



Make It Yours.

Cooler Master V650 Gold

Serial Number MPY6501AFAAGV1184300008

Lab ID CM19650004

Certification ID 25645

Test Result Report ID: 19PS645A

Certificate Issue Date: Jan 3, 2019

115V

230V

Scheme: ETA-EMI PSU



115V

230V



Scheme: LAMBDA PSU

A handwritten signature in blue ink, appearing to read "A. Bitziopoulos".

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	V650 Gold
OEM/ODM	Chicony Electronics
Serial Number	MPY6501AFAAGV1184300008
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	9
Rated Frequency (Hz)	50-60

Rated Power (W)	650
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	CM19650004
Date of receipt	Feb 27, 2019
Testing Date	Feb 3, 2019
Report Issued Date	Jan 3, 2019
DUT Notes	MPY-6501-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 (550mm+120mm)	2	4	18AWG	No
SATA (500mm+120mm+120mm+120mm)	2	8	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	54	3	0.3
	Watts	130		648	15	3.6
Total Max. Power (W)		650				

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)	89.069%
Average Noise Output (>1450 Load Combinations)	26.20dBA
Average PF (>1450 Load Combinations)	0.974
Efficiency With 10W (≤500W) or 2% (>500W) Load	67.603%
Standby Power Consumption	0.0771W
Non-Accredited	
12V Ripple (Full Load)	36.72mV
5V Ripple (Full Load)	16.23mV
3.3V Ripple (Full Load)	29.82mV
5VSB Ripple (Full Load)	20.76mV
12V Load Regulation	0.87%

5V Load Regulation	0.84%
3.3V Load Regulation	0.83%
5VSB Load Regulation	3.37%
Inrush Current	33.513A

230V

Accredited		
Average Efficiency (>1450 load combinations)	91.112%	
Average Noise Output (>1450 Load Combinations)	24.28dBA	
Average PF (>1450 Load Combinations)	0.892	
Efficiency With 10W (≤500W) or 2% (>500W) Load	-	
Standby Power Consumption	0.1659W	
Non-Accredited		
12V Ripple (Full Load)	29.99mV	
5V Ripple (Full Load)	16.84mV	
3.3V Ripple (Full Load)	27.91mV	
5VSB Ripple (Full Load)	26.10mV	
12V Load Regulation	0.86%	
5V Load Regulation	0.84%	
3.3V Load Regulation	0.89%	
5VSB Load Regulation	3.35%	
Inrush Current	-	
Hold-Up Time & PWR_OK Signal	20.60ms	
AC Loss to PWR_OK Hold Up Time	18.00ms	
PWR_OK Inactive to DC Loss Delay	2.60ms	
OPP (0.00°C / 0.00°C)	-	-

Hold-Up Time & PWR_OK Signal

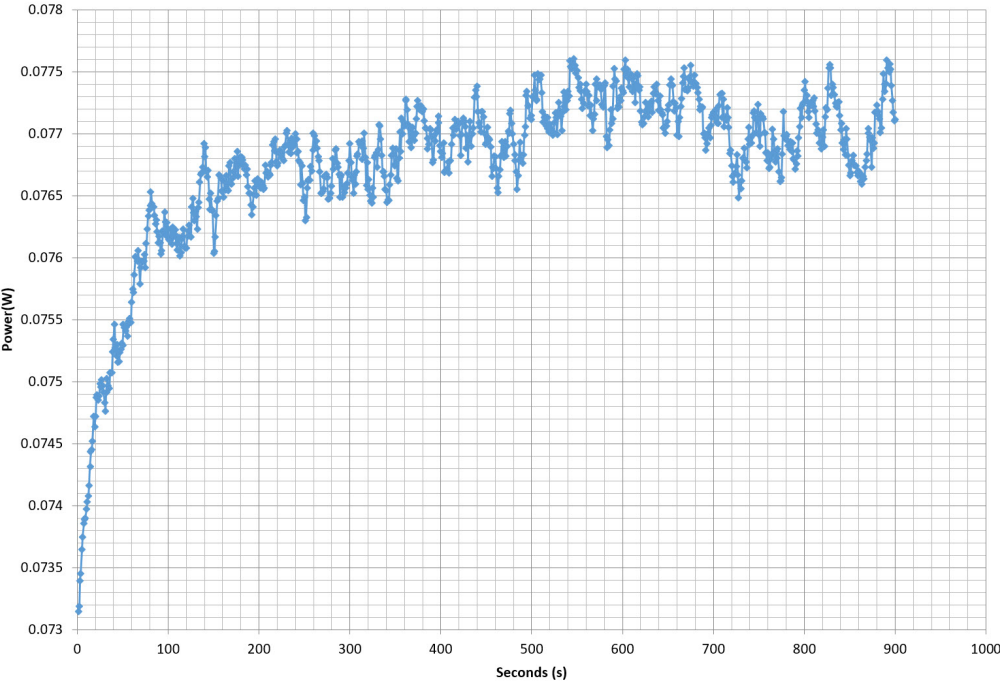
Hold-Up Time (ms)	20.6
AC Loss to PWR_OK Hold Up Time (ms)	18

