Anex

Cooler Master MWE Gold 850 V2 (Fixed)

Lab ID#: CM85001847
Receipt Date: May 6, 2021
Test Date: May 24, 2021

Report: 21PS1847A
Report Date: May 24, 2021

DUT INFORMATION

Brand	Cooler Master
Manufacturer (OEM)	Huizhou Xin Hui Yuan Tech (Fusion Power)
Series	MWE Gold V2
Model Number	MPE-8501-ACAAG-U2
Serial Number	MPE8501ACAAGU21205200001
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	12-6
Rated Frequency (Hz)	50-60
Rated Power (W)	850
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, 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
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
ALPM (Alternative Low Power Mode) compatible	✓

115V

Average Efficiency	88.544%
Efficiency With 10W (≤500W) or 2% (>500W)	62.127
Average Efficiency 5VSB	81.863%
Standby Power Consumption (W)	0.1039970
Average PF	0.990
Avg Noise Output	35.11 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	Standard+

230V

Average Efficiency	90.724%
Average Efficiency 5VSB	81.103%
Standby Power Consumption (W)	0.1631680
Average PF	0.955
Avg Noise Output	34.43 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	Standard++

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	70.8	3	0.3
	Watts	100		849.6	15	3.6
Total Max. Power (W)		850				

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

Hold-Up Time (ms)	20
AC Loss to PWR_OK Hold Up Time (ms)	16.9
PWR_OK Inactive to DC Loss Delay (ms)	3.1

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CABLES AND CONNECTORS

Captive Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (620mm)	1	1	18-22AWG	No
8 pin EPS12V (630mm) / 4+4 pin EPS12V (+125mm)	1	1 / 1	16-18AWG	No
6+2 pin PCIe (590mm+120mm)	2	4	16-18AWG	No
SATA (510mm+125mm+125mm+125mm)	3	12	18AWG	No
4-pin Molex (510mm+125mm+125mm+125mm)	1	4	18AWG	No

Modular Cables

AC Power Cord (1370mm) - C13 coupler	1	1	18AWG	-

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General Data	
Manufacturer (OEM)	Huizhou Xin Hui Yuan Tech (Fusion Power)
PCB Type	Double Sided
Primary Side	
Transient Filter	4x Y caps, 3x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor MF72 5D15 (5Ohm) & Relay
Bridge Rectifier(s)	2x GBU15J (600V, 15A @ 100°C)
APFC MOSFETs	2x NCE Power NCE65TF130 (650V, 18A @ 100°C, Rds(on): 0.13Ohm)
APFC Boost Diode	1x ON Semiconductor RHRP1560 (600V, 15A @ 140°C)
Bulk Cap(s)	1x Ltec (400V, 680uF, 2,000h @ 105°C, HP)
Main Switchers	4x Great Power GPT13N50DG (500V, 13A, Rds(on): 0.49Ohm)
APFC Controller	ON Semiconductor NCP1654
Resonant Controller	Champion CM6901T6X
Topology	Primary side: APFC, Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETs	4x Excelliance MOS Corp EMP16N04HS (40V, 100A @ 100°C, Rds(on): 1.6mOhm)
5V & 3.3V	DC-DC Converters: 4x Excelliance MOS Corp EMB06N03HR (30V, 45A @ 100°C, Rds(on): 6mOhm) PWM Controller(s): ANPEC APW7159C
Filtering Capacitors	Electrolytic: 5x Ltec (4-7,000h @ 105°C, LZG), 7x Elite (4-10,000h @ 105°C, EY) Polymer: 6x FPCAP, 2x Elite, 4x info
Supervisor IC	IN1S313I-DAG
Fan Model	Hong Hua HA1225H12F-Z (120mm, 12V, 0.58A, Fluid Dynamic Bearing Fan)
5VSB Circuit	
Rectifier	1x 45R10C
Standby PWM Controller	Excelliance MOS Corp EM8569

