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

Cooler Master MWE Gold 550

Lab ID#: CM19550127
Receipt Date: Sep 26, 2019
Test Date: Oct 15, 2019

Report: 19PS876A
Report Date: Oct 22, 2019

DUT INFORMATION

Brand	Cooler Master
Manufacturer (OEM)	Huizhou Xin Hui Yuan Tech.
Series	MWE Gold
Model Number	MPY-5501-AFAAG-EU
Serial Number	MPY5501AFAAG1192700062
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	7
Rated Frequency (Hz)	50-60
Rated Power (W)	550
Type	ATX12V
Cooling	120mm Rifle Bearing Fan (DF1202512RFLN)
Semi-Passive Operation	✓
Cable Design	Fully Modular

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, Keithley 2015 - THD
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	ErP Lot 6 2010: ✓ ErP Lot 6 2013: ✓ ErP Lot 3 2014 & CEC: Partially
(EU) No 617/2013 Compliance	✓

115V

Average Efficiency	88.547%
Efficiency With 10W (≤500W) or 2% (>500W)	57.769
Average Efficiency 5VSB	78.543%
Standby Power Consumption (W)	0.0783322
Average PF	0.989
Avg Noise Output	31.96 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	Standard++

230V

Average Efficiency	90.573%
Average Efficiency 5VSB	76.647%
Standby Power Consumption (W)	0.1421220
Average PF	0.943
Avg Noise Output	30.63 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	Standard++

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	15	15	45.8	2.5	0.3
	Watts	100		549.6	12.5	3.6
Total Max. Power (W)		550				

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CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (610mm)	1	1	18-22AWG	No
4+4 pin EPS12V (650mm)	1	1	18AWG	No
6+2 pin PCIe (610mm+120mm)	1	2	18AWG	No
SATA (400mm+120mm+120mm+120mm)	2	8	18AWG	No
4-pin Molex (410mm+120mm+120mm) / FDD (+120mm)	1	3 / 1	18-22AWG	No
AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

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Cooler Master MWE Gold 550

General Data	
Manufacturer (OEM)	Huizhou Xin Hui Yuan Tech
PCB Type	Double Sided
Primary Side	
Transient Filter	4x Y caps, 3x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	1x GBU1006 (600V, 10A @ 100°C)
APFC MOSFETS	2x AP 65SL380D
APFC Boost Diode	1x ON Semiconductor RHRP1560 (600V, 15A @ 140°C)
Hold-up Cap(s)	1x Elite (400V, 330uF, 2,000h @ 85°C, GM)
Main Switchers	4x Champion GPT10N50AD (500V, 9.7A, 0.7Ohm)
APFC Controller	ON Semiconductor NCP1654
Resonant Controllers	Champion CM6901T6
Topology	Primary side: Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	2x Excelliance MOS Corp EMP16N04HS (40V, 100A @ 100°C, 1.6mOhm)
5V & 3.3V	DC-DC Converters:4x Excelliance MOS Corp EMB06N03HR (30V, 45A @ 100°C, 6mOhm) PWM Controllers: uPI Semi uP3861P
Filtering Capacitors	Electrolytics: 13x Elite (4-10,000h @ 105°C, EY) Polymers: 8x Elite
Supervisor IC	Sitronix ST9S313-DAG (OVP, UVP, SCP)
Fan Model	CoolerMaster (A12025-25RB-3IN-F1) DF1202512RFLN (120mm, 12V, 0.16A, Rifle Bearing Fan)
5VSB Circuit	
Rectifier	1x 1x Sapcon S20C45C SBR (45V, 20A)
Standby PWM Controller	Infineon ICE2QR4765

