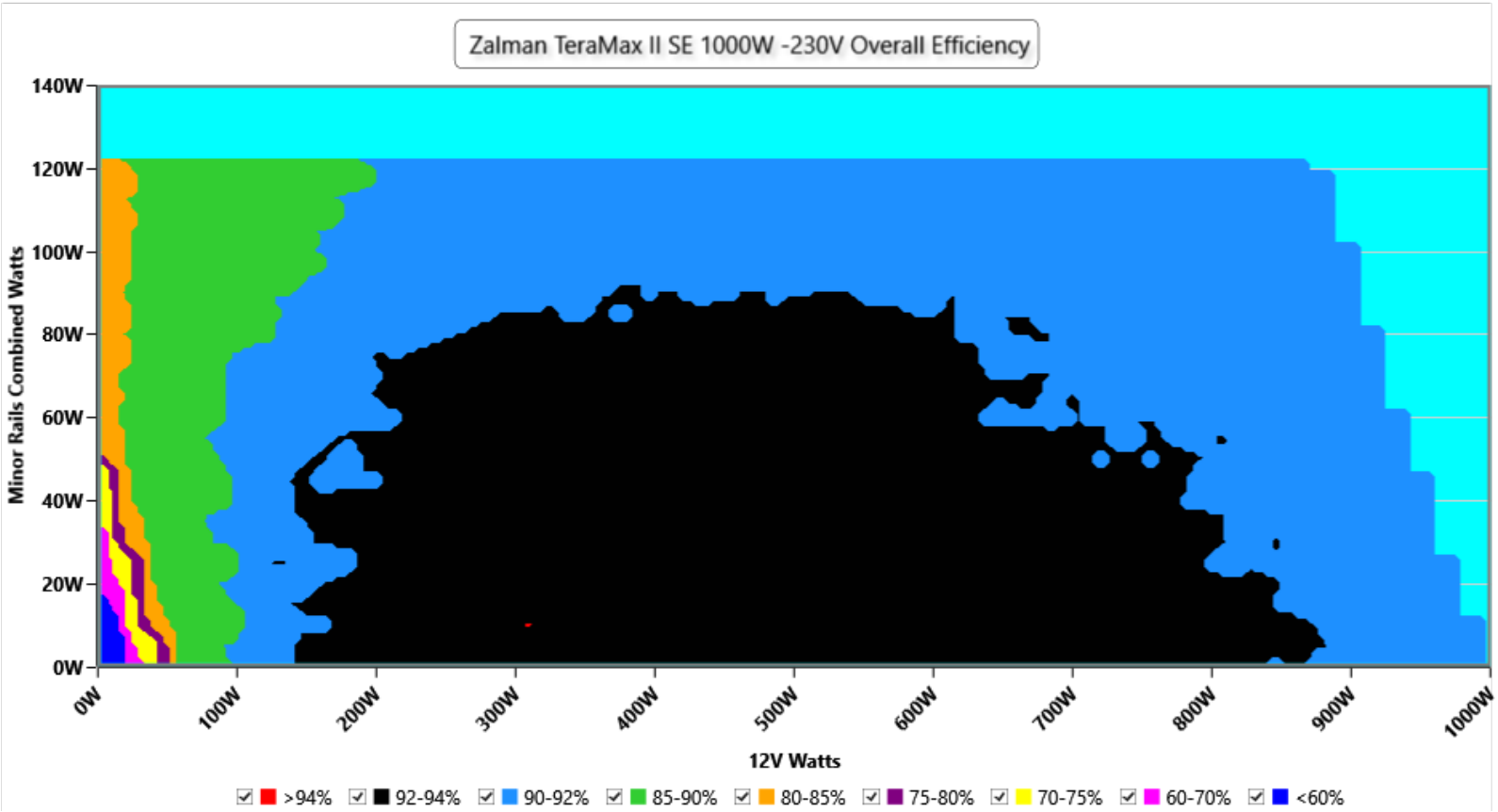
**115V**




**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

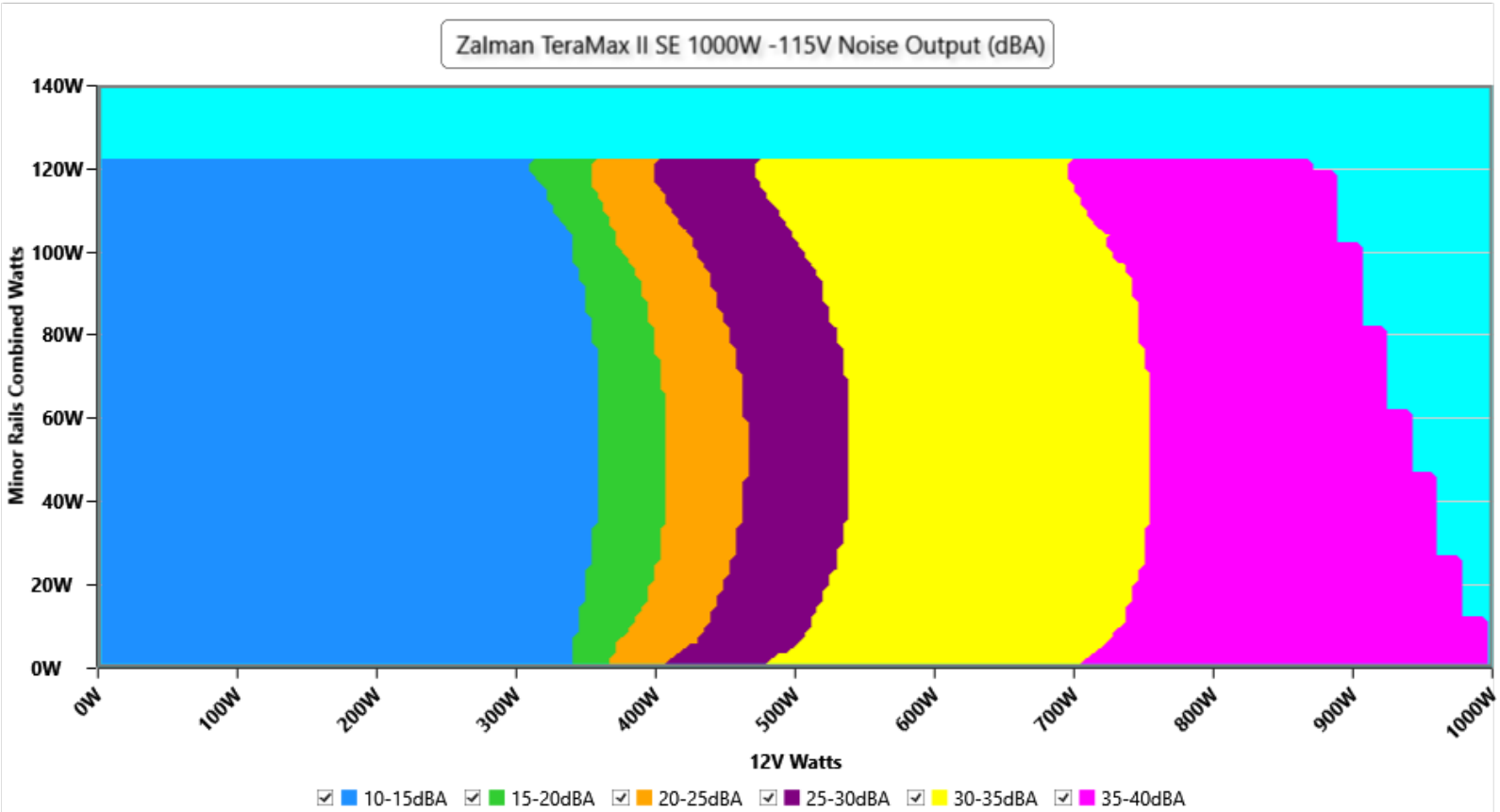



