



Make It Yours.

Cooler Master MWE 400

Serial Number MPE4001ACABW1191400003

Lab ID CM19400035

Certification ID 25695

Test Result Report ID: 20PS695A

Certificate Issue Date: Nov 6, 2019

115V 230V

Scheme: ETA-EMI PSU

115V

230V



Scheme: LAMBDA PSU

A handwritten signature in black ink, appearing to be "Aristeidis 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 400
OEM/ODM	Gospower
Serial Number	MPE4001ACABW1191400003
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	200-240
Rated Current (Arms)	4
Rated Frequency (Hz)	50-60

Rated Power (W)	400
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	CM19400035
Date of receipt	Jul 5, 2019
Testing Date	May 17, 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)	1	1	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	14	14	33	3	0.3
	Watts	100		396	15	3.6
Total Max. Power (W)		400				

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, 180uF, 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: 8x 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), 1x Rubyxon (4-10,000h @ 105°C, YXJ) 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)	86.735%	
Average Noise Output (>1450 Load Combinations)	30.74dBA	
Average PF (>1450 Load Combinations)	0.884	
Efficiency With 10W (≤500W) or 2% (>500W) Load	-	
Standby Power Consumption	0.1826W	
Non-Accredited		
12V Ripple (Full Load)	65.00mV	
5V Ripple (Full Load)	31.43mV	
3.3V Ripple (Full Load)	21.98mV	
5VSB Ripple (Full Load)	25.19mV	
12V Load Regulation	1.11%	
5V Load Regulation	2.28%	
3.3V Load Regulation	2.36%	
5VSB Load Regulation	3.11%	
Inrush Current	122.936A	
Hold-Up Time & PWR_OK Signal	16.20ms	
AC Loss to PWR_OK Hold Up Time	15.20ms	
PWR_OK Inactive to DC Loss Delay	1.00ms	
OPP (0.00°C / 0.00°C)	130.77%	-

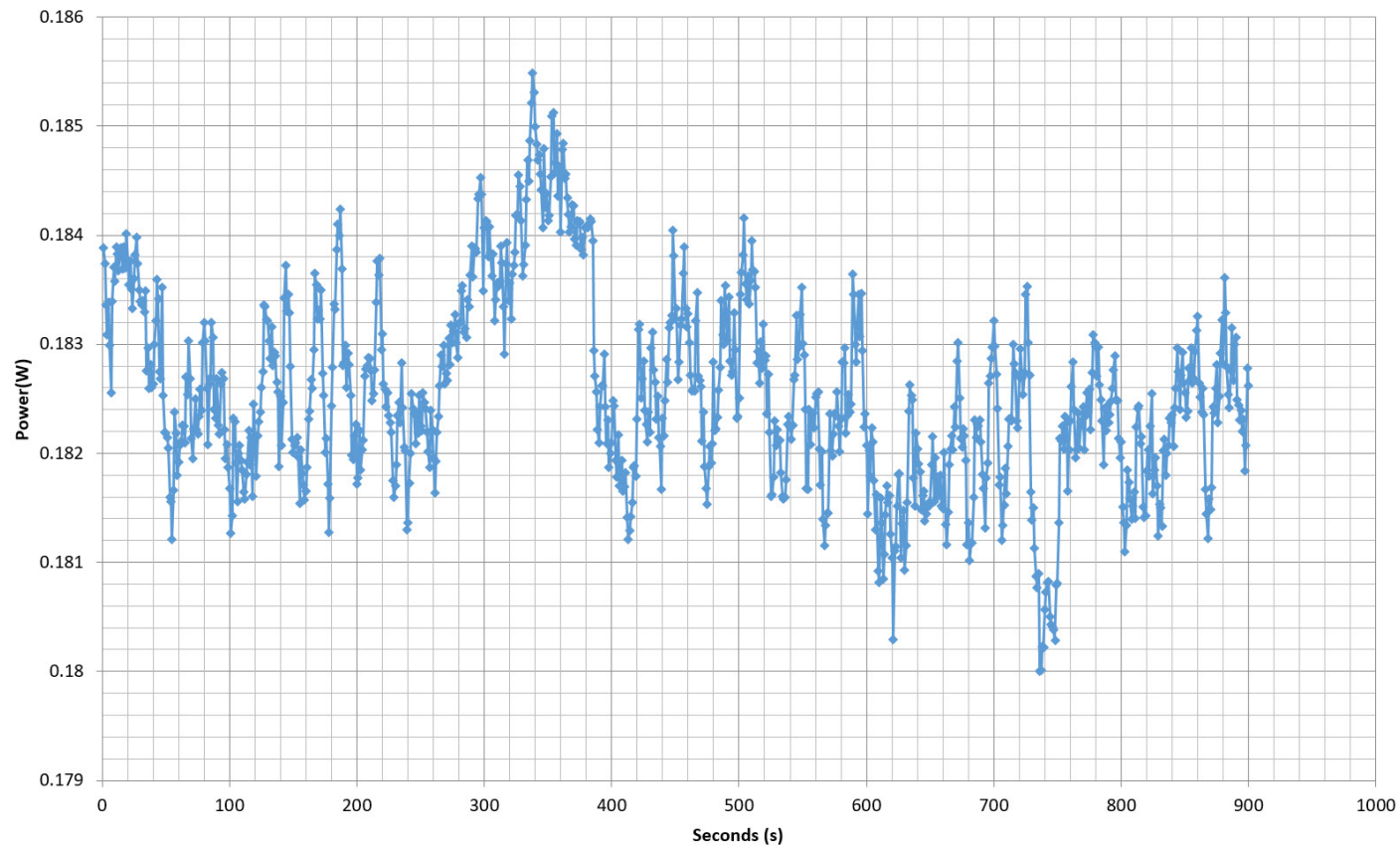
Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	16.2
AC Loss to PWR_OK Hold Up Time (ms)	15.2
PWR_OK Inactive to DC Loss Delay (ms)	1.0



