

Anex

Cooler Master MWE Bronze 600

Lab ID#: CM19600051

Receipt Date: Jul 5, 2019

Test Date: Jun 6, 2019

Report:

Report Date: Jun 21, 2019

DUT INFORMATION

Brand	Cooler Master
Manufacturer (OEM)	Gospower
Series	MWE Bronze
Model Number	
Serial Number	MPE6001ACAAB1191400001
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	50-60
Rated Power (W)	600
Type	ATX12V
Cooling	120mm Fluid Dynamic Bearing Fan (HA1225H12F-Z)
Semi-Passive Operation	✓
Cable Design	Fixed cables

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	50	3	0.3
	Watts	120		600	15	3.6
Total Max. Power (W)		600				

CABLES AND CONNECTORS

Captive Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (610mm)	1	1	18-20AWG	No
8 pin EPS12V (630mm) / 4+4 pin EPS12V (120mm)	1	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 (500mm+120mm+120mm+120mm)	1	4	18AWG	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 & 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, 560uF, 2000h @ 85°C, GM)
Main Switchers	2x Jilin Sino Microelectronics JCS18N50FH (500V, 11A @ 100°C, 0.27Ohm)
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), 1x CapXon (2-5,000h @ 105°C, KF), 1x CapXon (3-10,000h @ 105°C, GH) Polymers: CapXon
Supervisor IC	IN1S313I-SAG
Fan Model	Hong Hua HA1225H12F-Z (120mm, 12V, 0.58A, Fluid Dynamic 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	✓

115V

Average Efficiency	85.801%
Efficiency With 10W (≤500W) or 2% (>500W)	72.047
Average Efficiency 5VSB	77.752%
Standby Power Consumption (W)	0.0734064
Average PF	0.975
Avg Noise Output	38.02 dB(A)
Efficiency Rating (ETA)	SILVER
Noise Rating (LAMBDA)	S+

230V

Average Efficiency	88.099%
Average Efficiency 5VSB	77.051%
Standby Power Consumption (W)	0.1834670
Average PF	0.902
Avg Noise Output	37.76 dB(A)
Efficiency Rating (ETA)	
Noise Rating (LAMBDA)	S+

TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Keysight AC6804B
Power Analyzers	N4L PPA1530 x2
Sound Analyzer	Brüel & Kjær 2270 G4
Microphone	Brüel & Kjær Type 4955-A
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2
Tachometer	UNI-T UT372 x2
Digital Multimeter	Keysight U1273AX, Fluke 289
UPS	CyberPower OLS3000E 3kVA x2

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

Hold-Up Time (ms)	21.40
AC Loss to PWR_OK Hold Up Time (ms)	19.60
PWR_OK Inactive to DC Loss Delay (ms)	1.80

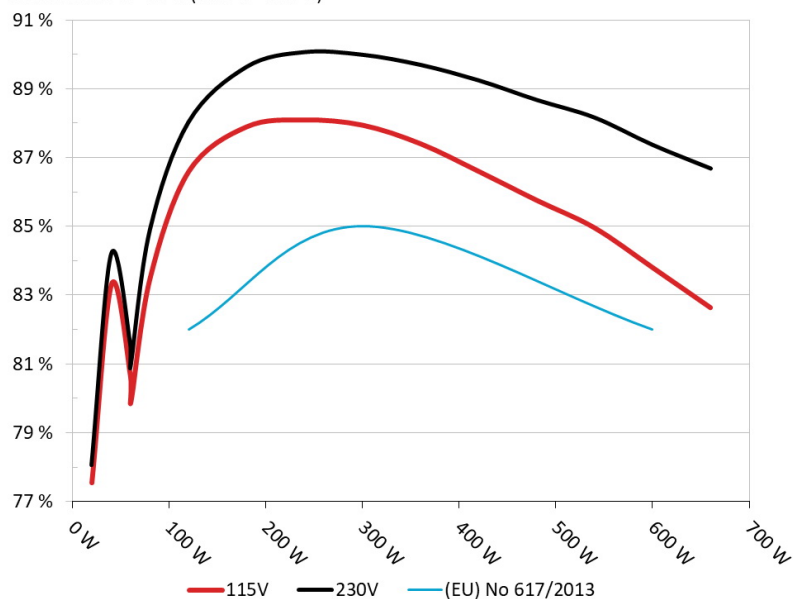
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Cooler Master MWE Bronze 600

