Make It Yours.

Cooler Master G500 Gold

Serial Number

Lab ID CM50001881

Certification ID 251881

Test Result Report ID: 21PS1881A

Certificate Issue Date: Jul 30, 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	G500 Gold
OEM/ODM	Xin Hui Yuan Tech (Fusion Power)
Serial Number	
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	50-60

Rated Power (W)	500
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fixed cables
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	120mm Rifle Bearing Fan (EFS-12E12M)
Semi-Passive Operation	✗
Cybenetics Testing Information	
Lab ID	CM50001881
Date of receipt	Jul 21, 2021
Testing Date	Jul 28, 2021
Report Issued Date	Jul 30, 2021
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors(Non-accredited measurements)

Captive Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (560mm)	1	1	18-22AWG	No
8 pin EPS12V (640mm)/ 4+4 pin EPS12V (+125mm)	1	1 / 1	18AWG	No
6+2 pin PCIe (590mm+125mm)	1	2	18AWG	No
SATA (550mm+125mm+125mm)	2	6	18AWG	No
4-pin Molex (520mm+125mm+125mm)	1	3	18AWG	No
Modular Cables				
AC Power Cord (1400mm) - C13 coupler	1	1	17AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	41.6	3	0.3
	Watts	100		499.2	15	3.6
Total Max. Power (W)		500				

Parts Description

General Data	
Manufacturer (OEM)	Xin Hui Yuan Tech (Fusion Power)
PCB Type	Double Sided
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	1x NTC Thermistor MF72-5D15 (5 Ohm) & Relay
Bridge Rectifier(s)	1x GBU1006 (600V, 10A @ 100°C)
APFC MOSFETs	2x SemiHow HCS60R350S (600V, 7A @ 100°C, Rds(on): 0.35Ohm)
APFC Boost Diode	1x NXP BYC8-600 (600V, 8A @ 109°C)
Bulk Cap(s)	1x Ltec (400V, 330uF, 2,000h @ 85°C, LP)
Main Switchers	4x Great Power GPT10N50AD (500V, 9.7A @ 100°C, Rds(on): 0.7Ohm)
APFC Controller	Champion CM6500UNX
Resonant Controller	Champion CM6901T6X
Topology	Primary side:APFC, Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETs	2x Excelliance MOS EMP16N04HS (40V, 100A @ 100°C, Rds(on): 1.6mOhm)
5V & 3.3V	DC-DC Converters: 4x Excelliance MOS EMB04N03A (30V, 55A @ 100°C, Rds(on): 4mOhm) PWM Controller(s): 2x Excelliance MOS EM5301F
Filtering Capacitors	Electrolytic: 5x Chengx (2-4,000h @ 105°C, GR), 2x Elite (4-10,000h @ 105°C, EY), 6x (105°C, WE) Polymer: 5x Elite, 2x FPCAP
Supervisor IC	IN1S313I-SAG
Fan Model	Ever Cool EFS-12E12M (120mm, 12V, 0.25A, Rifle Bearing Fan)
5VSB Circuit	

Rectifier	1x 45R10C
Standby PWM Controller	Excelliance MOS Corp EM8569C

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	✓
ALPM (Alternative Low Power Mode) compatible	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	87.160%
Average Noise Output (>1450 Load Combinations)	30.78dBA
Average PF (>1450 Load Combinations)	0.979
Efficiency With 10W (≤500W) or 2% (>500W) Load	53.913%
Standby Power Consumption	0.0498W
Non-Accredited	
12V Ripple (Full Load)	54.43mV
5V Ripple (Full Load)	30.54mV
3.3V Ripple (Full Load)	35.77mV
5VSB Ripple (Full Load)	20.93mV
12V Load Regulation	0.05%
5V Load Regulation	3.49%
3.3V Load Regulation	5.04%
5VSB Load Regulation	4.26%
Inrush Current	66.650A

230V		
Accredited		
Average Efficiency (>1450 load combinations)		89.105%
Average Noise Output (>1450 Load Combinations)		32.23dBA
Average PF (>1450 Load Combinations)		0.935
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
Standby Power Consumption		0.1080W
Non-Accredited		
12V Ripple (Full Load)		54.23mV
5V Ripple (Full Load)		31.33mV
3.3V Ripple (Full Load)		35.35mV
5VSB Ripple (Full Load)		20.90mV
12V Load Regulation		0.09%
5V Load Regulation		3.53%
3.3V Load Regulation		4.48%
5VSB Load Regulation		4.28%
Inrush Current		79.560A
Hold-Up Time & PWR_OK Signal		19.90ms
AC Loss to PWR_OK Hold Up Time		16.60ms
PWR_OK Inactive to DC Loss Delay		3.30ms
PSU Timings: T1 (20% / 100%)	42.0ms	42.0ms
PSU Timings: T3 (20% / 100%)	132.0ms	132.0ms
OPP (24.34°C / 45.64°C)	135.28%	122.76%

