# Montech Titan Gold 850W

Serial Number TITAN850221100504

Lab ID MT85002126

Certification ID 252126

Test Result Report ID: 23PS2126A

Certificate Issue Date: Feb 10, 2023

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 | Montech |
| Model | Titan Gold 850W |
| OEM/ODM | CWT |
| Serial Number | TITAN850221100504 |
| Product Specifications | |
| Manufacturer-Provided Information | |
| Rated Voltage (Vrms) | 100-240 |
| Rated Current (Arms) | 50-60 |

| | |
|---|---|
| Rated Frequency (Hz) | 5-12 |
| 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<br>(HA13525H12SF-Z) |
| Semi-Passive Operation | ✓ (selectable) |
| Cybenetics Testing Information | |
| Lab ID | MT85002126 |
| Date of receipt | Jan 20, 2023 |
| Testing Date | Feb 2, 2023 |
| Report Issued Date | Feb 10, 2023 |
| 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 | 16-18AWG | No |
| 4+4 pin EPS12V (700mm) | 1 | 1 | 16AWG | No |
| 8 pin EPS12V (700mm) | 1 | 1 | 16AWG | No |
| 6+2 pin PCIe (500mm+150mm) | 2 | 4 | 16-18AWG | No |
| 12+4 pin PCIe (600mm) (600W) | 1 | 1 | 16-24AWG | No |
| SATA (500mm+150mm+150mm+150mm) | 3 | 12 | 18AWG | No |
| 4-pin Molex (500mm+150mm+150mm+150mm) | 1 | 4 | 18AWG | No |

| | | | | |
|---|---|---|---|---|
| AC Power Cord (1400mm) - 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 | | 850 | 15 | 3.6 |
| Total Max. Power (W) | | 850 | | | | |

## Parts Description

| | |
|---|---|
| **General Data** | |
| Manufacturer (OEM) | CWT |
| Platform | CSZ |
| PCB Type | Double Sided |
| **Primary Side** | |
| Transient Filter | 4x Y caps, 2x X caps, 2x CM chokes, 1x MOV |
| Inrush Protection | 1x NTC Thermistor SCK-075 (7 Ohm) & Relay |
| Bridge Rectifier(s) | 2x GBJ1506 (600V, 15A @ 100°C) |
| APFC MOSFETs | 2x Infineon IPA60R125P6 (650V, 19A @ 100°C, Rds(on): 0.125Ohm) |
| APFC Boost Diode | 1x Infineon IDH08G65C6 (650V, 10A @ 140°C) |
| Bylk Caps | 1x Rubycon (420V, 470uF, 2,000h @ 105°C, MXE )<br>1x Rubycon (450V, 330uF, 3,000h @ 105°C, MXG ) |
| Main Switchers | 2x Infineon IPA60R190P6 (650V, 12.7A @ 100°C, Rds(on): 0.190Ohm) |

| | |
|---|---|
| APFC Controller | Champion CM6500UNX |
| Resonant Controller | Champion CU6901VAC |
| Topology | Primary side: APFC, Half-Bridge & LLC converter<br>Secondary side: Synchronous Rectification & DC-DC converters |
| **Secondary Side** | |
| +12V MOSFETs | 6x Infineon BSC014N04LS (40V, 125A @ 100°C, Rds(on): 1.4mOhm) |
| 5V & 3.3V | DC-DC Converters: 2x UBIQ QN3107M6N (30V, 70A @ 100°C, Rds(on): 2.6mOhm) &<br>2x UBIQ QM3054M6 (30V, 61A @ 100°C, Rds(on): 4.8mOhm)<br>PWM Controller(s): uPI-Semi uP3861P |
| Filtering Capacitors | Electrolytic:<br>2x Nippon Chemi-Con (105°C, W)<br>1x Nichicon (2-4,000h @ 105°C HD )<br>3x Nichicon (4-10,000h @ 105°C, HE )<br>1x Nichicon (5-6,000h @ 105°C HV )<br>1x Rubycon (3-6,000h @ 105°C YXG )<br>1x Rubycon (2-10,000h @ 105°C YXF )<br><br>Polymer: 18x FPCAP, 9x Chemi-Con |
| Supervisor IC | Weltrend WT7502R |
| Fan Controller | Microchip PIC16F1503 |
| Fan Model | Hong Hua HA13525H12SF-Z (135mm, 12V, 0.5A, Fluid Dynamic Bearing Fan) |
| **5VSB Circuit** | |
| Rectifier | 1x D10S45L SBR (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 v3.0 Compliance | ✓ |

## Performance Summary

### 115V

| | |
|---|---|
| Accredited | |
| Average Efficiency (>1450 load combinations) | 88.852% |
| Average Noise Output (>1450 Load Combinations) | 24.29dBA |
| Average PF (>1450 Load Combinations) | 0.988 |
| Efficiency With 10W (≤500W) or 2% (>500W) Load | 75.641% |
| Standby Power Consumption | 0.0143W |
| Non-Accredited | |
| 12V Ripple (Full Load) | 20.43mV |
| 5V Ripple (Full Load) | 10.74mV |
| 3.3V Ripple (Full Load) | 14.04mV |
| 5VSB Ripple (Full Load) | 12.75mV |
| 12V Load Regulation | 0.96% |
| 5V Load Regulation | 0.60% |
| 3.3V Load Regulation | 1.01% |
| 5VSB Load Regulation | 1.39% |
| Inrush Current | 25.410A |

### 230V

| | |
|---|---|
| Accredited | |
| Average Efficiency (>1450 load combinations) | 90.818% |
| Average Noise Output (>1450 Load Combinations) | 24.13dBA |
| Average PF (>1450 Load Combinations) | 0.964 |
| Efficiency With 10W (≤500W) or 2% (>500W) Load | 74.532% |
| Standby Power Consumption | 0.0686W |
| Non-Accredited | |
| 12V Ripple (Full Load) | 20.59mV |
| 5V Ripple (Full Load) | 11.16mV |
| 3.3V Ripple (Full Load) | 15.10mV |

| | | |
|---|---|---|
| 5VSB Ripple (Full Load) | | 11.56mV |
| 12V Load Regulation | | 0.99% |
| 5V Load Regulation | | 0.46% |
| 3.3V Load Regulation | | 1.04% |
| 5VSB Load Regulation | | 1.39% |
| Inrush Current | | 51.360A |
| 12V Transient Response (200%) | | 11.45V |
| 5V Transient Response (200%) | | 4.967V |
| 3.3V Transient Response (200%) | | 3.177V |
| 5VSB Transient Response (200%) | | 4.954V |
| Hold-Up Time & PWR_OK Signal | | 19.60ms |
| AC Loss to PWR_OK Hold Up Time | | 17.20ms |
| PWR_OK Inactive to DC Loss Delay | | 2.40ms |
| PSU Timings: T1 (20% / 100%) | 64.0ms | 63.0ms |
| PSU Timings: T3 (20% / 100%) | 127.0ms | 127.0ms |
| OPP (26.58°C / 36.71°C) | 126.18% | 126.19% |

## Hold-Up Time & PWR_OK Signal

| | |
|---|---|
| Hold-Up Time (ms) | 19.6 |
| AC Loss to PWR_OK Hold Up Time (ms) | 17.2 |
| PWR_OK Inactive to DC Loss Delay (ms) | 2.4 |

## Stromverbrauch im Ruhezustand

### Tables

**115V**

| Detailed Results | | | | | | |
|---|---|---|---|---|---|---|
| | Average | Min | Limit Min | Max | Limit Max | Result |
| Mains Voltage RMS: | 114.87 V | 114.82 V | 113.85 V | 114.89 V | 116.15 V | PASS |