Ambient: 32°C - 40°C (89.6°F - 104°F)



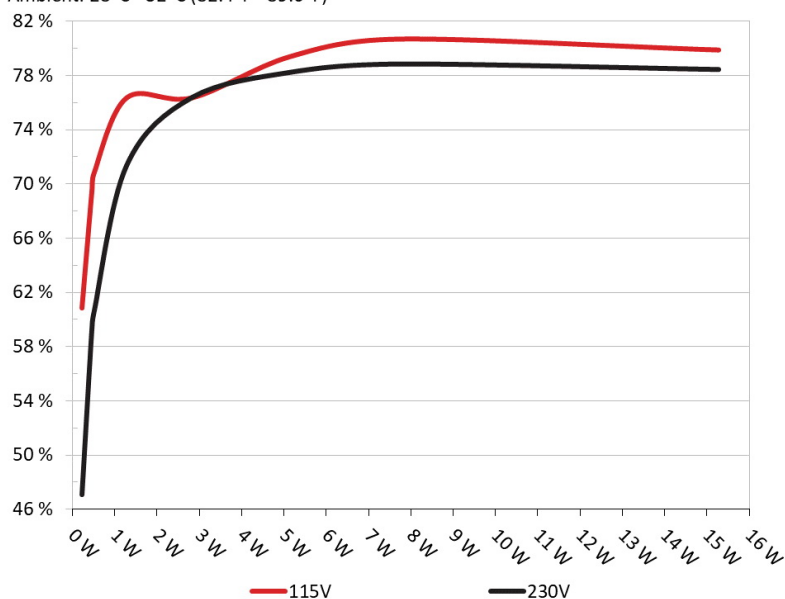
INFO

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 600

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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Cooler Master MWE Bronze 600

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.233	60.836%	0.025
	5.165V	0.383		115.11V
2	0.090A	0.465	69.403%	0.044
	5.164V	0.670		115.11V
3	0.550A	2.835	78.121%	0.208
	5.153V	3.629		115.11V
4	1.000A	5.142	78.780%	0.312
	5.142V	6.527		115.11V
5	1.500A	7.695	78.923%	0.378
	5.129V	9.750		115.11V
6	3.001A	15.276	76.799%	0.454
	5.091V	19.891		115.11V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.233	47.071%	0.010
	5.165V	0.495		230.24V
2	0.090A	0.465	59.236%	0.015
	5.164V	0.785		230.24V
3	0.550A	2.835	76.395%	0.070
	5.152V	3.711		230.24V
4	1.000A	5.142	78.241%	0.120
	5.141V	6.572		230.24V
5	1.500A	7.694	78.856%	0.170
	5.129V	9.757		230.24V
6	3.001A	15.276	78.455%	0.277
	5.091V	19.471		230.24V

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Cooler Master MWE Bronze 600

