



Make It Yours.

Cooler Master MWE 500

Serial Number MPE5001ACABW1191400004

Lab ID CM19500033

Certification ID 25697

Test Result Report ID:

Certificate Issue Date: Nov 6, 2019

115V 230V

Scheme: ETA-EMI PSU

115V

230V



Scheme: LAMBDA PSU

A handwritten signature in blue ink, appearing to be "Aristeidis Bitziopoulos", written over a faint circular stamp.

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 500
OEM/ODM	Gospower
Serial Number	MPE5001ACABW1191400004
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	200-240
Rated Current (Arms)	5
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	CM19500033
Date of receipt	Jul 5, 2019
Testing Date	May 15, 2019
Report Issued Date	Nov 6, 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 (510mm)	1	1	18-20AWG	No
4+4 pin EPS12V (530mm)	1	1	18AWG	No
6+2 pin PCIe (490mm+100mm)	1	2	16-18AWG	No
SATA (420mm+150mm+150mm)	2	6	18-20AWG	No
4-pin Molex (420mm+150mm+150mm)	1	3	18-20AWG	No
AC Power Cord (1400mm) - C13 coupler	1	1	18AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	16	16	41	3	0.3
	Watts	110		492	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
Bridge Rectifier(s)	1x Diode Incorporated GBU608 (800V, 6A @ 100°C)
APFC MOSFETS	1x JILIN SINO-MICROELECTRONICS JCS13N50FC (500V, 8A @ 100°C, 0.490hm)
APFC Boost Diode	1x JILIN SINO-MICROELECTRONICS 10F60UHF (600V, 10A @ 100°C)
Hold-up Cap(s)	1x Elite (420V, 330uF, 2000h @ 85°C, GM)
Main Switchers	2x JILIN SINO-MICROELECTRONICS JCS13N50FC (500V, 8A @ 100°C, 0.490hm)
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	2x 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: 4x 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 230V

Accredited		
Average Efficiency (>1450 load combinations)	86.127%	
Average Noise Output (>1450 Load Combinations)	31.55dBA	
Average PF (>1450 Load Combinations)	0.909	
Efficiency With 10W (≤500W) or 2% (>500W) Load	-	
Standby Power Consumption	0.1894W	
Non-Accredited		
12V Ripple (Full Load)	47.73mV	
5V Ripple (Full Load)	23.21mV	
3.3V Ripple (Full Load)	24.34mV	
5VSB Ripple (Full Load)	27.89mV	
12V Load Regulation	1.52%	
5V Load Regulation	2.57%	
3.3V Load Regulation	2.77%	
5VSB Load Regulation	3.41%	
Inrush Current	57.370A	
Hold-Up Time & PWR_OK Signal	21.00ms	
AC Loss to PWR_OK Hold Up Time	19.40ms	
PWR_OK Inactive to DC Loss Delay	1.60ms	
OPP (0.00°C / 0.00°C)	-	-

