# Thermaltake Toughpower GF1 1000W

Serial Number PSTPD1000FNFAGU1XU000245

Lab ID TT10001885

Certification ID 251885

Test Result Report ID: 21PS1885A

Certificate Issue Date: Aug 26, 2021

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 | Thermaltake |
| Model | Toughpower GF1 1000W |
| OEM/ODM | Channel Well Technology |
| Serial Number | PSTPD1000FNFAGU1XU000245 |
| Product Specifications | |
| Manufacturer-Provided Information | |
| Rated Voltage (Vrms) | 100-240 |
| Rated Current (Arms) | 15 |
| 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 | 140mm Hydraulic Bearing Fan<br>[TT-1425 (A1425L12S)] |
| Semi-Passive Operation | ✓ (selectable) |
| Cybenetics Testing Information | |
| Lab ID | TT10001885 |
| Date of receipt | Jul 19, 2021 |
| Testing Date | Aug 24, 2021 |
| Report Issued Date | Aug 26, 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 (600mm) | 1 | 1 | 16AWG | No |
| 8 pin EPS12V (700mm) | 1 | 1 | 16AWG | No |
| 4+4 pin EPS12V (700mm) | 1 | 1 | 16AWG | No |
| 6+2 pin PCIe (500mm+150mm) | 3 | 6 | 16-18AWG | No |
| SATA (500mm+150mm+150mm+150mm) | 3 | 12 | 18AWG | No |
| 4-pin Molex (500mm+150mm+150mm+150mm) | 1 | 4 | 18AWG | No |
| FDD Adapter (150mm) | 1 | 1 | 20AWG | No |
| AC Power Cord (1420mm) - C13 coupler | 1 | 1 | 14AWG | - |

## Power Specifications

| Rail | | 3.3V | 5V | 12V | 5VSB | -12V |
|---|---|---|---|---|---|---|
| Max. Power | Amps | 24 | 24 | 83.3 | 3 | 0.5 |
| | Watts | 120 | | 1000 | 15 | 6 |
| Total Max. Power (W) | | 1000 | | | | |

## Parts Description

| | |
|---|---|
| General Data | - |
| Manufacturer (OEM) | CWT |
| PCB Type | Double Sided |
| Primary Side | - |
| Transient Filter | 4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x CAP200DG (Discharge IC) |
| Inrush Protection | NTC Thermistor SCK-055 (5 Ohm) & Relay |
| Bridge Rectifier(s) | 2x  GBU1510 (1000V, 15A @ 100°C) |
| APFC MOSFETs | 3x Infineon IPA50R140CP (500V, 15A @ 100°C, Rds(on): 0.14 Ohm) |
| APFC Boost Diode | 1x Infineon IDH10G65C6 (650V, 10A @ 140°C) |
| Bulk Cap(s) | 2x Nichicon (400V, 680uF & 470uF each or 1.150uF compined, 2,000h @ 105°C, GG) |
| Main Switchers | 2x Infineon IPW60R125P6 (600V, 19A @ 100°C, Rds(on): 0.125Ohm) |
| APFC Controller | Champion CM6500UNX & Champion CM03X |
| Resonant Controller | Champion CM6901X |
| Topology | Primary side: APFC, Half-Bridge & LLC converter<br>Secondary side: Synchronous Rectification & DC-DC converters |
| Secondary Side | - |
| +12V MOSFETs | 8x International Rectifier IRFH7004PbF (40V, 164A @ 100°C, Rds(on): 1.4mOhm) |
| 5V & 3.3V | DC-DC Converters: 4x UBIQ QM3054M6 (30V, 61A @ 100°C, Rds(on): 4.8mOhm) & 2x UBIQ QN3107M6N (30V, 70A @ 100°C, Rds(on): 2.6mOhm)<br>PWM Controllers: UPI Semi uP3861P |
| Filtering Capacitors | Electrolytic: 10x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 6x Nichicon (4-10,000h @ 105°C, HE), 1x Rubycon (6-10,000h @ 105°C, ZLH), 1x Rubycon (3-6,000h @ 105°C, YXG)<br>Polymer: 10x FPCAP, 11x NIC, 5x Nippon Chemi-Con |
| Supervisor IC | IN1S429I (OCP, OVP, UVP, SCP, PG) |
| Fan Model | Thermaltake TT-1425 (Hong Sheng A1425L12S) (140mm, 12V, 0.30A, Hydraulic Bearing Fan) |
| 5VSB Circuit | - |

| | |
|---|---|
| Rectifier | 1x Galaxy Microelectronics D10PS45L SBR (45V, 10A) & IPS ISD04N65A FET |
| Standby PWM Controller | On-Bright OB5282 |

# 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) | 88.220% |
| Average Noise Output (>1450 Load Combinations) | 35.61dBA |
| Average PF (>1450 Load Combinations) | 0.976 |
| Efficiency With 10W (≤500W) or 2% (>500W) Load | 63.714% |
| Standby Power Consumption | 0.0438W |
| Non-Accredited | |
| 12V Ripple (Full Load) | 15.76mV |
| 5V Ripple (Full Load) | 16.16mV |
| 3.3V Ripple (Full Load) | 19.13mV |
| 5VSB Ripple (Full Load) | 7.30mV |
| 12V Load Regulation | 0.63% |
| 5V Load Regulation | 0.68% |
| 3.3V Load Regulation | 1.09% |
| 5VSB Load Regulation | 4.16% |
| Inrush Current | 33.900A |