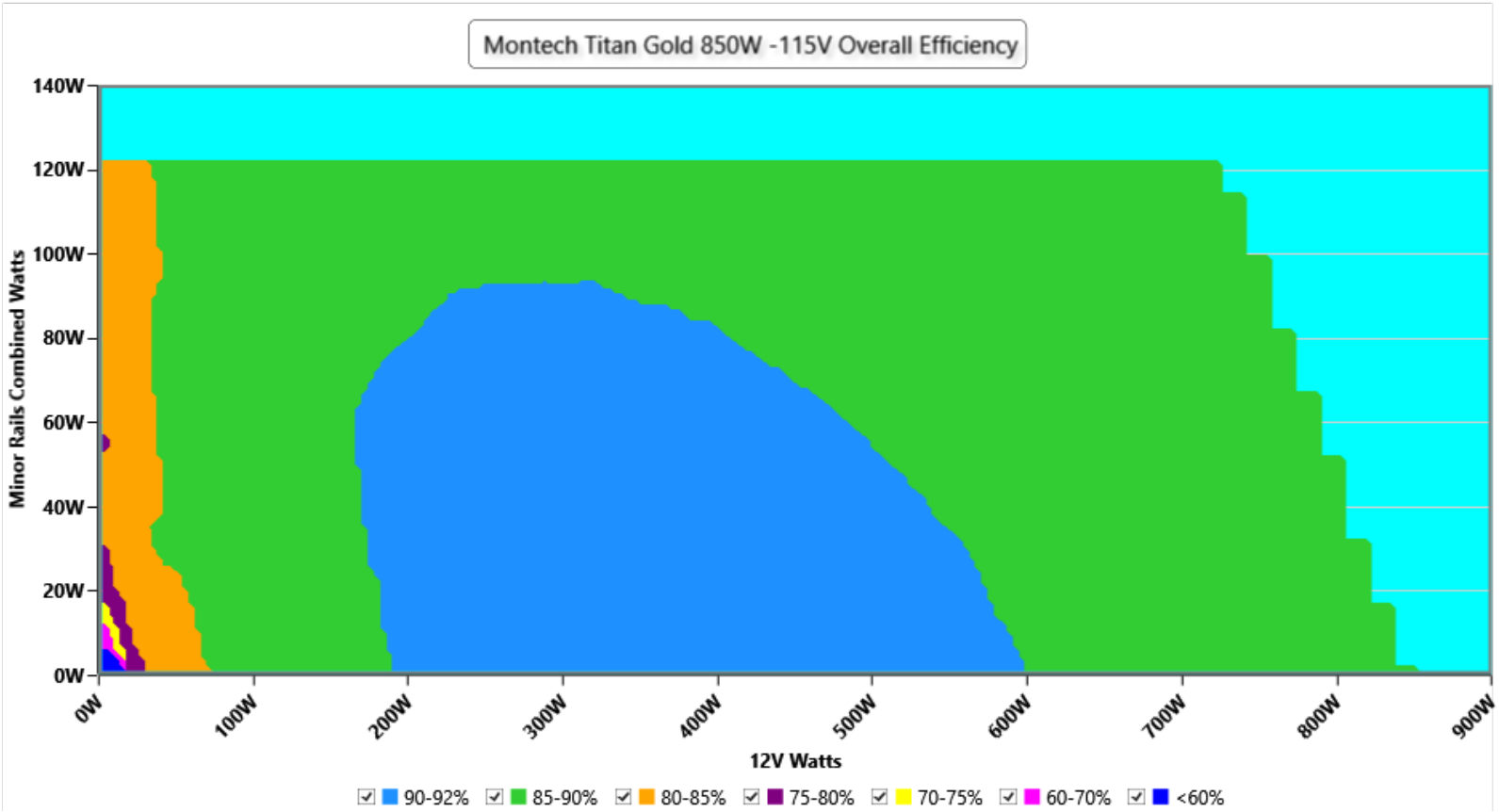
| | | | | | | |
|---|---|---|---|---|---|---|
| Mains Frequency: | 60.00 Hz | 60.00 Hz | 59.40 Hz | 60.02 Hz | 60.60 Hz | PASS |
| Mains Voltage CF: | 1.416 | 1.416 | 1.340 | 1.418 | 1.490 | PASS |
| Mains Voltage THD: | 0.14 % | 0.12 % | N/A | 0.17 % | 2.00 % | PASS |
| Real Power: | 0.014 W | 0.012 W | N/A | 0.016 W | N/A | N/A |
| Apparent Power: | 10.316 W | 10.293 W | N/A | 10.341 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: | 229.90 V | 229.84 V | 227.70 V | 229.92 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: | 0.13 % | 0.12 % | N/A | 0.16 % | 2.00 % | PASS |
| Real Power: | 0.069 W | 0.056 W | N/A | 0.085 W | N/A | N/A |
| Apparent Power: | 34.759 W | 34.737 W | N/A | 34.783 W | N/A | N/A |
| Power Factor: | 0.002 | N/A | N/A | N/A | N/A | N/A |

