



Make It Yours.

Cooler Master MWE Bronze 500

Serial Number MPE5001ACAAB1191400001

Lab ID CM19500053

Certification ID 25729

Test Result Report ID:

Certificate Issue Date: Jun 21, 2019

115V

230V

Scheme: ETA-EMI PSU



115V

230V



Scheme: LAMBDA PSU

A handwritten signature in blue ink, appearing to read "A. Bitziopoulos".

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	MWE Bronze 500
OEM/ODM	Gospower
Serial Number	MPE5001ACAAB1191400001
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	8-4
Rated Frequency (Hz)	50-60

Rated Power (W)	500
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fixed cables
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	120mm Rifle Bearing Fan (DF1202512SELN)
Semi-Passive Operation	✓
Cybenetics Testing Information	
Lab ID	CM19500053
Date of receipt	Jul 5, 2019
Testing Date	Nov 6, 2019
Report Issued Date	Jun 21, 2019
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors(Non-accredited measurements)

Captive Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (620mm)	1	1	18-20AWG	No
4+4 pin EPS12V (630mm)	1	1	18AWG	No
6+2 pin PCIe (530mm+120mm)	1	2	18AWG	No
SATA (520mm+120mm+120mm)	2	6	18AWG	No
4-pin Molex (510mm+120mm+120mm+120mm)	1	4	18AWG	No
AC Power Cord (1400mm) - C13 coupler	1	1	18AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	41.6	3	0.3
	Watts	120		499.2	15	3.6
Total Max. Power (W)		500				

Parts Description

General Data	
Manufacturer (OEM)	Gospower
PCB Type	Single Sided
Primary Side	
Transient Filter	3x Y caps, 2x X caps, 2x CM chokes
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	1x GBU1508 (800V, 15A @ 100°C)
APFC MOSFETS	2x Sanrise Tech SRC60R200 (630V, 7.1A @ 125°C, 0.20hm)
APFC Boost Diode	1x Jilin Sino Microelectronics 15F60UHF (600V, 15A @ 100°C)
Hold-up Cap(s)	1x Elite (420V, 390uF, 2000h @ 85°C, GM)
Main Switchers	2x Jilin Sino Microelectronics JCS13N50FC (500V, 8A @ 100°C, 0.49Ohm)
APFC Controller	Champion CM6500UNX
Resonant Controllers	Champion CU6901V
Topology	Primary side: Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	4x Nce Power NCE4080 (40V, 56A @ 100°C, 6.5mOhm)
5V & 3.3V	DC-DC Converters: 4x IPS FTD05N03NA (30V, 75A @ 100°C, 6mOhm) PWM Controllers: ANPEC APW7159C
Filtering Capacitors	Electrolytics: 5x Elite (2-5,000h @ 105°C, ED), 4x Elite (2,000h @ 105°C, EL), 2x CapXon (2-5,000h @ 105°C, KF), 1x CapXon (3-10,000h @ 105°C, GH) Polymers: CapXon
Supervisor IC	IN1S313I-SAG
Fan Model	Thermal Control DF1202512SELN (120mm, 12V, 0.25A, Rifle Bearing Fan)
5VSB Circuit	

Rectifier	-
Standby PWM Controller	On-Bright OB2365SP

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)	85.601%
Average Noise Output (>1450 Load Combinations)	30.07dBA
Average PF (>1450 Load Combinations)	0.974
Efficiency With 10W (≤500W) or 2% (>500W) Load	68.580%
Standby Power Consumption	0.0756W
Non-Accredited	
12V Ripple (Full Load)	48.99mV
5V Ripple (Full Load)	24.23mV
3.3V Ripple (Full Load)	19.35mV
5VSB Ripple (Full Load)	39.17mV
12V Load Regulation	1.07%
5V Load Regulation	1.96%
3.3V Load Regulation	2.26%
5VSB Load Regulation	2.79%
Inrush Current	62.537A

230V

Accredited		
Average Efficiency (>1450 load combinations)	87.864%	
Average Noise Output (>1450 Load Combinations)	29.96dBA	
Average PF (>1450 Load Combinations)	0.896	
Efficiency With 10W (≤500W) or 2% (>500W) Load	-	
Standby Power Consumption	0.1812W	
Non-Accredited		
12V Ripple (Full Load)	50.85mV	
5V Ripple (Full Load)	23.53mV	
3.3V Ripple (Full Load)	18.94mV	
5VSB Ripple (Full Load)	37.88mV	
12V Load Regulation	1.09%	
5V Load Regulation	1.94%	
3.3V Load Regulation	2.26%	
5VSB Load Regulation	2.79%	
Inrush Current	71.267A	
Hold-Up Time & PWR_OK Signal	17.20ms	
AC Loss to PWR_OK Hold Up Time	15.80ms	
PWR_OK Inactive to DC Loss Delay	1.40ms	
OPP (0.00°C / 0.00°C)	-	-

