



Corsair SF850 Platinum (ATX v3.1)

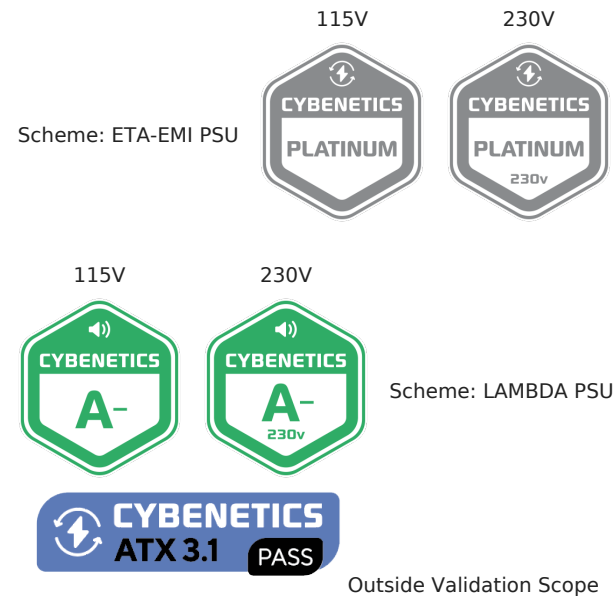
Serial Number A2MFD35331P66W

Lab ID CR85002349

Certification ID 252349

Test Result Report ID: 24PS2349A

Certificate Issue Date: Feb 12, 2024



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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	Brueel & Kjaer 2270 G4
Microphone	Brueel & 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	SF850 Platinum (ATX v3.1)
OEM/ODM	Great Wall
Serial Number	A2MFD35331P66W
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5

Rated Frequency (Hz)	47-63
Rated Power (W)	850
Operating Temperature (Continuous Full Load) (°C)	
Type	SFX
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	92mm Fluid Dynamic Bearing Fan (NR092P)
Semi-Passive Operation	✓
Cybenetics Testing Information	
Lab ID	CR85002349
Date of receipt	Jan 30, 2024
Testing Date	Feb 9, 2024
Report Issued Date	Feb 12, 2024
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 (310mm)	1	1	16-20AWG	No
4+4 pin EPS12V (410mm)	2	2	16AWG	No
6+2 pin PCIe (400mm)	3	3	16AWG	No
12+2 pin PCIe (410mm) (600W)	1	1	16-24AWG	No
SATA (100mm+115mm+115mm+115mm)	2	8	18AWG	No
4-pin Molex (100mm+115mm+115mm)	1	3	18AWG	No

Protection Features(Manufacturer)

Over Power Protection	✓
Over Current (+12V) Protection	✓
Over Temperature Protection	✓
Short Circuit Protection	✓
Surge Protection	✓
Inrush Current Protection	✓
Fan Failure Protection	✗

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	70.8	3	0
	Watts	130		850	15	0
Total Max. Power (W)		850				

Parts Description

General Data	
Manufacturer (OEM)	Great Wall
PCB Type	Double-Sided
Primary Side	
Transient Filter	2x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	1x NTC Thermistor SCK-056 (5 Ohm) & Relay
Bridge Rectifier(s)	2x Vishay GBUE2560 (600V, 25A @ 140°C)
APFC MOSFETs	1x Infineon IPW60R060C7 (650V, 22A @ 100°C, Rds(on): 0.060Ohm) 1x ChampionCM03X (reduce the no-load consumption)
APFC Boost Diode	1x Infineon IDH10G65C6 (650V, 10A @ 140°C)
Bulk Cap(s)	1x Rubycon (420V, 550uF, 3,000h @ 105°C, MXK)

Main Switchers	2x 60F2094 (600V, 15.8A @ 150°C, 0.190hm)
APFC Controller	Champion CM6502UHHX
Resonant Controller	Champion CM6901X
IC Driver	1x Novosense NSi6602BD
Topology	Primary side: APFC, Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETs	6x Infineon BSC014N04LS (40V, 125A @ 100°C, Rds(on): 1.4mOhm)
5V & 3.3V	DC-DC Converters: 4x Advanced Power AP4024GEMT (30V, 60A, Rds(on): 4.5mOhm) PWM Controller(s): ANPECAPW7159C
Filtering Capacitors	Electrolytic: 2x Rubycon (3-6,000h @ 105°C, YXG) Polymer: 3x United Chemi-Con, 40x FPCAP
Supervisor IC	IN1S429I-SCG (OCP,OVP, UVP, SCP, PG)
Fan Controller	Microchip PIC16F1824
Fan Model	Corsair NR092P (92mm, 12V, 0.22A, Fluid Dynamic Bearing Fan)
5VSB Circuit	
Rectifier	1x Infineon ICE5QR1680AG (800V, 5.8A, Rds(on): 1.75Ohm)
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	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX v3.1 PSU Power Excursion	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	90.951%
Average Noise Output (>1450 Load Combinations)	29.42dBA
Average PF (>1450 Load Combinations)	0.984
Efficiency With 10W ($\leq$ 500W) or 2% (>500W) Load	72.663%
Standby Power Consumption	0.0532W
Non-Accredited	
12V Ripple (Full Load)	43.00mV
5V Ripple (Full Load)	17.72mV
3.3V Ripple (Full Load)	18.00mV
5VSB Ripple (Full Load)	11.84mV
12V Load Regulation	0.12%
5V Load Regulation	0.30%
3.3V Load Regulation	0.45%
5VSB Load Regulation	1.74%
Inrush Current	35.060A

