EFFICIENCY AND NOISE REPORT IN ACCORDANCE WITH
CYBENETICS ETA AND CYBENETICS LAMBDA PROCEDURE

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

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	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer 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
Transformer	3kVA x2

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RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6 (+-2°C / +- 3.6°F)
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)	Standard+

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)	Standard+

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				

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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, 0.2Ohm)
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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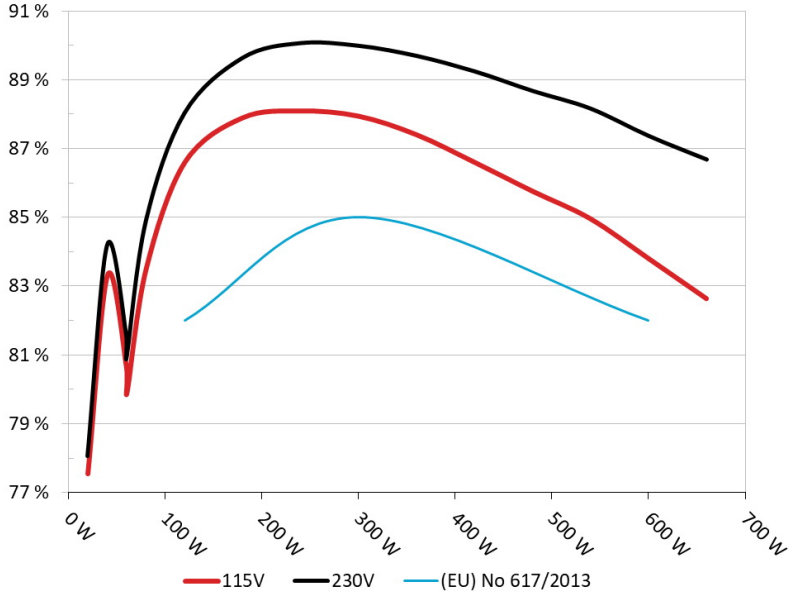
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Cooler Master MWE Bronze 600
Ambient: 32°C - 40°C (89.6°F - 104°F)

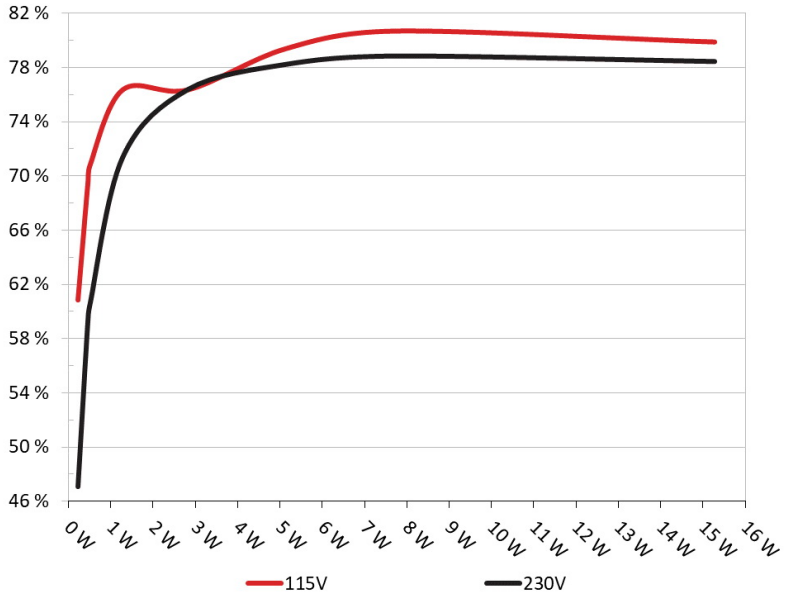


INFO

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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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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115V