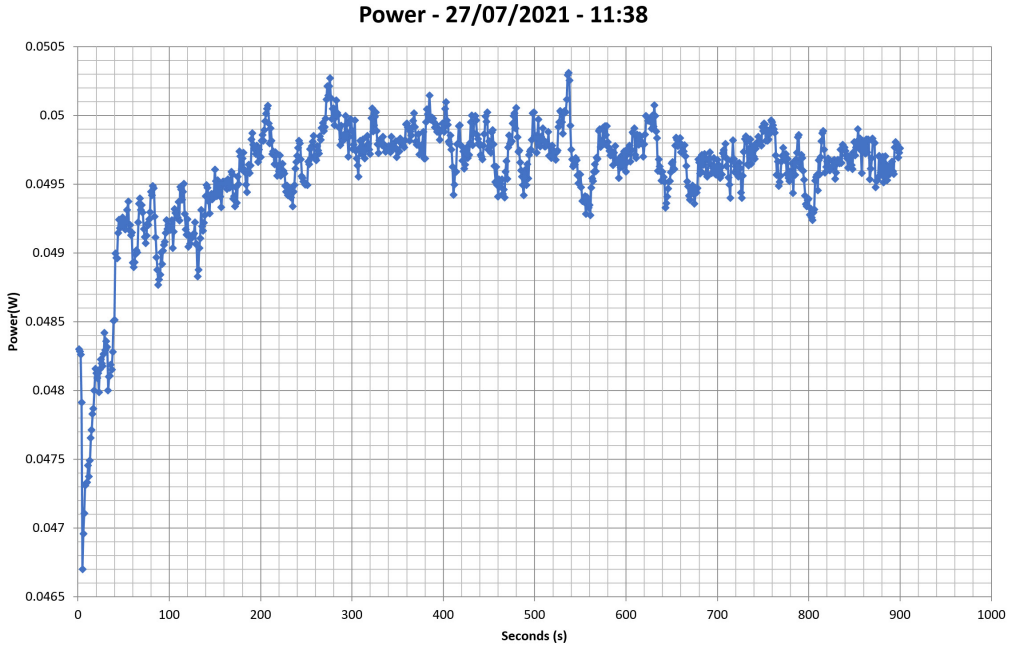
Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	19.9
AC Loss to PWR_OK Hold Up Time (ms)	16.6
PWR_OK Inactive to DC Loss Delay (ms)	3.3