Vampire Power

Graphs

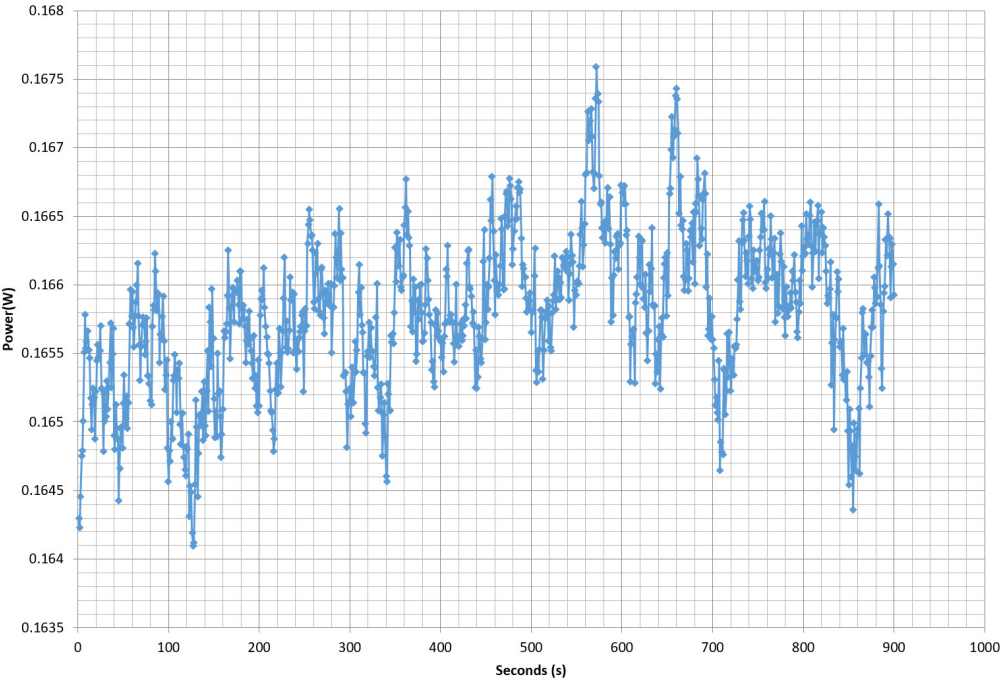
115V

Power - MPY6501AFAAGV1184300008 - 13/02/2019 - 21:38



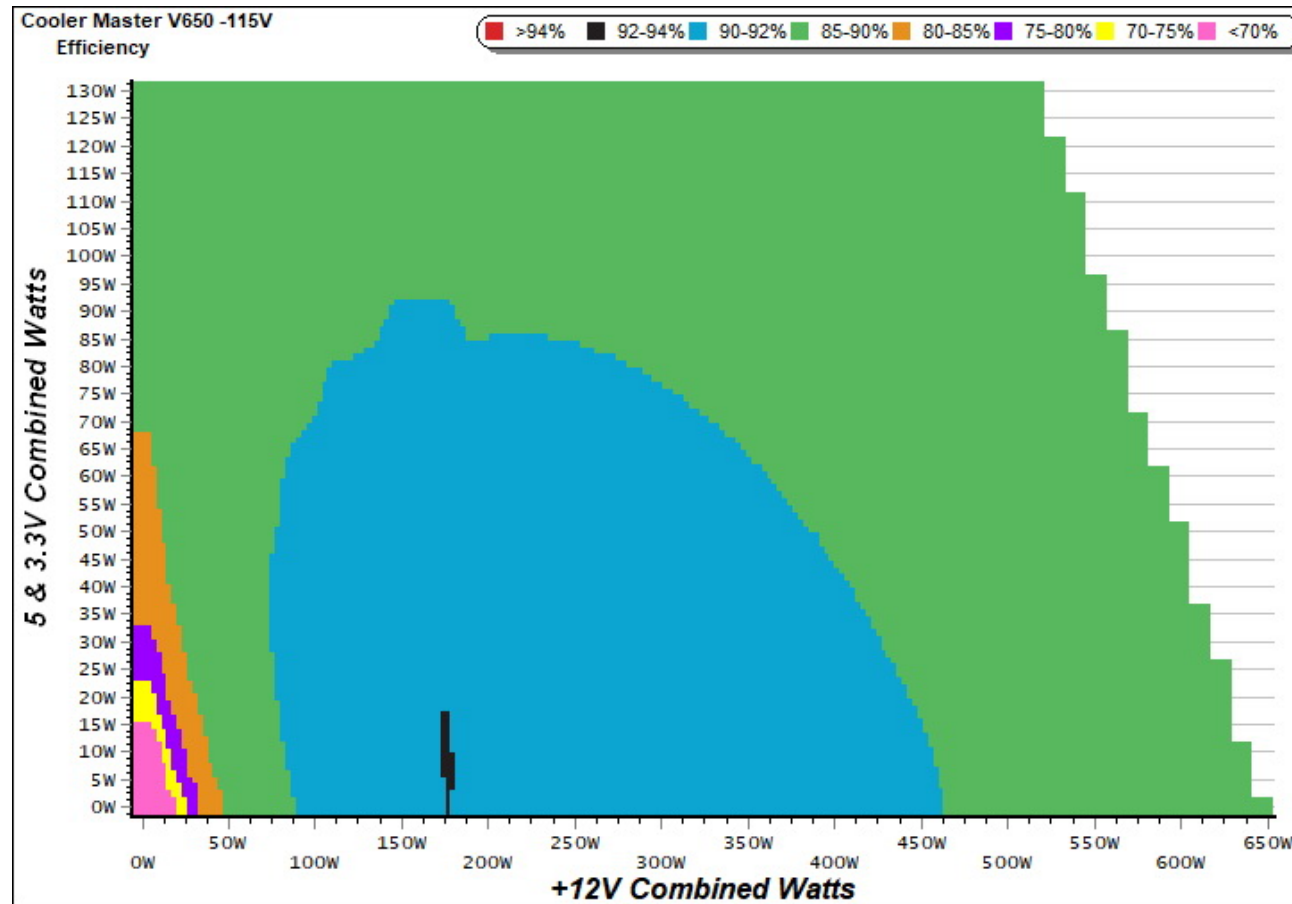
