Cougar GX-F550 (#2)

Serial Number ?1801006842

Lab ID 296

Certification ID 25296

Test Result Report ID:

Certificate Issue Date: Feb 22, 2018

Scheme: ETA-EMI PSU

115V

230V

Scheme: LAMBDA PSU

115V

230V

Aristeidis Bitziopoulos, Certification Body General Manager

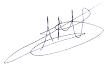
General Information

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	Cougar
Model	GX-F550 (#2)
OEM/ODM	HEC
Serial Number	?1801006842
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	9-4
Rated Frequency (Hz)	47-63

Rated Power (W)	550
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	135mm Hydro Dynamic Bearing Fan (RL4Z S1352512H)
Semi-Passive Operation	✗
Cybenetics Testing Information	
Lab ID	296
Date of receipt	Feb 8, 2018
Testing Date	Feb 19, 2018
Report Issued Date	Feb 22, 2018
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 (580mm)	1	1	16-18AWG	No
4+4 pin EPS12V (700mm)	1	1	16AWG	No
6+2 pin PCIe (600mm+120mm)	2	4	18AWG	No
SATA (450mm+120mm+120mm)	2	6	18AWG	No
4 pin Molex (400mm+120mm+120mm)	1	3	18AWG	No
AC Power Cord (1700mm) - C13 coupler	1	1	18AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	24	24	45.5	3	0.5
	Watts	130		546	15	6
Total Max. Power (W)		550				

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)	88.937%
Average Noise Output (>1450 Load Combinations)	29.56dBA
Average PF (>1450 Load Combinations)	0.981
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
Standby Power Consumption	0.0515W
Non-Accredited	
12V Ripple (Full Load)	11.76mV
5V Ripple (Full Load)	18.86mV
3.3V Ripple (Full Load)	21.50mV
5VSB Ripple (Full Load)	19.08mV
12V Load Regulation	0.59%
5V Load Regulation	1.00%
3.3V Load Regulation	1.38%

5VSB Load Regulation	1.84%
Inrush Current	67.991A

230V

Accredited		
Average Efficiency (>1450 load combinations)		90.568%
Average Noise Output (>1450 Load Combinations)		29.38dBA
Average PF (>1450 Load Combinations)		0.927
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
Standby Power Consumption		0.1074W
Non-Accredited		
12V Ripple (Full Load)		13.04mV
5V Ripple (Full Load)		19.37mV
3.3V Ripple (Full Load)		21.81mV
5VSB Ripple (Full Load)		20.44mV
12V Load Regulation		1.11%
5V Load Regulation		1.00%
3.3V Load Regulation		1.38%
5VSB Load Regulation		1.84%
Inrush Current		77.864A
Hold-Up Time & PWR_OK Signal		20.90ms
AC Loss to PWR_OK Hold Up Time		17.30ms
PWR_OK Inactive to DC Loss Delay		3.60ms
OPP (0.00°C / 0.00°C)	-	-

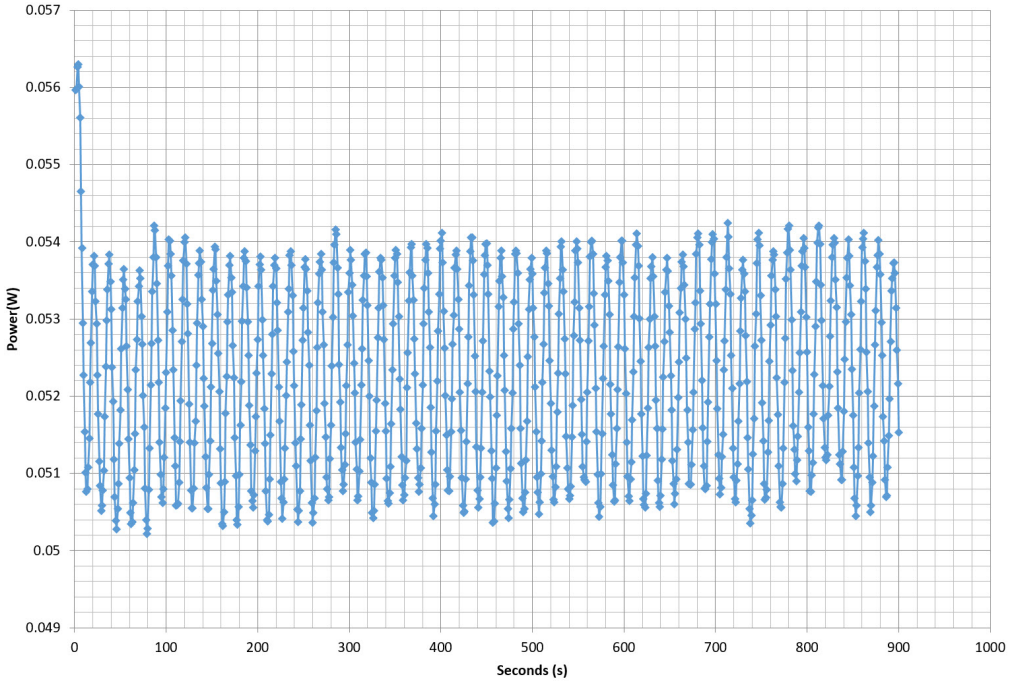
Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	20.9
AC Loss to PWR_OK Hold Up Time (ms)	17.3
PWR_OK Inactive to DC Loss Delay (ms)	3.6