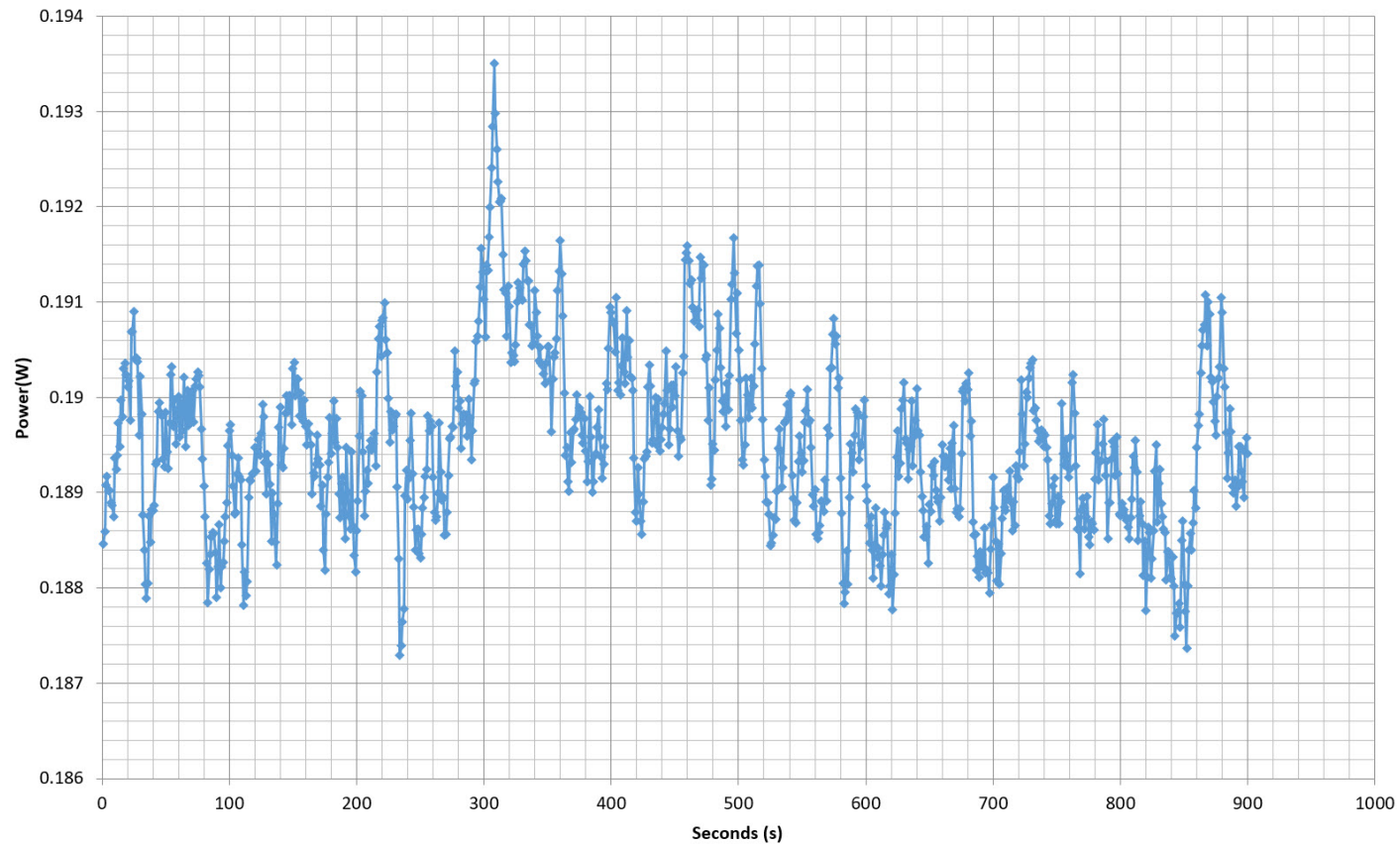
Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	21
AC Loss to PWR_OK Hold Up Time (ms)	19.4
PWR_OK Inactive to DC Loss Delay (ms)	1.6



