# Thermaltake Toughpower GF3 1650W

PSTPD1650FNFAGE4SL000342

Lab ID TT16502080

Certification ID 252080

Test Result Report ID: 22PS2080A

Certificate Issue Date: Oct 21, 2022

Scheme: ETA-EMI PSU

115V: CYBENETICS PLATINUM

230V: CYBENETICS PLATINUM 230v

Scheme: LAMBDA PSU

| 115V | 230V |
|---|---|
| **No LAMBDA level** | **No LAMBDA level** |
| Average noise output 45.58 dB(A), above the 45 dB(A) limit of the lowest LAMBDA level (Standard). | Average noise output 45.70 dB(A), above the 45 dB(A) limit of the lowest LAMBDA level (Standard). |

CYBENETICS ATX 3.0 PASS

Outside Validation Scope



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 GF3 1650W |
| OEM/ODM | High Power |
| Serial Number | PSTPD1650FNFAGE4SL000342 |

| Product Specifications | |
|---|---|
| Manufacturer-Provided Information | |
| □□□□ (Vrms) | 100-240 |
| □□□□ (Arms) | 20-16 |
| □□□□ (Hz) | 50-60 |
| □□□□ (W) | 1650 |
| Operating Temperature (Continuous Full Load) (°C) | |
| □□ | ATX12V |
| □□□□ | Fully Modular |
| Warranty | - |
| Cybenetics Measurements | |
| Dimensions (W x H x D) | |
| Weight | |
| □□ | 140mm Hydraulic Bearing Fan<br>[TT-1425 (A1425S12S-2)] |
| □□□□□ | ✓ (selectable) |
| Cybenetics Testing Information | |
| Lab ID | TT16502080 |
| Date of receipt | Sep 22, 2022 |
| Testing Date | Oct 21, 2022 |
| Report Issued Date | Oct 21, 2022 |
| 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 | 16-22AWG | □ |
| 8 pin EPS 12V □□ (750mm) | 1 | 1 | 16AWG | □ |
| 4+4 pin EPS 12V □□ (750mm) | 1 | 1 | 16AWG | □ |

| | | | | |
|---|---|---|---|---|
| 6+2pin PCIe□□ (600mm) | 3 | 3 | 16AWG | □ |
| 6+2pin PCIe□□ (600mm+150mm) | 3 | 6 | 16-18AWG | □ |
| 12+4 pin PCIe (600mm) (600W) | 2 | 2 | 16-24AWG | □ |
| SATA□□ (600mm+150mm+150mm+150mm) | 4 | 16 | 18AWG | □ |
| 4-pin Molex (600mm+150mm+150mm+150mm) | 2 | 8 | 18AWG | □ |
| □ 4pin □□ (150mm) | 1 | 1 | 22AWG | □ |
| AC Power Cord (1380mm) - C19 coupler | 1 | 1 | 16AWG | - |

□□□□

| □ | | 3.3V | 5V | 12V | 5VSB | -12V |
|---|---|---|---|---|---|---|
| □□□□ | □□ | 25 | 25 | 137.5 | 3 | 0.3 |
| | □ | 130 | | 1650 | 15 | 3.6 |
| □□□□□ (W) | | 1650 | | | | |

# Test Results

## Temperature & Compliance Info

| | |
|---|---|
| □□□□ (°C /°F) | 28-32 / 82.4-89.6 |
| □□ ErP Lot3/6□□ | ✓ |
| □□ (EU) No 617/2013□□ | ✓ |
| ALPM (Alternative Low Power Mode) compatible | ✓ |
| ATX v3.0 Compliance | ✓ |

## Performance Summary

### 115V

| | |
|---|---|
| Accredited | |
| □□□□ (>1450 load combinations) | 89.763% |
| Average Noise Output (>1450 Load Combinations) | 45.58dBA |
| PF□□□ (>1450 Load Combinations) | 0.996 |

| | |
|---|---|
| Efficiency With 10W (≤500W) or 2% (>500W) Load | 71.010% |
| □□□□□□ | 0.0099W |
| Non-Accredited | |
| 12V Ripple (Full Load) | 17.75mV |
| 5V Ripple (Full Load) | 16.02mV |
| 3.3V Ripple (Full Load) | 29.12mV |
| 5VSB Ripple (Full Load) | 20.97mV |
| 12V Load Regulation | 1.62% |
| 5V Load Regulation | 1.17% |
| 3.3V Load Regulation | 0.58% |
| 5VSB Load Regulation | 4.66% |
| Inrush Current | 33.370A |

## 230V

| | |
|---|---|
| Accredited | |
| □□□□ (>1450 load combinations) | 91.788% |
| Average Noise Output (>1450 Load Combinations) | 45.70dBA |
| PF□□□ (>1450 Load Combinations) | 0.981 |
| Efficiency With 10W (≤500W) or 2% (>500W) Load | 70.525% |
| □□□□□□ | 0.1067W |
| Non-Accredited | |
| 12V Ripple (Full Load) | 15.86mV |
| 5V Ripple (Full Load) | 16.24mV |
| 3.3V Ripple (Full Load) | 28.42mV |
| 5VSB Ripple (Full Load) | 19.20mV |
| 12V Load Regulation | 1.60% |
| 5V Load Regulation | 1.33% |
| 3.3V Load Regulation | 0.55% |
| 5VSB Load Regulation | 4.64% |
| Inrush Current | 66.190A |
| 12V Transient Response (200%) | 11.13V |
| 5V Transient Response (200%) | 4.882V |

| | | |
|---|---|---|
| 3.3V Transient Response (200%) | | 3.191V |
| 5VSB Transient Response (200%) | | 4.837V |
| □□□□ & PG□□ | | 11.30ms |
| AC Loss to PWR_OK Hold Up Time | | 8.40ms |
| PWR_OK Inactive to DC Loss Delay | | 2.90ms |
| PSU Timings: T1 (20% / 100%) | 106.0ms | 107.0ms |
| PSU Timings: T3 (20% / 100%) | 124.0ms | 124.0ms |
| OPP (33.21°C / 43.21°C) | 131.11% | 121.29% |