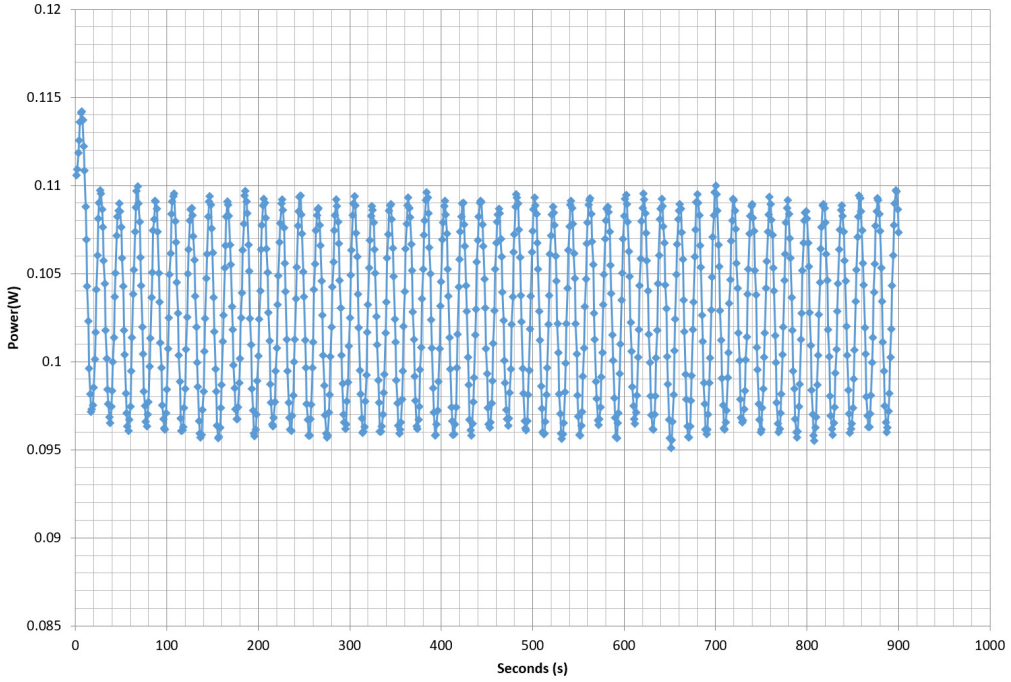
Vampire Power

Graphs

115V

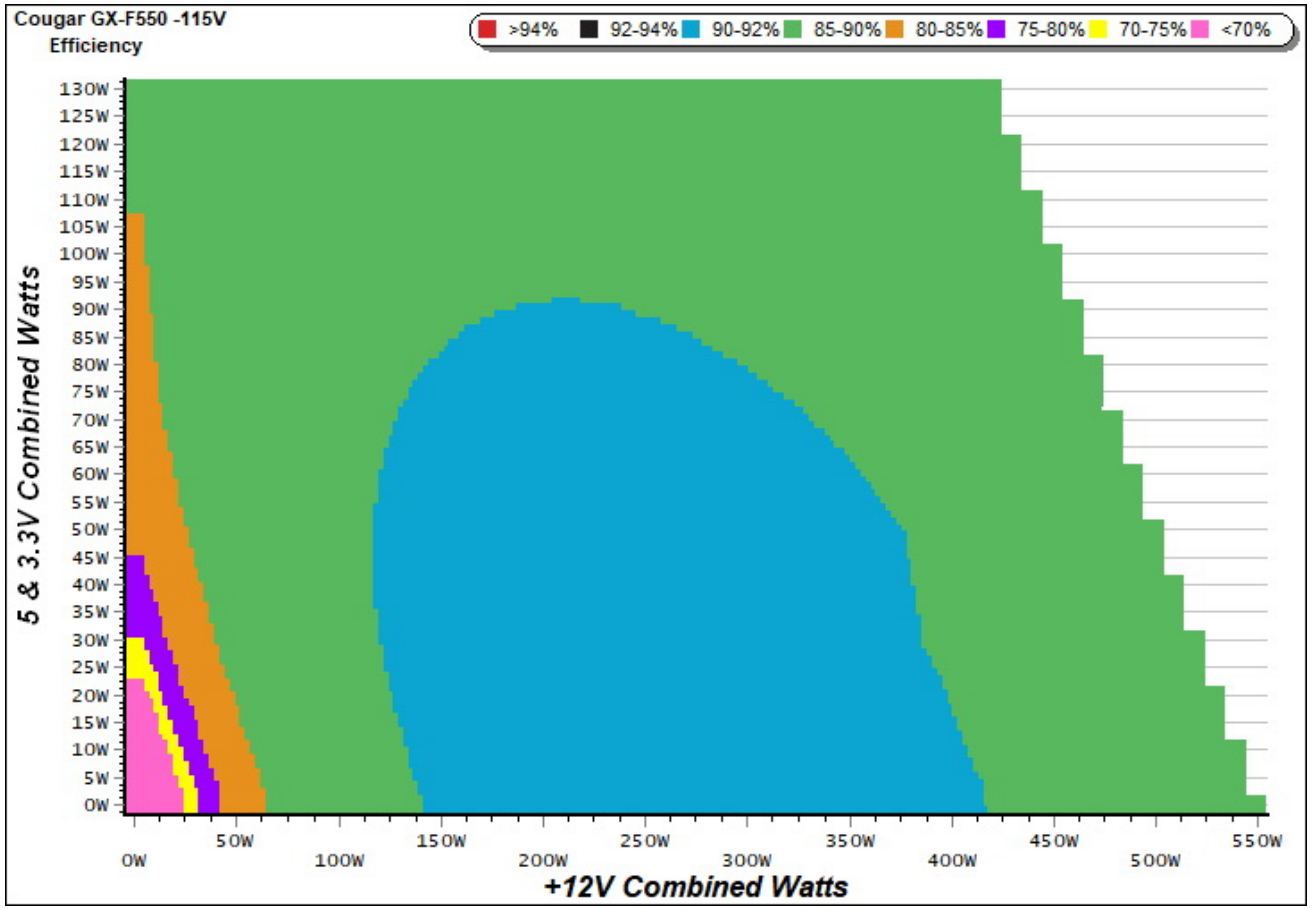


