CORSAIR

Corsair SF450 Platinum

Serial Number 18354850000062800004

Lab ID 538

Certification ID 25538

Test Result Report ID:

Certificate Issue Date: Jul 11, 2018

Scheme: ETA-EMI PSU

115V: CYBENETICS SILVER

230V: CYBENETICS BRONZE 230v

Scheme: LAMBDA PSU

115V: CYBENETICS A

230V: CYBENETICS A 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	Corsair
Model	SF450 Platinum
OEM/ODM	Great Wall
Serial Number	18354850000062800004
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	47-63

Rated Power (W)	450
Operating Temperature (Continuous Full Load) (°C)	
Type	SFX
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	92mm Rifle Bearing Fan (NR092L)
Semi-Passive Operation	✓
Cybenetics Testing Information	
Lab ID	538
Date of receipt	Jun 24, 2018
Testing Date	Jul 7, 2018
Report Issued Date	Jul 11, 2018
DUT Notes	RPS0111
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 (300mm)	1	1	16-18AWG	No
4+4 pin EPS12V (400mm)	1	1	16AWG	No
6+2 pin PCIe (700mm)	2	2	16AWG	No
SATA (100mm+105mm+105mm105mm)	1	4	18AWG	No
4 pin Molex (100mm+105mm+105mm)	1	3	18AWG	No
AC Power Cord (1400mm)	1	1	18AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	15	20	37.5	2.5	0.3
	Watts	100		450	12.5	3.6
Total Max. Power (W)		450				

Parts Description

General Data	
Manufacturer (OEM)	Great Wall
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 3x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	1x GBU25KH (800V, 25A @ 125 °C)
APFC MOSFET	1x Infineon IPZ60R099C7 (650V, 14A @ 100°C, 0.099Ohm)
APFC Boost Diode	1x Infineon IDH06G65C6 (600V, 6A @ 145°C)
Hold-up Cap(s)	1x Nippon Chemi-Con (420V, 420uF, 2000h @ 105 °C, KMW)
Main Switchers	2x STMicroelectronics STP24N60DM2 (650V, 14A @ 100°C, 0.2Ohm)
Driver IC	Silicon Labs Si8230BD
APFC Controller	Champion CM6502UHHX & CM03AX Green PFC controller
Resonant Controller	Champion CM6901X
Topology	Primary side: Half-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	2x Infineon BSC014N04LS (40V, 100A @ 100°C, 1.4mOhm)
5V & 3.3V	DC-DC Converters: 4x Nexperia PSMN2R0-30YL (30V, 100A @ 25°C, 2mOhm) PWM Controller: Anpec APW7159C
Filtering Capacitors	Electrolytics: 2x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 1x Rubycon (3-6,000h@ 105°C, YXJ) Polymers: Nippon Chemi-Con
Supervisor IC	IN1S429I -SCG
Fan Control MCU	PIC16F1824
Fan Model	Corsair NR092L (92mm, 12V, 0.22A, 3950 RPM, rifle bearing)

5VSB Circuit	
Rectifier	1x CSD18534 FET (60V, 69A @ 25 °C, 7.8mOhm)
Standby PWM Controller	Infineon ICE5QR1680AG

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)	90.732%
Average Noise Output (>1450 Load Combinations)	22.54dBA
Average PF (>1450 Load Combinations)	0.969
Efficiency With 10W (≤500W) or 2% (>500W) Load	64.632%
Standby Power Consumption	0.0468W
Non-Accredited	
12V Ripple (Full Load)	23.31mV
5V Ripple (Full Load)	11.85mV
3.3V Ripple (Full Load)	14.37mV
5VSB Ripple (Full Load)	14.54mV
12V Load Regulation	0.03%
5V Load Regulation	0.18%
3.3V Load Regulation	0.27%
5VSB Load Regulation	1.11%
Inrush Current	31.316A

230V		
Accredited		
Average Efficiency (>1450 load combinations)	92.060%	
Average Noise Output (>1450 Load Combinations)	22.69dBA	
Average PF (>1450 Load Combinations)	0.919	
Efficiency With 10W (≤500W) or 2% (>500W) Load	-	
Standby Power Consumption	0.0762W	
Non-Accredited		
12V Ripple (Full Load)	23.88mV	
5V Ripple (Full Load)	12.32mV	
3.3V Ripple (Full Load)	14.38mV	
5VSB Ripple (Full Load)	14.35mV	
12V Load Regulation	0.08%	
5V Load Regulation	0.18%	
3.3V Load Regulation	0.24%	
5VSB Load Regulation	1.09%	
Inrush Current	67.143A	
Hold-Up Time & PWR_OK Signal	17.80ms	
AC Loss to PWR_OK Hold Up Time	14.60ms	
PWR_OK Inactive to DC Loss Delay	3.20ms	
OPP (0.00°C / 0.00°C)	-	-