## □□□□ & PG□□

| | |
|---|---|
| Hold-Up Time (ms) | 11.3 |
| AC Loss to PWR_OK Hold Up Time (ms) | 8.4 |
| PWR_OK Inactive to DC Loss Delay (ms) | 2.9 |

## □□□□

### Tables

**115V**

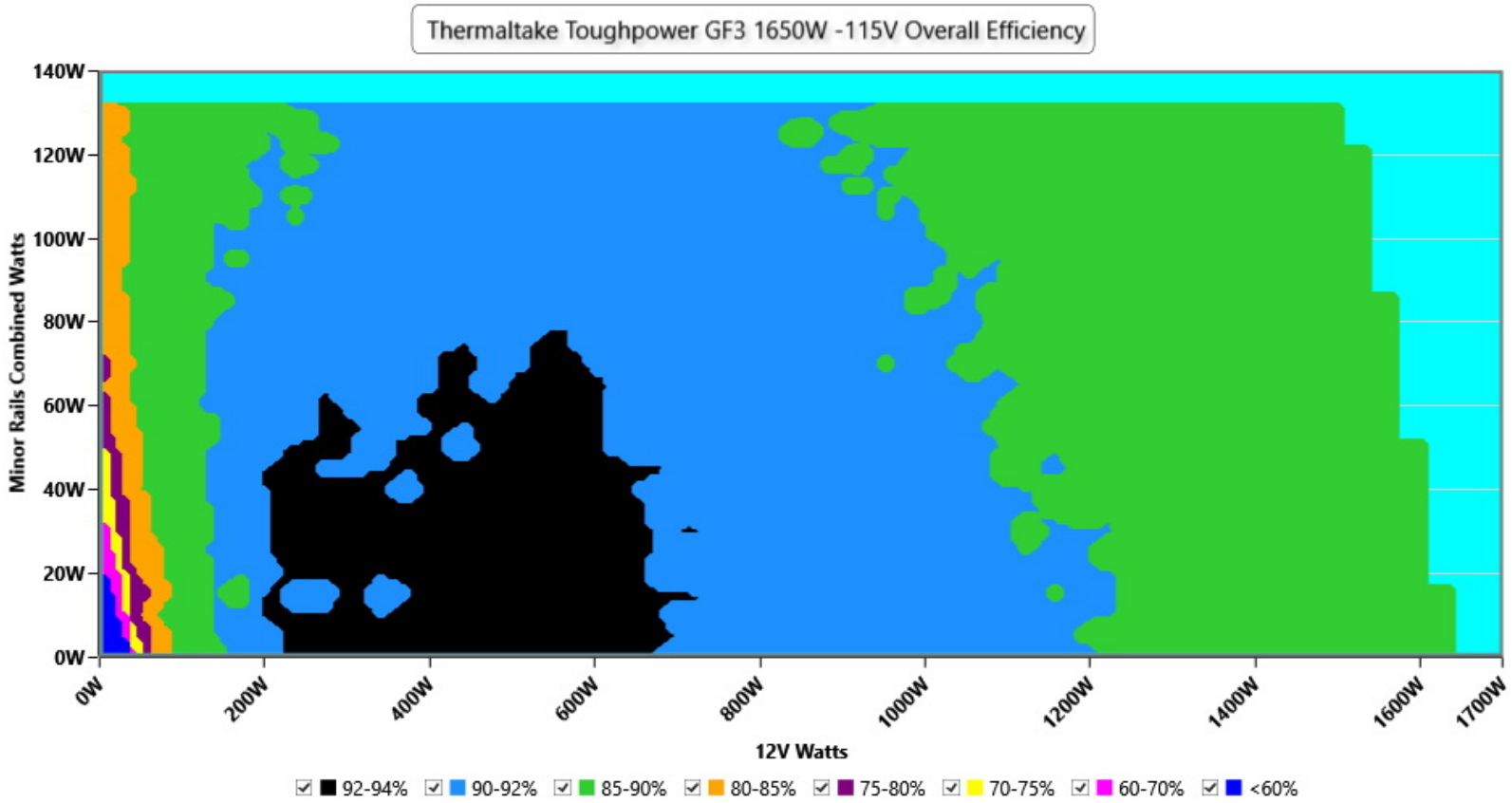
| Detailed Results | | | | | | |
|---|---|---|---|---|---|---|
| | Average | Min | Limit Min | Max | Limit Max | Result |
| Mains Voltage RMS: | 115.16 V | 115.15 V | 113.85 V | 115.18 V | 116.15 V | PASS |
| Mains Frequency: | 60.00 Hz | 59.91 Hz | 59.40 Hz | 60.01 Hz | 60.60 Hz | PASS |
| Mains Voltage CF: | 1.415 | 1.415 | 1.340 | 1.416 | 1.490 | PASS |
| Mains Voltage THD: | 0.13 % | 0.11 % | N/A | 0.15 % | 2.00 % | PASS |
| Real Power: | 0.010 W | 0.003 W | N/A | 0.017 W | N/A | N/A |
| Apparent Power: | 6.900 W | 6.891 W | N/A | 6.917 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: | 230.38 V | 230.37 V | 227.70 V | 230.41 V | 232.30 V | PASS |
| Mains Frequency: | 50.00 Hz | 50.00 Hz | 49.50 Hz | 50.00 Hz | 50.50 Hz | PASS |
| Mains Voltage CF: | 1.415 | 1.415 | 1.340 | 1.416 | 1.490 | PASS |
| Mains Voltage THD: | 0.14 % | 0.13 % | N/A | 0.16 % | 2.00 % | PASS |
| Real Power: | 0.107 W | 0.082 W | N/A | 0.162 W | N/A | N/A |
| Apparent Power: | 23.116 W | 23.090 W | N/A | 23.139 W | N/A | N/A |
| Power Factor: | 0.004 | N/A | N/A | N/A | N/A | N/A |