230V



Efficiency Graph

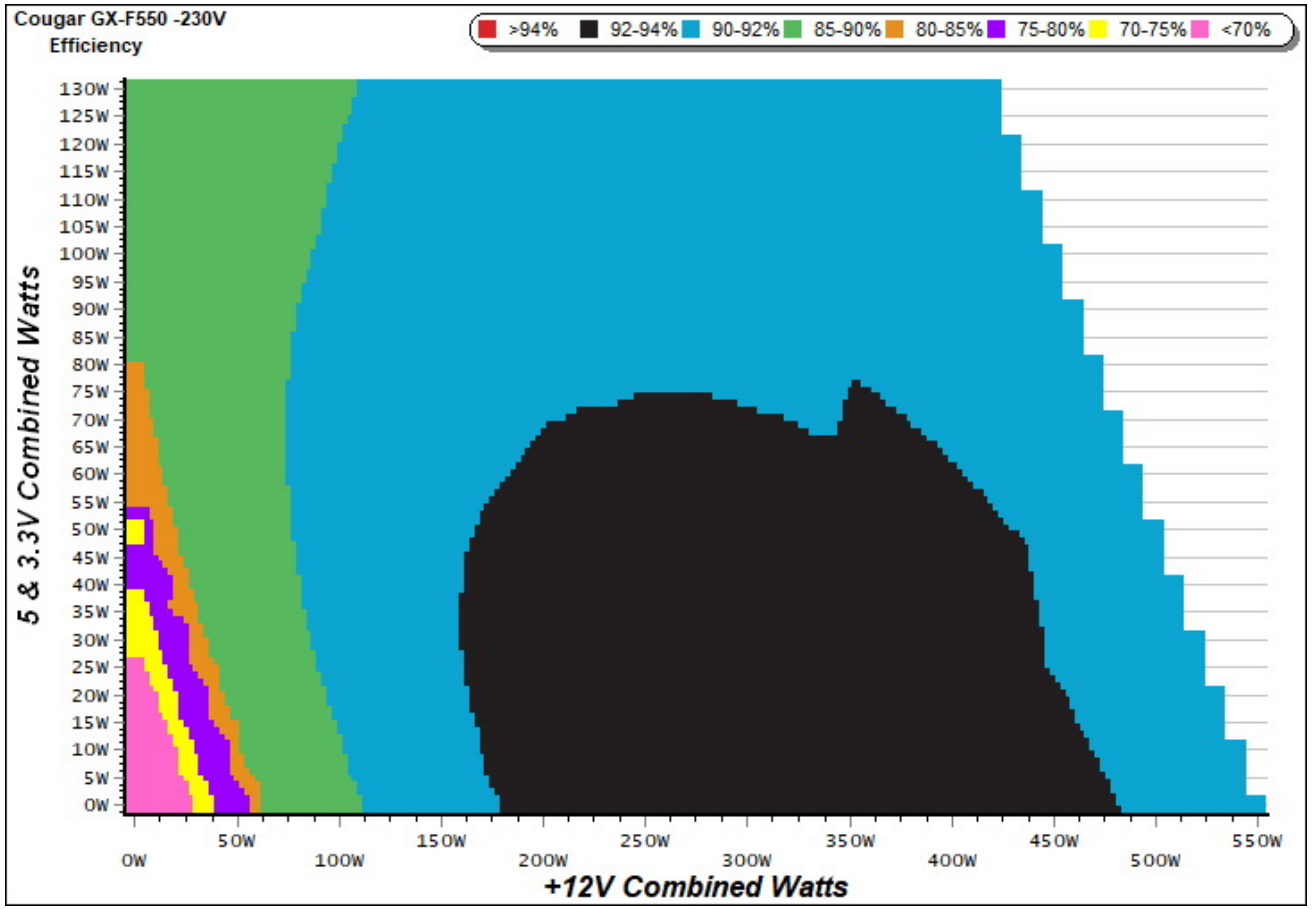
115V



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