## Efficiency Graph

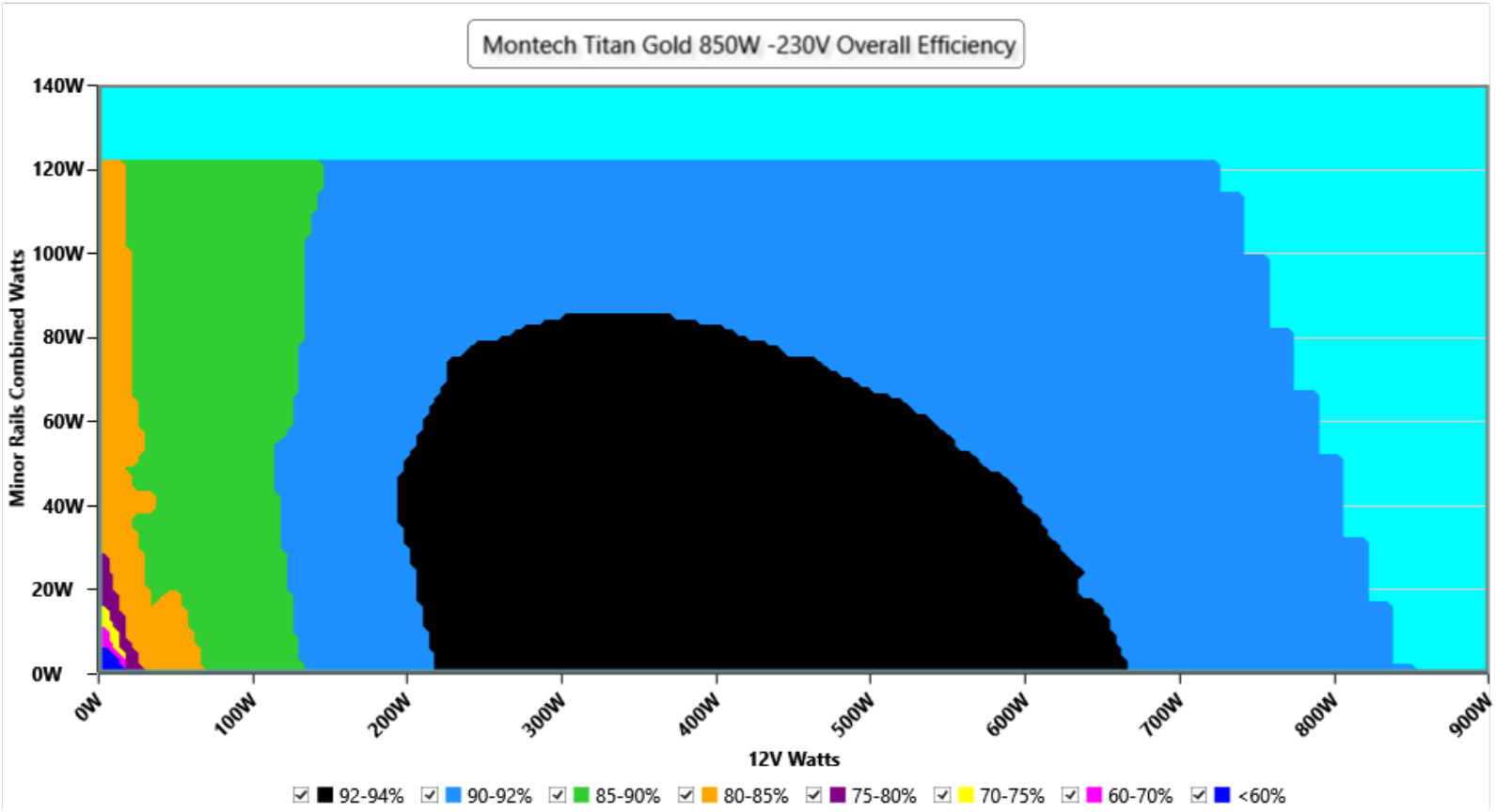
**115V**




**INFO**

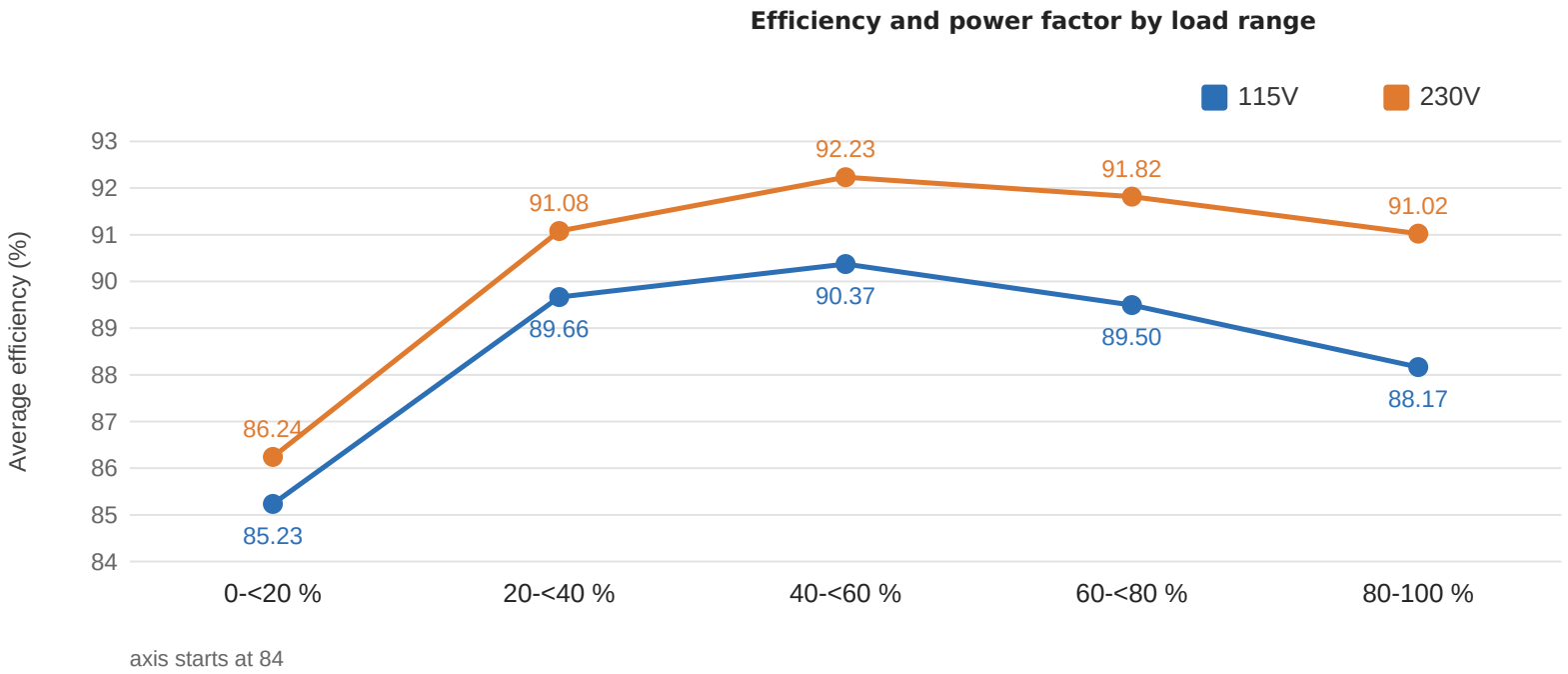
This graph depicts the PSU`s efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations

## 230V

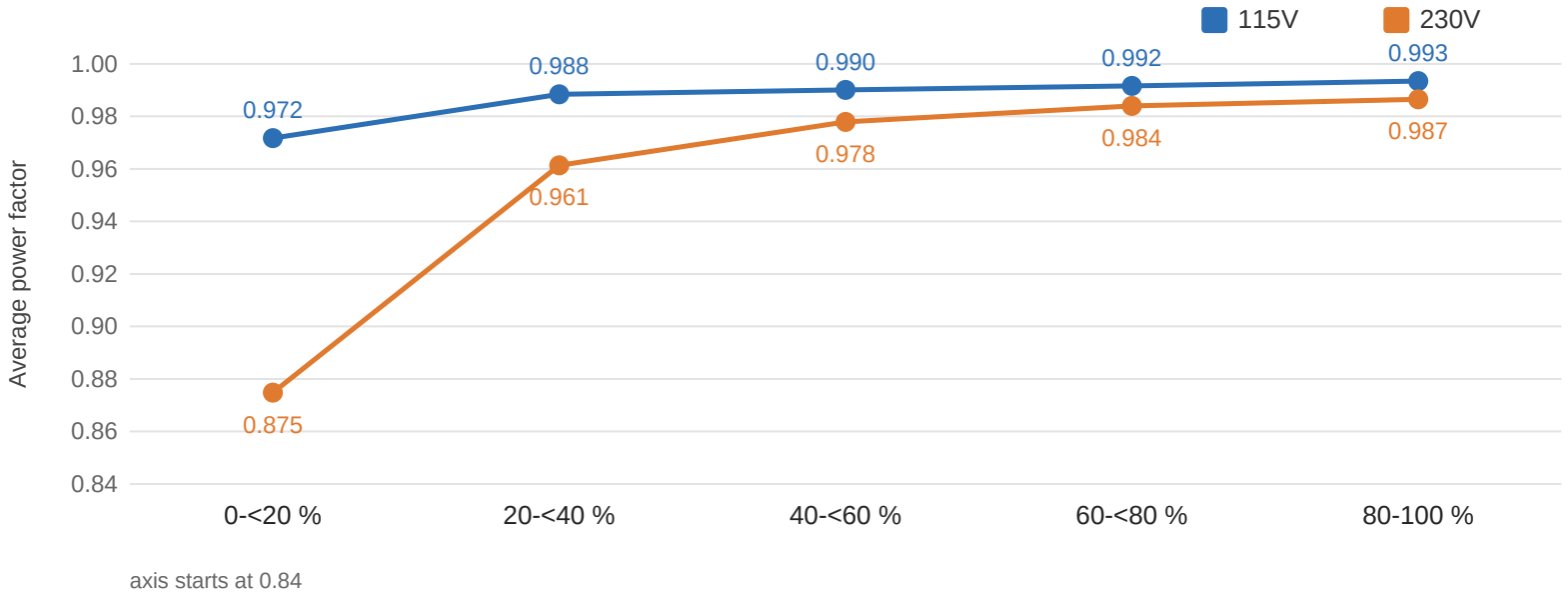



### INFO

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




axis starts at 84




axis starts at 0.84

| Load range | Points | Efficiency 115V | Efficiency 230V | PF 115V | PF 230V |
|---|---|---|---|---|---|
| 0-<20 % | 201 / 201 | 85.23% | 86.24% | 0.972 | 0.875 |
| 20-<40 % | 318 / 318 | 89.66% | 91.08% | 0.988 | 0.961 |
| 40-<60 % | 319 / 319 | 90.37% | 92.23% | 0.990 | 0.978 |
| 60-<80 % | 319 / 318 | 89.50% | 91.82% | 0.992 | 0.984 |
| 80-100 % | 324 / 325 | 88.17% | 91.02% | 0.993 | 0.987 |
| 70-100 % (High-Load) | 484 / 484 | 88.51% | 91.23% | 0.993 | 0.986 |
| All (published average) | 1481 / 1481 | 88.85% | 90.82% | 0.988 | 0.964 |

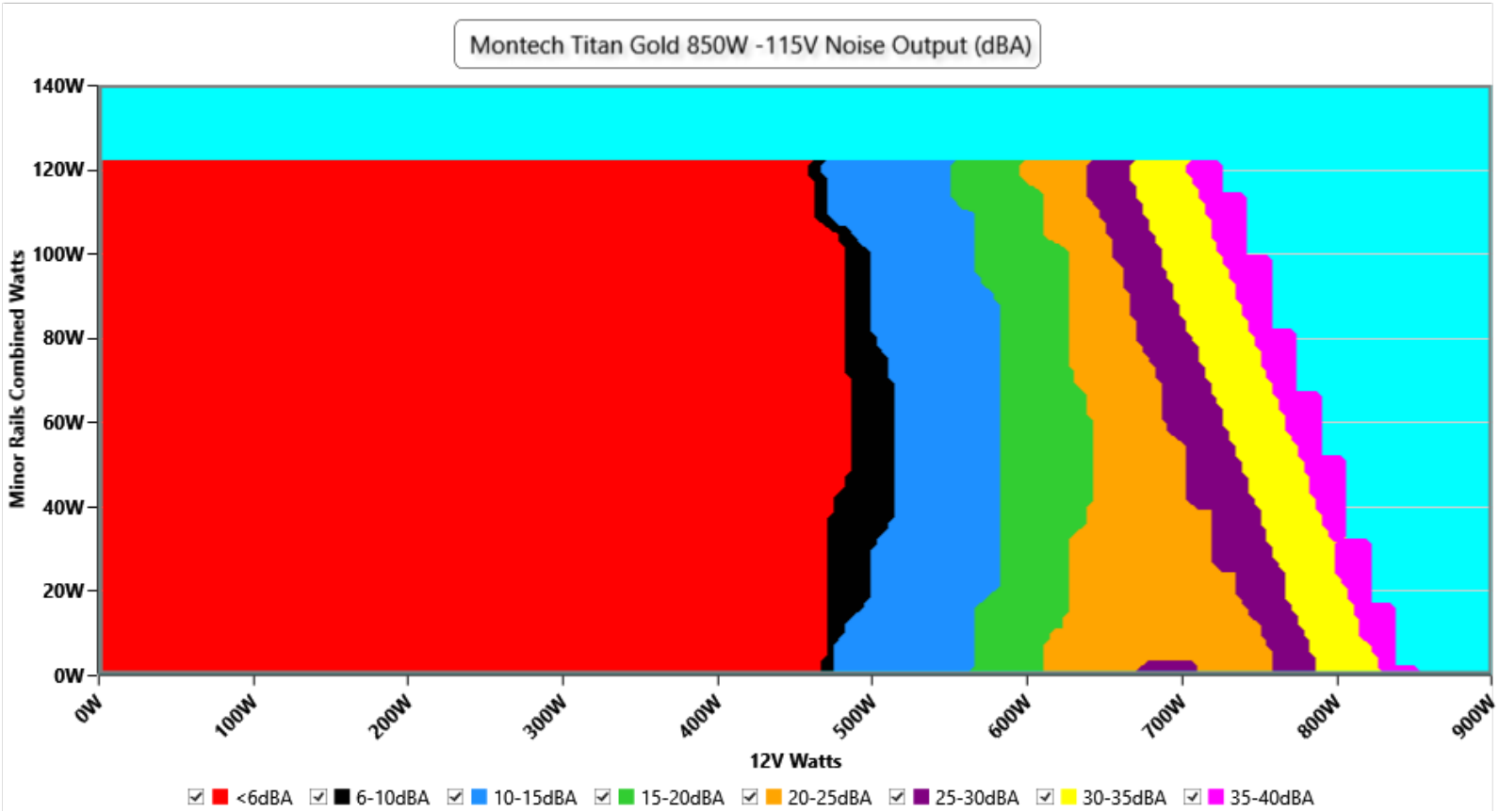
**INFO**

The average efficiency and power factor in five ranges of load. Calculated from the 1481 (115V) and 1481 (230V) load combinations of the certification sweep, the same data that ETA and LAMBDA use (test 0 excluded). Load is the total DC output as a share of the rated 850 W. These are plain averages of the valid readings, as for the ETA rating, so the ranges combined give back the published averages.

