Make It Yours.

Cooler Master V650 Gold SFX (2021)

MPY6501SFHAGVEU1210500001

Lab ID CM65001832

Certification ID 251832

Test Result Report ID: 21PS1832A

Certificate Issue Date: Apr 20, 2021

Scheme: ETA-EMI PSU

115V



230V



Scheme: LAMBDA PSU

115V



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	V650 Gold SFX (2021)
OEM/ODM	Gospower
Serial Number	MPY6501SFHAGVEU1210500001
Product Specifications	
Manufacturer-Provided Information	
□□□□ (Vrms)	100-240
□□□□ (Arms)	8-4
□□□□ (Hz)	50-60

□□□□ (W)	650
Operating Temperature (Continuous Full Load) (°C)	
□□	SFX
□□□□	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
□□	92mm Fluid Dynamic Bearing Fan (HA9215VH12FD-F00)
□□□□□	✓
Cybenetics Testing Information	
Lab ID	CM65001832
Date of receipt	Apr 5, 2021
Testing Date	Apr 16, 2021
Report Issued Date	Apr 20, 2021
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

□□□□□ (Non-accredited measurements)

□□□□□				
□□	□□□□	□□□□□□	Gauge	In Cable Capacitors
ATX □□ 20+4 pin (300mm)	1	1	18-22AWG	□
4+4 pin EPS 12V □□ (460mm)	1	1	18AWG	□
8 pin EPS 12V □□ (460mm)	1	1	18AWG	□
6+2pin PCIe□□ (400mm+120mm)	2	4	18AWG	□
SATA□□ (100mm+110mm+110mm+110mm)	2	8	18AWG	□
□ 4pin Molex□□ (100mm+110mm+110mm+110mm)	1	4	18AWG	□
AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

□□□□

□		3.3V	5V	12V	5VSB	-12V
□□□□	□□	20	20	54.1	3	0.3
	□	120		649.2	15	3.6
□□□□□ (W)		650				

Parts Description

General Data	-
Manufacturer (OEM)	Gospower
PCB Type	Double Sided
Primary Side	-
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x MPS HF81 (Discharge IC)
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	1x GBU2508 (800V, 25A @ 98°C)
APFC MOSFETs	2x STMicroelectronics STF33N60DM2 (650V, 15.5A @ 100°C, Rds(on): 0.13Ohm)
APFC Boost Diode	1x
Bulk Cap(s)	1x Rubycon (450V, 470uF, 3,000h @ 105°C, MXK)
Main Switchers	2x Sanrise Tech SRC60R140BTFE (630V, 11.2A @ 125°C, Rds(on): 0.14Ohm)
APFC Controller	Champion CM6500UNX & CM03AX
Resonant Controller	Champion CU6901VAC
Topology	Primary side: APFC, Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	-
+12V MOSFETs	6x NCE Power NCEP40T15GU (40V, 106A @ 100°C, Rds(on): 1.35mOhm)
5V & 3.3V	DC-DC Converters: 6x On Semiconductor NTMFS4C022N (30V, 136A, Rds(on): 1.7mOhm) PWM Controller(s): ANPEC APW7159C
Filtering Capacitors	Electrolytic: 4x Rubycon (4-10,000h @ 105°C, YXF) Polymer: 29x FPCAP
Supervisor IC	-
Fan Model	Hong Hua HA9215VH12FD-F00 (92mm, 12V, 0.36A, Fluid Dynamic Bearing Fan)
5VSB Circuit	-

Standby PWM Controller	On-Bright OB2365SP

Test Results

Temperature & Compliance Info

□□□□ (°C /°F)	28-32 / 82.4-89.6
□□ ErP Lot3/6□□	✓
□□ (EU) No 617/2013□□	✓
ALPM (Alternative Low Power Mode) compatible	✓

Performance Summary

115V

Accredited	
□□□□ (>1450 load combinations)	88.712%
Average Noise Output (>1450 Load Combinations)	33.08dBA
PF□□□ (>1450 Load Combinations)	0.972
Efficiency With 10W (≤500W) or 2% (>500W) Load	48.150%
□□□□□□	0.0447W
Non-Accredited	
12V Ripple (Full Load)	13.64mV
5V Ripple (Full Load)	12.07mV
3.3V Ripple (Full Load)	15.05mV
5VSB Ripple (Full Load)	14.49mV
12V Load Regulation	1.10%
5V Load Regulation	1.34%
3.3V Load Regulation	1.90%
5VSB Load Regulation	2.60%
Inrush Current	77.420A