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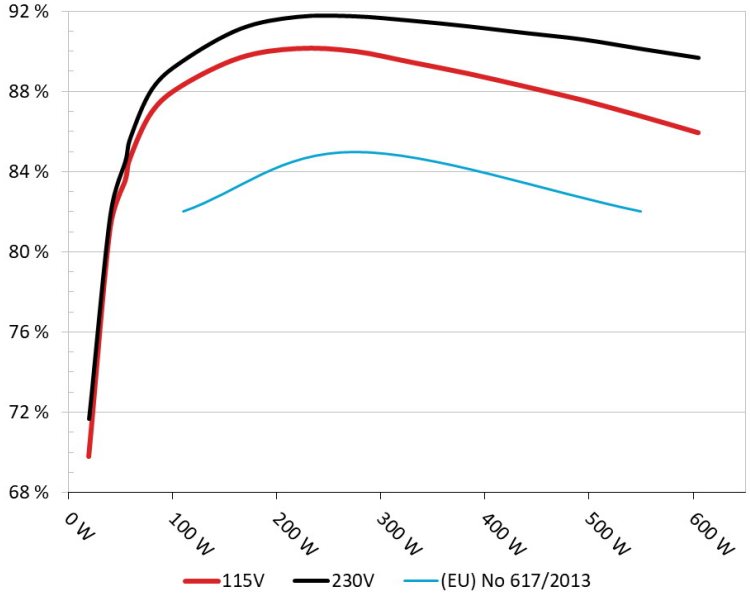
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Cooler Master MWE Gold 550
Ambient: 37°C - 47°C (98.6°F - 116.6°F)

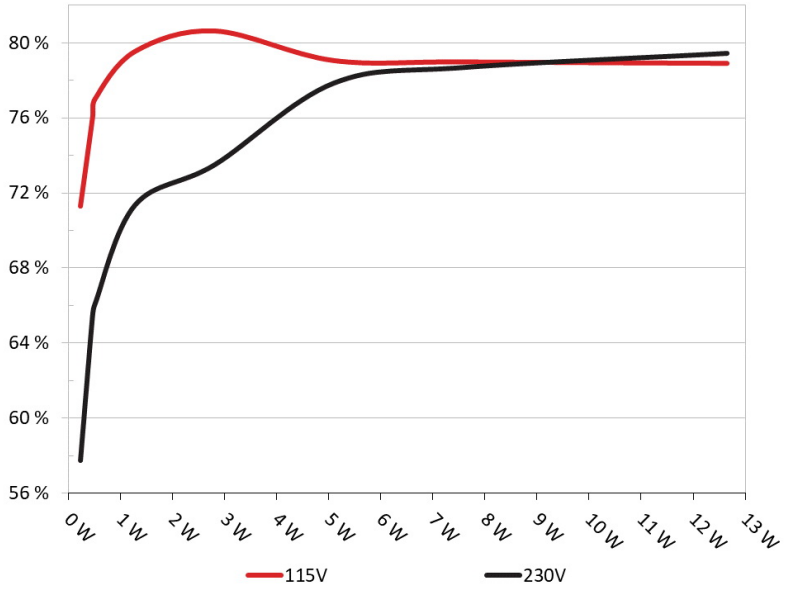


INFO

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 Gold 550
Ambient: 34°C - 36°C (93.2°F - 96.8°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	0.231	71.296%	0.045
	5.126V	0.324		115.16V
2	0.090A	0.462	75.987%	0.083
	5.125V	0.608		115.15V
3	0.550A	2.812	80.642%	0.316
	5.112V	3.487		115.16V
4	1.000A	5.101	79.061%	0.401
	5.100V	6.452		115.16V
5	1.500A	7.632	78.990%	0.444
	5.087V	9.662		115.15V
6	2.501A	12.653	78.914%	0.486
	5.060V	16.034		115.15V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231	57.750%	0.017
	5.126V	0.400		230.33V
2	0.090A	0.461	65.390%	0.030
	5.125V	0.705		230.33V
3	0.550A	2.812	73.497%	0.146
	5.112V	3.826		230.33V
4	1.000A	5.101	77.842%	0.220
	5.100V	6.553		230.33V
5	1.500A	7.632	78.680%	0.280
	5.087V	9.700		230.33V
6	2.501A	12.653	79.424%	0.349
	5.060V	15.931		230.33V