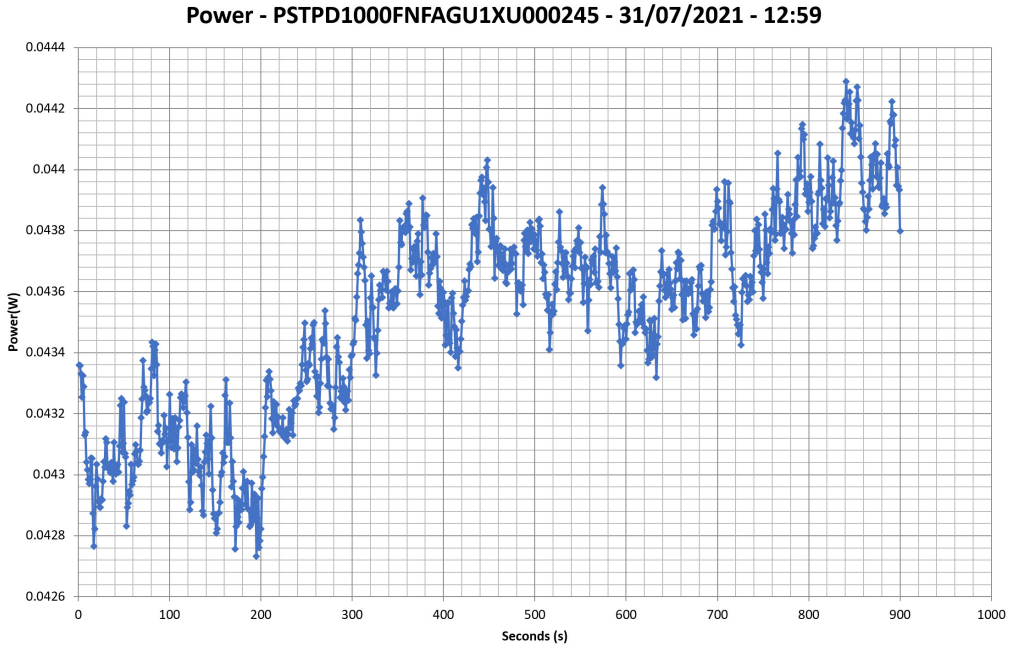
| 230V | | |
|---|---|---|
| Accredited | | |
| Average Efficiency (>1450 load combinations) | | 90.422% |
| Average Noise Output (>1450 Load Combinations) | | 35.58dBA |
| Average PF (>1450 Load Combinations) | | 0.931 |
| Efficiency With 10W (≤500W) or 2% (>500W) Load | | - |
| Standby Power Consumption | | 0.0624W |
| Non-Accredited | | |
| 12V Ripple (Full Load) | | 15.04mV |
| 5V Ripple (Full Load) | | 16.87mV |
| 3.3V Ripple (Full Load) | | 19.56mV |
| 5VSB Ripple (Full Load) | | 7.39mV |
| 12V Load Regulation | | 0.61% |
| 5V Load Regulation | | 0.68% |
| 3.3V Load Regulation | | 1.06% |
| 5VSB Load Regulation | | 4.14% |
| Inrush Current | | 66.480A |
| Hold-Up Time & PWR_OK Signal | | 19.00ms |
| AC Loss to PWR_OK Hold Up Time | | 17.40ms |
| PWR_OK Inactive to DC Loss Delay | | 1.60ms |
| PSU Timings: T1 (20% / 100%) | 36.0ms | 36.0ms |
| PSU Timings: T3 (20% / 100%) | 134.0ms | 134.0ms |
| OPP (29.73°C / 40.76°C) | 131.54% | 120.14% |

## Hold-Up Time & PWR_OK Signal

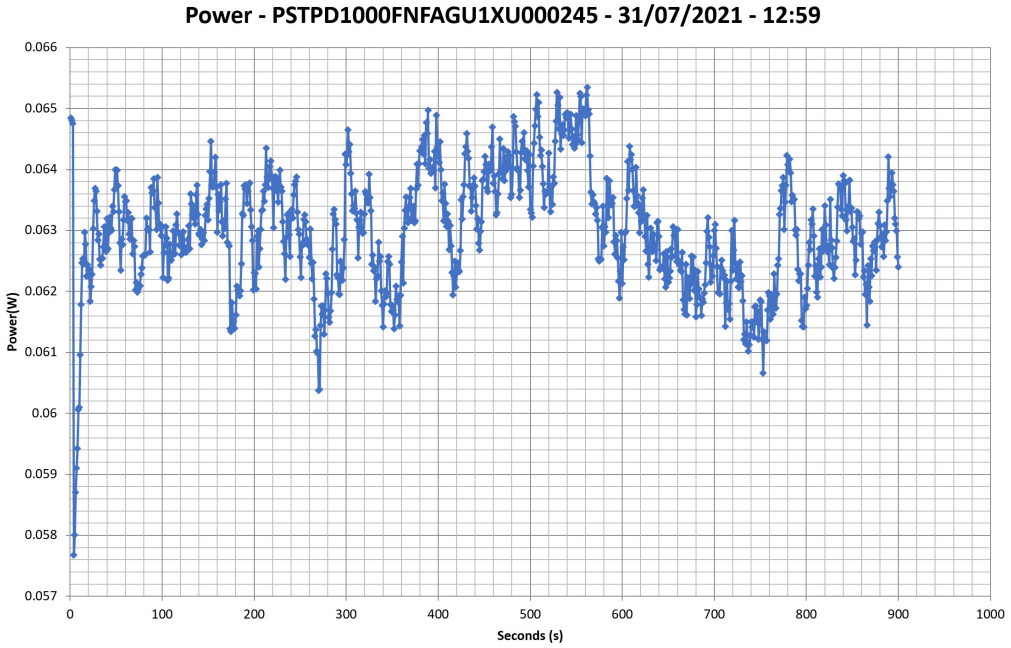
| | |
|---|---|
| Hold-Up Time (ms) | 19 |
| AC Loss to PWR_OK Hold Up Time (ms) | 17.4 |
| PWR_OK Inactive to DC Loss Delay (ms) | 1.6 |