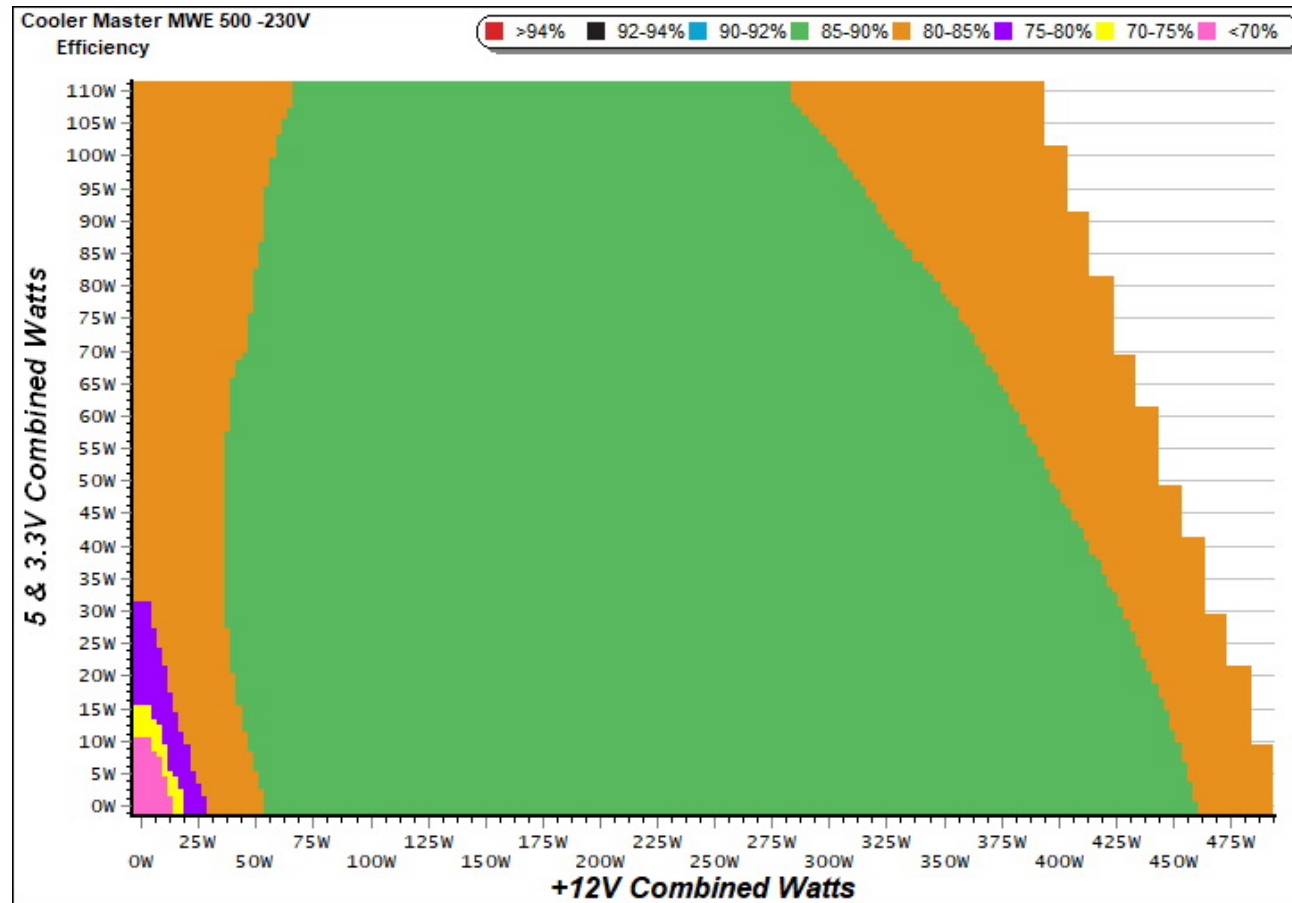
Graphs 230V

Power - MPE5001ACABW1191400004 - 14/05/2019 - 10:48



Efficiency Graph

230V

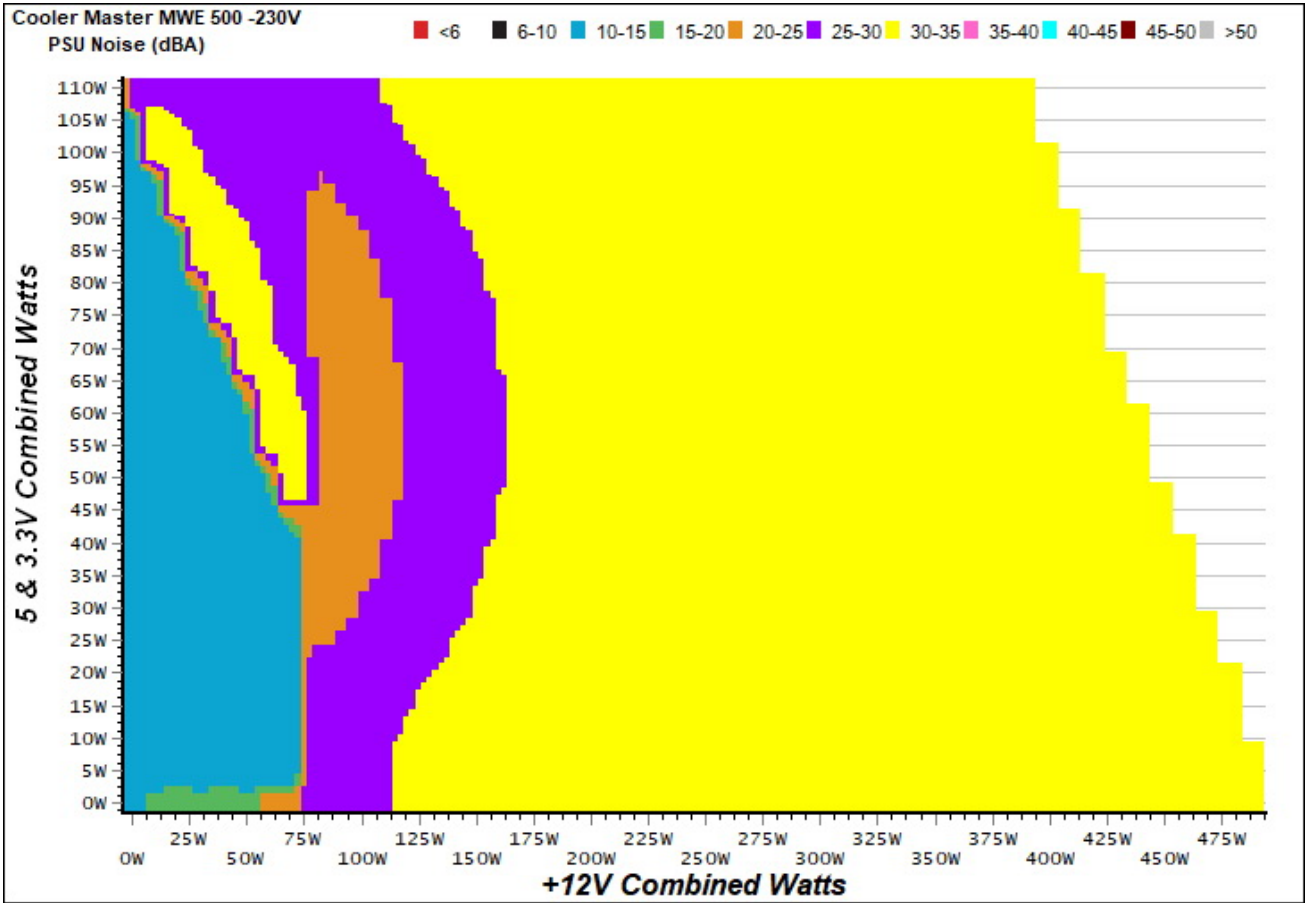


