Make It Yours.

Cooler Master V850 Gold (#2)

Serial Number MPY8501AFAAGV1184300028

Lab ID 622

Certification ID 25622

Test Result Report ID: 19PS622A

Certificate Issue Date: Aug 2, 2019

115V 230V

Scheme: ETA-EMI PSU

115V 230V

Scheme: LAMBDA PSU

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 (#2)
OEM/ODM	Chicony Electronics
Serial Number	MPY8501AFAAGV1184300028
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	622
Date of receipt	Jul 27, 2019
Testing Date	Jul 30, 2019
Report Issued Date	Aug 2, 2019
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 (Installed on the secondary side)
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 (4-10,000h @ 105°C, KY), 1x Nippon Chemi-Con (1-5,000h @ 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)	89.082%
Average Noise Output (>1450 Load Combinations)	31.64dBA
Average PF (>1450 Load Combinations)	0.993
Efficiency With 10W (≤500W) or 2% (>500W) Load	62.967%
Standby Power Consumption	0.0784W
Non-Accredited	
12V Ripple (Full Load)	23.48mV
5V Ripple (Full Load)	12.37mV
3.3V Ripple (Full Load)	20.30mV
5VSB Ripple (Full Load)	58.15mV
12V Load Regulation	0.70%
5V Load Regulation	1.13%
3.3V Load Regulation	0.98%
5VSB Load Regulation	4.29%
Inrush Current	85.664A

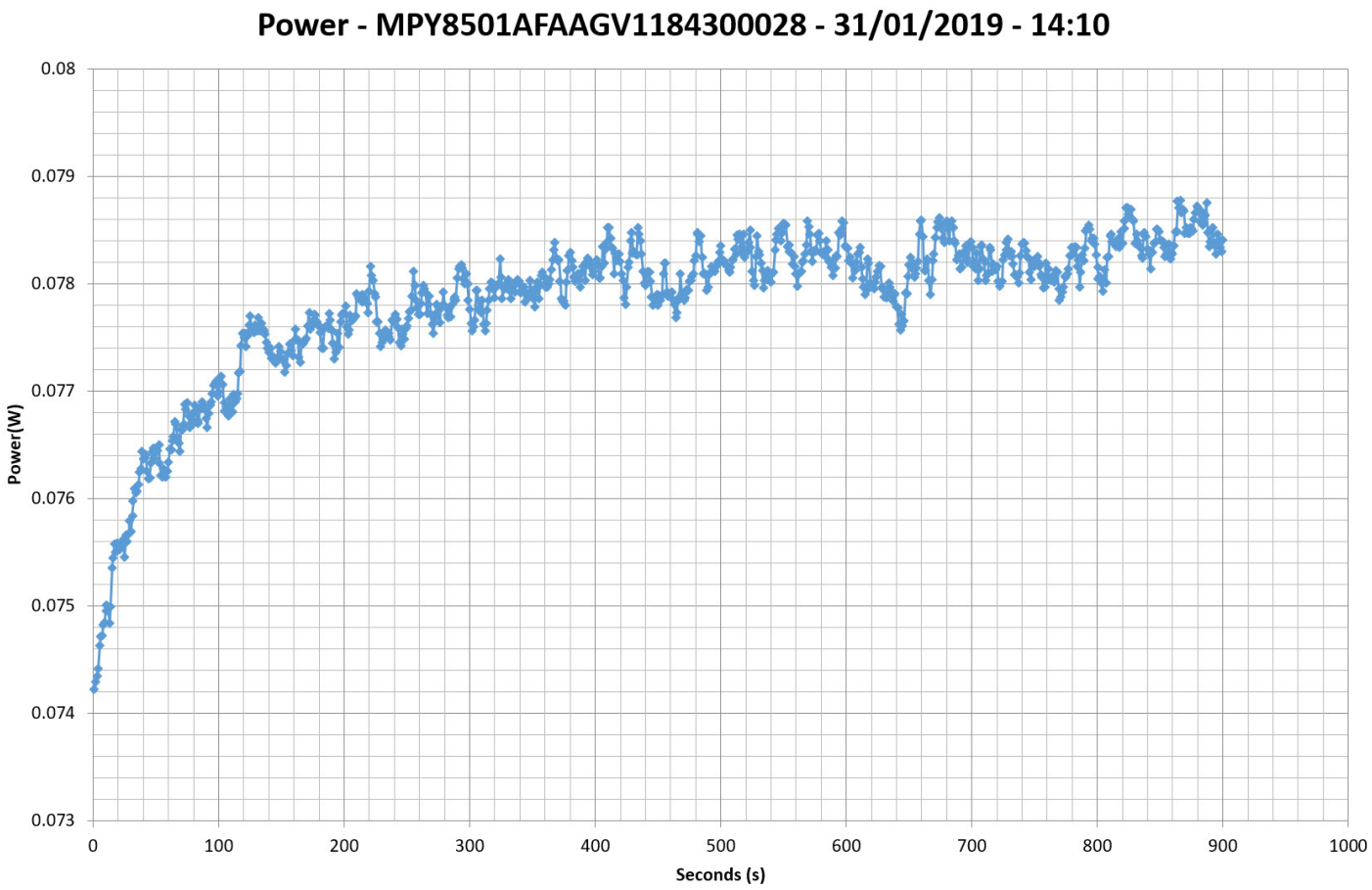
Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	23.6
AC Loss to PWR_OK Hold Up Time (ms)	18.8