230V

Power - MPY6501AFAAGV1184300008 - 13/02/2019 - 21:38



Efficiency Graph

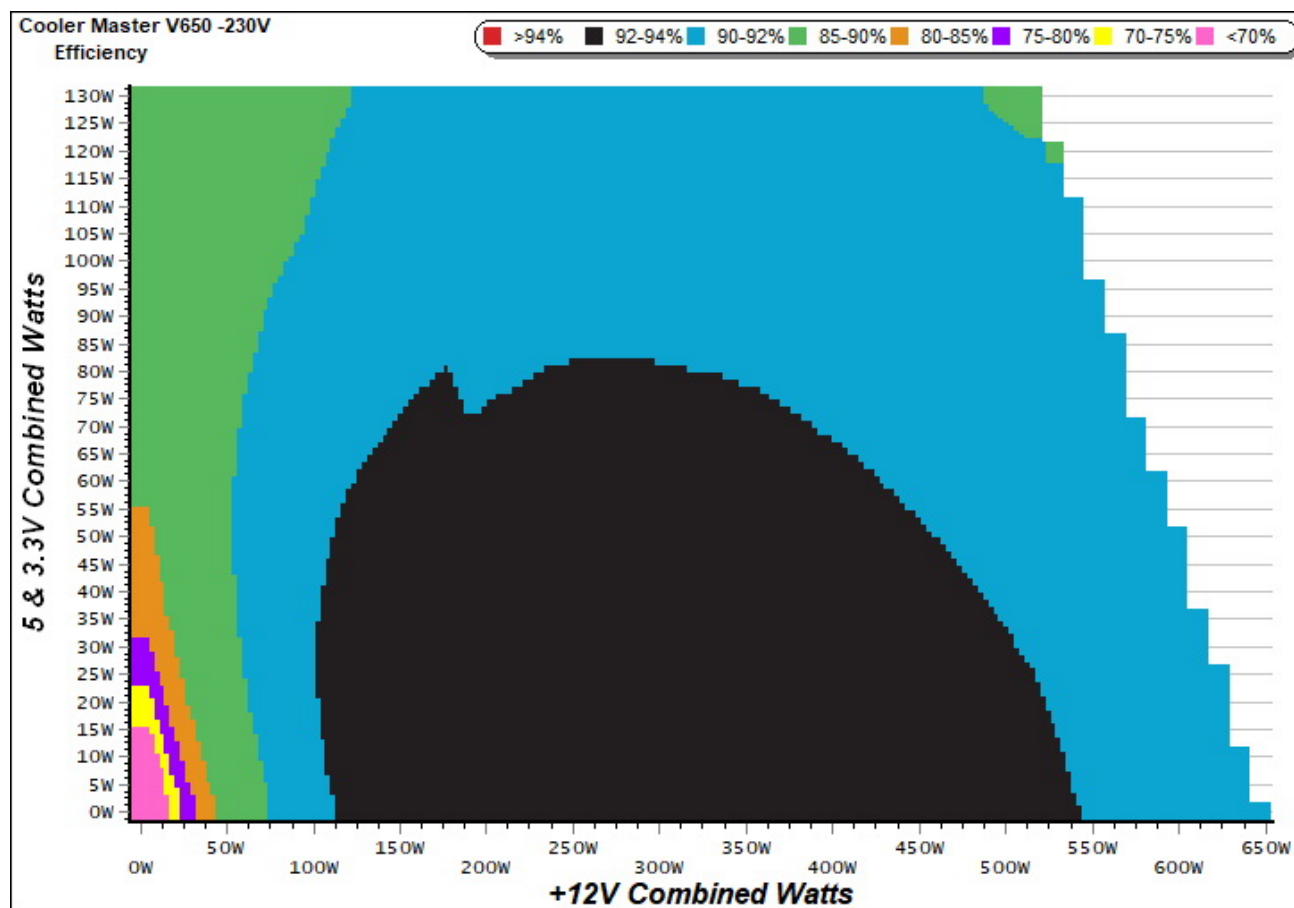
115V



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