INFO

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

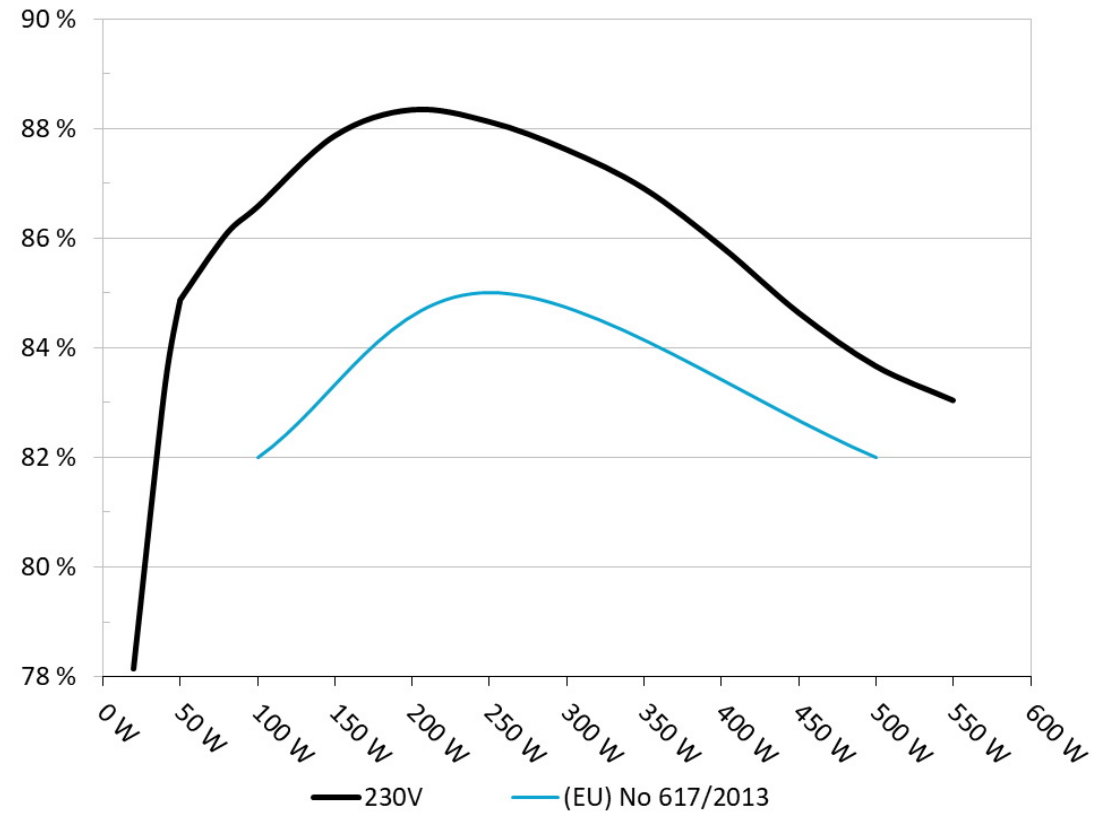
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

Indicative Performance

Efficiency under high ambient temperature

Efficiency: Cooler Master MWE 500

Ambient: 32°C - 40°C (89.6°F - 104°F)