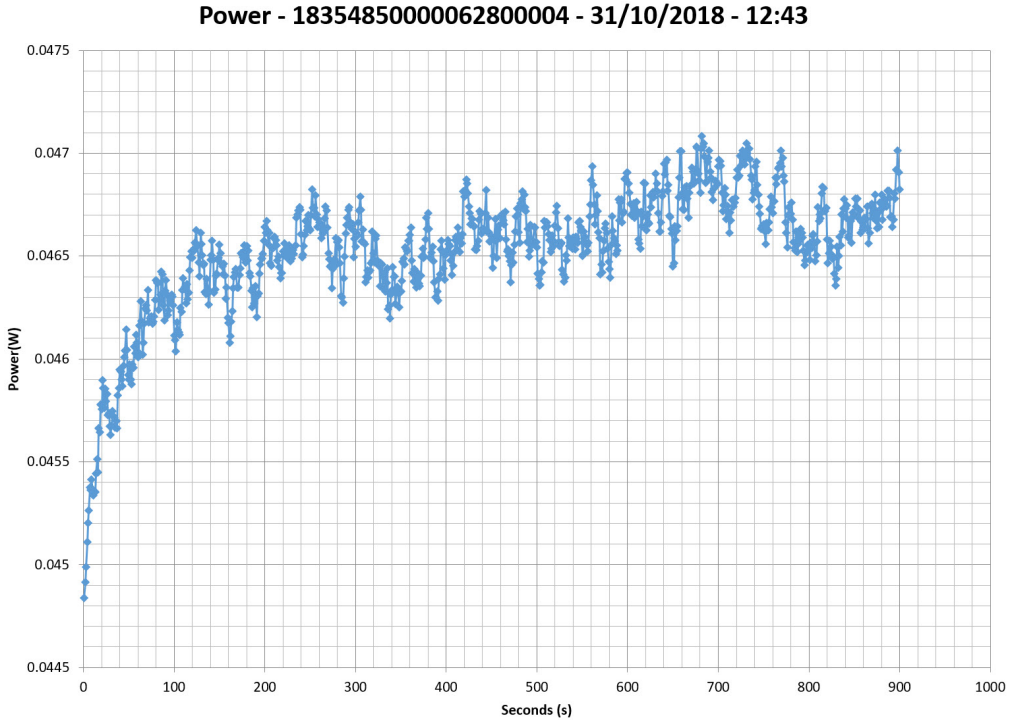
Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	17.80
AC Loss to PWR_OK Hold Up Time (ms)	14.60
PWR_OK Inactive to DC Loss Delay (ms)	3.20