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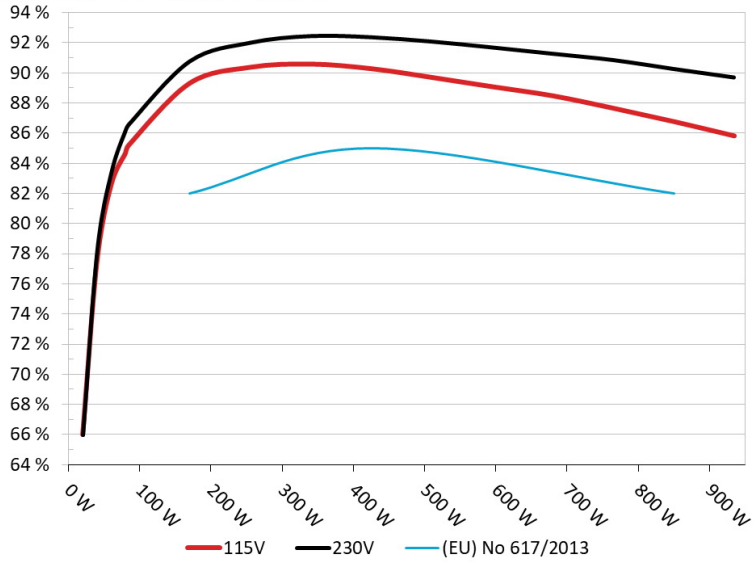
Cooler Master MWE Gold 850 V2 (Fixed)

EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Cooler Master MWE Gold 850 V2 (Fixed)
Ambient: 37°C - 47°C (98.6°F - 116.6°F)

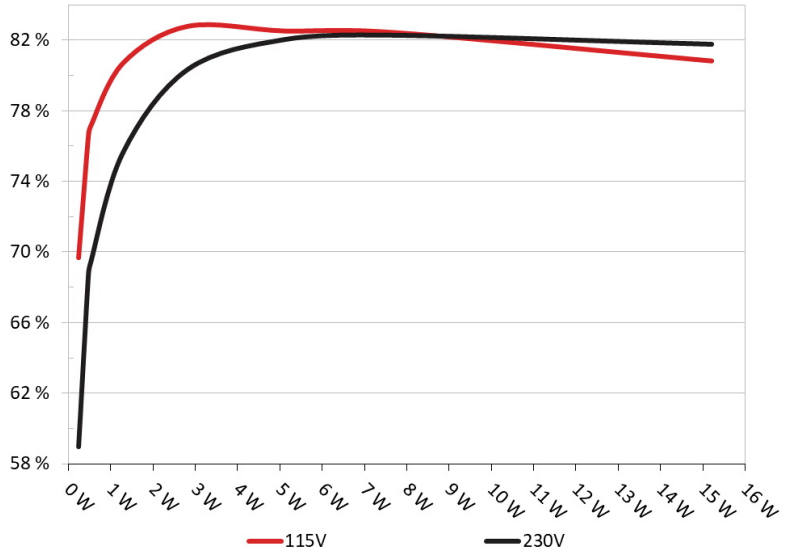


INFO

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 850 V2 (Fixed)
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

Anex

Cooler Master MWE Gold 850 V2 (Fixed)

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	69.697%	0.040
	5.120V	0.330		115.13V
2	0.090A	0.461	76.578%	0.072
	5.119V	0.602		115.13V
3	0.550A	2.810	82.769%	0.295
	5.111V	3.395		115.13V
4	1.000A	5.102	82.503%	0.388
	5.103V	6.184		115.13V
5	1.500A	7.641	82.427%	0.437
	5.095V	9.270		115.13V
6	2.999A	15.199	80.811%	0.494
	5.068V	18.808		115.12V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	58.974%	0.014
	5.120V	0.390		230.25V
2	0.090A	0.461	68.703%	0.025
	5.119V	0.671		230.25V
3	0.550A	2.810	80.332%	0.120
	5.111V	3.498		230.24V
4	1.000A	5.102	82.026%	0.194
	5.103V	6.220		230.24V
5	1.500A	7.641	82.267%	0.255
	5.095V	9.288		230.24V
6	2.999A	15.199	81.755%	0.357
	5.068V	18.591		230.23V

