Make It Yours.

Cooler Master V850 Gold

Serial Number MPY8501AFAAGV1184300027

Lab ID 570

Certification ID 25570

Test Result Report ID: 19PS570A

Certificate Issue Date: Dec 22, 2018

Scheme: ETA-EMI PSU

115V

CYBENETICS PLATINUM

230V

CYBENETICS PLATINUM 230v

Scheme: LAMBDA PSU

115V

CYBENETICS STANDARD++

230V

CYBENETICS STANDARD++ 230v

Aristeidis Bitziopoulos, Certification Body General Manager

General Information

Test Equipment

Electronic Loads	Chroma 63601-5 x2 Chroma 63600-2 Chroma 63640-80-80 x10 Chroma 63610-80-20
AC Sources	Chroma 6530, APM SP300VAC4000W-P, GW Instek ASR-3500
Power Analyzers	Rohde & Schwarz HMC8015 & NPA701
Oscilloscopes	Picoscope 4444, Siglent SDS2104X PLUS
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Temperature Logger	Picoscope TC-08
Tachometer	UNI-T UT372
Multimeters	Keysight 34465A
EMI Analyzer	TekBox TBMR-110M-EU
Isolation Transformer	4kVA
UPS	FSP Champ Tower 3kVA, CyberPower OLS3000E 3kVA
Testing Methodology	Cybenetics PSU Test Protocol

DUT Information(Non-accredited measurements)

Product Identification Details	
Brand	Cooler Master
Model	V850 Gold
OEM/ODM	Chicony Electronics
Serial Number	MPY8501AFAAGV1184300027
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	13-6
Rated Frequency (Hz)	50-60

Rated Power (W)	850
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	135mm Fluid Dynamic Bearing Fan (APISTEK SAC4H2H)
Semi-Passive Operation	✓ (selectable)
Cybenetics Testing Information	
Lab ID	570
Date of receipt	Dec 11, 2018
Testing Date	Dec 18, 2018
Report Issued Date	Dec 22, 2018
DUT Notes	MPY-8501-AFAAGV
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors(Non-accredited measurements)

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	-

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				

Parts Description

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, 0.12Ohm)
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, 0.125Ohm)
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, 2.5Ohm) & MBR20100CTG SBR (100V, 1A)
Standby PWM Controller	400BBBBB2 PAJH

Test Results

Temperature & Compliance Info

Temperature Range (°C /°F)	28-32 / 82.4-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	89.194%
Average Noise Output (>1450 Load Combinations)	32.10dBA
Average PF (>1450 Load Combinations)	0.992
Efficiency With 10W (≤500W) or 2% (>500W) Load	66.645%
Standby Power Consumption	0.0778W
Non-Accredited	
12V Ripple (Full Load)	34.49mV
5V Ripple (Full Load)	10.41mV
3.3V Ripple (Full Load)	14.86mV
5VSB Ripple (Full Load)	61.19mV
12V Load Regulation	0.72%
5V Load Regulation	0.90%
3.3V Load Regulation	1.03%
5VSB Load Regulation	4.05%
Inrush Current	105.427A

230V		
Accredited		
Average Efficiency (>1450 load combinations)	91.096%	
Average Noise Output (>1450 Load Combinations)	31.15dBA	
Average PF (>1450 Load Combinations)	0.970	
Efficiency With 10W (≤500W) or 2% (>500W) Load	-	
Standby Power Consumption	0.1669W	
Non-Accredited		
12V Ripple (Full Load)	34.26mV	
5V Ripple (Full Load)	9.86mV	
3.3V Ripple (Full Load)	14.11mV	
5VSB Ripple (Full Load)	69.85mV	
12V Load Regulation	0.74%	
5V Load Regulation	0.86%	
3.3V Load Regulation	1.03%	
5VSB Load Regulation	3.07%	
Inrush Current	132.990A	
Hold-Up Time & PWR_OK Signal	22.60ms	
AC Loss to PWR_OK Hold Up Time	17.80ms	
PWR_OK Inactive to DC Loss Delay	4.80ms	
OPP (0.00°C / 0.00°C)	-	-