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

## Noise Graph

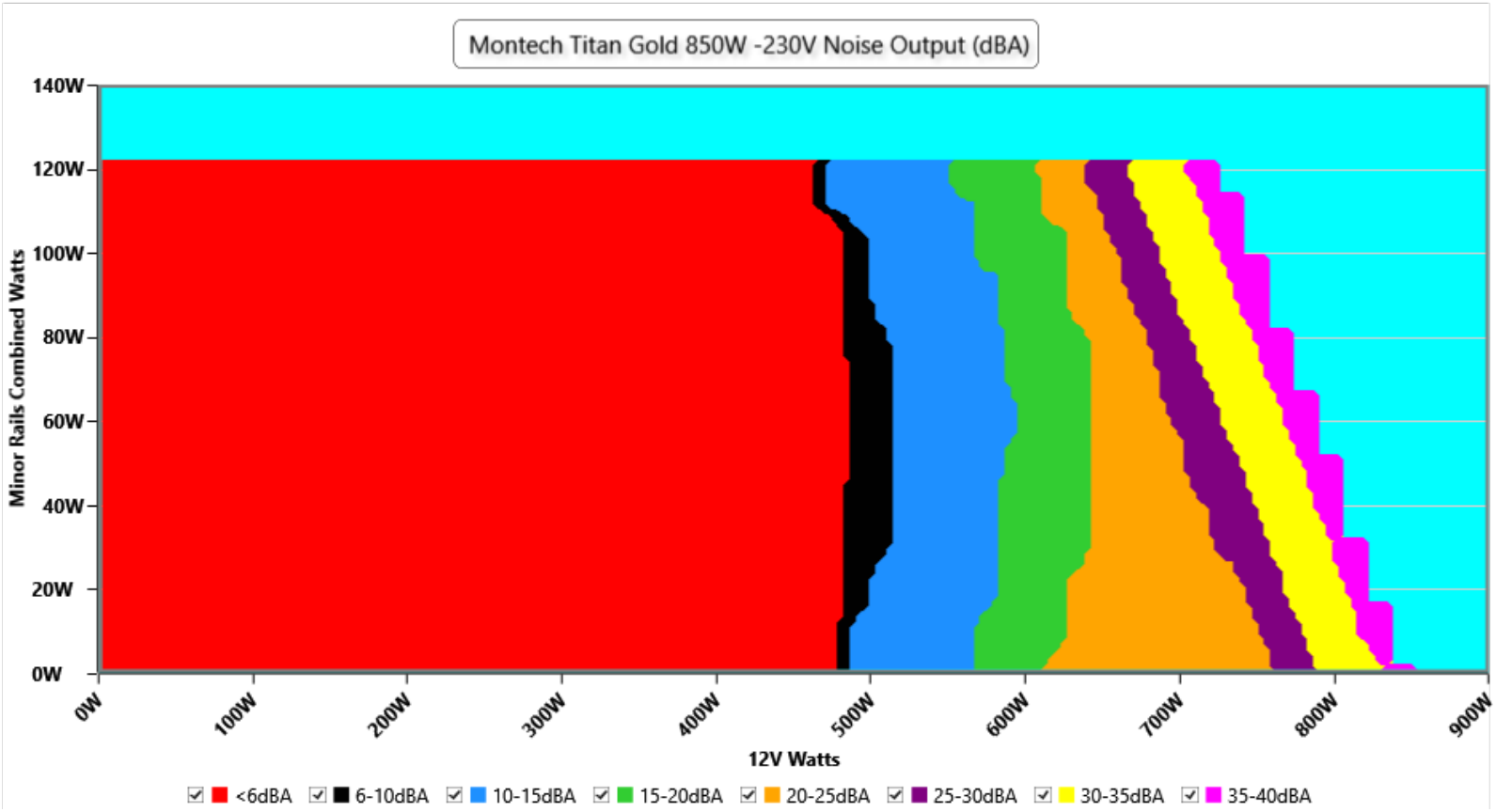
**115V**




**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

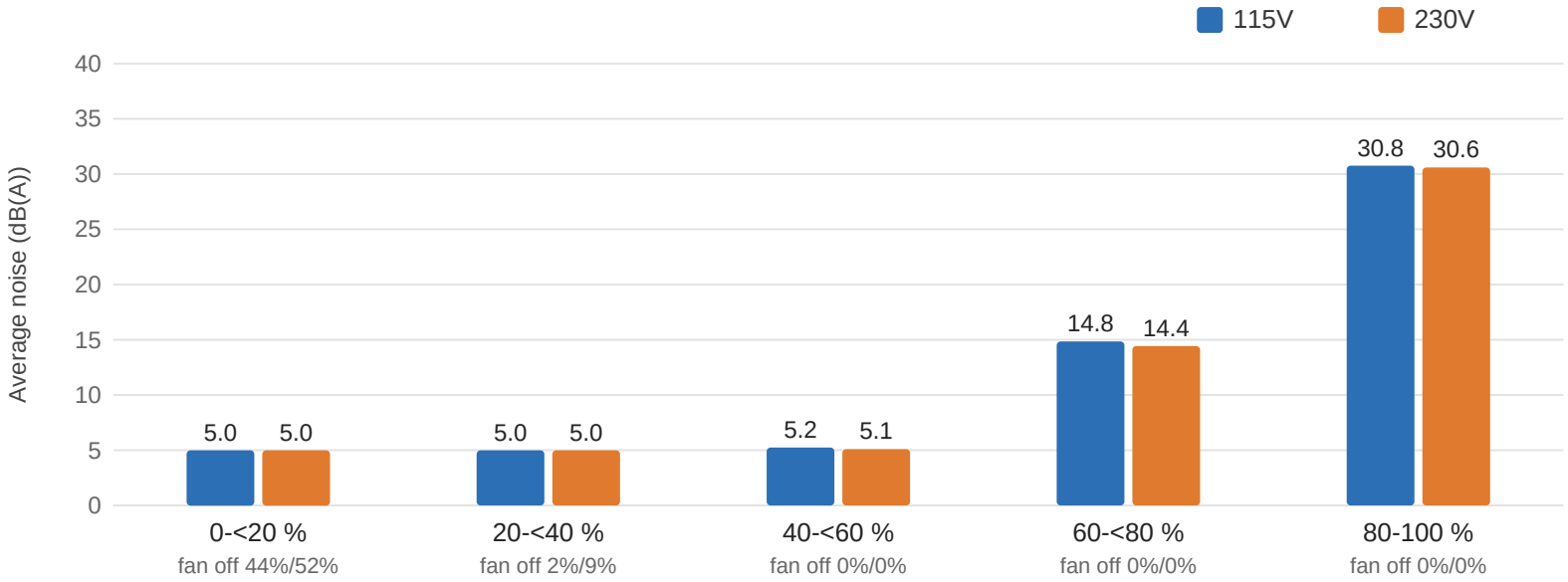
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

### Noise by load range

**High-Load Index (70-100 % load)**

Noise **29.1 dB(A)** at 115V and **28.9 dB(A)** at 230V · loudest point 38.8 dB(A)

Efficiency 88.51% / 91.23% · power factor 0.993 / 0.986 (115V / 230V)




| Load range | Noise 115V<br>avg (loudest) | Noise 230V<br>avg (loudest) | Fan off<br>115V / 230V |
|---|---|---|---|
| 0-<20 % | 5.0 (5.0) | 5.0 (5.0) | 44% / 52% |
| 20-<40 % | 5.0 (5.0) | 5.0 (5.0) | 2% / 9% |
| 40-<60 % | 5.2 (10.6) | 5.1 (10.6) | 0% / 0% |
| 60-<80 % | 14.8 (24.1) | 14.4 (24.1) | 0% / 0% |
| 80-100 % | 30.8 (38.8) | 30.6 (37.5) | 0% / 0% |
| 70-100 % (High-Load) | 29.1 (38.8) | 28.9 (37.5) | 0% / 0% |
| All (published average) | 24.3 (38.8) | 24.1 (37.5) | 6% / 9% |

**INFO**

The average noise in five ranges of load, the share of points with the fan stopped (semi-passive operation), and the High-Load Index: the same figures for all points at 70 % of the rated output and above. Calculated from the 1481 (115V) and 1481 (230V) load combinations of the certification sweep, the same data that ETA and LAMBDA use (test 0 excluded). Load is the total DC output as a share of the rated 850 W. Noise is averaged on the energy scale, as for LAMBDA, so the ranges combined give back the published average noise. Each load combination is held for about five seconds; the stabilized readings at fixed loads are under "Noise under high ambient temperature".

