Anex

Corsair CV650

Lab ID#: CR19650133
Receipt Date: Oct 29, 2019
Test Date: Nov 1, 2019

Report: 19PS886A
Report Date: Nov 1, 2019

DUT INFORMATION

Brand	Corsair
Manufacturer (OEM)	HEC
Series	CV
Model Number	
Serial Number	C65980681
DUT Notes	

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 (D12SH-12)
Semi-Passive Operation	✗
Cable Design	Fixed cables

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	24	20	52	3	0.3
	Watts	130		624	15	3.6
Total Max. Power (W)		650				

CABLES AND CONNECTORS

Captive Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (570mm)	1	1	18-20AWG	No
4+4 pin EPS12V (630mm)	1	1	18AWG	No
6+2 pin PCIe (570mm+110mm)	1	2	18AWG	No
SATA (490mm+120mm+120mm)	2	6	18AWG	No
SATA (480mm) / 4-pin Molex (+120mm+120mm) / FDD (+120mm)	1	1 / 2 / 1	18-20AWG	No
AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

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General Data	-
Manufacturer (OEM)	HEC
PCB Type	Single Sided
Primary Side	**-**
Transient Filter	4x Y caps, 3x X caps, 2x CM chokes, 1x MOV, 1x Discharge IC
Inrush Protection	NTC Thermistor
Bridge Rectifier(s)	2x GBU10K (800V, 10A @ 100°C)
APFC MOSFETs	2x Infineon IPAW60R180P7S (650V, 11A @ 100°C, 0.18Ohm)
APFC Boost Diode	1x Hestia H2S060H004 (600V, 4A @ 157°C)
Hold-up Cap(s)	1x Teapo (400V, 330uF, 2,000h @ 105°C, LG)
Main Switchers	2x Champion GPT22N50SYX
Combo APFC/PWM Controller	Champion CM6800TX
APFC Disconnect IC	Power Integrations SEN012DG
Topology	Primary side: Double Forward Secondary side: Passive Rectification & DC-DC converters
Secondary Side	**-**
+12V SBRs	4x PFC PFR40V60CT SBR (60V, 40A)
5V & 3.3V MOSFETs	5V: 4x Potens Semiconductor PDD3906 (30V, 51A @ 100°C, 6mOhm) 3.3V: 4x Potens Semiconductor PDD3906 (30V, 51A @ 100°C, 6mOhm) PWM Controller: 2x ANPEC APW7164
Filtering Capacitors	Electrolytic: 11x Teapo (1-3,000h @ 105°C, SC), 2x Elite (2-5,000h @ 105°C, ED), 2x Elite (1,000h @ 105°C, PS) Polymer: 2x Elite
Supervisor IC	Weltrend WT7527 (OCP, OVP, UVP, PG)
Fan Model	Yate Loon D12SH-12 (120mm, 12V, 0.30A, Sleeve Bearing Fan)
5VSB Circuit	**-**
Rectifier	1x PFC PFR10L60CT SBR (60V, 10A)
Standby PWM Controller	Power Integrations TNY289PG

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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	83.932%
Efficiency With 10W (≤500W) or 2% (>500W)	55.120
Average Efficiency 5VSB	79.778%
Standby Power Consumption (W)	0.0441618
Average PF	0.988
Avg Noise Output	31.67 dB(A)
Efficiency Rating (ETA)	BRONZE
Noise Rating (LAMBDA)	S++

230V

Average Efficiency	86.313%
Average Efficiency 5VSB	79.241%
Standby Power Consumption (W)	0.0951518
Average PF	0.958
Avg Noise Output	31.48 dB(A)
Efficiency Rating (ETA)	BRONZE
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)	14.3
AC Loss to PWR_OK Hold Up Time (ms)	12.1
PWR_OK Inactive to DC Loss Delay (ms)	2.2