### INFO

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

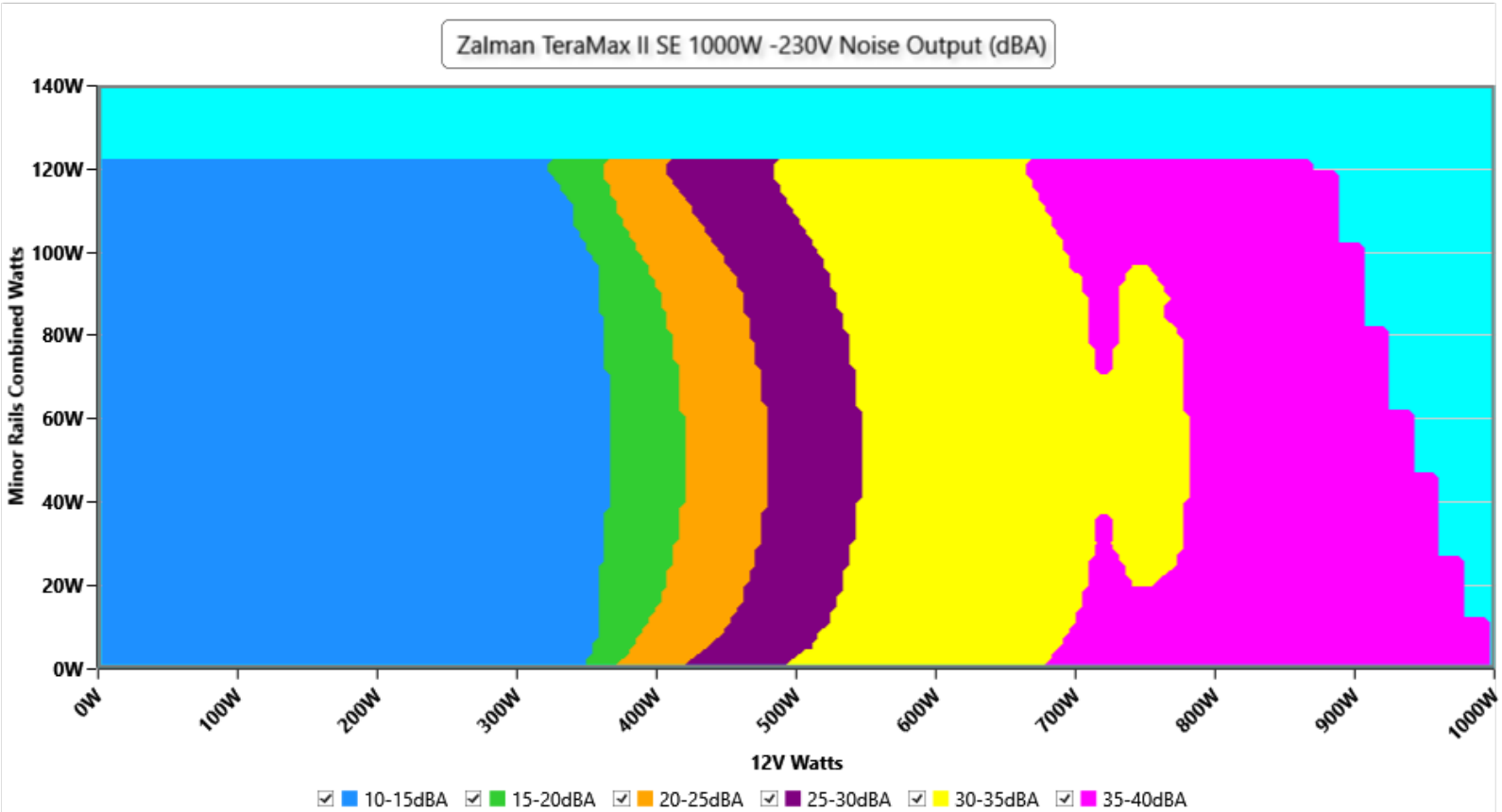