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

## 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) · 44.8 °C | 0 RPM · <6.0 dB(A) · 44.8 °C | fan off in both |
| 20% | 0 RPM · <6.0 dB(A) · 45.3 °C | 0 RPM · <6.0 dB(A) · 45.3 °C | fan off in both |
| 50% | 445 RPM · <6.0 dB(A) · 42.4 °C | 445 RPM · <6.0 dB(A) · 42.4 °C | fan off in both |
| 100% | 1585 RPM · 42.3 dB(A) · 45.5 °C | 1585 RPM · 42.3 dB(A) · 45.5 °C | **+0.0 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) · 44.5 °C | 0 RPM · <6.0 dB(A) · 44.5 °C | fan off in both |
| 20% | 0 RPM · <6.0 dB(A) · 45.3 °C | 0 RPM · <6.0 dB(A) · 45.3 °C | fan off in both |
| 50% | 407 RPM · <6.0 dB(A) · 42.3 °C | 407 RPM · <6.0 dB(A) · 42.3 °C | fan off in both |
| 100% | 1515 RPM · 41.2 dB(A) · 45.8 °C | 1515 RPM · 41.2 dB(A) · 45.8 °C | **+0.0 dB(A)** |

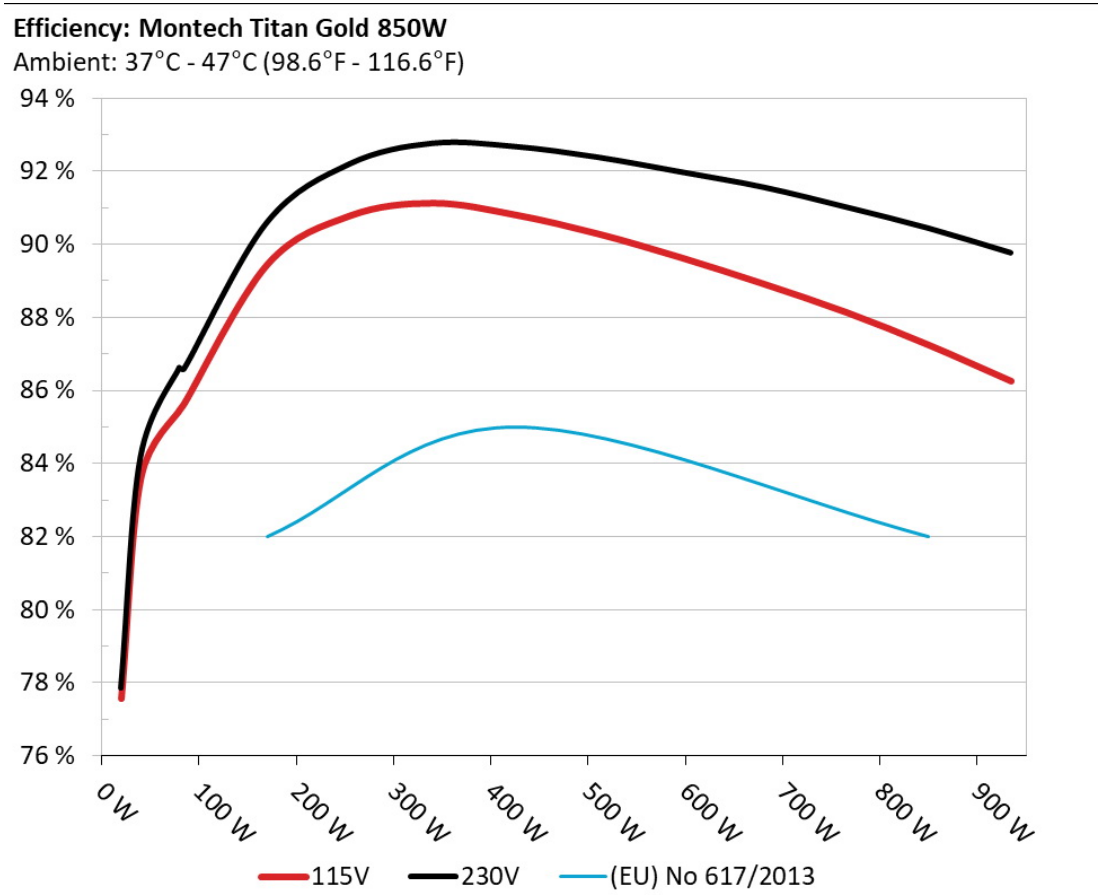
### INFO

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

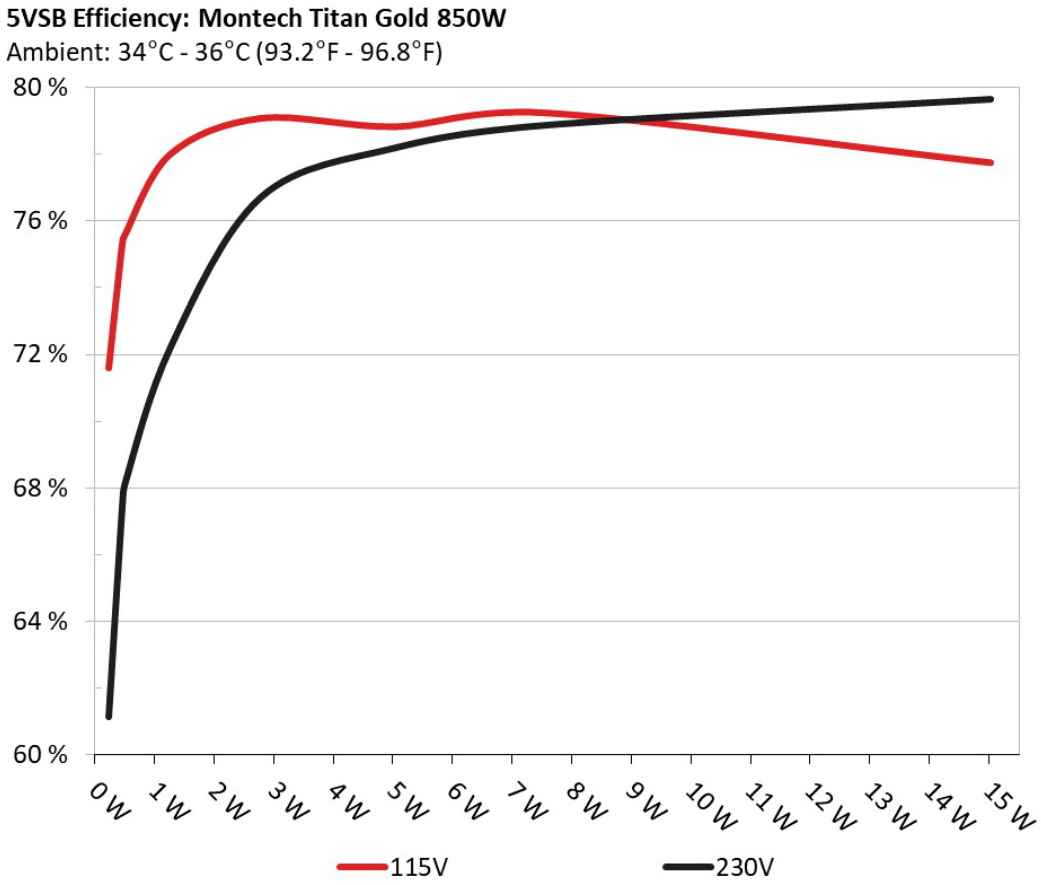
### Efficiency under high ambient temperature




**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 | 71.607% | 0.031 |
| | 5.064V | 0.318W | | 114.88V |
| 2 | 0.09A | 0.456W | 75.335% | 0.058 |
| | 5.063V | 0.605W | | 114.88V |
| 3 | 0.55A | 2.78W | 79.072% | 0.268 |
| | 5.054V | 3.516W | | 114.87V |
| 4 | 1A | 5.046W | 78.821% | 0.376 |
| | 5.046V | 6.402W | | 114.87V |
| 5 | 1.5A | 7.556W | 79.238% | 0.428 |
| | 5.037V | 9.536W | | 114.87V |
| 6 | 3A | 15.03W | 77.746% | 0.504 |
| | 5.01V | 19.331W | | 114.86V |