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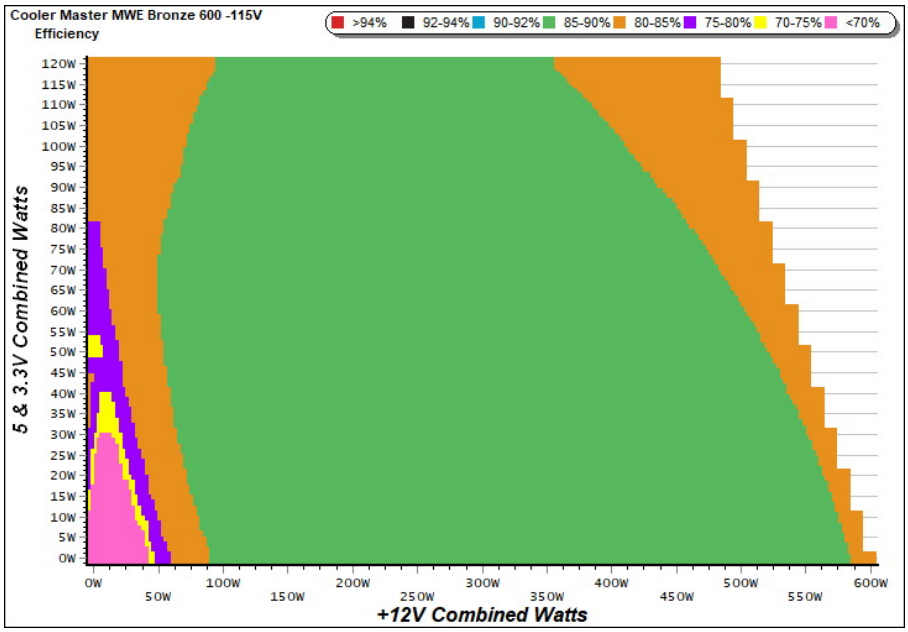
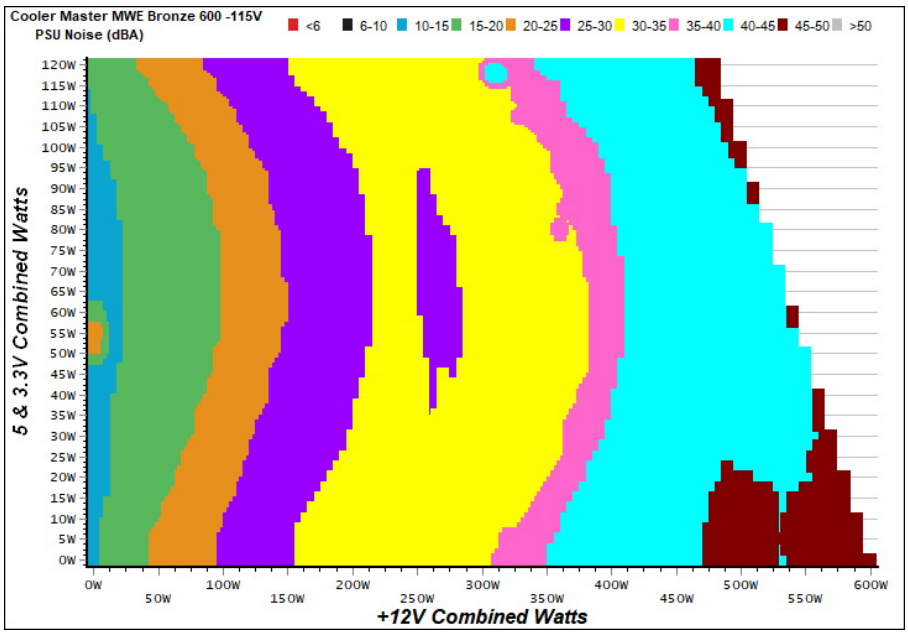
EFFICIENCY GRAPH 115V