## □□□□□□

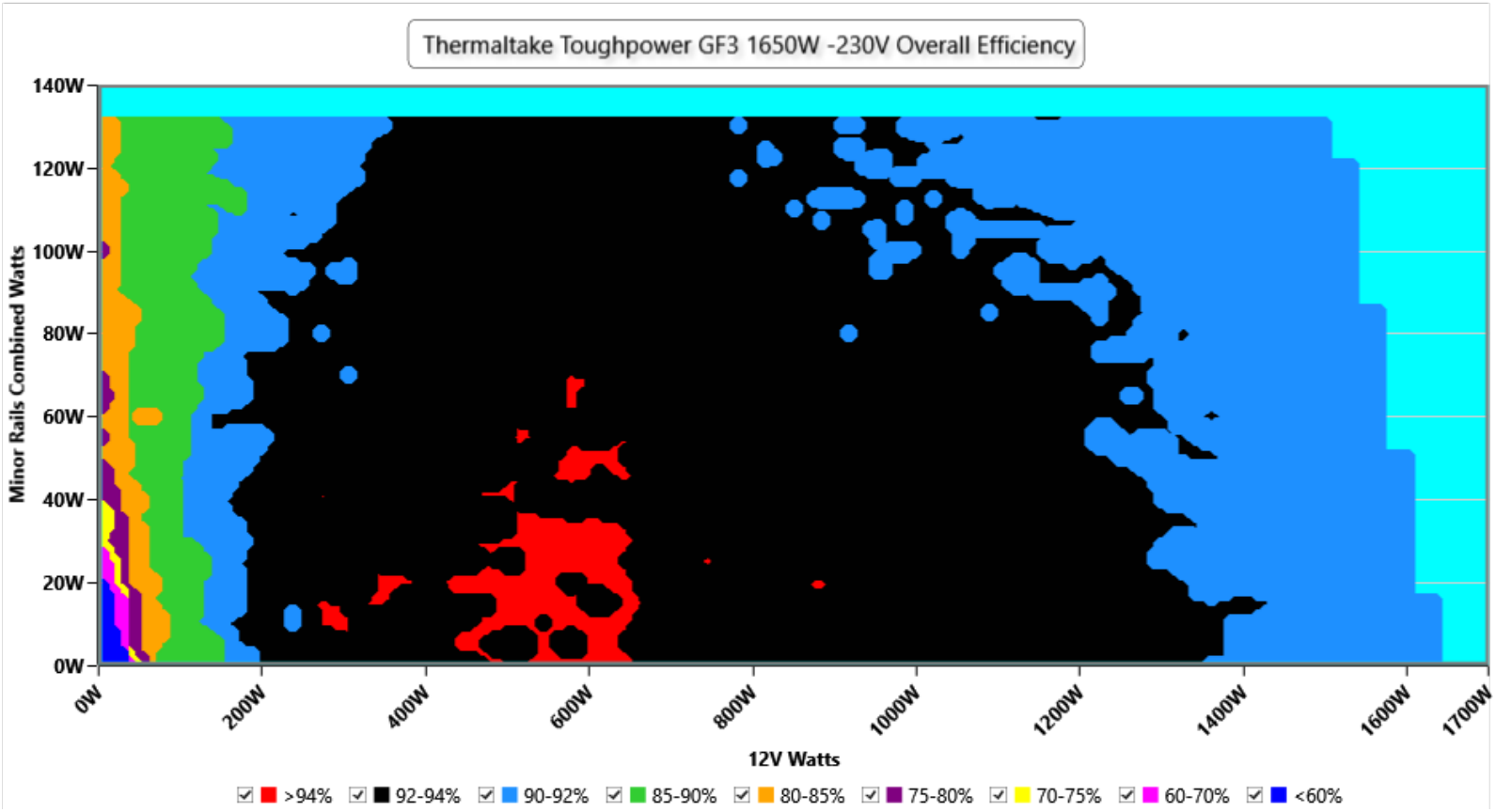
**115V**




□□

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

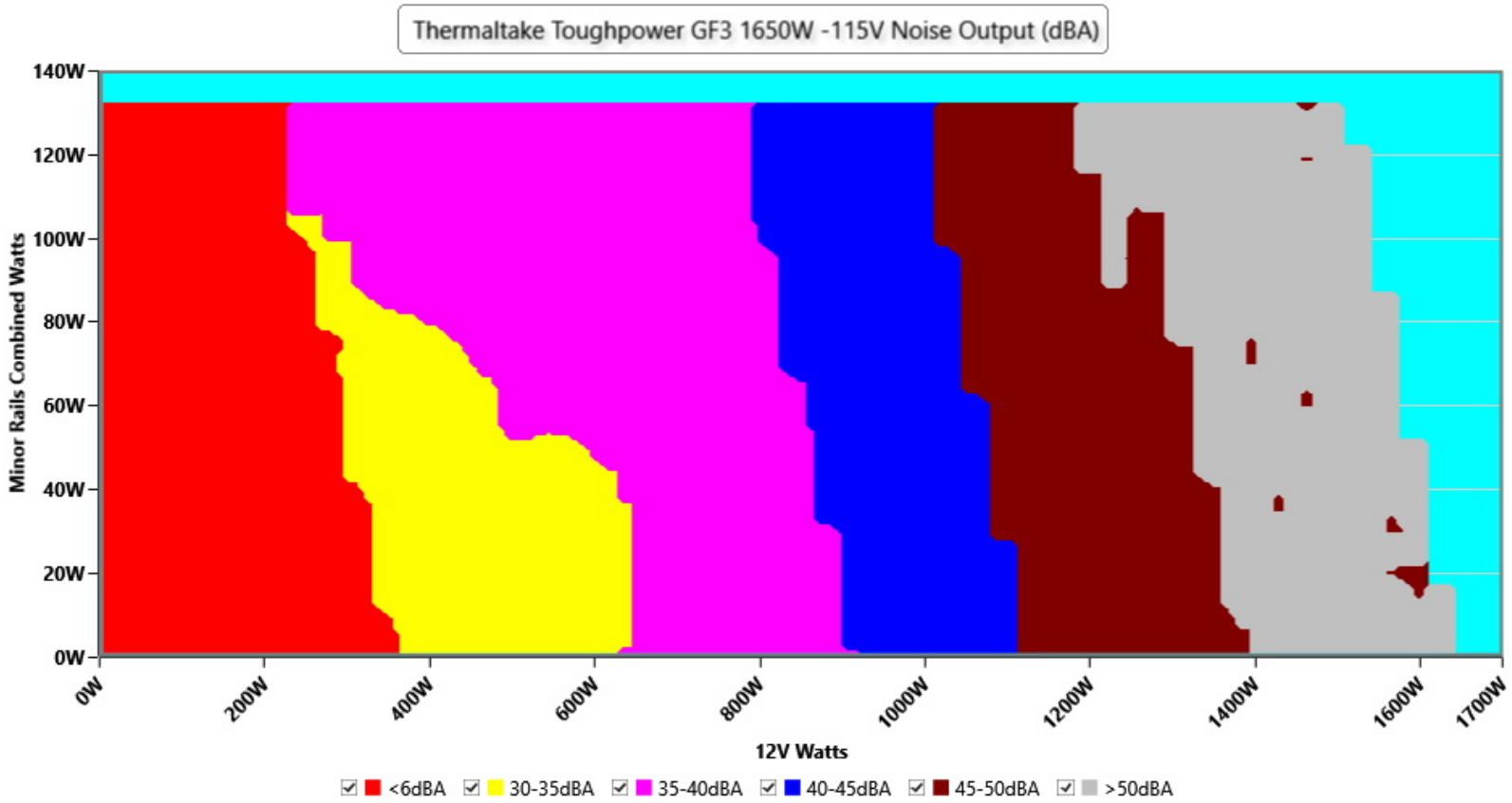
## 230V