## Graphs

### 115V

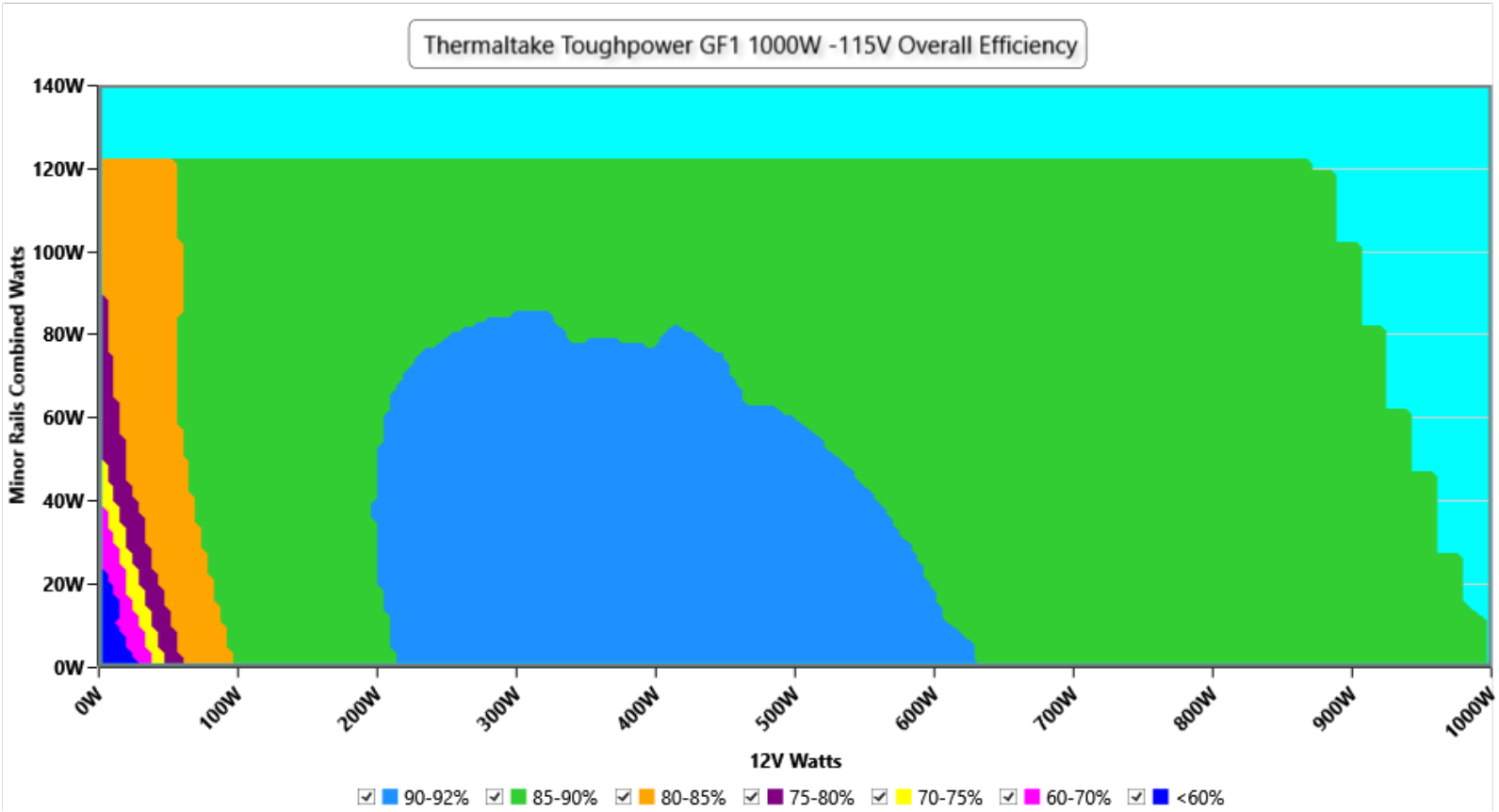



### 230V



## Efficiency Graph

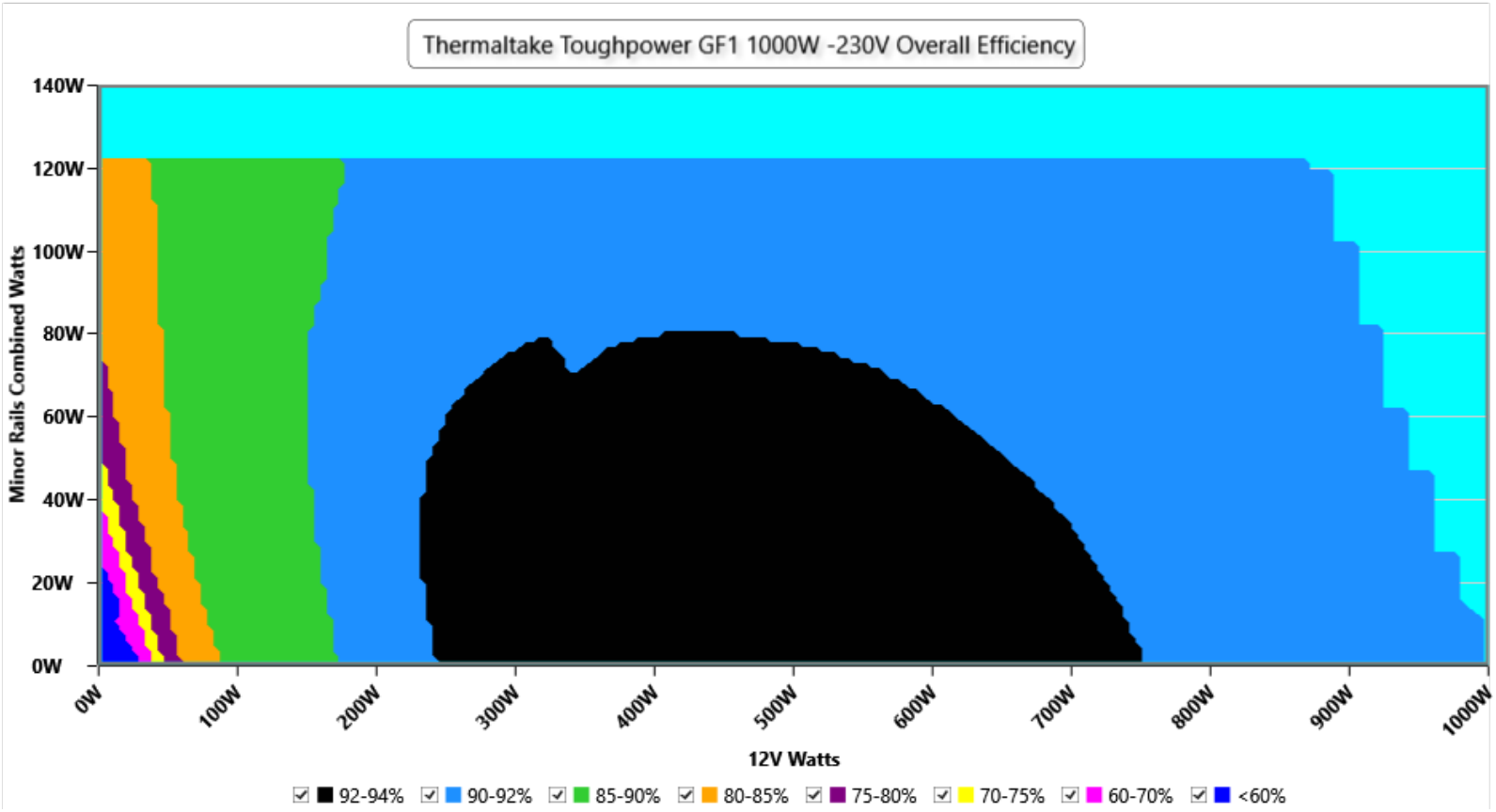
**115V**




**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

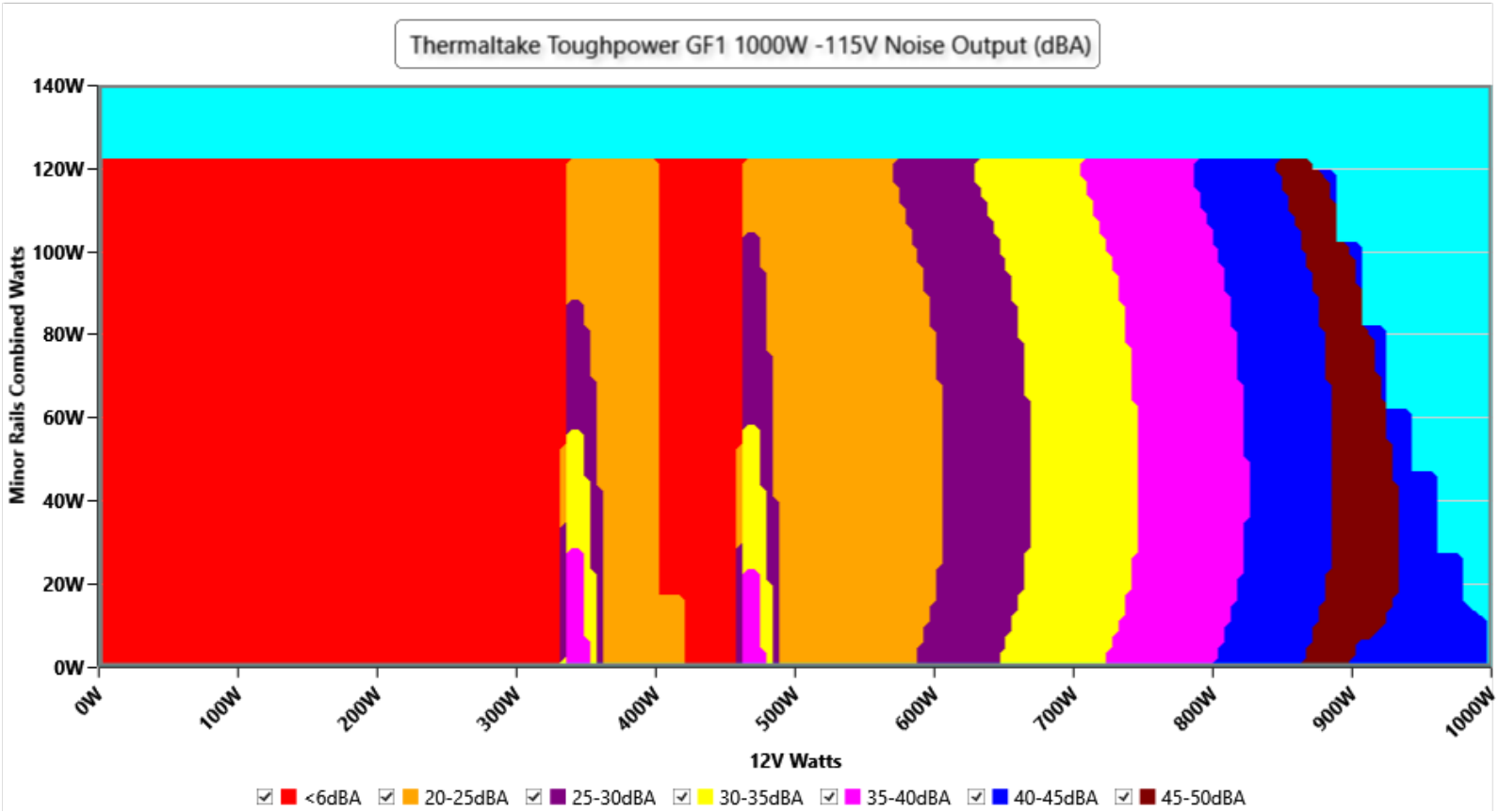



### INFO

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

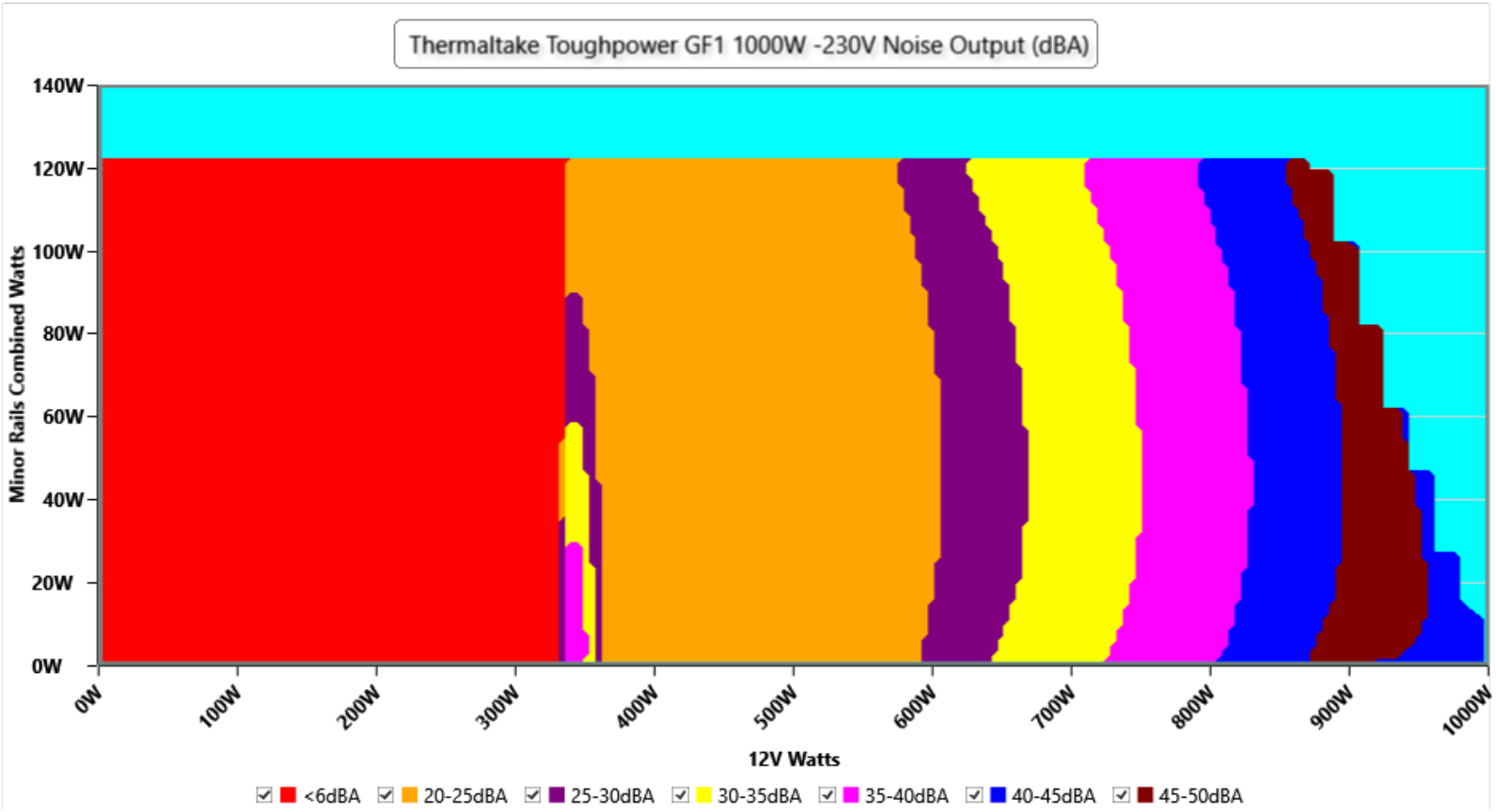
