# Corsair RM650e (ATX v3.1)

Serial Number A9UNF442000242

Lab ID CR65002628

Certification ID 252628

Test Result Report ID: 24PS2628A

Certificate Issue Date: Nov 4, 2024

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 | Corsair |
| Model | RM650e (ATX v3.1) |
| OEM/ODM | HEC |
| Serial Number | A9UNF442000242 |
| Product Specifications | |
| Manufacturer-Provided Information | |
| Rated Voltage (Vrms) | 100-240 |
| Rated Current (Arms) | 5-10 |

| | |
|---|---|
| Rated Frequency (Hz) | 47-63 |
| Rated Power (W) | 650 |
| Operating Temperature (Continuous Full Load) (°C) | |
| Type | ATX12V |
| Cable Design | Fully Modular |
| Warranty | - |
| Cybenetics Measurements | |
| Dimensions (W x H x D) | |
| Weight | |
| Cooling | 120mm Rifle Bearing Fan (HA1225H12SF-Z) |
| Semi-Passive Operation | ✓ |
| Cybenetics Testing Information | |
| Lab ID | CR65002628 |
| Date of receipt | Oct 22, 2024 |
| Testing Date | Nov 2, 2024 |
| Report Issued Date | Nov 4, 2024 |
| DUT Notes | This unit ships with 18AWG 12+4pin PCIe cable. |
| 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 24 pin (610mm) | 1 | 1 | 18-20AWG | No |
| 4+4 pin EPS12V (740mm+100mm) | 1 | 2 | 16-18AWG | No |
| 2x 6+2 pin PCIe (650mm) | 1 | 2 | 16-18AWG | No |
| 6+2 pin PCIe (640mm) | 1 | 1 | 18AWG | No |
| 12+2 pin PCIe (640mm) (300W) | 1 | 1 | 18-24AWG | No |
| SATA (450mm+100mm) / 4-pin Molex (+100mm+100mm) | 1 | 2 / 2 | 18AWG | No |

| | | | | |
|---|---|---|---|---|
| SATA (450mm+100mm+100mm+100mm) | 1 | 4 | 18AWG | No |
| AC Power Cord (1415mm) | 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 | 20 | 20 | 54.2 | 3 | 0 |
| | Watts | 110 | | 650 | 15 | 0 |
| Total Max. Power (W) | | 650 | | | | |

## Parts Description

| | |
|---|---|
| **General Data** | - |
| Manufacturer (OEM) | HEC |
| PCB Type | Single-Sided |
| **Primary Side** | - |
| Transient Filter | 4x Y caps, 3x X caps, 2x CM chokes, 1x MOV, 1x Power IntegrationsCAP200DG (Discharge IC) |
| Inrush Protection | NTC Thermistor SCK-037 (3 Ohm) & Relay |
| Bridge Rectifier(s) | 2x GBU8K (800V, 10A @ 100°C) |
| APFC MOSFETs | 2x Infineon IPAW60R180P7 (650V, 11A @ 100°C, Rds(on): 0.180Ohm) |
| APFC Boost Diode | 1x Hestia H2S060H006 (650V, 6A @ 152°C) |

| | |
|---|---|
| Bulk Cap(s) | 1x Teapo (400V, 390uF, 2,000h @ 105°C, LG) |
| Main Switchers | 2x Infineon IPAW60R180P7 (650V, 11A @ 100°C, Rds(on): 0.180Ohm) |
| APFC Controller | Champion CM6500UNX & CM03AX |
| Resonant Controller | Champion CM6901T6X |
| Topology | Primary side: APFC, Half-Bridge & LLC Resonant converter Secondary side: Synchronous Rectification & DC-DC converters |
| **Secondary Side** | - |
| +12V MOSFETs | no info |
| 5V & 3.3V | DC-DC Converters: 2x Potens Semiconductor PDC39F2BX (30V, 76A @ 100°C, Rds(on): 2.95mOhm) PWM Controller(s): 1x ANPECAPW7159C |
| Filtering Capacitors | Electrolytic: 6x Teapo (1-3,000h @ 105°C, SC), 2x Nippon Chemi-con (2-5,000h @ 105°C, KZE) 1x Rubycon (4-10,000h @ 105°C, YXF) Polymer: 10x Teapo, 12x |
| Supervisor IC | Weltrend WT7527RT (OCP, OVP, UVP, SCP, PG) |
| Fan Controller | Nuvoton M031FB0AE |
| Fan Model | Hong Hua HA1225H12F-Z (120mm, 12V, 0.58A, Rifle Bearing Fan) |
| **5VSB Circuit** | - |
| Rectifier | 1x PS1060L SBR (60V, 10A) |
| Standby PWM Controller | Excelliance MOS EM8569D |

## 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) | 89.070% |
| Average Noise Output (>1450 Load Combinations) | 12.58dBA |
| Average PF (>1450 Load Combinations) | 0.989 |
| Efficiency With 10W (≤500W) or 2% (>500W) Load | 62.614% |
| Standby Power Consumption | 0.0515W |
| Non-Accredited | |
| 12V Ripple (Full Load) | 38.30mV |
| 5V Ripple (Full Load) | 15.25mV |
| 3.3V Ripple (Full Load) | 17.46mV |
| 5VSB Ripple (Full Load) | 19.58mV |
| 12V Load Regulation | 0.69% |
| 5V Load Regulation | 0.54% |
| 3.3V Load Regulation | 0.86% |
| 5VSB Load Regulation | 2.19% |
| Inrush Current | 55.820A |