PWR_OK Inactive to DC Loss Delay (ms)	4.8

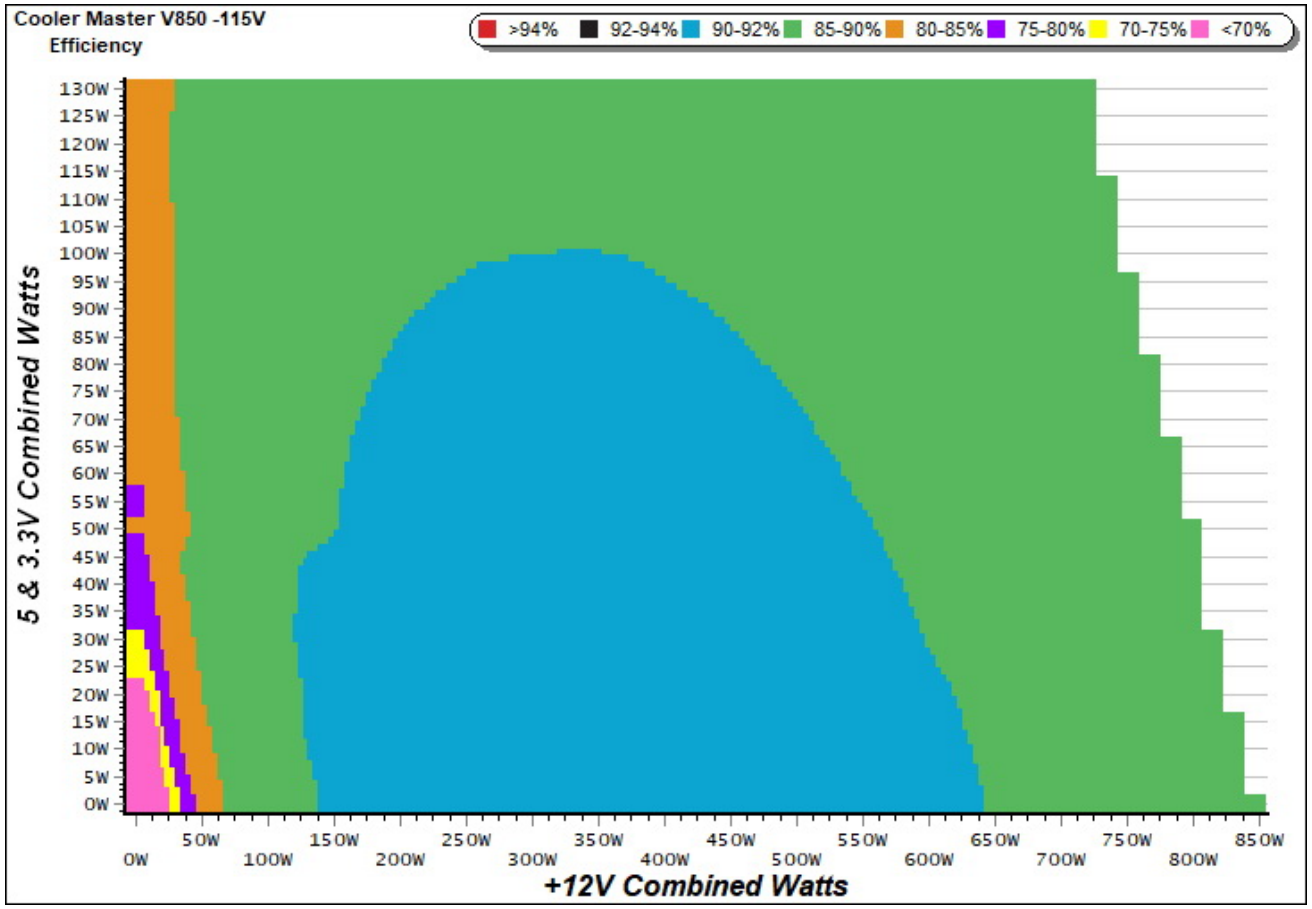
Vampire Power

Graphs 115V