**115V**




**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

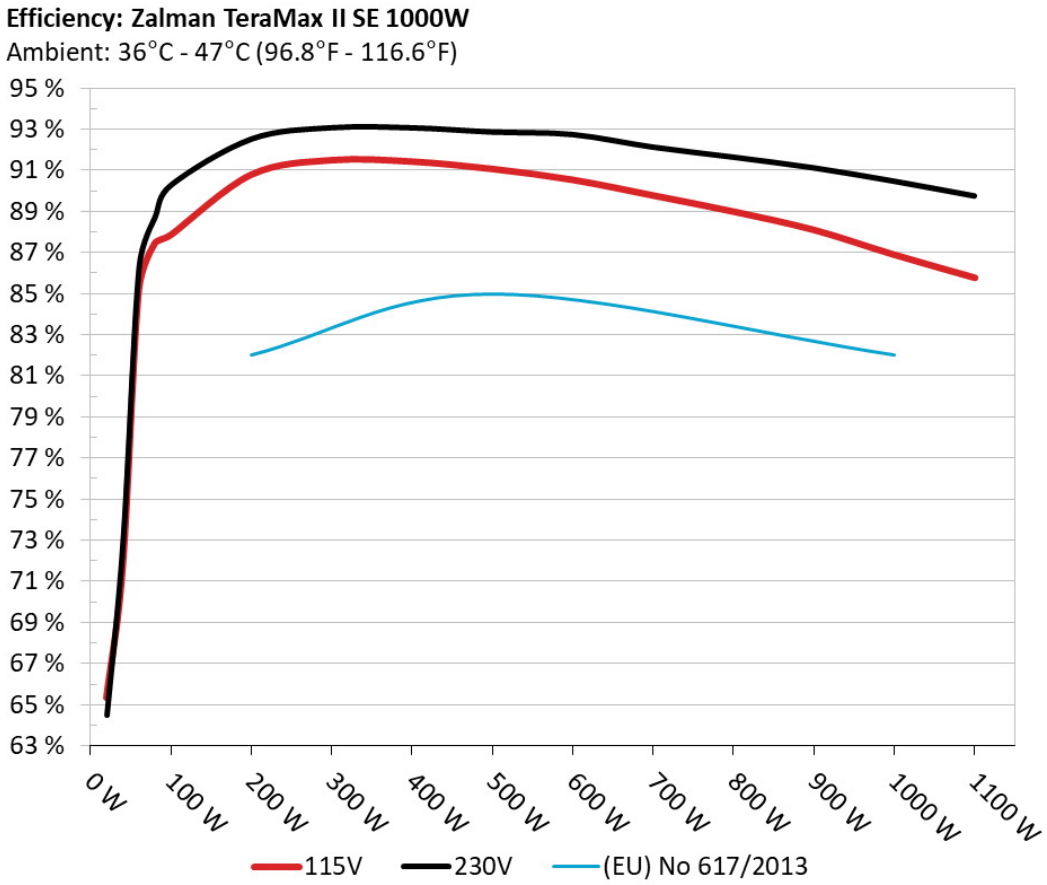



### INFO

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

