

Anex

Cooler Master V850 Gold

Lab ID#: 570

Receipt Date: Dec 11, 2018

Test Date: Dec 18, 2018

Report: 19PS570A

Report Date: Dec 22, 2018

DUT INFORMATION

Brand	Cooler Master
Manufacturer (OEM)	Chicony Electronics
Series	V Gold Series
Model Number	
Serial Number	MPY8501AFAAGV1184300027
DUT Notes	MPY-8501-AFAAGV

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	13-6
Rated Frequency (Hz)	50-60
Rated Power (W)	850
Type	ATX12V
Cooling	135mm Fluid Dynamic Bearing Fan (APISTEK SAC4H2H)
Semi-Passive Operation	✓ (selectable)
Cable Design	Fully Modular

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	70.4	3	0.3
	Watts	130		844	15	3.6
Total Max. Power (W)		850				

CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (650mm)	1	1	18-22AWG	No
4+4 pin EPS12V (650mm)	1	1	18AWG	No
8 pin EPS12V (650mm)	1	1	18AWG	No
6+2 pin PCIe (600mm+120mm)	3	6	18AWG	No
SATA (500mm+120mm+120mm+120mm)	3	12	18AWG	No
4 pin Molex (500mm+120mm+120mm+120mm)	1	4	18AWG	No
FDD Adapter (125mm)	1	1	22AWG	No
AC Power Cord (1350mm) - C13 coupler	1	1	18AWG	-

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General Data	
Manufacturer (OEM)	Chicony
PCB Type	Single Layer
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes
Inrush Protection	-
Bridge Rectifier(s)	2x GBU15JL (600V, 15A @ 115°C)
APFC MOSFETS	2x Infineon IPA60R120P7 (650V, 16A @ 100°C, 0.120hm)
APFC Boost Diode	1x CREE C3D10060A (600V, 10A @ 150°C)
Hold-up Cap(s)	1x Nichicon (450V, 560uF, 2000h @ 105 °C, GL)
Main Switchers	2x Toshiba TK25A60X (600V, 25A @ 150°C, 0.1250hm)
APFC Controller	Infineon ICE3PCS03G
Resonant Controllers	MPS HR1000A & 2x MPS MP6903
Topology	Primary side: Half-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	6x Nexperia PSMN2R6-40YS (40V, 100A @ 25°C, 3.7mOhm)
5V & 3.3V	DC-DC Converters: 6x APEC AP0403GH (30V, 50A @ 100°C, 4.5mOhm) PWM Controller: 2x APW7160A
Filtering Capacitors	Electrolytics: 4x Rubycon (6-10,000h @ 105°C, ZLH), 2x Chemi-Con (4-10,000 @ 105°C, KY), 1x Nippon Chemi-Con (1-5,000 @ 105°C, KZE), Polymers: FPCAP (FP5), Chemi-Con
Supervisor IC	CP006WD
Fan Model	APISTEK SAC4H2H (135mm, 12V, 0.50A, 111.1CFM, 41.6 dBA, Fluid Dynamic Bearing)
5VSB Circuit	
Rectifier	UTC 4N60K-MK FET (600V, 4A @ 25°C, 2.50hm) & MBR20100CTG SBR (100V, 1A)
Standby PWM Controller	400BBBBB2 PAJH

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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	89.194%
Efficiency With 10W (≤500W) or 2% (>500W)	66.645
Average Efficiency 5VSB	78.161%
Standby Power Consumption (W)	0.0777703
Average PF	0.992
Avg Noise Output	32.10 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	S++

230V

Average Efficiency	91.096%
Average Efficiency 5VSB	76.831%
Standby Power Consumption (W)	0.1669120
Average PF	0.970
Avg Noise Output	31.15 dB(A)
Efficiency Rating (ETA)	PLATINUM
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)	22.6
AC Loss to PWR_OK Hold Up Time (ms)	17.8
PWR_OK Inactive to DC Loss Delay (ms)	4.8