Efficiency Graph

115V

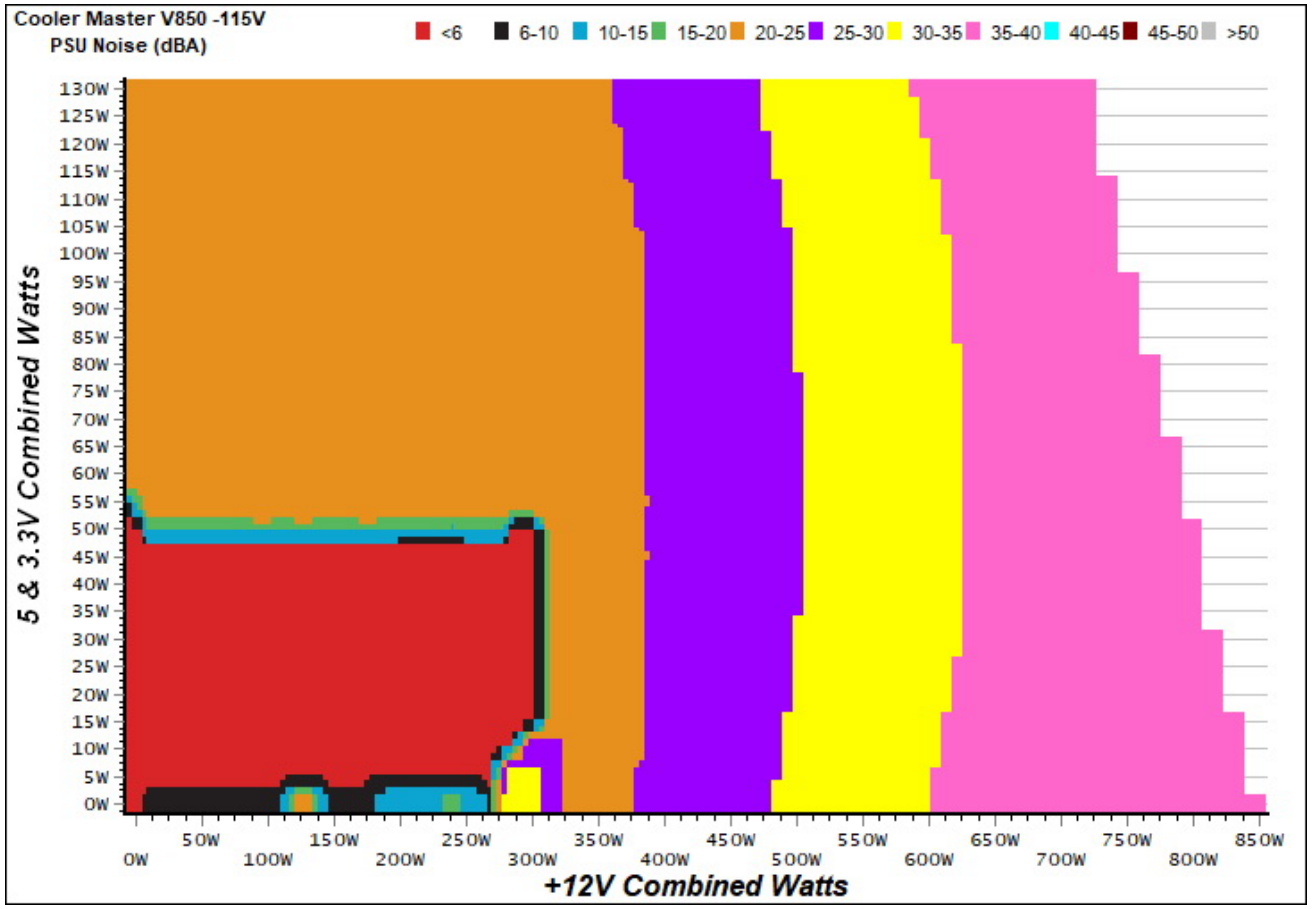


INFO

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