Hold-Up Time & PWR_OK Signal

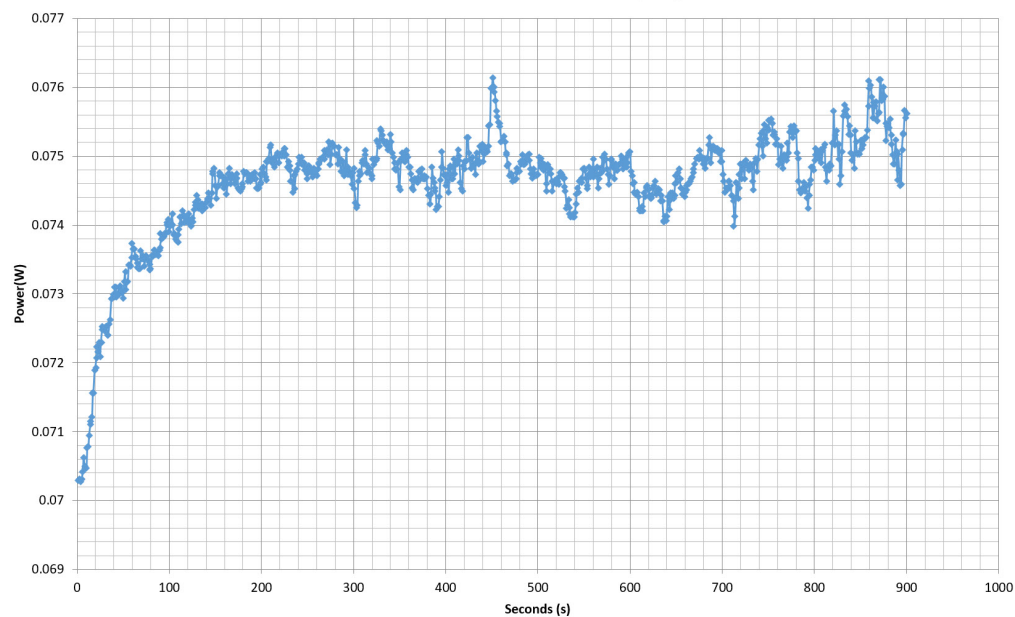
Hold-Up Time (ms)	17.2
AC Loss to PWR_OK Hold Up Time (ms)	15.8
PWR_OK Inactive to DC Loss Delay (ms)	1.4