## Indicative Performance

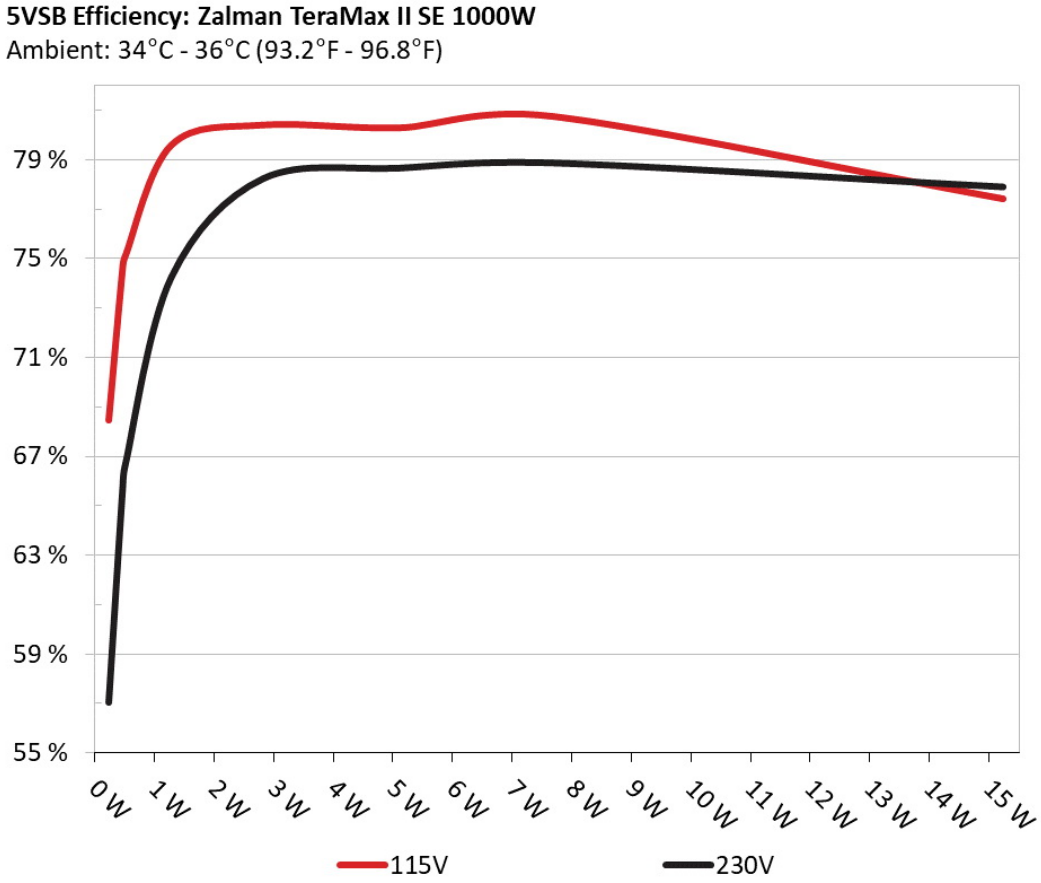
### Efficiency under high ambient temperature