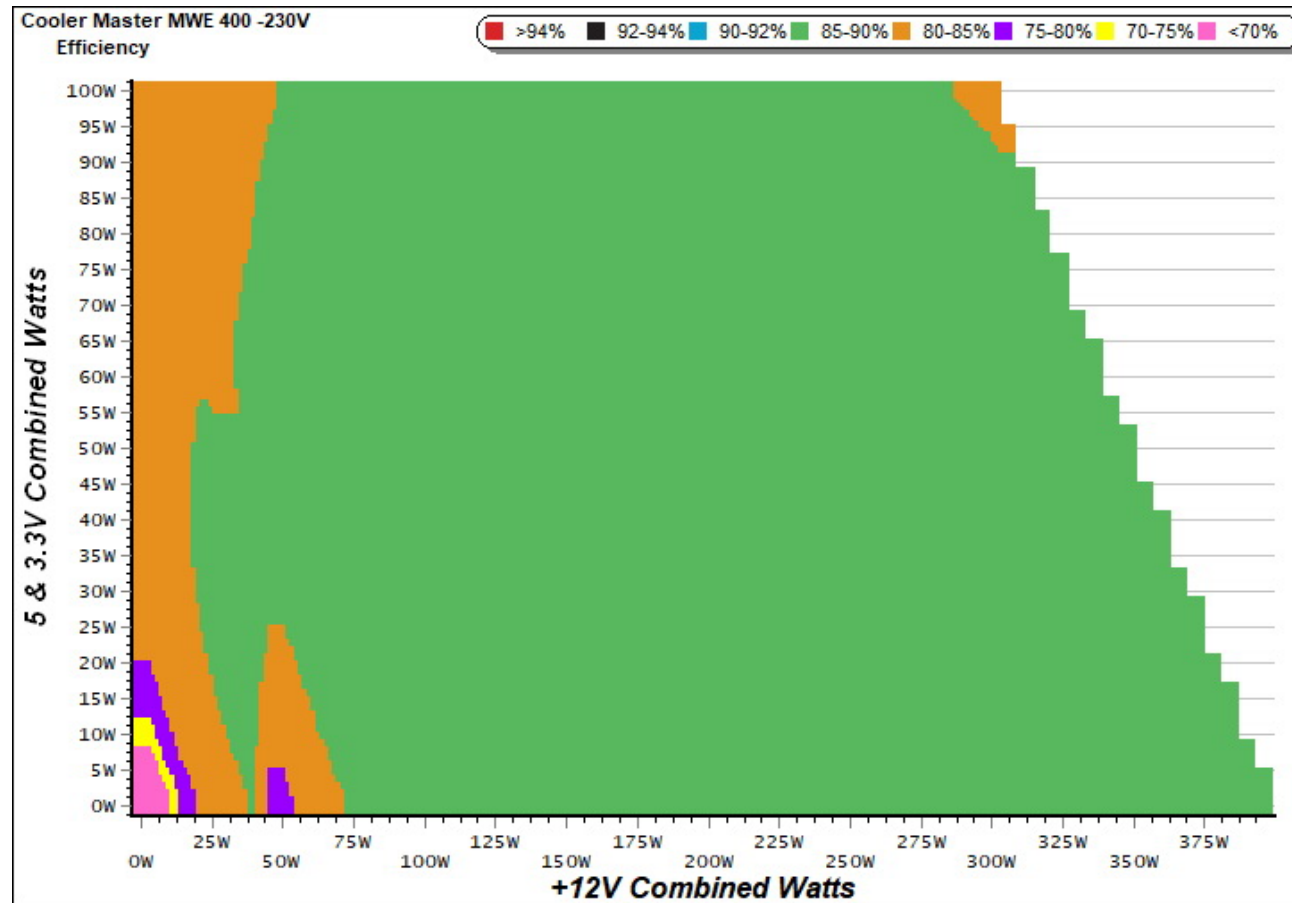
Graphs 230V

Power - MPE4001ACABW1191400003 - 15/05/2019 - 12:03



Efficiency Graph

230V

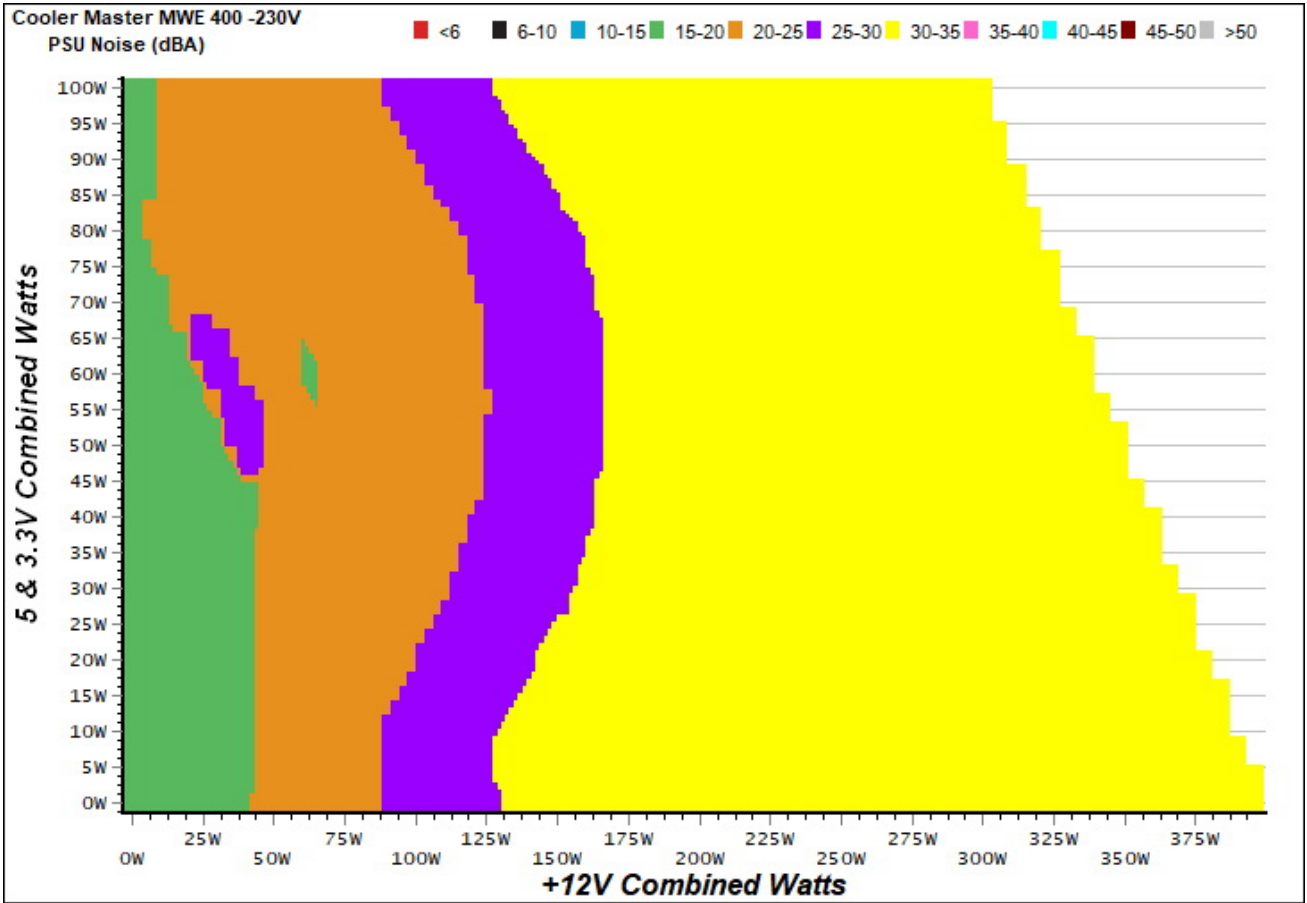