Graphs

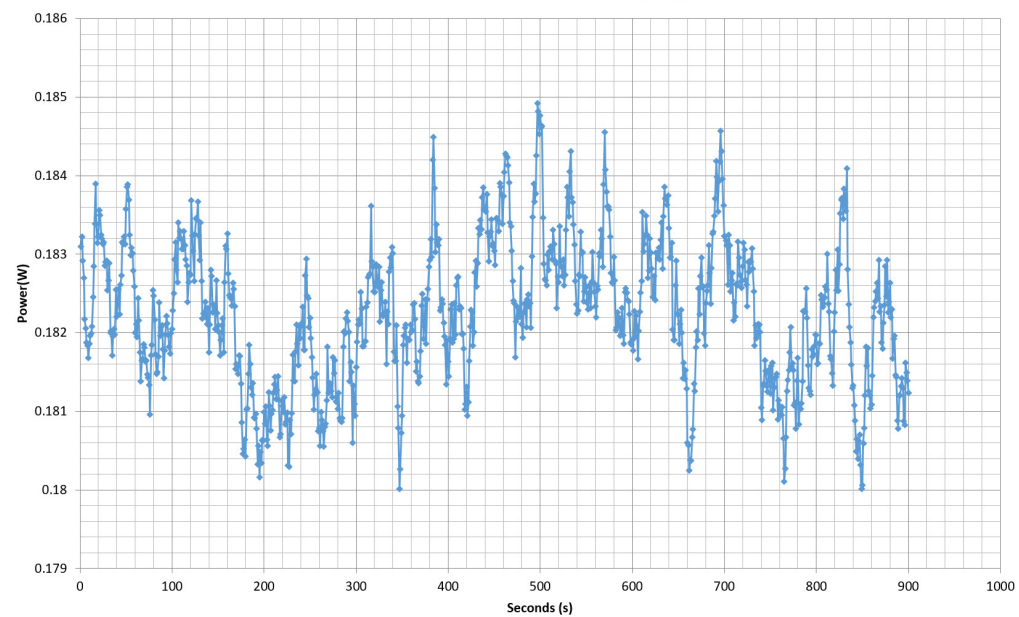
115V

Power - MPE5001ACAAB1191400001 - 07/06/2019 - 10:05



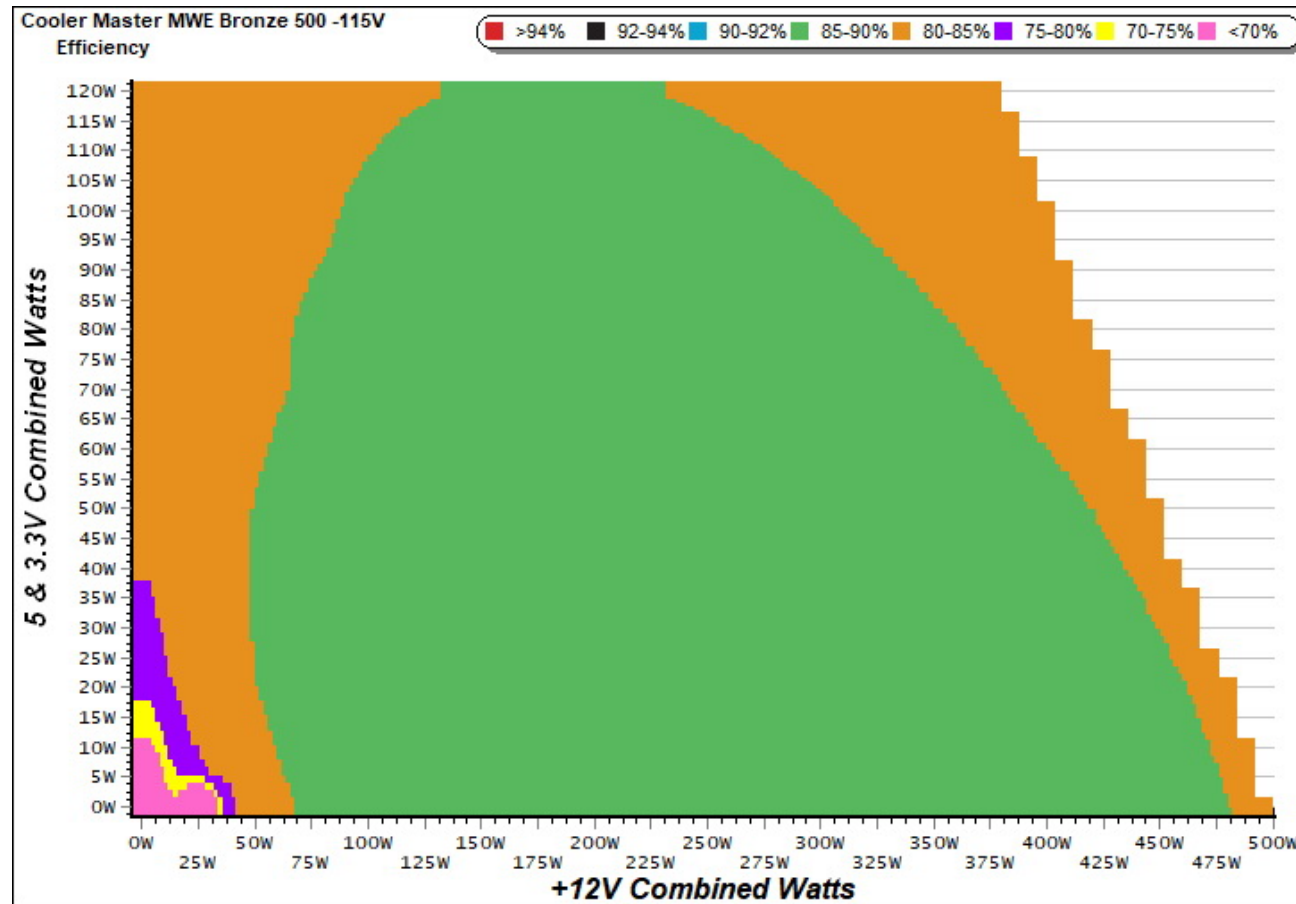
230V

Power - MPE5001ACAAB1191400001 - 07/06/2019 - 10:05