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

## □□□□□

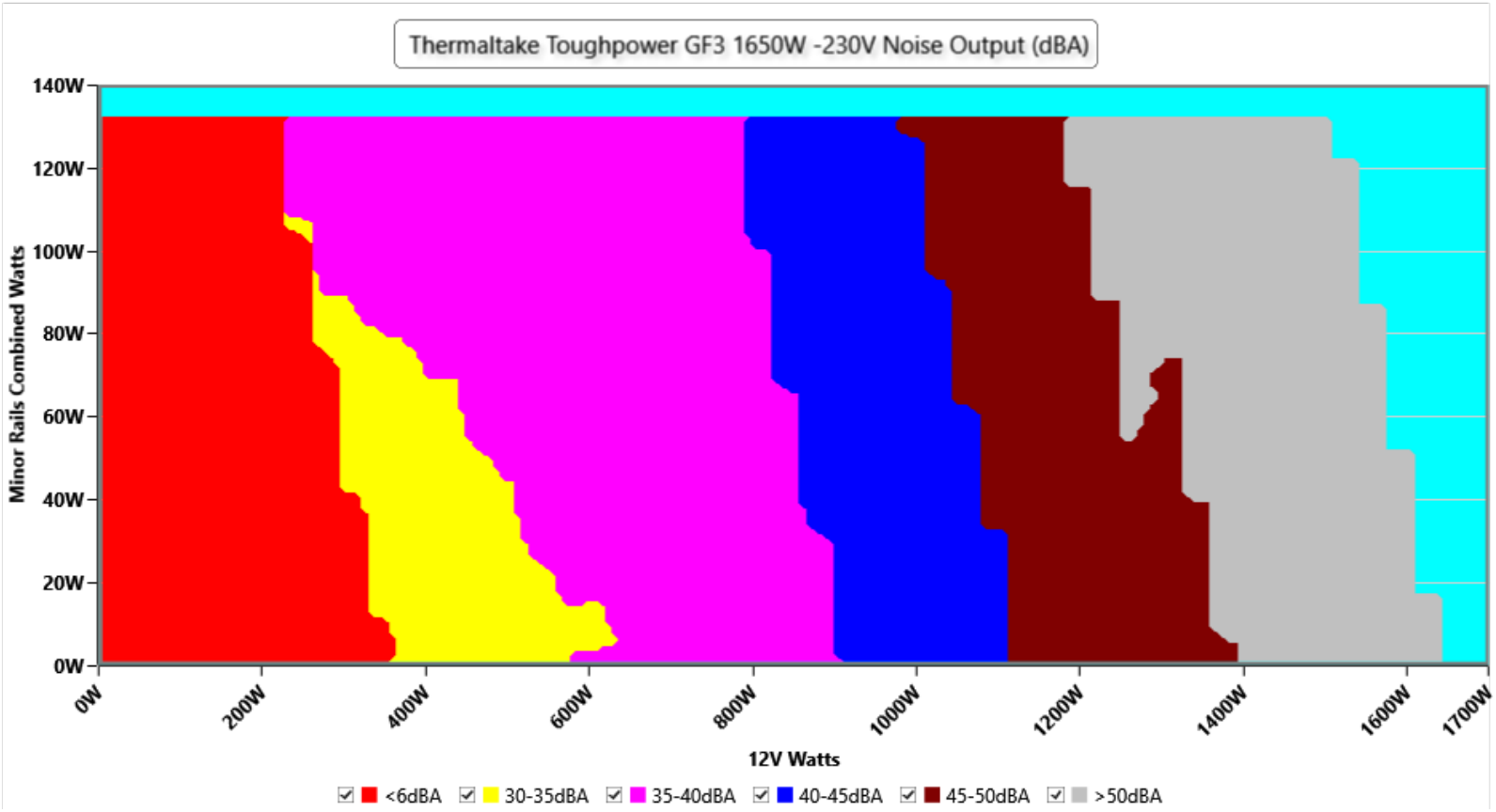
**115V**




□□

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 under high ambient temperature (indicative)