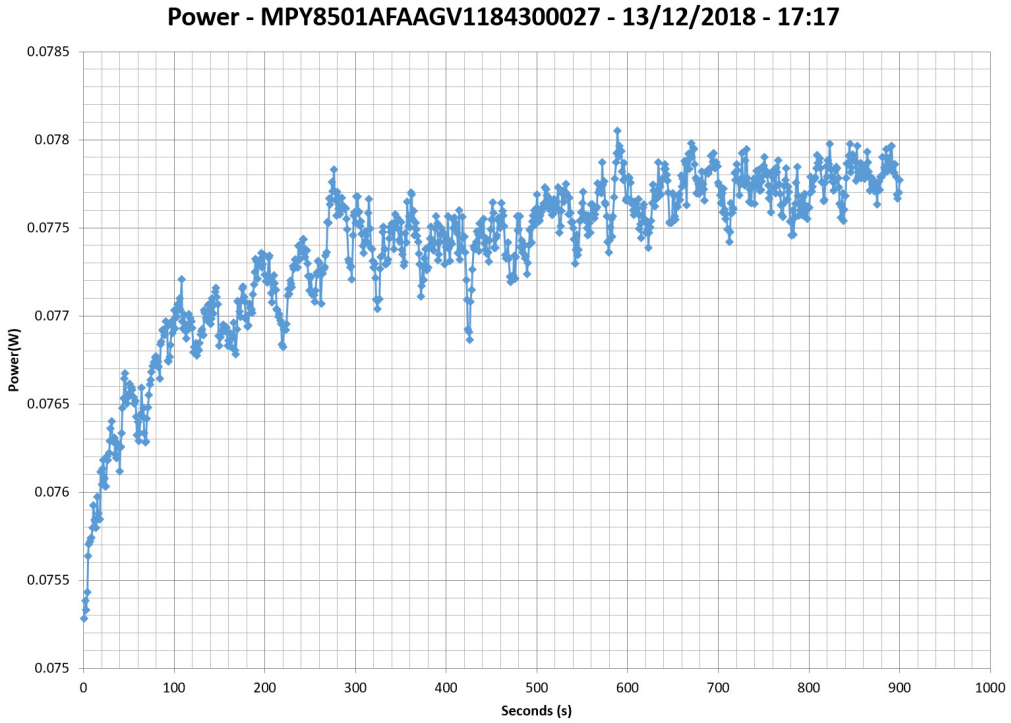
Hold-Up Time & PWR_OK Signal

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