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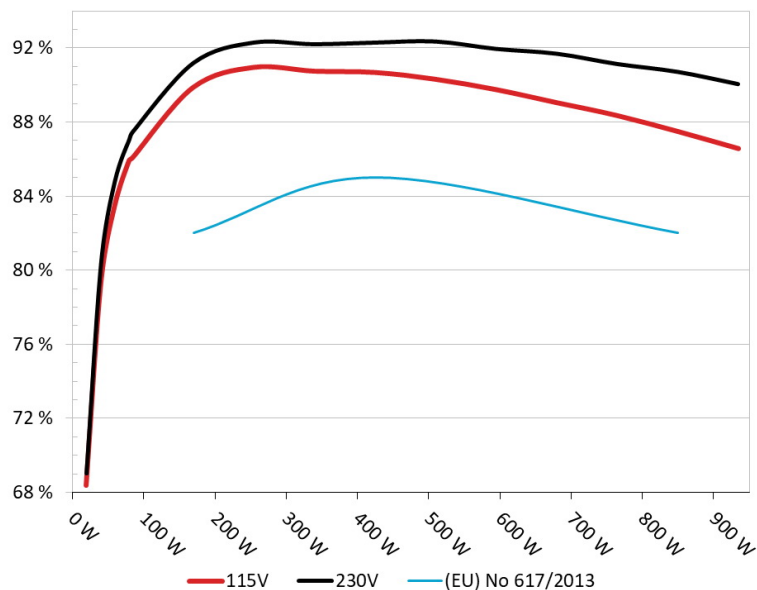
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Cooler Master V850

Ambient: 37°C - 47°C (98.6°F - 116.6°F)



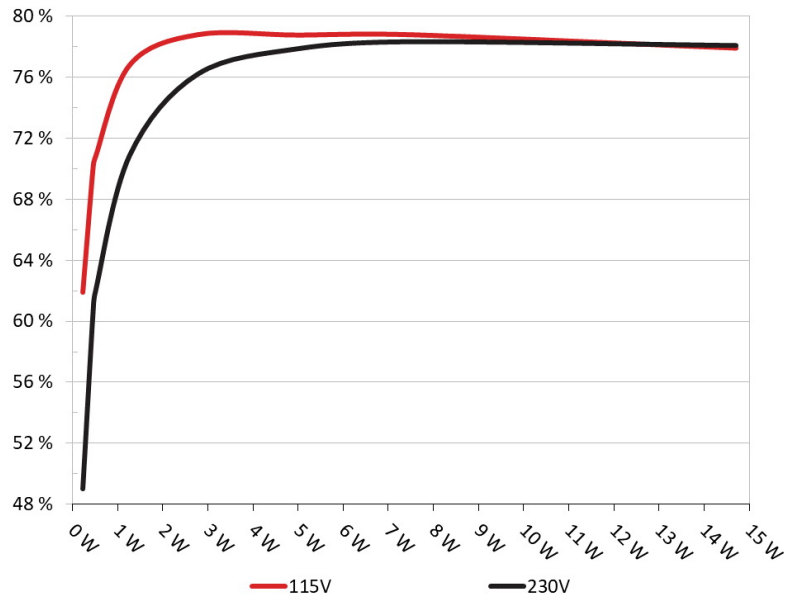
INFO

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 V850

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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Cooler Master V850 Gold

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.229	61.892%	0.053
	5.077V	0.370		115.05V
2	0.090A	0.457	70.092%	0.090
	5.075V	0.652		115.05V
3	0.550A	2.777	78.780%	0.269
	5.049V	3.525		115.05V
4	1.000A	5.023	78.755%	0.315
	5.023V	6.378		115.05V
5	1.500A	7.491	78.778%	0.339
	4.994V	9.509		115.05V
6	2.999A	14.707	77.897%	0.374
	4.904V	18.880		115.05V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.229	49.036%	0.020
	5.077V	0.467		230.19V
2	0.090A	0.457	60.691%	0.032
	5.075V	0.753		230.19V
3	0.550A	2.776	76.222%	0.136
	5.048V	3.642		230.19V
4	1.000A	5.022	77.897%	0.198
	5.022V	6.447		230.19V
5	1.500A	7.488	78.343%	0.239
	4.992V	9.558		230.19V
6	2.999A	14.703	78.095%	0.295
	4.903V	18.827		230.18V