230V

Accredited	
Average Efficiency (>1450 load combinations)	92.525%
Average Noise Output (>1450 Load Combinations)	27.73dBA
Average PF (>1450 Load Combinations)	0.942
Efficiency With 10W ($\leq$ 500W) or 2% (>500W) Load	65.865%
Standby Power Consumption	0.0969W
Non-Accredited	
12V Ripple (Full Load)	41.96mV
5V Ripple (Full Load)	16.73mV
3.3V Ripple (Full Load)	17.93mV

5VSB Ripple (Full Load)	12.02mV	
12V Load Regulation	0.14%	
5V Load Regulation	0.30%	
3.3V Load Regulation	0.48%	
5VSB Load Regulation	1.72%	
Inrush Current	72.310A	
12V Transient Response (200%)	11.75V	
5V Transient Response (200%)	4.903V	
3.3V Transient Response (200%)	3.199V	
5VSB Transient Response (200%)	4.932V	
Hold-Up Time & PWR_OK Signal	19.30ms	
AC Loss to PWR_OK Hold Up Time	17.00ms	
PWR_OK Inactive to DC Loss Delay	2.30ms	
PSU Timings: T1 (20% / 100%)	52.0ms	52.0ms
PSU Timings: T3 (20% / 100%)	130.0ms	131.0ms
OPP (26.48°C / 41.51°C)	122.55%	124.19%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	19.3
AC Loss to PWR_OK Hold Up Time (ms)	17
PWR_OK Inactive to DC Loss Delay (ms)	2.3



Tables

115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	115.04 V	115.00 V	113.85 V	115.08 V	116.15 V	PASS

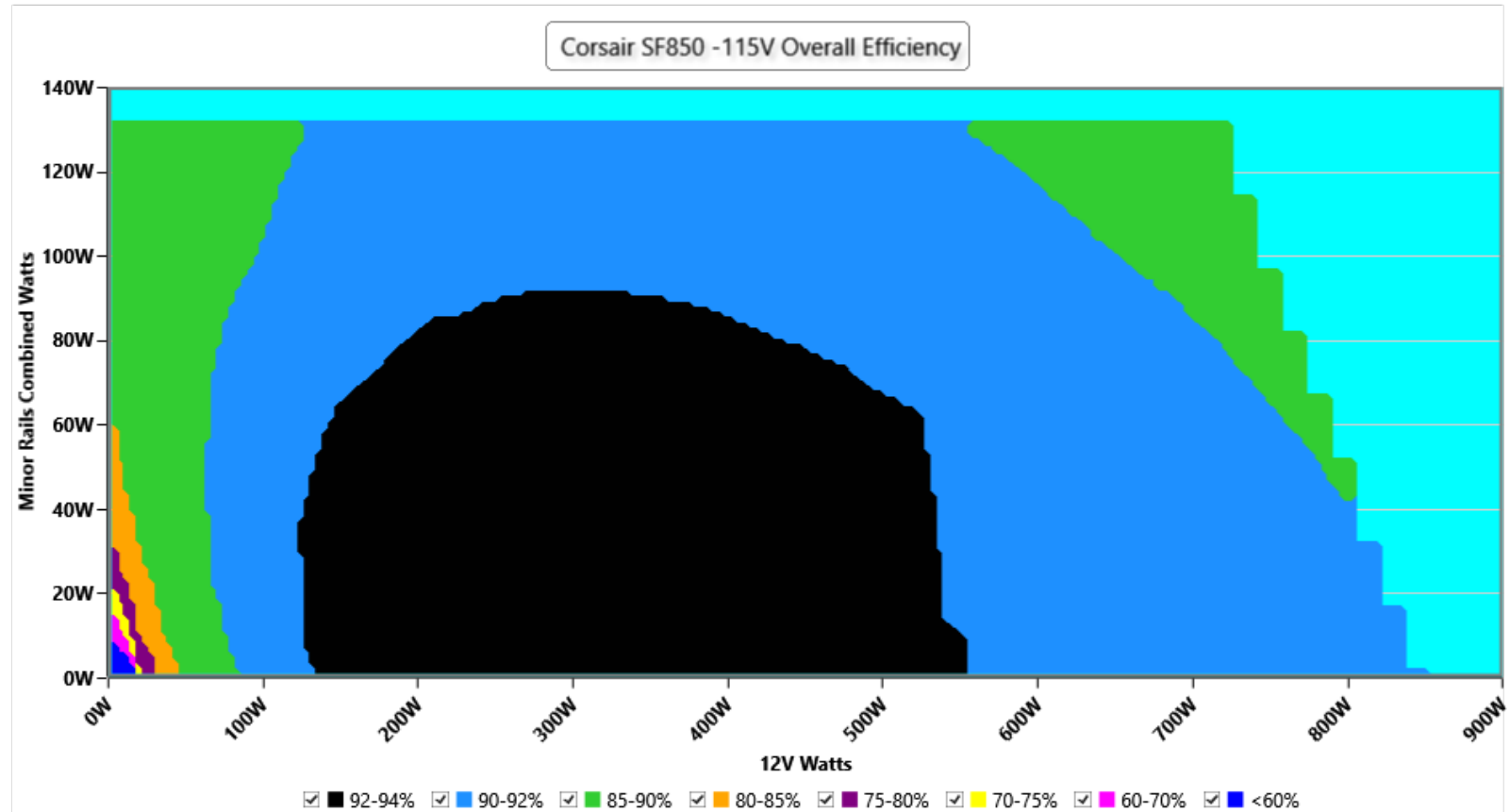
Mains Frequency:	60.00 Hz	59.99 Hz	59.40 Hz	60.01 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.416	1.415	1.340	1.418	1.490	PASS
Mains Voltage THD:	0.13 %	0.09 %	N/A	0.18 %	2.00 %	PASS
Real Power:	0.053 W	0.010 W	N/A	0.073 W	N/A	N/A
Apparent Power:	10.580 W	10.264 W	N/A	10.903 W	N/A	N/A
Power Factor:	0.006	N/A	N/A	N/A	N/A	N/A