### 230V

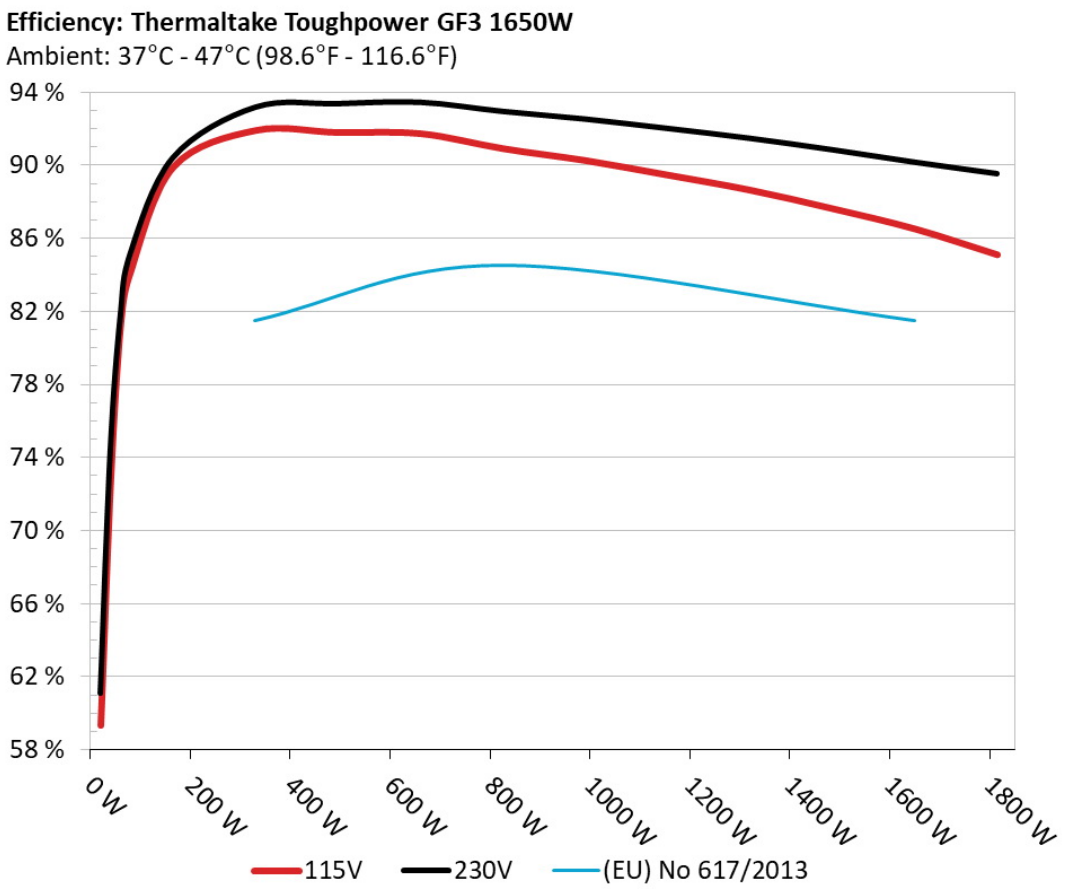
| Load | Normal ambient<br>fan · noise · intake | High ambient<br>fan · noise · intake | Noise change |
|---|---|---|---|
| 10% | 0 RPM · <6.0 dB(A) · 44.7 °C | 0 RPM · <6.0 dB(A) · 44.7 °C | fan off in both |
| 20% | 0 RPM · <6.0 dB(A) · 45.6 °C | 0 RPM · <6.0 dB(A) · 45.6 °C | fan off in both |
| 50% | 1199 RPM · 38.6 dB(A) · 42.3 °C | 1199 RPM · 38.6 dB(A) · 42.3 °C | **+0.0 dB(A)** |
| 100% | 1989 RPM · 51.7 dB(A) · 45.9 °C | 1989 RPM · 51.7 dB(A) · 45.9 °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.

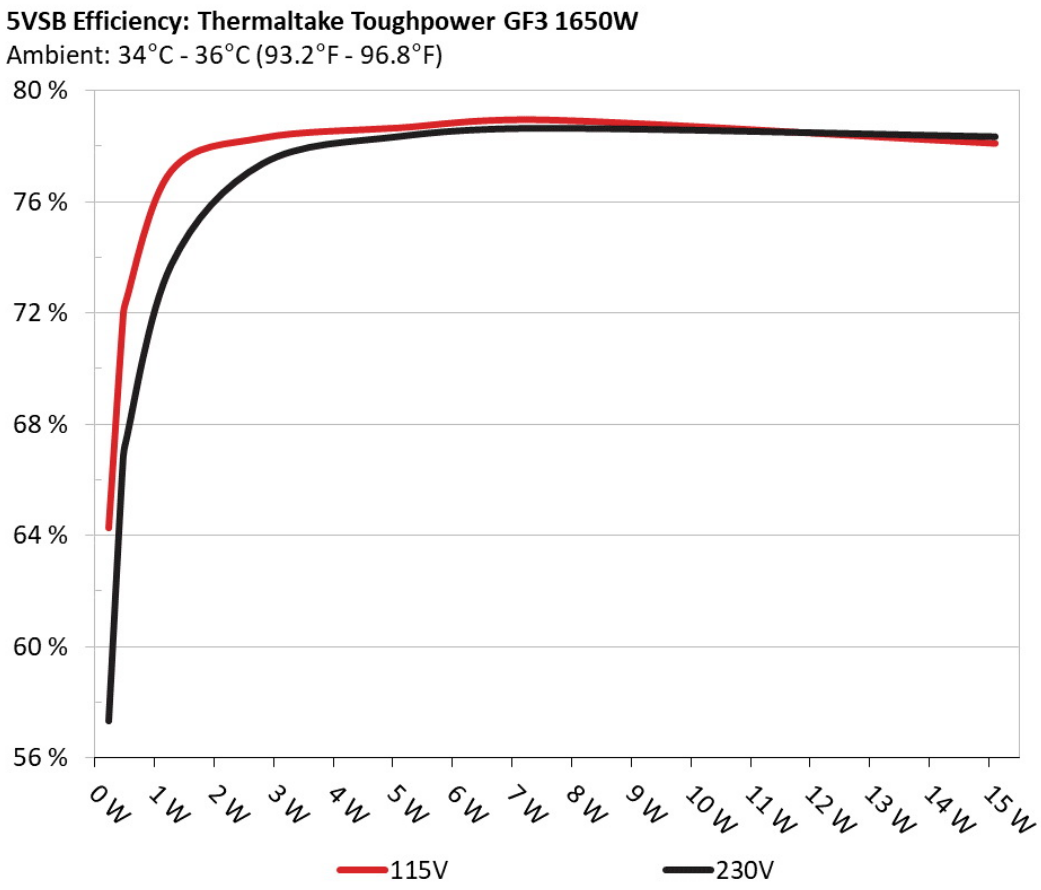
*Informational. Not part of the ETA or LAMBDA rating.*