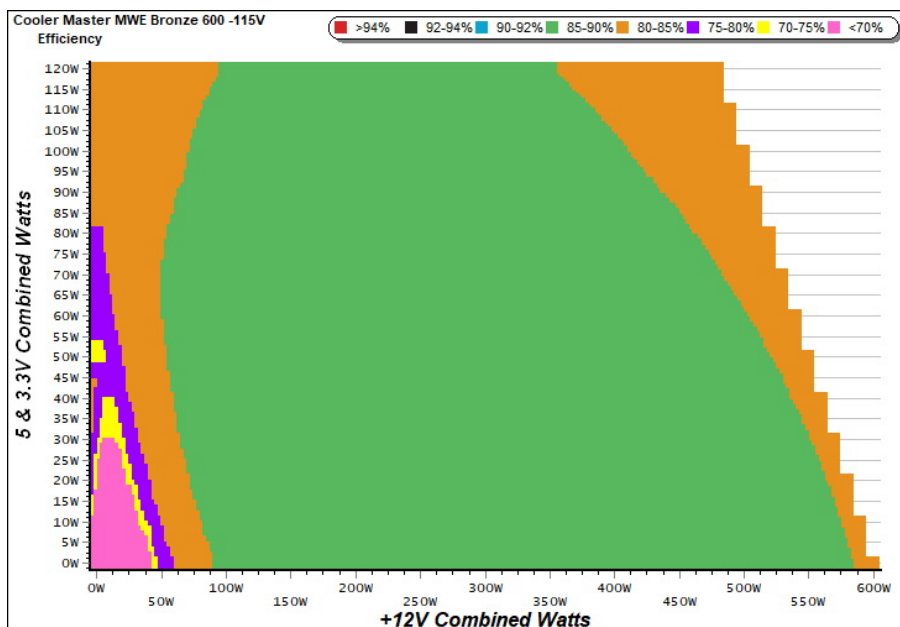
115V

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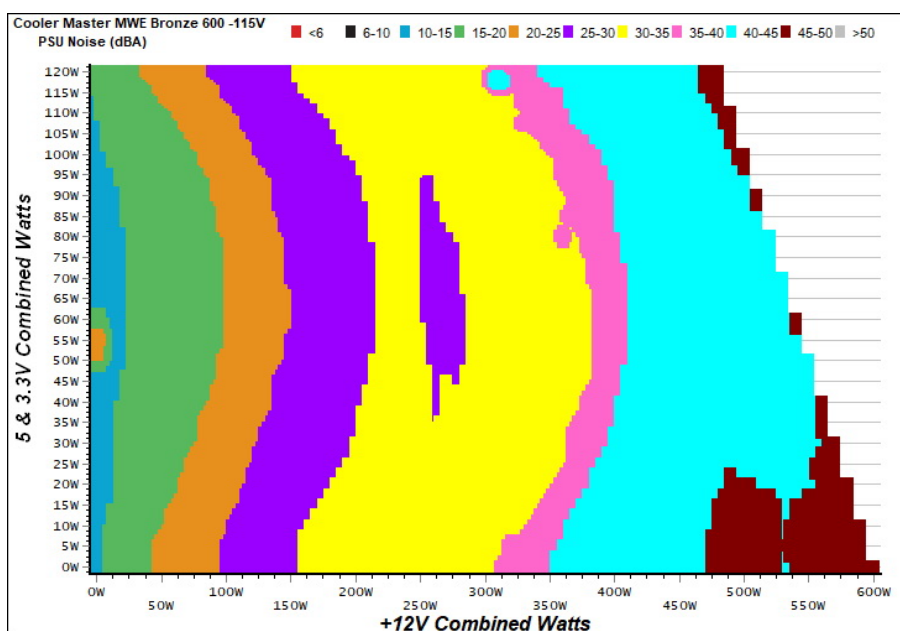
EFFICIENCY GRAPH 115V



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

NOISE GRAPH 115V



INFO

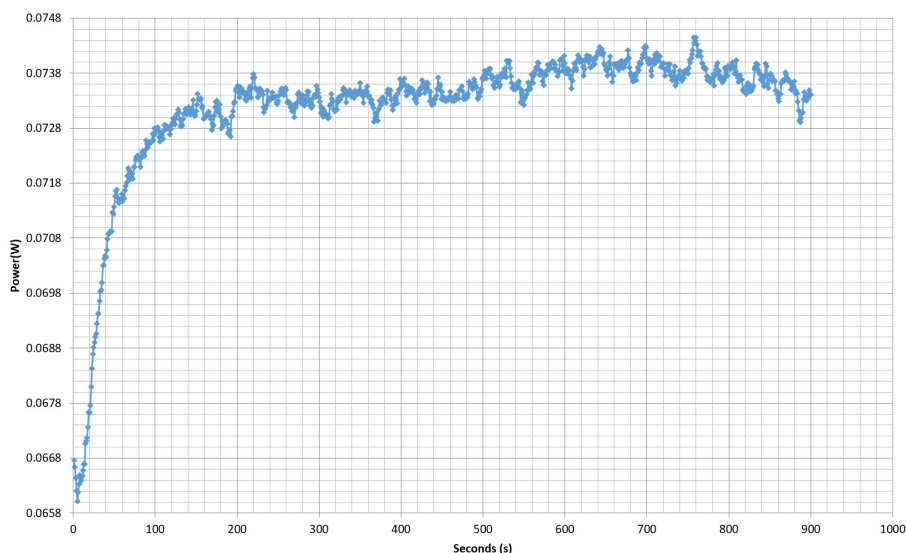
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -115V