**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** | 0.231W | 68.455% | 0.033 |
| | 5.141V | 0.338W | | 114.86V |
| **2** | **0.09A** | 0.463W | 74.61% | 0.059 |
| | 5.14V | 0.621W | | 114.86V |
| **3** | **0.55A** | 2.822W | 80.42% | 0.262 |
| | 5.131V | 3.509W | | 114.86V |
| **4** | **1A** | 5.122W | 80.304% | 0.355 |
| | 5.122V | 6.378W | | 114.85V |
| **5** | **1.5A** | 7.668W | 80.77% | 0.411 |
| | 5.112V | 9.494W | | 114.83V |
| **6** | **3A** | 15.239W | 77.429% | 0.479 |
| | 5.079V | 19.682W | | 114.83V |

### 230V

| Test # | 5VSB | DC/AC (Watts) | Efficiency | PF/AC Volts |
|---|---|---|---|---|
| **1** | **0.045A** | 0.231W | 57.04% | 0.012 |
| | 5.141V | 0.405W | | 229.84V |
| **2** | **0.09A** | 0.463W | 65.68% | 0.02 |
| | 5.14V | 0.706W | | 229.84V |
| **3** | **0.55A** | 2.822W | 78.232% | 0.099 |
| | 5.131V | 3.608W | | 229.83V |
| **4** | **1A** | 5.122W | 78.66% | 0.167 |
| | 5.122V | 6.512W | | 229.83V |
| **5** | **1.5A** | 7.669W | 78.867% | 0.222 |
| | 5.112V | 9.724W | | 229.84V |
| **6** | **3A** | 15.243W | 77.897% | 0.333 |
| | 5.081V | 19.569W | | 229.83V |

## Protection Features

| | |
|---|---|
| OCP (Normal @ 30.1°C) | 12V: 123.40A (148.09%), 11.936V<br>5V: 27.5A (137.50%), 5.002V<br>3.3V: 28.2A (141.00%), 3.269V<br>5VSB: 5A (166.67%), 5.012V |
| OCP (Hot @ 43.8°C) | 12V: 107.80A (129.37%), 11.947V<br>5V: 27.3A (136.50%), 4.996V<br>3.3V: 28.7A (143.50%), 3.261V<br>5VSB: 5A (166.67%), 5.012V |
| OPP (Normal @ 29.1°C) | 1444.46W (144.45%) |
| OPP (Hot @ 42.3°C) | 1219.45W (121.95%) |
| OTP | ✓ (120°C @ Heat Sink) |
| 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%** | **6.418A** | **1.958A** | **1.95A** | **0.978A** | 99.987 | 87.87% | 756 | 14.4 | 40.38°C | 0.963 |
| | 12.213V | 5.106V | 3.384V | 5.113V | 113.782 | | | | 43.87°C | 114.81V |

