

Anex

Cooler Master Masterwatt Lite 400W

Lab ID#: CM40001754
 Receipt Date: Nov 10, 2020
 Test Date: Nov 18, 2020

Report: 20PS1754A
 Report Date: Nov 19, 2020

DUT INFORMATION

| | |
|--------------------|------------------------|
| Brand | Cooler Master |
| Manufacturer (OEM) | |
| Series | Masterwatt Lite |
| Model Number | MPX-4001-ACABW |
| Serial Number | MPX4001ACABW1164700477 |
| DUT Notes | |

DUT SPECIFICATIONS

| | |
|------------------------|-------------------------------------|
| Rated Voltage (Vrms) | 200-240 |
| Rated Current (Arms) | 3.5 |
| Rated Frequency (Hz) | 50-60 |
| Rated Power (W) | 400 |
| Type | ATX12V |
| Cooling | 120mm Sleeve Bearing Fan (D12SH-12) |
| Semi-Passive Operation | X |
| Cable Design | Fixed cables |

TEST EQUIPMENT

| | |
|--------------------|---|
| Electronic Loads | Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2 |
| AC Sources | Chroma 6530, Keysight AC6804B |
| Power Analyzers | N4L PPA1530 x2 |
| Sound Analyzer | Bruel & Kjaer 2270 G4 |
| Microphone | Bruel & Kjaer Type 4955-A |
| Data Loggers | Picoscope TC-08 x2, Labjack U3-HV x2 |
| Tachometer | UNI-T UT372 x2 |
| Digital Multimeter | Keysight U1273AX, Fluke 289, Keithley 2015 - THD |
| UPS | CyberPower OLS3000E 3kVA x2 |
| Transformer | 3kVA x2 |

All data and graphs included in this test report can be used by any individual on the following conditions:

- > It should be mentioned that the test results are provided by Cybenetics
- > The link to the original test results document should be provided in any case

Anex

Cooler Master Masterwatt Lite 400W

RESULTS

| | |
|-----------------------------|-----------------|
| Temperature Range (°C /°F) | 30-32 / 86-89.6 |
| ErP Lot 3/6 Ready | ✓ |
| (EU) No 617/2013 Compliance | ✓ |

230V

| | |
|-------------------------------|-------------|
| Average Efficiency | 82.963% |
| Average Efficiency 5VSB | 77.167% |
| Standby Power Consumption (W) | 0.0924054 |
| Average PF | 0.973 |
| Avg Noise Output | 44.57 dB(A) |
| Efficiency Rating (ETA) | |
| Noise Rating (LAMBDA) | Standard |

POWER SPECIFICATIONS

| Rail | | 3.3V | 5V | 12V | 5VSB | -12V |
|----------------------|-------|------|----|-----|------|------|
| Max. Power | Amps | 20 | 20 | 30 | 2.5 | 0.3 |
| | Watts | 120 | | 360 | 12.5 | 3.6 |
| Total Max. Power (W) | | 400 | | | | |

HOLD-UP TIME & POWER OK SIGNAL (230V)

| | |
|---------------------------------------|------|
| Hold-Up Time (ms) | 11.5 |
| AC Loss to PWR_OK Hold Up Time (ms) | 8.8 |
| PWR_OK Inactive to DC Loss Delay (ms) | 2.7 |

All data and graphs included in this test report can be used by any individual on the following conditions:

- > It should be mentioned that the test results are provided by Cybenetics
- > The link to the original test results document should be provided in any case

Anex

Cooler Master Masterwatt Lite 400W

CABLES AND CONNECTORS

Native Cables

| Description | Cable Count | Connector Count (Total) | Gauge | In Cable Caps |
|--|-------------|-------------------------|----------|---------------|
| ATX connector 20+4 pin (520mm) | 1 | 1 | 20-22AWG | No |
| 4+4 pin EPS12V (620mm) | 1 | 1 | 20AWG | No |
| 6+2 pin PCIe (530mm) | 1 | 1 | 20AWG | No |
| SATA (480mm+95mm+95mm) | 2 | 6 | 20AWG | No |
| 4-pin Molex (480mm+100mm+100mm) / FDD (+100mm) | 1 | 3 / 1 | 20-22AWG | No |