Power - MPE6001ACAAB1191400001 - 04/06/2019 - 14:35



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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Cooler Master MWE Bronze 600

10-110% 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	3.164A	2.017A	1.971A	0.975A	60.175	79.914%	981	20.3	34.15°C	0.936
	12.190V	4.961V	3.348V	5.130V	75.300				39.97°C	115.13V
2	7.304A	3.032A	2.964A	1.173A	119.834	86.597%	967	20.0	34.52°C	0.964
	12.176V	4.949V	3.338V	5.117V	138.381				40.81°C	115.12V
3	11.832A	3.543A	3.453A	1.372A	179.708	87.902%	1171	25.7	35.02°C	0.963
	12.145V	4.940V	3.331V	5.105V	204.442				41.71°C	115.12V
4	16.365A	4.058A	3.972A	1.572A	239.727	88.104%	1512	32.7	35.82°C	0.974
	12.131V	4.930V	3.322V	5.091V	272.095				42.88°C	115.11V
5	20.578A	5.086A	4.980A	1.773A	299.805	87.952%	1630	33.1	36.03°C	0.980
	12.115V	4.917V	3.312V	5.077V	340.874				43.72°C	115.11V
6	24.801A	6.119A	5.995A	1.976A	359.902	87.411%	2006	41.2	36.69°C	0.984
	12.100V	4.904V	3.302V	5.064V	411.736				44.99°C	115.11V
7	29.005A	7.159A	7.015A	2.179A	419.609	86.611%	2207	42.8	37.03°C	0.987
	12.084V	4.891V	3.292V	5.050V	484.475				46.45°C	115.11V
8	33.282A	8.202A	8.041A	2.384A	480.118	85.763%	2427	45.5	37.58°C	0.988
	12.070V	4.878V	3.282V	5.035V	559.820				47.60°C	115.11V
9	37.904A	8.730A	8.553A	2.389A	539.440	84.970%	2424	45.4	38.24°C	0.990
	12.055V	4.868V	3.274V	5.026V	634.862				48.87°C	115.11V
10	42.373A	9.265A	9.096A	3.001A	599.844	83.809%	2425	45.5	39.41°C	0.991
	12.039V	4.858V	3.265V	5.001V	715.725				50.39°C	115.11V
11	47.414A	9.276A	9.116A	3.006A	659.866	82.639%	2424	45.4	40.44°C	0.991
	12.025V	4.852V	3.258V	4.992V	798.491				52.30°C	115.10V
CL1	0.144A	14.004A	13.999A	0.000A	116.484	80.418%	2108	41.5	36.32°C	0.961
	12.162V	4.886V	3.308V	5.123V	144.849				43.45°C	115.12V
CL2	50.014A	1.002A	1.000A	1.000A	615.697	84.318%	2427	45.5	39.46°C	0.991
	12.045V	4.912V	3.291V	5.065V	730.210				50.72°C	115.11V