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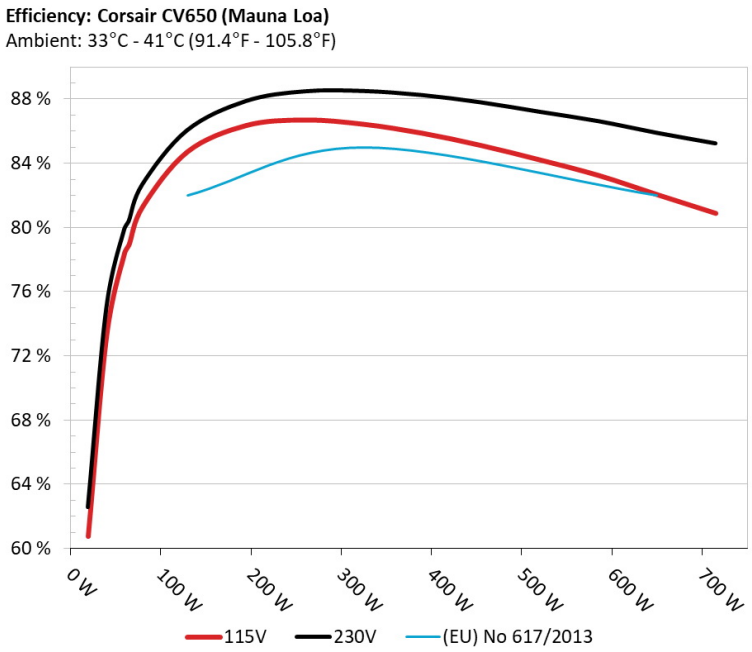
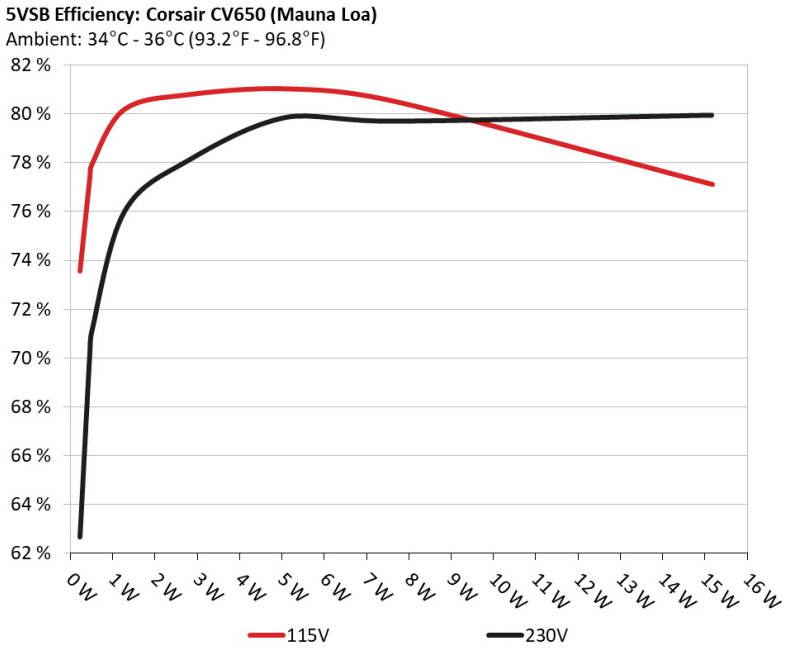
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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



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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	0.231	73.567%	0.038
	5.113V	0.314		115.15V
2	0.090A	0.461	77.349%	0.071
	5.112V	0.596		115.15V
3	0.550A	2.808	80.783%	0.280
	5.103V	3.476		115.15V
4	1.000A	5.096	81.017%	0.358
	5.094V	6.290		115.16V
5	1.500A	7.629	80.517%	0.400
	5.085V	9.475		115.15V
6	3.000A	15.173	77.110%	0.457
	5.057V	19.677		115.15V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	62.670%	0.013
	5.112V	0.367		230.39V
2	0.090A	0.460	70.122%	0.024
	5.111V	0.656		230.39V
3	0.550A	2.807	78.102%	0.121
	5.103V	3.594		230.37V
4	1.000A	5.095	79.846%	0.191
	5.094V	6.381		230.38V
5	1.500A	7.629	79.693%	0.248
	5.085V	9.573		230.38V
6	3.000A	15.169	79.938%	0.336
	5.056V	18.976		230.39V