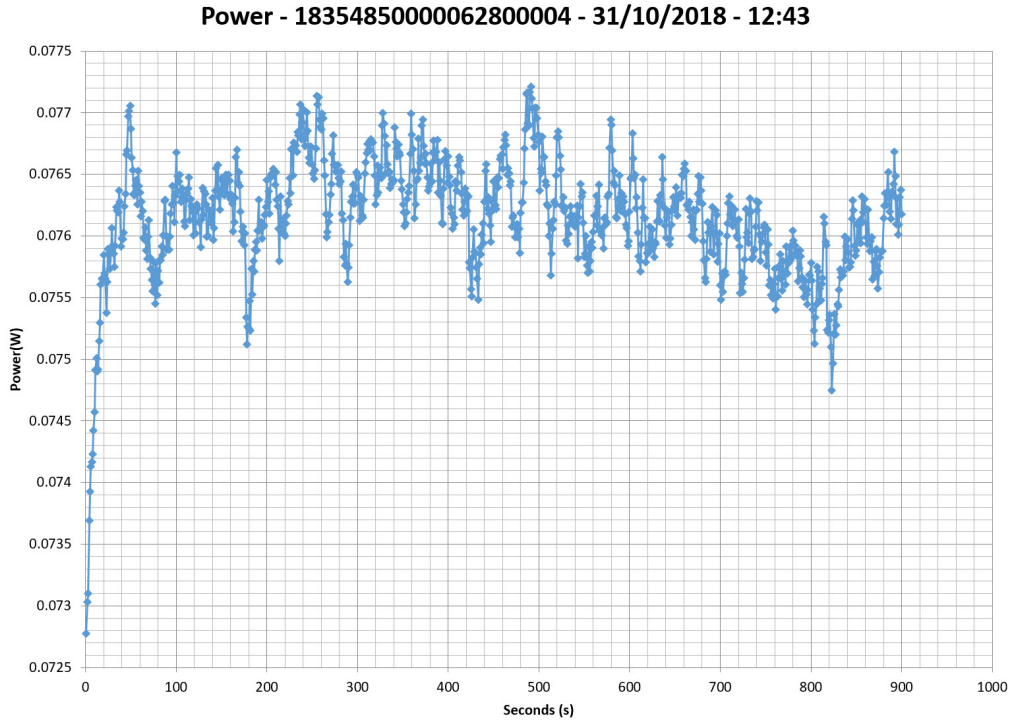
Vampire Power

Graphs

115V

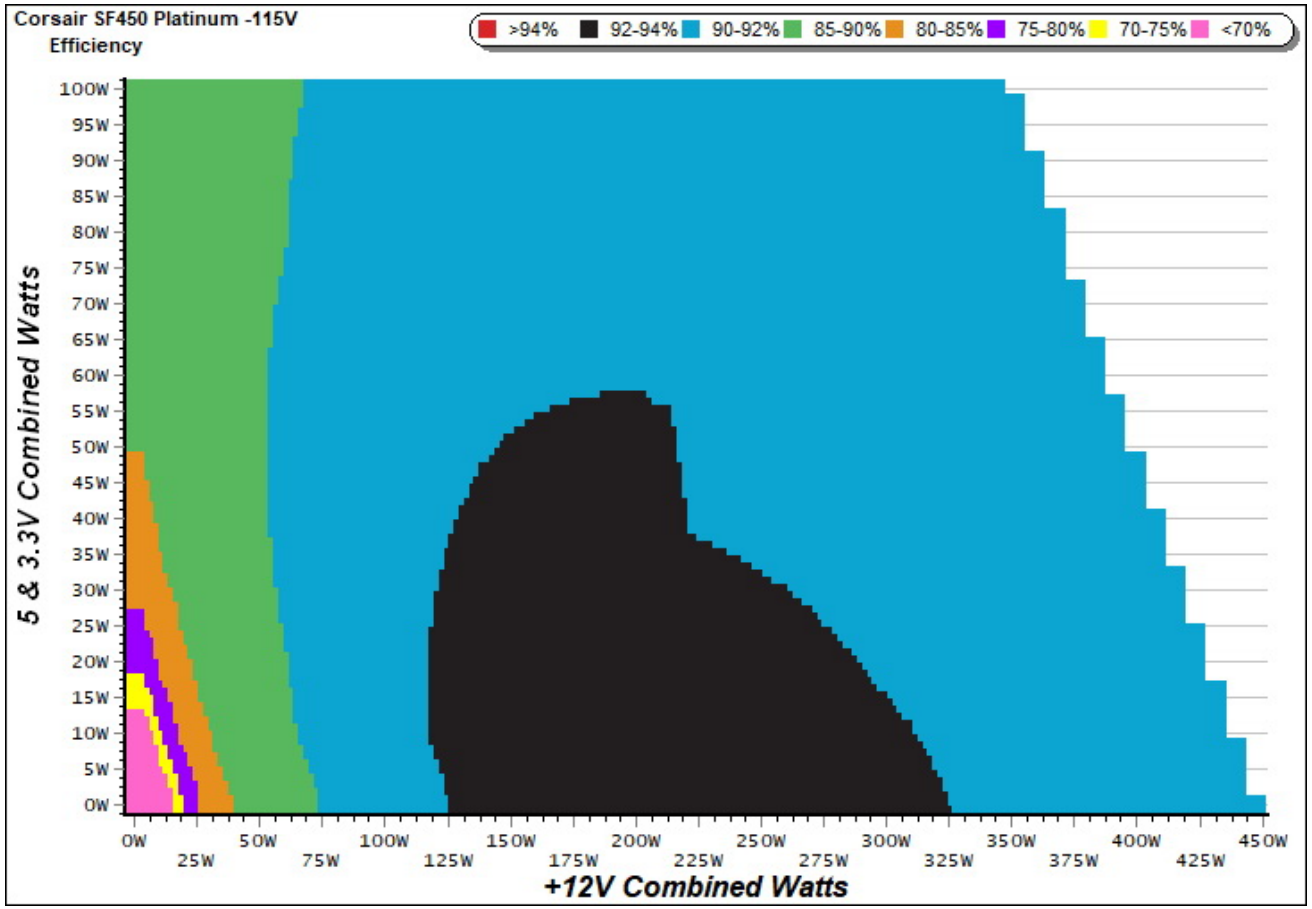


230V



Efficiency Graph

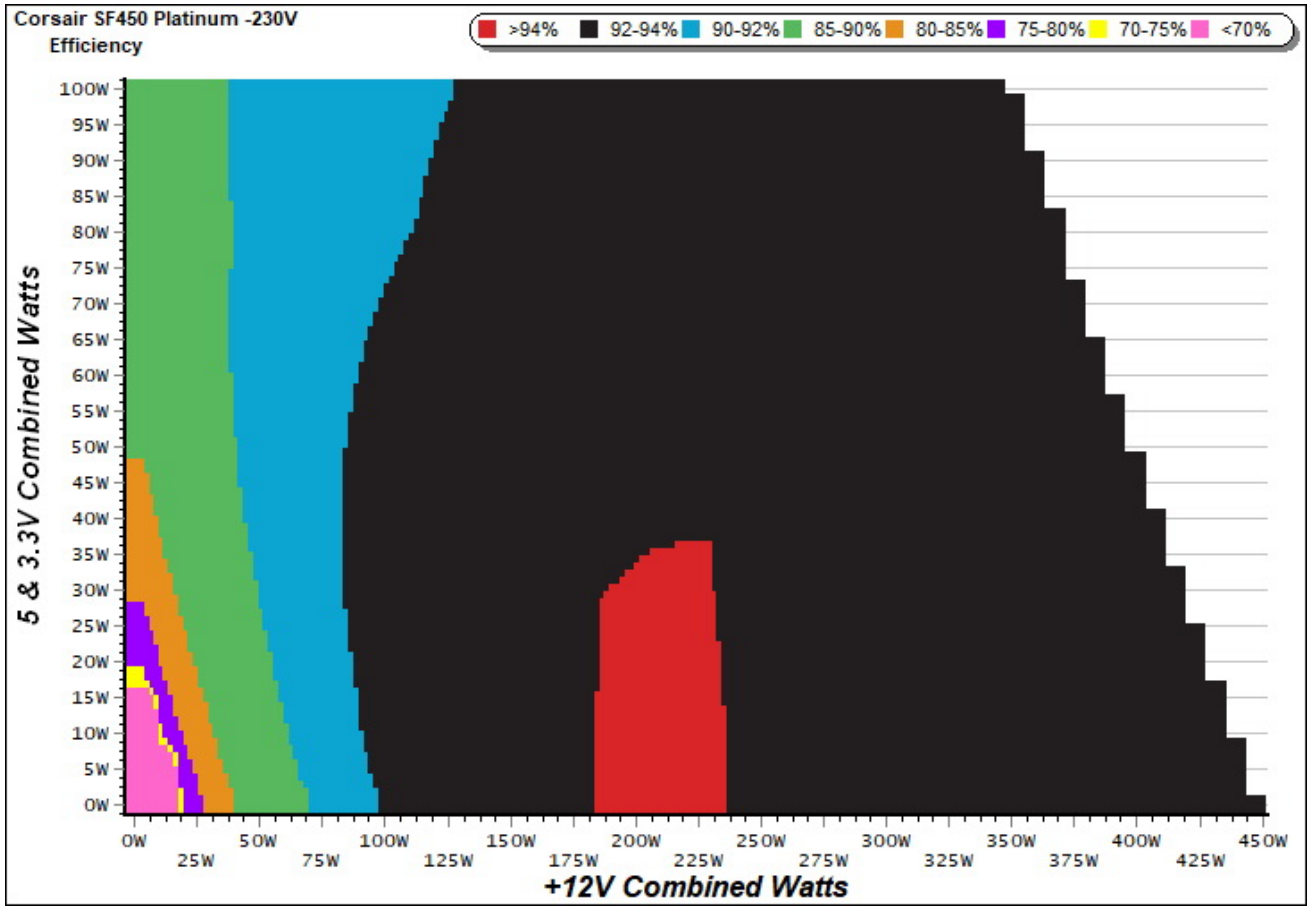