## 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 | 0.231W | 64.282% | 0.052 |
| | 5.125V | 0.359W | | 115.17V |
| 2 | 0.09A | 0.461W | 71.56% | 0.09 |
| | 5.123V | 0.645W | | 115.16V |
| 3 | 0.55A | 2.811W | 78.284% | 0.324 |
| | 5.11V | 3.591W | | 115.15V |
| 4 | 1A | 5.098W | 78.644% | 0.405 |
| | 5.096V | 6.483W | | 115.16V |
| 5 | 1.5A | 7.624W | 78.924% | 0.44 |
| | 5.081V | 9.659W | | 115.16V |
| 6 | 3A | 15.098W | 78.086% | 0.491 |
| | 5.032V | 19.334W | | 115.15V |

### 230V

| □□ # | 5VSB | DC/AC (□ ) | □□ | PF/AC □□ |
|---|---|---|---|---|
| 1 | 0.045A | 0.231W | 57.345% | 0.018 |
| | 5.125V | 0.403W | | 230.38V |
| 2 | 0.09A | 0.461W | 66.422% | 0.03 |
| | 5.123V | 0.695W | | 230.38V |
| 3 | 0.55A | 2.811W | 77.385% | 0.143 |
| | 5.11V | 3.632W | | 230.37V |
| 4 | 1A | 5.097W | 78.36% | 0.223 |
| | 5.096V | 6.504W | | 230.37V |
| 5 | 1.5A | 7.623W | 78.658% | 0.283 |
| | 5.081V | 9.691W | | 230.37V |
| 6 | 3A | 15.106W | 78.352% | 0.369 |
| | 5.035V | 19.278W | | 230.37V |

## Supplementary Tests (For Reference)

### 10-110%□□□□

#### 115V

| □□ | 12V | 5V | 3.3V | 5VSB | DC/AC (□ ) | □□ | □□□□ (RPM) | □□□□□□□□ (dB[A]) | □□ (□□ /□□ ) | PF/AC □□ |
|---|---|---|---|---|---|---|---|---|---|---|
| 10% | 11.974A | 1.997A | 2A | 0.985A | 164.977 | 90.411% | 0 | <6.0 | 44.59°C | 0.989 |
| | 11.973V | 5.01V | 3.3V | 5.078V | 182.431 | | | | 40.25°C | 115.12V |
| 20% | 25.017A | 2.998A | 3.002A | 1.186A | 329.997 | 92.42% | 0 | <6.0 | 45.61°C | 0.996 |
| | 11.955V | 5.004V | 3.298V | 5.059V | 357.088 | | | | 40.71°C | 115.08V |
| 30% | 38.408A | 3.503A | 3.5A | 1.389A | 494.636 | 92.31% | 1033 | 34.9 | 41.06°C | 0.998 |
| | 11.940V | 4.996V | 3.301V | 5.042V | 535.838 | | | | 46.32°C | 115.04V |
| 40% | 51.890A | 4.008A | 3.995A | 1.593A | 659.856 | 92.248% | 1038 | 35.0 | 42.87°C | 0.998 |
| | 11.922V | 4.992V | 3.305V | 5.023V | 715.306 | | | | 48.94°C | 115V |
| 50% | 65.080A | 5.017A | 5.002A | 1.8A | 825.226 | 91.426% | 1197 | 38.5 | 43.57°C | 0.999 |
| | 11.904V | 4.984V | 3.299V | 5.003V | 902.653 | | | | 50.21°C | 114.96V |
| 60% | 78.240A | 6.016A | 6.009A | 2.001A | 989.732 | 90.778% | 1377 | 42.1 | 43.69°C | 0.999 |
| | 11.886V | 4.989V | 3.296V | 4.983V | 1090.276 | | | | 50.79°C | 114.91V |
| 70% | 91.510A | 7.041A | 7.015A | 2.217A | 1155.134 | 89.979% | 1625 | 46.3 | 43.78°C | 0.999 |
| | 11.868V | 4.973V | 3.294V | 4.962V | 1283.744 | | | | 51.52°C | 114.86V |
| 80% | 104.820A | 8.003A | 7.999A | 2.326A | 1319.745 | 89.155% | 1807 | 49.2 | 44.17°C | 0.999 |
| | 11.849V | 4.976V | 3.3V | 4.945V | 1480.286 | | | | 52.52°C | 114.83V |
| 90% | 118.596A | 8.567A | 8.486A | 2.436A | 1485.397 | 88.134% | 1990 | 51.7 | 44.65°C | 0.999 |
| | 11.829V | 4.962V | 3.299V | 4.928V | 1685.546 | | | | 53.76°C | 114.76V |
| 100% | 132.153A | 9.081A | 9.009A | 3.068A | 1650.282 | 87.025% | 1987 | 51.7 | 46.1°C | 0.999 |
| | 11.809V | 4.957V | 3.297V | 4.889V | 1896.279 | | | | 56.19°C | 114.71V |
| 110% | 145.622A | 10.102A | 10.109A | 3.078A | 1814.918 | 85.613% | 1995 | 51.8 | 47.22°C | 0.999 |
| | 11.788V | 4.95V | 3.294V | 4.874V | 2119.78 | | | | 58.12°C | 114.67V |
| CL1 | 0.119A | 15.626A | 15.604A | 0A | 131.326 | 82.901% | 0 | <6.0 | 48.25°C | 0.98 |
| | 11.962V | 5.011V | 3.307V | 5.095V | 158.418 | | | | 42.8°C | 115.15V |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CL2 | 0.117A | 25.077A | 0A | 0A | 126.408 | 79.404% | 0 | <6.0 | 50.07°C | 0.986 |
| | 11.967V | 4.985V | 3.295V | 5.109V | 159.195 | | | | 43.69°C | 115.14V |
| CL3 | 0.117A | 0A | 24.997A | 0A | 83.898 | 75.09% | 0 | <6.0 | 52.26°C | 0.978 |
| | 11.974V | 4.994V | 3.3V | 5.092V | 111.721 | | | | 44.18°C | 115.15V |
| CL4 | 139.621A | 0A | 0A | 0.002A | 1649.756 | 87.497% | 1982 | 51.6 | 45.51°C | 0.999 |
| | 11.816V | 4.967V | 3.293V | 5.018V | 1885.489 | | | | 55.41°C | 114.72V |