### 230V

| | |
|---|---|
| Accredited | |
| Average Efficiency (>1450 load combinations) | 91.226% |
| Average Noise Output (>1450 Load Combinations) | 12.63dBA |
| Average PF (>1450 Load Combinations) | 0.962 |
| Efficiency With 10W (≤500W) or 2% (>500W) Load | - |
| Standby Power Consumption | 0.1035W |
| Non-Accredited | |
| 12V Ripple (Full Load) | 37.25mV |
| 5V Ripple (Full Load) | 15.74mV |
| 3.3V Ripple (Full Load) | 18.17mV |

| | | |
|---|---|---|
| 5VSB Ripple (Full Load) | | 18.82mV |
| 12V Load Regulation | | 0.66% |
| 5V Load Regulation | | 0.54% |
| 3.3V Load Regulation | | 0.80% |
| 5VSB Load Regulation | | 2.15% |
| Inrush Current | | 103.250A |
| 12V Transient Response (200%) | | 11.55V |
| 5V Transient Response (200%) | | 4.891V |
| 3.3V Transient Response (200%) | | 3.174V |
| 5VSB Transient Response (200%) | | 4.869V |
| Hold-Up Time & PWR_OK Signal | | 19.40ms |
| AC Loss to PWR_OK Hold Up Time | | 16.80ms |
| PWR_OK Inactive to DC Loss Delay | | 2.60ms |
| PSU Timings: T1 (20% / 100%) | 49.0ms | 50.0ms |
| PSU Timings: T3 (20% / 100%) | 126.0ms | 121.0ms |
| 12V OCP (27.8°C / 44.0°C) | 67.60A (124.72%), 12.034V | 67.40A (124.35%), 12.046V |
| 5V OCP (27.8°C / 44.0°C) | 29.9A (149.50%), 4.974V | 28.7A (143.50%), 4.976V |
| 3.3V OCP (27.8°C / 44.0°C) | 27.7A (138.50%), 3.262V | 26.2A (131.00%), 3.268V |
| 5VSB OCP (27.8°C / 44.0°C) | 4A (133.33%), 4.888V | 4A (133.33%), 4.89V |
| OPP (28.46°C / 41.48°C) | 122.26% | 122.26% |

## Hold-Up Time & PWR_OK Signal

| | |
|---|---|
| Hold-Up Time (ms) | 19.4 |
| AC Loss to PWR_OK Hold Up Time (ms) | 16.8 |
| PWR_OK Inactive to DC Loss Delay (ms) | 2.6 |

## Tables

### 115V

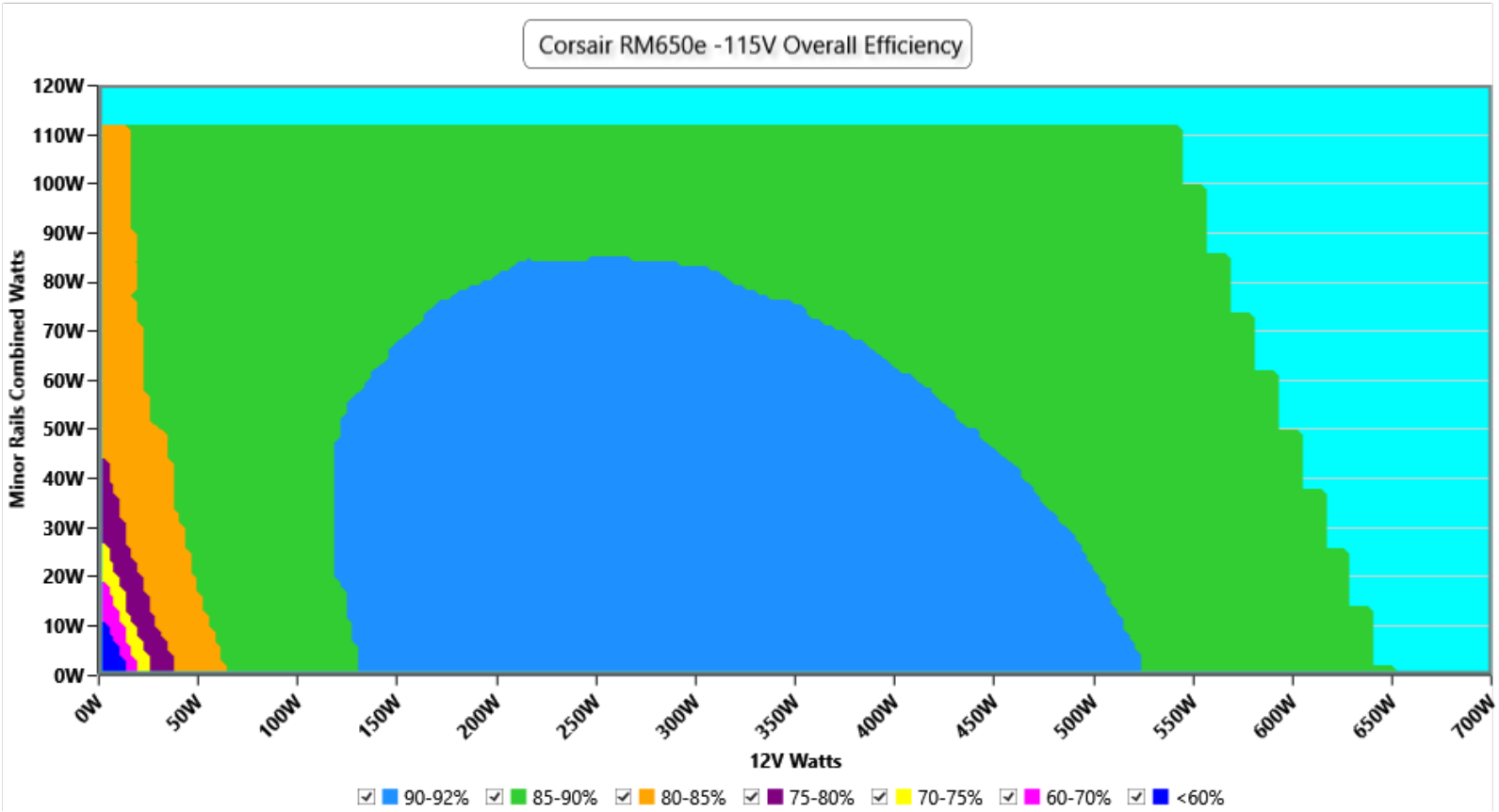
| Detailed Results | | | | | | |
|---|---|---|---|---|---|---|
| | Average | Min | Limit Min | Max | Limit Max | Result |
| Mains Voltage RMS: | 115.07 V | 115.03 V | 113.85 V | 115.11 V | 116.15 V | PASS |
| Mains Frequency: | 60.00 Hz | 59.99 Hz | 59.40 Hz | 60.01 Hz | 60.60 Hz | PASS |
| Mains Voltage CF: | 1.416 | 1.415 | 1.340 | 1.418 | 1.490 | PASS |
| Mains Voltage THD: | 0.13 % | 0.09 % | N/A | 0.17 % | 2.00 % | PASS |
| Real Power: | 0.051 W | -0.007 W | N/A | 0.088 W | N/A | N/A |
| Apparent Power: | 8.373 W | 8.322 W | N/A | 8.421 W | N/A | N/A |
| Power Factor: | 0.005 | N/A | N/A | N/A | N/A | N/A |