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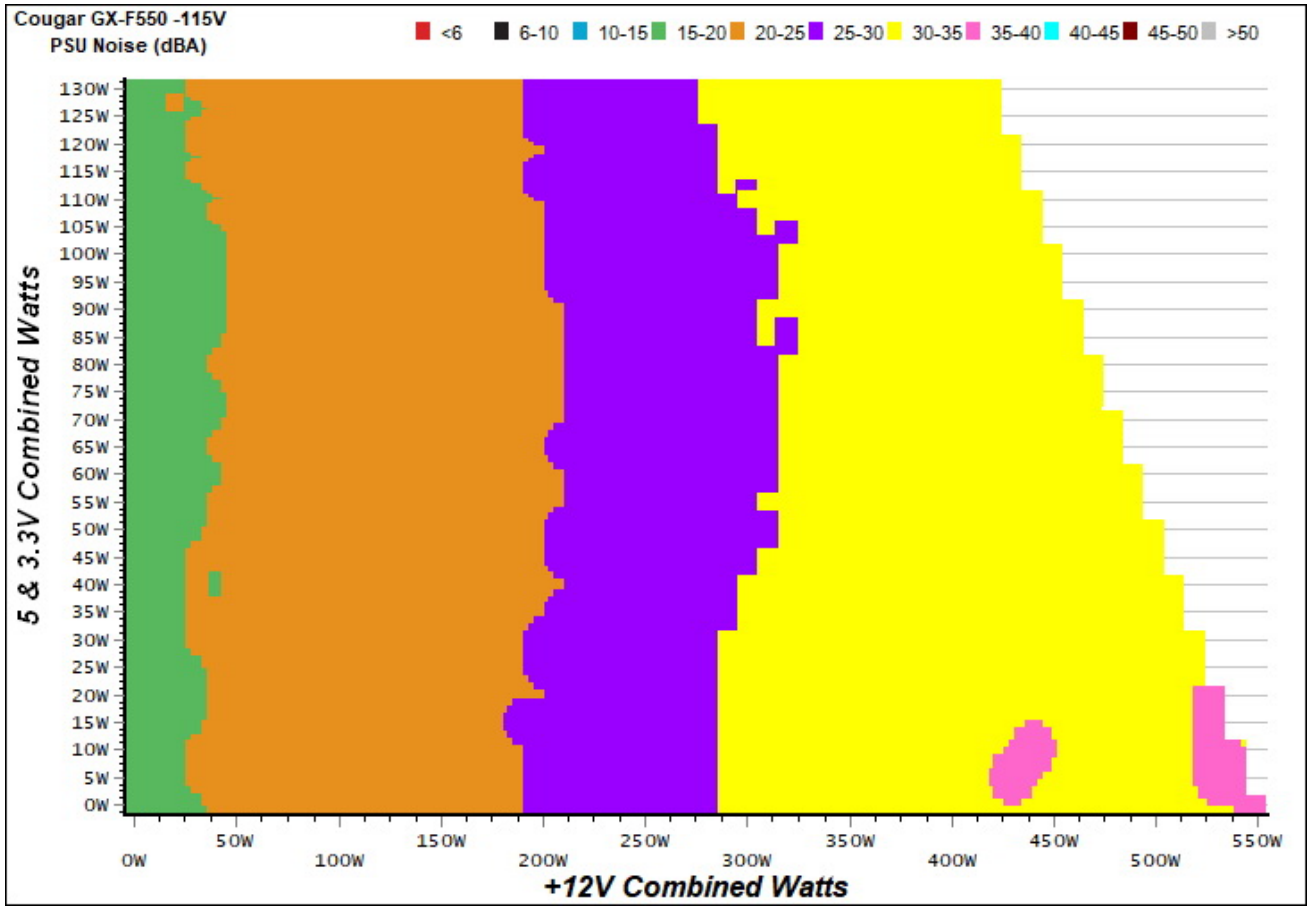
Noise Graph