230V

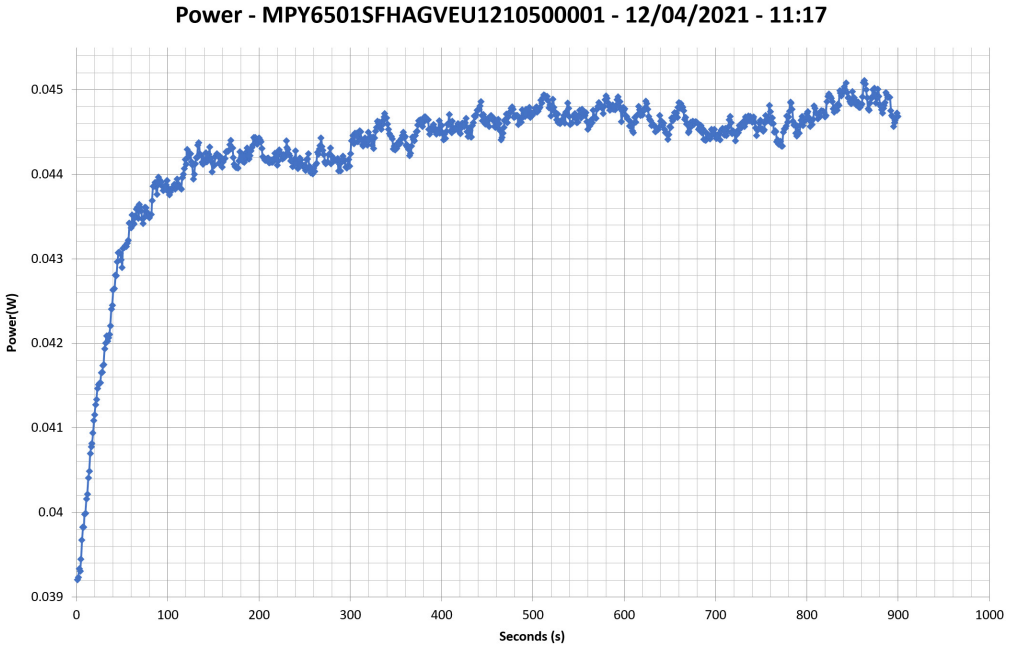
Accredited		
□□□□ (>1450 load combinations)		90.692%
Average Noise Output (>1450 Load Combinations)		37.19dBA
PF□□□ (>1450 Load Combinations)		0.930
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
□□□□□□		0.0841W
Non-Accredited		
12V Ripple (Full Load)		14.87mV
5V Ripple (Full Load)		12.60mV
3.3V Ripple (Full Load)		13.75mV
5VSB Ripple (Full Load)		14.35mV
12V Load Regulation		1.03%
5V Load Regulation		1.26%
3.3V Load Regulation		1.84%
5VSB Load Regulation		2.56%
Inrush Current		88.810A
□□□□ & PG□□		19.60ms
AC Loss to PWR_OK Hold Up Time		16.10ms
PWR_OK Inactive to DC Loss Delay		3.50ms
PSU Timings: T1 (20% / 100%)	50.0ms	50.0ms
PSU Timings: T3 (20% / 100%)	126.0ms	126.0ms
OPP (30.86°C / 43.61°C)	119.36%	117.36%

□□□□ & PG□□

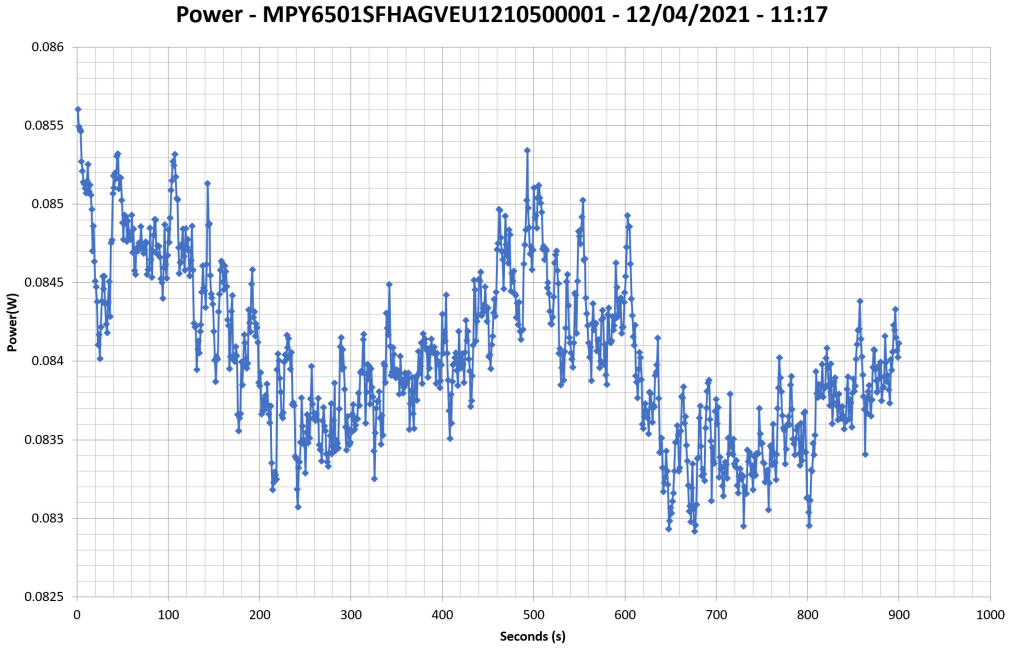
Hold-Up Time (ms)	19.6
AC Loss to PWR_OK Hold Up Time (ms)	16.1
PWR_OK Inactive to DC Loss Delay (ms)	3.5