### 230V

| Detailed Results | | | | | | |
|---|---|---|---|---|---|---|
| | Average | Min | Limit Min | Max | Limit Max | Result |
| Mains Voltage RMS: | 231.03 V | 230.94 V | 227.70 V | 231.10 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: | 1.417 | 1.416 | 1.340 | 1.419 | 1.490 | PASS |
| Mains Voltage THD: | 0.17 % | 0.15 % | N/A | 0.25 % | 2.00 % | PASS |
| Real Power: | 0.104 W | 0.059 W | N/A | 0.172 W | N/A | N/A |
| Apparent Power: | 28.766 W | 28.586 W | N/A | 28.981 W | N/A | N/A |
| Power Factor: | 0.003 | N/A | N/A | N/A | N/A | N/A |

## Efficiency Graph

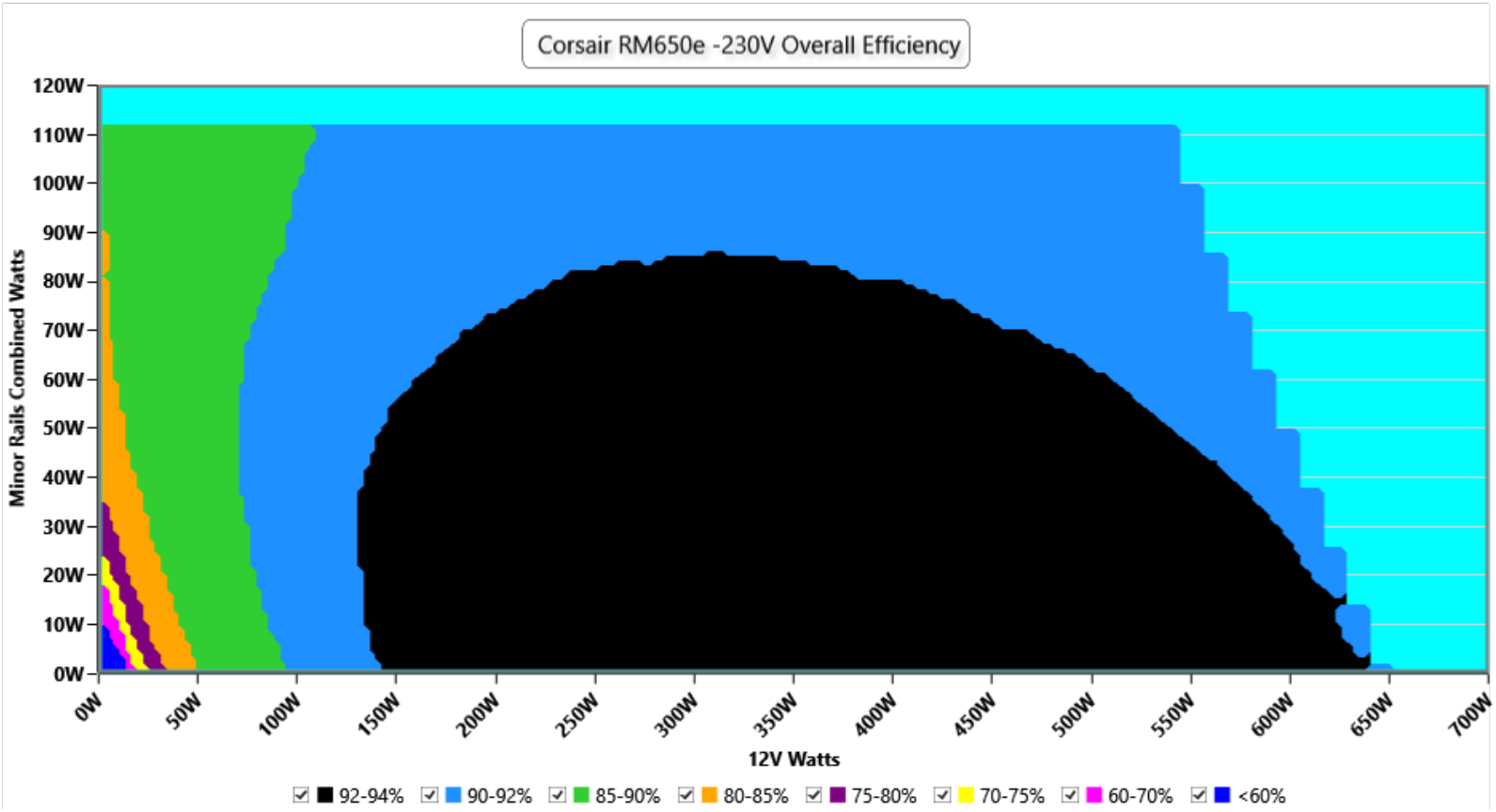