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115V

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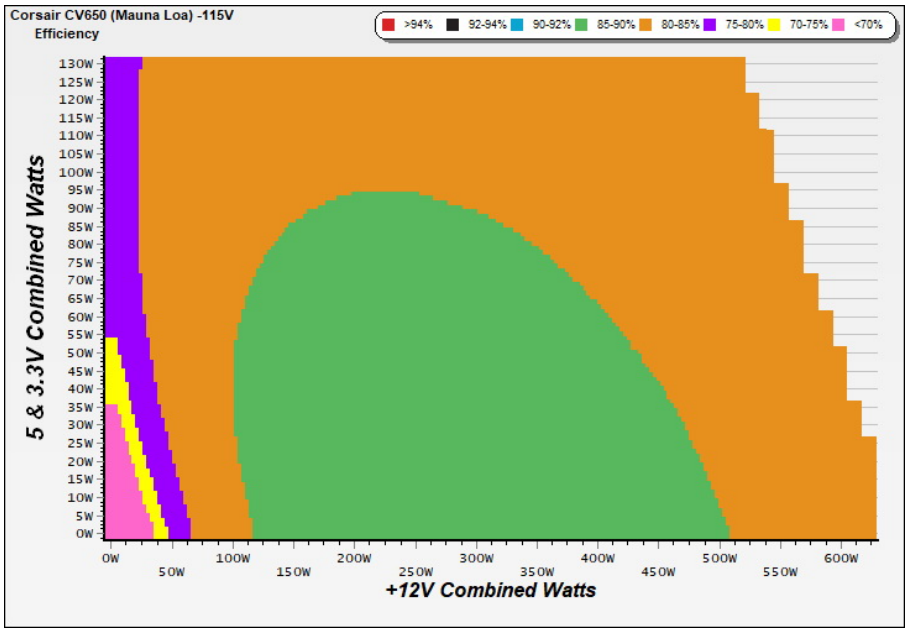
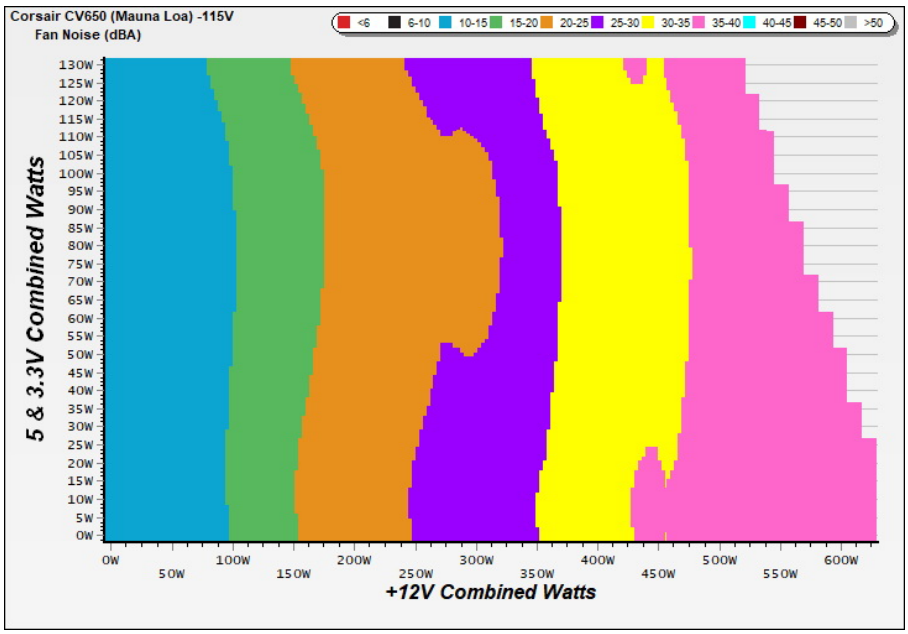
EFFICIENCY GRAPH 115V



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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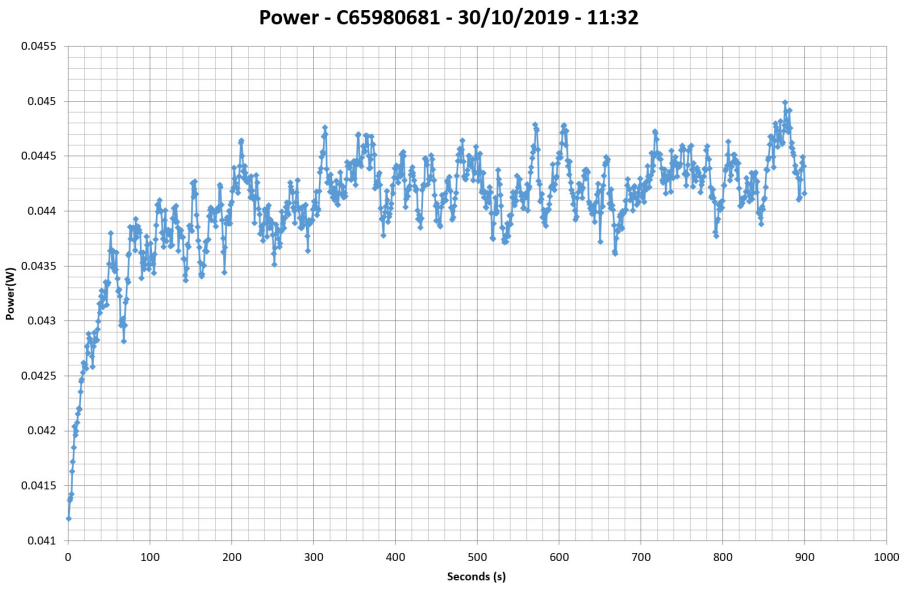
VAMPIRE POWER -115V