| Test | 12V | 5V | 3.3V | 5VSB | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|---|---|---|---|---|---|---|---|---|---|---|
| **20%** | **13.853A** | **2.946A** | **2.936A** | **1.176A** | 199.935 | 90.802% | 760 | 14.7 | 40.91°C | 0.965 |
| | 12.203V | 5.092V | 3.371V | 5.101V | 220.191 | | | | 45.2°C | 114.77V |
| **30%** | **21.651A** | **3.444A** | **3.437A** | **1.376A** | 299.99 | 91.509% | 805 | 16.9 | 41.17°C | 0.985 |
| | 12.190V | 5.081V | 3.361V | 5.088V | 327.833 | | | | 48.09°C | 114.73V |
| **40%** | **29.422A** | **3.945A** | **3.939A** | **1.576A** | 399.525 | 91.44% | 1176 | 28 | 41.89°C | 0.993 |
| | 12.178V | 5.07V | 3.351V | 5.076V | 436.925 | | | | 49.85°C | 114.71V |
| **50%** | **36.878A** | **4.943A** | **4.941A** | **1.778A** | 499.279 | 91.085% | 1324 | 31.8 | 42.11°C | 0.997 |
| | 12.169V | 5.058V | 3.339V | 5.063V | 548.172 | | | | 50.4°C | 114.66V |
| **60%** | **44.411A** | **5.95A** | **5.956A** | **1.98A** | 599.796 | 90.55% | 1499 | 35 | 42.61°C | 0.998 |
| | 12.159V | 5.042V | 3.325V | 5.051V | 662.591 | | | | 53.11°C | 114.64V |
| **70%** | **51.889A** | **6.963A** | **6.977A** | **2.184A** | 699.53 | 89.79% | 1626 | 37.6 | 43.14°C | 0.999 |
| | 12.149V | 5.027V | 3.311V | 5.038V | 779.053 | | | | 56.01°C | 114.6V |
| **80%** | **59.451A** | **7.984A** | **8.013A** | **2.288A** | 799.532 | 89.003% | 1751 | 39.7 | 43.76°C | 0.999 |
| | 12.139V | 5.009V | 3.294V | 5.026V | 898.331 | | | | 60.35°C | 114.57V |
| **90%** | **67.356A** | **8.505A** | **8.528A** | **2.393A** | 899.34 | 88.116% | 1813 | 40.9 | 44.7°C | 0.999 |
| | 12.128V | 4.997V | 3.283V | 5.015V | 1020.67 | | | | 63.18°C | 114.53V |
| **100%** | **75.078A** | **9.028A** | **9.079A** | **3.005A** | 999.336 | 86.907% | 1860 | 41.8 | 45.82°C | 0.997 |
| | 12.116V | 4.984V | 3.271V | 4.993V | 1149.9 | | | | 66.69°C | 114.49V |
| **110%** | **82.761A** | **10.071A** | **10.236A** | **3.011A** | 1099.98 | 85.779% | 1880 | 42 | 46.73°C | 0.995 |
| | 12.103V | 4.964V | 3.253V | 4.982V | 1282.334 | | | | 73.09°C | 114.46V |
| **CL1** | **0.114A** | **14.497A** | **14.57A** | **0A** | 121.297 | 80.754% | 1309 | 31.7 | 42.94°C | 0.983 |
| | 12.188V | 4.981V | 3.274V | 5.123V | 149.947 | | | | 54.35°C | 114.81V |
| **CL2** | **0.114A** | **19.87A** | **0A** | **0A** | 101.344 | 80.565% | 1027 | 23.9 | 42.22°C | 0.969 |
| | 12.195V | 5.03V | 3.329V | 5.129V | 125.789 | | | | 49.93°C | 114.81V |
| **CL3** | **0.113A** | **0A** | **20.029A** | **0A** | 67.383 | 74.66% | 845 | 17.8 | 40.98°C | 0.964 |
| | 12.197V | 5.017V | 3.295V | 5.129V | 90.244 | | | | 48.05°C | 114.82V |
| **CL4** | **82.438A** | **0A** | **0.001A** | **0.003A** | 999.925 | 88.063% | 1829 | 41.2 | 46.5°C | 0.999 |
| | 12.129V | 5.066V | 3.344V | 5.061V | 1135.506 | | | | 62.35°C | 114.5V |

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%** | **6.418A** | **1.96A** | **1.95A** | **0.978A** | 99.986 | 88.723% | 757 | 14.5 | 40.37°C | 0.809 |
| | 12.213V | 5.102V | 3.385V | 5.113V | 112.543 | | | | 43.77°C | 229.83V |
| **20%** | **13.853A** | **2.948A** | **2.936A** | **1.176A** | 199.934 | 92.541% | 758 | 14.6 | 40.63°C | 0.9 |
| | 12.203V | 5.088V | 3.371V | 5.101V | 216.467 | | | | 45°C | 229.81V |
| **30%** | **21.646A** | **3.446A** | **3.435A** | **1.376A** | 299.975 | 93.092% | 770 | 14.9 | 41.04°C | 0.925 |
| | 12.193V | 5.078V | 3.362V | 5.089V | 322.245 | | | | 46.99°C | 229.78V |
| **40%** | **29.420A** | **3.946A** | **3.937A** | **1.576A** | 399.512 | 93.085% | 1102 | 26.1 | 41.91°C | 0.94 |
| | 12.179V | 5.068V | 3.353V | 5.077V | 429.203 | | | | 49.62°C | 229.78V |
| **50%** | **36.872A** | **4.946A** | **4.941A** | **1.777A** | 499.225 | 92.882% | 1332 | 31.9 | 42.09°C | 0.948 |
| | 12.170V | 5.054V | 3.339V | 5.064V | 537.473 | | | | 51.58°C | 229.76V |
| **60%** | **44.407A** | **5.954A** | **5.955A** | **1.98A** | 599.771 | 92.758% | 1484 | 34.7 | 42.86°C | 0.959 |
| | 12.160V | 5.039V | 3.325V | 5.051V | 647 | | | | 53.34°C | 229.75V |
| **70%** | **51.885A** | **6.968A** | **6.978A** | **2.183A** | 699.505 | 92.145% | 1608 | 37.5 | 43.21°C | 0.962 |
| | 12.150V | 5.024V | 3.311V | 5.038V | 758.961 | | | | 56°C | 229.71V |
| **80%** | **59.445A** | **7.989A** | **8.011A** | **2.288A** | 799.504 | 91.659% | 1718 | 38.9 | 43.86°C | 0.967 |
| | 12.140V | 5.006V | 3.295V | 5.027V | 872.258 | | | | 59.64°C | 229.7V |
| **90%** | **67.344A** | **8.506A** | **8.522A** | **2.392A** | 899.302 | 91.14% | 1791 | 40.4 | 44.31°C | 0.973 |
| | 12.129V | 4.996V | 3.285V | 5.016V | 986.771 | | | | 62.51°C | 229.69V |
| **100%** | **75.064A** | **9.03A** | **9.073A** | **3.003A** | 999.314 | 90.491% | 1844 | 41.5 | 45.06°C | 0.978 |
| | 12.118V | 4.983V | 3.273V | 4.995V | 1104.127 | | | | 66.67°C | 229.67V |
| **110%** | **82.742A** | **10.074A** | **10.23A** | **3.01A** | 1099.948 | 89.77% | 1875 | 42 | 46.37°C | 0.982 |
| | 12.105V | 4.963V | 3.255V | 4.984V | 1226.15 | | | | 72.72°C | 229.65V |
| **CL1** | **0.114A** | **14.506A** | **14.569A** | **0A** | 121.293 | 82.102% | 1388 | 33.1 | 43.96°C | 0.854 |
| | 12.188V | 4.977V | 3.274V | 5.123V | 147.801 | | | | 56.87°C | 229.82V |
| **CL2** | **0.113A** | **19.883A** | **0A** | **0A** | 101.335 | 81.644% | 1036 | 24.1 | 42.4°C | 0.826 |
| | 12.196V | 5.027V | 3.329V | 5.129V | 124.099 | | | | 51.12°C | 229.82V |
| **CL3** | **0.113A** | **0A** | **20.026A** | **0A** | 67.38 | 76.042% | 847 | 17.8 | 41.34°C | 0.649 |
| | 12.198V | 5.013V | 3.296V | 5.129V | 88.601 | | | | 48.79°C | 229.83V |