**115V**




**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

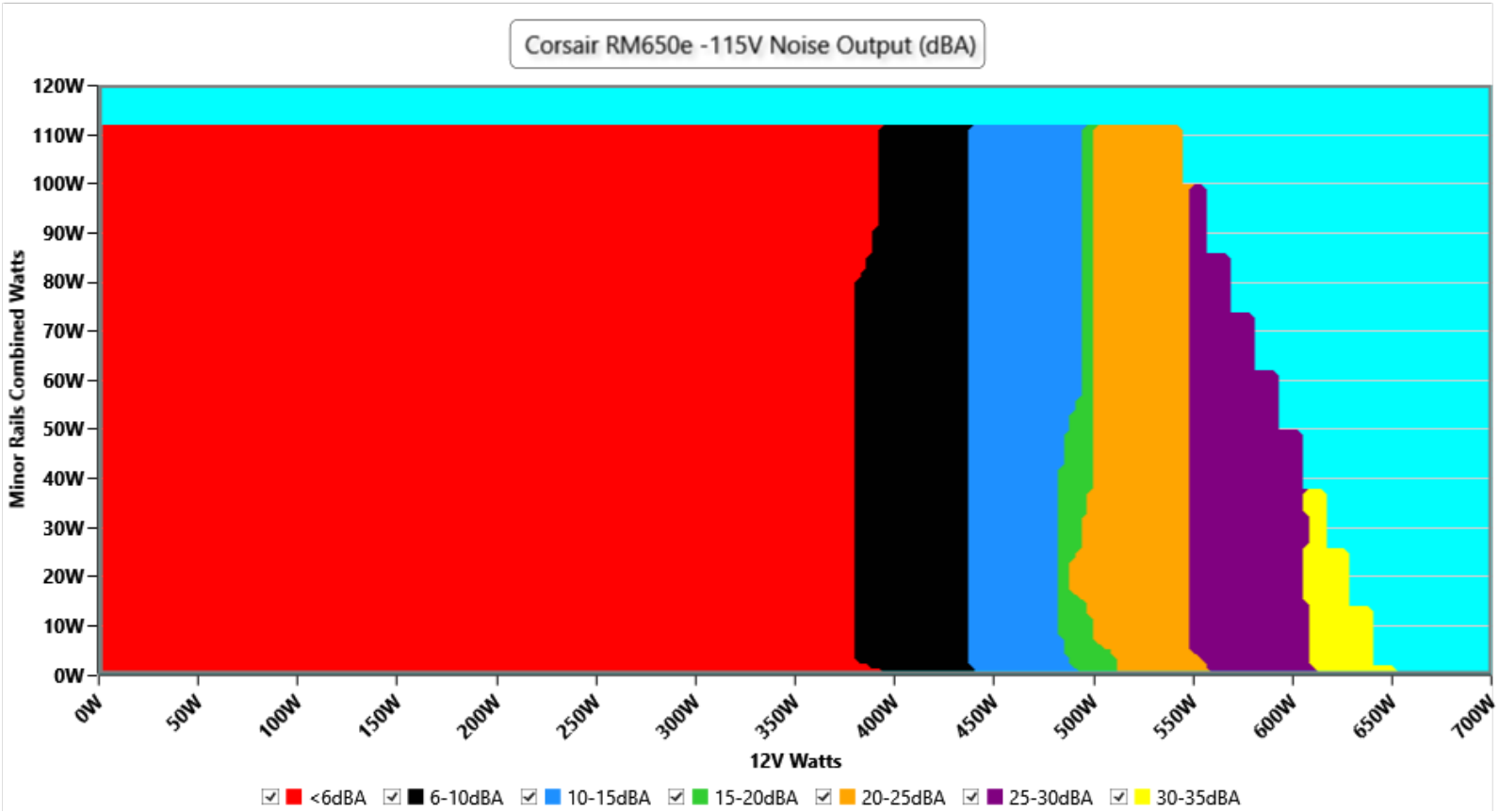



### INFO

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

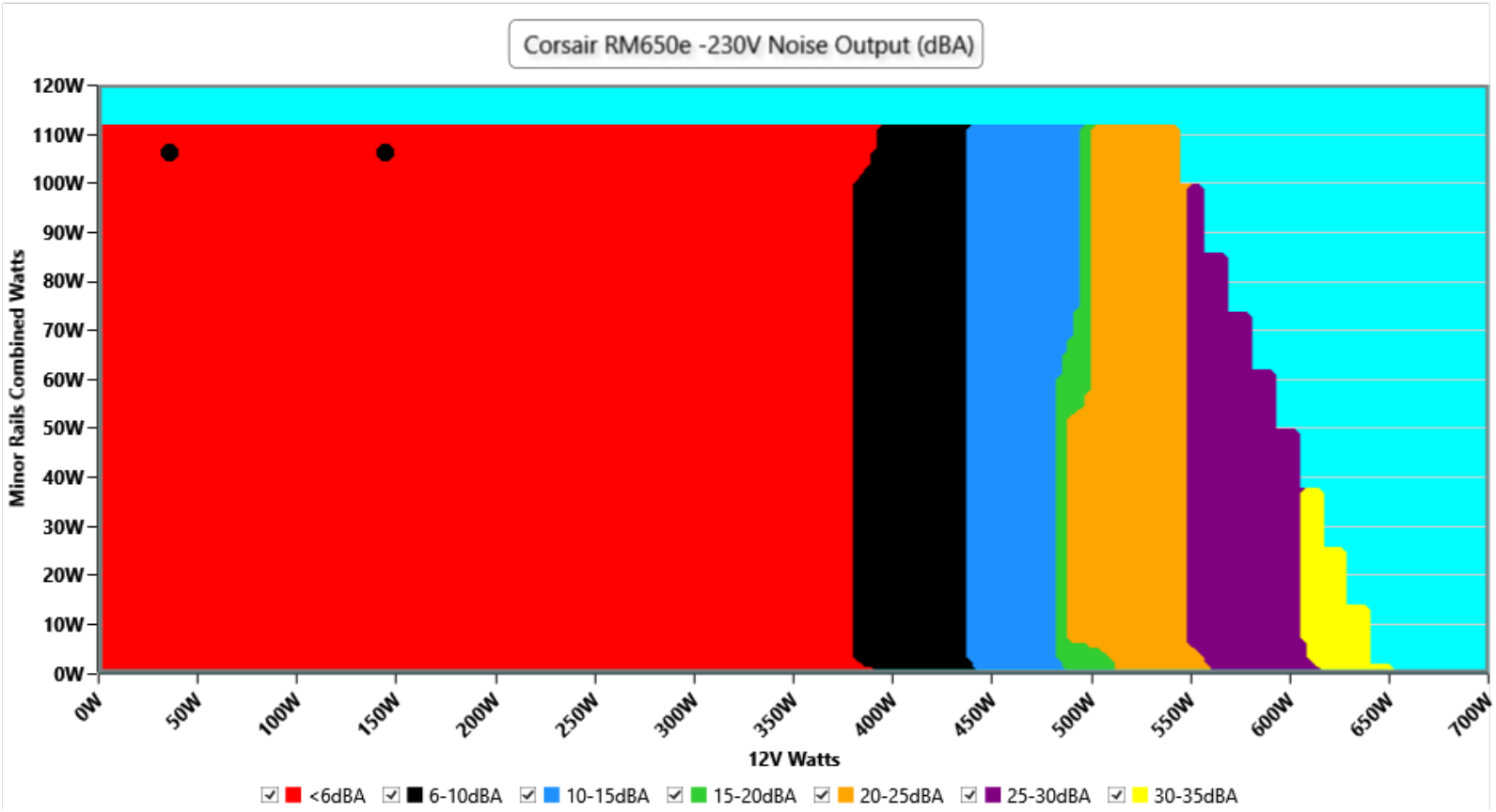
### 115V




### 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

## 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) · 39.0 °C | 0 RPM · <6.0 dB(A) · 46.8 °C | fan off in both |
| 20% | 0 RPM · <6.0 dB(A) · 39.5 °C | 0 RPM · <6.0 dB(A) · 49.4 °C | fan off in both |
| 50% | 400 RPM · <6.0 dB(A) · 30.1 °C | 406 RPM · <6.0 dB(A) · 42.3 °C | fan off in both |