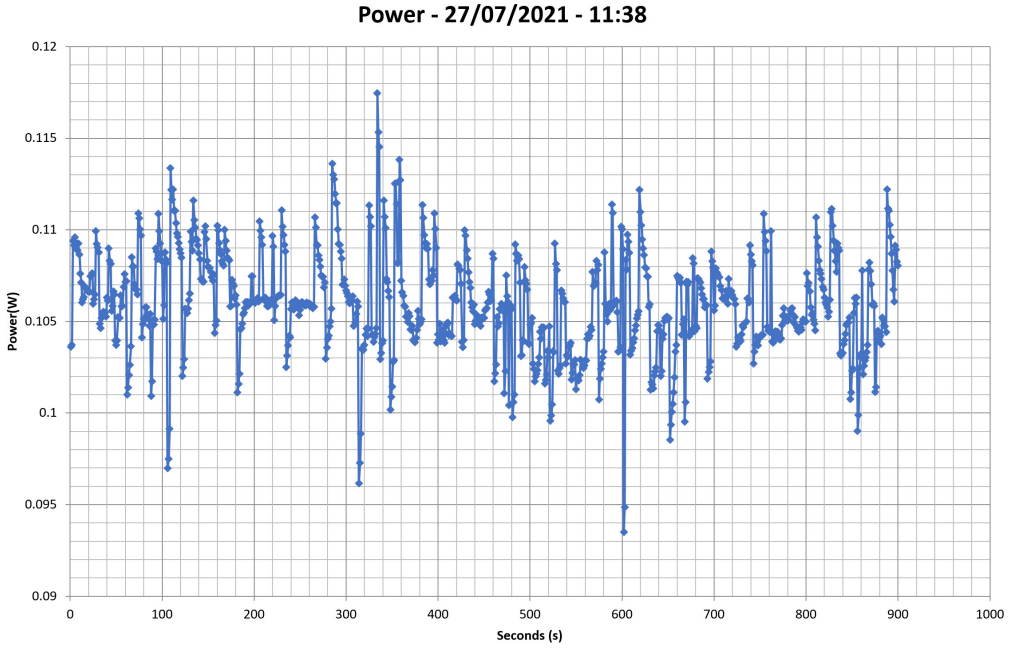
Vampire Power

Graphs

115V

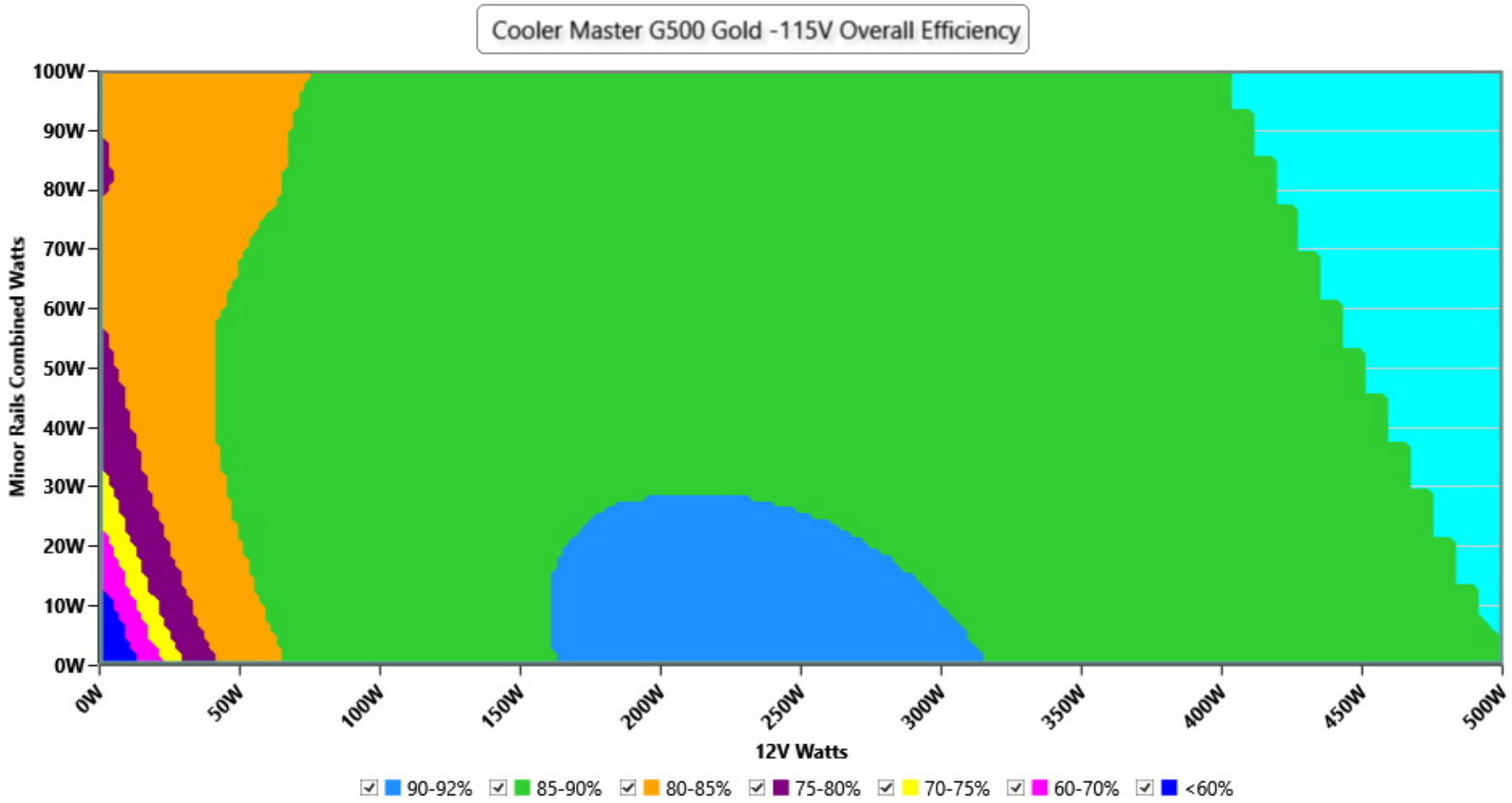


230V



Efficiency Graph

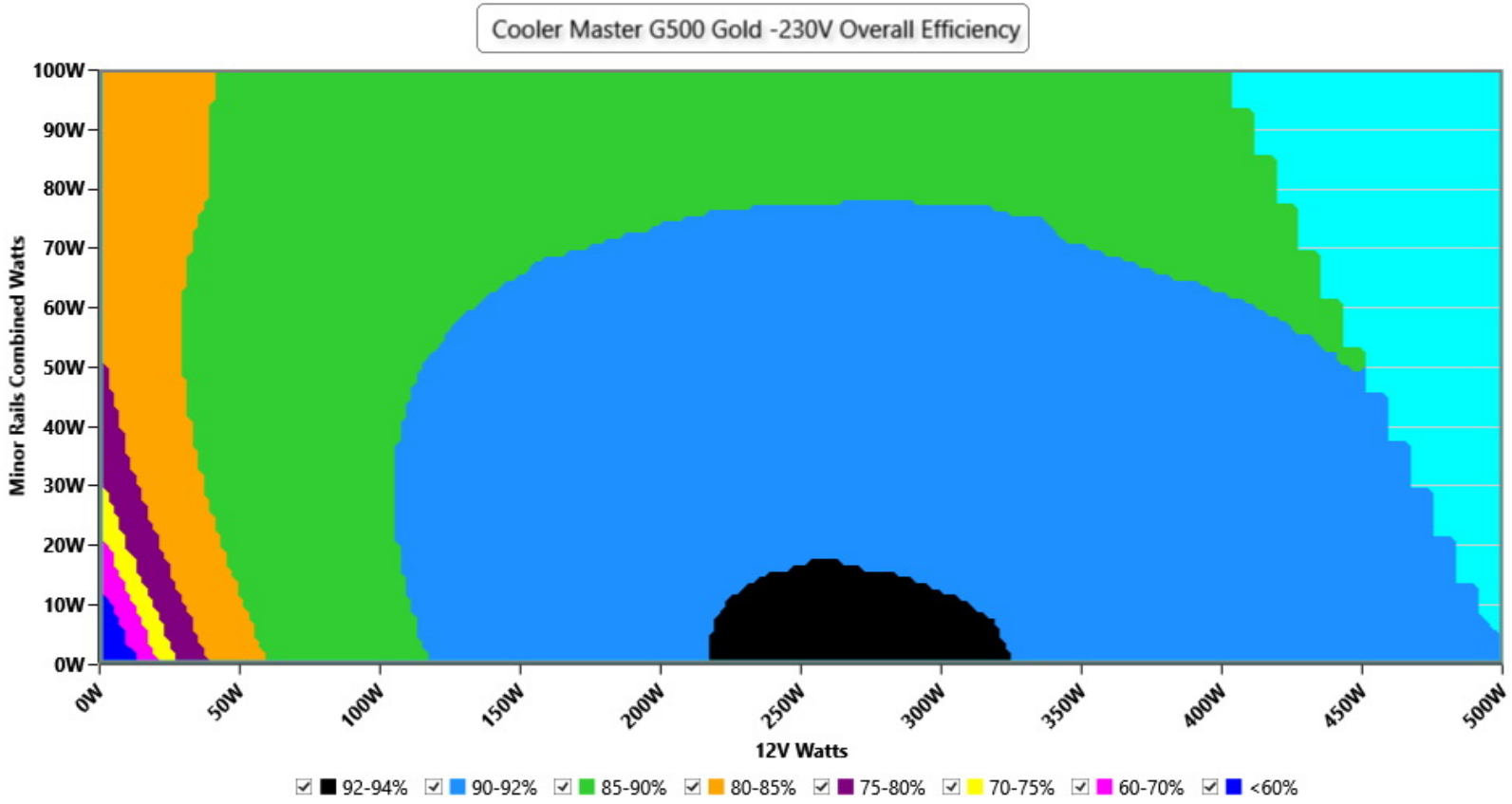
115V



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

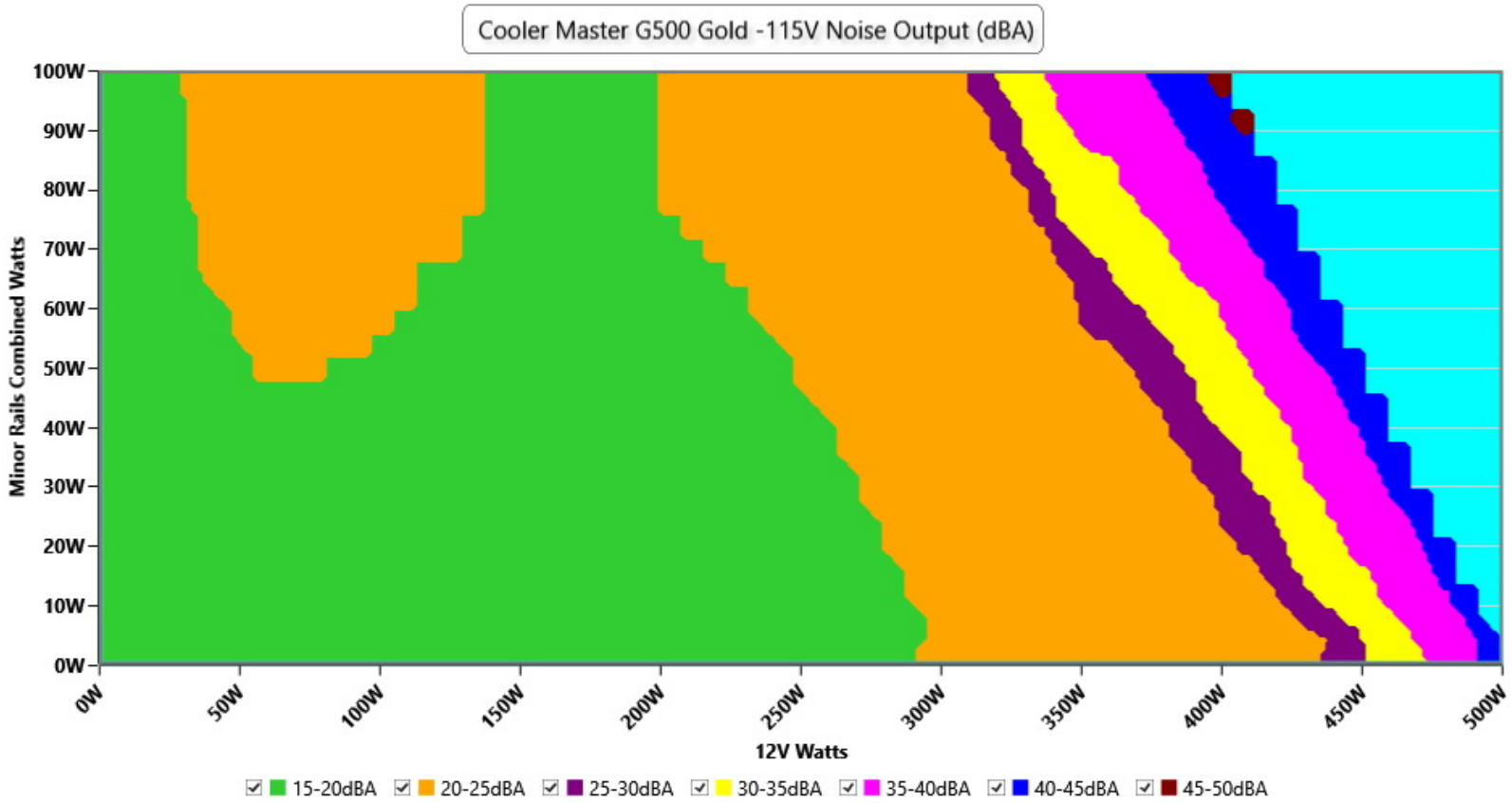


INFO

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