Efficiency Graph

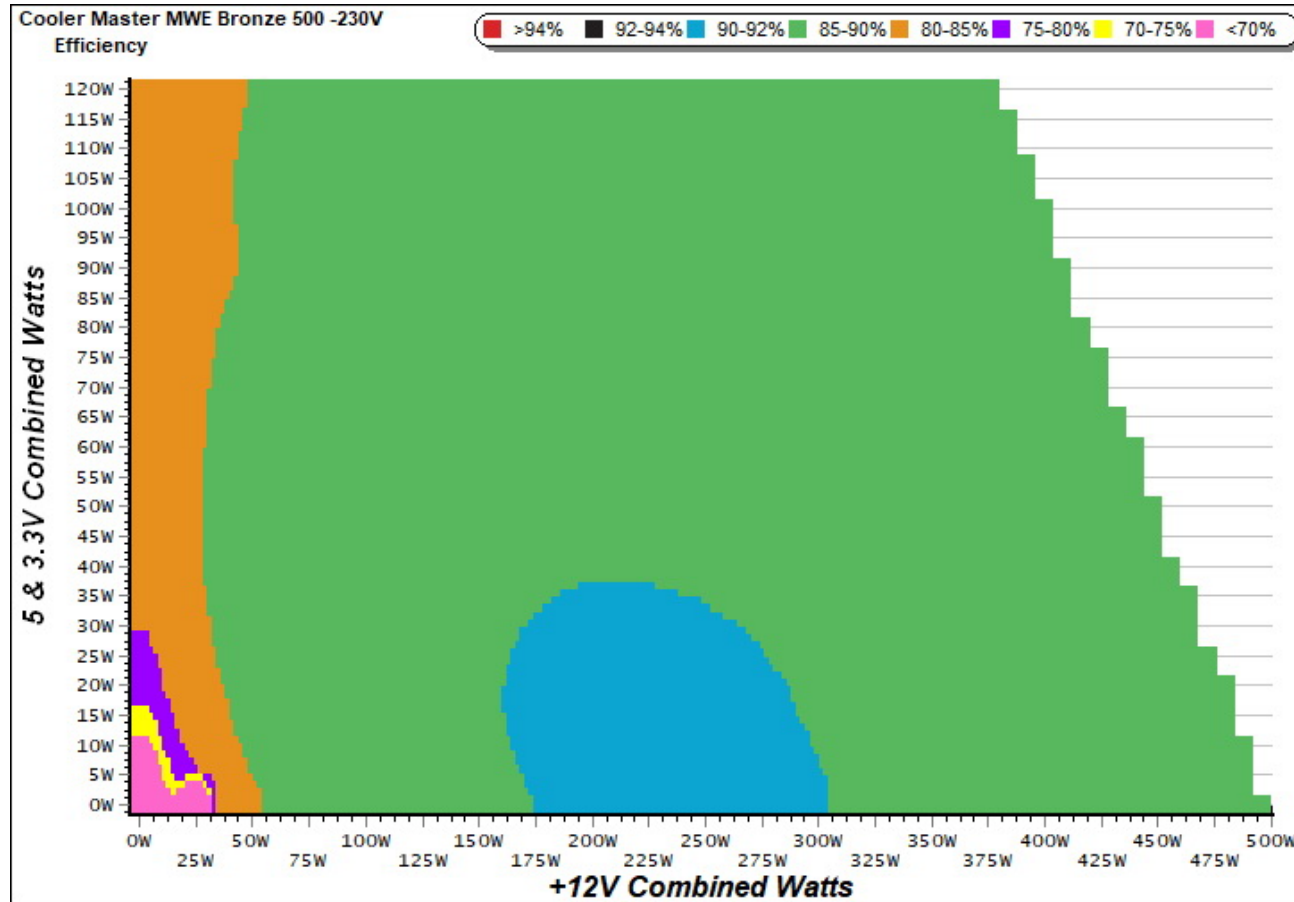
115V



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

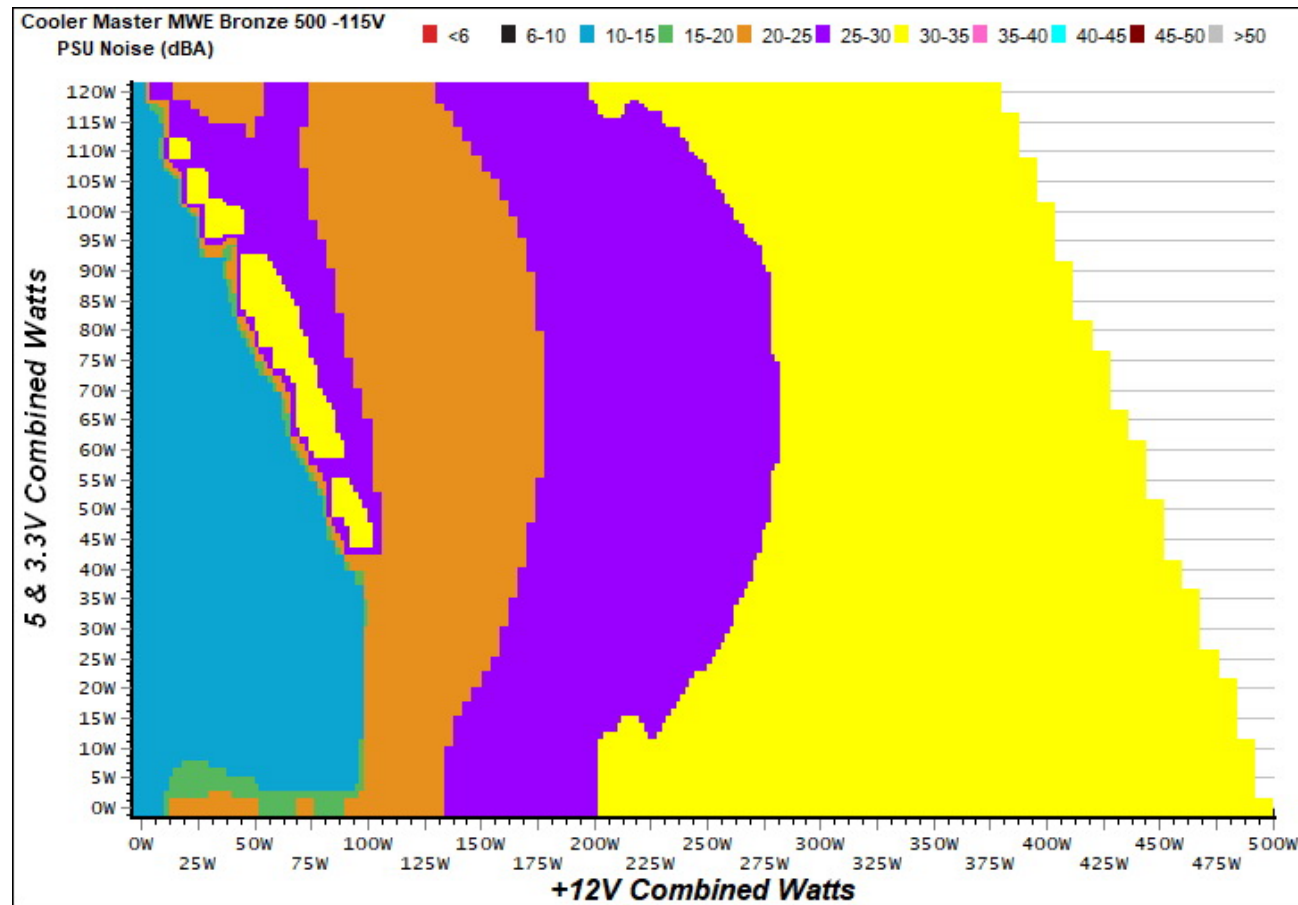


INFO

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