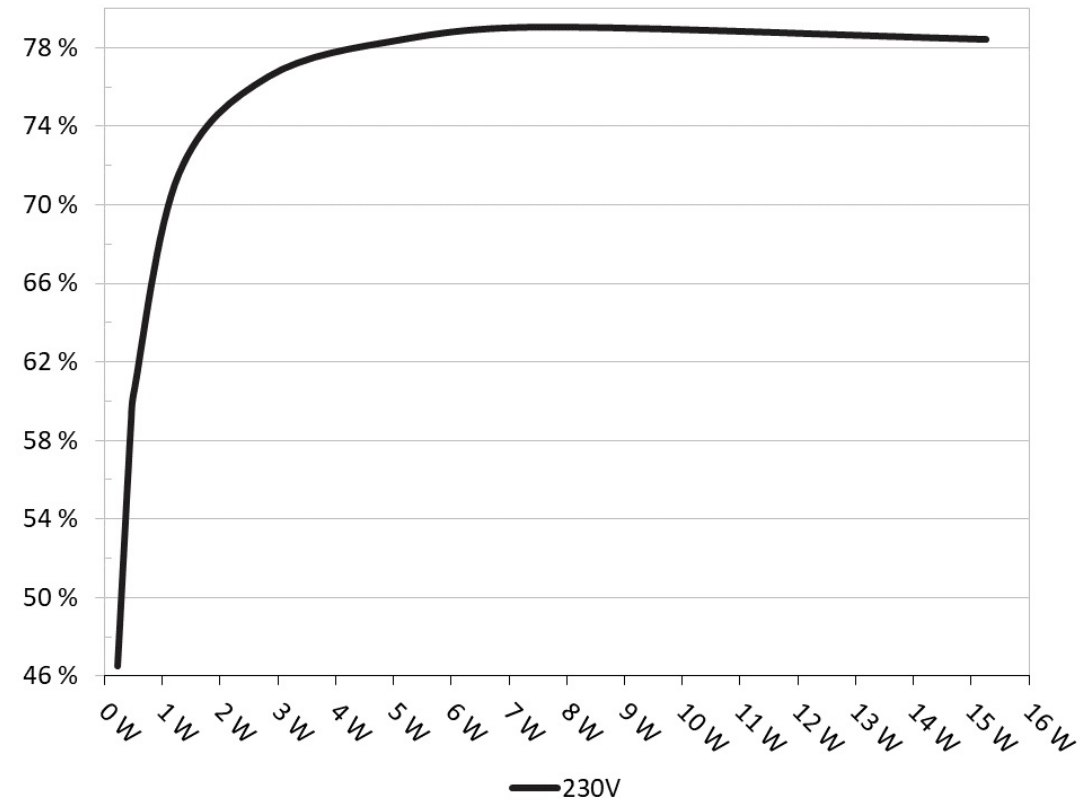
INFO

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 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) 230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.234	46.521%	0.010
	5.177V	0.503		230.25V

2	0.090A	0.466	58.987%	0.015
	5.176V	0.790		230.25V
3	0.550A	2.840	76.550%	0.068
	5.162V	3.710		230.31V
4	1.000A	5.149	78.443%	0.115
	5.148V	6.564		230.31V
5	1.500A	7.701	79.082%	0.161
	5.133V	9.738		230.31V
6	3.000A	15.262	78.452%	0.261
	5.087V	19.454		230.29V

Supplementary Tests (For Reference)

Typical 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	2.306A	2.010A	1.945A	0.974A	49.644	83.549%	0	<6.0	40.85°C	0.616
	12.163V	4.976V	3.389V	5.137V	59.419				34.06°C	230.25V
2	5.683A	3.024A	2.929A	1.172A	99.749	86.578%	0	<6.0	41.58°C	0.802
	12.115V	4.961V	3.378V	5.121V	115.213				34.47°C	230.25V
3	9.391A	3.539A	3.414A	1.371A	149.640	87.871%	1315	31.8	35.05°C	0.863
	12.101V	4.946V	3.367V	5.107V	170.295				42.94°C	230.25V
4	13.115A	4.055A	3.932A	1.571A	199.631	88.347%	1431	32.8	35.59°C	0.917
	12.080V	4.932V	3.357V	5.094V	225.962				43.81°C	230.25V
5	16.519A	5.086A	4.929A	1.773A	249.756	88.128%	1450	33.0	36.05°C	0.938
	12.062V	4.917V	3.346V	5.078V	283.401				44.86°C	230.25V
6	19.927A	6.119A	5.937A	1.976A	299.830	87.617%	1450	33.0	36.96°C	0.949
	12.045V	4.903V	3.336V	5.062V	342.206				46.26°C	230.24V
7	23.348A	7.161A	6.946A	2.181A	349.940	86.906%	1450	33.0	37.21°C	0.956
	12.028V	4.889V	3.325V	5.046V	402.663				47.49°C	230.24V
8	26.777A	8.208A	7.963A	2.387A	400.045	85.845%	1454	33.0	37.65°C	0.962
	12.012V	4.874V	3.314V	5.029V	466.007				48.57°C	230.24V

9	30.619A	8.741A	8.470A	2.391A	449.757	84.641%	1454	33.0	38.31°C	0.968
	11.994V	4.864V	3.305V	5.020V	531.373				49.62°C	230.24V
10	34.233A	9.275A	9.010A	3.006A	499.741	83.664%	1451	33.0	39.37°C	0.972
	11.978V	4.852V	3.296V	4.990V	597.320				50.92°C	230.24V
11	38.452A	9.290A	9.030A	3.011A	549.718	83.040%	1455	33.0	40.28°C	0.974
	11.963V	4.845V	3.289V	4.984V	661.991				52.36°C	230.24V
CL1	0.133A	13.002A	12.998A	0.000A	108.525	81.791%	1444	32.9	36.15°C	0.832
	12.103V	4.882V	3.342V	5.133V	132.685				44.76°C	230.24V
CL2	41.001A	0.999A	0.999A	0.000A	499.637	84.382%	1452	33.0	39.18°C	0.972
	11.985V	4.920V	3.329V	5.103V	592.110				50.86°C	230.23V

