Make It Yours.

Cooler Master MasterWatt Maker 1200W MIJ

Serial Number MPZC002AFBAT1164600010

Lab ID 85

Certification ID 2585

Test Result Report ID:

Certificate Issue Date: Jul 4, 2018

115V 230V

Scheme: ETA-EMI PSU

115V 230V

Scheme: LAMBDA PSU

Aristeidis Bitziopoulos, Certification Body General Manager

General Information

Test Equipment

Electronic Loads	Chroma 63601-5 x2 Chroma 63600-2 Chroma 63640-80-80 x10 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	Cooler Master
Model	MasterWatt Maker 1200W MIJ
OEM/ODM	Murata
Serial Number	MPZC002AFBAT1164600010
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	15-6
Rated Frequency (Hz)	50-60

Rated Power (W)	1200
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	135mm LDB Fan (Silencio FP)
Semi-Passive Operation	✓
Cybenetics Testing Information	
Lab ID	85
Date of receipt	Jun 24, 2018
Testing Date	Jul 2, 2018
Report Issued Date	Jul 4, 2018
DUT Notes	Low PF and 5VSB Efficiency
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
ATX connector 20+4 pin (700mm)	1	1	18-22AWG
4+4 pin EPS12V (700mm) / 4+4 pin EPS12V (800mm)	2	2	16AWG
6+2 pin PCIe (760mm)	4	4	16AWG
6+2 pin PCIe (610mm+120mm)	4	8	16-18AWG
SATA (450mm+110mm+110mm+110mm)	2	8	18AWG
SATA (550mm+110mm+110mm+110mm)	2	8	18AWG
4 pin Molex (550mm+120mm+120mm+120mm)	2	8	18AWG

4 pin Molex (450mm+100mm+100mm+100mm) / FDD Adapter (+100mm)	1	4 / 1	18 / 22AWG

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	25	25	100	3.5	0.5
	Watts	130		1200	17.5	6
Total Max. Power (W)		1200				

Parts Description

General Data	
Manufacturer (OEM)	Murata Manufacturing
Platform Model	-
Primary Side	
Transient Filter	6x Y caps, 4x X caps, 2x CM chokes, 1x MOV, 1x CAP200DG
Inrush Protection	NTC Thermistor & Diode
Bridge Rectifier(s)	1x Shindengen D25XB60 (800V, 3.5A @ 25°C - without heatsink)
APFC MOSFETS	4x Infineon IPA65R045C7 (700V, 11A @ 100°C, 0.045Ohm)
APFC Boost Diode	2x SiC SCS220AM (650V, 20A @ 97°C)
Hold-up Cap(s)	2x Chemi-Con (420V, 830uF & 650uF - 1450uF combined, 2000h @ 105 °C, KMW)
Main Switchers	2x Alpha & Omega AOTF27S60 (700V, 110A @ 150°C, 0.16Ohm)
CMOS Logic Shifter	On Semiconductor MC74VHCT50A
MCU1	Microchip PIC24FJ64 (16-bit, 16 MIPS, 64KB Flash, 8KB RAM)
MCU2	Microchip PIC24FJ32GA (16-bit, 16 MIPS, 16KB Flash, 4KB RAM)
APFC Controller	Texas Instruments UCC28070
Resonant Controller	On Semiconductors NCP1399
Topology	Primary side: Bridgeless & Interleaved APFC, Half-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	unknown number of FETs
Driver IC	IR1168S (max 500 KHz)

5V & 3.3V	DC-DC Converters: 2x Toshiba TPHR9003NL (30V, 220A @ 150°C, 1.1mOhm) Buck Controller: 1x TPS40101
Filtering Capacitors	Electrolytics: Nippon Chemi-Con (1-5,000 @ 105°C, KZE), Rubycon (105°C, ZLH, YXM), Polymers: Chemi-Con
Supervisor IC	MCUs
Fan Model	Cooler Master FA13525L 12LPA (135mm, 12V, 0.50A, 2940 RPM, Loop Dynamic Bearing)
5VSB Circuit	
Switching FET	1x Fairchild FQPF 8N80C (800V, 8A, 1.55Ohm)
Rectifier	1x MOSPEC MBRF20100 SBR (100V, 20A)
Step-Down Converter	Texas Instruments TPS54332 (3.5V - 28V Input, 3.5A)