230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	229.92 V	229.85 V	227.70 V	230.05 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	49.99 Hz	49.50 Hz	50.01 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.418	1.418	1.340	1.419	1.490	PASS
Mains Voltage THD:	0.15 %	0.13 %	N/A	0.18 %	2.00 %	PASS
Real Power:	0.097 W	0.056 W	N/A	0.285 W	N/A	N/A
Apparent Power:	39.419 W	39.354 W	N/A	39.491 W	N/A	N/A
Power Factor:	0.002	N/A	N/A	N/A	N/A	N/A

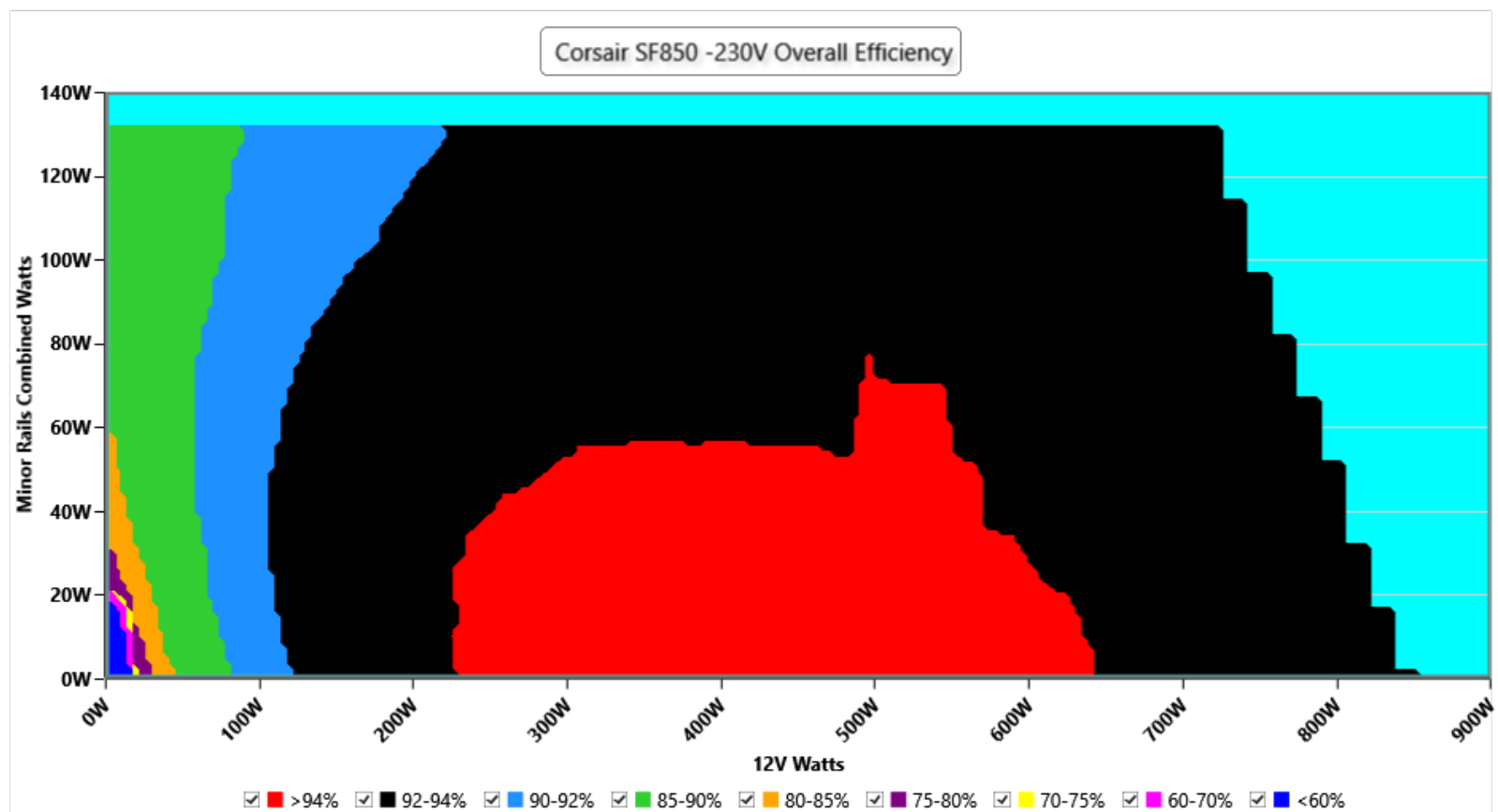
Efficiency Graph

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

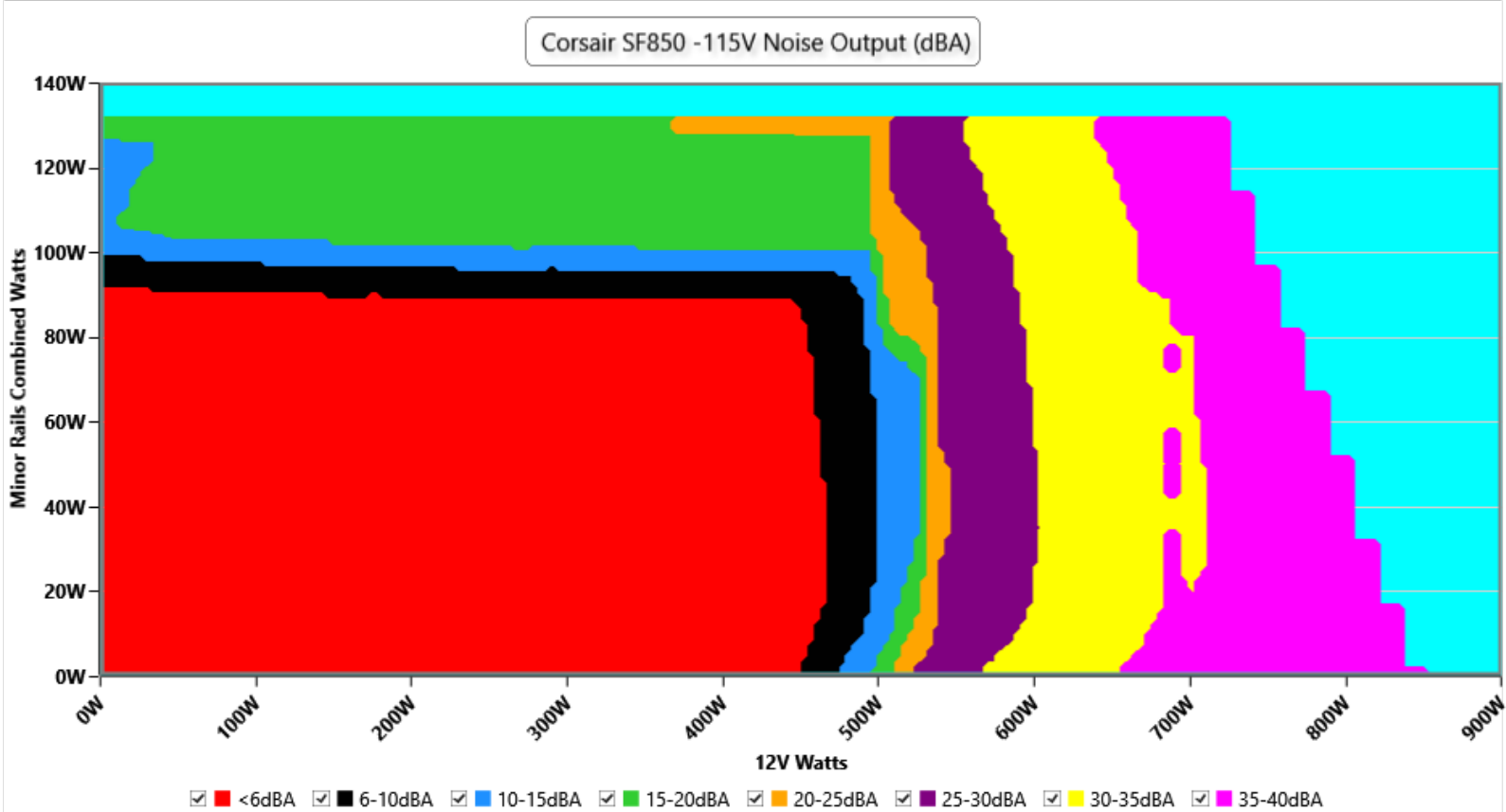