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115V

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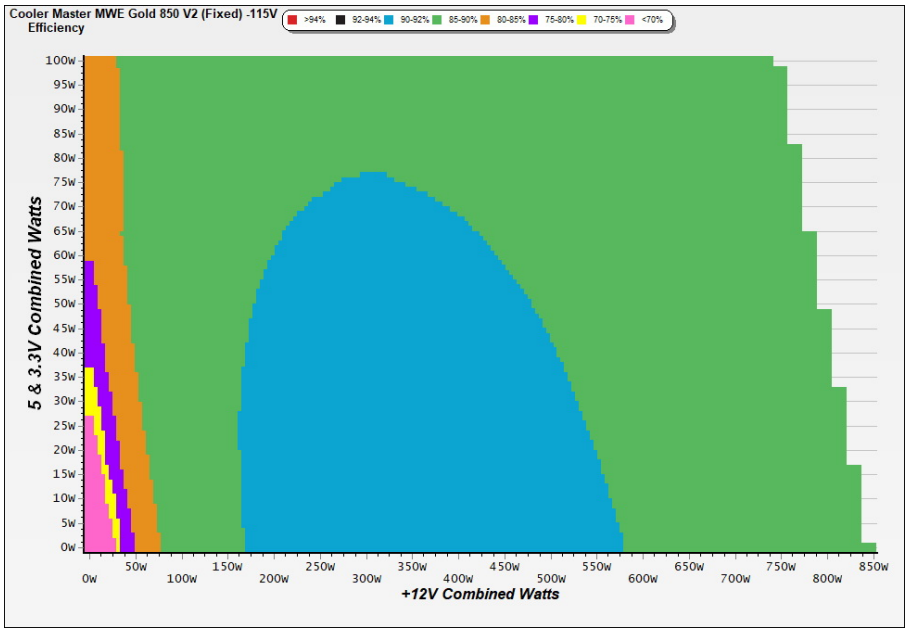
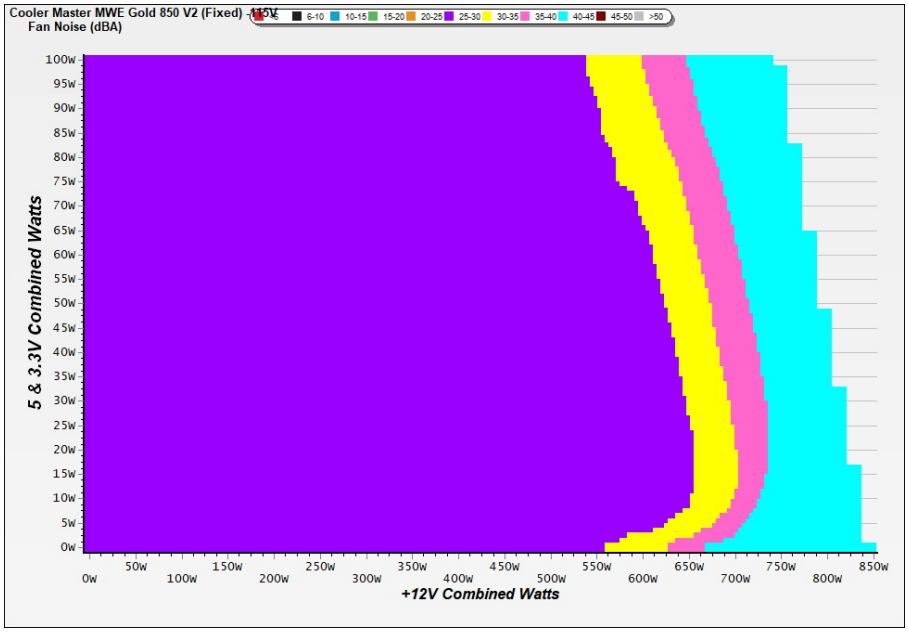
EFFICIENCY GRAPH 115V