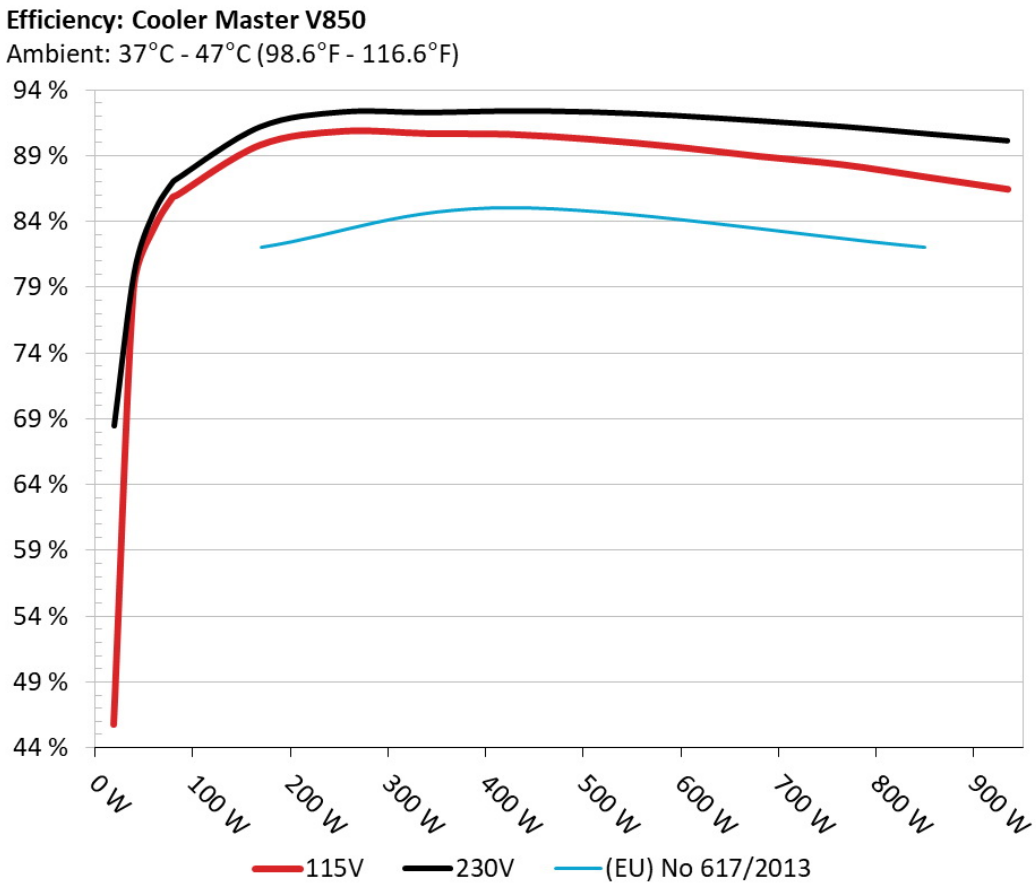


INFO

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.