115V



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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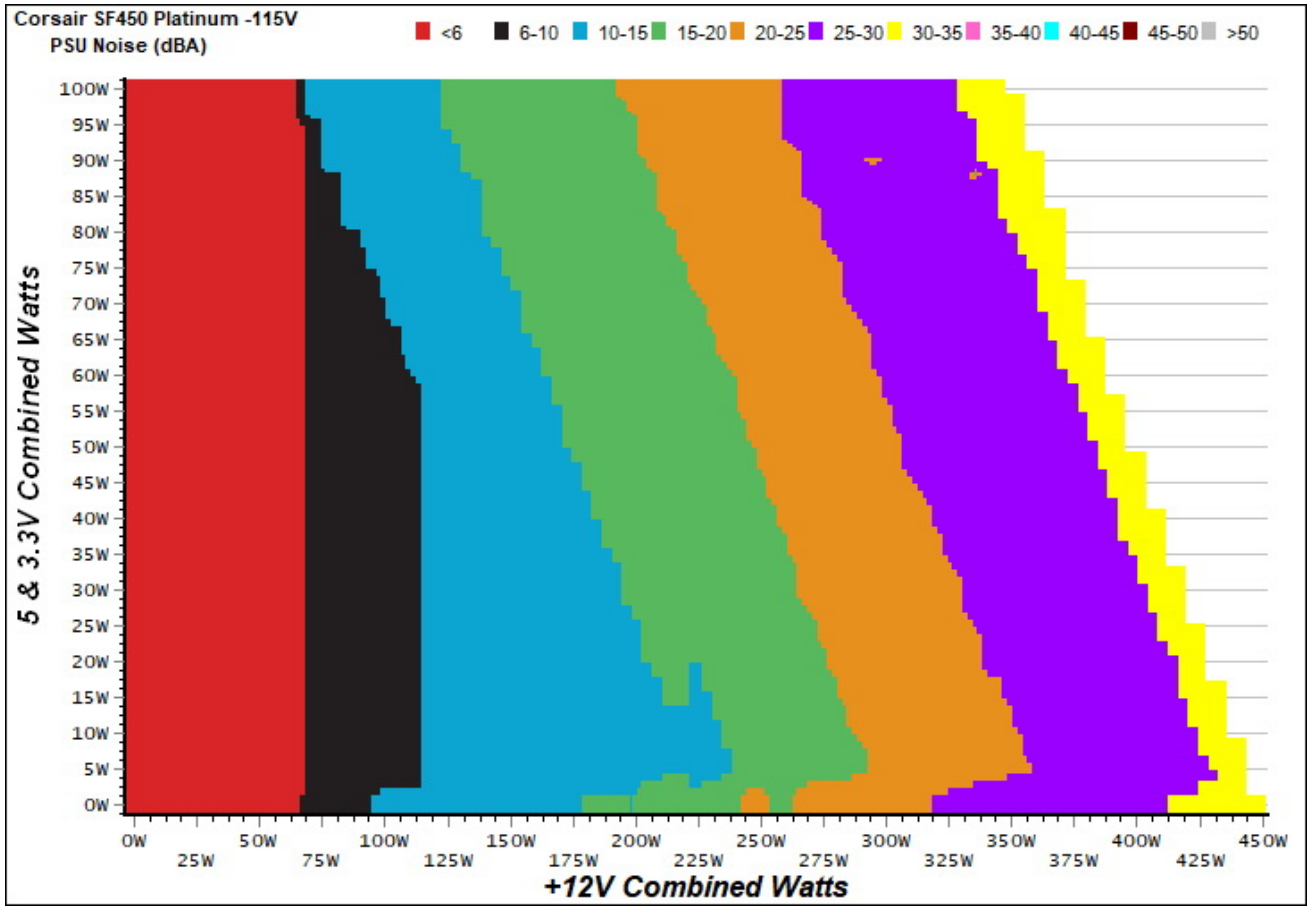
Noise Graph