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



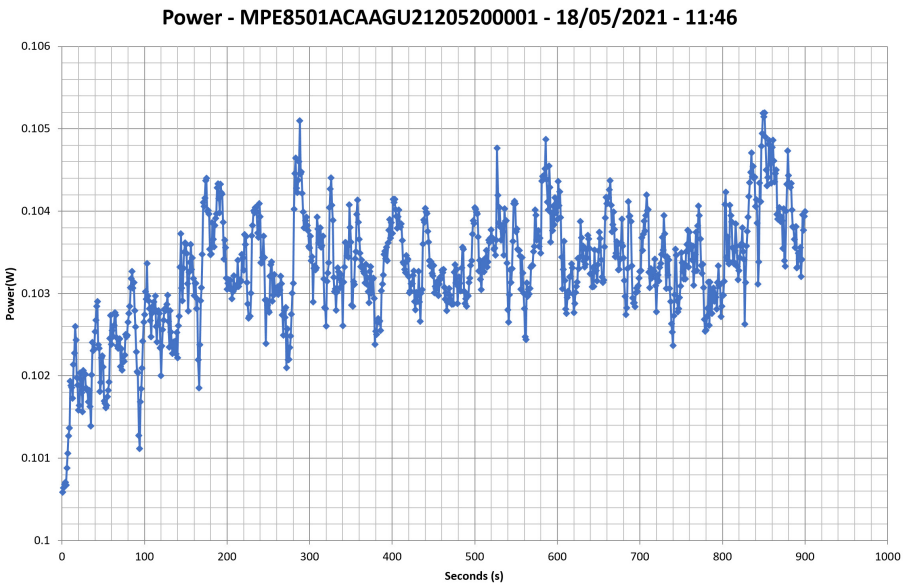
INFO

The PSU's noise in its entire operational range and under 30-32 °C 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

Anex

Cooler Master MWE Gold 850 V2 (Fixed)

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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Cooler Master MWE Gold 850 V2 (Fixed)

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	5.242A	1.978A	1.965A	0.982A	84.951	85.216%	1050	25.4	40.70°C	0.974
	12.085V	5.056V	3.359V	5.093V	99.689				45.32°C	115.14V
2	11.510A	2.969A	2.948A	1.181A	169.983	89.301%	1052	25.7	41.02°C	0.981
	12.084V	5.053V	3.356V	5.081V	190.348				46.36°C	115.13V
3	18.119A	3.465A	3.443A	1.381A	254.975	90.365%	1054	25.7	41.24°C	0.987
	12.083V	5.050V	3.353V	5.069V	282.162				47.05°C	115.13V
4	24.735A	3.962A	3.942A	1.581A	339.972	90.578%	1055	25.7	41.40°C	0.993
	12.079V	5.047V	3.350V	5.058V	375.336				47.83°C	115.13V
5	30.979A	4.955A	4.930A	1.784A	424.722	90.272%	1067	25.4	42.64°C	0.995
	12.080V	5.045V	3.346V	5.046V	470.494				49.74°C	115.13V
6	37.215A	5.954A	5.922A	1.986A	509.261	89.696%	1728	39.7	42.97°C	0.997
	12.077V	5.042V	3.343V	5.034V	567.761				50.57°C	115.12V
7	43.524A	6.948A	6.916A	2.189A	594.563	89.077%	1987	43.7	43.21°C	0.997
	12.073V	5.038V	3.340V	5.022V	667.469				51.44°C	115.12V
8	49.867A	7.947A	7.908A	2.394A	679.837	88.471%	1995	43.8	43.86°C	0.997
	12.061V	5.034V	3.337V	5.011V	768.433				52.82°C	115.11V
9	56.529A	8.444A	8.397A	2.398A	764.792	87.646%	2010	43.8	44.85°C	0.998
	12.070V	5.033V	3.334V	5.001V	872.594				54.36°C	115.10V
10	62.978A	8.950A	8.915A	3.010A	849.636	86.764%	2013	43.8	46.02°C	0.998
	12.067V	5.028V	3.330V	4.981V	979.247				56.45°C	115.10V
11	70.008A	8.953A	8.922A	3.015A	934.393	85.815%	2015	43.8	46.73°C	0.998
	12.066V	5.025V	3.328V	4.974V	1088.851				57.31°C	115.10V
CL1	0.116A	11.998A	11.997A	0.000A	102.193	83.416%	1054	25.7	42.45°C	0.988
	12.087V	5.051V	3.350V	5.094V	122.510				49.37°C	115.15V
CL2	70.817A	1.000A	1.000A	1.000A	867.801	87.288%	2007	43.7	46.29°C	0.998
	12.065V	5.032V	3.336V	5.026V	994.186				56.29°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	1.227A	0.495A	0.490A	0.196A	19.977	65.996%	1044	24.8	0.838
	12.081V	5.058V	3.362V	5.114V	30.270				115.14V
2	2.456A	0.989A	0.982A	0.391A	39.965	77.467%	1044	24.8	0.927
	12.079V	5.057V	3.361V	5.108V	51.590				115.14V
3	3.688A	1.483A	1.473A	0.588A	59.998	82.595%	1046	24.9	0.965
	12.080V	5.056V	3.360V	5.102V	72.641				115.14V
4	4.913A	1.975A	1.965A	0.785A	79.950	84.664%	1049	25.1	0.971
	12.083V	5.056V	3.359V	5.096V	94.432				115.14V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	10.40mV	11.60mV	12.30mV	9.60mV	Pass
20% Load	14.70mV	14.00mV	15.40mV	10.50mV	Pass
30% Load	13.80mV	16.20mV	22.90mV	10.70mV	Pass
40% Load	15.40mV	16.50mV	28.30mV	11.70mV	Pass
50% Load	16.60mV	17.50mV	22.40mV	12.60mV	Pass
60% Load	18.70mV	20.20mV	24.10mV	14.50mV	Pass
70% Load	21.20mV	20.50mV	25.80mV	15.60mV	Pass
80% Load	24.00mV	20.60mV	31.70mV	17.00mV	Pass
90% Load	25.70mV	22.10mV	40.60mV	17.40mV	Pass
100% Load	37.30mV	25.40mV	45.50mV	18.60mV	Pass
110% Load	41.30mV	25.90mV	48.10mV	19.40mV	Pass
Crossload1	16.70mV	18.60mV	23.90mV	12.40mV	Pass
Crossload2	39.30mV	20.80mV	36.60mV	17.80mV	Pass