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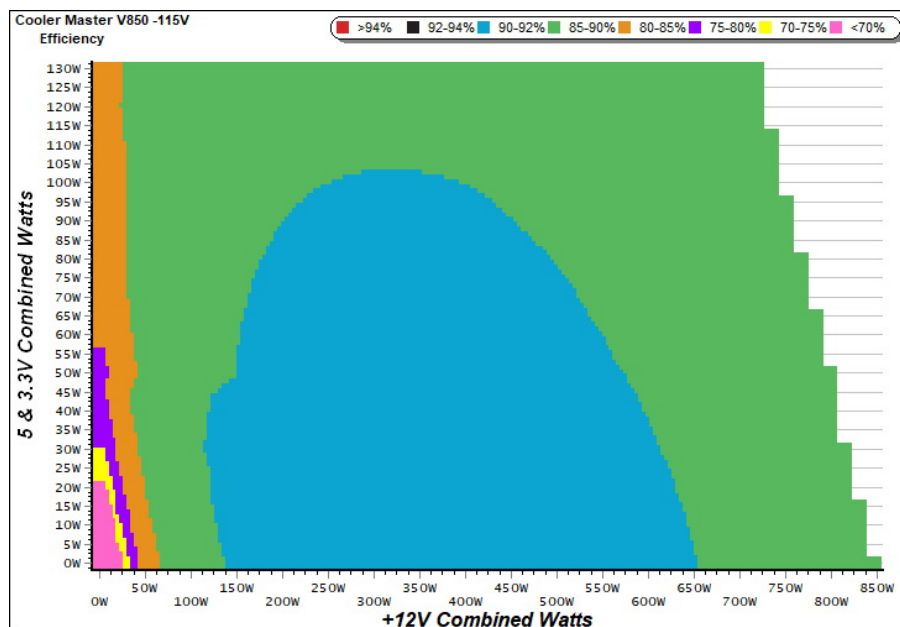
115V

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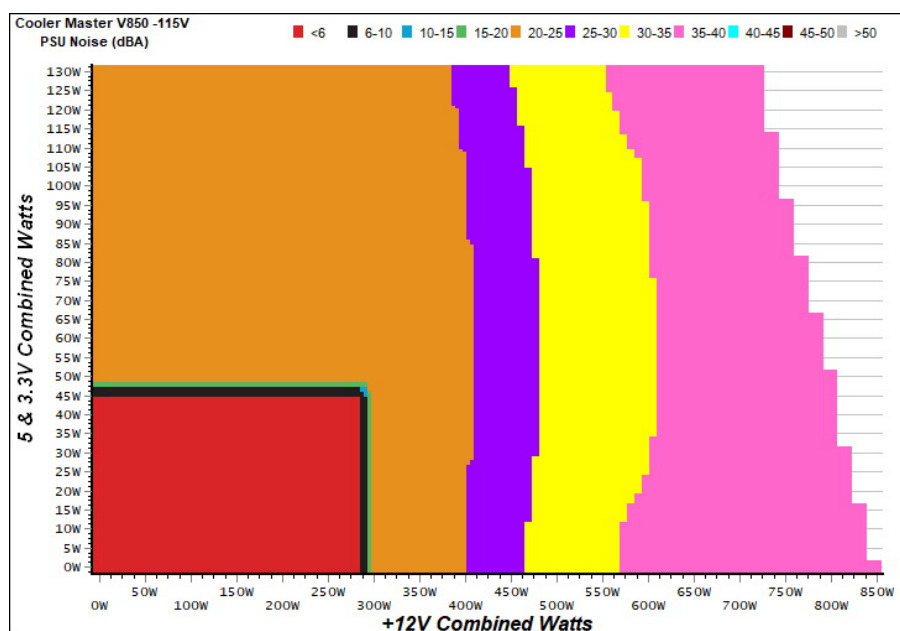
EFFICIENCY GRAPH 115V



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

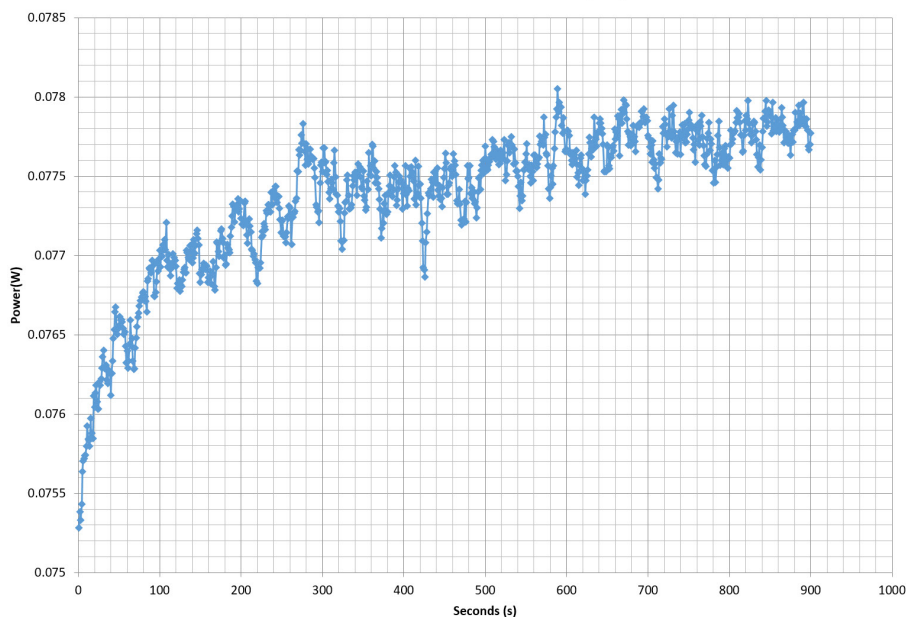
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -115V