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20-80W LOAD TESTS 115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.196A	0.503A	0.477A	0.194A	19.684	77.536%	0	<6.0	0.699
	12.190V	4.975V	3.357V	5.158V	25.387				115.15V
2	2.441A	1.006A	0.986A	0.389A	40.132	83.327%	0	<6.0	0.873
	12.217V	4.970V	3.354V	5.150V	48.162				115.15V
3	3.624A	1.511A	1.463A	0.584A	59.586	80.644%	687	11.0	0.932
	12.191V	4.965V	3.350V	5.141V	73.888				115.15V
4	4.869A	2.018A	1.972A	0.779A	79.934	83.494%	886	17.4	0.942
	12.185V	4.959V	3.346V	5.133V	95.736				115.14V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	18.6 mV	17.9 mV	11.5 mV	17.7 mV	Pass
20% Load	25.1 mV	17.8 mV	11.8 mV	24.1 mV	Pass
30% Load	24.4 mV	18.2 mV	12.3 mV	29.7 mV	Pass
40% Load	23.6 mV	18.1 mV	12.0 mV	31.6 mV	Pass
50% Load	22.0 mV	18.0 mV	12.6 mV	32.8 mV	Pass
60% Load	22.5 mV	17.5 mV	13.9 mV	32.4 mV	Pass
70% Load	23.8 mV	18.8 mV	15.0 mV	33.6 mV	Pass
80% Load	25.0 mV	19.1 mV	17.3 mV	36.1 mV	Pass
90% Load	24.3 mV	19.8 mV	17.1 mV	35.5 mV	Pass
100% Load	36.6 mV	21.9 mV	19.0 mV	41.5 mV	Pass
110% Load	38.6 mV	22.0 mV	18.7 mV	42.8 mV	Pass
Crossload 1	37.1 mV	25.5 mV	19.5 mV	26.7 mV	Pass
Crossload 2	35.9 mV	20.6 mV	14.7 mV	37.1 mV	Pass

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Cooler Master MWE Bronze 600