### 230V

| Test # | 5VSB | DC/AC (Watts) | Efficiency | PF/AC Volts |
|---|---|---|---|---|
| 1 | 0.045A | 0.228W | 61.147% | 0.011 |
| | 5.064V | 0.373W | | 229.9V |
| 2 | 0.09A | 0.456W | 67.475% | 0.019 |
| | 5.063V | 0.676W | | 229.9V |
| 3 | 0.55A | 2.78W | 76.702% | 0.1 |
| | 5.055V | 3.625W | | 229.89V |
| 4 | 1A | 5.046W | 78.188% | 0.167 |
| | 5.046V | 6.452W | | 229.89V |
| 5 | 1.5A | 7.556W | 78.86% | 0.228 |
| | 5.038V | 9.582W | | 229.89V |
| 6 | 3A | 15.03W | 79.638% | 0.331 |
| | 5.01V | 18.873W | | 229.89V |

## 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% | 5.194A | 1.985A | 2.011A | 0.991A | 84.995 | 85.65% | 0 | <6.0 | 44.77°C | 0.974 |
| | 12.204V | 5.036V | 3.282V | 5.045V | 99.235 | | | | 40.53°C | 114.85V |
| 20% | 11.390A | 2.979A | 3.019A | 1.191A | 169.913 | 89.436% | 0 | <6.0 | 45.31°C | 0.985 |
| | 12.206V | 5.035V | 3.279V | 5.037V | 189.983 | | | | 40.66°C | 114.81V |
| 30% | 17.947A | 3.476A | 3.524A | 1.371A | 254.905 | 90.771% | 0 | <6.0 | 46.22°C | 0.989 |
| | 12.195V | 5.035V | 3.277V | 5.107V | 280.821 | | | | 41.07°C | 114.79V |
| 40% | 24.545A | 3.972A | 4.03A | 1.567A | 339.982 | 91.118% | 0 | <6.0 | 47.36°C | 0.991 |
| | 12.172V | 5.034V | 3.275V | 5.107V | 373.122 | | | | 41.79°C | 114.76V |
| 50% | 30.786A | 4.967A | 5.041A | 1.765A | 424.709 | 90.797% | 445 | <6.0 | 42.38°C | 0.99 |
| | 12.155V | 5.033V | 3.273V | 5.099V | 467.76 | | | | 48.28°C | 114.73V |
| 60% | 37.027A | 5.961A | 6.054A | 1.964A | 509.243 | 90.282% | 567 | 11.1 | 42.82°C | 0.991 |
| | 12.138V | 5.032V | 3.27V | 5.092V | 564.053 | | | | 49.25°C | 114.71V |
| 70% | 43.345A | 6.956A | 7.069A | 2.163A | 594.552 | 89.631% | 766 | 20.4 | 43.15°C | 0.992 |
| | 12.122V | 5.032V | 3.268V | 5.084V | 663.335 | | | | 50.17°C | 114.67V |
| 80% | 49.688A | 7.952A | 8.083A | 2.265A | 679.434 | 88.912% | 944 | 27.3 | 43.71°C | 0.993 |
| | 12.106V | 5.03V | 3.266V | 5.077V | 764.161 | | | | 51.76°C | 114.65V |
| 90% | 56.427A | 8.451A | 8.58A | 2.366A | 764.873 | 88.131% | 1231 | 35.6 | 44.12°C | 0.994 |
| | 12.093V | 5.029V | 3.263V | 5.071V | 867.879 | | | | 53.17°C | 114.61V |
| 100% | 62.866A | 8.95A | 9.109A | 2.967A | 849.706 | 87.235% | 1585 | 42.3 | 45.53°C | 0.994 |
| | 12.089V | 5.028V | 3.26V | 5.055V | 974.04 | | | | 55.57°C | 114.58V |
| 110% | 69.179A | 9.949A | 10.221A | 2.97A | 934.305 | 86.248% | 1819 | 43.4 | 46.83°C | 0.995 |
| | 12.085V | 5.026V | 3.257V | 5.05V | 1083.279 | | | | 57.76°C | 114.55V |
| CL1 | 1.966A | 14.351A | 14.578A | 0.496A | 146.415 | 84.346% | 447 | <6.0 | 42.5°C | 0.984 |
| | 12.214V | 5.032V | 3.272V | 5.044V | 173.589 | | | | 47.97°C | 114.82V |

| Test | 12V | 5V | 3.3V | 5VSB | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|---|---|---|---|---|---|---|---|---|---|---|
| CL2 | 1.964A | 21.207A | 1.006A | 0.495A | 136.421 | 83.178% | 446 | <6.0 | 42.4°C | 0.983 |
| | 12.223V | 5.028V | 3.279V | 5.05V | 164.011 | | | | 49.43°C | 114.83V |
| CL3 | 1.964A | 0.992A | 20.712A | 0.495A | 99.095 | 80.595% | 445 | <6.0 | 42.48°C | 0.979 |
| | 12.221V | 5.043V | 3.264V | 5.046V | 122.957 | | | | 51.56°C | 114.84V |
| CL4 | 69.398A | 0.993A | 1.01A | 0.489A | 849.814 | 88.008% | 1314 | 37.9 | 44.46°C | 0.994 |
| | 12.090V | 5.036V | 3.266V | 5.107V | 965.617 | | | | 55.37°C | 114.59V |

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% | 5.196A | 1.983A | 2.011A | 0.991A | 84.988 | 86.589% | 0 | <6.0 | 44.52°C | 0.868 |
| | 12.200V | 5.041V | 3.281V | 5.046V | 98.154 | | | | 40.23°C | 229.89V |
| 20% | 11.394A | 2.976A | 3.02A | 1.191A | 169.896 | 90.587% | 0 | <6.0 | 45.34°C | 0.941 |
| | 12.200V | 5.04V | 3.278V | 5.037V | 187.551 | | | | 40.79°C | 229.88V |
| 30% | 17.951A | 3.472A | 3.525A | 1.374A | 254.893 | 92.193% | 0 | <6.0 | 46.22°C | 0.963 |
| | 12.191V | 5.039V | 3.276V | 5.093V | 276.477 | | | | 41.13°C | 229.86V |
| 40% | 24.557A | 3.969A | 4.032A | 1.566A | 339.973 | 92.76% | 0 | <6.0 | 47.25°C | 0.973 |
| | 12.166V | 5.039V | 3.274V | 5.107V | 366.507 | | | | 41.8°C | 229.85V |
| 50% | 30.800A | 4.962A | 5.044A | 1.765A | 424.734 | 92.67% | 407 | <6.0 | 42.27°C | 0.979 |
| | 12.151V | 5.038V | 3.271V | 5.099V | 458.33 | | | | 48.32°C | 229.83V |
| 60% | 37.039A | 5.955A | 6.057A | 1.964A | 509.279 | 92.38% | 459 | <6.0 | 42.46°C | 0.982 |
| | 12.135V | 5.038V | 3.269V | 5.092V | 551.284 | | | | 49.18°C | 229.81V |
| 70% | 43.358A | 6.949A | 7.072A | 2.164A | 594.595 | 91.978% | 702 | 17.5 | 43.23°C | 0.985 |
| | 12.120V | 5.037V | 3.266V | 5.084V | 646.454 | | | | 50.29°C | 229.8V |
| 80% | 49.698A | 7.943A | 8.087A | 2.265A | 679.442 | 91.561% | 884 | 25.2 | 43.71°C | 0.986 |
| | 12.104V | 5.036V | 3.264V | 5.078V | 742.068 | | | | 51.74°C | 229.79V |
| 90% | 56.433A | 8.44A | 8.584A | 2.366A | 764.855 | 91.015% | 1225 | 35.5 | 44.21°C | 0.987 |
| | 12.092V | 5.035V | 3.261V | 5.071V | 840.366 | | | | 53.25°C | 229.77V |