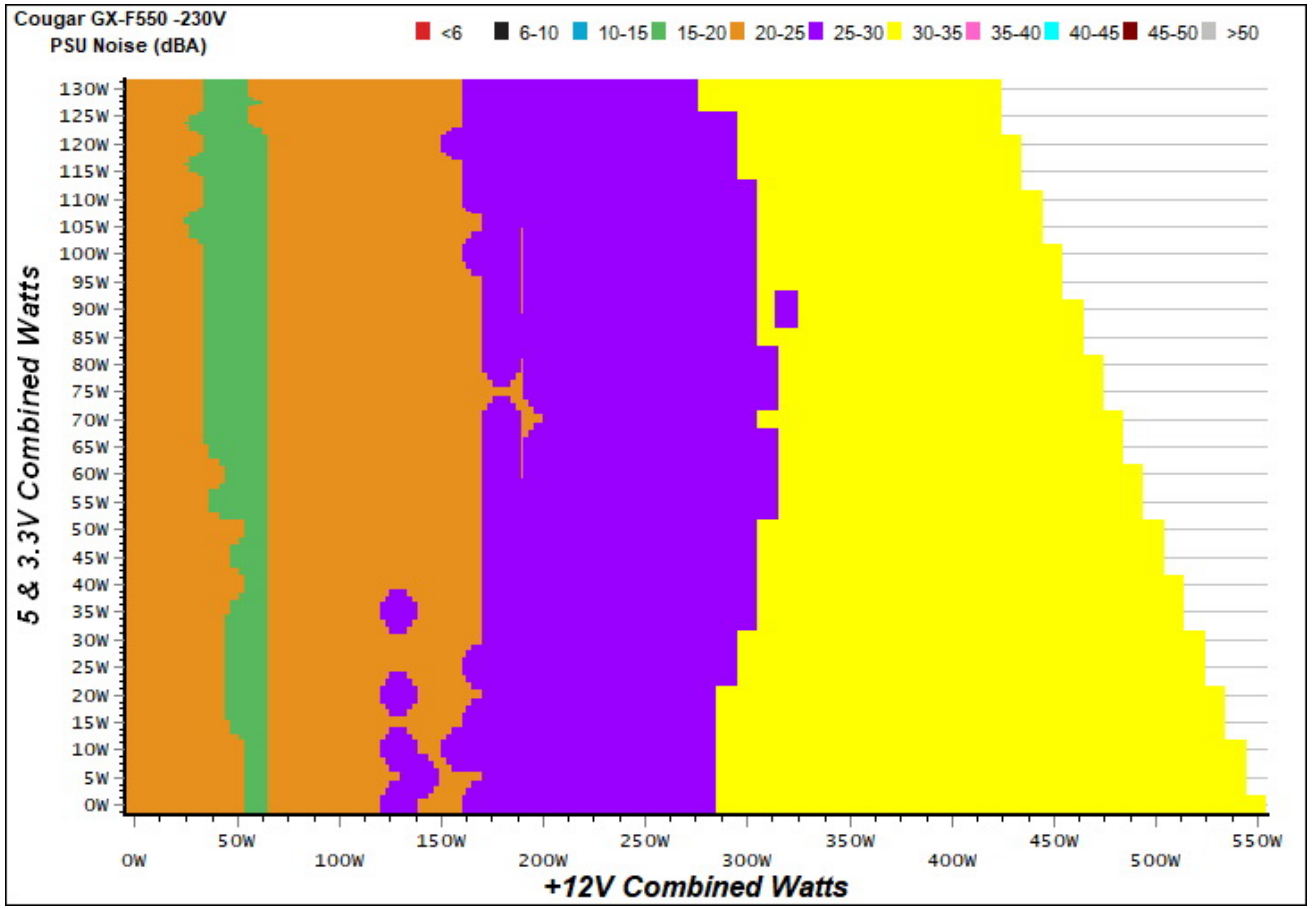
115V



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

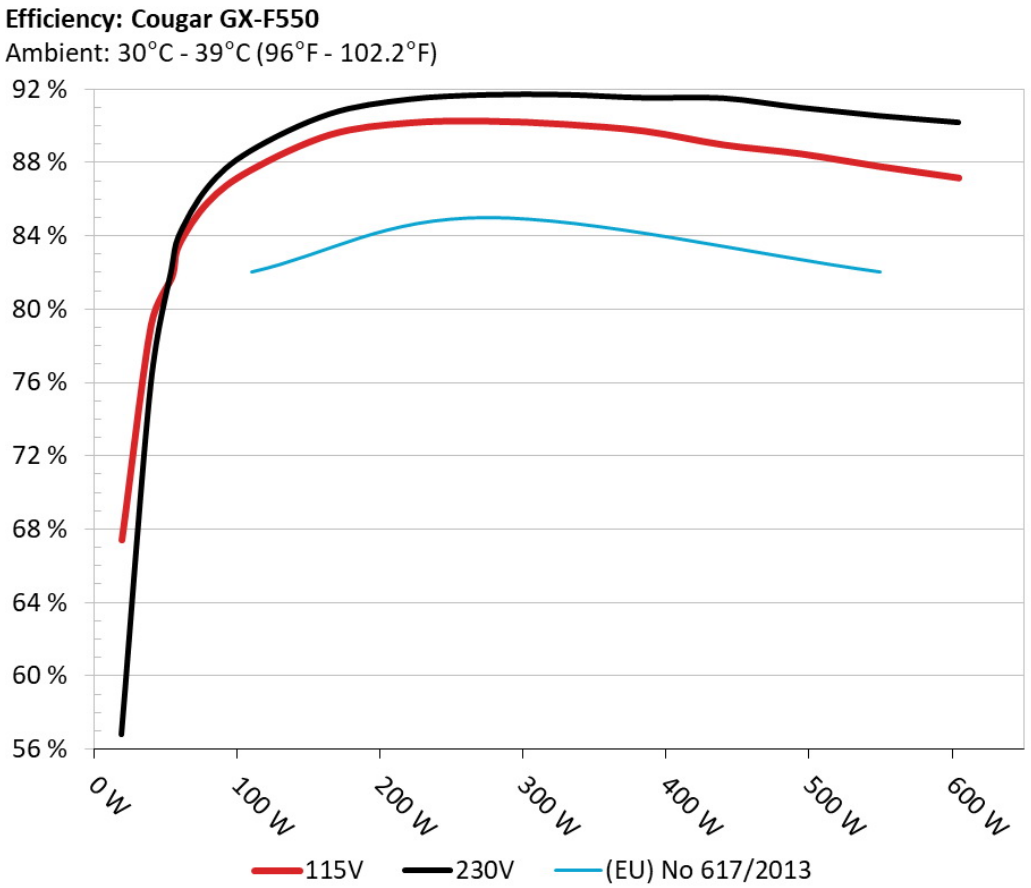