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230V

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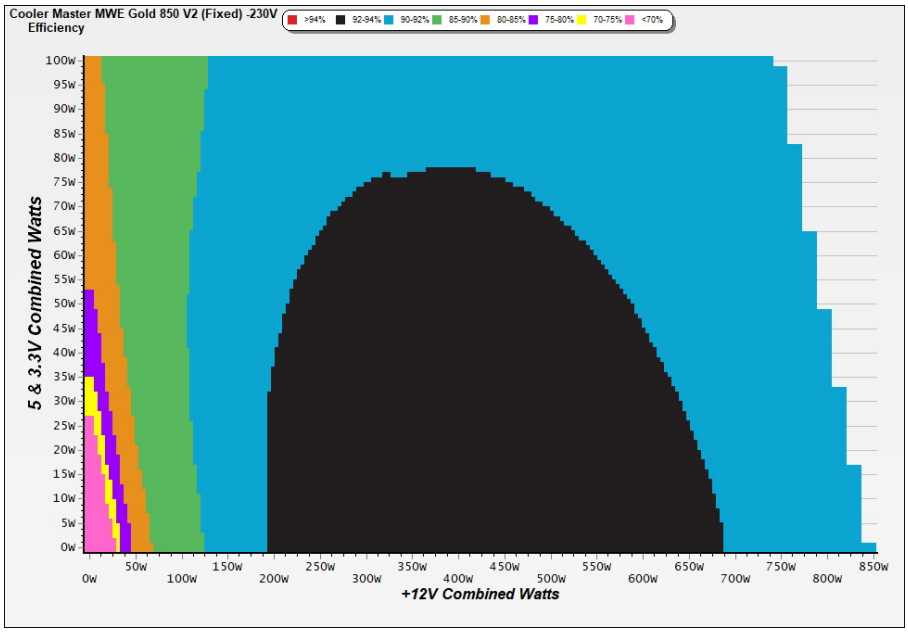
EFFICIENCY GRAPH 230V



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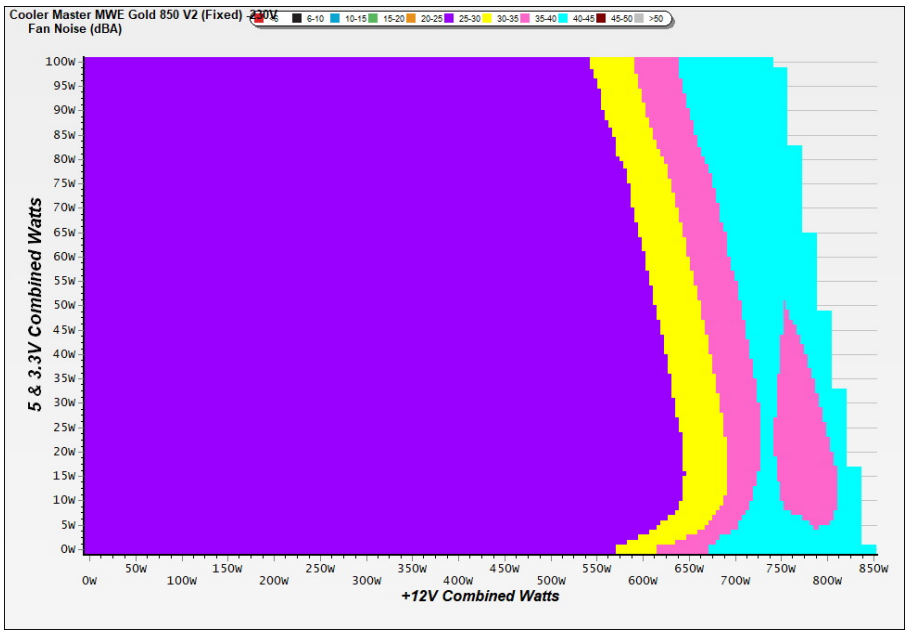
NOISE GRAPH 230V