INFO

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

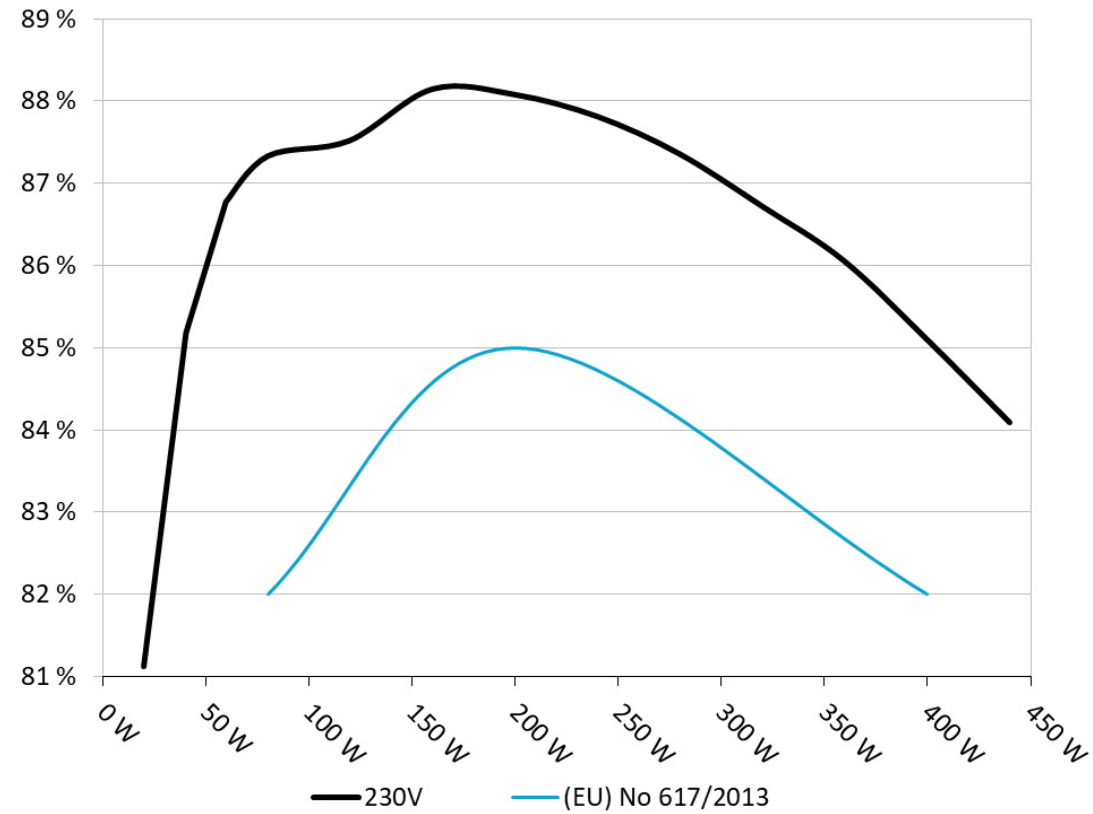
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

Indicative Performance

Efficiency under high ambient temperature

Efficiency: Cooler Master MWE 400

Ambient: 32°C - 40°C (89.6°F - 104°F)