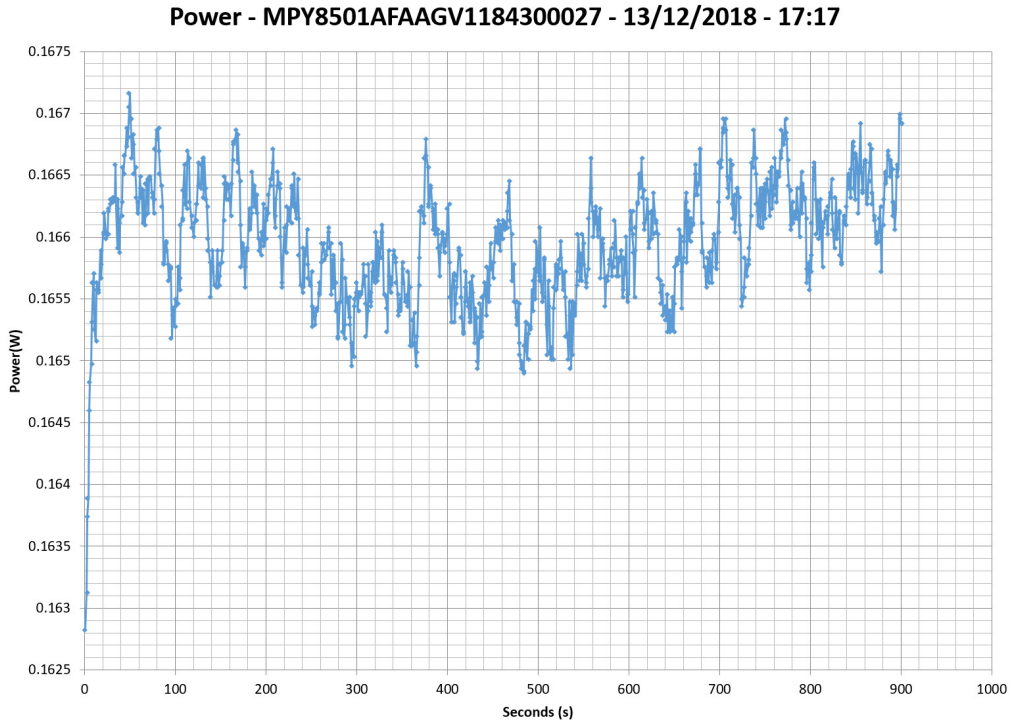
Vampire Power

Graphs

115V

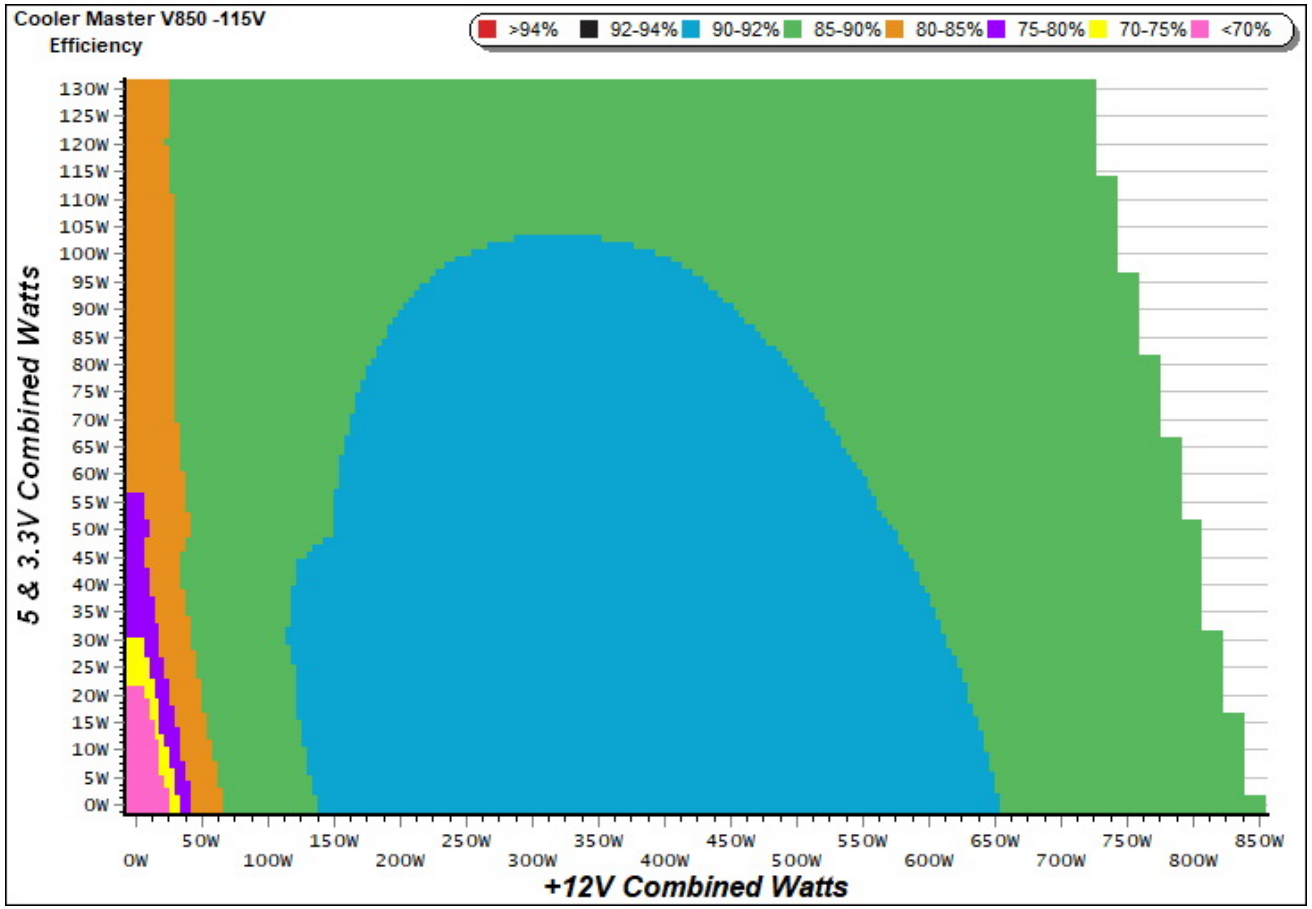


230V



