

Anex

Corsair CX650

Lab ID#: CR65001684
Receipt Date: Jul 9, 2020
Test Date: Jul 14, 2020

Report: 20PS1684A

Report Date: Jul 16, 2020

DUT INFORMATION

Brand	Corsair
Manufacturer (OEM)	Great Wall
Series	CX
Model Number	RPS0065
Serial Number	19214855000036630128
DUT Notes	CP-9020122

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	47-63
Rated Power (W)	650
Type	ATX12V
Cooling	120mm Sleeve Bearing Fan (D125M-12)
Semi-Passive Operation	X
Cable Design	Fixed cables

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	25	25	54	3	0.8
	Watts	130		648	15	9.6
Total Max. Power (W)		650				

CABLES AND CONNECTORS

Native Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Caps
ATX connector 20+4 pin (600mm)	1	1	18-20AWG	No
4+4 pin EPS12V (680mm)	1	1	18AWG	No
6+2 pin PCIe (600mm)	2	2	18AWG	No
SATA (520mm+120mm)	1	2	18AWG	No
SATA (400mm+120mm+120mm)	1	3	18AWG	No
4-pin Molex (400mm+120mm+120mm+120mm)	1	4	18AWG	No

Modular Cables

AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-
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General Data	-
Manufacturer (OEM)	Great Wall
PCB Type	Single Sided
Primary Side	-
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor SCK-028
Bridge Rectifier(s)	2x Shindengen U15K80R (800V, 15A @ 101°C)
APFC MOSFETs	2x Vishay SiHG30N60E (600V, 18A @ 100°C, Rds(on): 0.125Ohm)
APFC Boost Diode	1x WeEn BYC15-600 (600V, 15A @ 98°C)
Bulk Cap(s)	2x Rubycon (450V, 180uF each or 360uF combined, 2,000h @ 105°C, MXH)
Main Switchers	2x STMicroelectronics STP24N60DM2 (650V, 11A @ 100°C, Rds(on): 0.200Ohm)
APFC Controller	Champion CM6500UNX & CM03AX Green PFC controller
Resonant Controller	Champion CM6901X
Topology	Primary side: APFC, Half-Bridge & LLC Resonant Converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	-
+12V MOSFETs	4x Advanced Power AP9990GP (60V, 70A @ 100°C, Rds(on): 6mOhm)
5V & 3.3V	DC-DC Converters: 6x Advanced Power AP0403GH (30V, 50A @ 100°C, Rds(on): 4.5mOhm) PWM Controllers: ANPEC APW7159C
Filtering Capacitors	Electrolytic: 2x Elite (2-5,000h @ 105°C, ED), 4x Elite (3-5,000h @ 105°C, EJ), 2x Elite (2-5,000h @ 105°C, EK), 1x Teapo (2-6,000h @ 105°C, SY), 1x Teapo (2,000h @ 105°C, TH), 2x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 1x Rubycon (3-6,000h @ 105°C, YXG) Polymer: 4x Elite, 2x United Chemi-Con
Supervisor IC	Sitronix ST9S429-PG14 (OVP, UVP, OCP, SCP, PG)
Fan Model	Yate Loon D12SM-12 (120mm, 12V, 0.30A, Rifle Bearing Fan)
5VSB Circuit	-
Rectifier(s)	1x A-Power AP04N60H-HF FET (600V, 2.2A @ 100°C, Rds(on): 2.5Ohm) & 1x PFC PFR20L45CT SBR (45V, 20A)
Standby PWM Controller	SI8016HSP8

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RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

115V

Average Efficiency	86.880%
Efficiency With 10W (≤500W) or 2% (>500W)	63.102
Average Efficiency 5VSB	80.214%
Standby Power Consumption (W)	0.0581732
Average PF	0.990
Avg Noise Output	32.84 dB(A)
Efficiency Rating (ETA)	SILVER
Noise Rating (LAMBDA)	S++

230V

Average Efficiency	89.176%
Average Efficiency 5VSB	79.650%
Standby Power Consumption (W)	0.0841921
Average PF	0.958
Avg Noise Output	32.81 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	S++

TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Keysight AC6804B
Power Analyzers	N4L PPA1530 x2
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2
Tachometer	UNI-T UT372 x2
Digital Multimeter	Keysight U1273AX, Fluke 289, Keithley 2015 - THD
UPS	CyberPower OLS3000E 3kVA x2