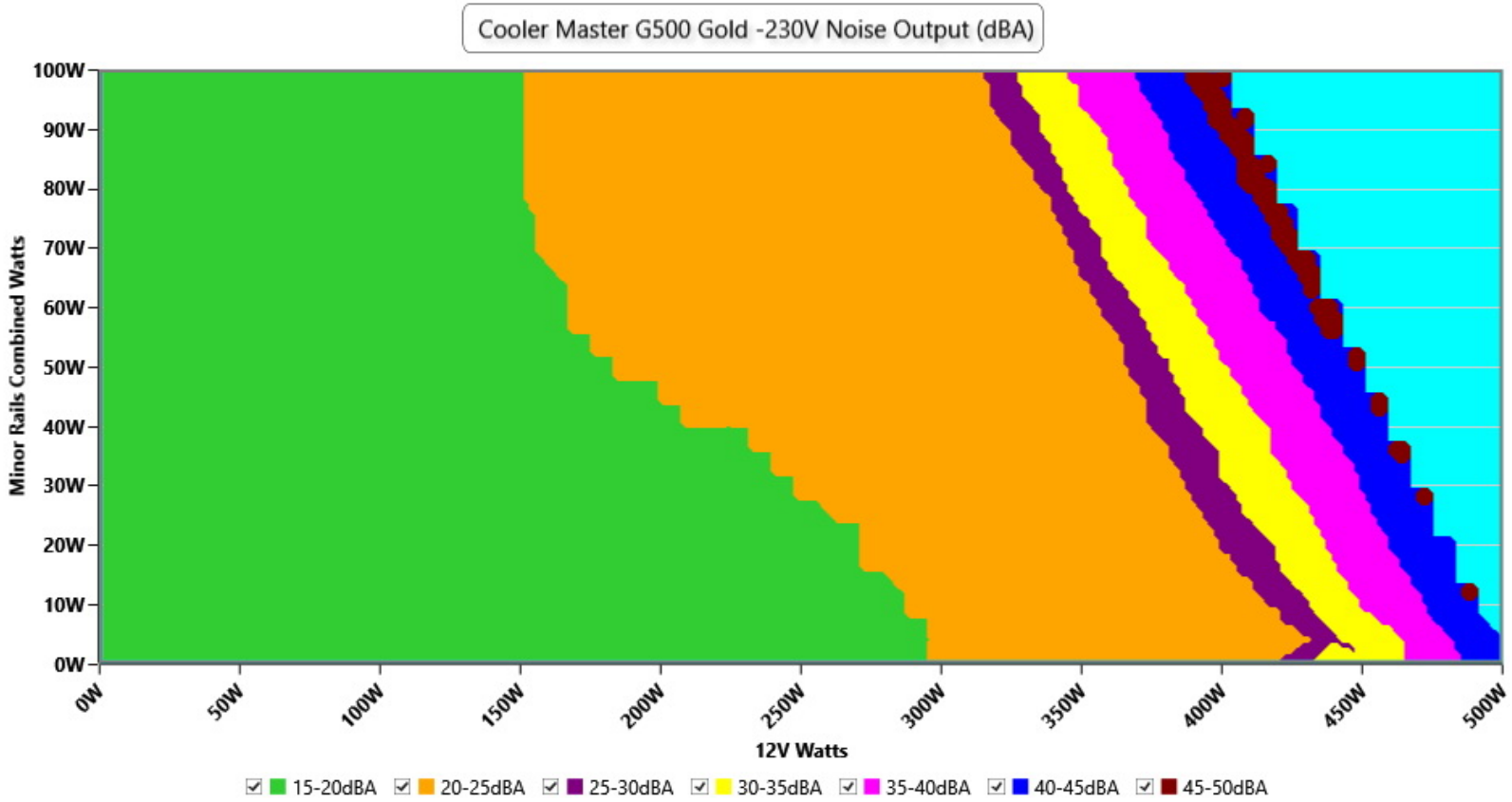
115V



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

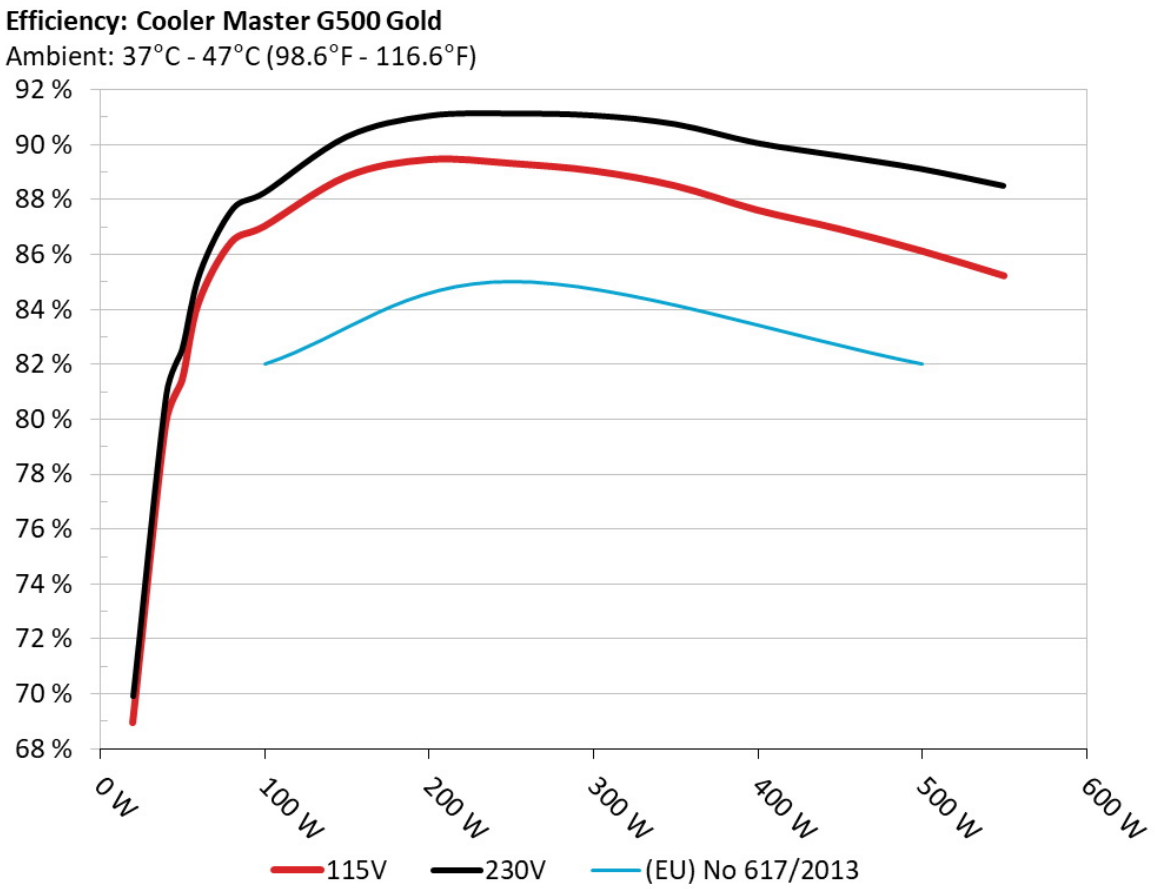


INFO

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

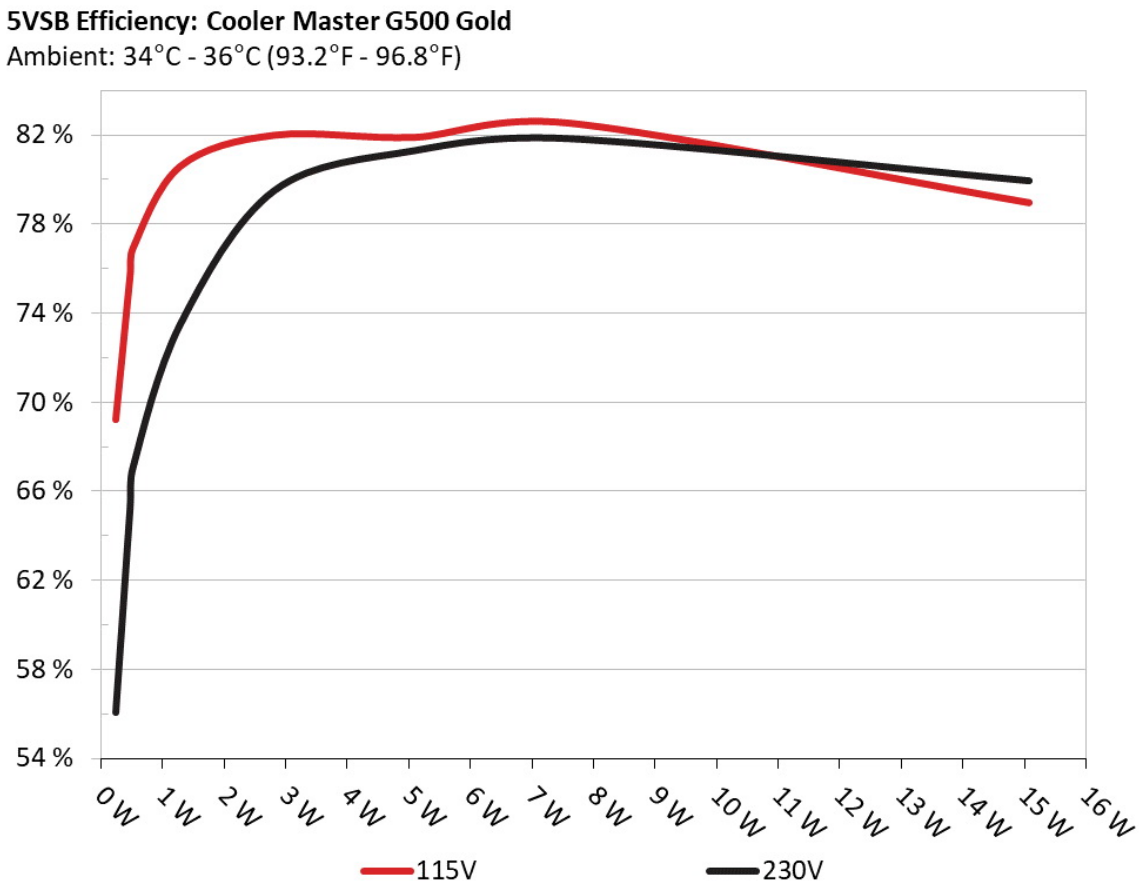
Efficiency under high ambient temperature



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	0.23W	69.224%	0.053
	5.122V	0.332W		115.16V
2	0.09A	0.461W	75.660%	0.095
	5.121V	0.609W		115.16V
5	0.55A	2.807W	81.996%	0.325
	5.105V	3.423W		115.17V
6	1A	5.09W	81.901%	0.398
	5.09V	6.215W		115.17V
7	1.5A	7.611W	82.535%	0.434
	5.074V	9.221W		115.17V
8	2.999A	15.065W	78.964%	0.483
	5.023V	19.079W		115.17V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.23W	56.049%	0.02
	5.121V	0.41W		230.33V
2	0.09A	0.461W	65.202%	0.034
	5.12V	0.707W		230.32V
3	0.55A	2.807W	79.497%	0.153
	5.105V	3.531W		230.33V
4	1A	5.09W	81.292%	0.232
	5.09V	6.261W		230.33V
5	1.5A	7.611W	81.823%	0.288
	5.074V	9.302W		230.32V
6	2.999A	15.069W	79.934%	0.372
	5.024V	18.852W		230.33V