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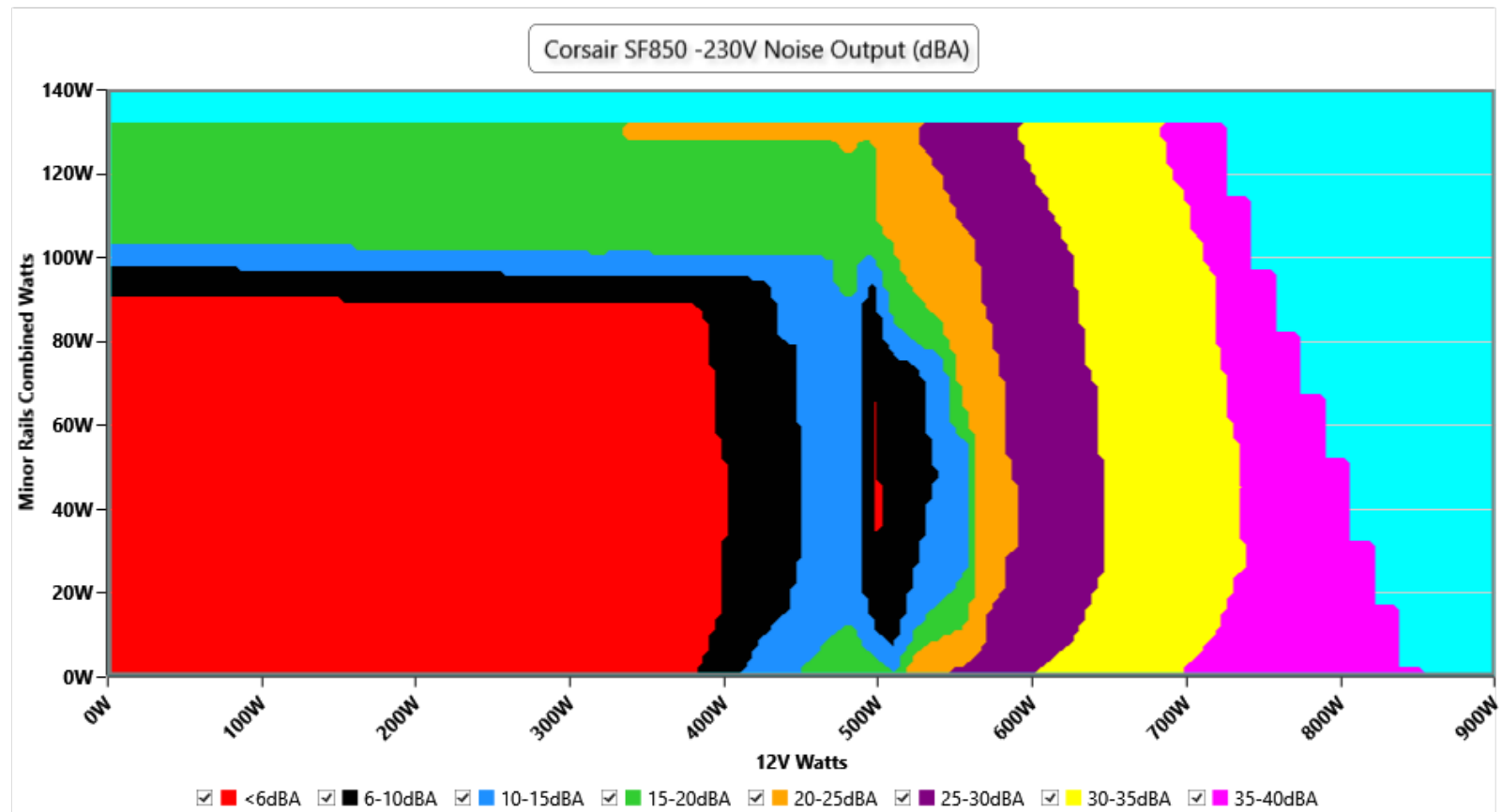
Noise Graph

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



INFO

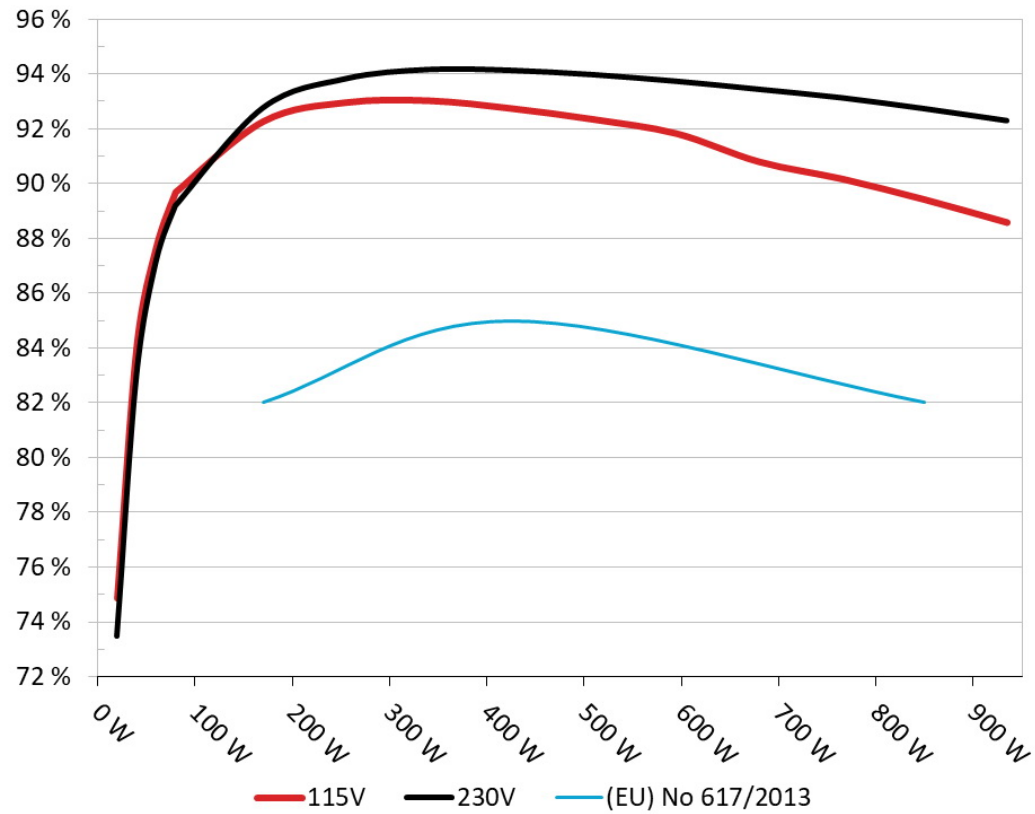
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Indicative Performance