**115V**




**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

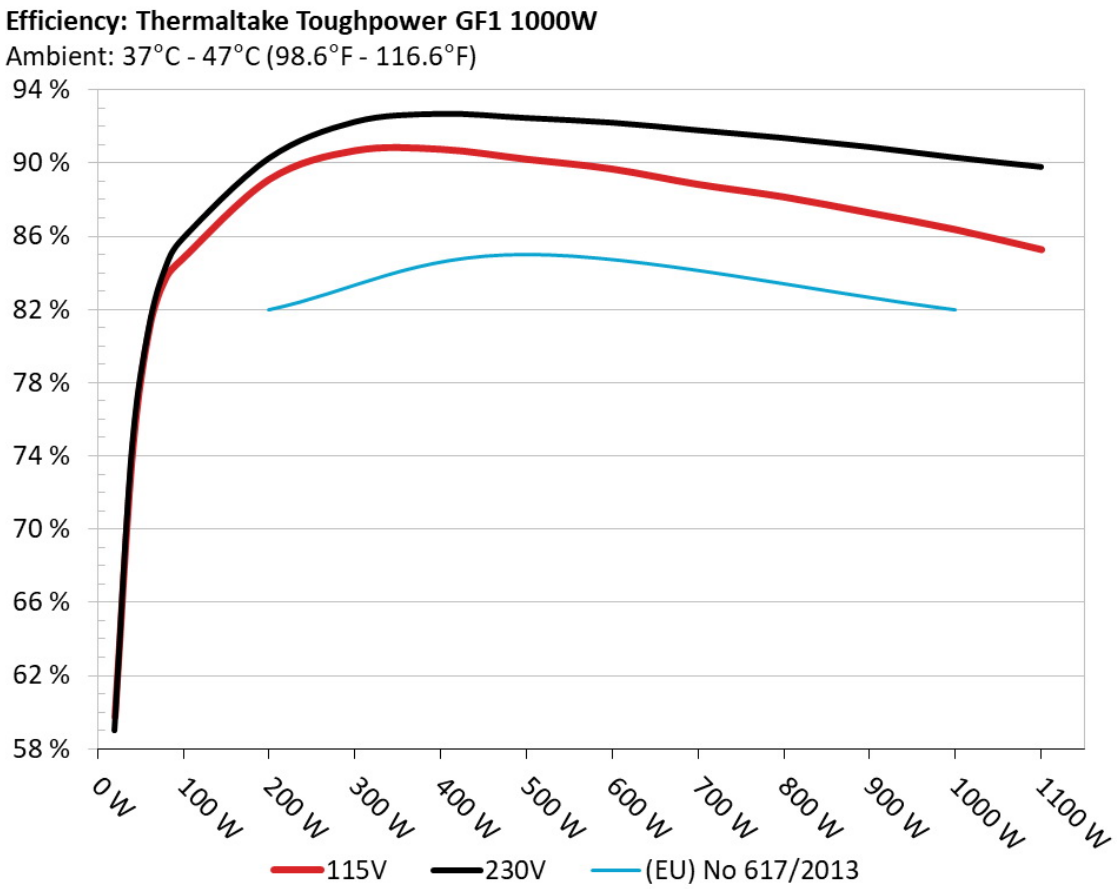



### INFO

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

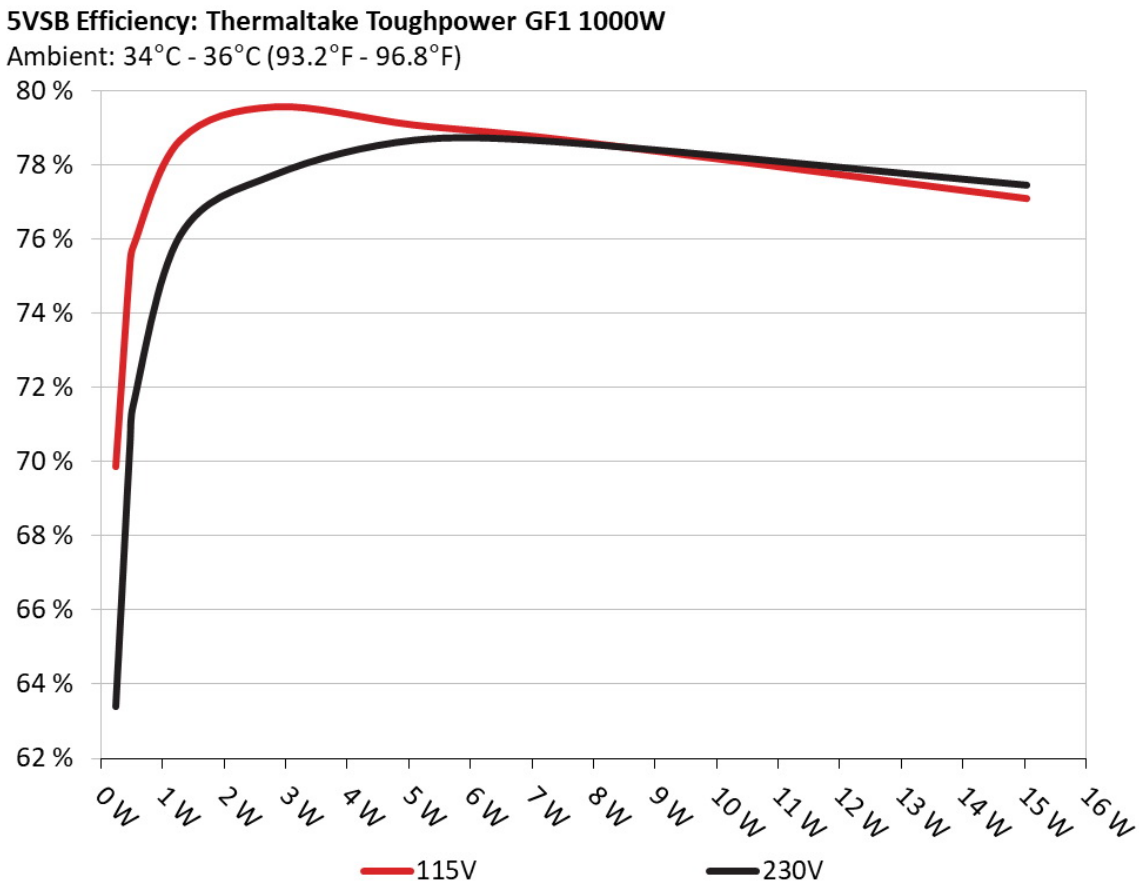
### Efficiency under high ambient temperature




**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 | 0.23W | 69.871% | 0.033 |
| | 5.117V | 0.329W | | 115.13V |
| 2 | 0.09A | 0.461W | 75.340% | 0.061 |
| | 5.115V | 0.612W | | 115.12V |