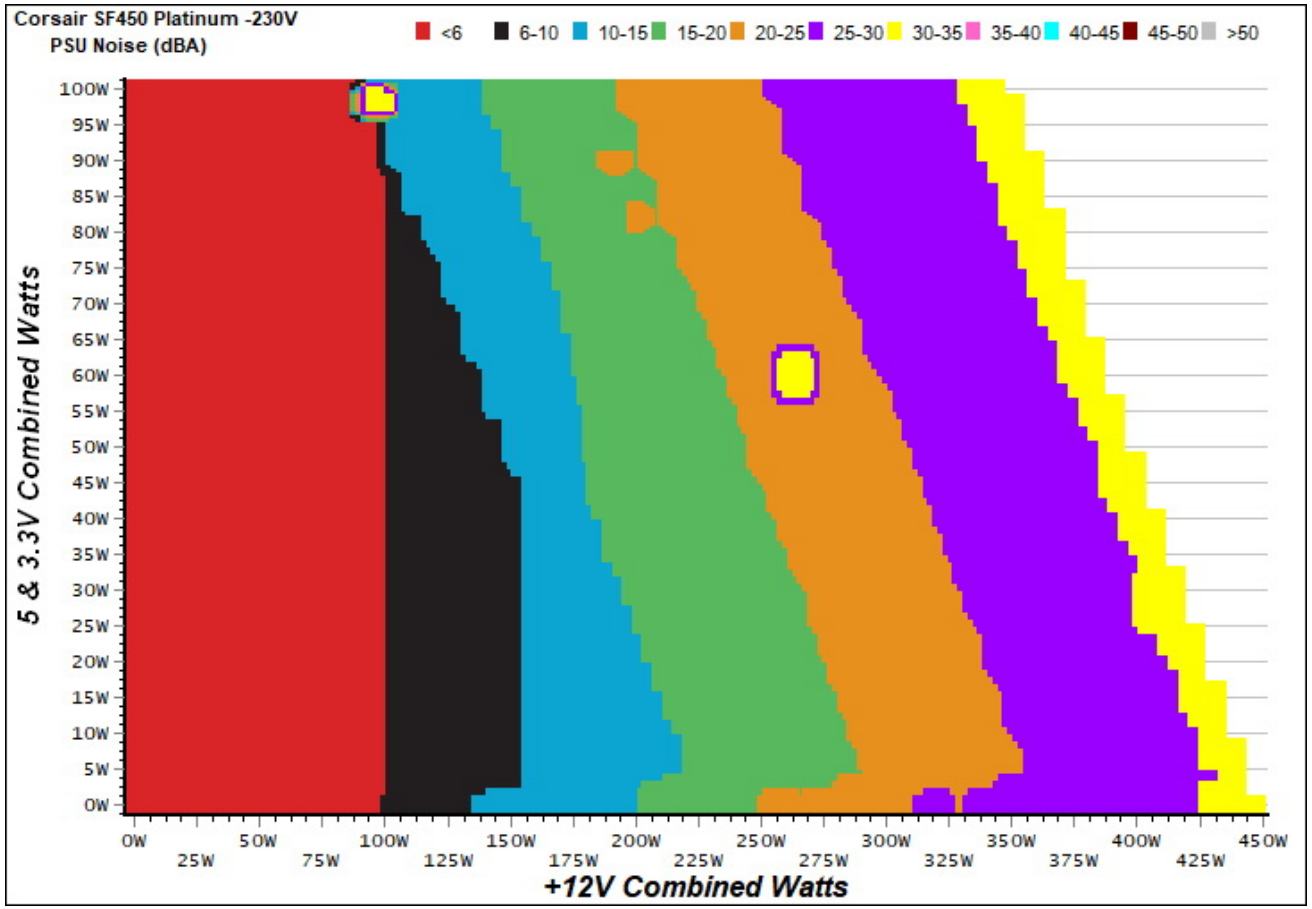
115V



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



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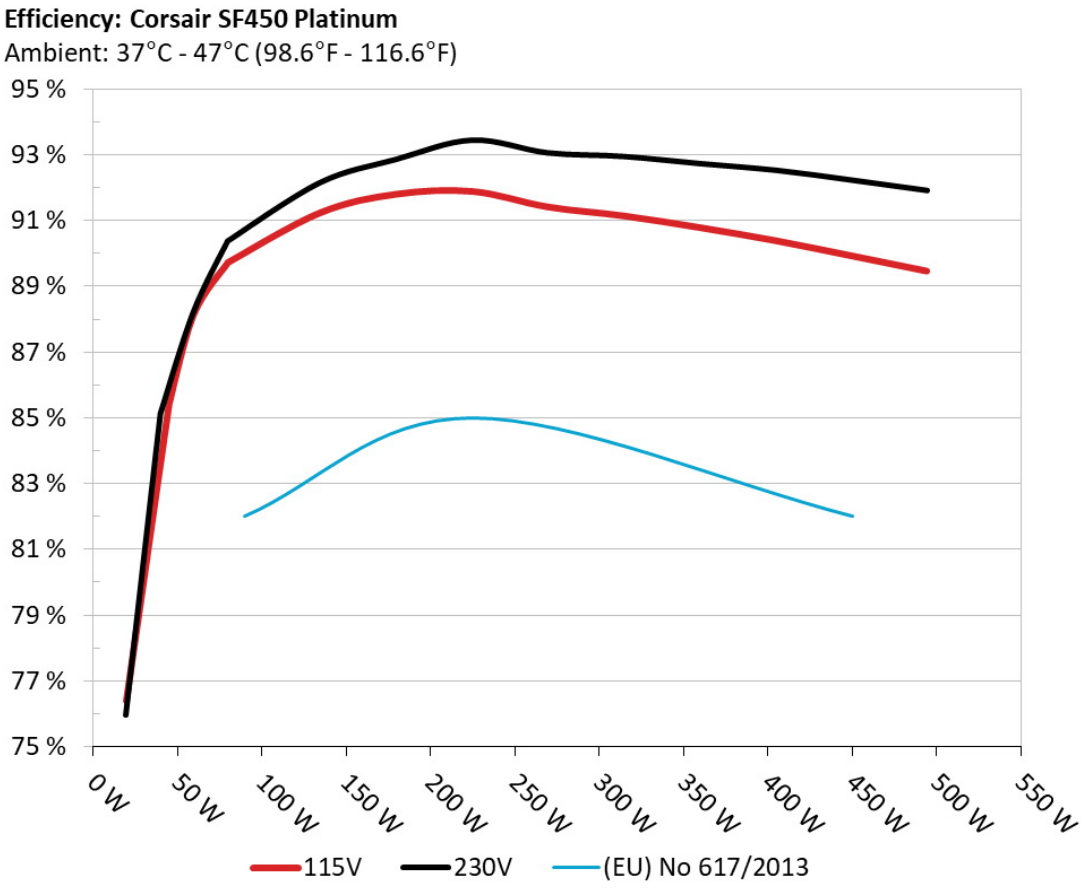