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	3.543A	1.968A	1.973A	0.984A	64.835	78.921%	695	16.6	35.49°C	0.970
	12.206V	5.078V	3.342V	5.083V	82.152				39.50°C	115.14V
2	8.080A	2.964A	2.968A	1.184A	129.354	84.693%	723	16.9	35.81°C	0.975
	12.184V	5.063V	3.336V	5.067V	152.732				40.17°C	115.14V
3	13.037A	3.466A	3.453A	1.386A	194.466	86.331%	821	20.3	36.64°C	0.982
	12.155V	5.049V	3.330V	5.053V	225.255				41.39°C	115.13V
4	18.026A	3.974A	3.969A	1.588A	259.704	86.675%	974	23.8	36.77°C	0.988
	12.121V	5.036V	3.325V	5.038V	299.630				42.47°C	115.13V
5	22.700A	4.985A	4.972A	1.793A	325.008	86.406%	1148	28.5	37.41°C	0.991
	12.092V	5.019V	3.318V	5.021V	376.142				43.72°C	115.13V
6	27.322A	5.997A	5.979A	1.999A	389.532	85.853%	1316	32.6	38.15°C	0.993
	12.068V	5.003V	3.312V	5.005V	453.721				45.20°C	115.13V
7	32.027A	7.020A	6.990A	2.206A	454.865	85.088%	1474	35.1	38.59°C	0.994
	12.045V	4.985V	3.305V	4.988V	534.579				46.63°C	115.12V
8	36.731A	8.054A	8.005A	2.415A	520.172	84.185%	1628	37.8	39.01°C	0.995
	12.027V	4.967V	3.298V	4.970V	617.888				47.73°C	115.12V
9	41.873A	8.581A	8.504A	2.421A	585.109	83.223%	1798	40.3	39.45°C	0.995
	12.003V	4.954V	3.292V	4.957V	703.058				48.81°C	115.13V
10	46.749A	9.115A	9.039A	3.042A	649.962	82.026%	1925	42.7	40.15°C	0.995
	11.984V	4.938V	3.286V	4.934V	792.390				50.26°C	115.15V
11	52.224A	9.134A	9.056A	3.049A	714.789	80.864%	2000	42.8	40.57°C	0.995
	11.969V	4.927V	3.281V	4.921V	883.935				51.13°C	115.13V
CL1	0.151A	16.000A	16.000A	0.000A	134.511	78.260%	1043	28.4	38.52°C	0.977
	12.176V	4.975V	3.317V	5.052V	171.878				44.80°C	115.16V
CL2	52.020A	1.002A	0.999A	1.000A	637.083	83.071%	1919	42.6	40.91°C	0.996
	11.991V	5.004V	3.304V	4.997V	766.910				50.83°C	115.15V

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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	1.182A	0.491A	0.477A	0.196A	19.545	60.750%	689	16.2	0.924
	12.223V	5.093V	3.347V	5.107V	32.173				115.14V
2	2.427A	0.979A	0.986A	0.392A	39.920	73.249%	694	16.5	0.949
	12.213V	5.088V	3.345V	5.100V	54.499				115.14V
3	3.606A	1.475A	1.465A	0.589A	59.411	78.310%	706	16.8	0.968
	12.207V	5.082V	3.343V	5.092V	75.866				115.14V
4	4.856A	1.970A	1.973A	0.787A	79.841	81.274%	697	16.6	0.972
	12.201V	5.076V	3.341V	5.084V	98.237				115.14V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	10.4 mV	15.8 mV	14.8 mV	11.7 mV	Pass
20% Load	15.4 mV	17.1 mV	15.8 mV	13.6 mV	Pass
30% Load	16.5 mV	18.4 mV	17.5 mV	13.8 mV	Pass
40% Load	20.2 mV	19.7 mV	17.9 mV	13.5 mV	Pass
50% Load	23.6 mV	21.0 mV	18.3 mV	14.8 mV	Pass
60% Load	24.3 mV	23.0 mV	20.1 mV	15.7 mV	Pass
70% Load	27.1 mV	24.0 mV	21.2 mV	18.3 mV	Pass
80% Load	31.1 mV	26.1 mV	24.0 mV	23.4 mV	Pass
90% Load	32.3 mV	26.5 mV	23.7 mV	23.4 mV	Pass
100% Load	50.1 mV	30.7 mV	23.9 mV	21.0 mV	Pass
110% Load	56.5 mV	31.0 mV	24.3 mV	23.4 mV	Pass
Crossload 1	25.0 mV	31.3 mV	25.3 mV	19.4 mV	Pass
Crossload 2	49.8 mV	22.6 mV	20.3 mV	16.8 mV	Pass