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 (+-2 °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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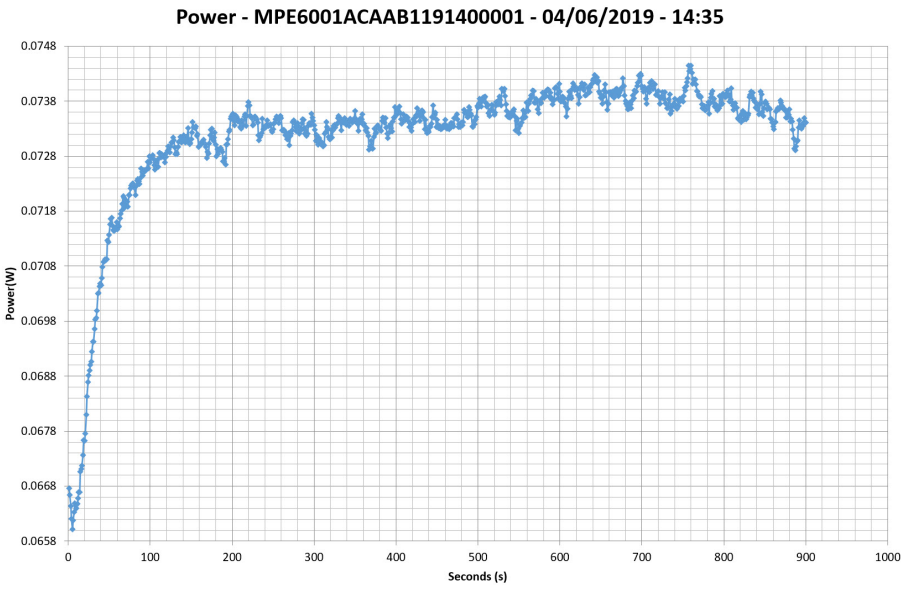
VAMPIRE POWER -115V



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

COMMISSION REGULATION (EU) NO 617/2013 TESTING 115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
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
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
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

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230V

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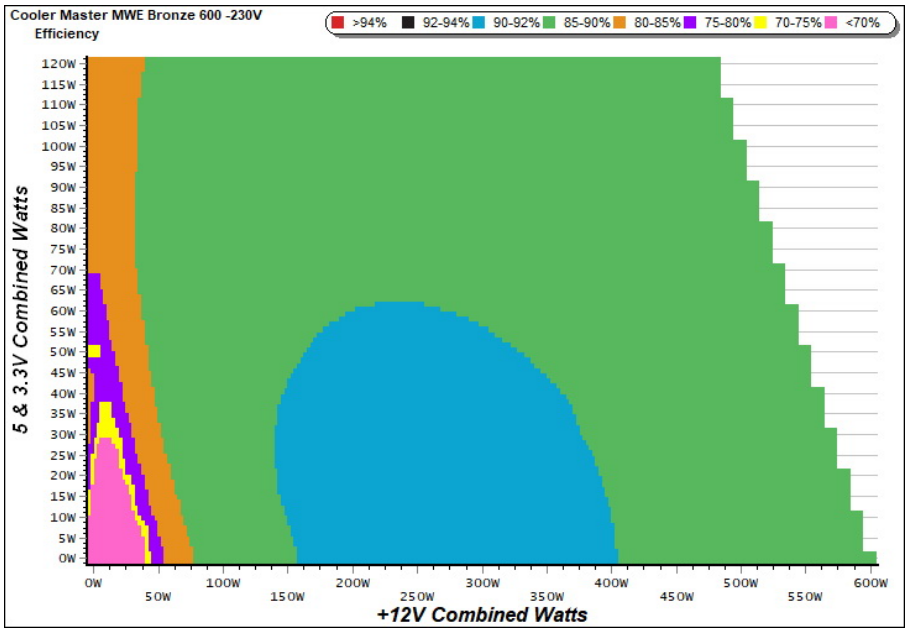
EFFICIENCY GRAPH 230V