| 100% | 1044 RPM · 25.8 dB(A) · 30.1 °C | 1187 RPM · 30.1 dB(A) · 45.5 °C | **+4.3 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) · 32.3 °C | 0 RPM · <6.0 dB(A) · 44.7 °C | fan off in both |
| 20% | 0 RPM · <6.0 dB(A) · 31.0 °C | 0 RPM · <6.0 dB(A) · 46.0 °C | fan off in both |
| 50% | 396 RPM · <6.0 dB(A) · 30.5 °C | 406 RPM · <6.0 dB(A) · 42.5 °C | fan off in both |
| 100% | 1038 RPM · 25.6 dB(A) · 30.6 °C | 1144 RPM · 28.9 dB(A) · 45.6 °C | **+3.3 dB(A)** |

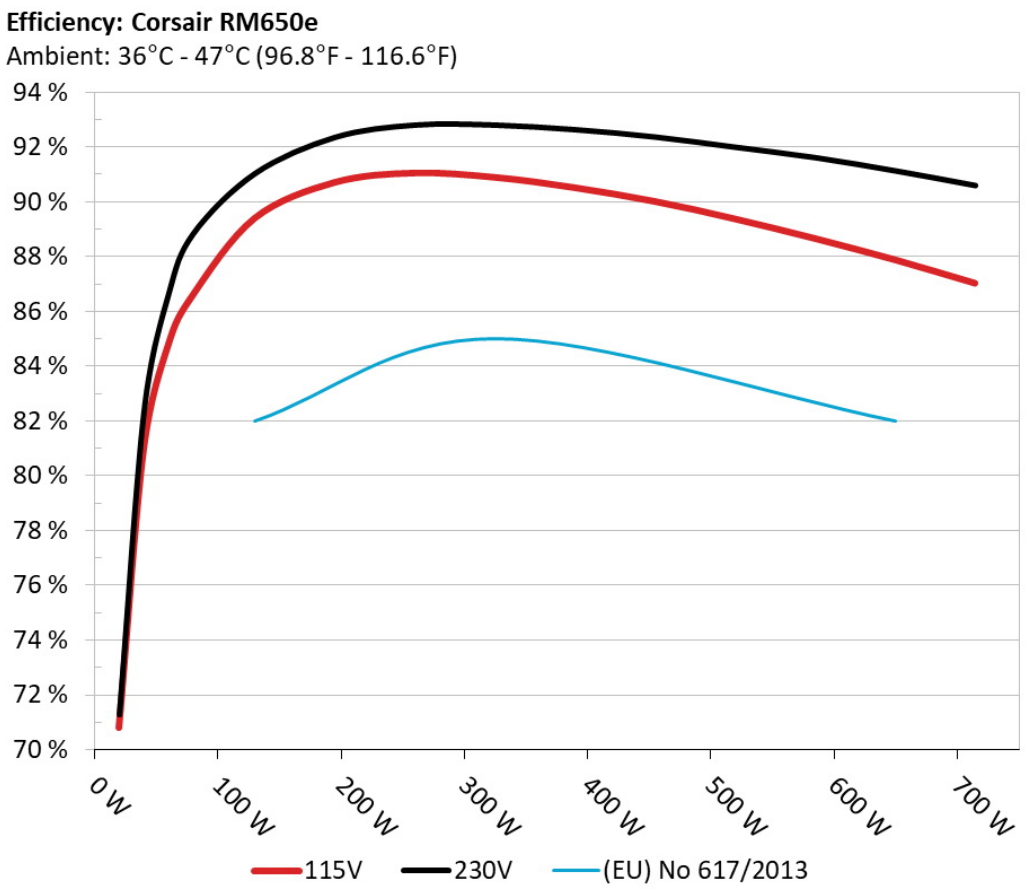
### INFO

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

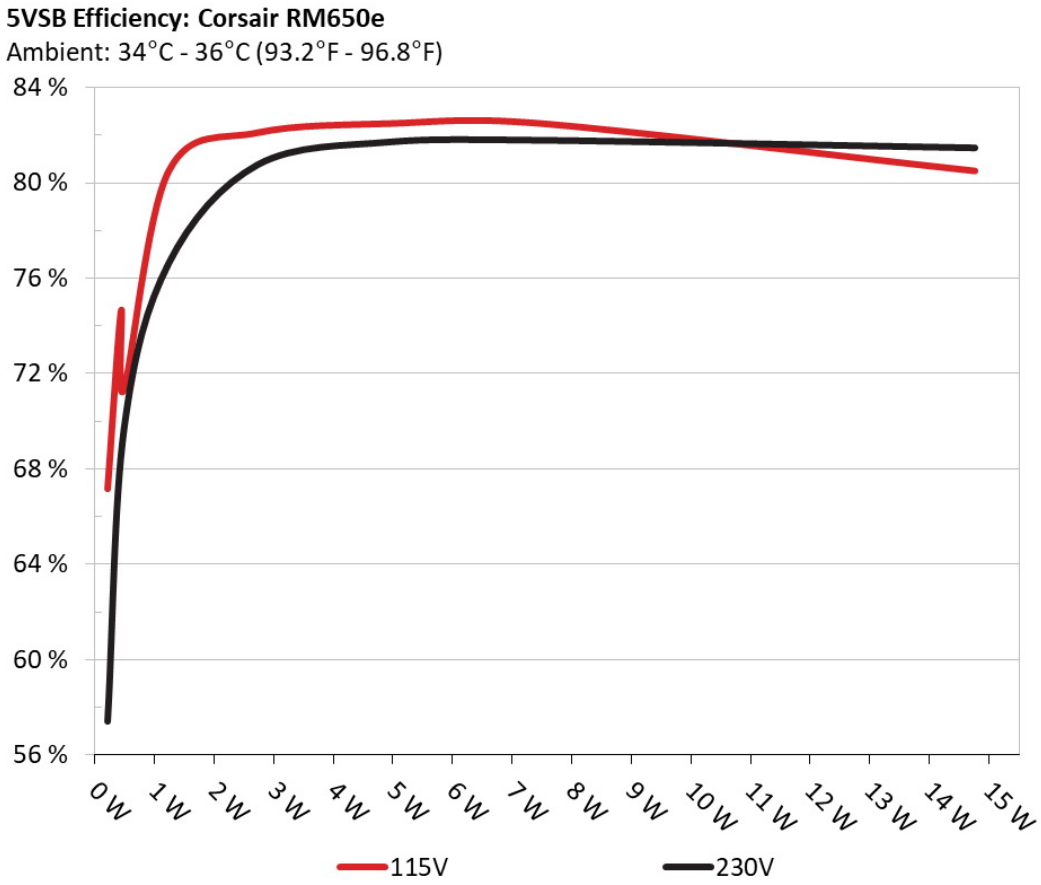
### Efficiency under high ambient temperature