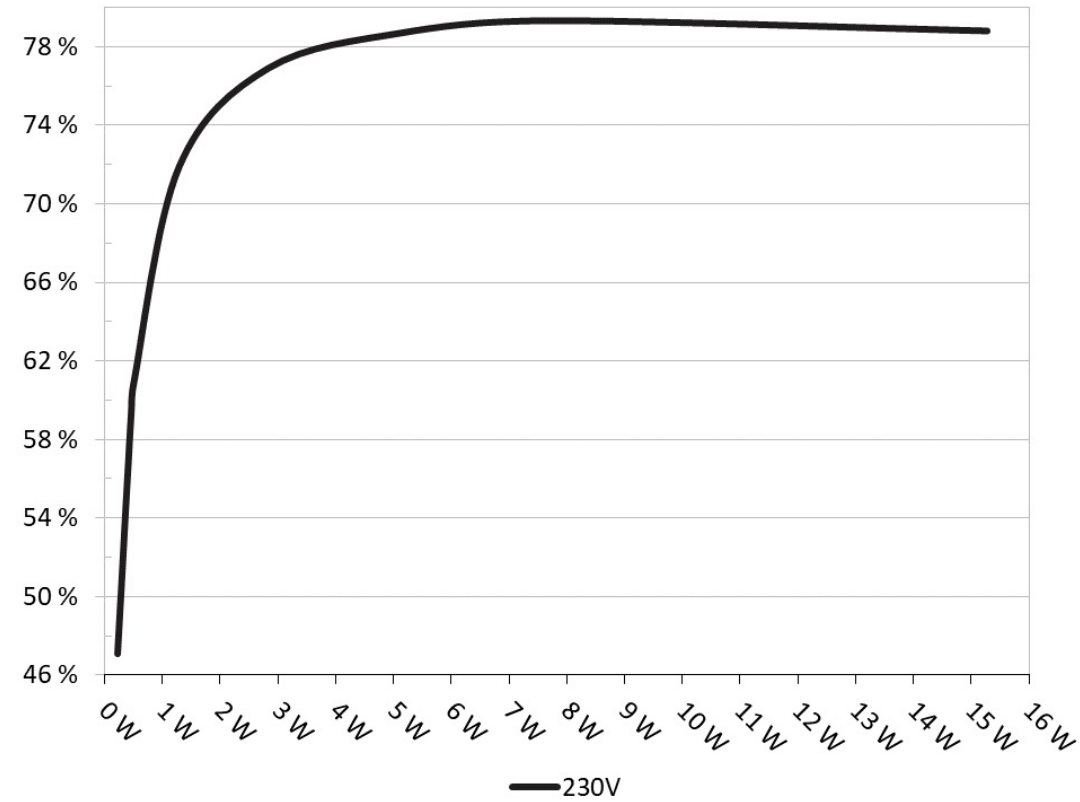
INFO

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 400

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	47.082%	0.009
	5.180V	0.497		230.31V

2	0.090A	0.467	59.264%	0.015
	5.179V	0.788		230.31V
3	0.550A	2.842	76.894%	0.067
	5.165V	3.696		230.31V
4	1.000A	5.152	78.693%	0.115
	5.151V	6.547		230.31V
5	1.500A	7.705	79.310%	0.160
	5.136V	9.715		230.32V
6	3.000A	15.271	78.790%	0.261
	5.090V	19.382		230.32V

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	1.532A	2.019A	1.973A	0.973A	40.111	83.914%	0	<6.0	40.86°C	0.552
	12.084V	4.953V	3.343V	5.142V	47.800				34.01°C	230.25V
2	4.050A	3.037A	2.969A	1.170A	79.751	86.772%	0	<6.0	42.08°C	0.747
	12.062V	4.940V	3.334V	5.128V	91.909				34.79°C	230.24V
3	6.910A	3.551A	3.457A	1.369A	119.273	87.514%	1085	24.8	35.02°C	0.838
	12.050V	4.930V	3.326V	5.115V	136.290				43.51°C	230.25V
4	9.846A	4.066A	3.979A	1.568A	159.676	88.142%	1266	27.9	35.57°C	0.876
	12.033V	4.919V	3.317V	5.102V	181.157				44.27°C	230.24V
5	12.421A	5.097A	4.988A	1.769A	199.776	88.074%	1431	32.8	36.27°C	0.906
	12.018V	4.906V	3.307V	5.088V	226.828				45.51°C	230.24V
6	15.002A	6.133A	6.000A	1.972A	239.884	87.807%	1433	32.8	36.60°C	0.925
	12.004V	4.893V	3.298V	5.073V	273.194				46.36°C	230.24V
7	17.553A	7.174A	7.022A	2.175A	279.576	87.354%	1433	32.8	37.33°C	0.939
	11.991V	4.879V	3.289V	5.058V	320.049				47.58°C	230.23V
8	20.177A	8.224A	8.048A	2.380A	320.069	86.710%	1432	32.8	37.55°C	0.948
	11.977V	4.865V	3.280V	5.043V	369.124				48.50°C	230.24V