Power - MPY8501AFAAGV1184300027 - 13/12/2018 - 17:17



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 V850 Gold

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	5.185A	1.966A	1.962A	0.998A	84.793	86.097%	0	<6.0	45.88°C	0.975
	12.188V	5.087V	3.361V	5.013V	98.485				39.82°C	115.05V
2	11.376A	2.934A	2.927A	1.201A	169.339	89.881%	0	<6.0	46.78°C	0.993
	12.169V	5.113V	3.383V	4.996V	188.403				40.22°C	115.05V
3	17.974A	3.428A	3.409A	1.406A	254.425	90.971%	0	<6.0	48.22°C	0.992
	12.152V	5.106V	3.373V	4.980V	279.676				41.17°C	115.04V
4	24.501A	3.934A	3.923A	1.610A	339.636	90.765%	1182	33.6	41.68°C	0.993
	12.181V	5.084V	3.362V	4.969V	374.191				49.20°C	115.04V
5	30.587A	4.922A	4.913A	1.817A	424.754	90.695%	1262	35.4	42.06°C	0.995
	12.236V	5.079V	3.357V	4.953V	468.330				50.12°C	115.02V
6	36.781A	5.919A	5.875A	2.025A	509.286	90.330%	1340	36.9	42.32°C	0.995
	12.221V	5.067V	3.369V	4.939V	563.807				51.07°C	115.02V
7	43.064A	6.874A	6.877A	2.235A	594.609	89.767%	1434	38.8	43.24°C	0.996
	12.203V	5.092V	3.358V	4.923V	662.392				52.57°C	115.02V
8	49.373A	7.869A	7.885A	2.446A	679.966	89.060%	1530	40.0	43.94°C	0.996
	12.184V	5.084V	3.348V	4.906V	763.493				53.77°C	115.01V
9	56.090A	8.375A	8.320A	2.448A	764.894	88.360%	1622	41.6	44.23°C	0.996
	12.166V	5.076V	3.364V	4.903V	865.656				54.57°C	115.01V
10	62.564A	8.881A	8.852A	3.087A	849.720	87.502%	1688	42.3	45.03°C	0.996
	12.148V	5.067V	3.354V	4.860V	971.087				56.86°C	115.01V
11	69.657A	8.894A	8.875A	3.090A	934.505	86.582%	1751	43.1	46.58°C	0.997
	12.128V	5.060V	3.346V	4.856V	1079.331				60.16°C	115.01V
CL1	0.133A	16.001A	15.998A	0.000A	138.577	83.108%	1358	37.0	42.47°C	0.993
	12.171V	5.136V	3.424V	5.068V	166.743				50.31°C	115.04V
CL2	70.326A	0.999A	1.000A	1.000A	867.470	87.964%	1676	42.1	45.34°C	0.996
	12.146V	5.014V	3.292V	4.990V	986.160				56.90°C	115.01V