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115V

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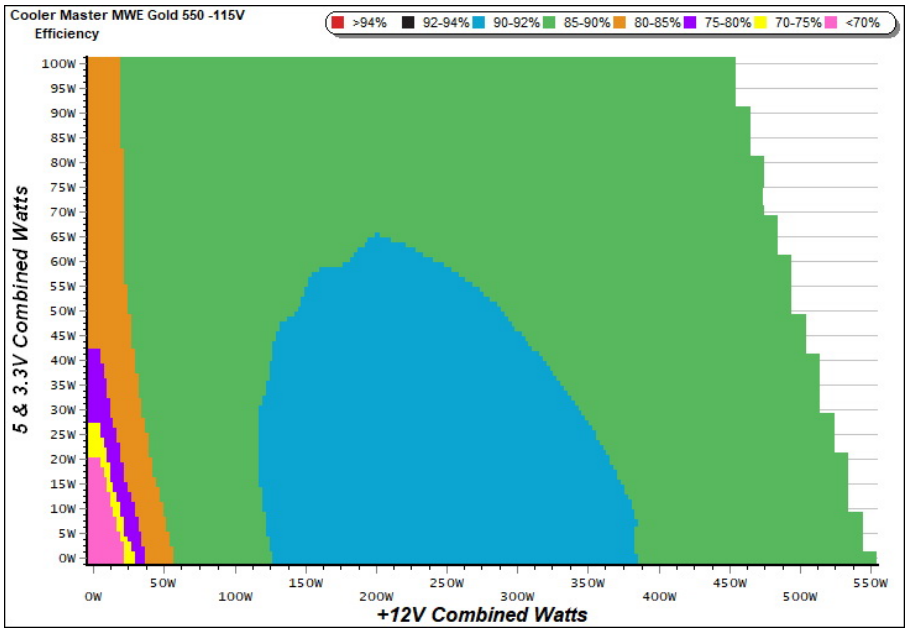
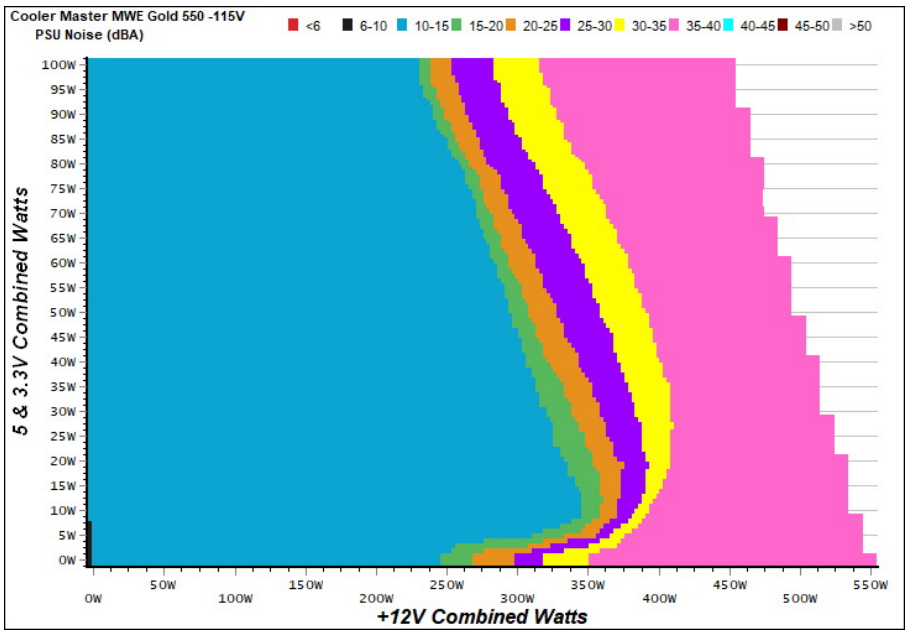
EFFICIENCY GRAPH 115V



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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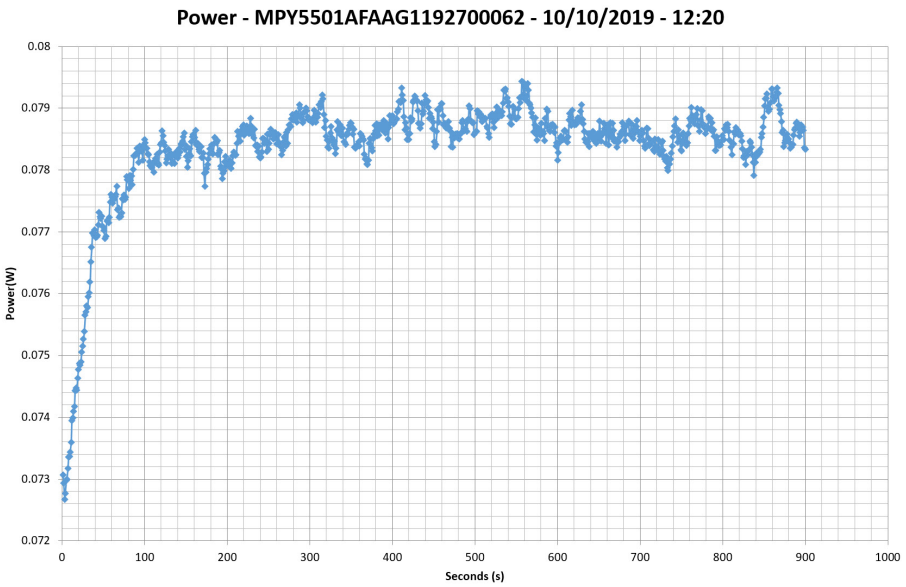
VAMPIRE POWER -115V