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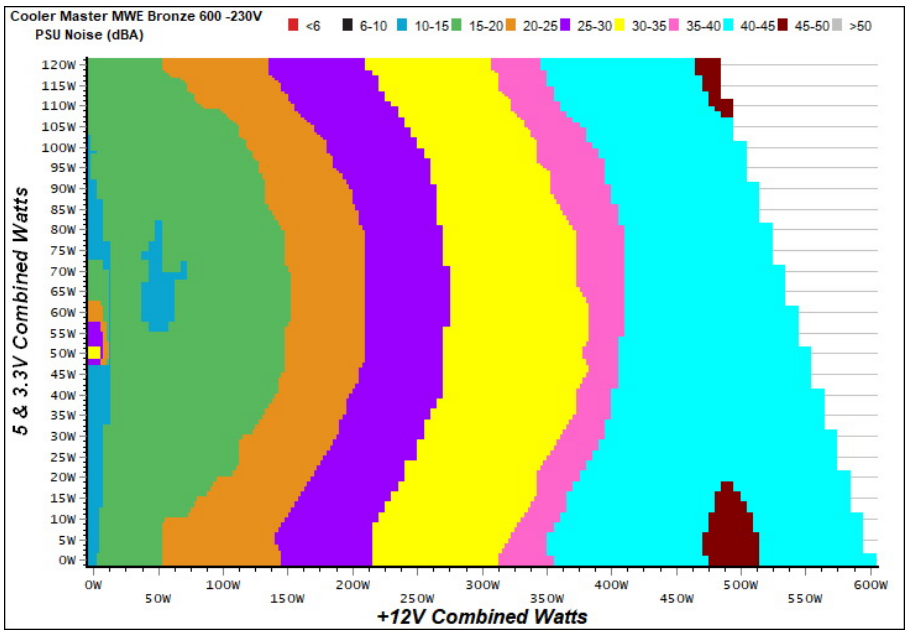
NOISE GRAPH 230V



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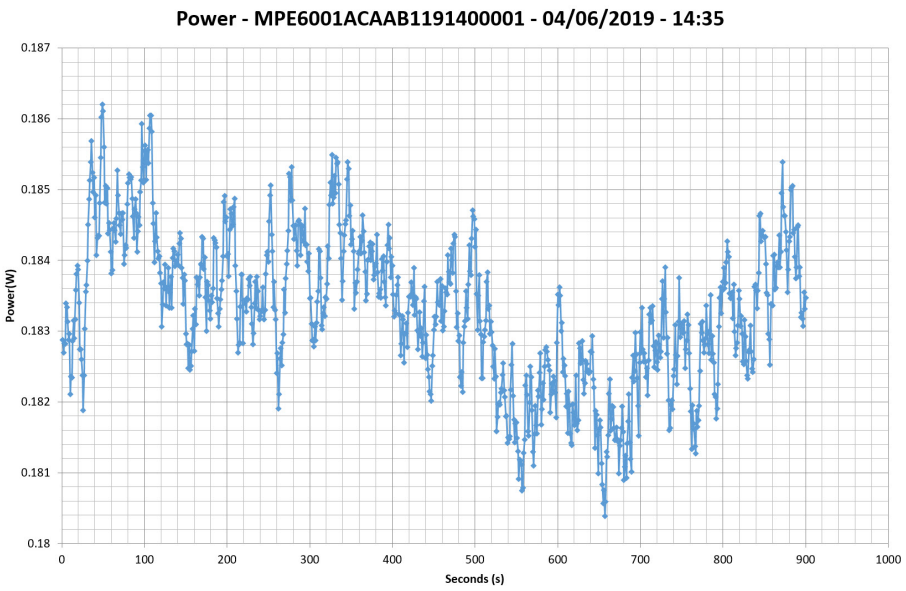
VAMPIRE POWER -230V



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COMMISSION REGULATION (EU) NO 617/2013 TESTING 230V

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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
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
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

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Cooler Master MWE Bronze 600

Top side

Power specifications label

CERTIFICATIONS 115V

CYBENETICS SILVER

CYBENETICS STANDARD+

CERTIFICATIONS 230V

CYBENETICS STANDARD+ 230v

Aristeidis Bitziopoulos
Lab Director