



Corsair CX450 (Great Wall)

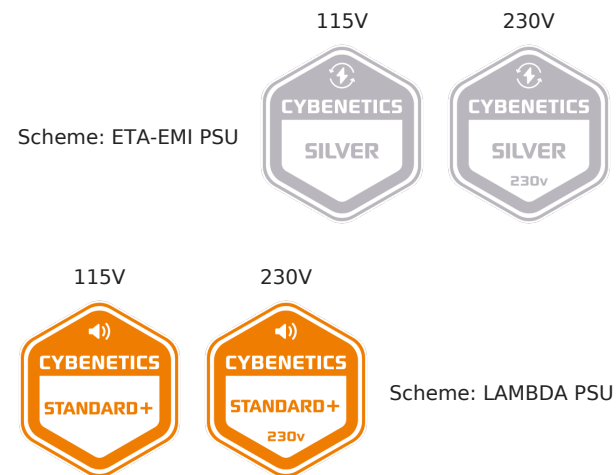
Serial Number 18114851000036261087

Lab ID 404

Certification ID 25404

Test Result Report ID: 19PS404A

Certificate Issue Date: Nov 6, 2018



A handwritten signature in blue ink, appearing to read "A. Bitziopoulos", written over a faint circular stamp.

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	Corsair
Model	CX450 (Great Wall)
OEM/ODM	Great Wall
Serial Number	18114851000036261087
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	6-3
Rated Frequency (Hz)	47-63

Rated Power (W)	450
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 (D12SM-12)
Semi-Passive Operation	X
Cybenetics Testing Information	
Lab ID	404
Date of receipt	Oct 27, 2018
Testing Date	Nov 4, 2018
Report Issued Date	Nov 6, 2018
DUT Notes	RPS0063 / CP-9020120
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 (600mm)	1	1	18-22AWG	No
4+4 pin EPS12V (670mm)	1	1	18AWG	No
6+2 pin PCIe (600mm)	1	1	18AWG	No
SATA (410mm+120mm)	2	4	18AWG	No
4 pin Molex (410mm+120mm+120mm+120mm)	1	4	18AWG	No
AC Power Cord (1370mm) - C13 coupler	1	1	18AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	37.4	3	0.8
	Watts	110		448.8	15	9.6
Total Max. Power (W)		450				

Parts Description

General Data	
Manufacturer (OEM)	Great Wall
Platform Model	GW-ATX450BL
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor
Bridge Rectifier	GBU1508 (800V, 15A @ 100°C)
APFC MOSFETS	2x ROHM R6020ANX (600V, 9.7A @ 100°C, 0.22Ohm)
APFC Boost Diode	STi STTH8S06FP (600V, 8A @ 150°C)
Hold-up Cap	Nippon Chemi-Con (450V, 220uF, 2-3,000h @ 105°C, KMM)
Main Switchers	2x Jilin Sino-Microelectronics JCS18N50H (500V, 11A @ 100°C, 0.27Ohm)
APFC Controller	Champion CM6500UNX & CM03X Green PFC controller
Resonant Controller	Champion CM6901
Topology	Primary side: Half-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	2x Silan Microelectronics SVD3205T (55V, 80A @ 25°C, 8mOhm)
5V & 3.3V	DC-DC Converters: 6x A-Power AP0403GH (30V, 50A @ 100°C, 4.5mOhm) PWM Controller: APW7159C
Filtering Capacitors	Electrolytics: Elite EJ (3-5,000h @ 105°C), ED (2-5,000h @ 105°C), EK (2-5,000h @ 105°C), 1x Teapo (3-6,000h @ 105°C, SY), 1x Rubycon (105°C) Polymers: Nichicon (LF)
Supervisor IC	Sitronix/Infino ST9S429-PG14 (OCP, OVP, UVP, SCP, PG)
Fan Model	Yate Loon D12SM-12 (120mm, 12V, 0.30A, 1700RPM, 72CFM, 34 dBA, Sleeve Bearing)
5VSB Circuit	

Rectifier	A-Power AP04N60H-HF (600V, 2.2A @ 100°C, 2.5Ohm)
Standby PWM Controller	SI8016HSP8

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)	85.253%
Average Noise Output (>1450 Load Combinations)	36.08dBA
Average PF (>1450 Load Combinations)	0.989
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
Standby Power Consumption	0.0671W
Non-Accredited	
12V Ripple (Full Load)	44.22mV
5V Ripple (Full Load)	17.94mV
3.3V Ripple (Full Load)	18.05mV
5VSB Ripple (Full Load)	14.86mV
12V Load Regulation	0.34%
5V Load Regulation	0.30%
3.3V Load Regulation	0.54%
5VSB Load Regulation	2.12%
Inrush Current	-

230V

Accredited		
Average Efficiency (>1450 load combinations)	87.701%	
Average Noise Output (>1450 Load Combinations)	36.05dBA	
Average PF (>1450 Load Combinations)	0.951	
Efficiency With 10W (≤500W) or 2% (>500W) Load	-	
Standby Power Consumption	0.0826W	
Non-Accredited		
12V Ripple (Full Load)	42.52mV	
5V Ripple (Full Load)	17.41mV	
3.3V Ripple (Full Load)	17.04mV	
5VSB Ripple (Full Load)	14.03mV	
12V Load Regulation	0.32%	
5V Load Regulation	0.26%	
3.3V Load Regulation	0.51%	
5VSB Load Regulation	2.10%	
Inrush Current	-	
Hold-Up Time & PWR_OK Signal	9.10ms	
AC Loss to PWR_OK Hold Up Time	6.80ms	
PWR_OK Inactive to DC Loss Delay	2.30ms	
OPP (0.00°C / 0.00°C)	-	-