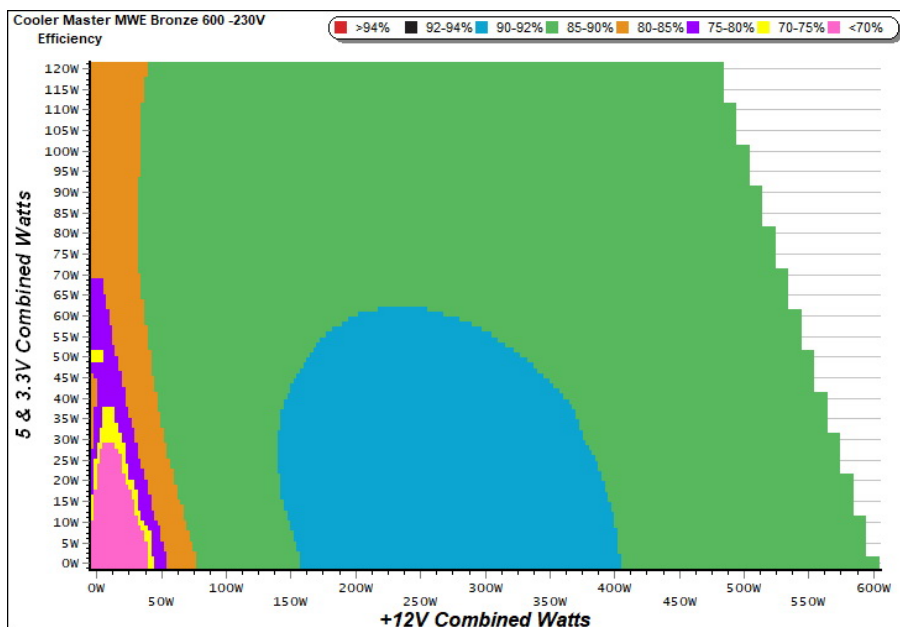
230V

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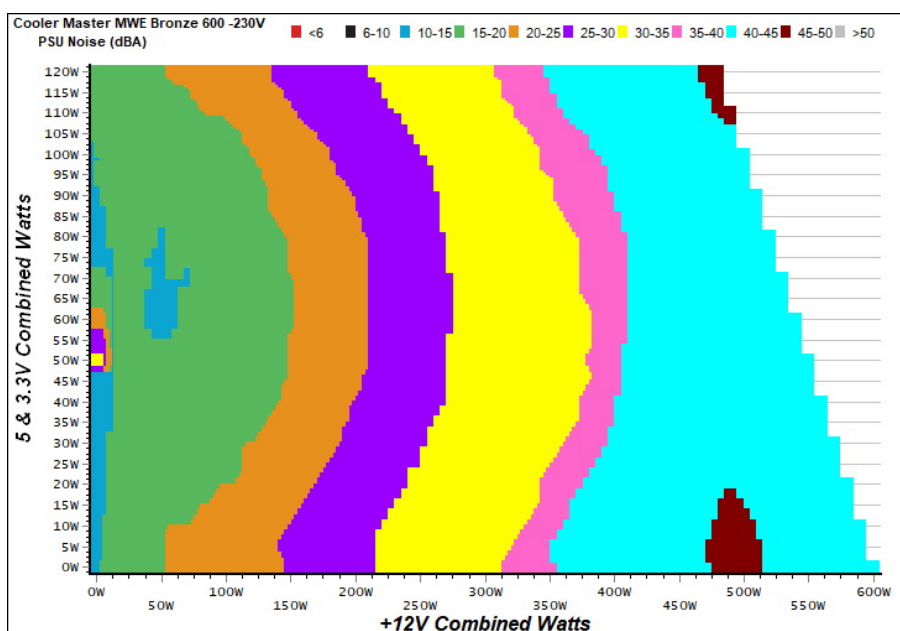
EFFICIENCY GRAPH 230V



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

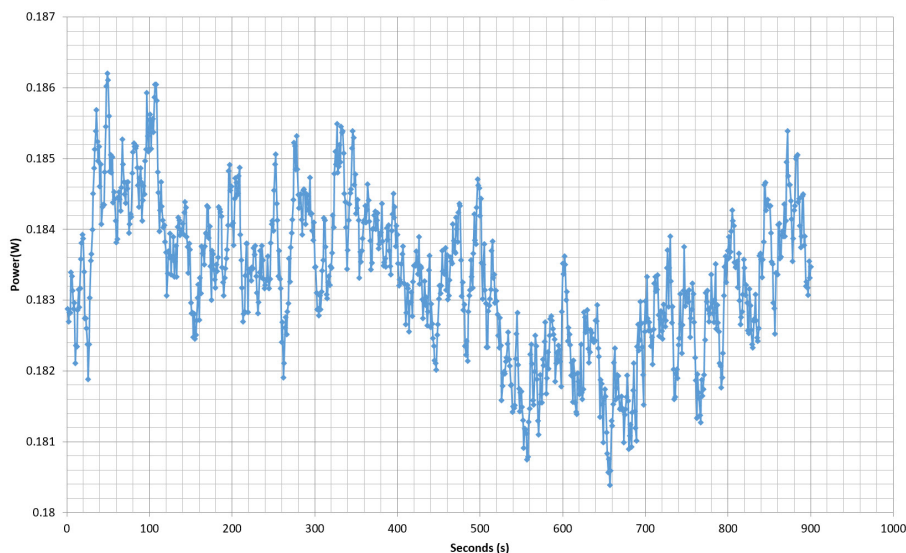
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10-110% LOAD TESTS 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	3.163A	2.016A	1.970A	0.975A	60.158	80.965%	907	18.1	34.01°C	0.636
	12.191V	4.961V	3.348V	5.130V	74.301				39.91°C	230.27V
2	7.303A	3.032A	2.964A	1.173A	119.822	88.031%	1065	22.8	34.73°C	0.800
	12.176V	4.949V	3.338V	5.117V	136.113				40.87°C	230.26V
3	11.834A	3.544A	3.452A	1.372A	179.713	89.636%	1203	26.4	35.03°C	0.872
	12.144V	4.939V	3.330V	5.104V	200.492				41.59°C	230.27V
4	16.368A	4.058A	3.975A	1.572A	239.733	90.069%	1452	32.4	35.74°C	0.910
	12.129V	4.929V	3.321V	5.091V	266.165				42.89°C	230.27V
5	20.580A	5.087A	4.983A	1.773A	299.813	89.993%	1773	38.1	36.03°C	0.930
	12.114V	4.916V	3.311V	5.077V	333.152				43.73°C	230.26V
6	24.807A	6.118A	5.998A	1.976A	359.915	89.698%	2036	41.5	36.64°C	0.944
	12.098V	4.903V	3.301V	5.063V	401.251				44.84°C	230.26V
7	29.009A	7.160A	7.019A	2.179A	419.627	89.251%	2245	43.0	37.34°C	0.949
	12.083V	4.890V	3.291V	5.048V	470.166				46.18°C	230.27V
8	33.292A	8.205A	8.045A	2.385A	480.153	88.677%	2432	45.7	37.56°C	0.956
	12.067V	4.877V	3.281V	5.034V	541.462				46.81°C	230.27V
9	37.915A	8.734A	8.556A	2.389A	539.460	88.170%	2426	45.5	38.23°C	0.961
	12.052V	4.867V	3.272V	5.025V	611.841				48.22°C	230.27V
10	42.381A	9.266A	9.102A	3.001A	599.869	87.372%	2425	45.5	39.67°C	0.965
	12.037V	4.858V	3.264V	5.000V	686.566				50.27°C	230.27V
11	47.429A	9.276A	9.121A	3.006A	659.890	86.686%	2429	45.6	40.28°C	0.966
	12.022V	4.851V	3.256V	4.991V	761.242				52.15°C	230.27V
CL1	0.144A	14.005A	13.999A	0.000A	116.488	81.736%	2108	41.5	36.27°C	0.811
	12.159V	4.886V	3.308V	5.124V	142.518				43.66°C	230.27V
CL2	50.014A	1.002A	1.001A	1.000A	615.597	87.975%	2424	45.5	39.32°C	0.964
	12.043V	4.911V	3.290V	5.065V	699.741				50.61°C	230.27V