Graphs

115V



230V



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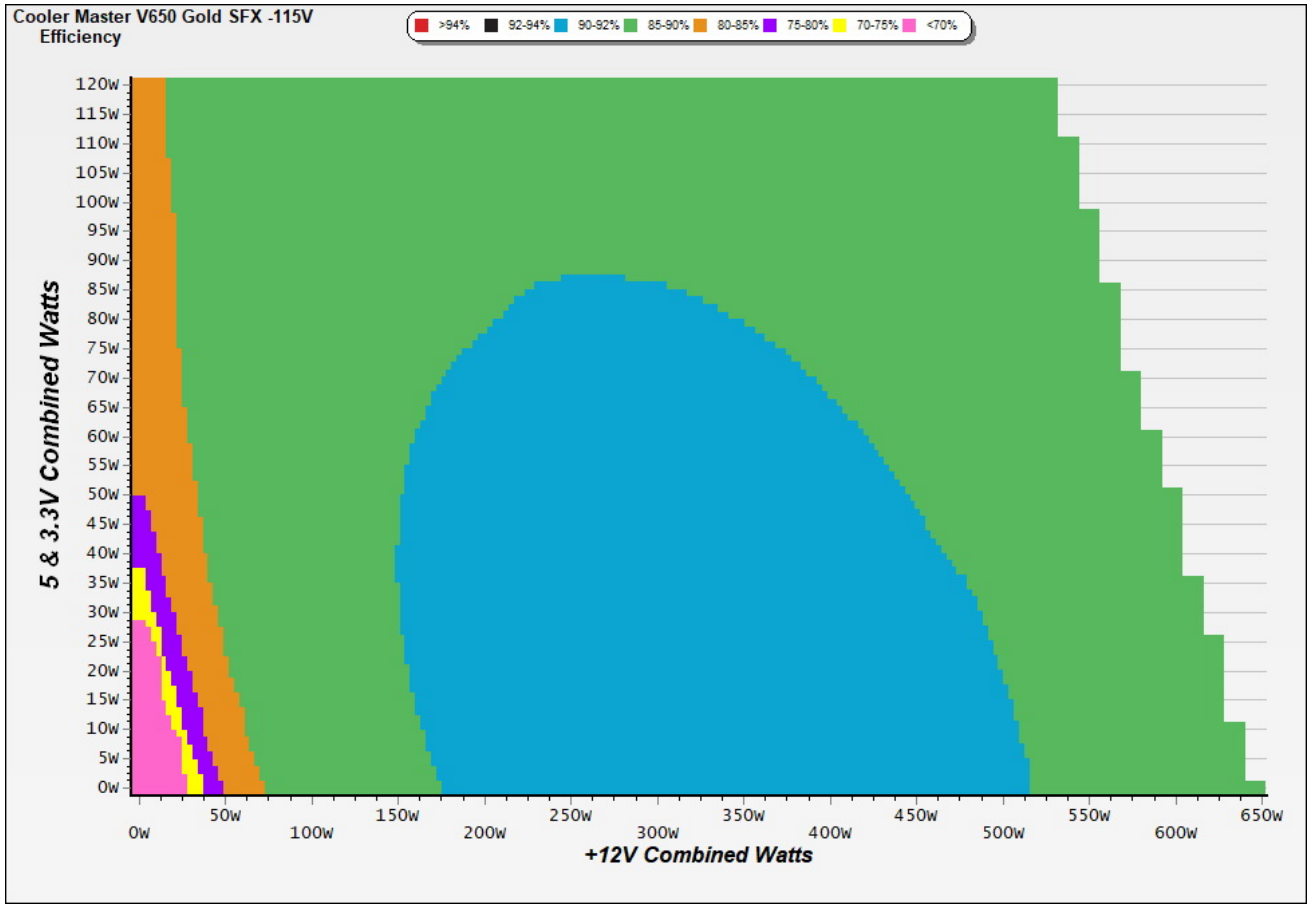
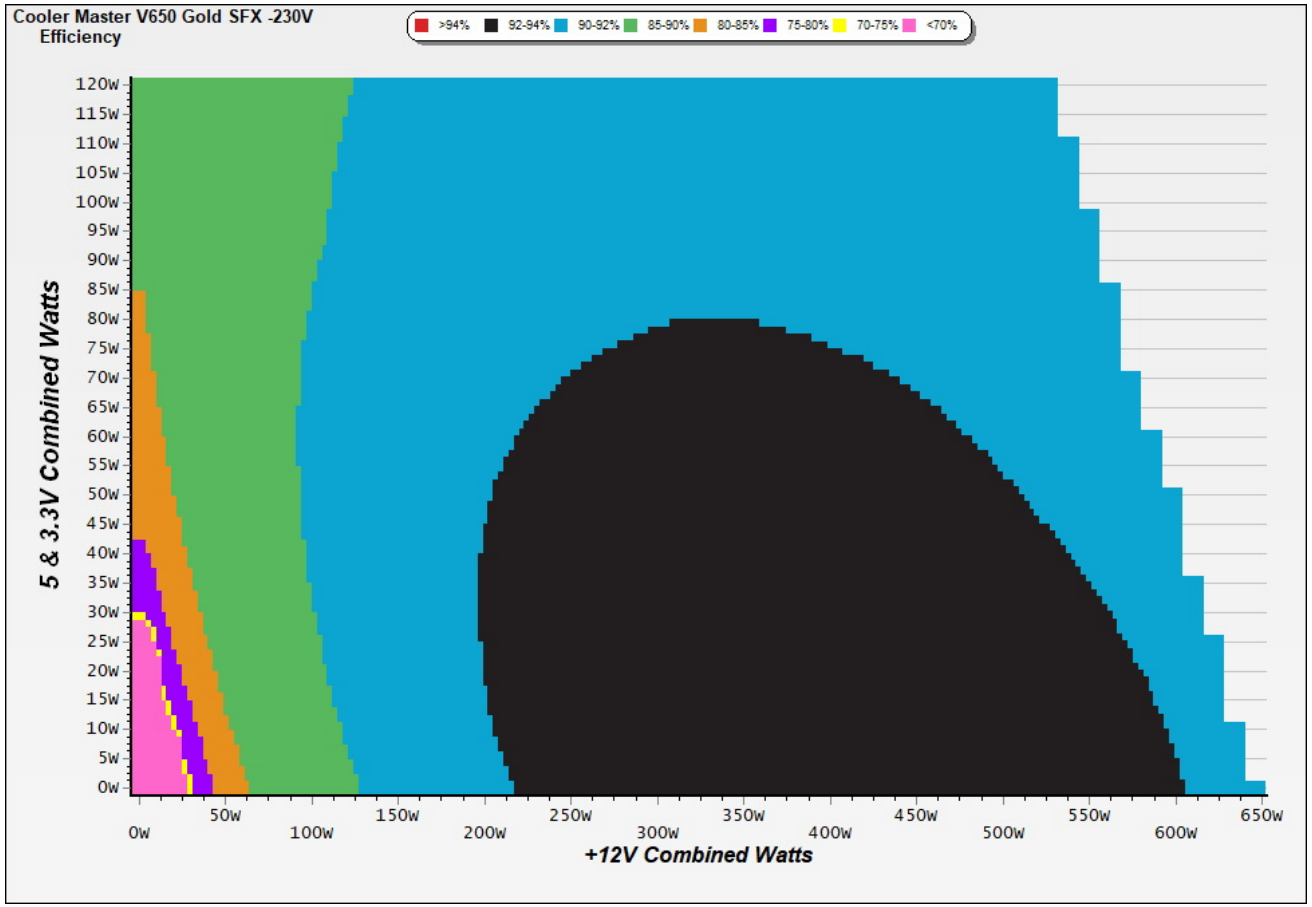
115V