| 3 | 0.55A | 2.805W | 79.553% | 0.269 |
| | 5.099V | 3.526W | | 115.13V |
| 4 | 1A | 5.084W | 79.064% | 0.364 |
| | 5.083V | 6.43W | | 115.13V |
| 5 | 1.5A | 7.6W | 78.650% | 0.417 |
| | 5.066V | 9.663W | | 115.13V |
| 6 | 3.001A | 15.039W | 77.088% | 0.479 |
| | 5.012V | 19.509W | | 115.12V |

### 230V

| Test # | 5VSB | DC/AC (Watts) | Efficiency | PF/AC Volts |
|---|---|---|---|---|
| 1 | 0.045A | 0.23W | 63.404% | 0.011 |
| | 5.116V | 0.363W | | 230.26V |
| 2 | 0.09A | 0.461W | 70.486% | 0.02 |
| | 5.115V | 0.654W | | 230.26V |
| 3 | 0.55A | 2.805W | 77.723% | 0.103 |
| | 5.099V | 3.609W | | 230.26V |
| 4 | 1A | 5.084W | 78.656% | 0.17 |
| | 5.083V | 6.464W | | 230.26V |
| 5 | 1.5A | 7.599W | 78.587% | 0.229 |
| | 5.065V | 9.67W | | 230.26V |
| 6 | 3.001A | 15.038W | 77.446% | 0.334 |
| | 5.012V | 19.418W | | 230.26V |