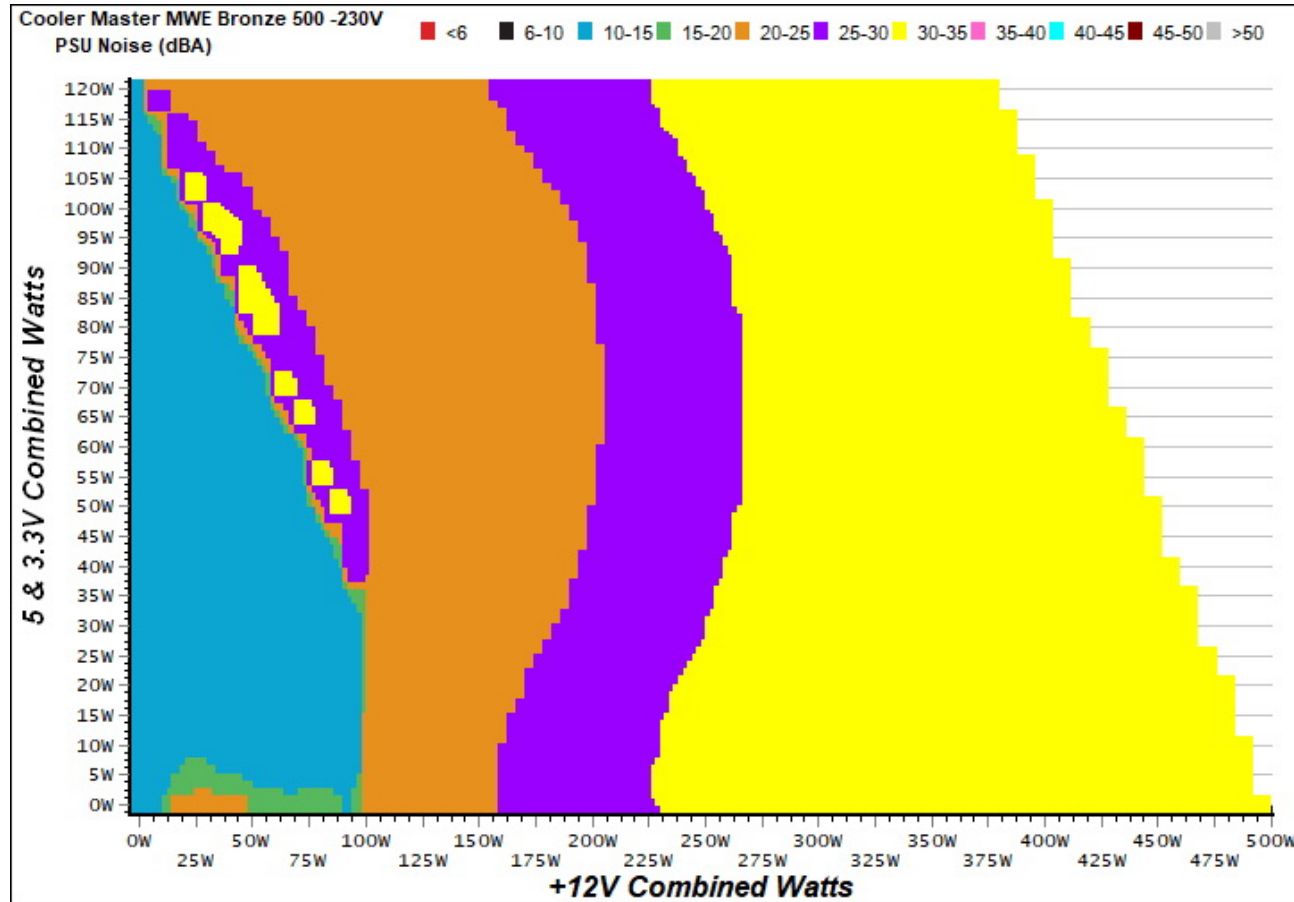
115V



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

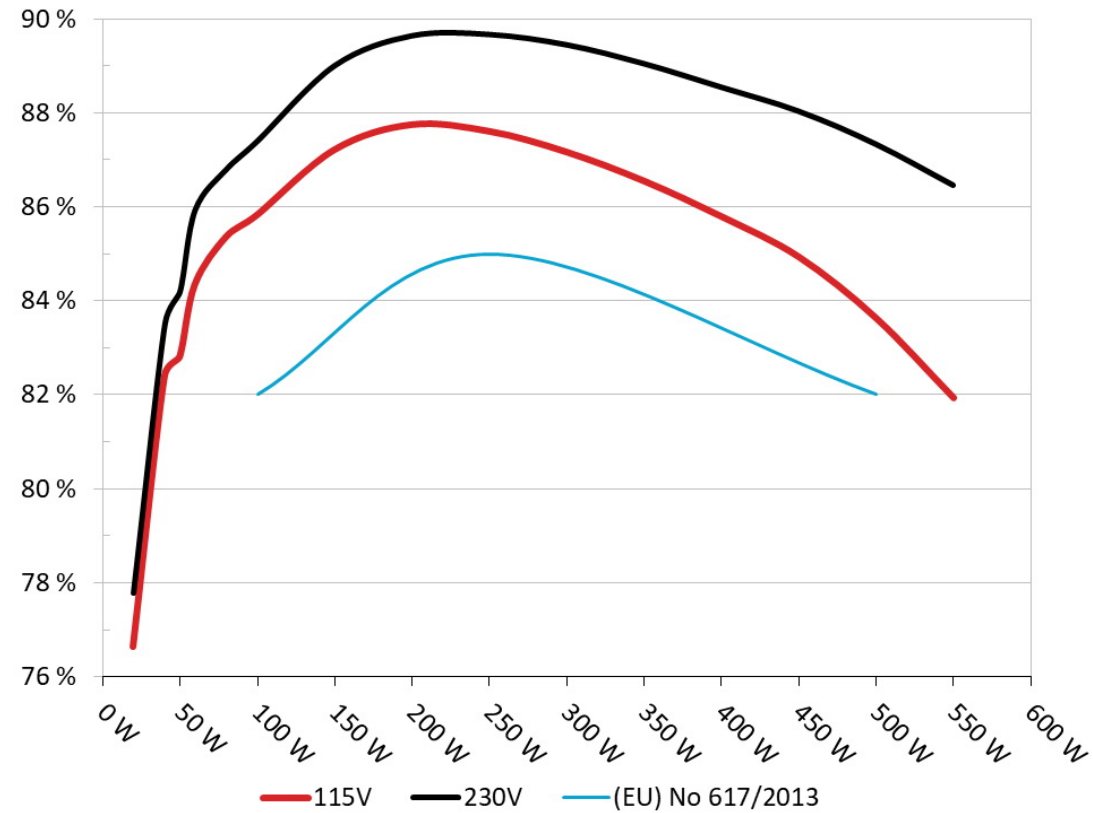
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