Hold-Up Time & PWR_OK Signal

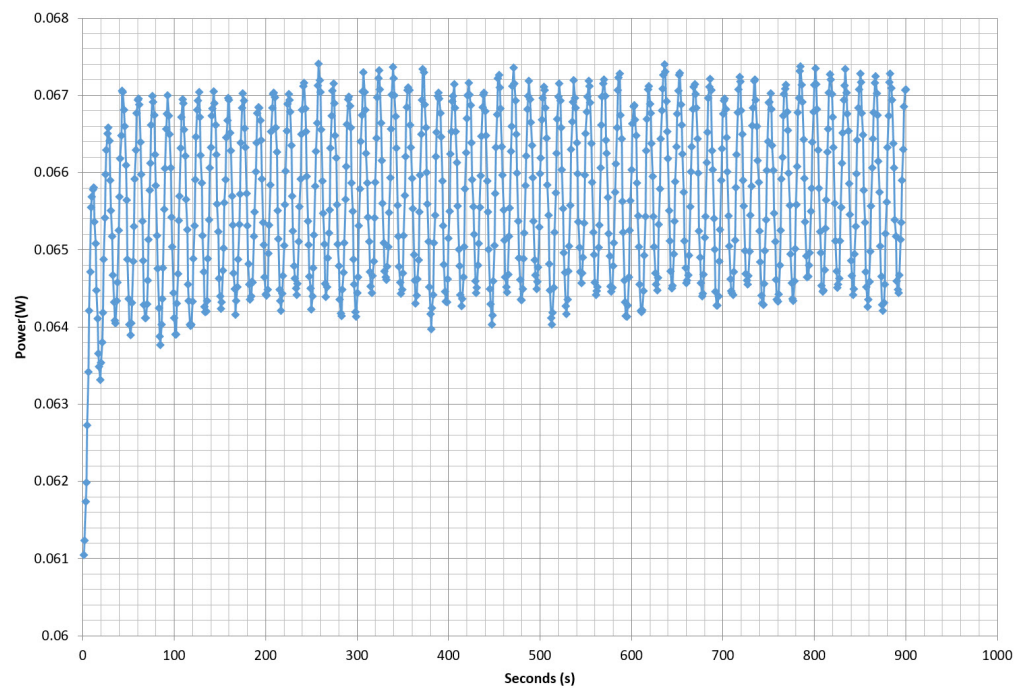
Hold-Up Time (ms)	9.1
AC Loss to PWR_OK Hold Up Time (ms)	6.8
PWR_OK Inactive to DC Loss Delay (ms)	2.3