INFO

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

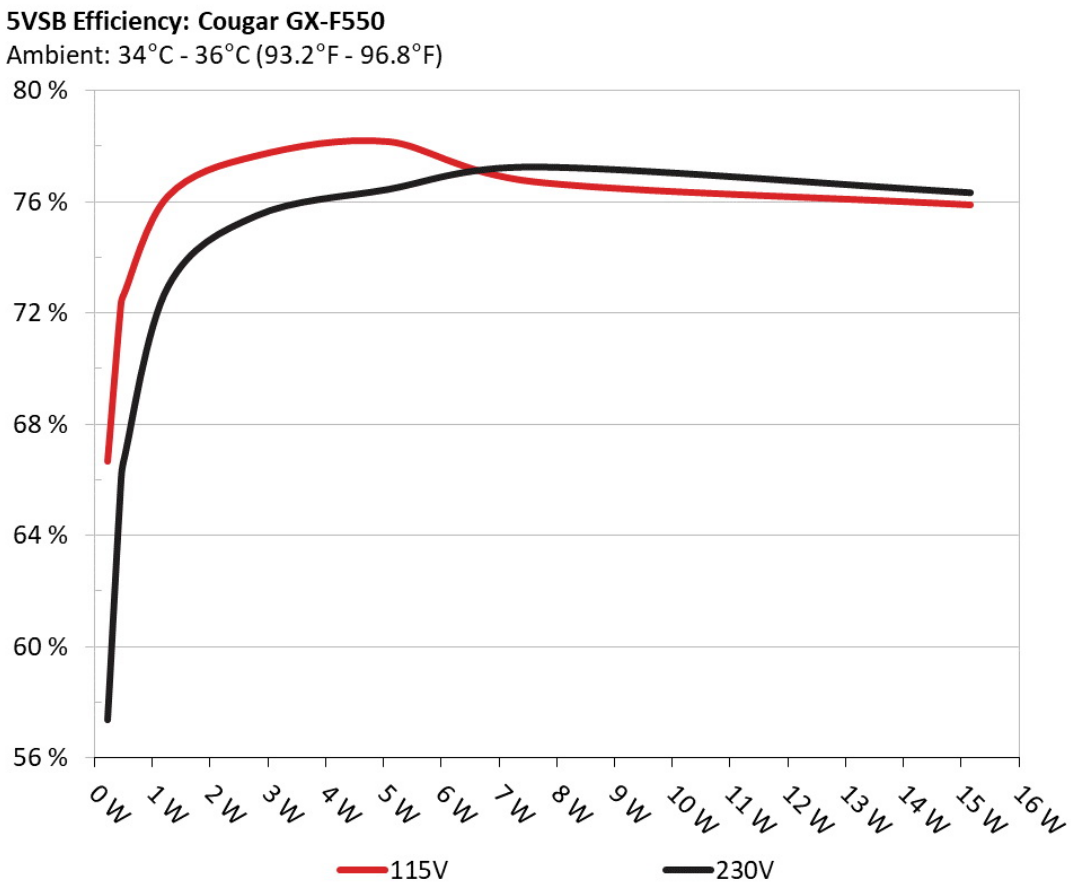
Efficiency under high ambient temperature