Efficiency Graph

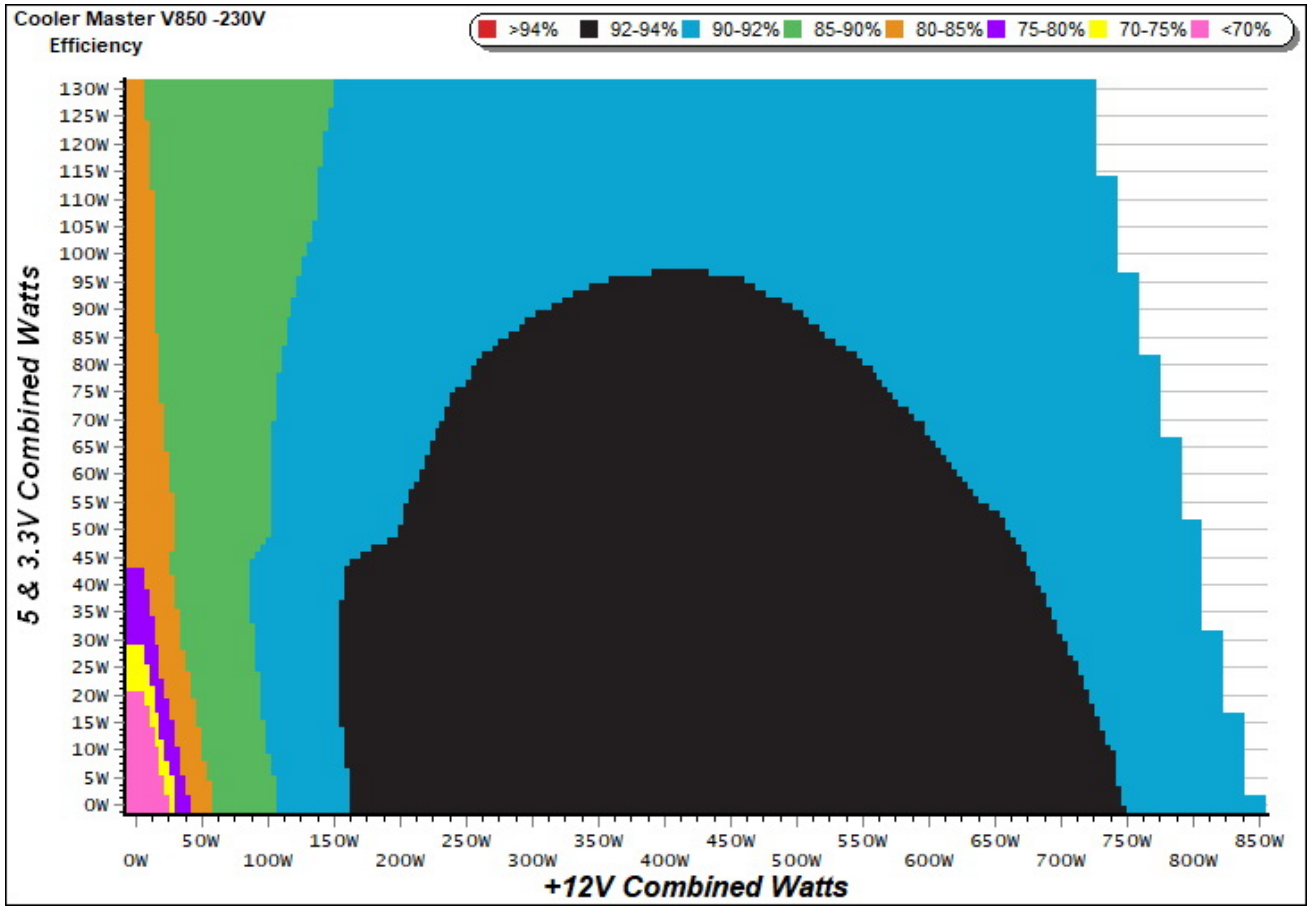
115V



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.