Indicative Performance

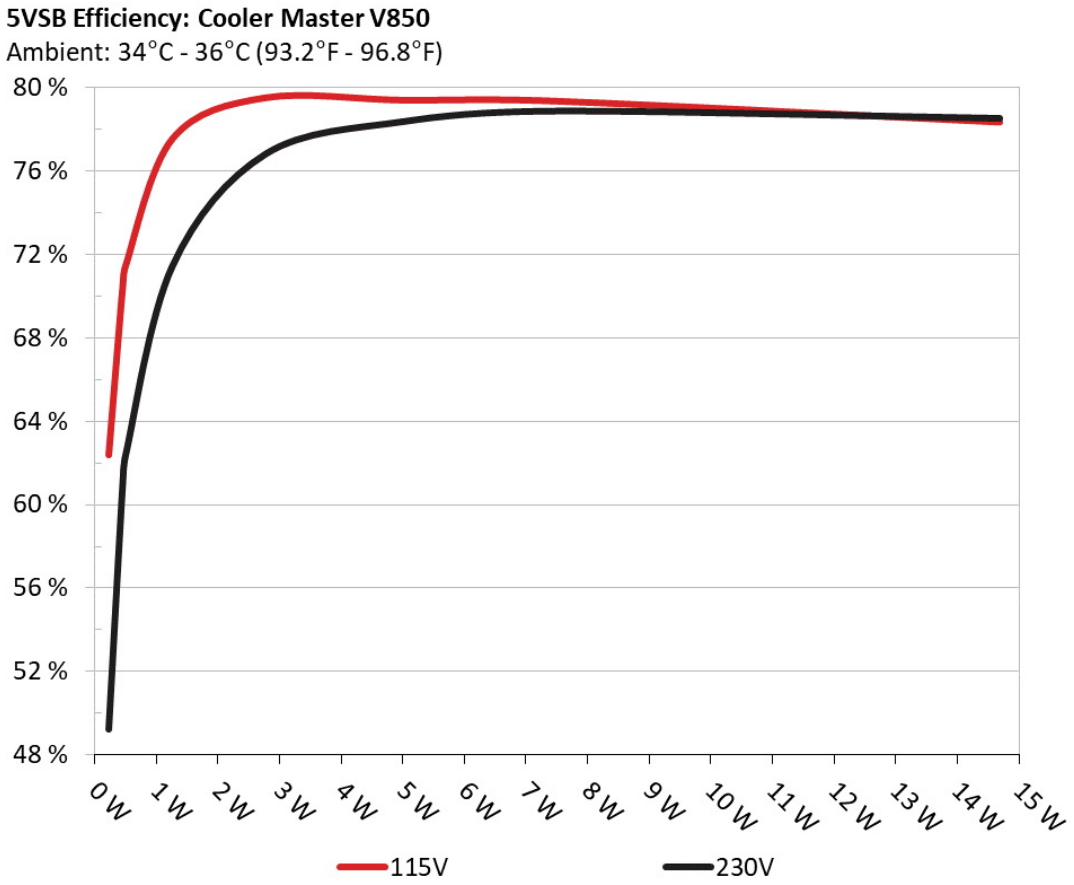
Efficiency under high ambient temperature



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	62.398%	0.053
	5.072V	0.367		115.12V

2	0.090A	0.457	70.525%	0.090
	5.069V	0.648		115.12V
3	0.550A	2.774	79.530%	0.276
	5.043V	3.488		115.12V
4	1.000A	5.018	79.411%	0.325
	5.016V	6.319		115.12V
5	1.500A	7.482	79.368%	0.351
	4.987V	9.427		115.12V
6	3.000A	14.688	78.361%	0.388
	4.896V	18.744		115.12V