## 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% | 6.476A | 1.985A | 1.972A | 0.987A | 100.032 | 84.851% | 0 | <6.0 | 46.19°C | 0.963 |
| | 12.110V | 5.038V | 3.347V | 5.069V | 117.892 | | | | 40.82°C | 115.14V |
| 20% | 13.961A | 2.98A | 2.961A | 1.188A | 199.998 | 89.134% | 0 | <6.0 | 46.83°C | 0.976 |
| | 12.112V | 5.034V | 3.344V | 5.052V | 224.379 | | | | 40.97°C | 115.14V |
| 30% | 21.792A | 3.479A | 3.457A | 1.391A | 300.071 | 90.708% | 0 | <6.0 | 47.73°C | 0.976 |
| | 12.116V | 5.031V | 3.341V | 5.034V | 330.809 | | | | 41.35°C | 115.14V |
| 40% | 29.626A | 3.978A | 3.955A | 1.595A | 399.894 | 90.78% | 0 | <6.0 | 48.4°C | 0.972 |
| | 12.107V | 5.029V | 3.338V | 5.017V | 440.509 | | | | 41.65°C | 115.14V |
| 50% | 37.162A | 4.976A | 4.949A | 1.801A | 499.627 | 90.238% | 960 | 27.3 | 41.95°C | 0.975 |
| | 12.085V | 5.026V | 3.335V | 4.999V | 553.68 | | | | 49.2°C | 115.13V |
| 60% | 44.792A | 5.975A | 5.947A | 2A | 600.119 | 89.698% | 993 | 28.3 | 42.48°C | 0.978 |
| | 12.063V | 5.023V | 3.33V | 4.984V | 669.041 | | | | 50.26°C | 115.13V |
| 70% | 52.300A | 6.976A | 6.945A | 2.216A | 699.853 | 88.86% | 1266 | 35.6 | 42.87°C | 0.98 |
| | 12.060V | 5.019V | 3.327V | 4.965V | 787.592 | | | | 51.23°C | 115.12V |
| 80% | 59.899A | 7.979A | 7.946A | 2.324A | 799.904 | 88.173% | 1530 | 41.1 | 43.59°C | 0.982 |
| | 12.053V | 5.016V | 3.323V | 4.951V | 907.2 | | | | 52.32°C | 115.12V |
| 90% | 67.824A | 8.483A | 8.436A | 2.432A | 899.71 | 87.305% | 1751 | 45.0 | 44.54°C | 0.984 |
| | 12.049V | 5.012V | 3.32V | 4.936V | 1030.542 | | | | 53.83°C | 115.12V |
| 100% | 75.572A | 8.988A | 8.957A | 3.061A | 999.721 | 86.393% | 1745 | 44.6 | 45.97°C | 0.985 |
| | 12.042V | 5.009V | 3.316V | 4.902V | 1157.18 | | | | 55.8°C | 115.11V |
| 110% | 83.271A | 9.995A | 10.055A | 3.069A | 1100.351 | 85.298% | 1743 | 44.3 | 46.64°C | 0.987 |
| | 12.033V | 5.005V | 3.312V | 4.89V | 1290.012 | | | | 57.38°C | 115.11V |
| CL1 | 0.116A | 14.389A | 14.31A | 0A | 121.346 | 82.461% | 840 | 22.7 | 42.26°C | 0.973 |
| | 12.083V | 5.02V | 3.333V | 5.09V | 147.156 | | | | 49.4°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 |
|---|---|---|---|---|---|---|---|---|---|---|
| CL2 | 0.116A | 23.955A | 0A | 0A | 121.452 | 80.603% | 0 | <6.0 | 51.45°C | 0.973 |
| | 12.087V | 5.011V | 3.348V | 5.096V | 150.679 | | | | 43.45°C | 115.15V |
| CL3 | 0.116A | 0A | 23.801A | 0A | 80.6 | 74.691% | 0 | <6.0 | 53.87°C | 0.962 |
| | 12.105V | 5.035V | 3.327V | 5.094V | 107.911 | | | | 44.91°C | 115.15V |
| CL4 | 83.012A | 0A | 0A | 0A | 1000.252 | 86.873% | 1758 | 45.4 | 45.93°C | 0.985 |
| | 12.049V | 5.025V | 3.329V | 5.027V | 1151.392 | | | | 55.75°C | 115.11V |

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% | 6.474A | 1.985A | 1.972A | 0.987A | 100.026 | 85.89% | 0 | <6.0 | 45.29°C | 0.822 |
| | 12.115V | 5.038V | 3.347V | 5.069V | 116.459 | | | | 40.01°C | 230.29V |
| 20% | 13.962A | 2.98A | 2.961A | 1.188A | 199.986 | 90.242% | 0 | <6.0 | 46.75°C | 0.9 |
| | 12.109V | 5.034V | 3.344V | 5.052V | 221.61 | | | | 40.95°C | 230.29V |
| 30% | 21.798A | 3.479A | 3.457A | 1.39A | 300.052 | 92.232% | 0 | <6.0 | 47.86°C | 0.929 |
| | 12.111V | 5.031V | 3.341V | 5.035V | 325.324 | | | | 41.47°C | 230.29V |
| 40% | 29.626A | 3.978A | 3.954A | 1.595A | 399.853 | 92.672% | 0 | <6.0 | 48.68°C | 0.94 |
| | 12.105V | 5.029V | 3.338V | 5.017V | 431.471 | | | | 41.87°C | 230.28V |
| 50% | 37.188A | 4.975A | 4.949A | 1.8A | 499.599 | 92.447% | 878 | 24.1 | 42.24°C | 0.949 |
| | 12.076V | 5.026V | 3.334V | 5.001V | 540.415 | | | | 49.62°C | 230.28V |
| 60% | 44.751A | 5.974A | 5.945A | 2A | 600.066 | 92.192% | 1126 | 32.0 | 42.88°C | 0.953 |
| | 12.073V | 5.023V | 3.33V | 4.983V | 650.885 | | | | 50.83°C | 230.29V |
| 70% | 52.274A | 6.975A | 6.944A | 2.216A | 699.819 | 91.778% | 1336 | 37.2 | 43.45°C | 0.956 |
| | 12.065V | 5.019V | 3.327V | 4.965V | 762.513 | | | | 51.84°C | 230.29V |
| 80% | 59.883A | 7.978A | 7.945A | 2.323A | 799.84 | 91.356% | 1547 | 41.2 | 43.88°C | 0.959 |
| | 12.055V | 5.016V | 3.323V | 4.952V | 875.524 | | | | 52.77°C | 230.28V |
| 90% | 67.820A | 8.482A | 8.435A | 2.431A | 899.618 | 90.865% | 1748 | 44.8 | 44.46°C | 0.961 |
| | 12.048V | 5.013V | 3.32V | 4.938V | 990.056 | | | | 53.79°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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 100% | 75.566A | 8.987A | 8.956A | 3.06A | 999.634 | 90.29% | 1746 | 44.7 | 45.47°C | 0.963 |
| | 12.042V | 5.009V | 3.316V | 4.903V | 1107.14 | | | | 55.38°C | 230.28V |
| 110% | 83.236A | 9.993A | 10.053A | 3.066A | 1100.212 | 89.779% | 1747 | 44.7 | 46.54°C | 0.965 |
| | 12.036V | 5.005V | 3.312V | 4.893V | 1225.474 | | | | 57.33°C | 230.28V |
| CL1 | 0.116A | 14.386A | 14.309A | 0A | 121.33 | 82.899% | 840 | 22.7 | 42.43°C | 0.854 |
| | 12.086V | 5.021V | 3.333V | 5.091V | 146.36 | | | | 49.61°C | 230.28V |
| CL2 | 0.116A | 23.95A | 0A | 0A | 121.438 | 81.305% | 0 | <6.0 | 51.65°C | 0.856 |
| | 12.095V | 5.012V | 3.349V | 5.096V | 149.361 | | | | 43.92°C | 230.28V |
| CL3 | 0.116A | 0A | 23.798A | 0A | 80.591 | 75.471% | 0 | <6.0 | 53.21°C | 0.803 |
| | 12.113V | 5.034V | 3.328V | 5.094V | 106.784 | | | | 44.7°C | 230.28V |
| CL4 | 82.980A | 0A | 0A | 0A | 1000.131 | 90.895% | 1754 | 45.1 | 45.25°C | 0.962 |
| | 12.053V | 5.025V | 3.329V | 5.028V | 1100.316 | | | | 54.51°C | 230.28V |