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	✓

Performance Summary 115V

Accredited	
Average Efficiency (>1450 load combinations)	91.243%
Average Noise Output (>1450 Load Combinations)	-
Average PF (>1450 Load Combinations)	0.956
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
Standby Power Consumption	0.0624W
Non-Accredited	
12V Ripple (Full Load)	30.54mV
5V Ripple (Full Load)	15.87mV
3.3V Ripple (Full Load)	14.63mV
5VSB Ripple (Full Load)	16.74mV
12V Load Regulation	0.52%

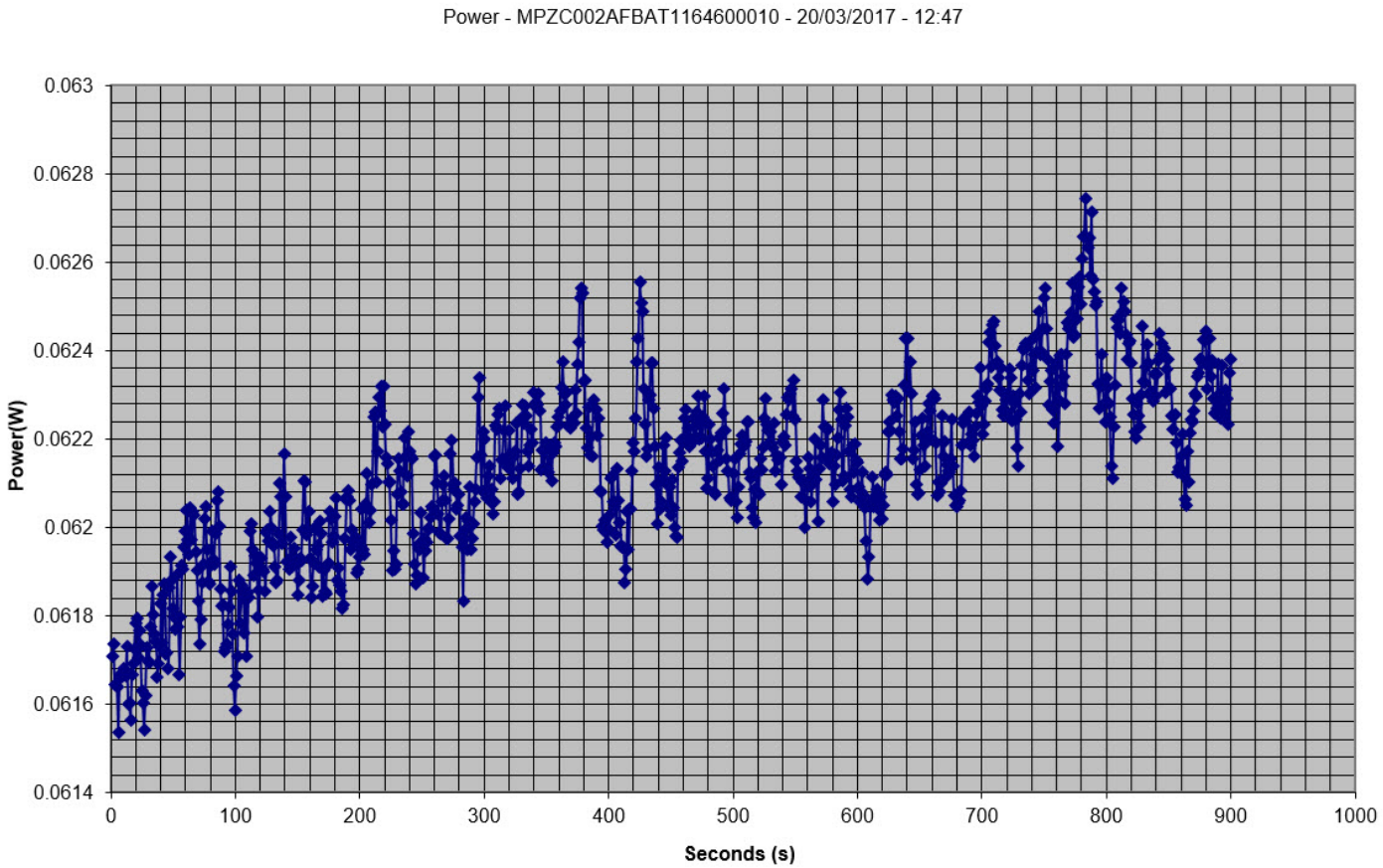
5V Load Regulation	0.12%
3.3V Load Regulation	2.12%
5VSB Load Regulation	1.55%
Inrush Current	26.499A