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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	1.193A	0.504A	0.478A	0.194A	19.659	78.068%	0	<6.0	0.337
	12.192V	4.977V	3.358V	5.157V	25.182				230.30V
2	2.436A	1.007A	0.984A	0.389A	40.077	84.210%	0	<6.0	0.503
	12.219V	4.972V	3.355V	5.149V	47.592				230.30V
3	3.619A	1.511A	1.464A	0.584A	59.534	81.616%	779	13.9	0.633
	12.192V	4.966V	3.350V	5.141V	72.944				230.28V
4	4.867A	2.017A	1.970A	0.779A	79.900	84.893%	872	16.9	0.710
	12.185V	4.960V	3.346V	5.133V	94.119				230.27V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	18.9 mV	18.4 mV	11.2 mV	19.9 mV	Pass
20% Load	25.3 mV	18.0 mV	11.5 mV	20.3 mV	Pass
30% Load	24.8 mV	17.5 mV	12.0 mV	24.2 mV	Pass
40% Load	24.1 mV	17.5 mV	12.4 mV	27.9 mV	Pass
50% Load	23.1 mV	17.9 mV	12.5 mV	29.4 mV	Pass
60% Load	22.7 mV	17.4 mV	14.1 mV	31.2 mV	Pass
70% Load	22.8 mV	19.7 mV	15.6 mV	35.6 mV	Pass
80% Load	24.4 mV	19.6 mV	16.8 mV	34.5 mV	Pass
90% Load	24.1 mV	20.1 mV	17.1 mV	36.0 mV	Pass
100% Load	37.0 mV	21.7 mV	18.9 mV	41.3 mV	Pass
110% Load	39.2 mV	21.5 mV	19.6 mV	41.7 mV	Pass
Crossload 1	41.8 mV	25.4 mV	18.6 mV	23.0 mV	Pass
Crossload 2	38.7 mV	22.4 mV	14.0 mV	38.5 mV	Pass

All data and graphs included in this test report can be used by any individual on the following conditions:

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- > The link to the original test results document should be provided in any case

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Anex

Cooler Master MWE Bronze 600



Top side

600W MODEL / 型号					
Switching Power Supply					
AC INPUT 交流輸入/交流輸入	100-240V~, 10-5A, 50-60Hz				
DC OUTPUT 直流輸出/直流輸出	+5V	+3.3V	+12V	-12V	+5VSB
	20A	20A	50A	0.3A	3A
TOTAL POWER 總功率/总功率	120W	600W	3.6W	15W	
	600W				



Power specifications label

CERTIFICATIONS 115V



CERTIFICATIONS 230V



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