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	5.195A	1.964A	1.968A	0.999A	84.930	86.049%	0	<6.0	44.87°C	0.975
	12.191V	5.092V	3.352V	5.005V	98.700				40.19°C	115.14V
2	11.377A	2.933A	2.934A	1.203A	169.398	89.832%	0	<6.0	45.81°C	0.992
	12.173V	5.116V	3.374V	4.988V	188.572				40.62°C	115.13V
3	17.973A	3.426A	3.416A	1.409A	254.500	90.884%	0	<6.0	47.20°C	0.993
	12.157V	5.109V	3.365V	4.971V	280.026				41.20°C	115.13V
4	24.484A	3.932A	3.933A	1.615A	339.715	90.708%	1197	34.0	41.69°C	0.995
	12.192V	5.088V	3.355V	4.957V	374.515				48.47°C	115.13V
5	30.586A	4.930A	4.930A	1.821A	424.962	90.646%	1219	34.5	42.34°C	0.996
	12.243V	5.072V	3.345V	4.943V	468.815				49.66°C	115.11V
6	36.777A	5.927A	5.892A	2.030A	509.477	90.259%	1323	36.6	42.52°C	0.996
	12.227V	5.062V	3.361V	4.926V	564.462				50.24°C	115.11V
7	43.056A	6.884A	6.892A	2.241A	594.815	89.690%	1402	38.1	43.13°C	0.997
	12.210V	5.085V	3.351V	4.909V	663.187				51.32°C	115.11V
8	49.349A	7.882A	7.899A	2.454A	680.157	88.972%	1524	40.0	43.83°C	0.997
	12.194V	5.075V	3.341V	4.891V	764.458				52.86°C	115.11V

9	56.042A	8.388A	8.335A	2.456A	764.975	88.346%	1538	40.2	44.20°C	0.997
	12.178V	5.066V	3.359V	4.888V	865.890				53.69°C	115.11V
10	62.512A	8.896A	8.867A	3.099A	849.843	87.410%	1717	42.7	45.80°C	0.997
	12.160V	5.058V	3.349V	4.842V	972.251				56.20°C	115.09V
11	69.581A	8.909A	8.886A	3.101A	934.620	86.473%	1781	43.5	46.62°C	0.997
	12.143V	5.051V	3.342V	4.838V	1080.823				57.65°C	115.09V
CL1	0.142A	16.000A	15.999A	0.000A	138.397	82.940%	1380	37.7	42.72°C	0.992
	12.176V	5.134V	3.408V	5.052V	166.864				49.75°C	115.12V
CL2	70.343A	1.002A	0.996A	1.000A	868.643	87.791%	1675	42.1	45.51°C	0.997
	12.160V	5.007V	3.290V	4.978V	989.448				56.28°C	115.09V

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	1.189A	0.490A	0.473A	0.198A	19.611	45.795%	0	<6.0	0.910
	12.217V	5.091V	3.361V	5.059V	42.823				115.14V
2	2.436A	0.981A	0.982A	0.397A	40.018	78.976%	0	<6.0	0.932
	12.201V	5.092V	3.358V	5.046V	50.671				115.14V
3	3.612A	1.474A	1.459A	0.596A	59.457	83.322%	0	<6.0	0.959
	12.197V	5.092V	3.356V	5.033V	71.358				115.14V
4	4.862A	1.966A	1.967A	0.797A	79.879	85.867%	0	<6.0	0.972
	12.192V	5.090V	3.353V	5.019V	93.026				115.14V

The results above are not used in the certification process

Ripple Measurements 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.1 mV	6.3 mV	12.0 mV	9.6 mV	Pass
20% Load	8.1 mV	6.7 mV	12.3 mV	11.2 mV	Pass
30% Load	8.9 mV	7.7 mV	13.7 mV	12.7 mV	Pass
40% Load	10.3 mV	9.2 mV	13.8 mV	13.1 mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
50% Load	11.1 mV	9.4 mV	14.4 mV	19.3 mV	Pass
60% Load	12.2 mV	10.7 mV	15.9 mV	23.6 mV	Pass
70% Load	14.8 mV	10.9 mV	17.9 mV	30.3 mV	Pass
80% Load	16.8 mV	11.4 mV	19.2 mV	37.9 mV	Pass
90% Load	18.2 mV	11.7 mV	18.4 mV	47.2 mV	Pass
100% Load	23.5 mV	12.4 mV	20.3 mV	58.2 mV	Fail
110% Load	26.6 mV	12.4 mV	20.8 mV	61.4 mV	Fail
Crossload 1	9.7 mV	8.9 mV	18.2 mV	10.5 mV	Pass
Crossload 2	22.3 mV	9.9 mV	15.5 mV	18.7 mV	Pass

The results above are not used in the certification process

Cooler Master V850 Gold (#2)

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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