Indicative Performance

Efficiency under high ambient temperature

Efficiency: Cooler Master MWE Bronze 500

Ambient: 32°C - 40°C (89.6°F - 104°F)



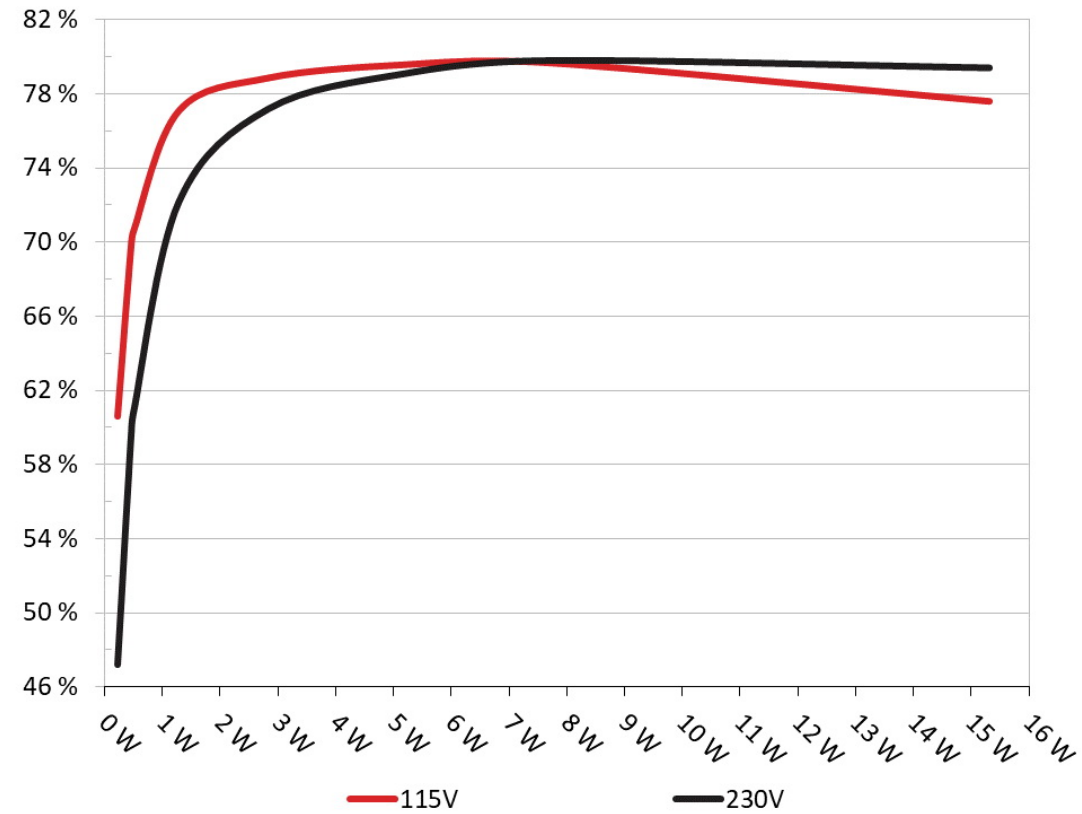
INFO

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 MWE Bronze 500

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.

5VSB Efficiency (ERP LOT 3/6 & CEC)

115V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.234	60.622%	0.025
	5.178V	0.386		115.13V
2	0.090A	0.467	69.806%	0.044
	5.177V	0.669		115.13V
3	0.550A	2.842	78.835%	0.207
	5.166V	3.605		115.13V
4	1.000A	5.156	79.543%	0.310
	5.155V	6.482		115.12V
5	1.500A	7.715	79.643%	0.376
	5.142V	9.687		115.13V
6	3.000A	15.314	77.579%	0.455
	5.105V	19.740		115.14V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.234	47.177%	0.010
	5.178V	0.496		230.29V
2	0.090A	0.467	59.566%	0.015
	5.177V	0.784		230.28V
3	0.550A	2.842	77.186%	0.070
	5.166V	3.682		230.29V
4	1.000A	5.156	79.068%	0.120
	5.155V	6.521		230.29V
5	1.500A	7.715	79.799%	0.169
	5.142V	9.668		230.29V
6	3.000A	15.314	79.401%	0.277
	5.105V	19.287		230.29V