□□

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



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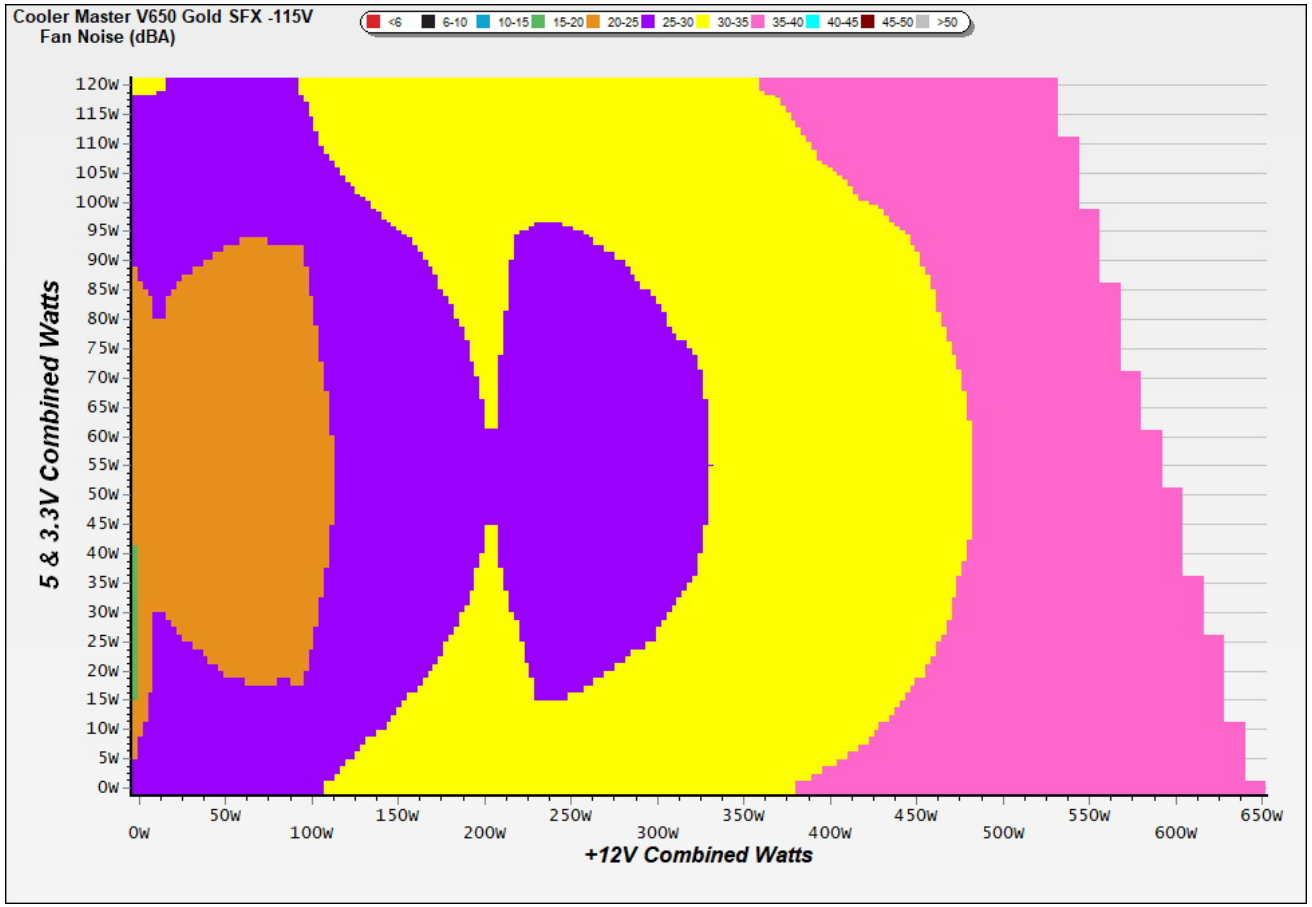
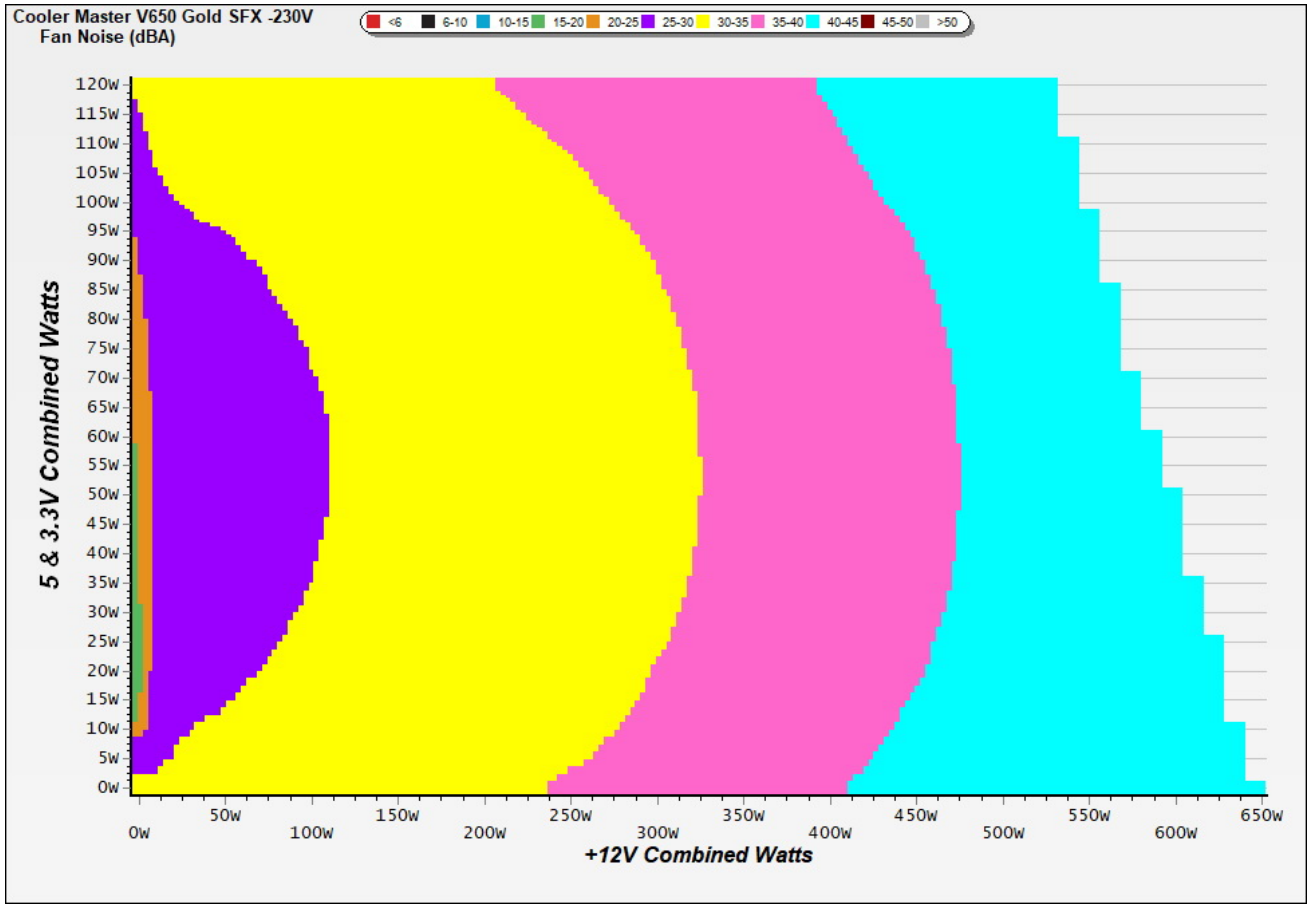
115V