Graphs

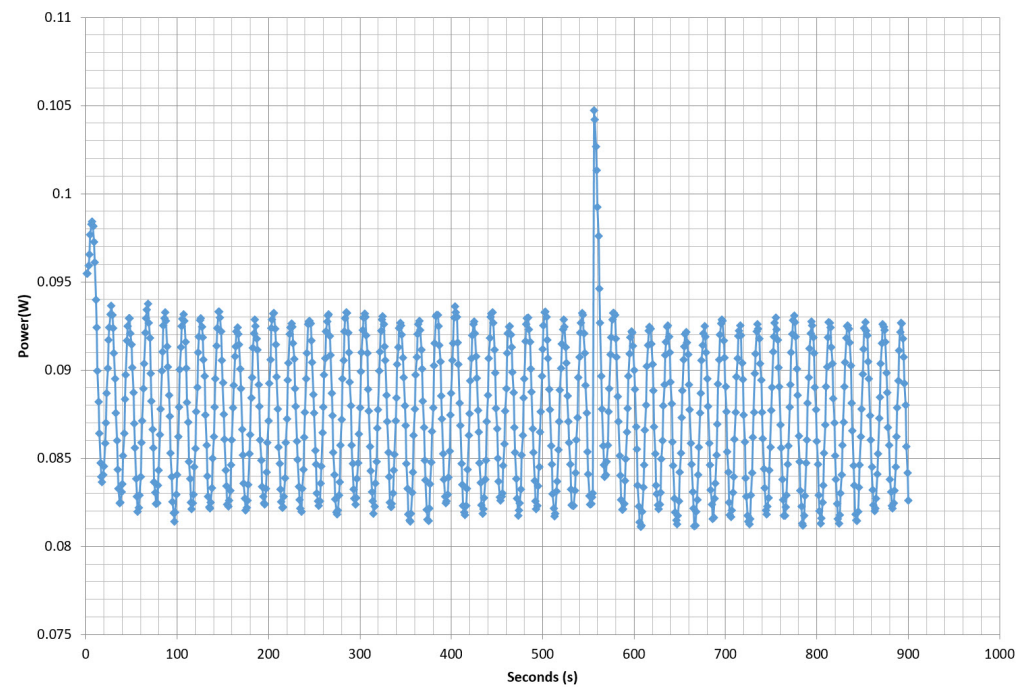
115V

Power - 18114851000036261087 - 07/06/2018 - 08:32



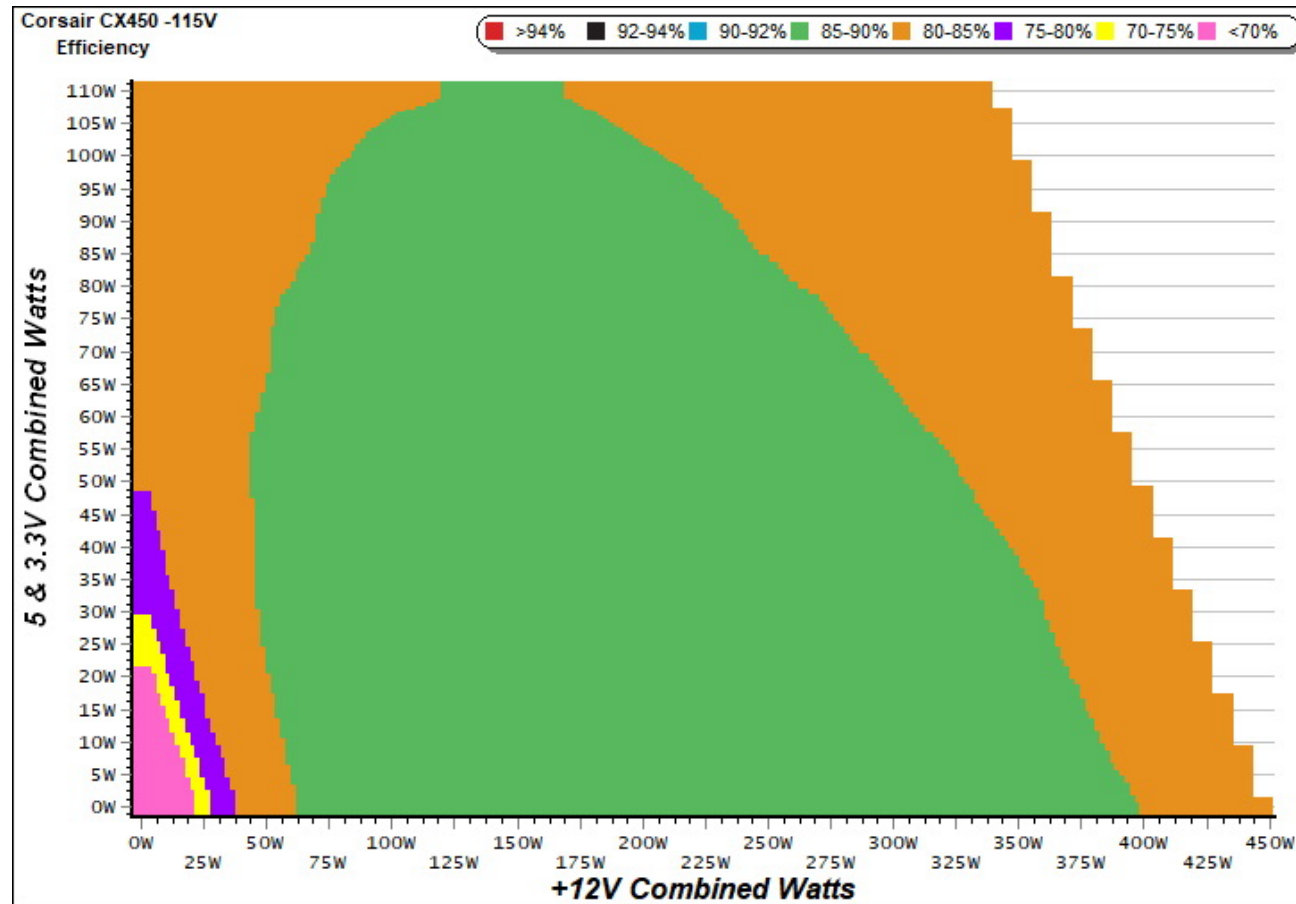
230V

Power - 18114851000036261087 - 07/06/2018 - 08:32



Efficiency Graph

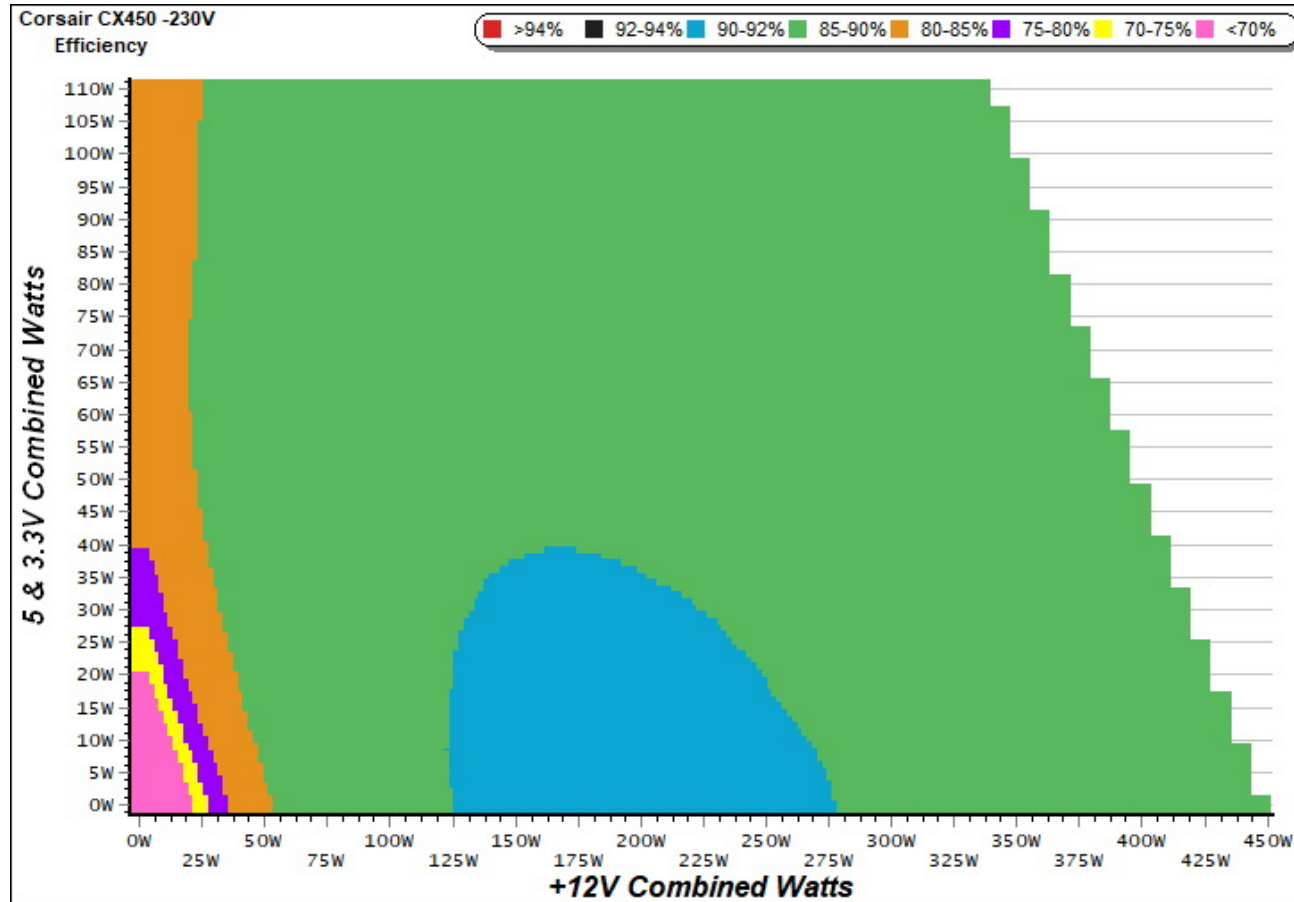
115V



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

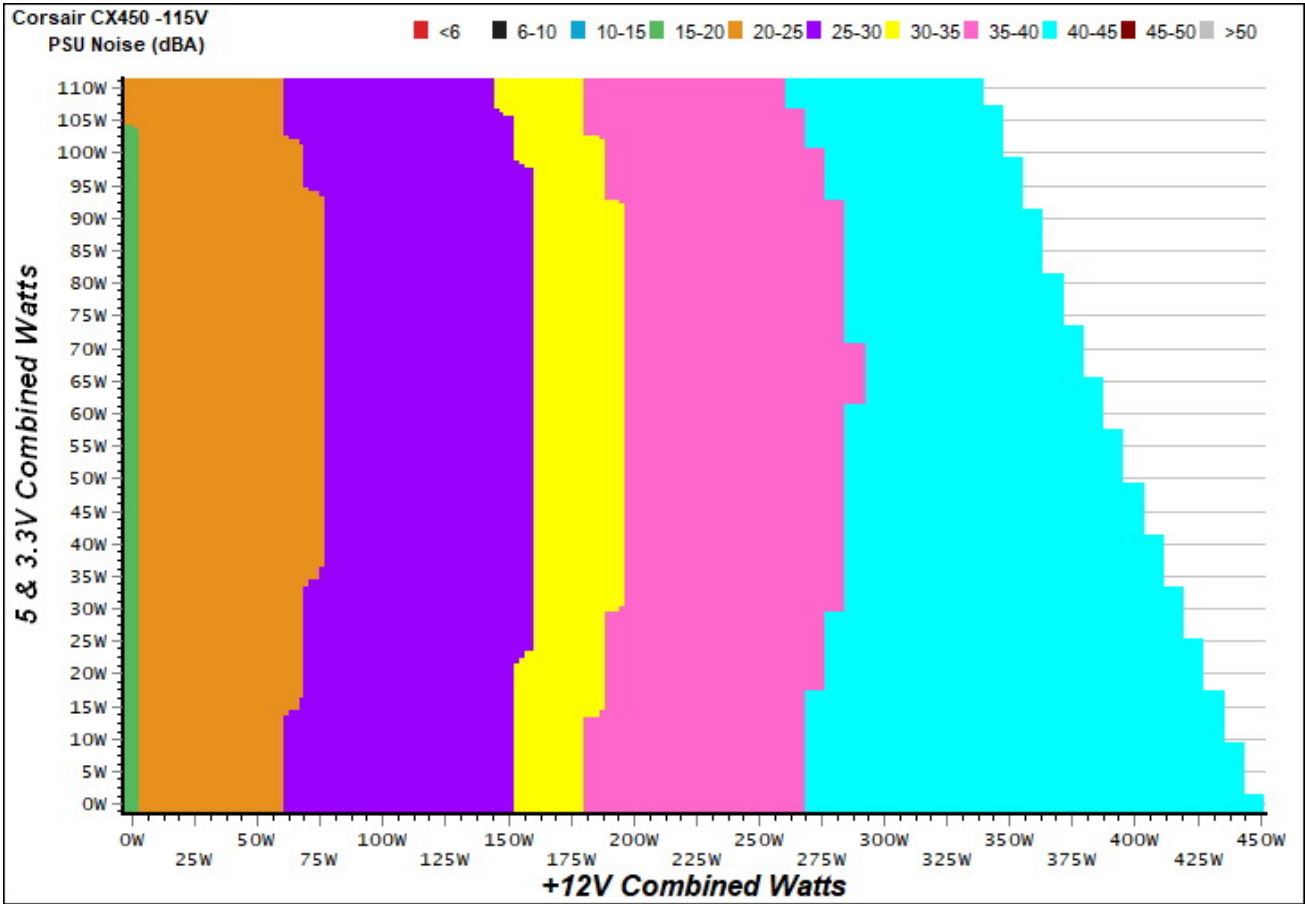


INFO