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Cooler Master V850 Gold

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	1.180A	0.491A	0.472A	0.198A	19.495	68.375%	0	<6.0	0.840
	12.205V	5.089V	3.370V	5.065V	28.512				115.05V
2	2.429A	0.980A	0.979A	0.396A	39.918	79.250%	0	<6.0	0.932
	12.200V	5.089V	3.367V	5.052V	50.370				115.05V
3	3.610A	1.474A	1.455A	0.595A	59.416	83.482%	0	<6.0	0.958
	12.195V	5.088V	3.364V	5.039V	71.172				115.05V
4	4.857A	1.965A	1.963A	0.796A	79.801	85.938%	0	<6.0	0.973
	12.190V	5.086V	3.362V	5.026V	92.859				115.05V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.6 mV	5.1 mV	6.1 mV	7.2 mV	Pass
20% Load	9.8 mV	6.8 mV	7.0 mV	8.4 mV	Pass
30% Load	12.6 mV	7.0 mV	7.4 mV	10.6 mV	Pass
40% Load	13.8 mV	7.5 mV	8.6 mV	11.3 mV	Pass
50% Load	15.5 mV	8.0 mV	44.7 mV	14.3 mV	Pass
60% Load	16.1 mV	8.7 mV	9.5 mV	21.8 mV	Pass
70% Load	18.4 mV	8.6 mV	10.6 mV	24.1 mV	Pass
80% Load	21.0 mV	9.8 mV	12.0 mV	29.3 mV	Pass
90% Load	23.4 mV	9.5 mV	13.0 mV	32.9 mV	Pass
100% Load	34.5 mV	10.4 mV	14.9 mV	61.2 mV	Fail
110% Load	39.6 mV	10.9 mV	15.3 mV	56.6 mV	Fail
Crossload 1	13.4 mV	9.5 mV	11.8 mV	7.8 mV	Pass
Crossload 2	35.3 mV	8.5 mV	12.1 mV	14.9 mV	Pass

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Cooler Master V850 Gold

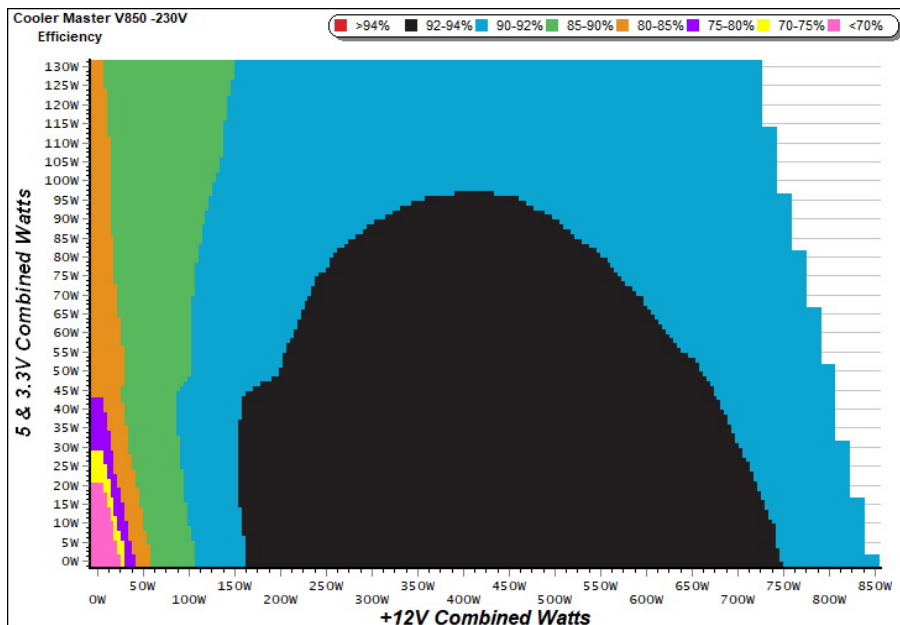
230V

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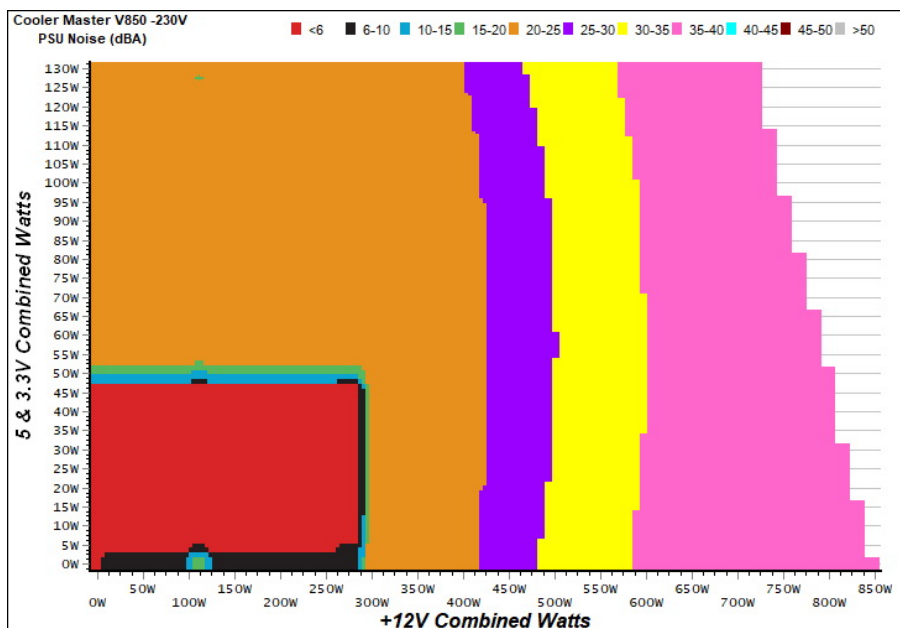
EFFICIENCY GRAPH 230V