HOLD-UP TIME & POWER OK SIGNAL (230V)

Hold-Up Time (ms)	8.3
AC Loss to PWR_OK Hold Up Time (ms)	6.6
PWR_OK Inactive to DC Loss Delay (ms)	1.7

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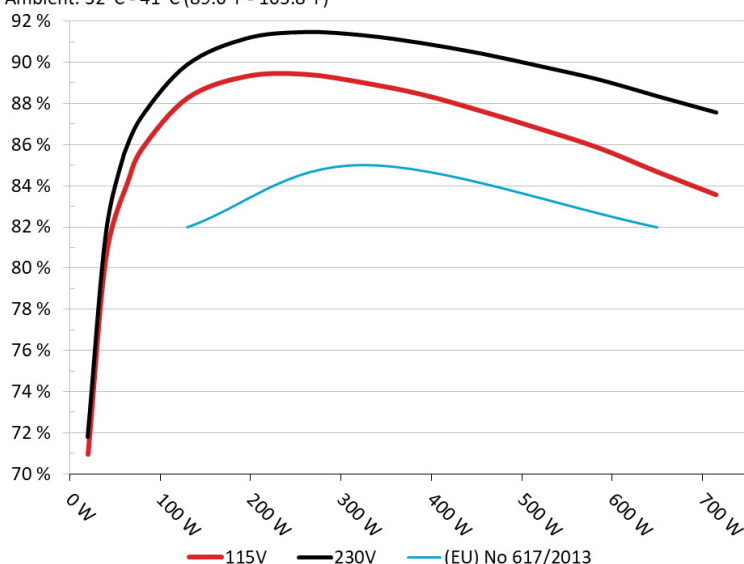
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Corsair CX650

Ambient: 32°C - 41°C (89.6°F - 105.8°F)



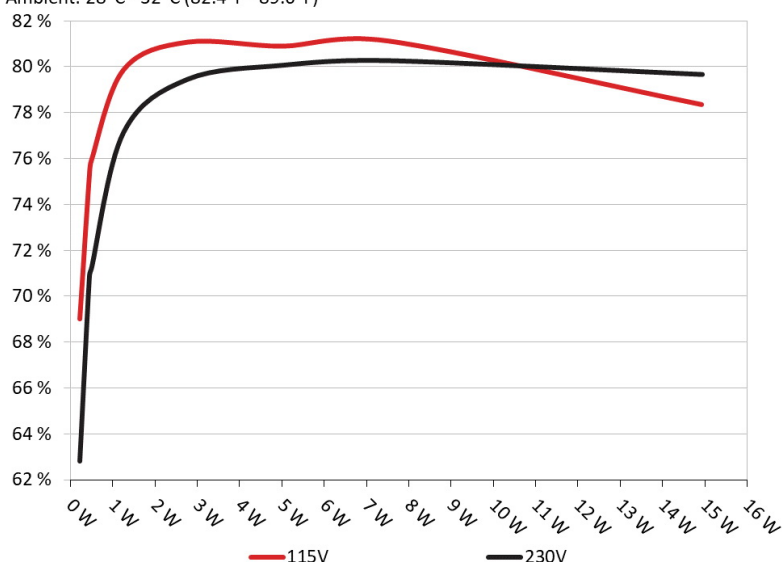
INFO

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 CX650

Ambient: 28°C - 32°C (82.4°F - 89.6°F)



INFO

This graph depicts the efficiency levels of the 5VSB rail with 115V and 230V input

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5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.227	68.997%	0.039
	5.051V	0.329		115.13V
2	0.090A	0.455	75.331%	0.069
	5.050V	0.604		115.12V
3	0.550A	2.772	81.076%	0.271
	5.039V	3.419		115.11V
4	1.000A	5.028	80.901%	0.346
	5.027V	6.215		115.11V
5	1.500A	7.523	81.128%	0.386
	5.015V	9.273		115.11V
6	3.000A	14.931	78.353%	0.444
	4.977V	19.056		115.12V

5VSB EFFICIENCY -230V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.228	62.810%	0.013
	5.051V	0.363		230.26V
2	0.090A	0.455	70.872%	0.022
	5.050V	0.642		230.26V
3	0.550A	2.772	79.450%	0.112
	5.039V	3.489		230.26V
4	1.000A	5.028	80.064%	0.180
	5.027V	6.280		230.26V
5	1.500A	7.523	80.262%	0.234
	5.015V	9.373		230.26V
6	3.001A	14.932	79.663%	0.320
	4.976V	18.744		230.26V

