

Anex

Cooler Master MWE 400

Lab ID#: CM19400035

Receipt Date: Jul 5, 2019

Test Date: May 17, 2019

Report: 20PS695A

Report Date: Nov 6, 2019

DUT INFORMATION

Brand	Cooler Master
Manufacturer (OEM)	Gospower
Series	MWE White
Model Number	
Serial Number	MPE4001ACABW1191400003
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	200-240
Rated Current (Arms)	4
Rated Frequency (Hz)	50-60
Rated Power (W)	400
Type	ATX12V
Cooling	120mm Rifle Bearing Fan (DF1202512SELN)
Semi-Passive Operation	✓
Cable Design	Fixed cables

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				

CABLES AND CONNECTORS

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	-

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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

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RESULTS

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

230V

Average Efficiency	86.735%
Average Efficiency 5VSB	77.433%
Standby Power Consumption (W)	0.1826160
Average PF	0.884
Avg Noise Output	30.74 dB(A)
Efficiency Rating (ETA)	
Noise Rating (LAMBDA)	S++

TEST EQUIPMENT

Electronic Loads	Chroma 6314A x2 63123A x6 63102A 63101A	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Chroma 61604, Keysight AC6804B	
Power Analyzers	N4L PPA1530 x2, N4L PPA5530	
Oscilloscopes	Picoscope 4444 & 3424, Keysight DSOX3024A, Rigol DS2072A	
Voltmeter	Keithley 2015 THD 6.5 Digit	
Sound Analyzer	Bruel & Kjaer 2250-L G4	
Microphone	Bruel & Kjaer Type 4955-A, Bruel & Kjaer Type 4189	
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2	

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

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

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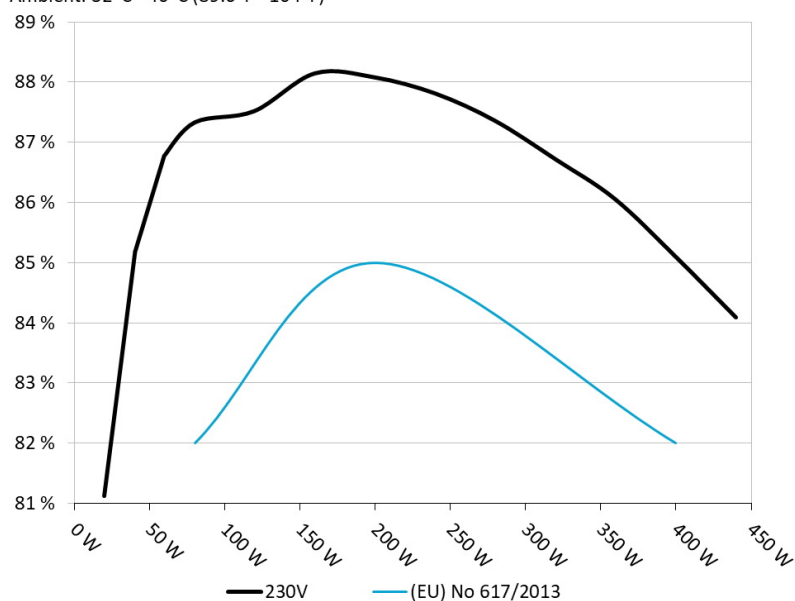
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Cooler Master MWE 400

Ambient: 32°C - 40°C (89.6°F - 104°F)



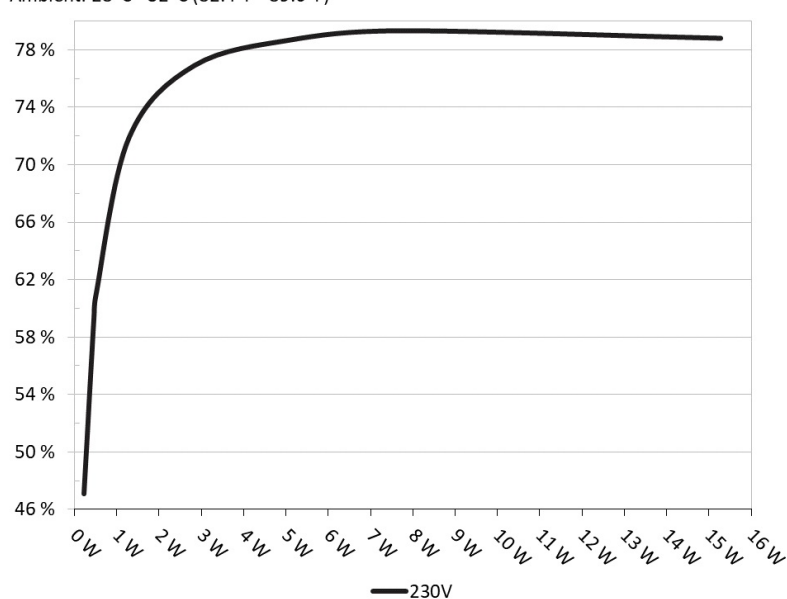
INFO

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

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5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