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
10%	2.344A	1.982A	1.979A	0.984A	49.994	81.427%	653	20.2	40.13°C	0.949
	12.117V	5.047V	3.335V	5.078V	61.398				44.53°C	115.19V
20%	5.697A	2.983A	2.985A	1.186A	99.933	87.026%	659	20.3	40.97°C	0.97
	12.117V	5.029V	3.316V	5.06V	114.831				45.85°C	115.18V
30%	9.400A	3.49A	3.497A	1.388A	149.963	88.844%	664	21.8	41.32°C	0.978
	12.118V	5.015V	3.303V	5.043V	168.794				46.54°C	115.18V
40%	13.104A	3.999A	4.015A	1.592A	199.999	89.459%	665	21.8	41.47°C	0.982
	12.119V	5.001V	3.288V	5.026V	223.566				47.21°C	115.18V
50%	16.458A	5.018A	5.046A	1.798A	249.947	89.319%	670	21.2	42.56°C	0.983
	12.119V	4.983V	3.27V	5.007V	279.837				48.97°C	115.18V
60%	19.820A	6.043A	6.09A	2A	299.953	89.047%	675	20.0	42.6°C	0.984
	12.117V	4.965V	3.252V	4.988V	336.847				49.57°C	115.18V
70%	23.184A	7.078A	7.129A	2.213A	350.005	88.497%	677	20.1	43.27°C	0.984
	12.117V	4.946V	3.241V	4.968V	395.501				50.86°C	115.18V
80%	26.535A	8.003A	8.185A	2.321A	398.873	87.629%	1137	33.7	43.56°C	0.985
	12.118V	4.928V	3.225V	4.952V	455.184				51.89°C	115.17V
90%	30.287A	8.653A	8.713A	2.43A	449.649	86.923%	1767	46.9	44.56°C	0.986
	12.123V	4.911V	3.213V	4.937V	517.293				53.68°C	115.17V
100%	33.785A	9.192A	9.292A	3.058A	499.259	86.134%	1797	46.4	46.09°C	0.987
	12.123V	4.895V	3.195V	4.904V	579.631				56.18°C	115.17V
110%	37.214A	10.257A	10.515A	3.066A	549.472	85.228%	1805	46.4	46.54°C	0.988
	12.124V	4.875V	3.166V	4.89V	644.71				57.28°C	115.17V
CL1	0.114A	12.164A	12.445A	0A	101.276	81.287%	698	22.4	41.98°C	0.973
	12.096V	4.949V	3.189V	5.071V	124.591				48.47°C	115.19V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL2	0.114A	20.294A	0A	0A	101.38	79.157%	677	20.1	42.63°C	0.974
	12.098V	4.928V	3.305V	5.081V	128.076				50.36°C	115.19V
CL3	0.114A	0A	20.704A	0A	67.373	71.597%	695	22.3	44.14°C	0.965
	12.093V	5.022V	3.188V	5.078V	94.101				52.74°C	115.19V
CL4	41.189A	0.001A	0.001A	0.002A	499.928	87.642%	1792	47.0	45.68°C	0.987
	12.137V	4.986V	3.273V	5.035V	570.419				55.43°C	115.17V

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
10%	2.344A	1.981A	1.975A	0.985A	49.997	82.542%	664	21.8	40.3°C	0.761
	12.114V	5.048V	3.342V	5.078V	60.572				44.86°C	230.37V
20%	5.699A	2.983A	2.976A	1.186A	99.939	88.247%	666	21.8	40.99°C	0.874
	12.114V	5.03V	3.326V	5.059V	113.248				46.14°C	230.37V
30%	9.404A	3.49A	3.485A	1.388A	149.971	90.281%	669	21.2	41.06°C	0.918
	12.114V	5.016V	3.314V	5.042V	166.116				46.77°C	230.37V
40%	13.110A	3.999A	3.999A	1.592A	200.007	91.045%	671	20.6	42°C	0.939
	12.114V	5.002V	3.301V	5.025V	219.68				48.23°C	230.37V
50%	16.466A	5.018A	5.023A	1.798A	249.954	91.132%	675	20.0	42.37°C	0.952
	12.112V	4.983V	3.285V	5.006V	274.277				49.18°C	230.37V
60%	19.831A	6.043A	6.057A	2A	299.959	91.063%	678	20.1	43°C	0.96
	12.111V	4.965V	3.269V	4.987V	329.397				50.48°C	230.37V
70%	23.195A	7.078A	7.092A	2.214A	350.01	90.744%	683	20.7	43.12°C	0.965
	12.110V	4.946V	3.258V	4.967V	385.712				51.31°C	230.37V
80%	26.554A	8.003A	8.132A	2.322A	398.91	90.064%	1268	36.9	44.35°C	0.969
	12.111V	4.928V	3.245V	4.951V	442.918				53.06°C	230.37V
90%	30.315A	8.654A	8.664A	2.431A	449.684	89.594%	1755	46.4	44.39°C	0.971
	12.113V	4.911V	3.231V	4.936V	501.913				53.69°C	230.37V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
100%	33.813A	9.194A	9.239A	3.059A	499.298	89.116%	1793	47.0	45.58°C	0.974
	12.114V	4.894V	3.214V	4.903V	560.281				55.88°C	230.37V
110%	37.257A	10.257A	10.394A	3.068A	549.51	88.499%	1802	46.4	46.61°C	0.976
	12.111V	4.875V	3.203V	4.889V	620.918				57.34°C	230.37V
CL1	0.114A	12.161A	12.163A	0A	101.281	83.002%	703	22.5	41.91°C	0.884
	12.096V	4.95V	3.263V	5.071V	122.022				48.52°C	230.37V
CL2	0.114A	20.31A	0A	0A	101.387	80.425%	675	20.0	43.19°C	0.888
	12.098V	4.924V	3.304V	5.081V	126.065				50.78°C	230.37V
CL3	0.114A	0A	20.675A	0A	67.375	72.672%	694	22.3	44.78°C	0.845
	12.093V	5.022V	3.192V	5.078V	92.711				53.86°C	230.36V
CL4	41.229A	0.001A	0.001A	0.002A	499.952	90.594%	1792	47.0	45.42°C	0.973
	12.126V	4.985V	3.273V	5.034V	551.861				55.83°C	230.36V