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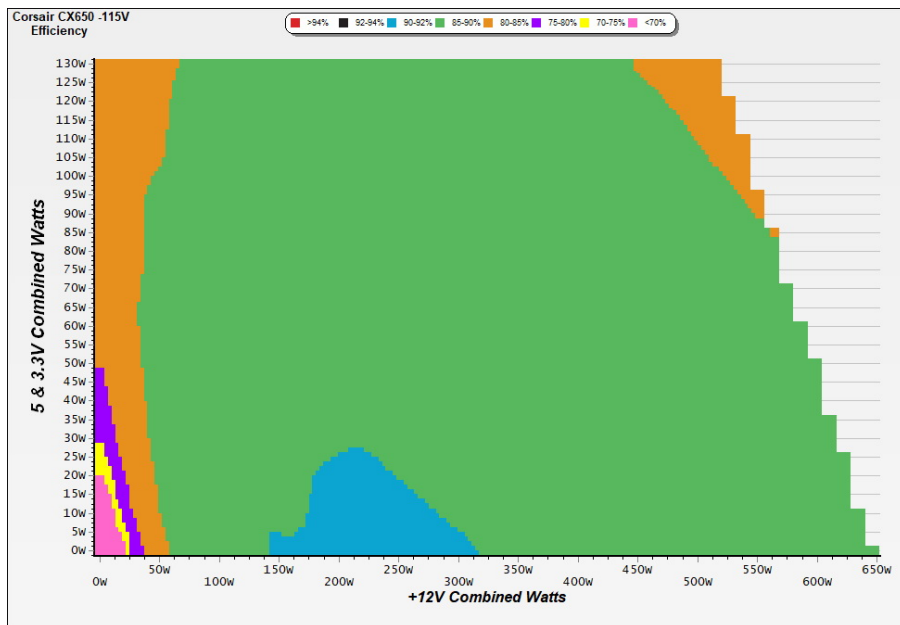
115V

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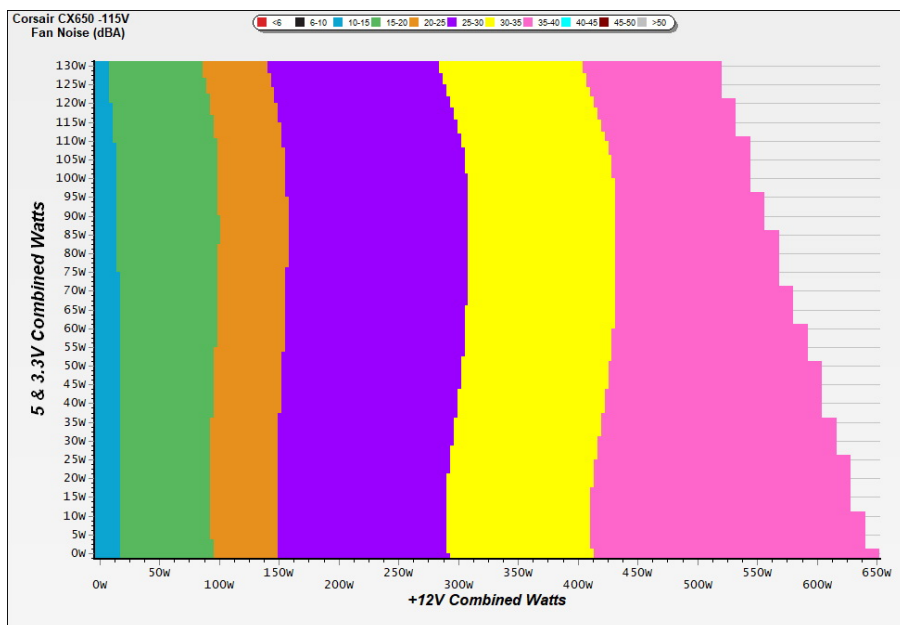
EFFICIENCY GRAPH 115V