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

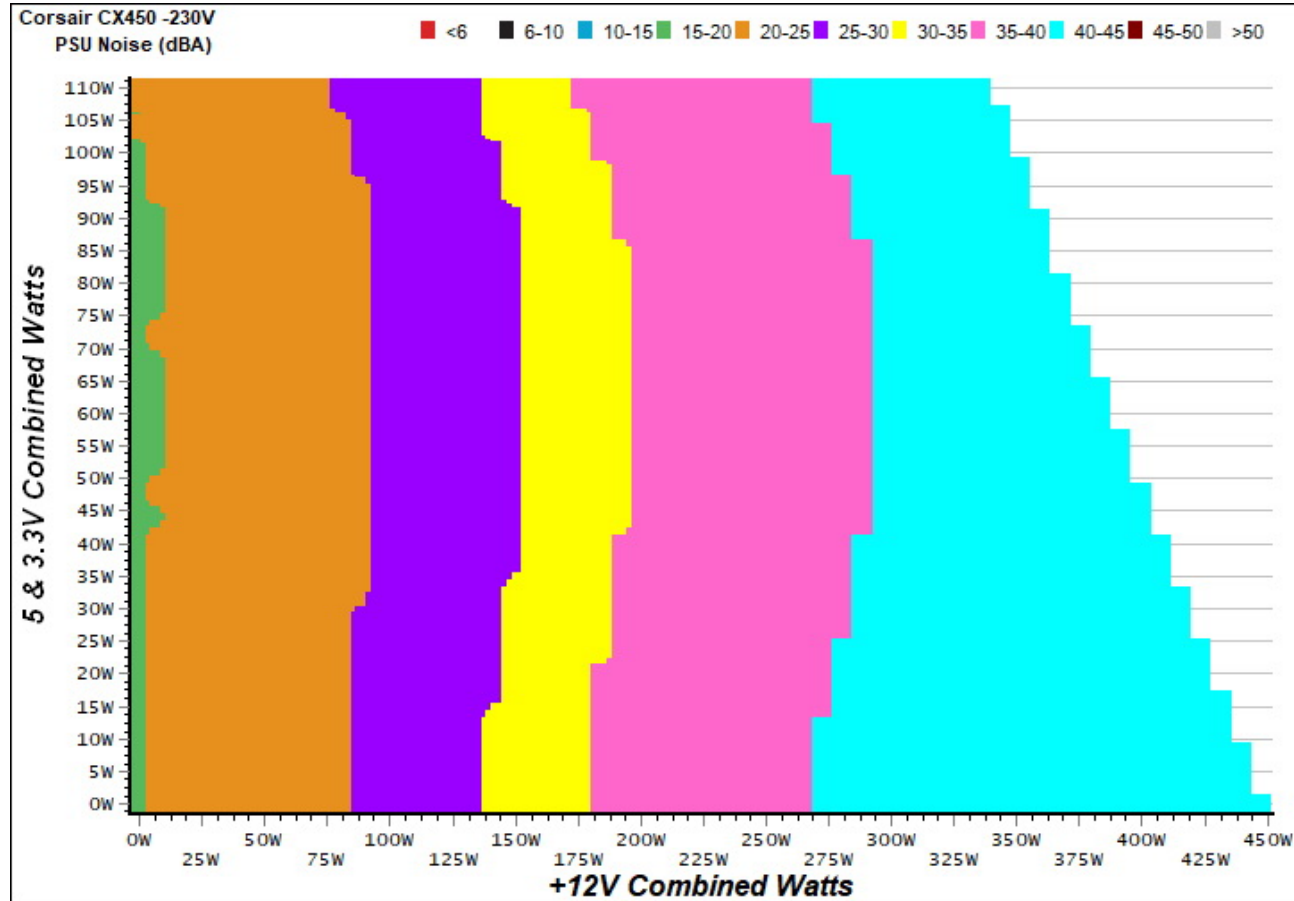
115V



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

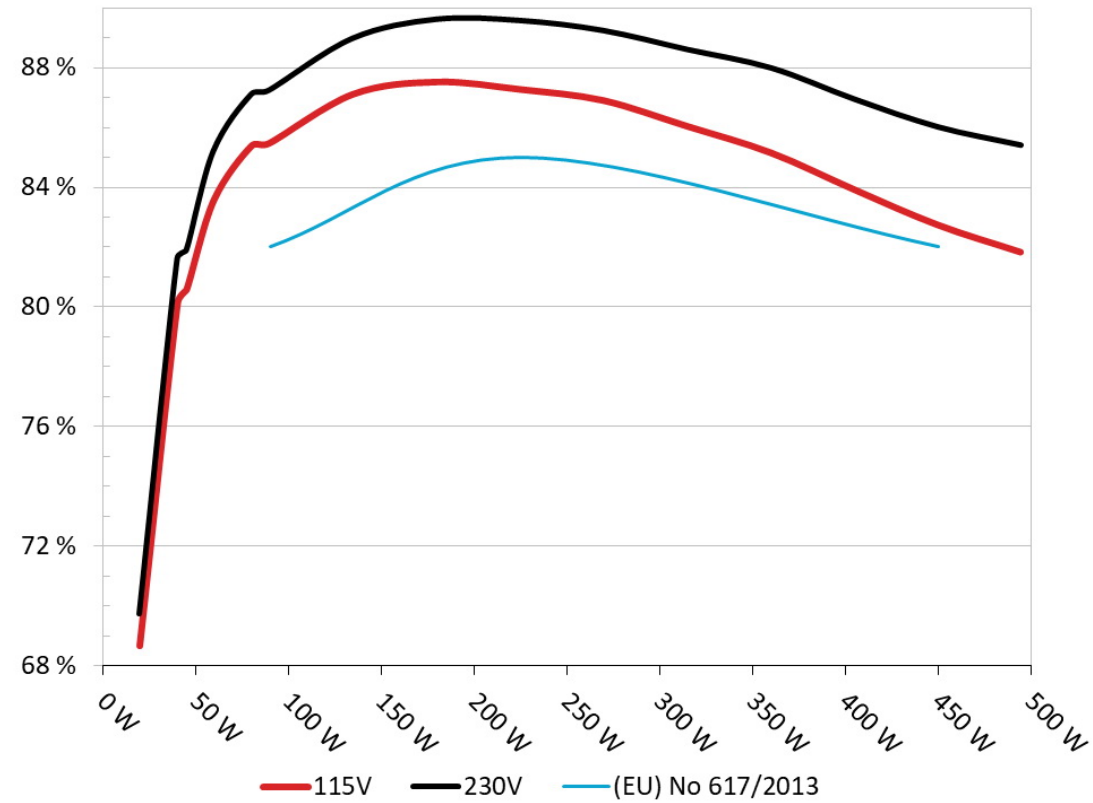
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

Indicative Performance

Efficiency under high ambient temperature

Efficiency: Corsair CX450

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

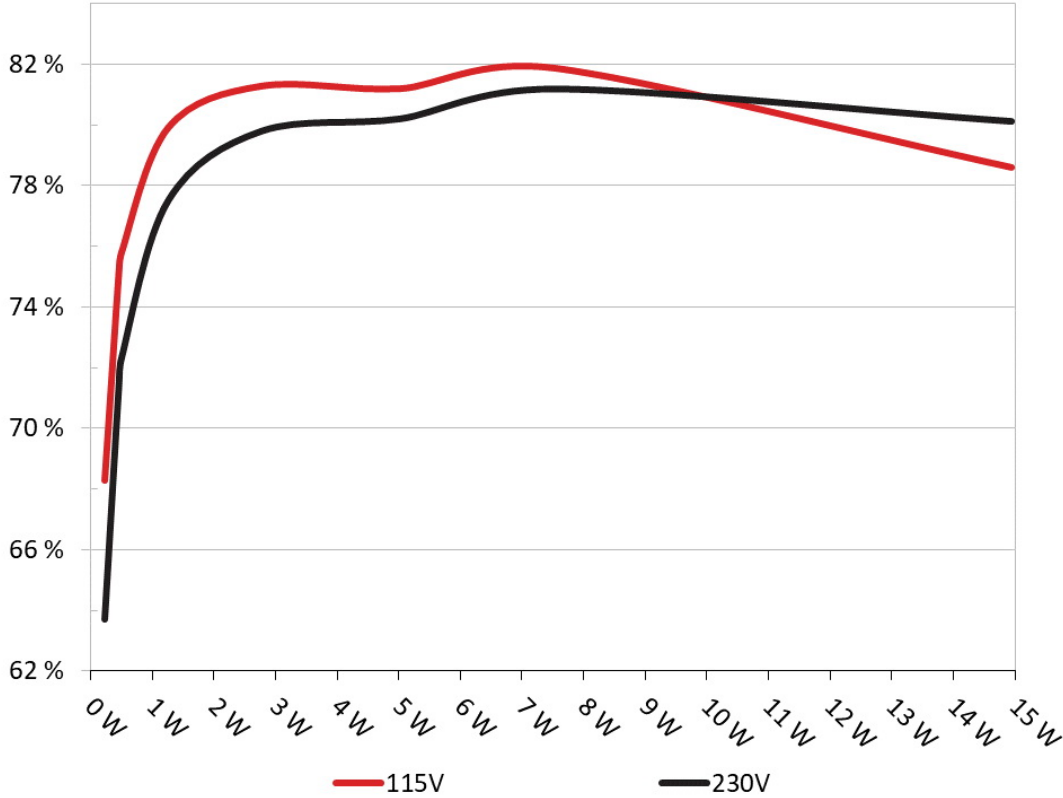


INFO

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: Corsair CX450
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	0.228	68.263%	0.028
	5.050V	0.334		115.37V
2	0.090A	0.455	75.083%	0.051
	5.049V	0.606		115.38V
3	0.550A	2.772	81.290%	0.230
	5.039V	3.410		115.37V
4	1.000A	5.029	81.205%	0.322
	5.028V	6.193		115.38V
5	1.500A	7.526	81.884%	0.375
	5.016V	9.191		115.36V
6	3.000A	14.942	78.605%	0.447
	4.980V	19.009		115.35V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.228	63.687%	0.011
	5.050V	0.358		230.93V
2	0.090A	0.455	71.317%	0.019
	5.048V	0.638		230.94V
3	0.550A	2.772	79.793%	0.096
	5.038V	3.474		230.93V
4	1.000A	5.028	80.204%	0.161
	5.027V	6.269		230.93V
5	1.500A	7.525	81.185%	0.216
	5.015V	9.269		230.75V
6	3.001A	14.940	80.116%	0.318
	4.979V	18.648		230.76V