□□

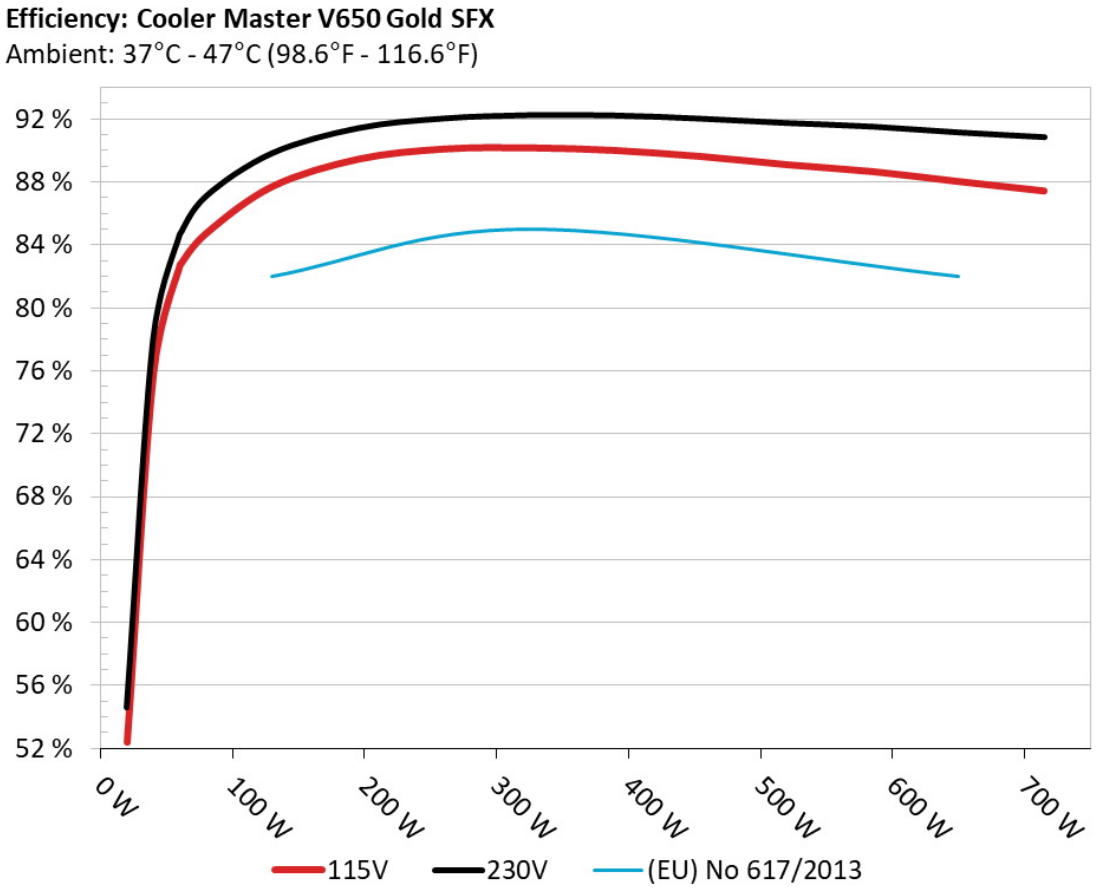
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

230V



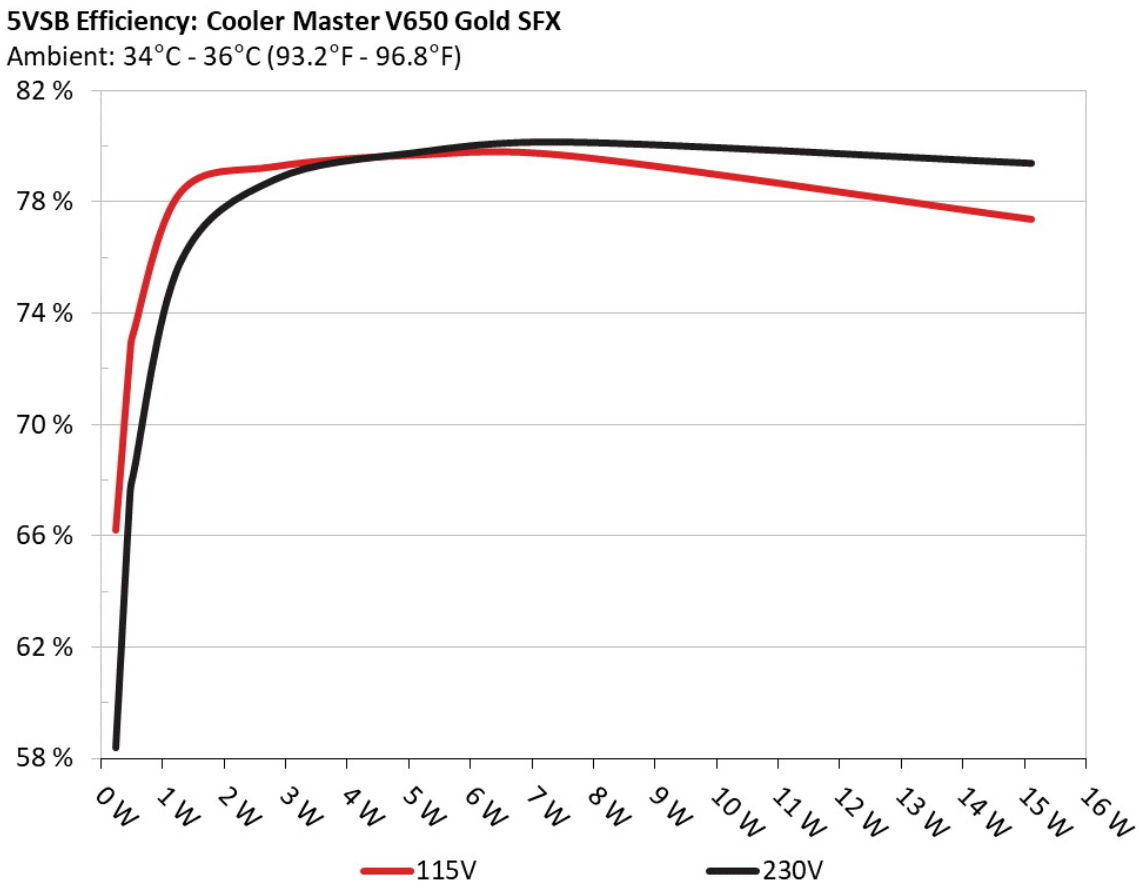
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Indicative Performance



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□□□□



□□

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

□□□□ □□ 5Vsb □□ (ErP Lot3/6 & CEC)