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

NOISE GRAPH 115V



INFO

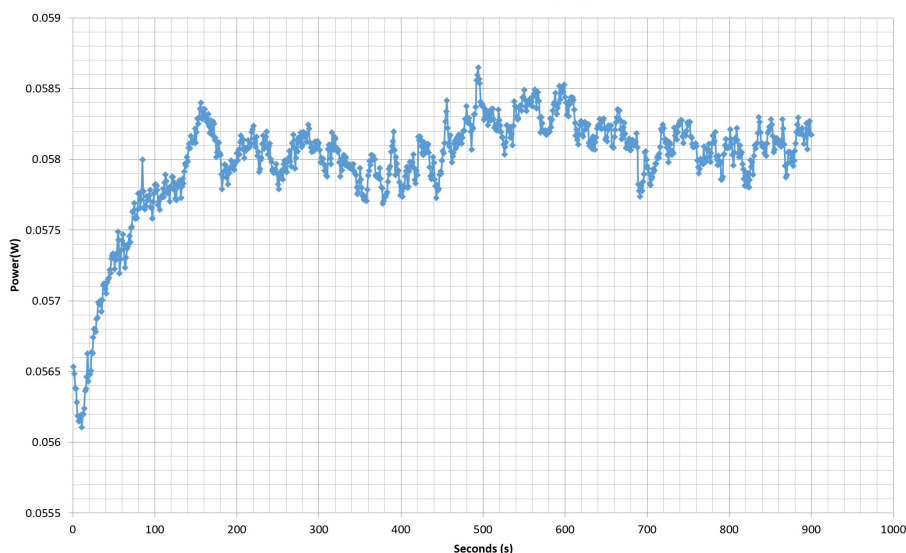
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -115V

Power - 19214855000036630128 - 09/07/2020 - 21:15



INFO

This graph is generated by the PPA Standby Power Analysis software which takes full control of the power analyzer during the whole procedure. This application features all of the EN50564 & IEC62301 test limits for standby power software testing

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10-110% 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	3.608A	1.992A	1.992A	0.996A	64.975	84.250%	1024	22.4	33.86°C	0.972
	12.023V	5.018V	3.313V	5.021V	77.122				37.24°C	115.14V
2	8.253A	2.992A	2.991A	1.198A	130.052	88.250%	1106	25.1	34.90°C	0.987
	12.014V	5.014V	3.309V	5.010V	147.367				38.85°C	115.13V
3	13.244A	3.493A	3.492A	1.400A	195.059	89.301%	1208	27.8	35.33°C	0.992
	12.006V	5.012V	3.306V	5.000V	218.429				40.69°C	115.13V
4	18.245A	3.993A	3.996A	1.604A	260.071	89.400%	1258	29.0	35.71°C	0.992
	11.996V	5.009V	3.303V	4.990V	290.908				42.25°C	115.12V
5	22.908A	4.996A	5.002A	1.808A	325.112	88.988%	1357	31.2	36.07°C	0.993
	11.987V	5.005V	3.300V	4.979V	365.345				43.08°C	115.12V
6	27.533A	6.000A	6.007A	2.000A	389.564	88.420%	1471	34.1	36.63°C	0.993
	11.979V	5.002V	3.296V	4.968V	440.582				44.79°C	115.12V
7	32.230A	7.003A	7.017A	2.220A	454.935	87.620%	1609	36.4	37.20°C	0.993
	11.971V	4.998V	3.293V	4.956V	519.215				46.58°C	115.11V
8	36.936A	8.002A	8.027A	2.428A	520.199	86.749%	1755	39.2	37.93°C	0.994
	11.962V	4.994V	3.289V	4.945V	599.657				48.27°C	115.11V
9	42.048A	8.517A	8.521A	2.431A	585.157	85.829%	1808	39.5	38.77°C	0.994
	11.954V	4.991V	3.286V	4.939V	681.772				50.21°C	115.10V
10	46.900A	9.025A	9.046A	3.052A	649.986	84.665%	1810	39.6	39.20°C	0.995
	11.946V	4.988V	3.283V	4.916V	767.715				51.25°C	115.10V
11	52.355A	9.030A	9.055A	3.056A	714.804	83.560%	1813	39.7	40.71°C	0.995
	11.939V	4.986V	3.281V	4.910V	855.438				53.58°C	115.09V
CL1	0.102A	16.005A	16.000A	0.000A	133.938	81.807%	1532	35.3	36.65°C	0.989
	12.009V	4.996V	3.297V	5.025V	163.725				43.57°C	115.13V
CL2	54.017A	1.000A	0.999A	1.000A	658.981	85.327%	1812	39.6	39.93°C	0.995
	11.952V	5.001V	3.294V	4.978V	772.300				51.77°C	115.10V