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	0.230	66.667%	0.026
	5.108V	0.345		115.37V
2	0.090A	0.460	72.327%	0.047
	5.106V	0.636		115.37V
3	0.550A	2.804	77.673%	0.219
	5.097V	3.610		115.37V
4	1.000A	5.089	78.184%	0.310
	5.088V	6.509		115.36V
5	1.500A	7.619	76.735%	0.368
	5.079V	9.929		115.37V
6	3.000A	15.150	75.906%	0.438
	5.050V	19.959		115.35V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	57.357%	0.010
	5.108V	0.401		230.83V
2	0.090A	0.460	65.903%	0.017
	5.106V	0.698		230.83V
3	0.550A	2.804	75.498%	0.089
	5.097V	3.714		230.83V
4	1.000A	5.089	76.446%	0.149
	5.088V	6.657		230.82V
5	1.500A	7.619	77.248%	0.203
	5.079V	9.863		230.82V
6	3.001A	15.150	76.326%	0.307
	5.049V	19.849		230.82V

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	2.722A	2.005A	1.974A	0.984A	54.424	81.732%	770	22.4	32.40°C	0.952
	12.059V	4.988V	3.342V	5.083V	66.588				34.45°C	115.29V
2	6.509A	3.010A	2.967A	1.182A	109.299	87.571%	810	23.3	32.92°C	0.981
	12.045V	4.983V	3.337V	5.075V	124.812				35.26°C	115.22V
3	10.704A	3.516A	3.450A	1.381A	164.824	89.508%	860	24.7	33.46°C	0.974
	12.035V	4.978V	3.333V	5.068V	184.145				35.99°C	115.15V
4	14.836A	4.022A	3.966A	1.581A	219.617	90.157%	885	26.3	33.79°C	0.978
	12.026V	4.973V	3.328V	5.060V	243.595				36.71°C	115.08V
5	18.640A	5.033A	4.963A	1.782A	274.510	90.258%	955	29.0	34.36°C	0.982
	12.018V	4.967V	3.323V	5.052V	304.139				37.74°C	115.11V
6	22.448A	6.046A	5.969A	1.983A	329.424	90.082%	1050	31.0	35.20°C	0.985
	12.011V	4.961V	3.318V	5.044V	365.695				39.13°C	115.02V
7	26.296A	7.064A	6.973A	2.185A	384.735	89.714%	1110	32.8	36.07°C	0.988
	12.003V	4.955V	3.313V	5.035V	428.844				40.19°C	114.94V
8	30.127A	8.081A	7.983A	2.388A	440.057	88.966%	1210	35.3	36.98°C	0.988
	12.004V	4.950V	3.308V	5.027V	494.636				41.33°C	114.86V
9	34.348A	8.595A	8.477A	2.390A	494.580	88.470%	1300	37.3	37.74°C	0.990
	11.997V	4.945V	3.303V	5.023V	559.035				42.49°C	114.87V
10	38.372A	9.111A	9.004A	2.996A	549.785	87.780%	1360	39.2	38.25°C	0.991
	11.990V	4.940V	3.298V	5.007V	626.319				43.31°C	114.78V
11	42.997A	9.118A	9.017A	2.998A	604.997	87.159%	1420	39.8	39.00°C	0.992
	11.984V	4.937V	3.294V	5.004V	694.133				44.37°C	114.70V
CL1	0.134A	16.003A	16.001A	0.000A	134.032	84.971%	1090	32.2	37.50°C	0.975
	12.036V	4.954V	3.321V	5.086V	157.739				41.16°C	115.18V

CL2	45.510A	1.000A	1.001A	1.000A	559.305	88.405%	1380	38.4	38.50°C	0.991
	11.997V	4.958V	3.308V	5.053V	632.664				42.95°C	114.78V

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	2.681A	2.002A	1.968A	0.983A	54.069	82.162%	770	22.4	32.09°C	0.706
	12.125V	4.988V	3.343V	5.084V	65.808				35.52°C	230.66V
2	6.468A	3.007A	2.962A	1.182A	108.954	88.611%	770	22.4	32.58°C	0.864
	12.072V	4.983V	3.338V	5.076V	122.958				36.40°C	230.63V
3	10.659A	3.513A	3.445A	1.381A	164.452	90.640%	820	23.8	34.10°C	0.914
	12.054V	4.978V	3.333V	5.068V	181.434				38.10°C	230.59V
4	14.791A	4.019A	3.962A	1.581A	219.275	91.436%	860	24.7	35.69°C	0.933
	12.041V	4.973V	3.329V	5.061V	239.812				39.84°C	230.56V
5	18.596A	5.032A	4.961A	1.781A	274.175	91.689%	925	27.8	36.13°C	0.945
	12.029V	4.967V	3.324V	5.053V	299.027				40.76°C	230.52V
6	22.407A	6.044A	5.963A	1.982A	329.098	91.700%	1000	29.8	36.65°C	0.951
	12.020V	4.961V	3.318V	5.044V	358.887				41.98°C	230.48V
7	26.253A	7.062A	6.969A	2.184A	384.404	91.529%	1070	31.5	37.21°C	0.957
	12.011V	4.955V	3.313V	5.036V	419.979				42.85°C	230.54V
8	30.122A	8.079A	7.979A	2.387A	439.729	91.509%	1140	33.6	37.81°C	0.963
	11.996V	4.950V	3.308V	5.027V	480.530				43.82°C	230.50V
9	34.324A	8.593A	8.472A	2.389A	494.262	90.992%	1250	36.5	38.28°C	0.965
	11.997V	4.945V	3.303V	5.024V	543.190				44.79°C	230.46V
10	38.347A	9.107A	9.003A	2.995A	549.469	90.545%	1350	37.9	38.97°C	0.968
	11.990V	4.940V	3.299V	5.008V	606.848				45.96°C	230.42V
11	42.971A	9.112A	9.011A	2.997A	604.685	90.189%	1440	40.0	39.67°C	0.971
	11.985V	4.937V	3.295V	5.005V	670.466				47.26°C	230.37V
CL1	0.118A	15.999A	15.997A	0.000A	133.841	85.901%	1140	33.6	38.47°C	0.901
	12.059V	4.955V	3.322V	5.086V	155.808				44.08°C	230.71V