115V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.045A	0.231	66.189%	0.039
	5.119V	0.349		115.13V
2	0.090A	0.461	72.484%	0.071
	5.117V	0.636		115.14V
3	0.550A	2.808	79.255%	0.284
	5.105V	3.543		115.13V
4	1.000A	5.094	79.668%	0.373
	5.093V	6.394		115.13V
5	1.500A	7.620	79.640%	0.419
	5.079V	9.568		115.13V
6	3.000A	15.116	77.363%	0.476
	5.038V	19.539		115.14V

230V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.045A	0.230	58.376%	0.014
	5.119V	0.394		230.25V
2	0.090A	0.461	67.496%	0.024
	5.117V	0.683		230.26V
3	0.550A	2.808	78.788%	0.115
	5.105V	3.564		230.26V
4	1.000A	5.094	79.756%	0.187
	5.093V	6.387		230.26V
5	1.500A	7.620	80.135%	0.247
	5.080V	9.509		230.26V
6	3.000A	15.118	79.376%	0.348
	5.039V	19.046		230.26V

Supplementary Tests (For Reference)

10-110%□□□□

115V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	3.580A	1.995A	1.962A	0.983A	64.958	82.715%	2296	38.0	39.71°C	0.908
	12.111V	5.010V	3.366V	5.088V	78.532				45.21°C	115.10V
2	8.206A	2.998A	2.945A	1.182A	130.012	87.694%	2435	39.6	40.56°C	0.952
	12.079V	5.003V	3.359V	5.077V	148.256				46.63°C	115.10V
3	13.173A	3.501A	3.446A	1.381A	195.018	89.422%	2545	41.2	41.48°C	0.958
	12.068V	4.997V	3.353V	5.067V	218.087				48.24°C	115.11V
4	18.150A	4.007A	3.945A	1.582A	260.033	90.068%	2663	41.9	41.79°C	0.969
	12.057V	4.990V	3.347V	5.057V	288.707				48.97°C	115.11V
5	22.795A	5.018A	4.942A	1.784A	325.079	90.145%	2780	42.9	42.04°C	0.977
	12.045V	4.983V	3.340V	5.046V	360.616				49.81°C	115.11V
6	27.399A	6.030A	5.942A	1.986A	389.502	89.978%	2855	43.7	42.38°C	0.983
	12.033V	4.976V	3.333V	5.035V	432.888				50.97°C	115.11V
7	32.084A	7.046A	6.947A	2.190A	454.833	89.596%	3025	46.7	43.23°C	0.987
	12.022V	4.969V	3.326V	5.024V	507.649				52.53°C	115.10V
8	36.780A	8.003A	7.955A	2.395A	519.836	89.078%	3075	46.5	43.99°C	0.989
	12.010V	4.961V	3.319V	5.012V	583.572				53.75°C	115.10V
9	41.888A	8.582A	8.451A	2.398A	585.088	88.637%	3076	46.5	44.31°C	0.991
	11.998V	4.954V	3.313V	5.005V	660.095				54.67°C	115.10V
10	46.742A	9.100A	8.984A	3.012A	649.924	88.008%	3081	46.5	45.63°C	0.992
	11.985V	4.947V	3.306V	4.981V	738.482				56.55°C	115.10V
11	52.212A	9.111A	8.999A	3.015A	714.746	87.406%	3081	46.5	46.91°C	0.992
	11.971V	4.940V	3.301V	4.976V	817.727				58.64°C	115.11V
CL1	0.118A	14.003A	13.999A	0.000A	117.975	83.217%	2967	45.3	42.23°C	0.950
	12.096V	4.981V	3.343V	5.099V	141.768				49.46°C	115.12V

CL2	54.112A	1.000A	1.001A	1.000A	661.325	88.506%	3082	46.5	45.80°C	0.992
	11.975V	4.962V	3.320V	5.049V	747.210				56.13°C	115.10V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	3.582A	1.996A	1.962A	0.983A	64.973	84.666%	2328	38.3	40.12°C	0.780
	12.108V	5.010V	3.365V	5.088V	76.740				45.41°C	230.27V
2	8.210A	2.999A	2.948A	1.182A	130.048	89.848%	2405	39.5	40.73°C	0.872
	12.076V	5.003V	3.358V	5.077V	144.742				46.56°C	230.27V
3	13.178A	3.503A	3.445A	1.382A	195.055	91.439%	2554	41.3	41.46°C	0.906
	12.065V	4.998V	3.353V	5.067V	213.317				47.84°C	230.26V
4	18.156A	4.008A	3.945A	1.582A	260.060	92.057%	2629	41.3	41.82°C	0.927
	12.054V	4.991V	3.347V	5.057V	282.498				48.87°C	230.26V
5	22.803A	5.016A	4.940A	1.784A	325.099	92.267%	2692	42.5	42.15°C	0.937
	12.042V	4.985V	3.340V	5.046V	352.345				49.80°C	230.26V
6	27.410A	6.029A	5.942A	1.986A	389.559	92.242%	2800	43.0	42.38°C	0.948
	12.030V	4.978V	3.333V	5.035V	422.321				50.71°C	230.25V
7	32.093A	7.044A	6.949A	2.190A	454.858	92.043%	2976	45.6	43.09°C	0.954
	12.019V	4.971V	3.326V	5.025V	494.178				51.81°C	230.25V
8	36.790A	8.004A	7.955A	2.395A	519.871	91.764%	3095	46.6	43.64°C	0.959
	12.007V	4.963V	3.319V	5.013V	566.533				53.20°C	230.25V
9	41.899A	8.578A	8.452A	2.398A	585.066	91.533%	3099	46.7	44.18°C	0.964
	11.994V	4.957V	3.313V	5.007V	639.187				54.14°C	230.25V
10	46.748A	9.094A	8.983A	3.012A	649.901	91.167%	3104	46.9	45.45°C	0.968
	11.983V	4.950V	3.306V	4.982V	712.868				56.47°C	230.24V
11	52.214A	9.106A	9.001A	3.015A	714.718	90.869%	3106	46.9	46.79°C	0.970
	11.970V	4.943V	3.300V	4.976V	786.538				58.56°C	230.25V
CL1	0.117A	14.004A	13.999A	0.000A	118.039	85.379%	2966	45.3	42.45°C	0.865
	12.095V	4.986V	3.343V	5.100V	138.253				49.59°C	230.25V