Modular Cables

| | | | | |
|--------------------------------------|---|---|-------|---|
| AC Power Cord (1350mm) - C13 coupler | 1 | 1 | 18AWG | - |
|--------------------------------------|---|---|-------|---|

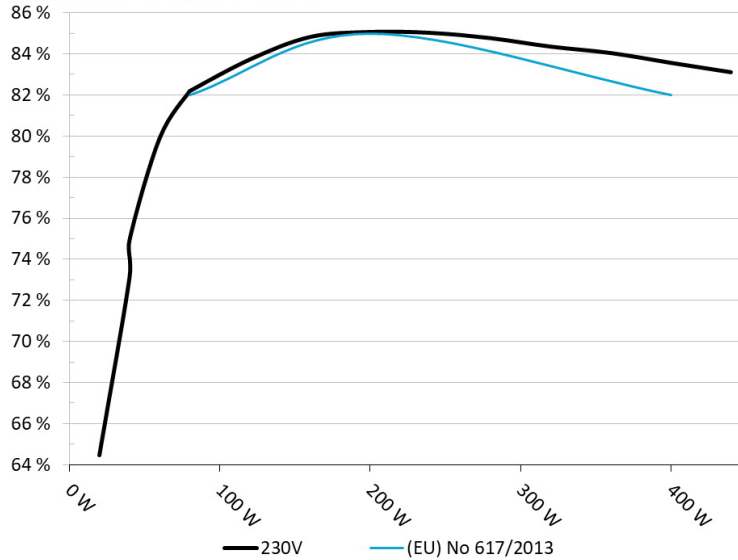
All data and graphs included in this test report can be used by any individual on the following conditions:

- > It should be mentioned that the test results are provided by Cybenetics
- > The link to the original test results document should be provided in any case

PAGE 3/11

EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Cooler Master Masterwatt Lite 400W
Ambient: 28°C - 36°C (82.4°F - 96.8°F)

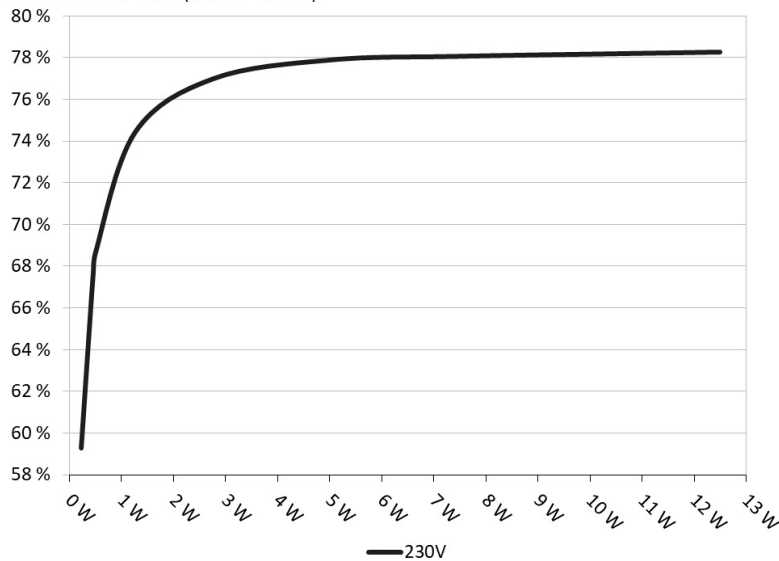


INFO

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

5VSB Efficiency: Cooler Master Masterwatt Lite 400W
Ambient: 28°C - 32°C (82.4°F - 89.6°F)



INFO

This graph depicts the efficiency levels of the 5VSB rail with 115V and 230V input

All data and graphs included in this test report can be used by any individual on the following conditions:

- > It should be mentioned that the test results are provided by Cybenetics
- > The link to the original test results document should be provided in any case