Efficiency under high ambient temperature

Efficiency: Corsair SF850

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



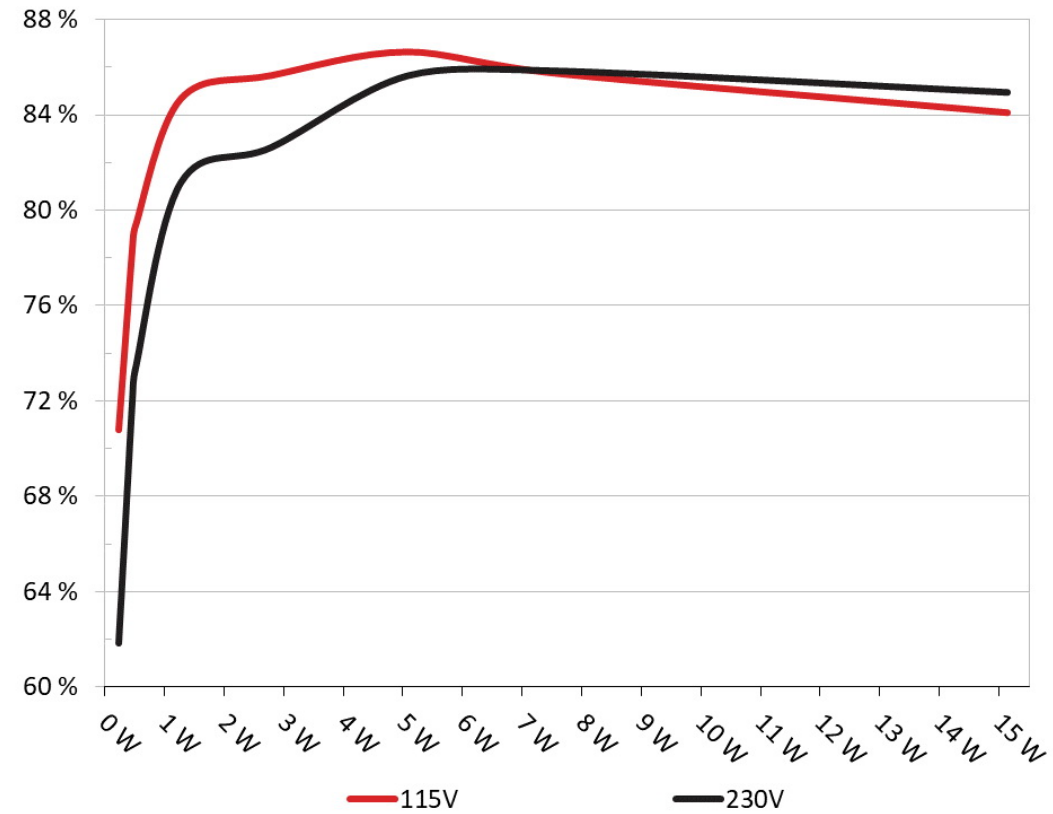
INFO

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 SF850

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	0.229W	70.266%	0.031
	5.092V	0.326W		114.86V
2	0.09A	0.458W	77.915%	0.056
	5.091V	0.588W		114.86V
3	0.55A	2.796W	85.148%	0.253
	5.084V	3.284W		114.85V
4	1A	5.078W	86.139%	0.355
	5.078V	5.895W		114.84V
5	1.5A	7.606W	85.225%	0.404
	5.071V	8.925W		114.85V
6	3A	15.147W	83.584%	0.484
	5.049V	18.121W		114.84V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.229W	61.333%	0.011
	5.092V	0.374W		229.86V
2	0.09A	0.458W	71.562%	0.018
	5.091V	0.641W		229.86V
3	0.55A	2.796W	82.135%	0.093
	5.084V	3.405W		229.86V
4	1A	5.078W	85.13%	0.154
	5.078V	5.965W		229.85V
5	1.5A	7.607W	85.333%	0.212
	5.071V	8.915W		229.85V
6	3A	15.148W	84.435%	0.31
	5.049V	17.941W		229.85V