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 | 0.496A | 0.492A | 0.196A | 20.012 | 59.778% | 0 | <6.0 | 40.23°C | 0.847 |
| | 12.116V | 5.043V | 3.352V | 5.106V | 33.478 | | | | 36.95°C | 115.14V |
| 40W | 2.698A | 0.694A | 0.689A | 0.294A | 40.013 | 73.993% | 0 | <6.0 | 41.35°C | 0.923 |
| | 12.116V | 5.042V | 3.351V | 5.101V | 54.077 | | | | 37.65°C | 115.14V |
| 60W | 4.172A | 0.893A | 0.887A | 0.393A | 60.014 | 80.979% | 0 | <6.0 | 42.42°C | 0.938 |
| | 12.116V | 5.042V | 3.35V | 5.095V | 74.11 | | | | 38.24°C | 115.14V |
| 80W | 5.640A | 1.091A | 1.084A | 0.491A | 79.981 | 83.813% | 0 | <6.0 | 44.06°C | 0.958 |
| | 12.117V | 5.041V | 3.35V | 5.089V | 95.428 | | | | 39.34°C | 115.14V |

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 | 1.226A | 0.496A | 0.492A | 0.196A | 20.011 | 59.026% | 0 | <6.0 | 39.89°C | 0.53 |
| | 12.113V | 5.043V | 3.351V | 5.106V | 33.902 | | | | 36.78°C | 230.29V |
| 40W | 2.700A | 0.694A | 0.689A | 0.294A | 40.012 | 74.232% | 0 | <6.0 | 40.7°C | 0.652 |
| | 12.114V | 5.042V | 3.351V | 5.101V | 53.9 | | | | 37.17°C | 230.29V |
| 60W | 4.172A | 0.893A | 0.887A | 0.393A | 60.012 | 80.984% | 0 | <6.0 | 42.82°C | 0.727 |
| | 12.113V | 5.041V | 3.35V | 5.095V | 74.103 | | | | 38.7°C | 230.29V |
| 80W | 5.642A | 1.091A | 1.084A | 0.491A | 79.974 | 84.346% | 0 | <6.0 | 44.61°C | 0.78 |
| | 12.113V | 5.04V | 3.349V | 5.09V | 94.816 | | | | 39.87°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 | 8.03mV | 12.67mV | 14.37mV | 4.25mV | Pass |
| 20% Load | 8.55mV | 12.61mV | 12.02mV | 4.30mV | Pass |
| 30% Load | 12.67mV | 13.43mV | 12.17mV | 4.86mV | Pass |
| 40% Load | 10.69mV | 13.33mV | 12.63mV | 4.86mV | Pass |
| 50% Load | 9.93mV | 13.64mV | 15.90mV | 5.17mV | Pass |
| 60% Load | 9.93mV | 13.69mV | 15.29mV | 5.42mV | Pass |
| 70% Load | 9.82mV | 14.51mV | 15.34mV | 5.53mV | Pass |
| 80% Load | 9.98mV | 14.40mV | 15.80mV | 6.04mV | Pass |
| 90% Load | 10.03mV | 15.68mV | 17.44mV | 6.50mV | Pass |
| 100% Load | 15.76mV | 16.16mV | 19.13mV | 7.30mV | Pass |
| 110% Load | 15.57mV | 16.86mV | 19.75mV | 7.84mV | Pass |
| Crossload1 | 8.61mV | 13.42mV | 13.64mV | 8.47mV | Pass |
| Crossload2 | 9.31mV | 12.62mV | 14.01mV | 8.09mV | Pass |

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| Crossload3 | 9.21mV | 12.56mV | 12.78mV | 7.93mV | Pass |
| Crossload4 | 15.16mV | 16.33mV | 19.18mV | 10.58mV | Pass |

The results above are not used in the certification process

**230V**

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| 10% Load | 7.68mV | 12.36mV | 11.35mV | 4.40mV | Pass |
| 20% Load | 8.50mV | 12.62mV | 11.66mV | 4.50mV | Pass |
| 30% Load | 12.31mV | 13.59mV | 14.98mV | 4.71mV | Pass |
| 40% Load | 15.76mV | 18.85mV | 12.53mV | 8.44mV | Pass |
| 50% Load | 9.41mV | 14.45mV | 14.16mV | 5.48mV | Pass |
| 60% Load | 9.88mV | 14.25mV | 14.57mV | 5.68mV | Pass |
| 70% Load | 9.82mV | 14.86mV | 15.50mV | 5.88mV | Pass |
| 80% Load | 9.78mV | 14.55mV | 25.16mV | 6.19mV | Pass |
| 90% Load | 9.77mV | 15.02mV | 16.41mV | 6.24mV | Pass |
| 100% Load | 15.04mV | 16.87mV | 19.56mV | 7.39mV | Pass |
| 110% Load | 15.22mV | 17.09mV | 19.87mV | 7.50mV | Pass |
| Crossload1 | 8.25mV | 13.97mV | 13.48mV | 8.00mV | Pass |
| Crossload2 | 8.85mV | 12.51mV | 12.17mV | 8.29mV | Pass |
| Crossload3 | 8.80mV | 13.07mV | 12.63mV | 7.93mV | Pass |
| Crossload4 | 14.15mV | 16.81mV | 18.26mV | 10.34mV | Pass |

The results above are not used in the certification process

## Thermaltake Toughpower GF1 1000W




Top side




Power specifications label

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