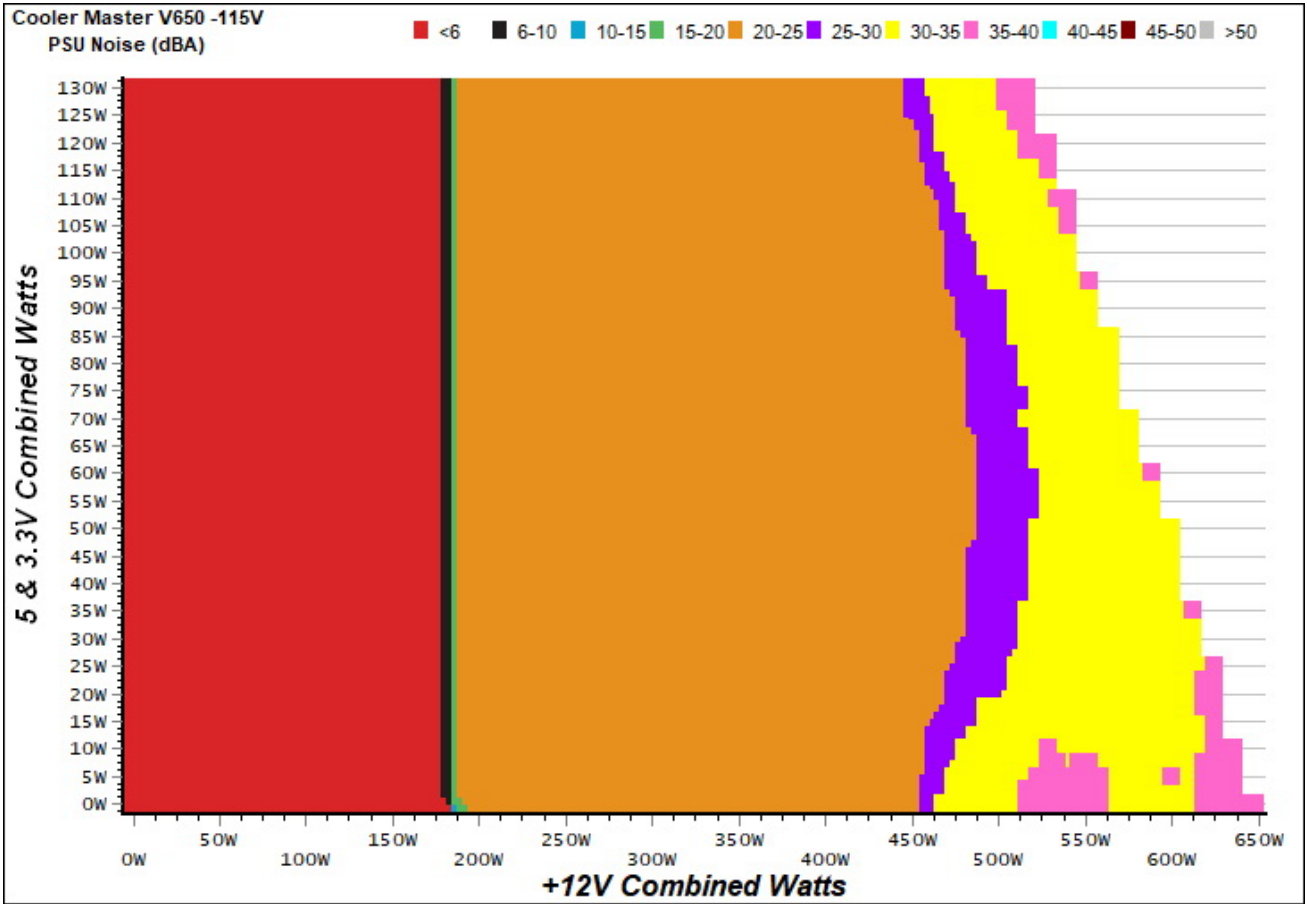


INFO

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

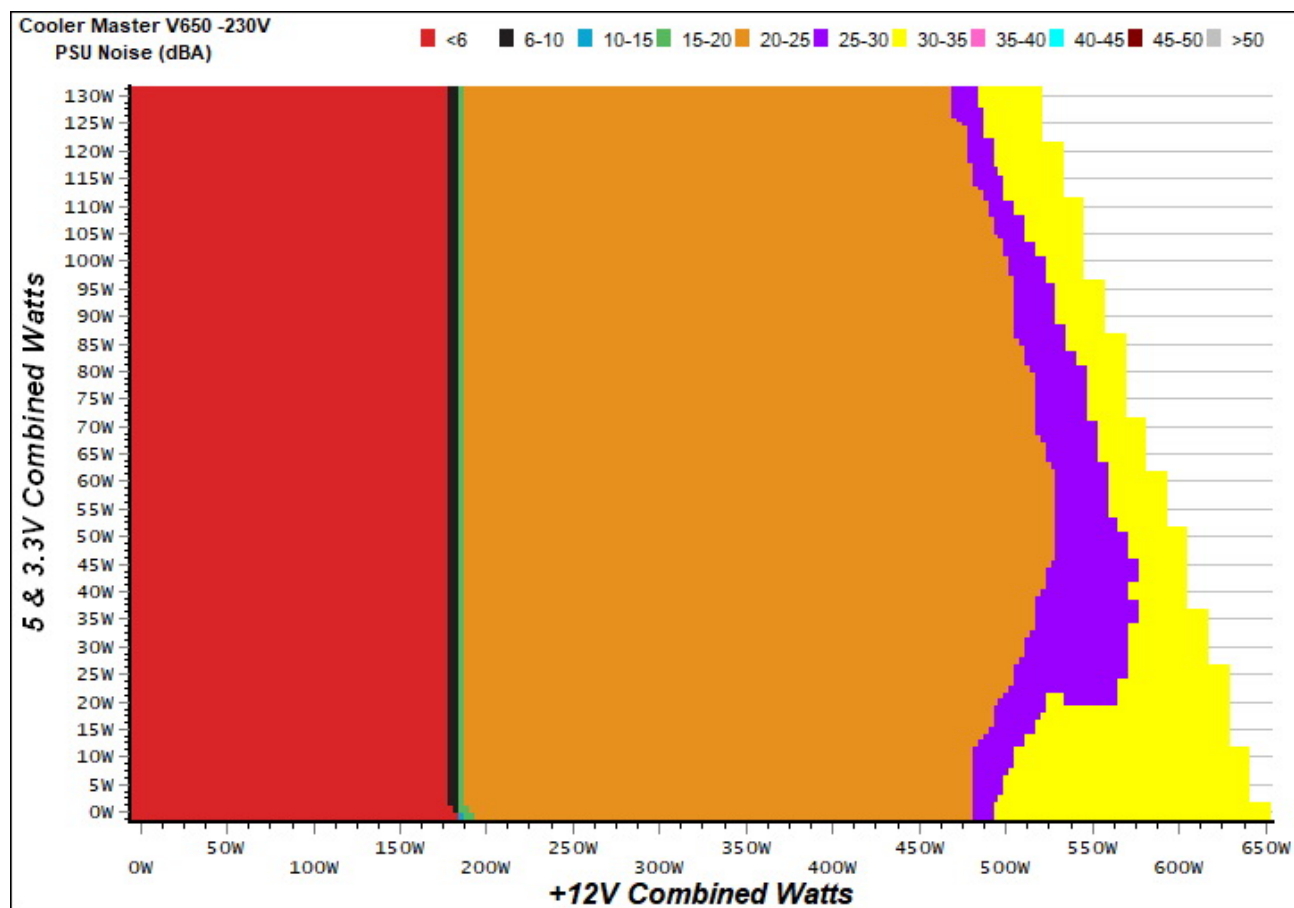
115V