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	23.954
AC Loss to PWR_OK Hold Up Time (ms)	21.9
PWR_OK Inactive to DC Loss Delay (ms)	2.054

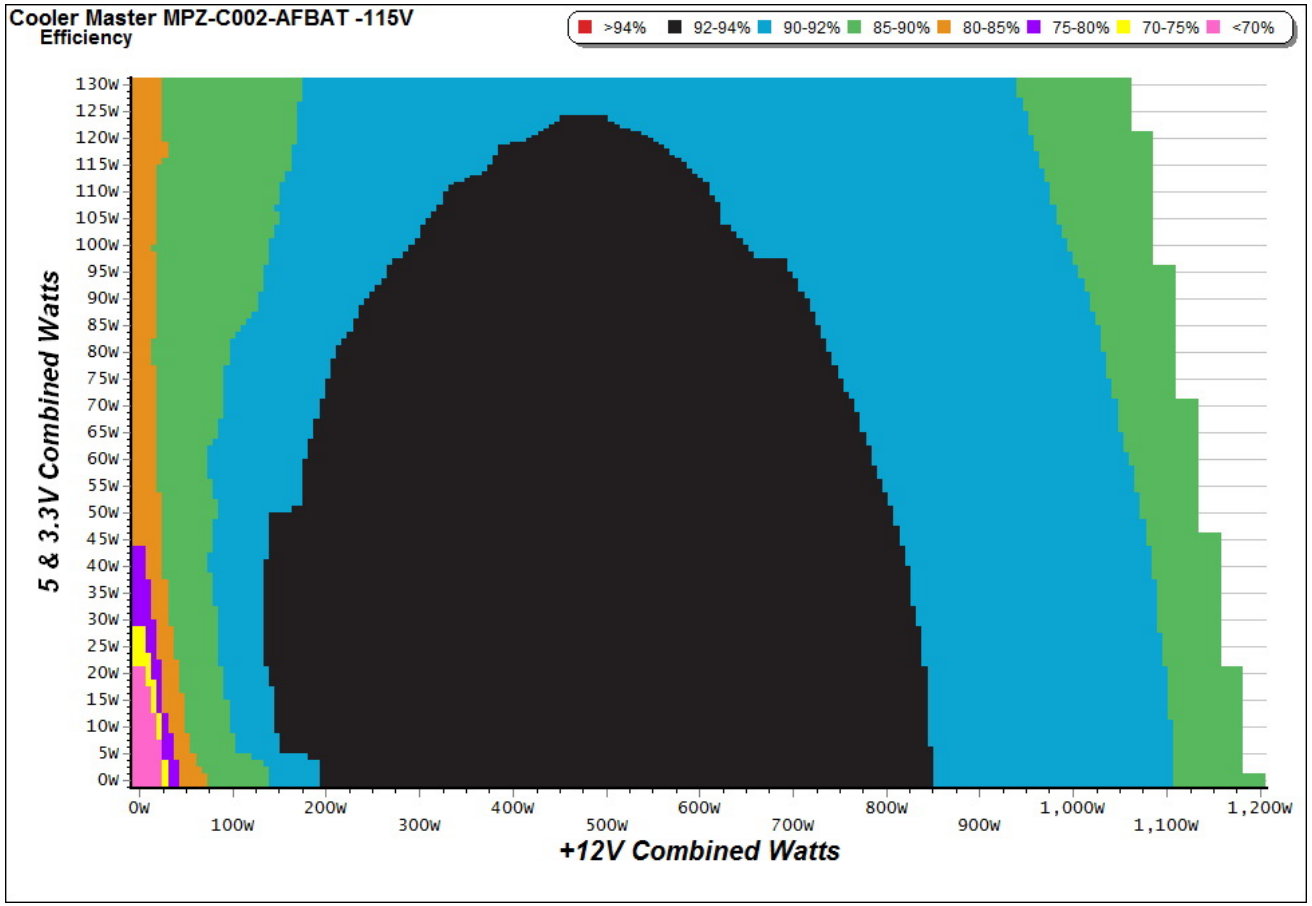
Stromverbrauch im Ruhezustand

Graphs 115V



Efficiency Graph

115V

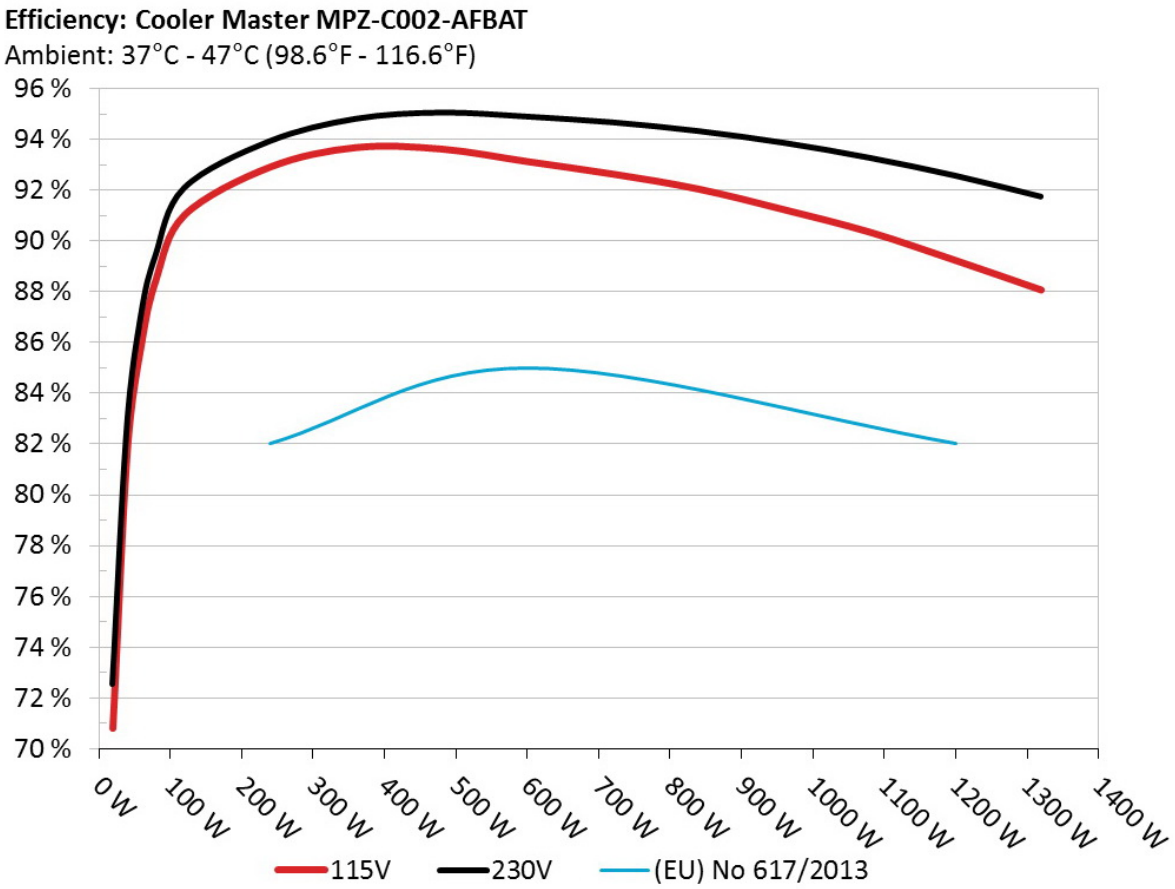