The results above are not used in the certification process

Light Load Tests 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.189A	0.501A	0.471A	0.194A	19.552	78.139%	0	<6.0	0.346
	12.152V	4.991V	3.398V	5.168V	25.022				230.25V
2	2.440A	1.001A	0.972A	0.388A	39.980	83.330%	0	<6.0	0.548
	12.168V	4.984V	3.394V	5.159V	47.978				230.26V
3	3.626A	1.507A	1.443A	0.583A	59.429	84.874%	0	<6.0	0.669
	12.144V	4.978V	3.389V	5.149V	70.020				230.26V
4	4.886A	2.010A	1.949A	0.778A	79.861	86.088%	0	<6.0	0.745
	12.131V	4.972V	3.385V	5.139V	92.767				230.26V

The results above are not used in the certification process

Ripple Measurements 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	66.2 mV	17.9 mV	12.8 mV	20.0 mV	Pass
20% Load	80.5 mV	18.9 mV	15.2 mV	19.6 mV	Pass
30% Load	32.2 mV	18.2 mV	15.0 mV	16.2 mV	Pass
40% Load	33.1 mV	18.8 mV	15.7 mV	18.2 mV	Pass

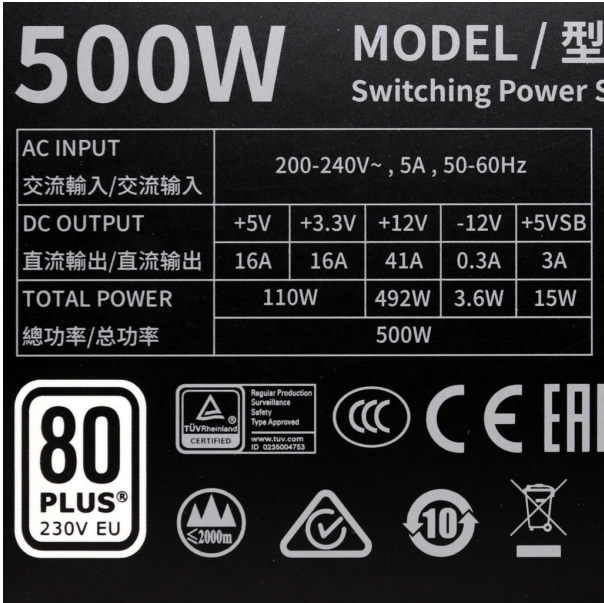
Test	12V	5V	3.3V	5VSB	Pass/Fail
50% Load	32.6 mV	19.3 mV	18.0 mV	19.3 mV	Pass
60% Load	32.7 mV	19.9 mV	18.6 mV	21.4 mV	Pass
70% Load	32.2 mV	20.9 mV	20.0 mV	22.0 mV	Pass
80% Load	32.3 mV	20.2 mV	21.8 mV	24.2 mV	Pass
90% Load	32.9 mV	21.0 mV	21.8 mV	25.3 mV	Pass
100% Load	47.7 mV	23.2 mV	24.3 mV	27.9 mV	Pass
110% Load	47.7 mV	24.0 mV	23.9 mV	29.1 mV	Pass
Crossload 1	37.1 mV	23.6 mV	20.8 mV	16.0 mV	Pass
Crossload 2	45.5 mV	22.0 mV	20.4 mV	25.0 mV	Pass

The results above are not used in the certification process

Cooler Master MWE 500



Top side



Power specifications label

Cybenetics  ETA LAMBDA SAFE DELTA PHI

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