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.

230V



INFO

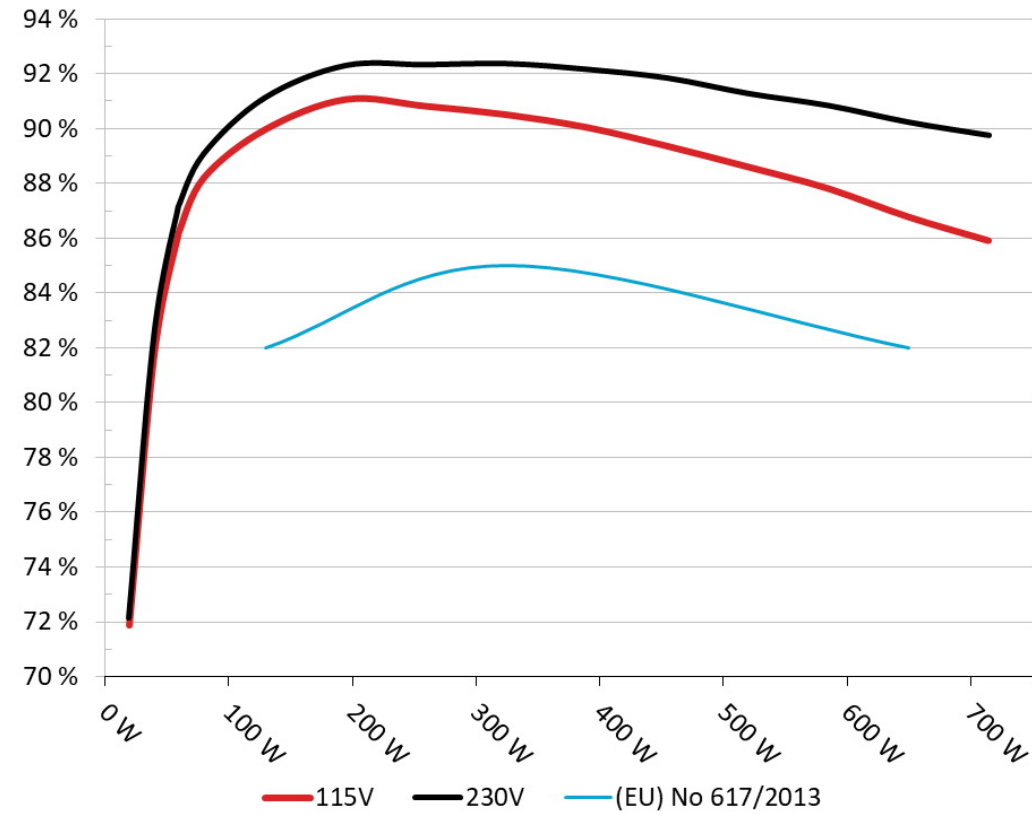
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