| Test | 12V | 5V | 3.3V | 5VSB | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|---|---|---|---|---|---|---|---|---|---|---|
| **CL4** | **82.428A** | **0A** | **0.001A** | **0.003A** | 999.916 | 91.414% | 1833 | 41.3 | 45.25°C | 0.977 |
| | 12.130V | 5.064V | 3.346V | 5.062V | 1093.854 | | | | 63.78°C | 229.67V |

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** | **1.214A** | **0.487A** | **0.484A** | **0.195A** | 19.996 | 65.324% | 740 | 14.1 | 36.04°C | 0.78 |
| | 12.226V | 5.13V | 3.406V | 5.136V | 30.641 | | | | 39.31°C | 114.85V |
| **40W** | **2.674A** | **0.683A** | **0.679A** | **0.292A** | 39.997 | 71.677% | 746 | 14.2 | 37.8°C | 0.869 |
| | 12.222V | 5.124V | 3.401V | 5.132V | 55.822 | | | | 45.25°C | 114.86V |
| **60W** | **4.136A** | **0.879A** | **0.874A** | **0.39A** | 59.997 | 85.153% | 750 | 14.8 | 38.24°C | 0.891 |
| | 12.218V | 5.119V | 3.396V | 5.129V | 70.741 | | | | 42.14°C | 114.86V |
| **80W** | **5.592A** | **1.075A** | **1.07A** | **0.488A** | 79.936 | 87.451% | 752 | 14.8 | 39.01°C | 0.908 |
| | 12.216V | 5.115V | 3.393V | 5.125V | 91.48 | | | | 42.56°C | 114.84V |

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** | **1.215A** | **0.487A** | **0.484A** | **0.195A** | 20.001 | 64.482% | 741 | 14.1 | 36.49°C | 0.452 |
| | 12.225V | 5.128V | 3.407V | 5.136V | 30.213 | | | | 37.79°C | 229.83V |
| **40W** | **2.675A** | **0.684A** | **0.679A** | **0.292A** | 39.998 | 72.925% | 751 | 14.8 | 37.22°C | 0.57 |
| | 12.220V | 5.119V | 3.4V | 5.132V | 54.85 | | | | 38.18°C | 229.83V |
| **60W** | **4.136A** | **0.879A** | **0.874A** | **0.39A** | 59.997 | 86.304% | 752 | 14.8 | 38.77°C | 0.609 |
| | 12.218V | 5.116V | 3.397V | 5.129V | 69.514 | | | | 39.79°C | 229.82V |
| **80W** | **5.592A** | **1.076A** | **1.069A** | **0.488A** | 79.935 | 88.744% | 753 | 14.8 | 39.2°C | 0.651 |
| | 12.216V | 5.113V | 3.394V | 5.125V | 90.206 | | | | 39.03°C | 229.82V |