**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** | 0.225W | 67.174% | 0.038 |
| | 4.997V | 0.335W | | 114.86V |
| **2** | **0.09A** | 0.45W | 74.603% | 0.068 |
| | 4.996V | 0.603W | | 114.85V |
| **3** | **0.55A** | 2.742W | 82.098% | 0.272 |
| | 4.986V | 3.34W | | 114.85V |
| **4** | **1A** | 4.975W | 82.478% | 0.341 |
| | 4.975V | 6.032W | | 114.84V |
| **5** | **1.5A** | 7.446W | 82.487% | 0.39 |
| | 4.963V | 9.027W | | 114.84V |
| **6** | **3A** | 14.756W | 80.492% | 0.454 |
| | 4.918V | 18.333W | | 114.84V |

### 230V

| Test # | 5VSB | DC/AC (Watts) | Efficiency | PF/AC Volts |
|---|---|---|---|---|
| **1** | **0.045A** | 0.225W | 57.406% | 0.013 |
| | 4.999V | 0.393W | | 229.84V |
| **2** | **0.09A** | 0.45W | 69.838% | 0.022 |
| | 4.997V | 0.641W | | 229.84V |
| **3** | **0.55A** | 2.742W | 80.745% | 0.108 |
| | 4.985V | 3.397W | | 229.83V |
| **4** | **1A** | 4.974W | 81.7% | 0.177 |
| | 4.974V | 6.087W | | 229.83V |
| **5** | **1.5A** | 7.442W | 81.769% | 0.215 |
| | 4.96V | 9.1W | | 229.83V |
| **6** | **3.001A** | 14.761W | 81.45% | 0.316 |
| | 4.92V | 18.124W | | 229.83V |

## Protection Features

| | |
|---|---|
| OCP (Normal @ 27.8°C) | 12V: 67.60A (124.72%), 12.034V<br>5V: 29.9A (149.50%), 4.974V<br>3.3V: 27.7A (138.50%), 3.262V<br>5VSB: 4A (133.33%), 4.888V |
| OCP (Hot @ 44.0°C) | 12V: 67.40A (124.35%), 12.046V<br>5V: 28.7A (143.50%), 4.976V<br>3.3V: 26.2A (131.00%), 3.268V<br>5VSB: 4A (133.33%), 4.89V |
| OPP (Normal @ 28.5°C) | 794.66W (122.26%) |
| OPP (Hot @ 41.5°C) | 794.67W (122.26%) |
| OTP | ✓ (125°C @ Secondary Side) |
| SCP | 12V to Earth: ✓<br>5V to Earth: ✓<br>3.3V to Earth: ✓<br>5VSB 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%** | **3.582A** | **2.001A** | **2.006A** | **1.006A** | 65.009 | 84.609% | 0 | <6.0 | 46.83°C | 0.971 |
| | 12.121V | 4.998V | 3.29V | 4.969V | 76.833 | | | | 40.05°C | 114.84V |