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	1.924A	1.995A	1.982A	0.996A	44.813	80.582%	1230	27.6	40.07°C	0.955
	12.070V	5.008V	3.328V	5.023V	55.612				45.61°C	115.31V
2	4.841A	2.998A	2.976A	1.197A	89.319	85.465%	1340	29.3	40.76°C	0.981
	12.066V	5.006V	3.326V	5.014V	104.509				46.71°C	115.25V
3	8.162A	3.498A	3.457A	1.398A	134.428	87.103%	1395	31.5	41.09°C	0.988
	12.060V	5.004V	3.324V	5.007V	154.333				48.21°C	115.19V
4	11.484A	3.997A	3.973A	1.601A	179.644	87.516%	1575	35.1	41.74°C	0.990
	12.056V	5.003V	3.321V	4.998V	205.269				50.76°C	115.13V
5	14.475A	5.000A	4.971A	1.804A	224.927	87.265%	1710	37.7	42.12°C	0.992
	12.050V	5.001V	3.319V	4.989V	257.751				51.89°C	115.07V
6	17.403A	6.003A	5.966A	2.008A	269.436	86.899%	1865	40.2	42.81°C	0.993
	12.046V	4.999V	3.317V	4.981V	310.057				53.15°C	115.10V
7	20.396A	7.006A	6.967A	2.213A	314.729	86.036%	1865	40.2	43.11°C	0.994
	12.042V	4.998V	3.316V	4.971V	365.809				54.46°C	115.03V
8	23.392A	8.007A	7.966A	2.419A	360.029	85.148%	1865	40.2	43.83°C	0.995
	12.039V	4.997V	3.314V	4.962V	422.828				55.64°C	114.97V
9	26.793A	8.508A	8.456A	2.421A	404.935	83.918%	1870	40.3	44.22°C	0.995
	12.034V	4.995V	3.312V	4.958V	482.539				56.86°C	114.89V
10	29.931A	9.014A	8.975A	3.038A	449.755	82.743%	1865	40.2	45.32°C	0.994
	12.029V	4.993V	3.310V	4.938V	543.555				58.66°C	114.87V
11	33.661A	9.014A	8.974A	3.042A	494.583	81.830%	1865	40.2	46.51°C	0.994
	12.028V	4.993V	3.309V	4.933V	604.405				60.88°C	114.85V
CL1	0.136A	13.001A	12.999A	0.000A	109.905	81.270%	1862	40.1	43.10°C	0.987
	12.056V	5.004V	3.324V	5.029V	135.234				54.76°C	115.21V

CL2	37.419A	1.003A	1.001A	1.000A	463.776	83.467%	1873	40.3	45.55°C	0.995
	12.038V	4.999V	3.314V	4.994V	555.639				59.00°C	114.91V

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	1.924A	1.998A	1.982A	0.996A	44.828	81.905%	1280	28.9	38.40°C	0.757
	12.071V	5.008V	3.328V	5.021V	54.732				44.94°C	230.91V
2	4.843A	2.998A	2.976A	1.197A	89.337	87.264%	1360	30.5	38.68°C	0.892
	12.066V	5.005V	3.325V	5.013V	102.375				45.58°C	230.88V
3	8.163A	3.498A	3.459A	1.399A	134.453	89.002%	1455	33.2	39.28°C	0.937
	12.061V	5.004V	3.323V	5.004V	151.067				46.64°C	230.85V
4	11.486A	3.999A	3.974A	1.601A	179.673	89.642%	1585	35.4	40.16°C	0.957
	12.056V	5.002V	3.321V	4.996V	200.433				47.88°C	230.81V
5	14.476A	5.001A	4.970A	1.805A	224.958	89.597%	1725	38.2	40.78°C	0.968
	12.051V	5.001V	3.319V	4.988V	251.078				48.92°C	230.78V
6	17.405A	6.003A	5.967A	2.009A	269.465	89.264%	1865	40.2	42.06°C	0.974
	12.046V	4.999V	3.317V	4.979V	301.873				50.49°C	230.75V
7	20.400A	7.005A	6.967A	2.214A	314.766	88.630%	1865	40.2	43.14°C	0.978
	12.042V	4.998V	3.315V	4.970V	355.147				51.86°C	230.71V
8	23.396A	8.007A	7.967A	2.420A	360.082	88.011%	1870	40.3	44.45°C	0.982
	12.039V	4.997V	3.314V	4.960V	409.134				53.54°C	230.50V
9	26.796A	8.510A	8.452A	2.422A	405.002	86.963%	1865	40.2	45.11°C	0.984
	12.035V	4.996V	3.312V	4.956V	465.715				54.65°C	230.73V
10	29.927A	9.013A	8.972A	3.041A	449.816	86.039%	1873	40.3	46.58°C	0.986
	12.032V	4.995V	3.311V	4.935V	522.805				56.82°C	230.69V
11	33.660A	9.012A	8.974A	3.043A	494.636	85.428%	1865	40.2	47.60°C	0.987
	12.030V	4.994V	3.309V	4.931V	579.012				58.42°C	230.66V
CL1	0.136A	13.003A	13.001A	0.000A	109.935	83.122%	1865	40.2	43.42°C	0.925
	12.058V	5.005V	3.324V	5.027V	132.258				51.51°C	230.95V