The results above are not used in the certification process

## Ripple Measurements

### 115V

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| 10% Load | 16.93mV | 13.70mV | 14.57mV | 10.21mV | Pass |
| 20% Load | 20.46mV | 15.81mV | 17.24mV | 12.01mV | Pass |
| 30% Load | 22.56mV | 16.32mV | 17.95mV | 13.70mV | Pass |
| 40% Load | 22.86mV | 25.92mV | 26.58mV | 14.21mV | Pass |
| 50% Load | 20.00mV | 19.50mV | 21.81mV | 13.19mV | Pass |
| 60% Load | 22.81mV | 26.53mV | 34.53mV | 15.60mV | Pass |
| 70% Load | 28.39mV | 34.39mV | 34.63mV | 17.96mV | Pass |
| 80% Load | 31.50mV | 37.00mV | 29.09mV | 19.39mV | Pass |
| 90% Load | 38.87mV | 34.03mV | 29.76mV | 21.24mV | Pass |
| 100% Load | 39.06mV | 34.40mV | 30.06mV | 24.92mV | Pass |
| 110% Load | 45.69mV | 34.32mV | 30.76mV | 27.28mV | Pass |
| Crossload1 | 19.87mV | 16.10mV | 19.88mV | 12.58mV | Pass |
| Crossload2 | 18.92mV | 21.50mV | 15.29mV | 10.42mV | Pass |
| Crossload3 | 16.32mV | 15.04mV | 19.75mV | 9.75mV | Pass |
| Crossload4 | 42.21mV | 27.99mV | 29.72mV | 22.49mV | Pass |

The results above are not used in the certification process

### 230V

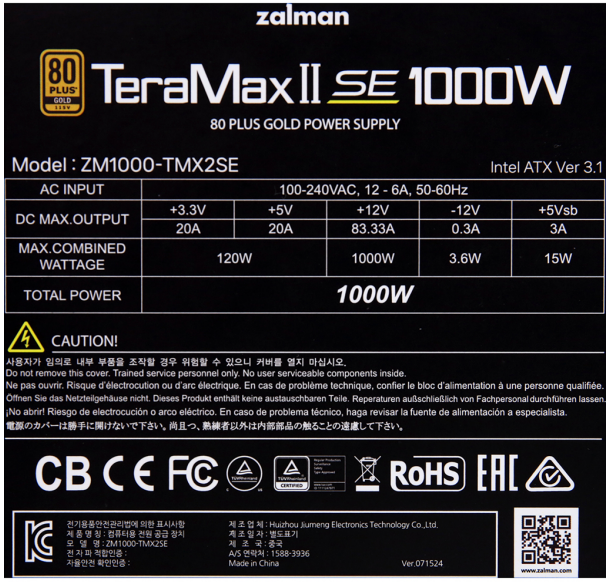
| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| 10% Load | 15.75mV | 11.86mV | 13.08mV | 8.36mV | Pass |
| 20% Load | 17.85mV | 13.65mV | 14.42mV | 11.19mV | Pass |
| 30% Load | 19.54mV | 16.01mV | 17.29mV | 13.65mV | Pass |
| 40% Load | 17.90mV | 20.58mV | 22.01mV | 11.85mV | Pass |
| 50% Load | 23.88mV | 22.94mV | 27.81mV | 15.55mV | Pass |
| 60% Load | 22.04mV | 24.63mV | 30.42mV | 14.52mV | Pass |

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| 70% Load | 24.65mV | 31.51mV | 32.22mV | 16.68mV | Pass |
| 80% Load | 28.85mV | 34.28mV | 29.76mV | 19.65mV | Pass |
| 90% Load | 31.05mV | 32.38mV | 28.21mV | 21.29mV | Pass |
| 100% Load | 36.51mV | 32.87mV | 29.86mV | 25.13mV | Pass |
| 110% Load | 40.20mV | 34.59mV | 30.46mV | 26.55mV | Pass |
| Crossload1 | 16.12mV | 13.31mV | 16.63mV | 11.90mV | Pass |
| Crossload2 | 19.43mV | 20.12mV | 14.52mV | 10.88mV | Pass |
| Crossload3 | 17.44mV | 14.68mV | 17.85mV | 10.11mV | Pass |
| Crossload4 | 37.13mV | 28.67mV | 28.26mV | 22.87mV | Pass |

The results above are not used in the certification process

## Zalman TeraMax II SE 1000W

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

CYBENETICS LTD Syrou 6, Latsia, 2231, Nicosia Cyprus

www.cybenetics.com - info@cybenetics.com