| Test | 12V | 5V | 3.3V | 5VSB | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|---|---|---|---|---|---|---|---|---|---|---|
| **20%** | **8.177A** | **3.003A** | **3.012A** | **1.21A** | 129.949 | 89.409% | 0 | <6.0 | 49.39°C | 0.989 |
| | 12.113V | 4.995V | 3.287V | 4.961V | 145.341 | | | | 40.71°C | 114.81V |
| **30%** | **13.125A** | **3.505A** | **3.516A** | **1.413A** | 194.954 | 90.72% | 0 | <6.0 | 51.15°C | 0.986 |
| | 12.106V | 4.993V | 3.285V | 4.954V | 214.893 | | | | 41.36°C | 114.78V |
| **40%** | **18.086A** | **4.007A** | **4.021A** | **1.618A** | 260.043 | 91.064% | 0 | <6.0 | 53.65°C | 0.987 |
| | 12.099V | 4.992V | 3.283V | 4.945V | 285.558 | | | | 41.77°C | 114.76V |
| **50%** | **22.709A** | **5.013A** | **5.031A** | **1.823A** | 325.042 | 90.904% | 406 | <6.0 | 42.28°C | 0.99 |
| | 12.089V | 4.988V | 3.28V | 4.937V | 357.567 | | | | 57.13°C | 114.74V |
| **60%** | **27.290A** | **6.019A** | **6.043A** | **2A** | 389.285 | 90.531% | 501 | <6.0 | 42.78°C | 0.991 |
| | 12.078V | 4.985V | 3.277V | 4.929V | 430.002 | | | | 58.74°C | 114.71V |
| **70%** | **31.951A** | **7.027A** | **7.058A** | **2.236A** | 454.73 | 90.027% | 612 | 8.5 | 43.41°C | 0.992 |
| | 12.068V | 4.982V | 3.274V | 4.92V | 505.104 | | | | 60.09°C | 114.69V |
| **80%** | **36.622A** | **8.035A** | **8.072A** | **2.341A** | 519.53 | 89.389% | 734 | 13.4 | 43.78°C | 0.993 |
| | 12.059V | 4.978V | 3.27V | 4.914V | 581.206 | | | | 61.91°C | 114.67V |
| **90%** | **41.699A** | **8.542A** | **8.569A** | **2.446A** | 584.979 | 88.668% | 905 | 20.6 | 44.52°C | 0.994 |
| | 12.050V | 4.975V | 3.268V | 4.906V | 659.739 | | | | 63.51°C | 114.64V |
| **100%** | **46.517A** | **9.049A** | **9.096A** | **3.071A** | 649.794 | 87.893% | 1187 | 30.1 | 45.51°C | 0.994 |
| | 12.041V | 4.973V | 3.265V | 4.886V | 739.309 | | | | 64.69°C | 114.62V |
| **110%** | **51.216A** | **10.061A** | **10.209A** | **3.073A** | 714.413 | 87.039% | 1503 | 36.9 | 46.83°C | 0.994 |
| | 12.030V | 4.969V | 3.261V | 4.882V | 820.801 | | | | 64.67°C | 114.59V |
| **CL1** | **0.116A** | **13.292A** | **13.353A** | **0A** | 111.3 | 83.886% | 1112 | 27.5 | 43.32°C | 0.988 |
| | 12.107V | 4.981V | 3.272V | 4.993V | 132.679 | | | | 55.75°C | 114.81V |
| **CL2** | **0.115A** | **20.06A** | **0A** | **0A** | 101.337 | 82.783% | 1110 | 27.4 | 41.45°C | 0.987 |
| | 12.109V | 4.982V | 3.284V | 4.996V | 122.411 | | | | 50.09°C | 114.81V |
| **CL3** | **0.114A** | **0A** | **20.161A** | **0A** | 67.387 | 76.525% | 847 | 18.5 | 41.02°C | 0.975 |
| | 12.106V | 4.991V | 3.273V | 4.996V | 88.06 | | | | 49.02°C | 114.83V |
| **CL4** | **53.929A** | **0A** | **0A** | **0A** | 649.618 | 88.979% | 1247 | 31.7 | 44.21°C | 0.994 |
| | 12.046V | 4.987V | 3.28V | 4.97V | 730.082 | | | | 56.35°C | 114.63V |

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%** | **3.582A** | **2.001A** | **2.007A** | **1.006A** | 65.007 | 86.747% | 0 | <6.0 | 44.66°C | 0.849 |
| | 12.116V | 4.997V | 3.289V | 4.969V | 74.939 | | | | 40.14°C | 229.83V |
| **20%** | **8.179A** | **3.003A** | **3.013A** | **1.21A** | 129.95 | 91.037% | 0 | <6.0 | 45.97°C | 0.939 |
| | 12.110V | 4.995V | 3.286V | 4.961V | 142.756 | | | | 40.51°C | 229.82V |
| **30%** | **13.130A** | **3.505A** | **3.517A** | **1.413A** | 194.955 | 92.362% | 0 | <6.0 | 47.78°C | 0.962 |
| | 12.102V | 4.993V | 3.284V | 4.953V | 211.076 | | | | 41.28°C | 229.8V |
| **40%** | **18.092A** | **4.008A** | **4.022A** | **1.618A** | 260.046 | 92.81% | 0 | <6.0 | 48.68°C | 0.971 |
| | 12.096V | 4.991V | 3.282V | 4.945V | 280.191 | | | | 41.85°C | 229.79V |
| **50%** | **22.715A** | **5.014A** | **5.033A** | **1.823A** | 325.052 | 92.808% | 406 | <6.0 | 42.47°C | 0.976 |
| | 12.087V | 4.987V | 3.279V | 4.937V | 350.237 | | | | 49.29°C | 229.78V |
| **60%** | **27.296A** | **6.02A** | **6.045A** | **2A** | 389.32 | 92.644% | 501 | <6.0 | 42.78°C | 0.979 |
| | 12.077V | 4.984V | 3.276V | 4.929V | 420.231 | | | | 48.64°C | 229.77V |
| **70%** | **31.959A** | **7.028A** | **7.059A** | **2.236A** | 454.767 | 92.373% | 610 | 8.5 | 43.07°C | 0.981 |
| | 12.067V | 4.981V | 3.273V | 4.92V | 492.313 | | | | 48.2°C | 229.75V |
| **80%** | **36.629A** | **8.035A** | **8.074A** | **2.341A** | 519.564 | 92.002% | 737 | 13.5 | 43.57°C | 0.983 |
| | 12.058V | 4.978V | 3.27V | 4.914V | 564.73 | | | | 48.28°C | 229.75V |
| **90%** | **41.704A** | **8.542A** | **8.569A** | **2.446A** | 584.991 | 91.619% | 905 | 20.6 | 44.45°C | 0.984 |
| | 12.049V | 4.975V | 3.267V | 4.907V | 638.502 | | | | 48.61°C | 229.74V |
| **100%** | **46.523A** | **9.05A** | **9.097A** | **3.071A** | 649.82 | 91.135% | 1144 | 28.9 | 45.64°C | 0.985 |
| | 12.040V | 4.972V | 3.265V | 4.886V | 713.031 | | | | 48.79°C | 229.73V |
| **110%** | **51.220A** | **10.062A** | **10.209A** | **3.073A** | 714.443 | 90.603% | 1588 | 38.7 | 46.02°C | 0.986 |
| | 12.029V | 4.969V | 3.261V | 4.883V | 788.546 | | | | 49.73°C | 229.71V |
| **CL1** | **0.116A** | **13.293A** | **13.353A** | **0A** | 111.303 | 85.483% | 1115 | 27.6 | 42.73°C | 0.932 |
| | 12.107V | 4.98V | 3.272V | 4.993V | 130.204 | | | | 47.68°C | 229.81V |
| **CL2** | **0.116A** | **20.064A** | **0A** | **0A** | 101.357 | 84.214% | 1358 | 33.9 | 42.72°C | 0.924 |
| | 12.110V | 4.982V | 3.284V | 4.996V | 120.359 | | | | 44.94°C | 229.81V |
| **CL3** | **0.115A** | **0A** | **20.161A** | **0A** | 67.387 | 78.67% | 848 | 18.6 | 42.08°C | 0.875 |
| | 12.107V | 4.991V | 3.273V | 4.996V | 85.657 | | | | 44.34°C | 229.82V |

| Test | 12V | 5V | 3.3V | 5VSB | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|---|---|---|---|---|---|---|---|---|---|---|
| **CL4** | **53.929A** | **0A** | **0A** | **0A** | 649.622 | 92.065% | 1245 | 31.7 | 45.42°C | 0.985 |
| | 12.046V | 4.986V | 3.28V | 4.971V | 705.61 | | | | 44.55°C | 229.72V |