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20-80W LOAD TESTS 115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.236A	0.498A	0.498A	0.198A	20.003	70.965%	862	16.3	0.860
	12.016V	5.022V	3.316V	5.046V	28.187				115.14V
2	2.470A	0.994A	0.996A	0.397A	39.995	80.578%	910	18.2	0.943
	12.025V	5.021V	3.315V	5.039V	49.635				115.14V
3	3.708A	1.493A	1.494A	0.596A	60.027	84.311%	991	21.6	0.967
	12.024V	5.019V	3.313V	5.032V	71.197				115.15V
4	4.939A	1.994A	1.993A	0.796A	79.977	85.799%	1028	22.5	0.977
	12.021V	5.018V	3.312V	5.025V	93.214				115.14V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	20.50mV	9.20mV	9.70mV	8.70mV	Pass
20% Load	20.10mV	10.00mV	10.50mV	9.80mV	Pass
30% Load	21.00mV	10.40mV	11.00mV	10.50mV	Pass
40% Load	20.50mV	10.80mV	11.00mV	11.80mV	Pass
50% Load	22.00mV	11.00mV	12.00mV	13.00mV	Pass
60% Load	25.80mV	11.80mV	13.30mV	14.80mV	Pass
70% Load	29.00mV	12.90mV	12.90mV	17.50mV	Pass
80% Load	31.20mV	13.80mV	14.70mV	17.10mV	Pass
90% Load	34.40mV	14.50mV	15.20mV	19.20mV	Pass
100% Load	48.60mV	15.80mV	16.60mV	20.30mV	Pass
110% Load	49.60mV	16.40mV	17.30mV	21.80mV	Pass
Crossload1	28.40mV	11.90mV	15.40mV	13.10mV	Pass
Crossload2	48.90mV	15.10mV	15.40mV	20.40mV	Pass

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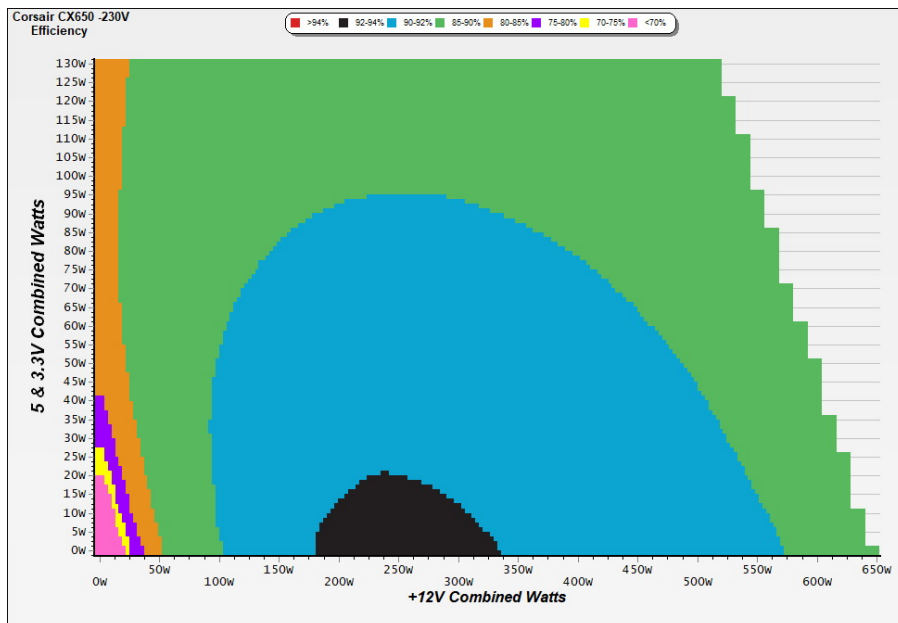
230V