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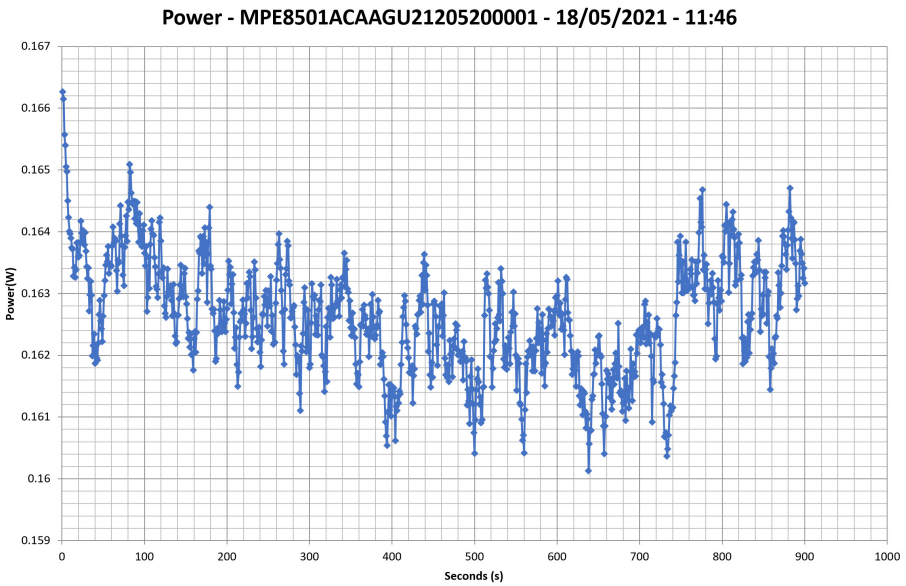
VAMPIRE POWER -230V



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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	5.242A	1.980A	1.966A	0.982A	84.957	86.602%	1051	25.4	40.06°C	0.827
	12.085V	5.054V	3.358V	5.090V	98.100				43.71°C	230.34V
2	11.515A	2.970A	2.952A	1.182A	170.028	90.762%	1053	25.7	40.52°C	0.923
	12.082V	5.051V	3.354V	5.078V	187.334				44.82°C	230.35V
3	18.128A	3.467A	3.446A	1.382A	255.023	91.993%	1053	25.7	41.66°C	0.953
	12.079V	5.048V	3.352V	5.067V	277.220				46.81°C	230.35V
4	24.746A	3.965A	3.942A	1.582A	340.013	92.435%	1054	25.7	41.71°C	0.971
	12.075V	5.045V	3.349V	5.056V	367.839				47.66°C	230.34V
5	31.001A	4.959A	4.935A	1.784A	424.816	92.358%	1062	25.4	42.67°C	0.978
	12.074V	5.042V	3.345V	5.044V	459.968				49.53°C	230.34V
6	37.232A	5.955A	5.927A	1.987A	509.333	92.072%	1474	35.1	42.86°C	0.984
	12.074V	5.039V	3.342V	5.032V	553.188				50.50°C	230.33V
7	43.546A	6.951A	6.921A	2.191A	594.619	91.681%	1981	43.7	43.19°C	0.986
	12.068V	5.035V	3.339V	5.020V	648.572				51.23°C	230.33V
8	49.850A	7.951A	7.915A	2.396A	679.942	91.261%	1991	43.7	43.31°C	0.987
	12.067V	5.032V	3.335V	5.007V	745.050				52.23°C	230.33V
9	56.557A	8.449A	8.399A	2.400A	764.833	90.843%	2000	43.7	44.11°C	0.988
	12.065V	5.029V	3.332V	4.999V	841.928				53.85°C	230.33V
10	63.002A	8.952A	8.919A	3.011A	849.671	90.252%	2009	43.8	45.67°C	0.990
	12.063V	5.026V	3.329V	4.980V	941.446				55.84°C	230.32V
11	70.009A	8.956A	8.928A	3.016A	934.410	89.692%	2014	43.8	47.13°C	0.991
	12.066V	5.024V	3.326V	4.971V	1041.804				57.88°C	230.32V
CL1	0.115A	11.998A	11.997A	0.000A	102.183	84.753%	1054	25.7	42.59°C	0.873
	12.091V	5.051V	3.350V	5.093V	120.565				49.42°C	230.33V
CL2	70.827A	1.000A	1.002A	1.000A	867.927	90.803%	2010	43.8	45.99°C	0.990
	12.065V	5.032V	3.336V	5.025V	955.834				56.15°C	230.32V