CL2	37.421A	1.002A	0.999A	1.000A	463.863	86.925%	1880	40.5	45.91°C	0.986
	12.040V	5.000V	3.315V	4.993V	533.638				55.97°C	230.69V

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	1.197A	0.499A	0.478A	0.198A	19.535	68.672%	1105	24.0	0.880
	12.067V	5.009V	3.329V	5.045V	28.447				115.35V
2	2.455A	0.999A	0.990A	0.397A	39.928	80.127%	1100	24.0	0.948
	12.069V	5.008V	3.328V	5.039V	49.831				115.32V
3	3.649A	1.495A	1.472A	0.596A	59.420	83.556%	1170	26.1	0.969
	12.068V	5.008V	3.327V	5.032V	71.114				115.30V
4	4.910A	1.997A	1.982A	0.796A	79.834	85.380%	1235	27.7	0.979
	12.066V	5.006V	3.326V	5.026V	93.504				115.26V

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	1.197A	0.499A	0.478A	0.198A	19.537	69.745%	1210	27.4	0.540
	12.070V	5.009V	3.330V	5.043V	28.012				230.92V
2	2.457A	0.997A	0.991A	0.397A	39.950	81.627%	1195	27.3	0.725
	12.071V	5.008V	3.329V	5.037V	48.942				230.91V
3	3.649A	1.497A	1.473A	0.597A	59.440	85.231%	1245	27.9	0.819
	12.069V	5.008V	3.327V	5.030V	69.740				230.89V
4	4.910A	1.998A	1.984A	0.796A	79.855	87.135%	1330	29.2	0.874
	12.068V	5.006V	3.326V	5.024V	91.645				230.88V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	22.8 mV	7.4 mV	7.1 mV	6.5 mV	Pass
20% Load	35.3 mV	8.8 mV	8.3 mV	7.0 mV	Pass
30% Load	54.7 mV	10.0 mV	9.2 mV	7.6 mV	Pass
40% Load	41.7 mV	10.6 mV	10.5 mV	8.1 mV	Pass
50% Load	37.1 mV	12.1 mV	11.5 mV	9.0 mV	Pass
60% Load	35.7 mV	14.4 mV	12.3 mV	9.8 mV	Pass
70% Load	35.3 mV	14.8 mV	14.0 mV	11.1 mV	Pass
80% Load	36.6 mV	14.7 mV	14.9 mV	12.8 mV	Pass
90% Load	39.0 mV	15.6 mV	16.7 mV	14.6 mV	Pass
100% Load	44.2 mV	17.9 mV	18.1 mV	14.9 mV	Pass
110% Load	48.1 mV	20.0 mV	18.6 mV	20.1 mV	Pass
Crossload 1	54.1 mV	13.9 mV	15.5 mV	10.7 mV	Pass
Crossload 2	45.2 mV	14.8 mV	13.7 mV	15.7 mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	21.7 mV	7.4 mV	7.3 mV	6.4 mV	Pass
20% Load	36.3 mV	8.7 mV	8.3 mV	6.9 mV	Pass
30% Load	53.2 mV	9.7 mV	9.3 mV	7.5 mV	Pass
40% Load	40.8 mV	10.2 mV	10.2 mV	8.0 mV	Pass
50% Load	36.8 mV	12.3 mV	11.0 mV	8.9 mV	Pass
60% Load	34.7 mV	13.5 mV	12.7 mV	9.9 mV	Pass
70% Load	35.9 mV	14.1 mV	13.4 mV	10.7 mV	Pass
80% Load	36.6 mV	14.7 mV	14.8 mV	11.6 mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	38.7 mV	15.5 mV	16.0 mV	12.8 mV	Pass
100% Load	42.5 mV	17.4 mV	17.0 mV	14.0 mV	Pass
110% Load	47.0 mV	17.6 mV	17.2 mV	15.2 mV	Pass
Crossload 1	53.4 mV	12.7 mV	14.0 mV	10.9 mV	Pass
Crossload 2	43.0 mV	14.0 mV	13.1 mV	14.1 mV	Pass

The results above are not used in the certification process

Corsair CX450 (Great Wall)



Top side

MODEL 型号 / 型號 / 모델 : RPS0063 POWER SUPPLY / 전원 공급 장치						
PART NUMBER : CP-9020120 / 75-002451						
交流輸入 直流輸出 最大電流 最大瓦特數	AC INPUT AC 입력	100V - 240V · 6A - 3A · 47Hz - 63Hz				
	DC OUTPUT DC 출력	+3.3V	+5V	+12V	-12V	+5Vsb
	MAX LOAD 최대 무하	20A	20A	37.4A	0.8A	3A
	MAXIMUM COMBINED WATTAGE 최대 결합 와트	110W		448.8W	9.6W	15W
		總功率 / 總功率 / 총 전력 TOTAL POWER : 450W				

FC

C  US
E307858





CE


N13


18114851000036261087

Power specifications table

Cybenetics 

ETA 

LAMBDA 

SAFE 

DELTA 

PHI 

CYBENETICS LTD Syrou 6, Latsia, 2231, Nicosia Cyprus

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