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
1	2.319A	1.999A	1.966A	0.972A	49.779	82.806%	0	<6.0	40.22°C	0.913
	12.149V	5.006V	3.356V	5.144V	60.115				34.60°C	115.13V
2	5.688A	3.005A	2.956A	1.169A	99.854	85.826%	0	<6.0	41.17°C	0.964
	12.122V	4.995V	3.348V	5.131V	116.345				34.88°C	115.13V
3	9.393A	3.513A	3.444A	1.367A	149.764	87.212%	1044	24.2	35.47°C	0.968
	12.110V	4.985V	3.340V	5.120V	171.725				42.51°C	115.13V
4	13.107A	4.020A	3.962A	1.566A	199.744	87.746%	1121	26.2	35.80°C	0.972
	12.096V	4.975V	3.332V	5.109V	227.638				43.70°C	115.13V
5	16.500A	5.040A	4.965A	1.766A	249.881	87.604%	1251	29.1	36.05°C	0.977
	12.083V	4.963V	3.323V	5.096V	285.238				44.55°C	115.13V
6	19.897A	6.058A	5.973A	1.968A	299.962	87.162%	1460	33.0	36.77°C	0.981
	12.070V	4.952V	3.315V	5.084V	344.142				45.60°C	115.13V
7	23.302A	7.085A	6.985A	2.170A	350.078	86.543%	1487	33.1	37.36°C	0.984
	12.058V	4.941V	3.306V	5.071V	404.515				46.52°C	115.12V
8	26.711A	8.116A	8.005A	2.374A	400.177	85.786%	1486	33.1	37.73°C	0.986
	12.046V	4.930V	3.298V	5.057V	466.485				47.40°C	115.13V
9	30.524A	8.636A	8.508A	2.377A	449.881	84.931%	1488	33.1	38.53°C	0.988
	12.035V	4.923V	3.292V	5.049V	529.701				48.80°C	115.12V
10	34.115A	9.160A	9.044A	2.986A	499.885	83.626%	1489	33.1	39.31°C	0.989
	12.023V	4.914V	3.284V	5.026V	597.760				50.30°C	115.12V
11	38.310A	9.170A	9.057A	2.990A	549.897	81.932%	1489	33.1	40.30°C	0.989
	12.012V	4.909V	3.279V	5.018V	671.163				51.75°C	115.12V
CL1	0.143A	14.005A	13.999A	0.000A	117.225	80.682%	1484	33.1	36.04°C	0.973
	12.110V	4.931V	3.317V	5.136V	145.292				44.24°C	115.13V

CL2	41.594A	1.004A	1.000A	1.000A	513.715	84.298%	1490	33.1	39.89°C	0.989
	12.029V	4.963V	3.309V	5.089V	609.402				50.91°C	115.12V

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
1	2.320A	1.998A	1.966A	0.972A	49.785	84.197%	0	<6.0	39.94°C	0.600
	12.150V	5.005V	3.356V	5.144V	59.129				34.11°C	230.29V
2	5.690A	3.004A	2.956A	1.170A	99.865	87.397%	0	<6.0	40.97°C	0.782
	12.120V	4.994V	3.348V	5.131V	114.266				34.55°C	230.29V
3	9.397A	3.513A	3.442A	1.368A	149.775	88.999%	1021	24.1	35.06°C	0.852
	12.107V	4.984V	3.339V	5.120V	168.288				42.00°C	230.29V
4	13.109A	4.023A	3.964A	1.566A	199.742	89.634%	1090	24.8	35.51°C	0.897
	12.093V	4.974V	3.331V	5.109V	222.841				42.81°C	230.29V
5	16.505A	5.040A	4.967A	1.766A	249.872	89.662%	1246	28.5	36.25°C	0.921
	12.079V	4.962V	3.322V	5.096V	278.681				43.89°C	230.29V
6	19.901A	6.062A	5.974A	1.968A	299.953	89.442%	1427	32.4	36.84°C	0.935
	12.067V	4.951V	3.313V	5.083V	335.360				44.86°C	230.29V
7	23.308A	7.090A	6.990A	2.171A	350.074	89.040%	1489	33.1	37.03°C	0.945
	12.054V	4.939V	3.304V	5.070V	393.163				45.60°C	230.28V
8	26.720A	8.119A	8.010A	2.374A	400.178	88.539%	1489	33.1	37.87°C	0.953
	12.042V	4.928V	3.296V	5.056V	451.979				47.16°C	230.29V
9	30.538A	8.640A	8.514A	2.378A	449.887	88.031%	1494	33.2	38.12°C	0.957
	12.030V	4.920V	3.289V	5.048V	511.055				48.20°C	230.29V
10	34.131A	9.166A	9.053A	2.987A	499.886	87.331%	1495	33.2	39.90°C	0.959
	12.017V	4.912V	3.281V	5.024V	572.405				50.63°C	230.29V
11	38.326A	9.175A	9.064A	2.992A	549.904	86.459%	1490	33.1	40.46°C	0.964
	12.007V	4.907V	3.276V	5.016V	636.027				51.91°C	230.29V
CL1	0.145A	14.004A	14.000A	0.000A	117.191	82.358%	1482	33.1	36.15°C	0.827
	12.107V	4.929V	3.315V	5.135V	142.295				43.88°C	230.30V