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

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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
1	2.715A	1.990A	1.989A	0.983A	54.549	83.545%	803	11.1	40.48°C	0.951
	12.130V	5.030V	3.320V	5.090V	65.293				42.84°C	115.18V
2	6.482A	2.989A	2.988A	1.183A	109.449	88.291%	805	11.2	40.53°C	0.980
	12.117V	5.022V	3.311V	5.074V	123.964				43.43°C	115.18V
5	18.552A	5.005A	5.020A	1.790A	274.628	89.999%	1503	25.9	42.06°C	0.997
	12.080V	4.998V	3.287V	5.030V	305.147				46.80°C	115.16V
10	38.498A	9.086A	9.160A	2.521A	549.796	86.764%	2350	38.6	45.59°C	0.996
	12.016V	4.952V	3.243V	4.960V	633.667				53.71°C	115.14V

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230V

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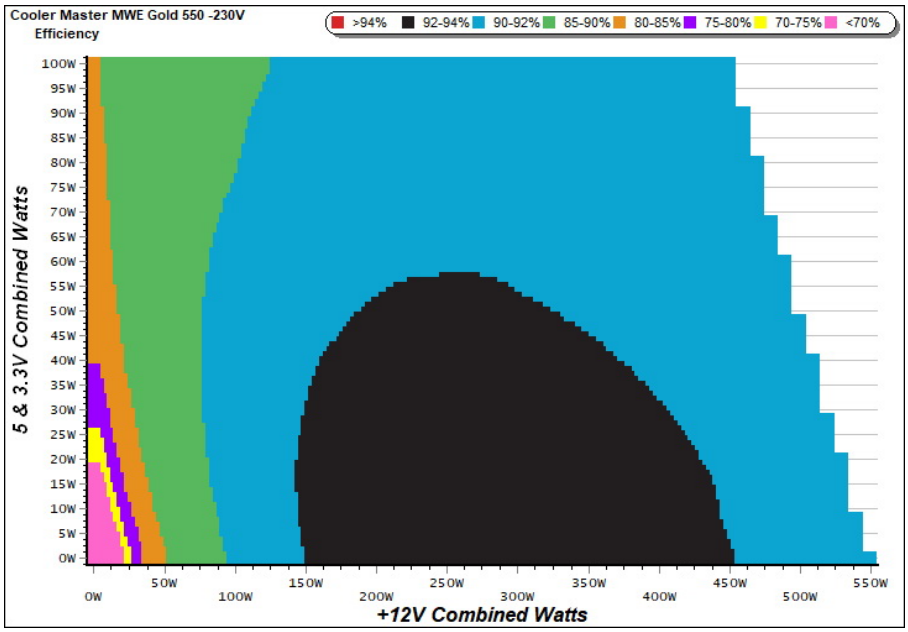
EFFICIENCY GRAPH 230V