Anex

Cooler Master Masterwatt Lite 400W

5VSB EFFICIENCY -230V (ERP LOT 3/6 & CEC)

| Test # | 5VSB | DC/AC (Watts) | Efficiency | PF/AC Volts |
|--------|--------|---------------|------------|-------------|
| 1 | 0.045A | 0.227 | 59.269% | 0.025 |
| | 5.041V | 0.383 | | 230.28V |
| 2 | 0.090A | 0.454 | 67.560% | 0.043 |
| | 5.041V | 0.672 | | 230.29V |
| 3 | 0.550A | 2.768 | 76.996% | 0.189 |
| | 5.033V | 3.595 | | 230.30V |
| 4 | 1.000A | 5.025 | 77.895% | 0.268 |
| | 5.025V | 6.451 | | 230.31V |
| 5 | 1.500A | 7.525 | 78.068% | 0.317 |
| | 5.017V | 9.639 | | 230.29V |
| 6 | 2.500A | 12.498 | 78.269% | 0.365 |
| | 5.000V | 15.968 | | 230.29V |

All data and graphs included in this test report can be used by any individual on the following conditions:

- > It should be mentioned that the test results are provided by Cybenetics
- > The link to the original test results document should be provided in any case

PAGE 5/11

Anex

Cooler Master Masterwatt Lite 400W

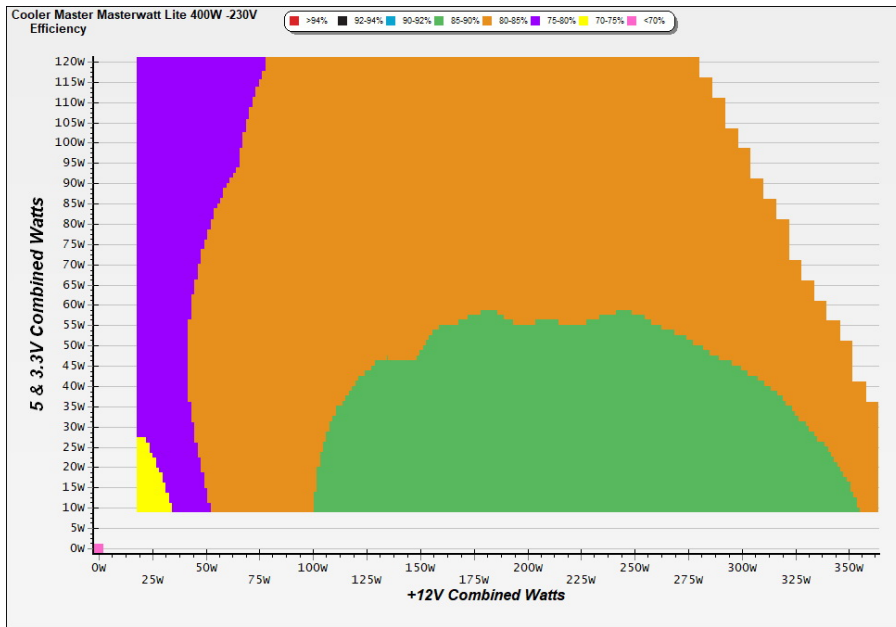
230V

All data and graphs included in this test report can be used by any individual on the following conditions:

- > It should be mentioned that the test results are provided by Cybenetics
- > The link to the original test results document should be provided in any case