230V



INFO

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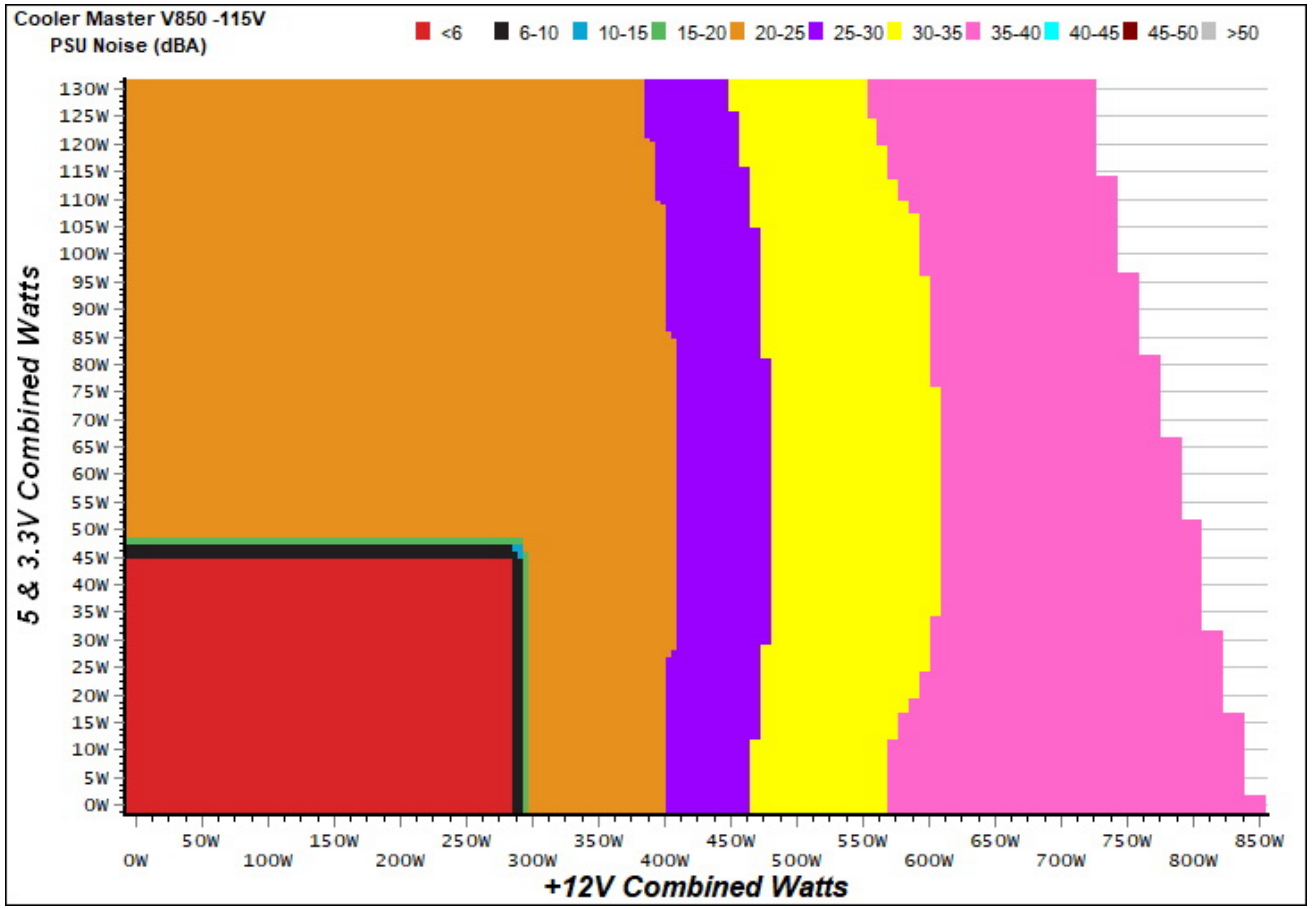
Noise Graph