INFO

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

Indicative Performance

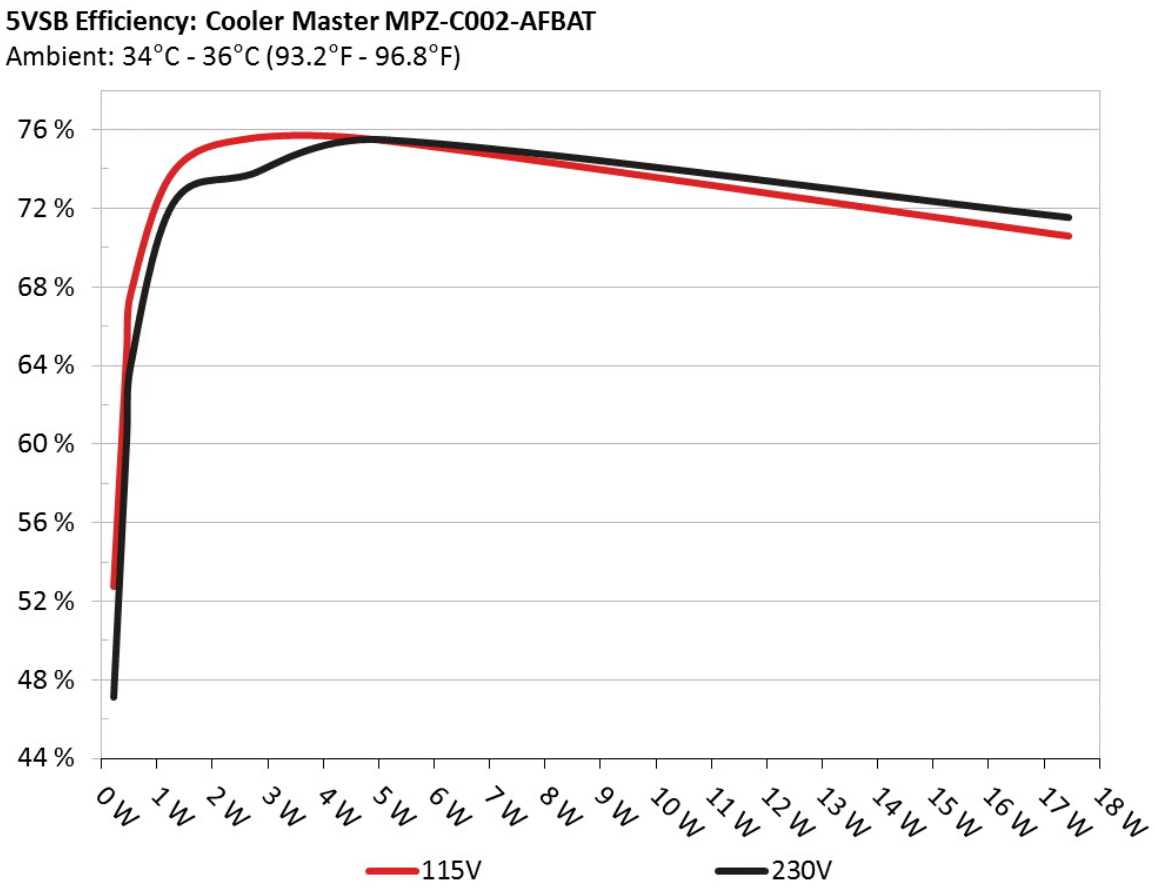
Efficiency under high ambient temperature



INFO

The PSU’s efficiency under high ambient temperatures

5VSB Efficiency



INFO

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	0.041A	0.211	52.750%	0.027
	5.095V	0.400		115.12V

2	0.087A	0.443	64.577%	0.045
	5.092V	0.686		115.12V
3	0.532A	2.698	75.574%	0.207
	5.074V	3.570		115.13V
4	3.502A	17.439	70.569%	0.504
	4.980V	24.712		115.11V

Supplementary Tests (For Reference)