Indicative Performance

Efficiency under high ambient temperature

Efficiency: Cooler Master V650

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



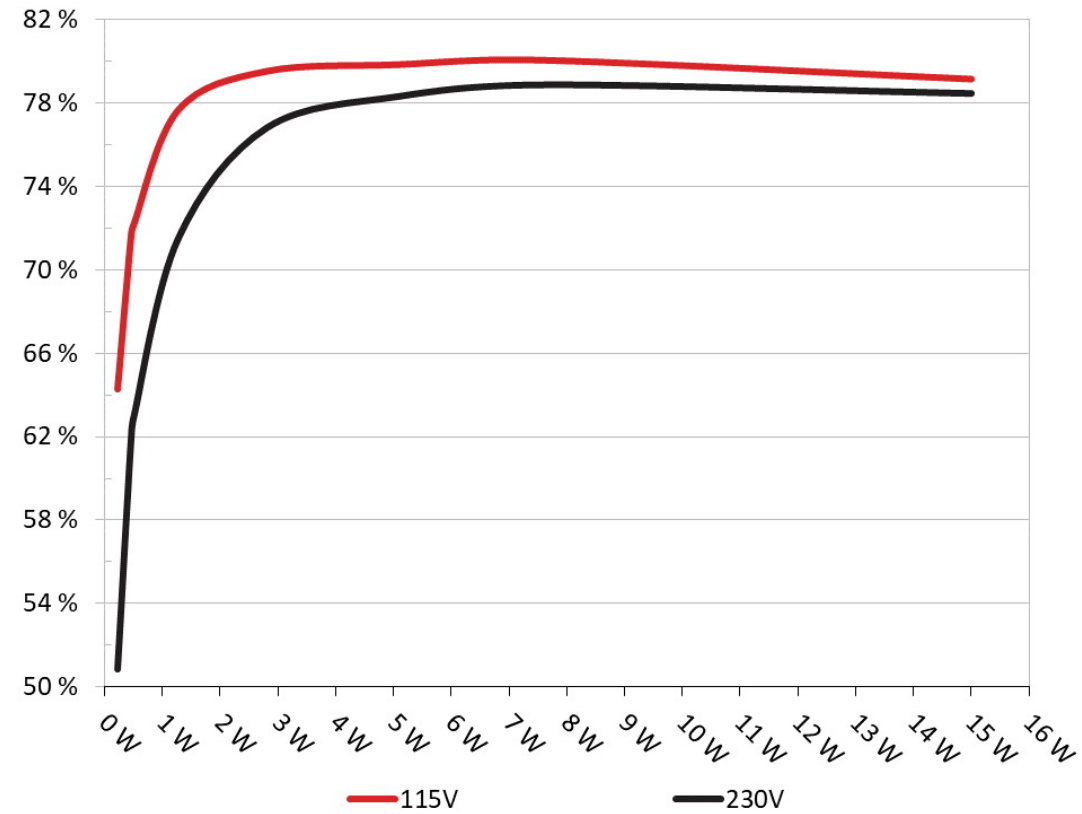
INFO

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 V650

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.

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

115V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.232	64.266%	0.041
	5.140V	0.361		115.10V
2	0.090A	0.463	71.561%	0.072
	5.138V	0.647		115.10V
3	0.550A	2.815	79.520%	0.244
	5.117V	3.540		115.10V
4	1.000A	5.097	79.840%	0.296
	5.097V	6.384		115.10V
5	1.500A	7.612	80.050%	0.323
	5.074V	9.509		115.10V
6	2.999A	15.009	79.145%	0.362
	5.004V	18.964		115.10V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.232	50.877%	0.019
	5.139V	0.456		230.24V
2	0.090A	0.463	61.816%	0.030
	5.137V	0.749		230.23V
3	0.550A	2.814	76.801%	0.129
	5.115V	3.664		230.24V
4	1.000A	5.095	78.300%	0.189
	5.095V	6.507		230.24V
5	1.500A	7.608	78.856%	0.229
	5.072V	9.648		230.24V
6	3.000A	15.004	78.444%	0.284
	5.002V	19.127		230.23V