The results above are not used in the certification process

**230V**

| □□ | 12V | 5V | 3.3V | 5VSB | DC/AC (□ ) | □□ | □□□□ (RPM) | □□□□□□□□ (dB[A]) | □□ (□□ /□□ ) | PF/AC □□ |
|---|---|---|---|---|---|---|---|---|---|---|
| 10% | 11.973A | 1.998A | 2A | 0.985A | 164.986 | 90.882% | 0 | <6.0 | 44.66°C | 0.933 |
| | 11.975V | 5.007V | 3.3V | 5.077V | 181.495 | | | | 40.28°C | 230.39V |
| 20% | 25.015A | 3A | 3.002A | 1.186A | 330.011 | 93.649% | 0 | <6.0 | 45.59°C | 0.97 |
| | 11.957V | 5.001V | 3.299V | 5.058V | 352.436 | | | | 40.85°C | 230.39V |
| 30% | 38.404A | 3.506A | 3.504A | 1.389A | 494.625 | 93.842% | 1037 | 35.0 | 41.63°C | 0.986 |
| | 11.941V | 4.993V | 3.296V | 5.041V | 527.011 | | | | 46.77°C | 230.37V |
| 40% | 51.881A | 4.011A | 3.994A | 1.593A | 659.831 | 93.92% | 1042 | 35.1 | 41.82°C | 0.992 |
| | 11.924V | 4.988V | 3.305V | 5.022V | 702.538 | | | | 47.43°C | 230.35V |
| 50% | 65.066A | 5.023A | 5.002A | 1.8A | 825.226 | 93.421% | 1199 | 38.6 | 42.26°C | 0.995 |
| | 11.906V | 4.978V | 3.299V | 5.002V | 883.329 | | | | 48.32°C | 230.33V |
| 60% | 78.224A | 6.035A | 6.006A | 2.001A | 989.703 | 93.003% | 1381 | 42.2 | 42.6°C | 0.997 |
| | 11.888V | 4.972V | 3.297V | 4.982V | 1064.322 | | | | 49.69°C | 230.3V |
| 70% | 91.488A | 7.052A | 7.014A | 2.217A | 1155.107 | 92.493% | 1621 | 46.2 | 42.83°C | 0.998 |
| | 11.870V | 4.965V | 3.294V | 4.962V | 1249.087 | | | | 50.35°C | 230.28V |
| 80% | 104.796A | 8.003A | 7.996A | 2.326A | 1319.621 | 91.951% | 1765 | 48.6 | 43.14°C | 0.998 |
| | 11.852V | 4.961V | 3.302V | 4.945V | 1435.222 | | | | 51.21°C | 230.26V |
| 90% | 118.558A | 8.581A | 8.485A | 2.435A | 1485.369 | 91.323% | 1991 | 51.7 | 45.21°C | 0.998 |
| | 11.832V | 4.953V | 3.3V | 4.928V | 1626.418 | | | | 54.28°C | 230.24V |
| 100% | 132.105A | 9.098A | 9.013A | 3.068A | 1650.217 | 90.641% | 1989 | 51.7 | 45.85°C | 0.999 |
| | 11.813V | 4.947V | 3.295V | 4.89V | 1820.457 | | | | 55.9°C | 230.22V |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 110% | 145.500A | 10.119A | 10.102A | 3.075A | 1814.621 | 90.016% | 1996 | 51.8 | 46.94°C | 0.999 |
| | 11.796V | 4.941V | 3.296V | 4.878V | 2015.874 | | | | 57.85°C | 230.2V |
| CL1 | 0.117A | 15.684A | 15.604A | 0A | 131.312 | 83.494% | 0 | <6.0 | 48.76°C | 0.918 |
| | 11.965V | 4.992V | 3.307V | 5.096V | 157.303 | | | | 42.31°C | 230.41V |
| CL2 | 0.117A | 25.204A | 0A | 0A | 126.403 | 79.757% | 0 | <6.0 | 50.45°C | 0.921 |
| | 11.971V | 4.959V | 3.296V | 5.109V | 158.486 | | | | 43.4°C | 230.4V |
| CL3 | 0.117A | 0A | 24.989A | 0A | 83.895 | 75.986% | 0 | <6.0 | 52.6°C | 0.878 |
| | 11.973V | 4.997V | 3.301V | 5.094V | 110.416 | | | | 44.49°C | 230.4V |
| CL4 | 139.616A | 0A | 0A | 0.002A | 1649.784 | 91.002% | 1993 | 51.7 | 45.55°C | 0.999 |
| | 11.816V | 4.966V | 3.293V | 5.017V | 1812.957 | | | | 55.53°C | 230.22V |