INFO

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NOISE GRAPH 230V



INFO

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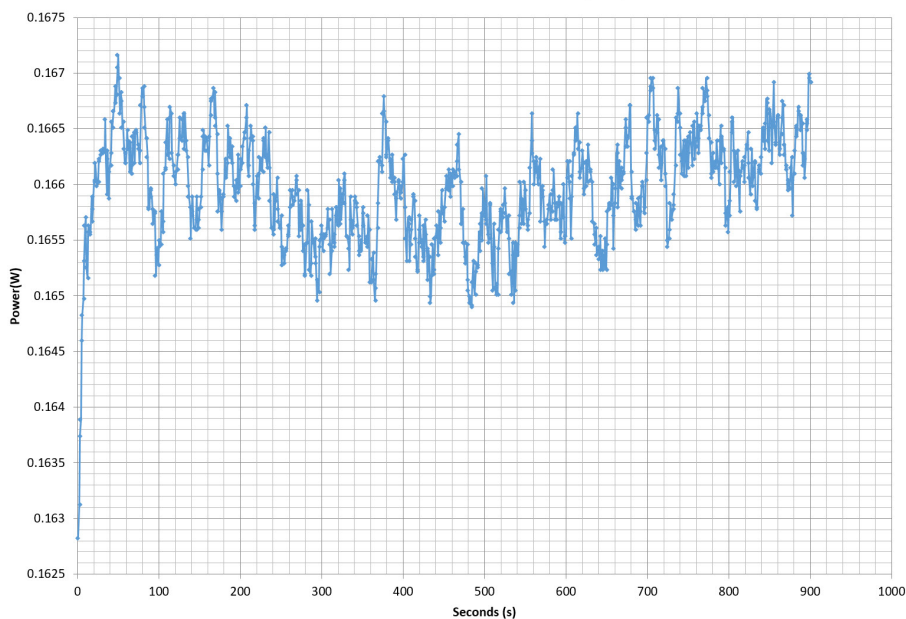
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10-110% LOAD TESTS 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	5.194A	1.967A	1.964A	0.998A	84.906	87.507%	0	<6.0	45.49°C	0.838
	12.187V	5.086V	3.361V	5.013V	97.028				39.48°C	230.03V
2	11.383A	2.935A	2.928A	1.201A	169.425	91.197%	0	<6.0	46.61°C	0.945
	12.169V	5.111V	3.382V	4.998V	185.780				40.08°C	230.19V
3	17.982A	3.430A	3.410A	1.406A	254.516	92.305%	0	<6.0	47.82°C	0.971
	12.151V	5.105V	3.373V	4.981V	275.733				40.77°C	230.19V
4	24.486A	3.935A	3.926A	1.611A	339.723	92.213%	1172	33.5	41.01°C	0.981
	12.191V	5.085V	3.362V	4.969V	368.411				48.83°C	230.21V
5	30.611A	4.928A	4.923A	1.817A	425.037	92.304%	1263	35.4	41.78°C	0.988
	12.235V	5.075V	3.352V	4.953V	460.474				49.81°C	230.20V
6	36.805A	5.923A	5.878A	2.026A	509.492	92.362%	1346	36.9	42.57°C	0.992
	12.218V	5.067V	3.367V	4.938V	551.628				50.84°C	230.03V
7	43.088A	6.875A	6.881A	2.236A	594.779	91.963%	1424	38.5	43.28°C	0.994
	12.200V	5.091V	3.357V	4.922V	646.757				51.89°C	230.20V
8	49.392A	7.871A	7.887A	2.447A	680.094	91.701%	1515	39.9	43.46°C	0.994
	12.182V	5.082V	3.347V	4.905V	741.644				52.55°C	230.01V
9	56.107A	8.377A	8.324A	2.448A	764.993	91.147%	1608	41.3	44.32°C	0.995
	12.164V	5.074V	3.364V	4.902V	839.292				54.20°C	230.19V
10	62.585A	8.883A	8.856A	3.088A	849.812	90.722%	1683	42.3	45.82°C	0.995
	12.145V	5.067V	3.354V	4.859V	936.726				56.30°C	230.01V
11	69.664A	8.896A	8.875A	3.090A	934.530	90.065%	1741	43.0	46.54°C	0.996
	12.127V	5.060V	3.346V	4.856V	1037.619				59.43°C	230.19V
CL1	0.135A	16.002A	15.999A	0.000A	138.593	84.247%	1437	38.8	41.54°C	0.921
	12.170V	5.136V	3.423V	5.068V	164.507				49.53°C	230.20V
CL2	70.328A	1.001A	0.998A	1.000A	867.426	91.081%	1667	42.1	45.87°C	0.995
	12.145V	5.014V	3.291V	4.989V	952.366				56.14°C	230.19V