PAGE 6/11

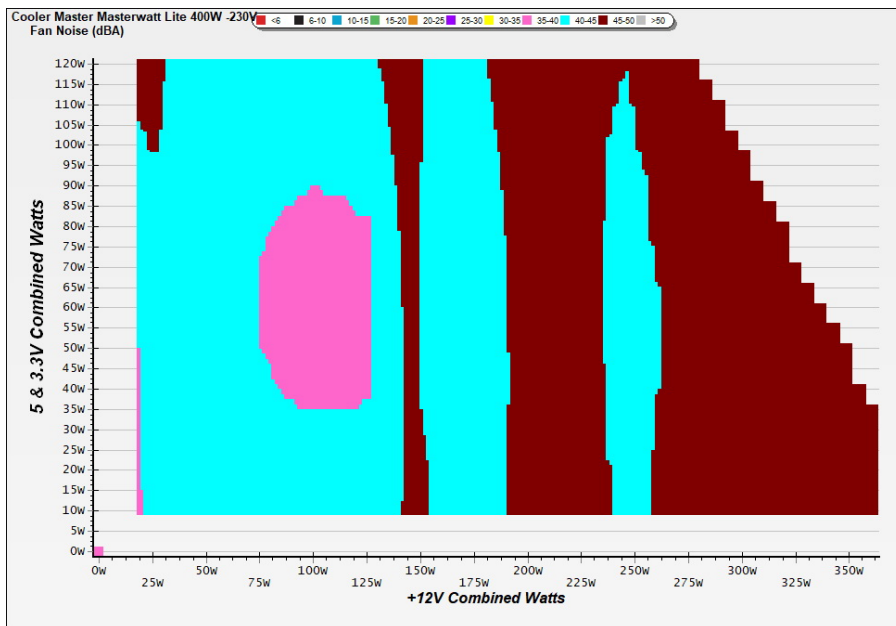
EFFICIENCY GRAPH 230V



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 230V



INFO

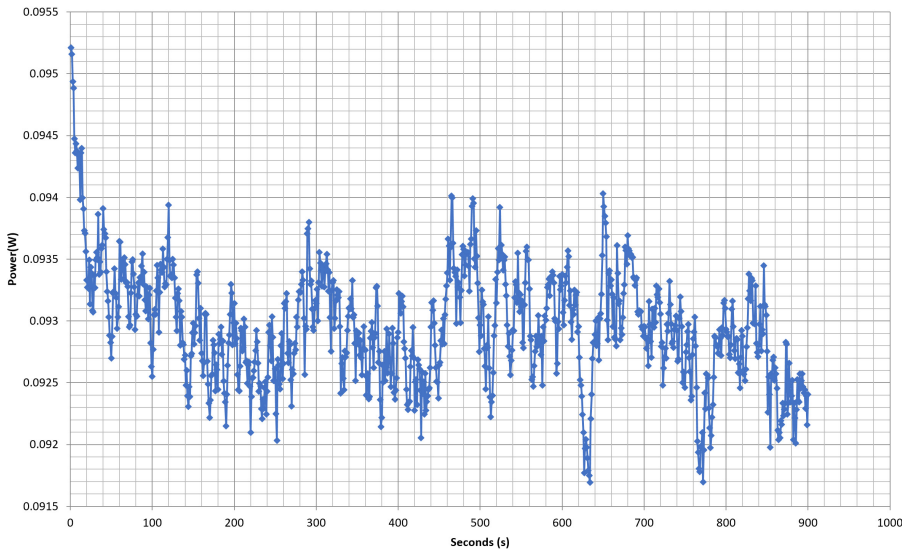
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

All data and graphs included in this test report can be used by any individual on the following conditions:

- > It should be mentioned that the test results are provided by Cybenetics
- > The link to the original test results document should be provided in any case

VAMPIRE POWER -230V

Power - MPX4001ACABW1164700477 - 13/11/2020 - 12:43



INFO

This graph is generated by the PPA Standby Power Analysis software which takes full control of the power analyzer during the whole procedure. This application features all of the EN50564 & IEC62301 test limits for standby power software testing

All data and graphs included in this test report can be used by any individual on the following conditions:

- > It should be mentioned that the test results are provided by Cybenetics
- > The link to the original test results document should be provided in any case