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%	5.211A	2.001A	1.991A	0.986A	85.001	89.681%	0	<6.0	44.32°C	0.96
	12.167V	4.996V	3.315V	5.071V	94.781				40.06°C	114.83V
20%	11.426A	3.003A	2.988A	1.185A	169.931	92.259%	0	<6.0	45.49°C	0.971
	12.168V	4.994V	3.313V	5.064V	184.19				40.92°C	114.81V
30%	17.987A	3.504A	3.487A	1.385A	254.935	92.947%	0	<6.0	46.39°C	0.977
	12.169V	4.994V	3.312V	5.056V	274.28				41.33°C	114.77V
40%	24.552A	4.006A	3.986A	1.585A	340.021	93.015%	774	<6.0	41.92°C	0.983
	12.171V	4.993V	3.312V	5.048V	365.557				47.47°C	114.76V
50%	30.757A	5.009A	4.986A	1.786A	424.819	92.733%	1128	13.9	42.03°C	0.988
	12.170V	4.991V	3.31V	5.04V	458.112				48.09°C	114.72V
60%	36.942A	6.013A	5.987A	1.987A	509.353	92.333%	1519	24.2	42.94°C	0.99
	12.169V	4.989V	3.308V	5.033V	551.645				49.46°C	114.69V
70%	43.190A	7.018A	6.988A	2.189A	594.661	91.815%	1906	30.9	43.16°C	0.992
	12.169V	4.988V	3.306V	5.025V	647.67				50.24°C	114.66V
80%	49.434A	8.022A	7.99A	2.291A	679.5	90.788%	2656	39.6	43.6°C	0.993
	12.170V	4.986V	3.304V	5.019V	748.452				51.64°C	114.63V
90%	56.077A	8.526A	8.477A	2.394A	764.935	90.161%	3044	42.0	44.76°C	0.994
	12.169V	4.984V	3.303V	5.013V	848.408				53.86°C	114.61V
100%	62.456A	9.029A	8.995A	3.001A	849.747	89.409%	3401	45.3	45.47°C	0.994
	12.169V	4.983V	3.302V	4.999V	950.407				55.48°C	114.57V
110%	68.701A	10.036A	10.091A	3.004A	934.316	88.575%	3731	47.4	46.78°C	0.995
	12.170V	4.982V	3.3V	4.994V	1054.834				57.68°C	114.54V
CL1	0.114A	15.718A	15.637A	0A	131.298	85.635%	1496	23.4	40.02°C	0.974
	12.187V	4.982V	3.3V	5.079V	153.324				45.51°C	114.82V

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	20.048A	0A	0A	101.335	84.719%	2277	34.4	40.3°C	0.975
	12.180V	4.985V	3.312V	5.084V	119.614				47.37°C	114.83V
CL3	0.113A	0A	19.988A	0A	67.383	79.91%	2067	33.3	40.82°C	0.961
	12.175V	4.993V	3.302V	5.084V	84.323				49.85°C	114.84V
CL4	69.845A	0A	0A	0A	849.494	90.178%	2968	42.1	45.57°C	0.994
	12.163V	4.995V	3.313V	5.047V	942.029				56.49°C	114.58V

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%	5.208A	2.001A	1.99A	0.986A	85.003	89.187%	0	<6.0	44.51°C	0.81
	12.173V	4.997V	3.316V	5.071V	95.311				40.23°C	229.85V
20%	11.415A	3.003A	2.987A	1.185A	169.935	92.766%	606	<6.0	40.7°C	0.91
	12.180V	4.995V	3.314V	5.064V	183.186				45.24°C	229.83V
30%	17.977A	3.504A	3.487A	1.385A	254.941	93.831%	728	<6.0	41.03°C	0.938
	12.176V	4.994V	3.313V	5.056V	271.699				46.03°C	229.82V
40%	24.546A	4.006A	3.987A	1.585A	340.027	94.168%	1005	9.6	41.79°C	0.951
	12.174V	4.992V	3.311V	5.049V	361.087				47.36°C	229.8V
50%	30.751A	5.01A	4.986A	1.786A	424.839	94.139%	1410	21.7	42.22°C	0.961
	12.173V	4.99V	3.309V	5.041V	451.289				48.29°C	229.79V
60%	36.935A	6.014A	5.987A	1.987A	509.372	93.98%	1784	28.5	42.78°C	0.965
	12.172V	4.989V	3.308V	5.034V	542				49.37°C	229.78V
70%	43.186A	7.019A	6.989A	2.189A	594.675	93.741%	2117	34.0	43.12°C	0.97
	12.170V	4.987V	3.306V	5.026V	634.38				50.21°C	229.76V
80%	49.438A	8.023A	7.99A	2.291A	679.512	93.448%	2536	38.4	43.95°C	0.974
	12.169V	4.985V	3.304V	5.02V	727.157				52.02°C	229.75V
90%	56.082A	8.527A	8.478A	2.394A	764.948	93.135%	2958	42.1	44.22°C	0.976
	12.169V	4.984V	3.303V	5.014V	821.33				53.29°C	229.74V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
100%	62.461A	9.03A	8.996A	3A	849.759	92.738%	3305	44.6	45.64°C	0.978
	12.168V	4.983V	3.301V	5V	916.303				55.69°C	229.72V
110%	68.705A	10.037A	10.092A	3.003A	934.333	92.301%	3665	46.9	46.95°C	0.98
	12.169V	4.981V	3.299V	4.995V	1012.267				57.89°C	229.71V
CL1	0.115A	15.72A	15.639A	0A	131.298	85.85%	1798	29.2	41.12°C	0.889
	12.192V	4.981V	3.299V	5.08V	152.935				46.64°C	229.84V
CL2	0.114A	20.05A	0A	0A	101.338	84.827%	2283	34.5	40.65°C	0.854
	12.180V	4.985V	3.312V	5.084V	119.463				47.76°C	229.84V
CL3	0.113A	0A	19.989A	0A	67.382	79.447%	2076	33.3	41.82°C	0.78
	12.175V	4.992V	3.302V	5.084V	84.814				50.84°C	229.85V
CL4	69.842A	0A	0A	0A	849.502	93.412%	2921	42.0	45.85°C	0.977
	12.164V	4.995V	3.313V	5.048V	909.413				56.83°C	229.72V