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

Indicative Performance

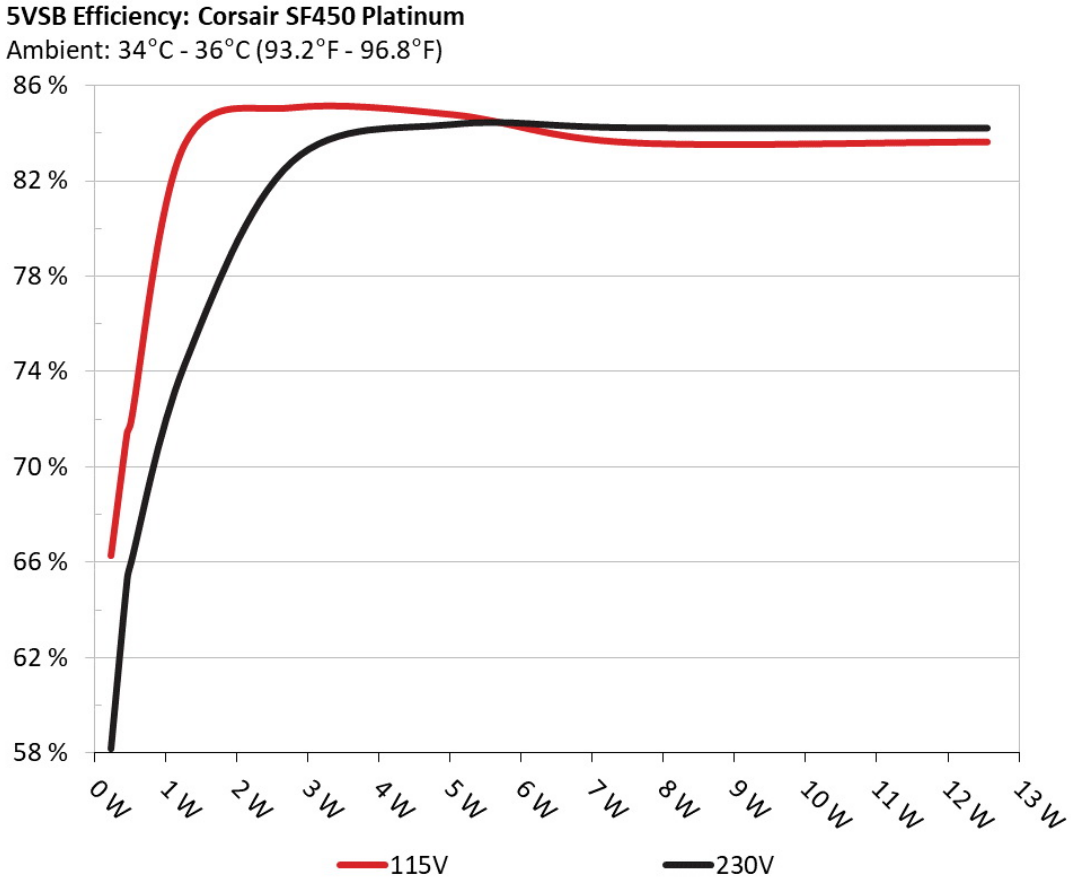
Efficiency under high ambient temperature