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	3.574A	1.991A	1.956A	0.983A	64.904	86.205%	0	<6.0	44.49°C	0.898
	12.115V	5.024V	3.375V	5.088V	75.290				40.12°C	115.14V
2	8.136A	2.990A	2.933A	1.183A	129.381	89.955%	0	<6.0	45.67°C	0.941
	12.104V	5.019V	3.373V	5.074V	143.829				40.70°C	115.15V
3	13.106A	3.491A	3.410A	1.383A	194.489	91.055%	0	<6.0	46.99°C	0.961
	12.093V	5.015V	3.370V	5.061V	213.594				41.33°C	115.16V
4	18.085A	3.990A	3.923A	1.585A	259.692	90.806%	828	23.7	41.74°C	0.978
	12.081V	5.014V	3.365V	5.048V	285.986				48.14°C	115.15V
5	22.738A	4.992A	4.907A	1.788A	324.955	90.497%	829	23.7	42.08°C	0.983
	12.070V	5.010V	3.362V	5.034V	359.079				49.19°C	115.14V
6	27.338A	5.994A	5.895A	1.992A	389.444	90.036%	832	23.8	42.50°C	0.987
	12.058V	5.005V	3.359V	5.021V	432.543				50.63°C	115.13V
7	32.014A	7.002A	6.883A	2.198A	454.741	89.351%	1002	28.9	43.14°C	0.989
	12.046V	4.999V	3.356V	5.004V	508.938				52.21°C	115.12V
8	36.692A	8.009A	7.874A	2.404A	520.035	88.595%	1265	35.4	43.89°C	0.991
	12.036V	4.995V	3.353V	4.993V	586.983				53.67°C	115.12V
9	41.781A	8.515A	8.356A	2.405A	584.950	87.804%	1493	39.6	44.50°C	0.993
	12.026V	4.991V	3.350V	4.990V	666.202				54.96°C	115.11V
10	46.611A	9.024A	8.872A	3.027A	649.776	86.769%	1644	41.9	45.33°C	0.994
	12.016V	4.987V	3.347V	4.956V	748.860				56.37°C	115.11V
11	52.062A	9.031A	8.877A	3.030A	714.601	85.906%	1794	43.7	46.70°C	0.995
	12.003V	4.983V	3.345V	4.952V	831.841				58.39°C	115.11V
CL1	0.133A	16.000A	16.000A	0.000A	135.225	84.896%	0	0	49.72°C	0.949
	12.092V	4.989V	3.362V	5.115V	159.284				42.12°C	115.13V

CL2	54.002A	1.002A	0.999A	1.000A	662.199	87.262%	1682	42.3	45.13°C	0.994
	12.014V	4.998V	3.355V	5.060V	758.867				56.27°C	115.11V

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	3.572A	1.992A	1.954A	0.983A	64.872	87.165%	0	<6.0	44.77°C	0.709
	12.114V	5.022V	3.376V	5.086V	74.424				40.02°C	230.33V
2	8.134A	2.990A	2.933A	1.183A	129.331	91.140%	0	<6.0	45.94°C	0.807
	12.102V	5.017V	3.373V	5.072V	141.904				40.50°C	230.34V
3	13.104A	3.490A	3.410A	1.384A	194.430	92.321%	0	<6.0	47.22°C	0.855
	12.091V	5.012V	3.371V	5.059V	210.602				41.11°C	230.33V
4	18.083A	3.992A	3.921A	1.585A	259.644	92.350%	827	23.7	41.51°C	0.885
	12.080V	5.012V	3.365V	5.047V	281.151				48.59°C	230.33V
5	22.738A	4.993A	4.908A	1.788A	324.925	92.391%	828	23.7	42.52°C	0.906
	12.069V	5.008V	3.361V	5.034V	351.683				50.17°C	230.33V
6	27.339A	5.997A	5.897A	1.992A	389.438	92.185%	833	23.8	42.72°C	0.919
	12.057V	5.004V	3.358V	5.020V	422.453				51.16°C	230.33V
7	32.016A	7.005A	6.883A	2.198A	454.739	91.865%	851	24.1	43.27°C	0.935
	12.045V	4.998V	3.355V	5.006V	495.010				52.69°C	230.33V
8	36.699A	8.011A	7.876A	2.404A	520.035	91.300%	1211	34.3	43.72°C	0.947
	12.034V	4.993V	3.352V	4.992V	569.588				54.33°C	230.32V
9	41.789A	8.520A	8.359A	2.406A	584.973	90.859%	1424	38.5	44.17°C	0.957
	12.024V	4.989V	3.349V	4.988V	643.824				55.27°C	230.32V
10	46.624A	9.029A	8.876A	3.028A	649.797	90.251%	1619	41.6	45.31°C	0.965
	12.013V	4.984V	3.346V	4.955V	719.990				57.12°C	230.32V
11	52.068A	9.034A	8.881A	3.030A	714.621	89.776%	1756	43.2	46.77°C	0.970
	12.002V	4.981V	3.344V	4.952V	796.001				58.84°C	230.31V
CL1	0.135A	16.002A	15.998A	0.000A	135.220	85.936%	0	<6.0	50.34°C	0.822
	12.091V	4.988V	3.361V	5.114V	157.349				42.51°C	230.30V