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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	1.188A	0.491A	0.473A	0.198A	19.593	69.053%	0	<6.0	0.518
	12.202V	5.093V	3.370V	5.065V	28.374				230.21V
2	2.437A	0.982A	0.981A	0.396A	40.026	80.377%	0	<6.0	0.672
	12.197V	5.090V	3.367V	5.052V	49.798				230.03V
3	3.618A	1.474A	1.455A	0.596A	59.512	84.826%	0	<6.0	0.762
	12.193V	5.088V	3.364V	5.039V	70.158				230.04V
4	4.866A	1.965A	1.963A	0.796A	79.901	87.103%	0	<6.0	0.827
	12.188V	5.086V	3.362V	5.026V	91.732				230.20V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	7.2 mV	7.7 mV	6.1 mV	6.3 mV	Pass
20% Load	10.3 mV	7.8 mV	6.7 mV	7.8 mV	Pass
30% Load	12.7 mV	6.7 mV	7.3 mV	10.7 mV	Pass
40% Load	14.5 mV	7.5 mV	7.7 mV	10.0 mV	Pass
50% Load	16.5 mV	9.1 mV	8.6 mV	12.2 mV	Pass
60% Load	16.8 mV	8.9 mV	9.7 mV	19.6 mV	Pass
70% Load	19.3 mV	8.9 mV	10.7 mV	22.9 mV	Pass
80% Load	22.4 mV	9.1 mV	12.4 mV	34.1 mV	Pass
90% Load	24.1 mV	9.5 mV	12.7 mV	33.7 mV	Pass
100% Load	34.3 mV	9.9 mV	14.1 mV	69.9 mV	Fail
110% Load	36.8 mV	16.1 mV	14.4 mV	71.2 mV	Fail
Crossload 1	13.5 mV	12.8 mV	11.2 mV	8.0 mV	Pass
Crossload 2	33.3 mV	14.8 mV	11.5 mV	11.0 mV	Pass

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

- > It should be mentioned that the test results are provided by Cybenetics
- > The link to the original test results document should be provided in any case

Anex

Cooler Master V850 Gold



Top side

850W		MODEL / 型號				
AC INPUT	100-240V~,13-6A,50-60Hz					
交流輸入	220-240V~,6A,50-60Hz,For Korea Use Only					
交流輸入	200-240V~,6A,50-60Hz 适用于中国地区使用					
DC OUTPUT	+3.3V	+5V	+12V	-12V	+5VSB	
直流輸出/直流輸出	20A	20A	70.4A	0.3A	3A	
TOTAL POWER	130W	844W	3.6W	15W		
總功率/ 總功率	850W					

MPY8501AFAAGV1184300027

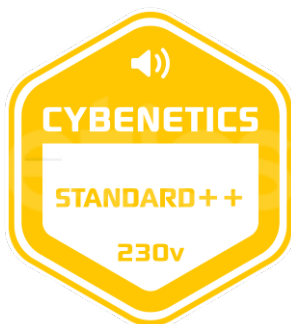


Power specifications label

CERTIFICATIONS 115V



CERTIFICATIONS 230V



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