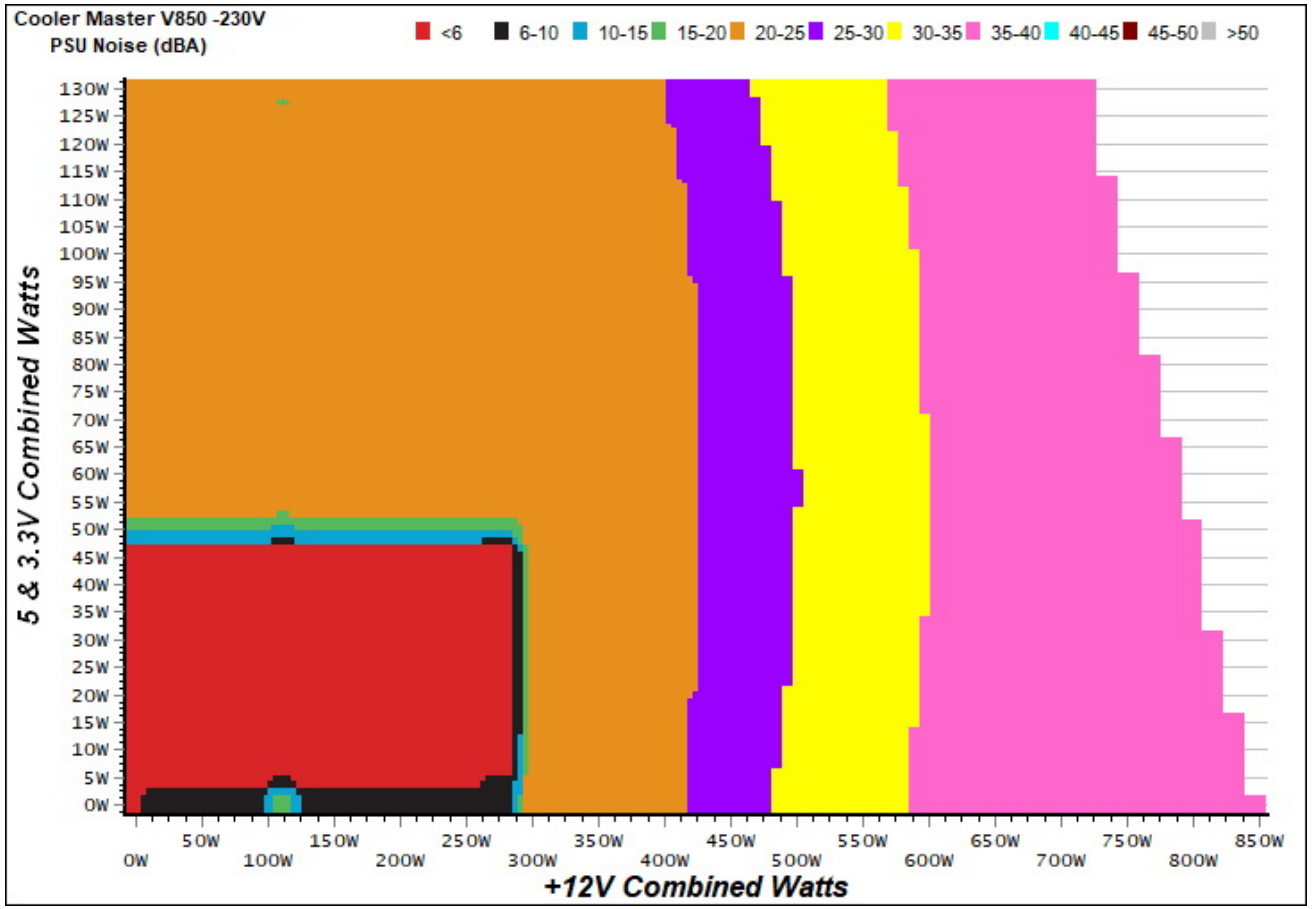
115V



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.