CL2	54.009A	1.003A	0.997A	1.000A	662.116	90.847%	1659	42.0	45.32°C	0.965
	12.011V	4.995V	3.355V	5.059V	728.824				57.18°C	230.33V

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	1.193A	0.497A	0.472A	0.195A	19.561	71.878%	0	<6.0	0.774
	12.127V	5.031V	3.376V	5.129V	27.214				115.13V
2	2.448A	0.995A	0.976A	0.391A	39.975	81.844%	0	<6.0	0.857
	12.122V	5.029V	3.375V	5.118V	48.843				115.13V
3	3.639A	1.493A	1.451A	0.588A	59.499	86.152%	0	<6.0	0.889
	12.117V	5.027V	3.375V	5.108V	69.063				115.15V
4	4.893A	1.991A	1.955A	0.785A	79.872	88.199%	0	<6.0	0.912
	12.113V	5.025V	3.374V	5.097V	90.559				115.14V

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	1.191A	0.497A	0.471A	0.195A	19.530	72.160%	0	<6.0	0.481
	12.125V	5.028V	3.378V	5.127V	27.065				230.31V
2	2.446A	0.995A	0.976A	0.391A	39.943	82.523%	0	<6.0	0.611
	12.120V	5.026V	3.377V	5.116V	48.402				230.32V
3	3.638A	1.492A	1.449A	0.588A	59.462	87.010%	0	<6.0	0.692
	12.115V	5.023V	3.376V	5.106V	68.339				230.32V
4	4.892A	1.992A	1.954A	0.785A	79.844	89.089%	0	<6.0	0.740
	12.111V	5.022V	3.375V	5.095V	89.623				230.33V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	7.1 mV	6.7 mV	14.0 mV	8.0 mV	Pass
20% Load	7.4 mV	8.9 mV	15.0 mV	8.6 mV	Pass
30% Load	8.7 mV	12.7 mV	18.0 mV	9.6 mV	Pass
40% Load	10.7 mV	9.7 mV	18.7 mV	10.7 mV	Pass
50% Load	20.0 mV	10.6 mV	19.0 mV	12.2 mV	Pass
60% Load	15.0 mV	12.1 mV	20.4 mV	13.5 mV	Pass
70% Load	18.4 mV	13.0 mV	23.0 mV	14.4 mV	Pass
80% Load	21.4 mV	15.1 mV	24.1 mV	17.0 mV	Pass
90% Load	24.5 mV	14.8 mV	27.5 mV	17.3 mV	Pass
100% Load	36.7 mV	16.2 mV	29.8 mV	20.8 mV	Pass
110% Load	32.5 mV	15.6 mV	28.2 mV	20.0 mV	Pass
Crossload 1	12.1 mV	14.8 mV	20.2 mV	12.5 mV	Pass
Crossload 2	33.6 mV	15.2 mV	27.0 mV	18.2 mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	7.0 mV	7.1 mV	13.7 mV	7.6 mV	Pass
20% Load	6.8 mV	9.1 mV	15.2 mV	8.8 mV	Pass
30% Load	8.1 mV	12.7 mV	17.9 mV	9.6 mV	Pass
40% Load	9.4 mV	10.1 mV	18.0 mV	10.5 mV	Pass
50% Load	17.0 mV	10.6 mV	19.0 mV	11.4 mV	Pass
60% Load	13.8 mV	12.0 mV	20.7 mV	12.4 mV	Pass
70% Load	16.4 mV	12.8 mV	22.3 mV	14.4 mV	Pass
80% Load	17.6 mV	14.8 mV	23.4 mV	19.3 mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	24.6 mV	15.4 mV	25.7 mV	19.0 mV	Pass
100% Load	30.0 mV	16.8 mV	27.9 mV	26.1 mV	Pass
110% Load	32.4 mV	16.2 mV	28.8 mV	25.7 mV	Pass
Crossload 1	11.3 mV	14.8 mV	20.1 mV	12.7 mV	Pass
Crossload 2	31.2 mV	15.5 mV	25.6 mV	18.7 mV	Pass

The results above are not used in the certification process

Cooler Master V650 Gold



Top side

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 LTD Syrou 6, Latsia, 2231, Nicosia Cyprus

650W		MODEL / 型号				
AC INPUT 交流輸入/交流輸入	100-240V~ 9A 50-60Hz					
DC OUTPUT 直流輸出/直流輸出	+3.3V 20A	+5V 20A	+12V 54A	-12V 0.3A	+5VSB 3A	
TOTAL POWER 總功率/ 总功率	130W		648W	3.6W	15W	
	650W					

MPY6501AFAAGV1184300008



Power specifications label

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

www.cybenetics.com - info@cybenetics.com