| Test | 12V | 5V | 3.3V | 5VSB | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|---|---|---|---|---|---|---|---|---|---|---|
| 100% | 62.868A | 8.939A | 9.112A | 2.967A | 849.667 | 90.435% | 1515 | 41.2 | 45.8°C | 0.988 |
| | 12.088V | 5.034V | 3.259V | 5.056V | 939.533 | | | | 55.85°C | 229.75V |
| 110% | 69.175A | 9.935A | 10.226A | 2.97A | 934.245 | 89.763% | 1858 | 47.0 | 46.54°C | 0.989 |
| | 12.085V | 5.032V | 3.256V | 5.051V | 1040.788 | | | | 57.45°C | 229.73V |
| CL1 | 1.965A | 14.332A | 14.585A | 0.495A | 146.411 | 85.543% | 446 | <6.0 | 41.19°C | 0.936 |
| | 12.215V | 5.038V | 3.27V | 5.045V | 171.154 | | | | 46.66°C | 229.87V |
| CL2 | 1.964A | 21.178A | 1.006A | 0.495A | 136.41 | 84.438% | 444 | <6.0 | 41.22°C | 0.93 |
| | 12.220V | 5.035V | 3.278V | 5.051V | 161.55 | | | | 48.29°C | 229.87V |
| CL3 | 1.964A | 0.99A | 20.717A | 0.495A | 99.092 | 81.458% | 443 | <6.0 | 40.55°C | 0.9 |
| | 12.216V | 5.05V | 3.263V | 5.046V | 121.649 | | | | 49.65°C | 229.88V |
| CL4 | 69.411A | 0.991A | 1.011A | 0.489A | 849.799 | 91.135% | 1311 | 37.8 | 44.73°C | 0.988 |
| | 12.088V | 5.043V | 3.265V | 5.107V | 932.465 | | | | 55.68°C | 229.75V |

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 | 1.219A | 0.494A | 0.501A | 0.198A | 19.987 | 77.561% | 0 | <6.0 | 39.64°C | 0.867 |
| | 12.174V | 5.058V | 3.293V | 5.063V | 25.771 | | | | 36.53°C | 114.87V |
| 40W | 2.684A | 0.692A | 0.701A | 0.296A | 39.989 | 83.594% | 0 | <6.0 | 40.99°C | 0.937 |
| | 12.177V | 5.058V | 3.293V | 5.061V | 47.836 | | | | 37.7°C | 114.87V |
| 60W | 4.148A | 0.891A | 0.903A | 0.395A | 59.989 | 85.458% | 0 | <6.0 | 41.99°C | 0.962 |
| | 12.180V | 5.047V | 3.287V | 5.058V | 70.197 | | | | 38.36°C | 114.86V |
| 80W | 5.596A | 1.091A | 1.105A | 0.495A | 79.923 | 86.097% | 0 | <6.0 | 43.89°C | 0.971 |
| | 12.205V | 5.041V | 3.284V | 5.055V | 92.83 | | | | 39.92°C | 114.85V |

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 | 1.218A | 0.494A | 0.501A | 0.198A | 19.986 | 77.845% | 0 | <6.0 | 39.65°C | 0.522 |
| | 12.176V | 5.057V | 3.293V | 5.064V | 25.673 | | | | 36.56°C | 229.89V |
| 40W | 2.684A | 0.692A | 0.701A | 0.296A | 39.987 | 84.154% | 0 | <6.0 | 40.72°C | 0.704 |
| | 12.178V | 5.057V | 3.293V | 5.061V | 47.517 | | | | 37.43°C | 229.88V |
| 60W | 4.148A | 0.891A | 0.903A | 0.395A | 59.986 | 86.616% | 0 | <6.0 | 42.31°C | 0.801 |
| | 12.181V | 5.046V | 3.287V | 5.058V | 69.256 | | | | 38.75°C | 229.88V |
| 80W | 5.594A | 1.091A | 1.105A | 0.494A | 79.912 | 86.718% | 0 | <6.0 | 43.05°C | 0.858 |
| | 12.206V | 5.04V | 3.284V | 5.056V | 92.153 | | | | 39.25°C | 229.88V |

The results above are not used in the certification process

## Ripple Measurements

### 115V

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| 10% Load | 8.54mV | 8.37mV | 9.49mV | 6.98mV | Pass |
| 20% Load | 9.77mV | 8.98mV | 9.39mV | 7.34mV | Pass |
| 30% Load | 21.43mV | 8.62mV | 10.16mV | 7.44mV | Pass |
| 40% Load | 13.35mV | 8.93mV | 10.67mV | 9.24mV | Pass |
| 50% Load | 13.04mV | 11.70mV | 10.11mV | 8.26mV | Pass |
| 60% Load | 12.94mV | 11.60mV | 10.42mV | 8.31mV | Pass |
| 70% Load | 13.30mV | 16.37mV | 19.03mV | 9.49mV | Pass |
| 80% Load | 13.14mV | 23.04mV | 13.44mV | 11.85mV | Pass |
| 90% Load | 12.84mV | 12.27mV | 13.44mV | 10.78mV | Pass |
| 100% Load | 20.43mV | 10.74mV | 14.04mV | 12.75mV | Pass |
| 110% Load | 20.92mV | 11.16mV | 14.45mV | 12.42mV | Pass |
| Crossload1 | 11.70mV | 10.90mV | 14.17mV | 8.25mV | Pass |
| Crossload2 | 15.50mV | 18.32mV | 9.96mV | 8.31mV | Pass |

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| Crossload3 | 12.02mV | 11.04mV | 14.73mV | 7.85mV | Pass |
| Crossload4 | 20.48mV | 10.28mV | 11.81mV | 8.95mV | Pass |

The results above are not used in the certification process

**230V**

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| 10% Load | 9.41mV | 9.34mV | 9.03mV | 7.39mV | Pass |
| 20% Load | 9.67mV | 9.44mV | 9.28mV | 7.23mV | Pass |
| 30% Load | 24.95mV | 8.78mV | 10.11mV | 7.70mV | Pass |
| 40% Load | 14.84mV | 8.62mV | 10.62mV | 8.47mV | Pass |
| 50% Load | 12.68mV | 8.88mV | 10.62mV | 7.70mV | Pass |
| 60% Load | 13.61mV | 8.98mV | 10.52mV | 8.06mV | Pass |
| 70% Load | 11.97mV | 15.14mV | 18.62mV | 9.03mV | Pass |
| 80% Load | 12.94mV | 9.39mV | 12.62mV | 9.96mV | Pass |
| 90% Load | 13.35mV | 10.16mV | 12.72mV | 10.06mV | Pass |
| 100% Load | 20.59mV | 11.16mV | 15.10mV | 11.56mV | Pass |
| 110% Load | 21.15mV | 10.77mV | 14.71mV | 12.02mV | Pass |
| Crossload1 | 10.87mV | 10.40mV | 13.18mV | 7.87mV | Pass |
| Crossload2 | 15.45mV | 17.29mV | 9.60mV | 7.90mV | Pass |
| Crossload3 | 11.40mV | 9.85mV | 16.52mV | 7.34mV | Pass |
| Crossload4 | 19.19mV | 9.72mV | 11.60mV | 8.65mV | Pass |

The results above are not used in the certification process

## Montech Titan Gold 850W




Top side




Power specifications label

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