CL2	45.496A	0.998A	0.998A	1.000A	559.122	91.156%	1390	38.5	39.20°C	0.968
	11.997V	4.960V	3.309V	5.054V	613.366				45.75°C	230.42V

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	1.194A	0.501A	0.476A	0.196A	19.504	67.406%	680	17.3	0.815
	12.069V	4.993V	3.346V	5.101V	28.935				115.35V
2	2.456A	1.000A	0.987A	0.393A	39.915	79.130%	700	18.7	0.930
	12.061V	4.990V	3.344V	5.096V	50.442				115.32V
3	3.652A	1.503A	1.466A	0.589A	59.426	83.502%	710	19.3	0.962
	12.056V	4.989V	3.342V	5.091V	71.167				115.29V
4	4.913A	2.005A	1.975A	0.787A	79.804	85.846%	750	21.3	0.969
	12.051V	4.986V	3.341V	5.085V	92.962				115.27V

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	1.151A	0.496A	0.473A	0.196A	19.093	56.794%	750	21.3	0.477
	12.192V	4.993V	3.348V	5.102V	33.618				230.68V
2	2.407A	0.997A	0.981A	0.392A	39.540	75.853%	810	23.3	0.629
	12.166V	4.991V	3.346V	5.097V	52.127				230.67V
3	3.604A	1.500A	1.459A	0.589A	58.992	83.953%	750	21.3	0.727
	12.106V	4.989V	3.344V	5.091V	70.268				230.66V
4	4.873A	2.002A	1.970A	0.786A	79.463	86.657%	750	21.3	0.800
	12.087V	4.987V	3.341V	5.086V	91.698				230.65V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	5.6 mV	8.4 mV	7.7 mV	8.0 mV	Pass
20% Load	6.8 mV	9.0 mV	9.3 mV	6.8 mV	Pass
30% Load	7.5 mV	10.0 mV	10.4 mV	8.2 mV	Pass
40% Load	8.3 mV	11.0 mV	11.1 mV	9.6 mV	Pass
50% Load	10.2 mV	12.1 mV	12.5 mV	13.0 mV	Pass
60% Load	11.9 mV	14.6 mV	14.3 mV	13.1 mV	Pass
70% Load	14.2 mV	16.9 mV	16.6 mV	13.9 mV	Pass
80% Load	10.5 mV	16.5 mV	18.7 mV	27.5 mV	Pass
90% Load	10.9 mV	17.8 mV	19.5 mV	29.5 mV	Pass
100% Load	11.8 mV	18.9 mV	21.5 mV	19.1 mV	Pass
110% Load	13.0 mV	19.9 mV	21.7 mV	21.0 mV	Pass
Crossload 1	7.7 mV	16.9 mV	18.7 mV	4.9 mV	Pass
Crossload 2	12.0 mV	14.6 mV	16.1 mV	21.1 mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	11.7 mV	8.4 mV	7.7 mV	7.6 mV	Pass
20% Load	9.4 mV	9.6 mV	9.7 mV	7.5 mV	Pass
30% Load	9.5 mV	11.2 mV	11.4 mV	8.4 mV	Pass
40% Load	9.0 mV	11.1 mV	12.3 mV	9.8 mV	Pass
50% Load	9.8 mV	13.2 mV	13.7 mV	12.9 mV	Pass
60% Load	10.3 mV	14.4 mV	15.5 mV	14.4 mV	Pass
70% Load	10.7 mV	15.6 mV	17.3 mV	14.2 mV	Pass
80% Load	14.4 mV	17.6 mV	18.7 mV	21.5 mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	12.1 mV	18.5 mV	19.9 mV	32.9 mV	Pass
100% Load	13.0 mV	19.4 mV	21.8 mV	20.4 mV	Pass
110% Load	14.3 mV	19.7 mV	21.5 mV	20.6 mV	Pass
Crossload 1	9.9 mV	17.4 mV	19.2 mV	5.7 mV	Pass
Crossload 2	12.9 mV	15.0 mV	17.1 mV	21.2 mV	Pass

The results above are not used in the certification process

Cougar GX-F550 (#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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