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	0.228	66.279%	0.051
	5.048V	0.344		115.06V
2	0.090A	0.455	71.429%	0.092
	5.048V	0.637		115.06V
3	0.550A	2.774	85.066%	0.314
	5.043V	3.261		115.07V
4	1.000A	5.038	84.772%	0.397
	5.037V	5.943		115.06V
5	1.500A	7.548	83.597%	0.440
	5.031V	9.029		115.06V
6	2.500A	12.550	83.628%	0.476
	5.019V	15.007		115.06V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.228	58.163%	0.170
	5.034V	0.392		230.22V
2	0.090A	0.455	65.280%	0.031
	5.048V	0.697		230.20V
3	0.550A	2.774	82.806%	0.137
	5.042V	3.350		230.21V
4	1.000A	5.038	84.374%	0.215
	5.037V	5.971		230.20V
5	1.500A	7.548	84.232%	0.276
	5.031V	8.961		230.04V
6	2.500A	12.549	84.216%	0.344
	5.019V	14.901		230.21V

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	1.934A	1.986A	1.972A	0.994A	44.909	85.283%	0	<6.0	44.75°C	0.858
	12.050V	5.037V	3.345V	5.034V	52.659				40.08°C	115.06V
2	4.852A	2.979A	2.961A	1.193A	89.359	89.723%	0	<6.0	45.84°C	0.932
	12.048V	5.036V	3.344V	5.028V	99.594				40.77°C	115.06V
3	8.175A	3.477A	3.440A	1.394A	134.502	91.229%	0	<6.0	47.05°C	0.957
	12.048V	5.035V	3.343V	5.023V	147.434				41.47°C	115.06V
4	11.497A	3.974A	3.948A	1.594A	179.719	91.795%	0	<6.0	48.93°C	0.971
	12.048V	5.034V	3.343V	5.019V	195.783				42.17°C	115.06V
5	14.485A	4.969A	4.937A	1.796A	225.016	91.879%	1348	14.7	42.24°C	0.979
	12.047V	5.034V	3.342V	5.012V	244.906				49.71°C	115.05V
6	17.405A	5.963A	5.924A	1.998A	269.521	91.408%	1479	17.8	42.84°C	0.983
	12.049V	5.033V	3.341V	5.007V	294.856				51.57°C	115.05V
7	20.391A	6.958A	6.915A	2.200A	314.804	91.135%	1694	21.8	43.31°C	0.986
	12.049V	5.032V	3.340V	5.002V	345.427				53.01°C	115.05V
8	23.380A	7.954A	7.907A	2.402A	360.101	90.778%	1902	24.6	43.80°C	0.988
	12.048V	5.031V	3.339V	4.996V	396.683				54.06°C	115.05V
9	26.771A	8.451A	8.386A	2.404A	405.017	90.381%	2510	32.9	44.80°C	0.989
	12.047V	5.030V	3.338V	4.994V	448.123				55.64°C	115.05V
10	30.093A	8.951A	8.901A	2.506A	449.720	89.925%	2979	37.5	45.62°C	0.990
	12.046V	5.029V	3.337V	4.989V	500.103				57.34°C	115.04V
11	33.816A	8.951A	8.902A	2.507A	494.519	89.459%	3489	41.5	46.72°C	0.990
	12.045V	5.028V	3.336V	4.987V	552.786				58.90°C	115.04V
CL1	0.139A	12.003A	11.999A	0.000A	102.248	87.187%	665	6.3	42.35°C	0.941
	12.065V	5.034V	3.346V	5.035V	117.275				50.39°C	115.06V

CL2	37.509A	1.002A	1.002A	1.000A	465.118	90.573%	2948	37.6	45.36°C	0.990
	12.043V	5.031V	3.337V	5.013V	513.526				57.26°C	115.04V

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	1.932A	1.985A	1.971A	0.994A	44.874	85.132%	0	<6.0	44.60°C	0.685
	12.050V	5.036V	3.345V	5.034V	52.711				40.21°C	230.20V
2	4.848A	2.980A	2.959A	1.193A	89.341	90.374%	0	<6.0	45.82°C	0.824
	12.055V	5.035V	3.344V	5.028V	98.857				40.96°C	230.21V
3	8.170A	3.476A	3.438A	1.394A	134.455	92.145%	0	<6.0	46.70°C	0.887
	12.051V	5.035V	3.343V	5.024V	145.917				41.56°C	230.20V
4	11.492A	3.974A	3.947A	1.594A	179.676	92.855%	0	<6.0	48.37°C	0.918
	12.050V	5.034V	3.342V	5.019V	193.501				42.59°C	230.19V
5	14.484A	4.969A	4.938A	1.796A	224.968	93.440%	1363	15.0	42.98°C	0.943
	12.045V	5.033V	3.341V	5.012V	240.763				49.18°C	230.19V
6	17.406A	5.962A	5.926A	1.998A	269.491	93.054%	1481	17.9	43.42°C	0.950
	12.047V	5.032V	3.341V	5.006V	289.608				50.28°C	230.19V
7	20.392A	6.958A	6.916A	2.200A	314.790	92.943%	1698	21.7	43.86°C	0.960
	12.048V	5.031V	3.340V	5.001V	338.690				51.65°C	230.19V
8	23.380A	7.955A	7.905A	2.403A	360.117	92.725%	1906	24.7	44.20°C	0.966
	12.049V	5.030V	3.339V	4.995V	388.370				52.50°C	230.20V
9	26.772A	8.454A	8.390A	2.404A	405.044	92.524%	2343	30.5	44.90°C	0.970
	12.047V	5.029V	3.338V	4.992V	437.772				54.08°C	230.20V
10	30.099A	8.951A	8.901A	2.506A	449.753	92.226%	2969	37.6	45.52°C	0.973
	12.045V	5.028V	3.337V	4.989V	487.666				55.94°C	230.20V
11	33.821A	8.955A	8.903A	2.508A	494.571	91.911%	3483	41.5	46.57°C	0.976
	12.044V	5.028V	3.336V	4.986V	538.100				57.42°C	230.20V
CL1	0.141A	12.003A	12.001A	0.000A	102.279	88.002%	760	6.6	42.60°C	0.850
	12.065V	5.034V	3.346V	5.035V	116.224				49.25°C	230.20V