10-110% LOAD TESTS 230V

| Test # | 12V | 5V | 3.3V | 5VSB | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | Temps (In/Out) | PF/AC Volts |
|--------|---------|---------|---------|--------|------------------|------------|--------------------|----------------------|-------------------|----------------|
| 1 | 1.542A | 1.969A | 1.953A | 0.998A | 39.986 | 73.119% | 1433 | 36.5 | 30.14°C | 0.832 |
| | 11.927V | 5.080V | 3.375V | 5.012V | 54.686 | | | | 34.15°C | 230.29V |
| 2 | 4.115A | 2.957A | 2.944A | 1.201A | 80.009 | 80.797% | 1576 | 39.2 | 31.04°C | 0.923 |
| | 11.934V | 5.073V | 3.362V | 4.997V | 99.025 | | | | 35.59°C | 230.28V |
| 3 | 7.037A | 3.448A | 3.447A | 1.405A | 119.938 | 83.718% | 1577 | 39.2 | 31.11°C | 0.953 |
| | 11.921V | 5.075V | 3.351V | 4.983V | 143.265 | | | | 36.29°C | 230.27V |
| 4 | 9.974A | 3.937A | 3.952A | 1.609A | 159.969 | 84.813% | 1738 | 42.3 | 31.90°C | 0.967 |
| | 11.909V | 5.078V | 3.340V | 4.970V | 188.614 | | | | 37.65°C | 230.26V |
| 5 | 12.540A | 4.933A | 4.961A | 1.816A | 199.988 | 85.057% | 1834 | 43.1 | 32.51°C | 0.975 |
| | 11.921V | 5.068V | 3.326V | 4.955V | 235.123 | | | | 38.82°C | 230.26V |
| 6 | 15.094A | 5.931A | 5.975A | 2.000A | 239.811 | 85.016% | 1934 | 45.2 | 32.93°C | 0.980 |
| | 11.934V | 5.059V | 3.313V | 4.940V | 282.076 | | | | 39.49°C | 230.26V |
| 7 | 17.656A | 6.932A | 7.002A | 2.233A | 279.991 | 84.757% | 2028 | 46.6 | 33.56°C | 0.983 |
| | 11.944V | 5.050V | 3.300V | 4.924V | 330.344 | | | | 40.85°C | 230.25V |
| 8 | 20.209A | 7.938A | 8.034A | 2.444A | 319.971 | 84.345% | 2108 | 46.0 | 34.09°C | 0.986 |
| | 11.954V | 5.040V | 3.285V | 4.907V | 379.359 | | | | 42.10°C | 230.25V |
| 9 | 23.229A | 8.428A | 8.548A | 2.450A | 359.901 | 84.035% | 2147 | 47.0 | 34.39°C | 0.987 |
| | 11.943V | 5.042V | 3.274V | 4.897V | 428.276 | | | | 43.26°C | 230.26V |
| 10 | 26.219A | 8.920A | 9.102A | 2.559A | 399.971 | 83.556% | 2188 | 47.9 | 35.24°C | 0.988 |
| | 11.930V | 5.044V | 3.262V | 4.883V | 478.684 | | | | 44.51°C | 230.26V |
| 11 | 29.646A | 8.899A | 9.129A | 2.564A | 439.826 | 83.102% | 2193 | 48.0 | 35.70°C | 0.989 |
| | 11.895V | 5.057V | 3.252V | 4.874V | 529.261 | | | | 45.55°C | 230.25V |
| CL1 | 3.999A | 14.001A | 13.998A | 0.000A | 163.588 | 78.458% | 2086 | 47.2 | 32.40°C | 0.971 |
| | 12.344V | 4.862V | 3.297V | 4.960V | 208.504 | | | | 38.54°C | 230.27V |
| CL2 | 30.000A | 0.999A | 1.000A | 1.000A | 359.918 | 85.106% | 1992 | 45.7 | 35.86°C | 0.987 |
| | 11.548V | 5.236V | 3.305V | 4.942V | 422.907 | | | | 44.81°C | 230.27V |

All data and graphs included in this test report can be used by any individual on the following conditions:

- > It should be mentioned that the test results are provided by Cybenetics
- > The link to the original test results document should be provided in any case

Anex

Cooler Master Masterwatt Lite 400W

20-80W LOAD TESTS 230V

| Test # | 12V | 5V | 3.3V | 5VSB | DC/AC (Watts) | Efficiency | Fan Speed (RPM) | PSU Noise (dB[A]) | PF/AC Volts |
|--------|---------|--------|--------|--------|---------------|------------|-----------------|-------------------|-------------|
| 1 | 1.255A | 0.486A | 0.486A | 0.199A | 19.980 | 64.472% | 1083 | 28.1 | 0.688 |
| | 11.824V | 5.131V | 3.386V | 5.033V | 30.990 | | | | 230.30V |
| 2 | 2.505A | 0.977A | 0.975A | 0.398A | 39.969 | 74.916% | 1293 | 33.6 | 0.826 |
| | 11.846V | 5.119V | 3.379V | 5.024V | 53.352 | | | | 230.30V |
| 3 | 3.755A | 1.468A | 1.466A | 0.598A | 60.000 | 79.889% | 1174 | 30.8 | 0.889 |
| | 11.866V | 5.108V | 3.373V | 5.015V | 75.104 | | | | 230.30V |
| 4 | 4.997A | 1.960A | 1.960A | 0.799A | 79.950 | 82.184% | 1238 | 32.1 | 0.921 |
| | 11.878V | 5.100V | 3.367V | 5.006V | 97.282 | | | | 230.29V |