230V

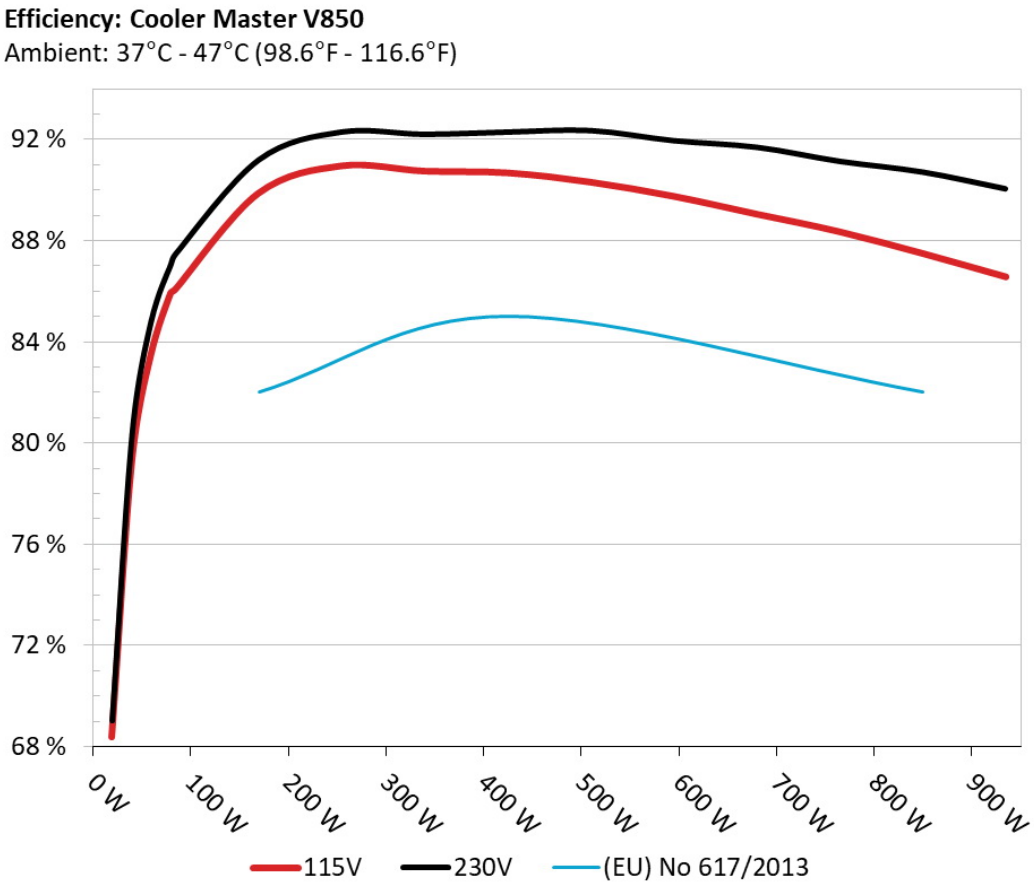


INFO

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.

Indicative Performance

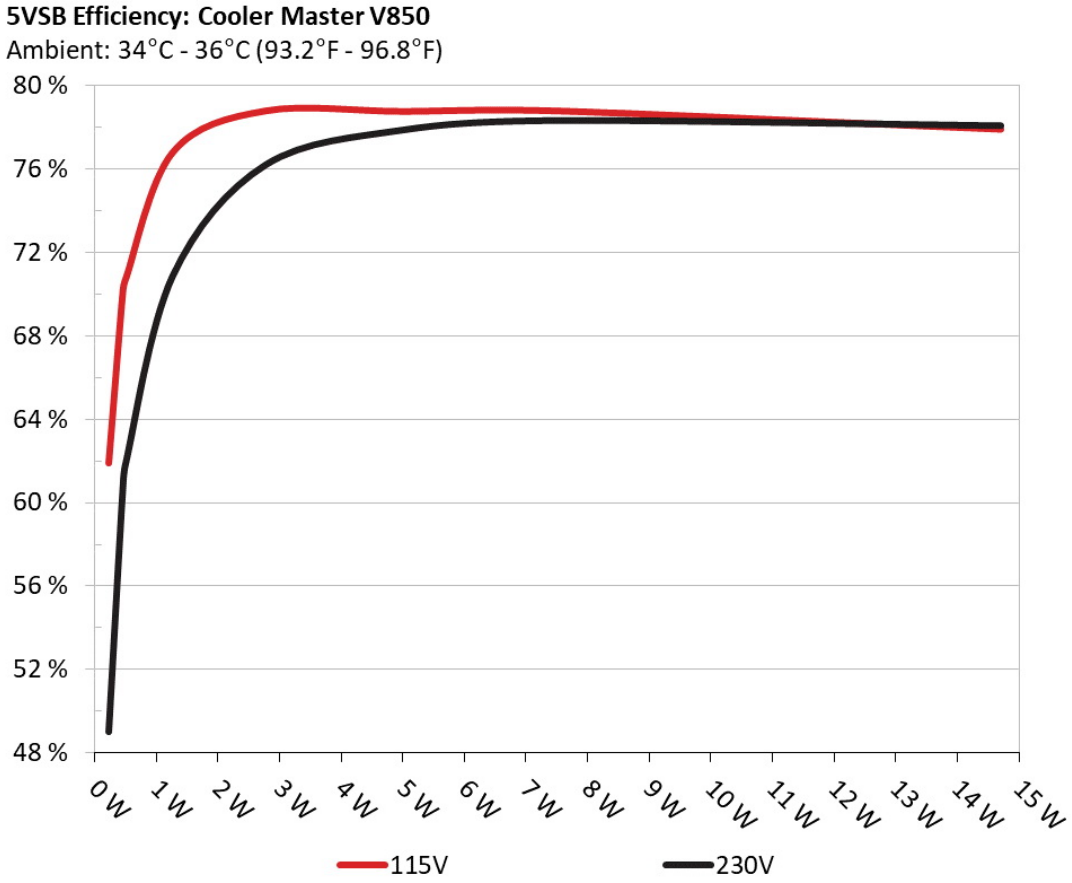
Efficiency under high ambient temperature