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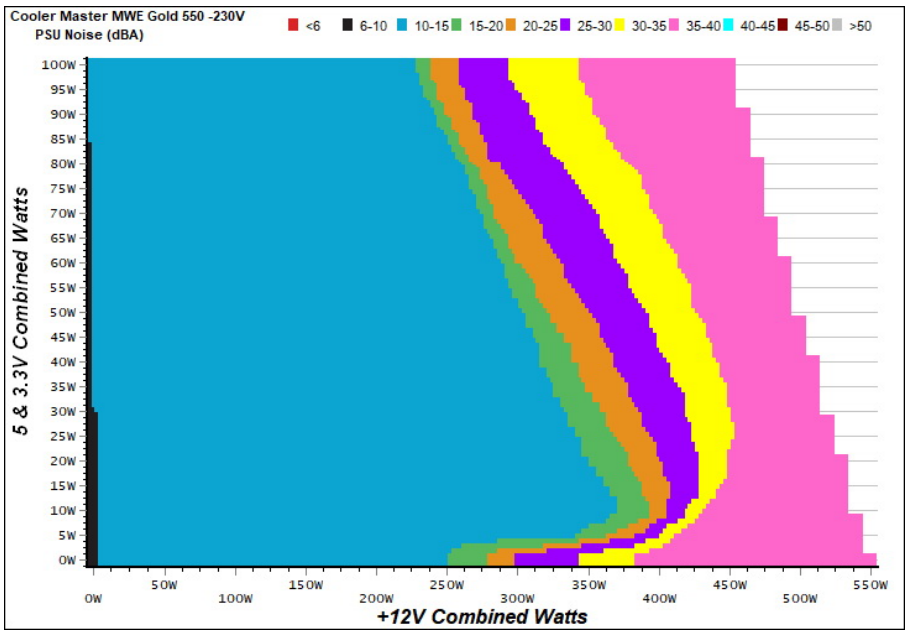
NOISE GRAPH 230V



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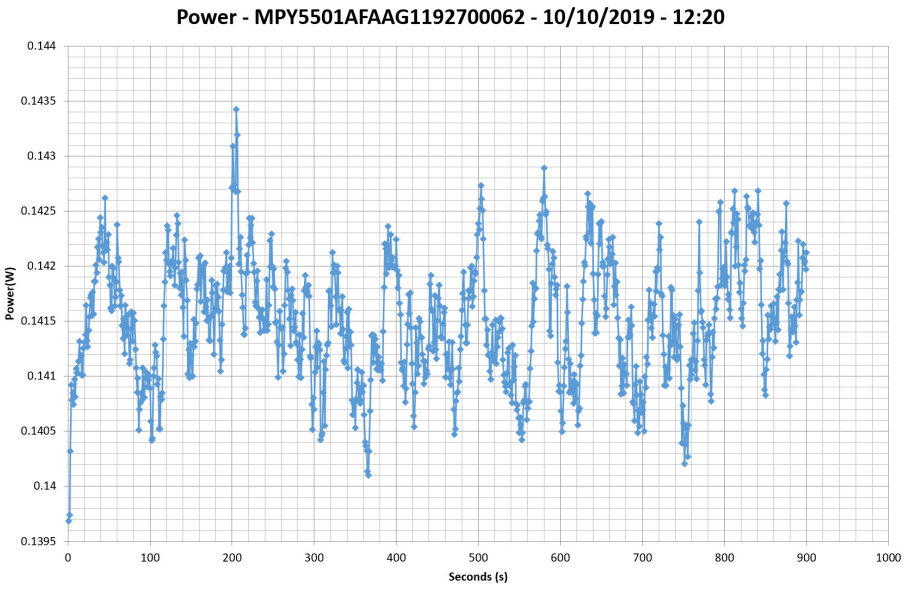
VAMPIRE POWER -230V



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

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	2.713A	1.985A	1.987A	0.983A	54.495	84.528%	801	11.2	40.01°C	0.739
	12.128V	5.033V	3.320V	5.090V	64.470				42.04°C	230.37V
2	6.481A	2.986A	2.987A	1.183A	109.421	89.513%	802	11.1	40.76°C	0.879
	12.115V	5.026V	3.312V	5.074V	122.241				43.02°C	230.38V
5	18.559A	5.000A	5.019A	1.790A	274.657	91.751%	1739	31.8	42.21°C	0.965
	12.078V	5.000V	3.287V	5.030V	299.351				46.17°C	230.39V
10	38.511A	9.091A	9.167A	2.521A	549.854	90.126%	2348	38.6	45.62°C	0.986
	12.013V	4.951V	3.241V	4.959V	610.094				52.80°C	230.40V

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Cooler Master MWE Gold 550

Top side

Power specifications label

CERTIFICATIONS 115V

CYBENETICS GOLD

CYBENETICS STANDARD++

CERTIFICATIONS 230V

CYBENETICS GOLD 230v

CYBENETICS STANDARD++ 230v

Aristeidis Bitziopoulos
Lab Director