CL2	54.107A	1.000A	0.999A	1.000A	661.153	91.701%	3103	46.8	45.88°C	0.968
	11.973V	4.963V	3.320V	5.050V	720.986				56.52°C	230.25V

The results above are not used in the certification process

20-80□□□□□

115V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	PF/AC □□
1	1.225A	0.498A	0.489A	0.196A	19.986	52.409%	1844	31.7	0.851
	12.111V	5.017V	3.372V	5.114V	38.135				115.09V
2	2.450A	0.994A	0.979A	0.392A	39.974	75.889%	2180	36.5	0.878
	12.118V	5.014V	3.370V	5.107V	52.674				115.09V
3	3.680A	1.496A	1.468A	0.588A	60.006	82.378%	2142	36.0	0.901
	12.111V	5.011V	3.367V	5.099V	72.842				115.10V
4	4.910A	1.997A	1.962A	0.785A	79.957	84.717%	2205	36.7	0.919
	12.089V	5.009V	3.364V	5.092V	94.381				115.10V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	PF/AC □□
1	1.226A	0.497A	0.491A	0.196A	19.997	54.611%	1773	30.6	0.617
	12.110V	5.016V	3.371V	5.114V	36.617				230.26V
2	2.450A	0.997A	0.981A	0.392A	39.989	78.014%	2045	34.6	0.697
	12.116V	5.013V	3.369V	5.107V	51.259				230.26V
3	3.681A	1.497A	1.471A	0.588A	60.020	84.602%	2087	35.3	0.767
	12.108V	5.011V	3.366V	5.099V	70.944				230.27V
4	4.912A	1.997A	1.961A	0.786A	79.972	87.106%	2223	36.9	0.808
	12.087V	5.008V	3.364V	5.093V	91.810				230.26V

The results above are not used in the certification process

□□□□

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	18.40mV	8.40mV	12.70mV	5.80mV	Pass
20% Load	11.90mV	8.90mV	13.20mV	6.10mV	Pass
30% Load	10.10mV	9.50mV	13.40mV	7.60mV	Pass
40% Load	10.60mV	9.50mV	14.10mV	8.60mV	Pass
50% Load	9.70mV	9.60mV	14.50mV	9.30mV	Pass
60% Load	9.90mV	10.60mV	13.80mV	9.90mV	Pass
70% Load	10.20mV	10.90mV	13.90mV	10.40mV	Pass
80% Load	10.80mV	12.10mV	15.10mV	12.50mV	Pass
90% Load	10.80mV	12.00mV	14.60mV	13.50mV	Pass
100% Load	13.60mV	12.10mV	15.10mV	14.50mV	Pass
110% Load	14.40mV	12.50mV	14.30mV	16.20mV	Pass
Crossload1	17.00mV	9.50mV	12.70mV	6.20mV	Pass
Crossload2	14.00mV	12.40mV	14.60mV	11.10mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	20.60mV	9.60mV	11.30mV	5.80mV	Pass
20% Load	12.60mV	9.20mV	11.30mV	6.20mV	Pass
30% Load	11.20mV	9.90mV	12.10mV	7.50mV	Pass
40% Load	10.90mV	9.50mV	11.20mV	7.90mV	Pass
50% Load	9.90mV	10.30mV	11.80mV	9.10mV	Pass
60% Load	10.00mV	11.30mV	12.20mV	10.00mV	Pass
70% Load	11.00mV	11.20mV	12.50mV	10.10mV	Pass
80% Load	10.70mV	11.40mV	12.30mV	12.30mV	Pass





Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	10.00mV	11.80mV	12.10mV	13.30mV	Pass
100% Load	14.90mV	12.60mV	13.80mV	14.40mV	Pass
110% Load	15.30mV	13.00mV	13.30mV	15.20mV	Pass
Crossload1	17.90mV	10.40mV	13.20mV	6.20mV	Pass
Crossload2	16.10mV	12.50mV	13.20mV	10.80mV	Pass

The results above are not used in the certification process

Cooler Master V650 Gold SFX (2021)

Top side

Power specifications label

本测试报告中包含的所有数据和图表均可在以下条件下由任何人使用：使用过程需提及测试结果由Cybenetics提供。
在任何情况下都应提供原始测试结果文档的网站链接

Cybenetics 提供自愿性认证计划：电源方面有ETA（效率）、LAMBDA（噪声）与SAFE（安全与正确运行）；散热产品方面有DELTA（机箱隔音）与PHI（风扇风量与静压）

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