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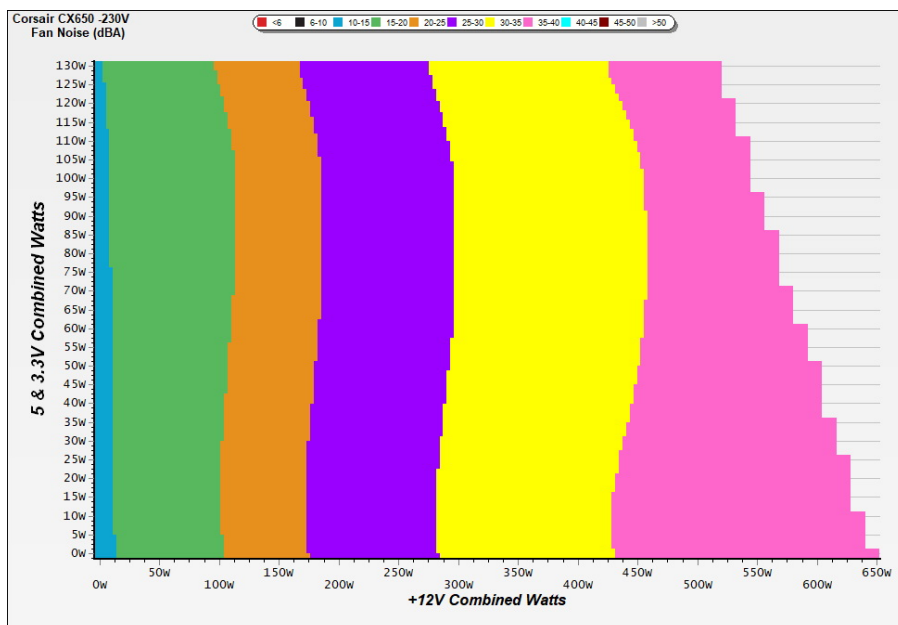
EFFICIENCY GRAPH 230V



INFO

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NOISE GRAPH 230V



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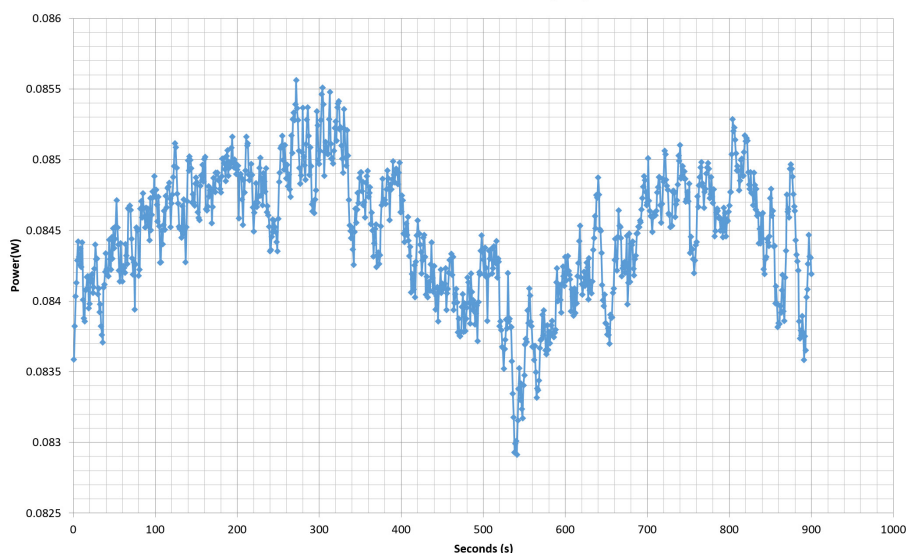
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VAMPIRE POWER -230V