9	23.144A	8.755A	8.554A	2.384A	359.378	86.053%	1433	32.8	38.11°C	0.954
	11.963V	4.855V	3.273V	5.035V	417.623				49.42°C	230.24V
10	25.947A	9.291A	9.097A	2.996A	399.786	85.093%	1432	32.8	39.28°C	0.959
	11.950V	4.845V	3.265V	5.008V	469.821				50.98°C	230.24V
11	29.326A	9.300A	9.113A	3.001A	439.800	84.087%	1437	32.8	40.38°C	0.962
	11.938V	4.839V	3.259V	5.000V	523.027				52.54°C	230.23V
CL1	0.135A	12.002A	11.999A	0.000A	99.661	82.097%	1430	32.8	36.58°C	0.817
	12.049V	4.868V	3.301V	5.140V	121.394				45.41°C	230.26V
CL2	33.007A	1.001A	1.000A	1.000A	407.863	85.918%	1436	32.8	39.31°C	0.959
	11.954V	4.910V	3.294V	5.088V	474.713				50.69°C	230.24V

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	1.202A	0.504A	0.478A	0.193A	19.609	81.119%	0	<6.0	0.345
	12.069V	4.967V	3.351V	5.172V	24.173				230.27V
2	2.459A	1.009A	0.986A	0.388A	40.016	85.178%	0	<6.0	0.546
	12.081V	4.961V	3.346V	5.162V	46.979				230.26V
3	3.650A	1.514A	1.467A	0.582A	59.468	86.499%	0	<6.0	0.666
	12.073V	4.954V	3.342V	5.152V	68.750				230.26V
4	4.918A	2.021A	1.976A	0.778A	79.905	87.329%	0	<6.0	0.746
	12.060V	4.948V	3.337V	5.142V	91.499				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	71.3 mV	19.2 mV	12.4 mV	14.7 mV	Pass
20% Load	54.0 mV	19.5 mV	12.2 mV	14.9 mV	Pass
30% Load	59.5 mV	20.0 mV	13.5 mV	15.0 mV	Pass
40% Load	57.1 mV	19.6 mV	13.6 mV	16.6 mV	Pass

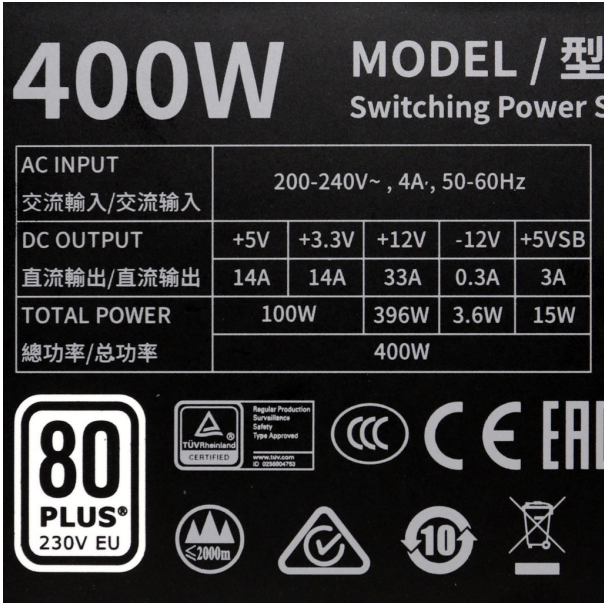
Test	12V	5V	3.3V	5VSB	Pass/Fail
50% Load	55.0 mV	22.0 mV	14.6 mV	18.4 mV	Pass
60% Load	54.2 mV	23.4 mV	16.1 mV	18.6 mV	Pass
70% Load	55.9 mV	24.9 mV	17.5 mV	20.0 mV	Pass
80% Load	54.9 mV	27.1 mV	19.9 mV	21.4 mV	Pass
90% Load	53.1 mV	28.1 mV	21.1 mV	21.9 mV	Pass
100% Load	65.0 mV	31.4 mV	22.0 mV	25.2 mV	Pass
110% Load	60.9 mV	30.7 mV	22.4 mV	27.8 mV	Pass
Crossload 1	62.7 mV	33.7 mV	22.4 mV	16.1 mV	Pass
Crossload 2	58.5 mV	22.6 mV	15.6 mV	23.1 mV	Pass

The results above are not used in the certification process

Cooler Master MWE 400



Top side



Power specifications label

Cybenetics ETA LAMBDA SAFE DELTA PHI

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