CL2	41.595A	1.003A	1.001A	1.000A	513.516	87.965%	1494	33.2	39.31°C	0.960
	12.024V	4.962V	3.308V	5.089V	583.772				50.37°C	230.29V

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])	PF/AC Volts
1	1.200A	0.500A	0.475A	0.194A	19.672	76.637%	0	<6.0	0.737
	12.135V	5.017V	3.364V	5.170V	25.669				115.13V
2	2.451A	0.998A	0.982A	0.388A	40.067	82.408%	0	<6.0	0.877
	12.143V	5.012V	3.360V	5.162V	48.620				115.13V
3	3.633A	1.497A	1.460A	0.582A	59.548	84.344%	0	<6.0	0.927
	12.153V	5.007V	3.357V	5.154V	70.601				115.13V
4	4.893A	2.000A	1.969A	0.777A	79.953	85.365%	0	<6.0	0.950
	12.129V	5.003V	3.353V	5.146V	93.660				115.13V

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])	PF/AC Volts
1	1.201A	0.500A	0.476A	0.194A	19.688	77.787%	0	<6.0	0.356
	12.135V	5.017V	3.364V	5.170V	25.310				230.30V
2	2.453A	0.997A	0.982A	0.388A	40.081	83.519%	0	<6.0	0.536
	12.141V	5.012V	3.360V	5.162V	47.990				230.29V
3	3.634A	1.497A	1.460A	0.582A	59.552	85.929%	0	<6.0	0.647
	12.151V	5.007V	3.356V	5.154V	69.304				230.29V
4	4.895A	2.001A	1.968A	0.778A	79.965	86.801%	0	<6.0	0.724
	12.126V	5.002V	3.352V	5.145V	92.125				230.29V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	88.0 mV	20.8 mV	12.2 mV	19.3 mV	Pass
20% Load	88.9 mV	21.0 mV	13.3 mV	18.4 mV	Pass
30% Load	35.1 mV	19.6 mV	12.5 mV	20.6 mV	Pass
40% Load	32.5 mV	18.9 mV	12.6 mV	24.8 mV	Pass
50% Load	29.9 mV	18.3 mV	13.3 mV	27.4 mV	Pass
60% Load	29.7 mV	19.4 mV	15.6 mV	30.7 mV	Pass
70% Load	26.5 mV	18.5 mV	13.2 mV	27.1 mV	Pass
80% Load	34.2 mV	21.2 mV	18.4 mV	33.7 mV	Pass
90% Load	33.5 mV	21.3 mV	17.5 mV	33.9 mV	Pass
100% Load	49.0 mV	24.2 mV	19.4 mV	39.2 mV	Pass
110% Load	49.5 mV	24.8 mV	18.6 mV	39.3 mV	Pass
Crossload 1	43.2 mV	26.5 mV	20.6 mV	20.5 mV	Pass
Crossload 2	46.6 mV	22.5 mV	14.4 mV	35.9 mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	89.1 mV	20.3 mV	11.9 mV	18.8 mV	Pass
20% Load	87.5 mV	20.4 mV	12.4 mV	18.0 mV	Pass
30% Load	34.7 mV	18.1 mV	11.9 mV	17.8 mV	Pass
40% Load	34.6 mV	18.7 mV	12.6 mV	22.0 mV	Pass
50% Load	32.6 mV	20.2 mV	12.7 mV	24.2 mV	Pass
60% Load	33.0 mV	18.9 mV	14.6 mV	26.4 mV	Pass
70% Load	33.6 mV	20.0 mV	15.5 mV	30.6 mV	Pass
80% Load	37.2 mV	20.2 mV	17.2 mV	33.0 mV	Pass

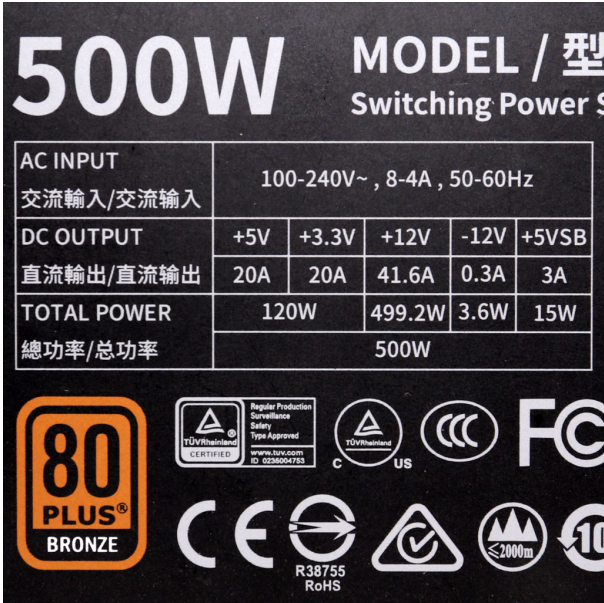
Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	33.6 mV	21.3 mV	17.2 mV	34.6 mV	Pass
100% Load	50.9 mV	23.5 mV	18.9 mV	37.9 mV	Pass
110% Load	50.6 mV	22.5 mV	17.9 mV	36.9 mV	Pass
Crossload 1	44.4 mV	27.2 mV	19.3 mV	18.5 mV	Pass
Crossload 2	50.9 mV	21.7 mV	15.5 mV	35.6 mV	Pass

The results above are not used in the certification process

Cooler Master MWE Bronze 500



Top side



Power specifications label

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

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