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10-110% LOAD TESTS 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	3.608A	1.993A	1.992A	0.996A	64.972	85.537%	1005	21.7	34.51°C	0.809
	12.021V	5.018V	3.313V	5.021V	75.958				37.70°C	230.26V
2	8.255A	2.990A	2.992A	1.198A	130.045	89.886%	1068	23.6	34.97°C	0.920
	12.011V	5.014V	3.309V	5.010V	144.677				38.68°C	230.26V
3	13.248A	3.493A	3.493A	1.400A	195.054	91.155%	1150	26.3	35.38°C	0.954
	12.002V	5.011V	3.306V	5.000V	213.980				39.55°C	230.26V
4	18.247A	3.994A	3.997A	1.604A	260.064	91.467%	1239	28.6	35.50°C	0.968
	11.994V	5.009V	3.303V	4.989V	284.325				40.60°C	230.26V
5	22.909A	4.996A	5.004A	1.808A	325.106	91.307%	1383	32.0	36.25°C	0.976
	11.986V	5.005V	3.300V	4.978V	356.057				42.37°C	230.26V
6	27.536A	5.999A	6.008A	2.000A	389.542	90.928%	1477	34.4	36.72°C	0.980
	11.977V	5.002V	3.296V	4.967V	428.408				43.70°C	230.26V
7	32.237A	7.005A	7.015A	2.220A	454.927	90.424%	1589	36.1	37.04°C	0.983
	11.968V	4.998V	3.293V	4.956V	503.107				45.23°C	230.26V
8	36.944A	8.002A	8.029A	2.428A	520.189	89.808%	1740	38.7	37.66°C	0.985
	11.959V	4.994V	3.289V	4.945V	579.224				46.88°C	230.26V
9	42.058A	8.518A	8.521A	2.431A	585.156	89.156%	1812	39.6	38.30°C	0.986
	11.951V	4.991V	3.286V	4.939V	656.331				48.61°C	230.25V
10	46.914A	9.025A	9.048A	3.052A	649.974	88.345%	1815	39.7	39.15°C	0.988
	11.942V	4.988V	3.283V	4.917V	735.725				50.28°C	230.25V
11	52.371A	9.030A	9.055A	3.056A	714.787	87.557%	1815	39.7	40.60°C	0.989
	11.935V	4.986V	3.281V	4.910V	816.363				53.10°C	230.26V
CL1	0.101A	16.005A	16.000A	0.000A	133.926	83.235%	1503	34.6	36.97°C	0.933
	12.008V	4.996V	3.297V	5.025V	160.901				42.79°C	230.26V
CL2	54.021A	1.000A	1.002A	1.000A	658.724	89.017%	1813	39.7	39.63°C	0.988
	11.948V	5.001V	3.295V	4.978V	739.996				50.52°C	230.25V

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20-80W LOAD TESTS 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.236A	0.498A	0.498A	0.198A	20.001	71.786%	868	16.7	0.503
	12.014V	5.023V	3.316V	5.045V	27.862				230.26V
2	2.469A	0.995A	0.997A	0.397A	39.991	81.641%	932	19.6	0.682
	12.025V	5.021V	3.315V	5.039V	48.984				230.26V
3	3.708A	1.493A	1.493A	0.596A	60.022	85.428%	994	21.6	0.789
	12.023V	5.019V	3.314V	5.032V	70.260				230.26V
4	4.940A	1.993A	1.992A	0.796A	79.972	87.375%	1010	21.8	0.849
	12.019V	5.018V	3.312V	5.025V	91.527				230.26V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	19.50mV	8.80mV	10.20mV	8.90mV	Pass
20% Load	20.30mV	8.90mV	9.80mV	9.40mV	Pass
30% Load	18.20mV	9.80mV	10.10mV	10.50mV	Pass
40% Load	18.80mV	10.30mV	11.20mV	11.10mV	Pass
50% Load	20.40mV	10.40mV	11.80mV	12.30mV	Pass
60% Load	23.20mV	10.70mV	12.80mV	12.70mV	Pass
70% Load	26.60mV	11.40mV	12.90mV	14.80mV	Pass
80% Load	29.00mV	13.10mV	14.10mV	15.10mV	Pass
90% Load	33.30mV	14.00mV	14.60mV	16.40mV	Pass
100% Load	45.60mV	16.90mV	16.80mV	17.50mV	Pass
110% Load	48.20mV	16.50mV	17.50mV	18.80mV	Pass
Crossload1	27.70mV	11.50mV	15.10mV	13.40mV	Pass
Crossload2	46.00mV	14.60mV	15.80mV	18.30mV	Pass

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Anex

Corsair CX650



Top side

MODEL 型号 / 型號 : RPS0065 POWER SUPPLY / 전원 공급 장치					
PART NUMBER: CP-9020122 / 75-002453					
交流電輸入 AC INPUT	100V - 240V • 10A • 47Hz - 63Hz				
直流電輸出 DC OUTPUT	+3.3V	+5V	+12V	-12V	+5Vsb
最大電流 MAX LOAD	25A	25A	54A	0.8A	3A
最大允許功率 MAXIMUM COMBINED WATTAGE	130W	648W	9.6W	15W	
總功率 / 總功率 / 총 전력 TOTAL POWER : 650W					
					

Power specifications label

CERTIFICATIONS 115V



CERTIFICATIONS 230V



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