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])	Temps (In/Out)	PF/AC Volts
20W	1.224A	0.493A	0.492A	0.196A	19.992	68.957%	632	19.4	36.82°C	0.88
	12.121V	5.066V	3.356V	5.113V	28.992				39.24°C	115.19V
40W	2.696A	0.692A	0.689A	0.294A	39.993	79.826%	639	18.8	37.1°C	0.934
	12.122V	5.061V	3.35V	5.106V	50.1				39.87°C	115.19V
60W	4.168A	0.89A	0.888A	0.392A	59.992	84.245%	646	20.0	38.49°C	0.954
	12.121V	5.056V	3.345V	5.099V	71.212				41.69°C	115.18V
80W	5.636A	1.089A	1.087A	0.491A	79.941	86.454%	650	20.3	39.63°C	0.964
	12.121V	5.05V	3.339V	5.092V	92.467				43.53°C	115.18V

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
20W	1.240A	0.5A	0.5A	0.2A	20.261	69.912%	634	19.4	36.84°C	0.579
	12.121V	5.067V	3.358V	5.113V	28.981				39.14°C	230.35V
40W	2.720A	0.7A	0.7A	0.3A	40.384	80.89%	643	19.3	37.32°C	0.717
	12.120V	5.061V	3.353V	5.106V	49.924				40.21°C	230.35V
60W	4.224A	0.9A	0.9A	0.4A	60.793	85.328%	647	20.3	38.21°C	0.795
	12.119V	5.056V	3.348V	5.098V	71.246				41.57°C	230.35V
80W	5.704A	1.1A	1.1A	0.5A	80.898	87.666%	657	20.2	39.41°C	0.844
	12.118V	5.051V	3.343V	5.091V	92.28				43.55°C	230.36V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	12.84mV	11.44mV	11.63mV	7.84mV	Pass
20% Load	19.37mV	13.62mV	10.97mV	8.96mV	Pass
30% Load	23.47mV	15.09mV	12.99mV	9.87mV	Pass
40% Load	26.91mV	16.21mV	14.31mV	10.52mV	Pass
50% Load	30.20mV	19.51mV	17.64mV	12.09mV	Pass
60% Load	31.42mV	21.29mV	21.94mV	13.10mV	Pass
70% Load	32.18mV	22.77mV	21.79mV	14.27mV	Pass
80% Load	34.25mV	25.31mV	27.40mV	16.45mV	Pass
90% Load	36.68mV	29.83mV	30.38mV	18.06mV	Pass
100% Load	54.43mV	30.54mV	35.77mV	20.93mV	Pass
110% Load	60.24mV	33.36mV	36.02mV	23.13mV	Pass
Crossload1	26.32mV	22.38mV	26.38mV	13.91mV	Pass
Crossload2	20.23mV	23.27mV	23.61mV	13.16mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	16.64mV	17.94mV	26.14mV	13.21mV	Pass
Crossload4	53.46mV	25.15mV	27.25mV	23.28mV	Pass

The results above are not used in the certification process

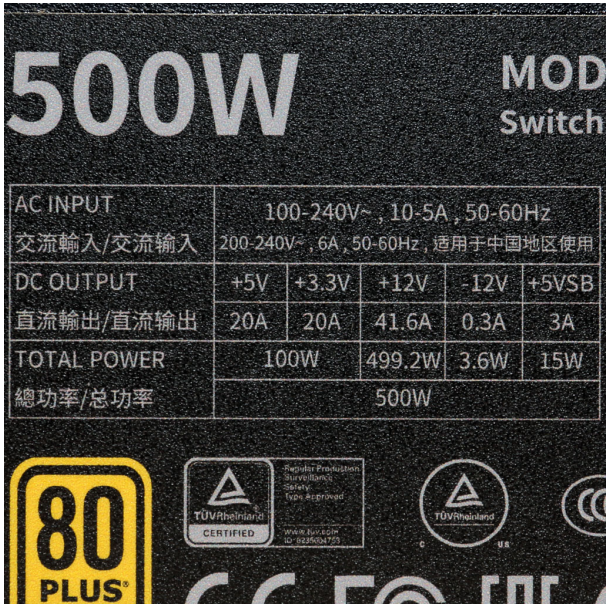
230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	13.04mV	11.44mV	10.06mV	7.84mV	Pass
20% Load	19.98mV	13.42mV	11.78mV	9.11mV	Pass
30% Load	24.59mV	15.19mV	13.55mV	9.87mV	Pass
40% Load	28.74mV	16.52mV	14.91mV	11.08mV	Pass
50% Load	30.51mV	18.85mV	18.00mV	12.20mV	Pass
60% Load	32.63mV	20.99mV	20.32mV	13.41mV	Pass
70% Load	34.35mV	23.43mV	23.11mV	15.08mV	Pass
80% Load	35.42mV	25.92mV	27.60mV	16.75mV	Pass
90% Load	37.60mV	29.27mV	31.09mV	18.72mV	Pass
100% Load	54.23mV	31.33mV	35.35mV	20.90mV	Pass
110% Load	59.79mV	33.15mV	37.56mV	22.94mV	Pass
Crossload1	26.43mV	21.65mV	25.04mV	13.76mV	Pass
Crossload2	21.34mV	23.43mV	24.16mV	13.16mV	Pass
Crossload3	16.84mV	19.82mV	26.09mV	13.31mV	Pass
Crossload4	53.53mV	26.67mV	27.28mV	23.82mV	Pass

The results above are not used in the certification process

Cooler Master G500 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

CYBENETICS LTD Syrou 6, Latsia, 2231, Nicosia Cyprus

www.cybenetics.com - info@cybenetics.com