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

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

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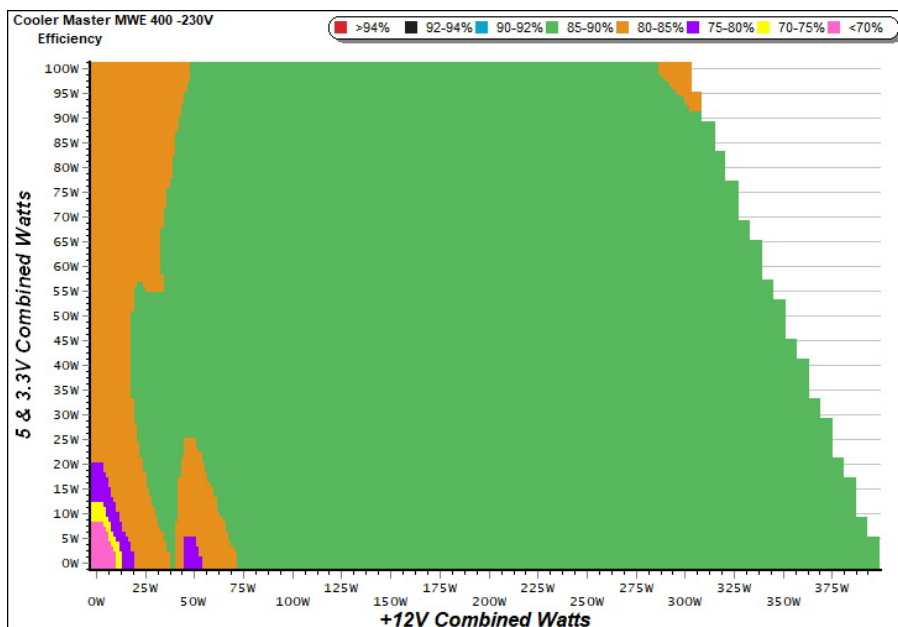
230V

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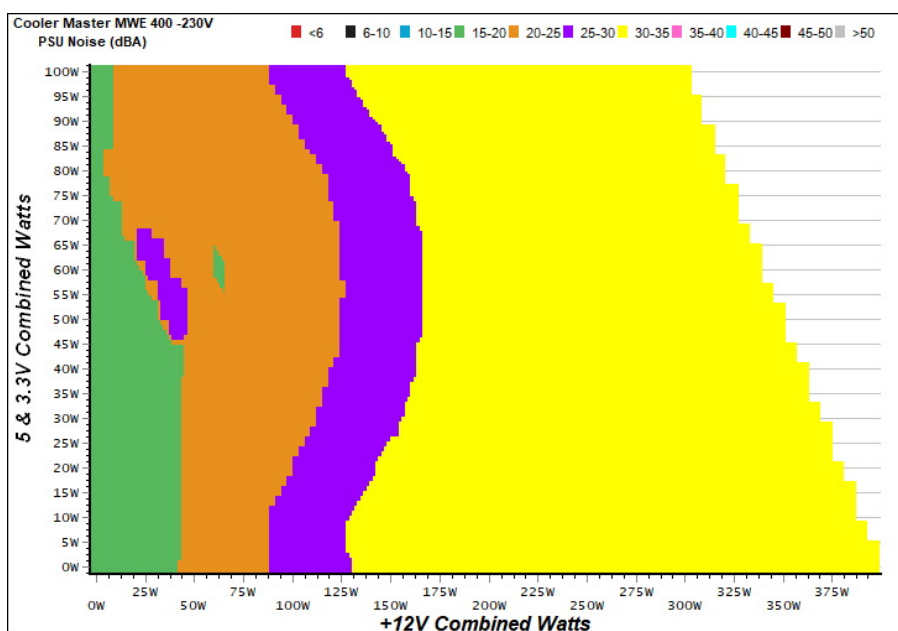
EFFICIENCY GRAPH 230V



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

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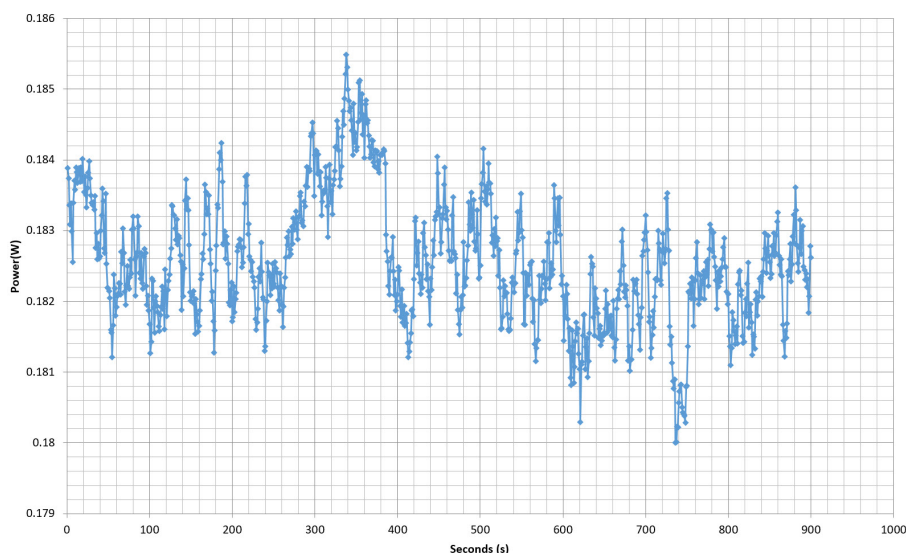
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VAMPIRE POWER -230V

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



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

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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	1.532A	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

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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	1.202A	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

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
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

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Top side

400W MODEL / 型 Switching Power S					
AC INPUT 交流輸入/交流輸入	200-240V~, 4A, 50-60Hz				
DC OUTPUT 直流輸出/直流輸出	+5V	+3.3V	+12V	-12V	+5VSB
	14A	14A	33A	0.3A	3A
TOTAL POWER 總功率/总功率	400W				



Power specifications label

CERTIFICATIONS 230V



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