CL2	37.513A	1.002A	1.001A	1.000A	465.128	92.924%	2857	36.2	45.18°C	0.974
	12.042V	5.031V	3.338V	5.013V	500.544				55.41°C	230.20V

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	1.199A	0.496A	0.478A	0.198A	19.545	76.404%	0	<6.0	0.755
	12.050V	5.039V	3.346V	5.045V	25.581				115.06V
2	2.466A	0.993A	0.987A	0.397A	40.019	85.432%	0	<6.0	0.846
	12.049V	5.038V	3.346V	5.042V	46.843				115.06V
3	3.660A	1.488A	1.464A	0.596A	59.490	88.148%	0	<6.0	0.892
	12.048V	5.037V	3.345V	5.038V	67.489				115.06V
4	4.918A	1.987A	1.973A	0.795A	79.862	89.690%	0	<6.0	0.925
	12.048V	5.037V	3.345V	5.034V	89.042				115.06V

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	1.198A	0.495A	0.479A	0.198A	19.534	75.975%	0	<6.0	0.502
	12.052V	5.038V	3.347V	5.045V	25.711				230.20V
2	2.464A	0.993A	0.987A	0.397A	39.997	84.982%	0	<6.0	0.657
	12.050V	5.037V	3.346V	5.042V	47.065				230.19V
3	3.657A	1.489A	1.465A	5.038A	59.462	88.207%	0	<6.0	0.745
	12.048V	5.037V	3.345V	5.038V	67.412				230.19V
4	4.917A	1.984A	1.972A	0.795A	79.854	90.195%	0	<6.0	0.802
	12.053V	5.036V	3.345V	5.034V	88.535				230.20V

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	6.5 mV	4.5 mV	8.4 mV	Pass
20% Load	8.4 mV	7.5 mV	5.4 mV	10.3 mV	Pass
30% Load	11.1 mV	7.3 mV	5.8 mV	9.9 mV	Pass
40% Load	12.4 mV	7.8 mV	5.9 mV	9.3 mV	Pass
50% Load	14.8 mV	8.3 mV	6.6 mV	9.4 mV	Pass
60% Load	16.7 mV	9.0 mV	7.4 mV	9.3 mV	Pass
70% Load	19.5 mV	9.7 mV	8.6 mV	10.9 mV	Pass
80% Load	19.3 mV	10.3 mV	11.7 mV	12.1 mV	Pass
90% Load	21.5 mV	10.9 mV	12.8 mV	13.0 mV	Pass
100% Load	23.3 mV	11.9 mV	14.4 mV	14.5 mV	Pass
110% Load	26.2 mV	11.9 mV	13.8 mV	15.6 mV	Pass
Crossload 1	10.0 mV	12.3 mV	11.1 mV	16.6 mV	Pass
Crossload 2	23.5 mV	8.1 mV	11.6 mV	16.6 mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.1 mV	8.0 mV	4.9 mV	7.2 mV	Pass
20% Load	20.0 mV	7.7 mV	5.3 mV	9.7 mV	Pass
30% Load	15.8 mV	7.3 mV	5.6 mV	9.4 mV	Pass
40% Load	15.7 mV	8.1 mV	5.9 mV	9.2 mV	Pass
50% Load	15.2 mV	8.1 mV	6.6 mV	9.5 mV	Pass
60% Load	17.3 mV	8.9 mV	7.6 mV	10.2 mV	Pass
70% Load	19.2 mV	9.4 mV	8.5 mV	10.7 mV	Pass
80% Load	20.3 mV	10.4 mV	11.6 mV	12.4 mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	22.0 mV	11.0 mV	12.6 mV	12.9 mV	Pass
100% Load	23.9 mV	12.3 mV	14.4 mV	14.4 mV	Pass
110% Load	26.0 mV	11.9 mV	14.9 mV	15.6 mV	Pass
Crossload 1	16.3 mV	12.2 mV	10.8 mV	15.8 mV	Pass
Crossload 2	24.2 mV	8.1 mV	10.8 mV	16.2 mV	Pass

The results above are not used in the certification process

Corsair SF450 Platinum

Top side

Power specifications table

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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