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



INFO

This graph depicts the efficiency levels of the 5VSB rail with 115V and 230V input.

5VSB Efficiency (ERP LOT 3/6 & CEC)

115V

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

230V

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

Supplementary Tests (For Reference)

Typical 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

The results above are not used in the certification process

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

The results above are not used in the certification process

Light 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

The results above are not used in the certification process

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

The results above are not used in the certification process

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

The results above are not used in the certification process

230V

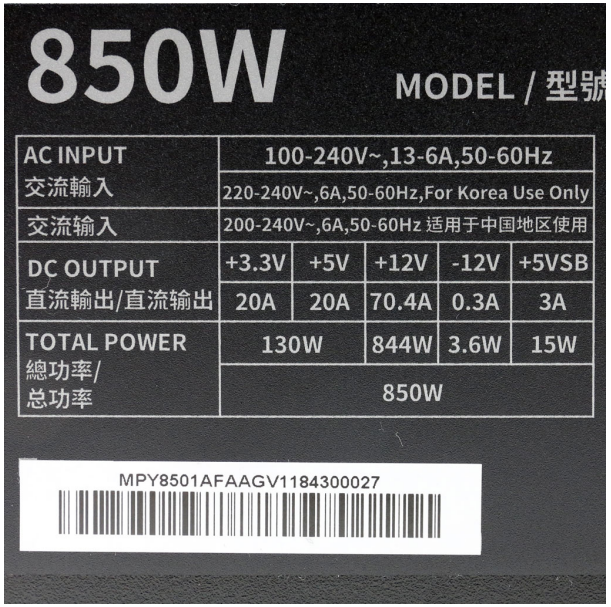
Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	7.2 mV	7.7 mV	6.1 mV	6.3 mV	Pass
20% Load	10.3 mV	7.8 mV	6.7 mV	7.8 mV	Pass
30% Load	12.7 mV	6.7 mV	7.3 mV	10.7 mV	Pass
40% Load	14.5 mV	7.5 mV	7.7 mV	10.0 mV	Pass
50% Load	16.5 mV	9.1 mV	8.6 mV	12.2 mV	Pass
60% Load	16.8 mV	8.9 mV	9.7 mV	19.6 mV	Pass
70% Load	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

Test	12V	5V	3.3V	5VSB	Pass/Fail
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

The results above are not used in the certification process

Cooler Master V850 Gold

Top side



Power specifications label

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

Cybenetics runs voluntary certification programs for power supplies - ETA for efficiency, LAMBDA for noise and SAFE for safety and correct operation - and for cooling products, with DELTA for chassis soundproofing and PHI for fan airflow and static pressure. THETA rates cooler performance on AMD AM5 and Intel LGA1851 outside ISO 17065 and accreditation scope

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