RIPPLE MEASUREMENTS 230V

| Test | 12V | 5V | 3.3V | 5VSB | Pass/Fail |
|------------|---------|---------|---------|---------|-----------|
| 10% Load | 23.00mV | 16.00mV | 8.20mV | 12.60mV | Pass |
| 20% Load | 25.30mV | 14.50mV | 8.30mV | 45.50mV | Pass |
| 30% Load | 26.30mV | 15.30mV | 8.60mV | 13.20mV | Pass |
| 40% Load | 27.30mV | 15.40mV | 9.10mV | 13.50mV | Pass |
| 50% Load | 29.90mV | 16.60mV | 9.90mV | 13.40mV | Pass |
| 60% Load | 32.50mV | 17.10mV | 10.60mV | 13.40mV | Pass |
| 70% Load | 35.60mV | 19.40mV | 11.50mV | 14.10mV | Pass |
| 80% Load | 40.80mV | 21.50mV | 16.80mV | 13.70mV | Pass |
| 90% Load | 43.20mV | 27.30mV | 17.90mV | 42.90mV | Pass |
| 100% Load | 61.10mV | 32.90mV | 19.40mV | 15.50mV | Pass |
| 110% Load | 61.40mV | 35.10mV | 20.50mV | 15.80mV | Pass |
| Crossload1 | 44.10mV | 29.00mV | 18.30mV | 14.00mV | Pass |
| Crossload2 | 50.30mV | 24.40mV | 13.80mV | 16.10mV | Pass |

All data and graphs included in this test report can be used by any individual on the following conditions:

- > It should be mentioned that the test results are provided by Cybenetics
- > The link to the original test results document should be provided in any case

Anex


Cooler Master Masterwatt Lite 400W



Top side

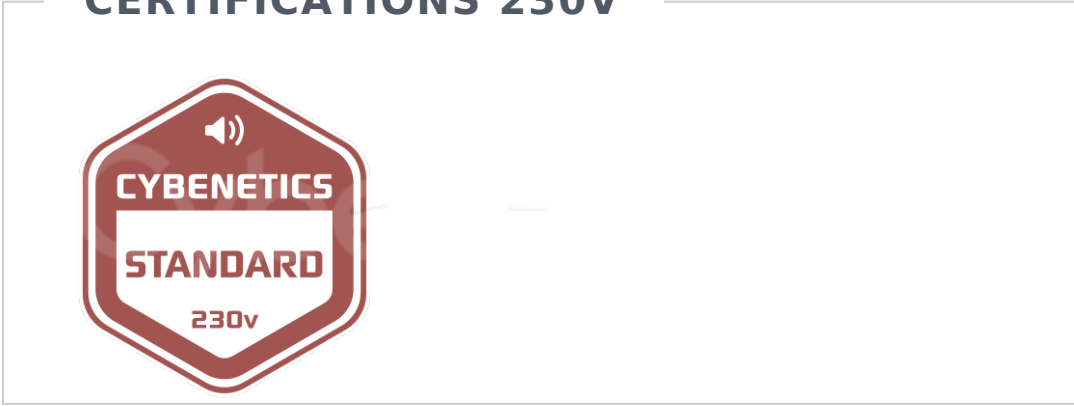


Power specifications label



Aristeidis Bitziopoulos
Lab Director

CERTIFICATIONS 230V



All data and graphs included in this test report can be used by any individual on the following conditions:
 > It should be mentioned that the test results are provided by Cybenetics
 > The link to the original test results document should be provided in any case