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Cooler Master MWE Gold 850 V2 (Fixed)

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	1.228A	0.494A	0.491A	0.196A	19.984	65.969%	1044	24.8	0.544
	12.078V	5.057V	3.362V	5.113V	30.293				230.30V
2	2.457A	0.988A	0.981A	0.392A	39.974	78.170%	1046	24.9	0.683
	12.080V	5.056V	3.360V	5.107V	51.137				230.32V
3	3.688A	1.482A	1.474A	0.588A	60.006	83.409%	1049	25.1	0.770
	12.083V	5.056V	3.359V	5.101V	71.942				230.33V
4	4.912A	1.977A	1.966A	0.785A	79.956	86.190%	1051	25.4	0.815
	12.085V	5.055V	3.358V	5.094V	92.767				230.34V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	13.30mV	11.20mV	12.90mV	9.10mV	Pass
20% Load	17.50mV	11.10mV	14.20mV	9.90mV	Pass
30% Load	17.00mV	14.50mV	23.70mV	10.40mV	Pass
40% Load	15.40mV	15.50mV	26.20mV	12.00mV	Pass
50% Load	17.90mV	16.70mV	22.00mV	13.00mV	Pass
60% Load	18.90mV	18.00mV	24.40mV	13.80mV	Pass
70% Load	19.90mV	18.80mV	24.70mV	15.30mV	Pass
80% Load	22.40mV	20.90mV	34.00mV	15.60mV	Pass
90% Load	25.50mV	22.70mV	39.50mV	16.50mV	Pass
100% Load	37.10mV	23.80mV	40.10mV	18.10mV	Pass
110% Load	41.20mV	24.80mV	42.40mV	19.40mV	Pass
Crossload1	18.60mV	18.20mV	25.10mV	12.70mV	Pass
Crossload2	39.00mV	20.20mV	35.40mV	17.40mV	Pass

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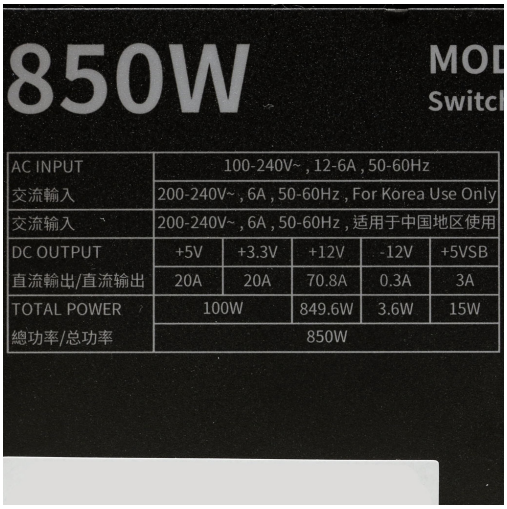
Anex

Cooler Master MWE Gold 850 V2 (Fixed)

Top side



Power specifications label

CERTIFICATIONS 115V

CYBENETICS GOLD

CYBENETICS STANDARD+

CERTIFICATIONS 230V

CYBENETICS GOLD 230v

CYBENETICS STANDARD++ 230v

Aristeidis Bitziopoulos
Lab Director

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