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	1.222A	0.5A	0.497A	0.197A	19.994	74.88%	0	<6.0	39.76°C	0.826
	12.156V	4.997V	3.317V	5.086V	26.702				36.69°C	114.84V
40W	2.688A	0.7A	0.696A	0.295A	39.996	84.056%	0	<6.0	40.41°C	0.914
	12.160V	4.997V	3.317V	5.084V	47.583				37.03°C	114.84V
60W	4.154A	0.9A	0.895A	0.394A	59.996	87.657%	0	<6.0	42.64°C	0.945
	12.162V	4.998V	3.317V	5.081V	68.443				38.86°C	114.83V
80W	5.616A	1.1A	1.094A	0.492A	79.934	89.655%	0	<6.0	43.19°C	0.96
	12.164V	4.998V	3.317V	5.079V	89.157				39.22°C	114.82V

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	1.220A	0.5A	0.497A	0.197A	19.997	73.469%	0	<6.0	39.96°C	0.457
	12.162V	4.997V	3.317V	5.086V	27.222				36.89°C	229.86V
40W	2.687A	0.7A	0.696A	0.295A	39.998	82.964%	0	<6.0	40.98°C	0.628
	12.165V	4.998V	3.317V	5.084V	48.21				37.68°C	229.85V
60W	4.154A	0.9A	0.895A	0.394A	59.998	87.138%	0	<6.0	42.44°C	0.73
	12.166V	4.998V	3.317V	5.081V	68.856				38.92°C	229.85V
80W	5.614A	1.1A	1.094A	0.492A	79.938	89.194%	0	<6.0	42.98°C	0.794
	12.169V	4.998V	3.317V	5.079V	89.623				39.14°C	229.85V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	18.05mV	14.11mV	12.52mV	8.41mV	Pass
20% Load	18.77mV	13.60mV	12.93mV	8.41mV	Pass
30% Load	20.15mV	14.52mV	12.83mV	8.47mV	Pass
40% Load	22.30mV	14.57mV	13.44mV	8.93mV	Pass
50% Load	24.30mV	17.19mV	15.29mV	9.34mV	Pass
60% Load	26.19mV	15.14mV	13.75mV	9.13mV	Pass
70% Load	32.07mV	16.06mV	14.62mV	9.49mV	Pass
80% Load	27.72mV	16.01mV	16.42mV	10.31mV	Pass
90% Load	31.66mV	16.73mV	16.62mV	11.70mV	Pass
100% Load	43.00mV	17.72mV	18.00mV	11.84mV	Pass
110% Load	48.39mV	18.42mV	18.74mV	12.16mV	Pass
Crossload1	29.72mV	17.76mV	15.10mV	24.30mV	Pass
Crossload2	23.02mV	19.71mV	14.83mV	24.73mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	19.74mV	15.96mV	12.93mV	22.88mV	Pass
Crossload4	44.54mV	17.45mV	18.08mV	26.50mV	Pass

The results above are not used in the certification process

230V

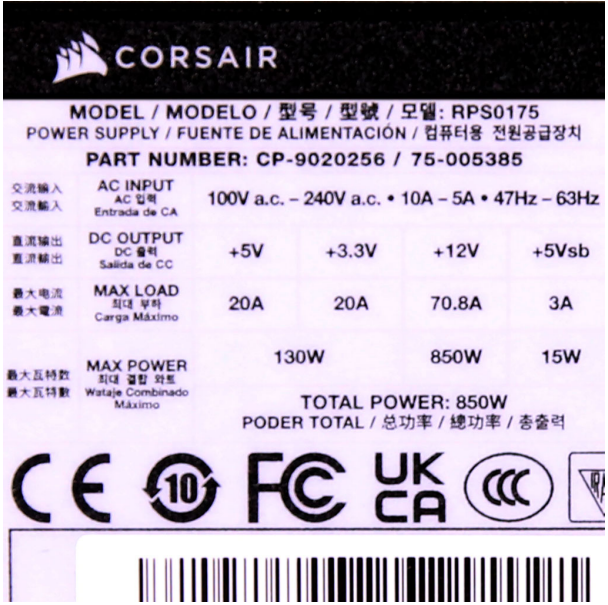
Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	20.97mV	14.52mV	13.49mV	8.57mV	Pass
20% Load	21.89mV	14.62mV	13.13mV	8.77mV	Pass
30% Load	21.79mV	14.58mV	13.44mV	9.03mV	Pass
40% Load	22.71mV	14.68mV	12.93mV	9.39mV	Pass
50% Load	24.81mV	15.14mV	16.88mV	9.23mV	Pass
60% Load	25.42mV	15.09mV	15.85mV	9.49mV	Pass
70% Load	27.16mV	15.76mV	15.03mV	9.75mV	Pass
80% Load	28.33mV	16.78mV	17.03mV	10.06mV	Pass
90% Load	29.26mV	15.34mV	15.65mV	9.90mV	Pass
100% Load	41.96mV	16.73mV	17.93mV	12.02mV	Pass
110% Load	42.75mV	17.15mV	17.89mV	11.93mV	Pass
Crossload1	33.08mV	16.73mV	14.35mV	23.38mV	Pass
Crossload2	22.40mV	18.12mV	12.57mV	22.68mV	Pass
Crossload3	23.94mV	15.81mV	14.57mV	22.78mV	Pass
Crossload4	40.82mV	16.81mV	17.51mV	26.41mV	Pass

The results above are not used in the certification process

Corsair SF850 Platinum (ATX v3.1)



Top side



Power specifications label

Cybenetics

ETA

LAMBDA

SAFE

DELTA

PHI

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