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 | 1.238A | 0.498A | 0.498A | 0.195A | 20 | 59.83% | 0 | <6.0 | 40.11°C | 0.888 |
| | 12.000V | 5.015V | 3.313V | 5.117V | 33.639 | | | | 36.97°C | 115.15V |
| 40W | 2.725A | 0.698A | 0.699A | 0.294A | 39.999 | 73.345% | 0 | <6.0 | 40.71°C | 0.941 |
| | 11.995V | 5.014V | 3.305V | 5.112V | 54.569 | | | | 37.26°C | 115.15V |
| 60W | 4.216A | 0.898A | 0.897A | 0.392A | 59.998 | 81.854% | 0 | <6.0 | 42.05°C | 0.963 |
| | 11.985V | 5.012V | 3.309V | 5.107V | 73.307 | | | | 38.29°C | 115.14V |
| 80W | 5.702A | 1.098A | 1.097A | 0.49A | 79.958 | 84.698% | 0 | <6.0 | 42.99°C | 0.97 |
| | 11.983V | 5.009V | 3.308V | 5.102V | 94.409 | | | | 39.03°C | 115.15V |

The results above are not used in the certification process

**230V**

| □□ | 12V | 5V | 3.3V | 5VSB | DC/AC (□ ) | □□ | □□□□ (RPM) | □□□□□□□ (dB[A]) | □□ (□□ /□□ ) | PF/AC □□ |
|---|---|---|---|---|---|---|---|---|---|---|
| 20W | 1.238A | 0.499A | 0.498A | 0.195A | 20.005 | 61.579% | 0 | <6.0 | 40.14°C | 0.53 |
| | 12.002V | 5.013V | 3.312V | 5.117V | 32.634 | | | | 37.02°C | 230.41V |
| 40W | 2.725A | 0.698A | 0.698A | 0.294A | 40.004 | 74.894% | 0 | <6.0 | 40.62°C | 0.677 |
| | 11.998V | 5.011V | 3.311V | 5.112V | 53.617 | | | | 37.35°C | 230.41V |
| 60W | 4.215A | 0.899A | 0.897A | 0.392A | 60.002 | 82.231% | 0 | <6.0 | 41.45°C | 0.763 |
| | 11.988V | 5.009V | 3.309V | 5.107V | 72.95 | | | | 37.93°C | 230.41V |
| 80W | 5.702A | 1.099A | 1.097A | 0.49A | 79.966 | 85.634% | 0 | <6.0 | 43.28°C | 0.836 |
| | 11.986V | 5.008V | 3.309V | 5.102V | 93.649 | | | | 39.53°C | 230.4V |

The results above are not used in the certification process

□□□□

**115V**

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| 10% Load | 7.80mV | 3.73mV | 4.61mV | 5.40mV | Pass |
| 20% Load | 6.98mV | 4.60mV | 6.14mV | 6.58mV | Pass |
| 30% Load | 7.29mV | 6.60mV | 7.88mV | 7.75mV | Pass |
| 40% Load | 8.17mV | 5.42mV | 7.98mV | 9.43mV | Pass |
| 50% Load | 7.97mV | 8.03mV | 11.00mV | 11.17mV | Pass |
| 60% Load | 8.73mV | 10.02mV | 12.33mV | 11.98mV | Pass |
| 70% Load | 12.97mV | 8.29mV | 12.44mV | 16.57mV | Pass |
| 80% Load | 12.36mV | 15.72mV | 17.71mV | 17.28mV | Pass |
| 90% Load | 14.15mV | 15.82mV | 23.08mV | 17.49mV | Pass |
| 100% Load | 17.75mV | 16.02mV | 29.12mV | 20.97mV | Pass |
| 110% Load | 18.16mV | 10.53mV | 22.68mV | 20.89mV | Pass |
| Crossload1 | 10.27mV | 7.85mV | 15.95mV | 6.28mV | Pass |
| Crossload2 | 6.88mV | 7.62mV | 7.07mV | 5.15mV | Pass |

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| Crossload3 | 7.25mV | 3.99mV | 17.86mV | 5.00mV | Pass |
| Crossload4 | 16.44mV | 13.92mV | 17.38mV | 19.44mV | Pass |

The results above are not used in the certification process

**230V**

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| 10% Load | 7.85mV | 3.78mV | 4.97mV | 5.30mV | Pass |
| 20% Load | 6.67mV | 4.86mV | 6.19mV | 6.52mV | Pass |
| 30% Load | 7.14mV | 6.09mV | 7.73mV | 7.75mV | Pass |
| 40% Load | 8.05mV | 6.03mV | 8.04mV | 9.33mV | Pass |
| 50% Load | 6.78mV | 6.70mV | 9.98mV | 10.45mV | Pass |
| 60% Load | 8.68mV | 9.31mV | 12.23mV | 11.98mV | Pass |
| 70% Load | 9.34mV | 7.31mV | 11.62mV | 13.41mV | Pass |
| 80% Load | 10.27mV | 8.64mV | 17.30mV | 15.09mV | Pass |
| 90% Load | 11.69mV | 15.77mV | 22.21mV | 16.46mV | Pass |
| 100% Load | 15.86mV | 16.24mV | 28.42mV | 19.20mV | Pass |
| 110% Load | 16.67mV | 10.58mV | 25.97mV | 21.03mV | Pass |
| Crossload1 | 11.01mV | 7.72mV | 15.50mV | 6.22mV | Pass |
| Crossload2 | 6.93mV | 9.44mV | 7.52mV | 5.00mV | Pass |
| Crossload3 | 6.44mV | 7.95mV | 16.74mV | 5.00mV | Pass |
| Crossload4 | 14.50mV | 13.34mV | 17.00mV | 18.98mV | Pass |

The results above are not used in the certification process





# Thermaltake Toughpower GF3 1650W

Top side

Power specifications label

本测试报告中包含的所有数据和图表均可在以下条件下由任何人使用：使用过程需提及测试结果由 Cybenetics提供。
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