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** | **0.5A** | **0.501A** | **0.2A** | 20.003 | 70.809% | 0 | <6.0 | 38.12°C | 0.893 |
| | 12.123V | 5V | 3.293V | 4.993V | 28.219 | | | | 36.15°C | 114.84V |
| **40W** | **2.698A** | **0.7A** | **0.702A** | **0.301A** | 40.005 | 80.968% | 0 | <6.0 | 40.34°C | 0.952 |
| | 12.121V | 4.999V | 3.292V | 4.991V | 49.408 | | | | 37.74°C | 114.85V |
| **60W** | **4.170A** | **0.9A** | **0.902A** | **0.401A** | 60.007 | 84.789% | 0 | <6.0 | 42.22°C | 0.969 |
| | 12.120V | 4.999V | 3.291V | 4.986V | 70.774 | | | | 38.18°C | 114.84V |
| **80W** | **5.638A** | **1.1A** | **1.103A** | **0.502A** | 79.96 | 86.608% | 0 | <6.0 | 44.89°C | 0.976 |
| | 12.119V | 4.999V | 3.291V | 4.981V | 92.322 | | | | 39.13°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** | **1.226A** | **0.5A** | **0.501A** | **0.2A** | 19.996 | 71.282% | 0 | <6.0 | 38.42°C | 0.543 |
| | 12.113V | 4.999V | 3.291V | 4.991V | 28.053 | | | | 36.22°C | 229.86V |
| **40W** | **2.698A** | **0.7A** | **0.702A** | **0.301A** | 40 | 82.359% | 0 | <6.0 | 39.68°C | 0.737 |
| | 12.113V | 4.998V | 3.29V | 4.989V | 48.568 | | | | 37.21°C | 229.85V |
| **60W** | **4.172A** | **0.9A** | **0.903A** | **0.401A** | 60.002 | 86.65% | 0 | <6.0 | 41.66°C | 0.831 |
| | 12.112V | 4.997V | 3.29V | 4.985V | 69.247 | | | | 38.85°C | 229.84V |
| **80W** | **5.640A** | **1.101A** | **1.104A** | **0.502A** | 79.949 | 88.842% | 0 | <6.0 | 42.48°C | 0.882 |
| | 12.112V | 4.997V | 3.289V | 4.98V | 89.992 | | | | 39.09°C | 229.84V |

The results above are not used in the certification process

## Ripple Measurements

### 115V

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| 10% Load | 14.99mV | 12.37mV | 13.03mV | 12.78mV | Pass |
| 20% Load | 17.54mV | 12.63mV | 13.95mV | 13.24mV | Pass |
| 30% Load | 19.79mV | 14.01mV | 15.29mV | 13.60mV | Pass |
| 40% Load | 21.63mV | 14.68mV | 16.32mV | 14.98mV | Pass |
| 50% Load | 21.94mV | 13.50mV | 15.03mV | 14.98mV | Pass |
| 60% Load | 21.94mV | 14.62mV | 16.72mV | 15.14mV | Pass |
| 70% Load | 21.63mV | 14.78mV | 15.65mV | 15.60mV | Pass |
| 80% Load | 23.12mV | 14.52mV | 17.75mV | 15.80mV | Pass |
| 90% Load | 29.92mV | 21.04mV | 21.24mV | 20.42mV | Pass |
| 100% Load | 38.30mV | 15.25mV | 17.46mV | 19.58mV | Pass |
| 110% Load | 40.56mV | 20.62mV | 23.67mV | 21.75mV | Pass |
| Crossload1 | 26.60mV | 13.97mV | 17.69mV | 11.75mV | Pass |
| Crossload2 | 18.72mV | 15.96mV | 14.42mV | 10.52mV | Pass |
| Crossload3 | 16.06mV | 12.67mV | 17.75mV | 10.78mV | Pass |
| Crossload4 | 37.85mV | 14.34mV | 14.99mV | 13.73mV | Pass |

The results above are not used in the certification process

### 230V

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| 10% Load | 16.06mV | 13.34mV | 14.26mV | 14.01mV | Pass |
| 20% Load | 14.73mV | 11.44mV | 12.26mV | 12.01mV | Pass |
| 30% Load | 19.39mV | 14.63mV | 15.03mV | 14.52mV | Pass |
| 40% Load | 20.56mV | 14.32mV | 15.13mV | 14.47mV | Pass |
| 50% Load | 20.00mV | 14.11mV | 15.18mV | 13.85mV | Pass |
| 60% Load | 20.77mV | 15.45mV | 15.85mV | 14.21mV | Pass |

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|---|---|---|---|---|---|
| 70% Load | 22.10mV | 13.65mV | 14.57mV | 15.29mV | Pass |
| 80% Load | 22.71mV | 15.09mV | 16.88mV | 15.60mV | Pass |
| 90% Load | 22.71mV | 15.55mV | 16.26mV | 16.42mV | Pass |
| 100% Load | 37.25mV | 15.74mV | 18.17mV | 18.82mV | Pass |
| 110% Load | 37.94mV | 15.55mV | 18.85mV | 19.00mV | Pass |
| Crossload1 | 27.04mV | 13.95mV | 16.78mV | 12.02mV | Pass |
| Crossload2 | 19.03mV | 17.70mV | 14.21mV | 10.52mV | Pass |
| Crossload3 | 15.91mV | 13.35mV | 17.39mV | 10.67mV | Pass |
| Crossload4 | 38.04mV | 14.76mV | 15.89mV | 14.08mV | Pass |

The results above are not used in the certification process

## Corsair RM650e (ATX v3.1)




Top side




Power specifications label

Cybenetics [illegible] ETA[illegible] LAMBDA[illegible] SAFE[illegible] DELTA[illegible] PHI[illegible]

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