Typical Load Tests 115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	Temps (In/Out)	PF/AC Volts
1	8.174A	1.954A	1.972A	0.981A	119.773	91.028%	0	45.19°C	0.701
	12.017V	5.104V	3.343V	5.078V	131.578			41.14°C	115.11V
2	17.383A	2.929A	2.963A	1.180A	239.611	92.922%	0	46.02°C	0.977
	12.011V	5.104V	3.336V	5.076V	257.863			41.85°C	115.09V
3	26.973A	3.427A	3.479A	1.379A	359.871	93.693%	0	46.52°C	0.980
	12.005V	5.103V	3.329V	5.070V	384.095			42.46°C	115.08V
4	36.546A	3.917A	3.971A	1.575A	479.634	93.635%	0	47.50°C	0.984
	11.998V	5.102V	3.322V	5.066V	512.238			43.52°C	115.07V
5	45.794A	4.902A	4.975A	1.776A	599.608	93.142%	640	42.33°C	0.988
	11.991V	5.102V	3.314V	5.065V	643.757			45.13°C	115.06V
6	55.047A	5.879A	5.983A	1.974A	719.505	92.648%	850	42.79°C	0.991
	11.985V	5.101V	3.307V	5.062V	776.603			45.20°C	115.06V
7	64.308A	6.864A	7.001A	2.169A	839.352	92.057%	975	43.52°C	0.993
	11.978V	5.100V	3.298V	5.060V	911.777			45.75°C	115.08V
8	73.579A	7.849A	8.020A	2.370A	959.301	91.243%	1140	44.38°C	0.994
	11.972V	5.100V	3.291V	5.059V	1051.365			46.39°C	115.06V
9	83.296A	8.335A	8.553A	2.369A	1079.306	90.355%	1320	45.62°C	0.996
	11.966V	5.099V	3.285V	5.061V	1194.516			47.60°C	115.06V
10	92.564A	8.826A	9.063A	3.481A	1199.151	89.243%	1500	46.99°C	0.996
	11.959V	5.099V	3.277V	5.020V	1343.695			48.70°C	115.07V

11	102.655A	8.826A	9.078A	3.484A	1319.120	88.076%	1500	47.32°C	0.997
	11.952V	5.099V	3.271V	5.020V	1497.699			49.53°C	115.07V
CL1	0.099A	16.026A	16.006A	0.003A	135.999	83.196%	1015	45.78°C	0.693
	12.021V	5.096V	3.319V	5.200V	163.469			47.80°C	115.13V
CL2	99.928A	1.003A	1.003A	1.002A	1208.249	89.251%	1500	45.79°C	0.996
	11.956V	5.104V	3.295V	5.074V	1353.760			47.75°C	115.07V

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)	PF/AC Volts
1	1.213A	0.482A	0.476A	0.196A	19.640	70.782%	0	0.674
	12.024V	5.106V	3.350V	5.099V	27.747			115.11V
2	2.456A	0.970A	0.985A	0.390A	39.762	81.724%	0	0.684
	12.022V	5.105V	3.348V	5.095V	48.654			115.11V
3	3.696A	1.460A	1.491A	0.585A	59.850	85.995%	0	0.713
	12.021V	5.105V	3.346V	5.090V	69.597			115.11V
4	4.927A	1.954A	1.971A	0.786A	79.784	88.459%	0	0.691
	12.019V	5.105V	3.345V	5.086V	90.193			115.12V

The results above are not used in the certification process

Ripple Measurements 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	17.4 mV	8.9 mV	9.8 mV	5.2 mV	Pass
20% Load	15.4 mV	9.5 mV	10.0 mV	5.5 mV	Pass
30% Load	17.4 mV	9.2 mV	9.7 mV	6.1 mV	Pass
40% Load	17.5 mV	10.3 mV	9.3 mV	6.5 mV	Pass
50% Load	22.5 mV	12.4 mV	14.7 mV	10.4 mV	Pass
60% Load	18.5 mV	10.5 mV	9.9 mV	9.3 mV	Pass
70% Load	23.3 mV	12.5 mV	11.5 mV	10.1 mV	Pass
80% Load	23.0 mV	13.0 mV	11.8 mV	11.4 mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	25.5 mV	13.5 mV	12.3 mV	13.1 mV	Pass
100% Load	30.5 mV	15.9 mV	14.6 mV	16.7 mV	Pass
110% Load	34.6 mV	17.5 mV	16.1 mV	18.3 mV	Pass
Crossload 1	22.9 mV	11.5 mV	11.3 mV	9.3 mV	Pass
Crossload 2	30.9 mV	13.3 mV	15.3 mV	15.2 mV	Pass

The results above are not used in the certification process

Cooler Master MasterWatt Maker 1200W MIJ

Top side

Power specifications label

Cybenetics bietet freiwillige Zertifizierungsprogramme für Netzteile – ETA für Effizienz, LAMBDA für Lautstärke und SAFE für Sicherheit und korrekten Betrieb – sowie für Kühlprodukte mit DELTA für die Schalldämmung von Gehäusen und PHI für Luftstrom und statischen Druck von Lüftern

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