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230V

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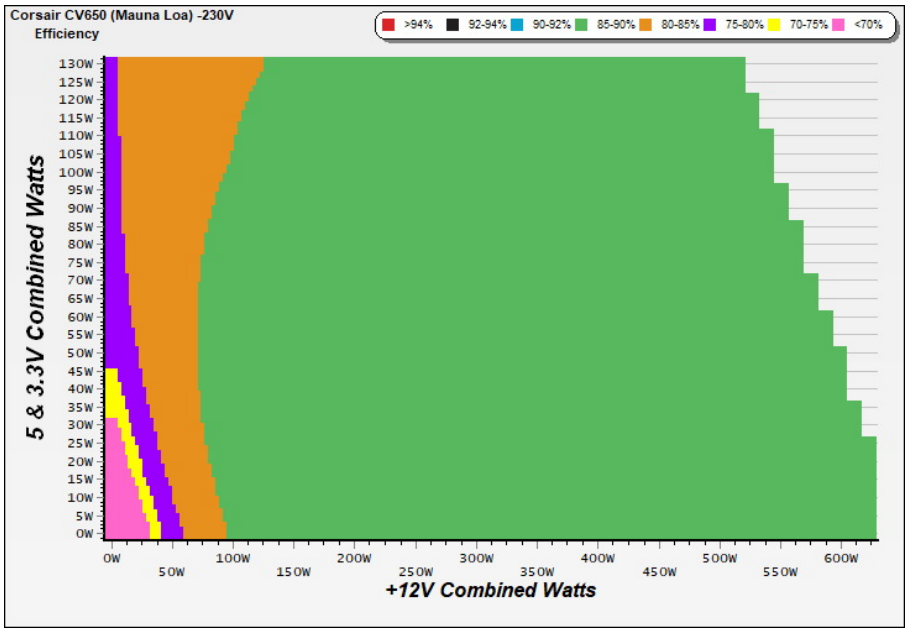
EFFICIENCY GRAPH 230V



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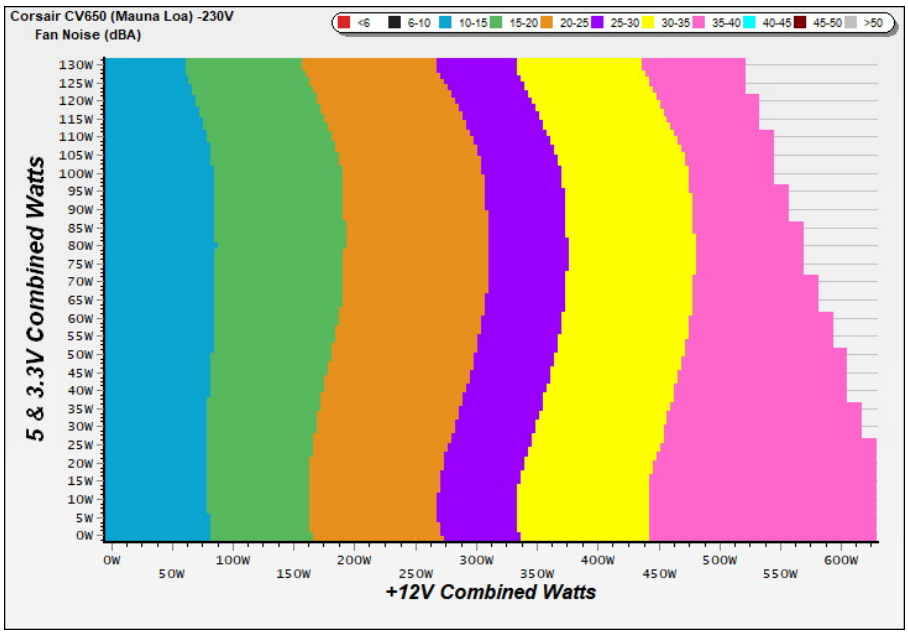
NOISE GRAPH 230V



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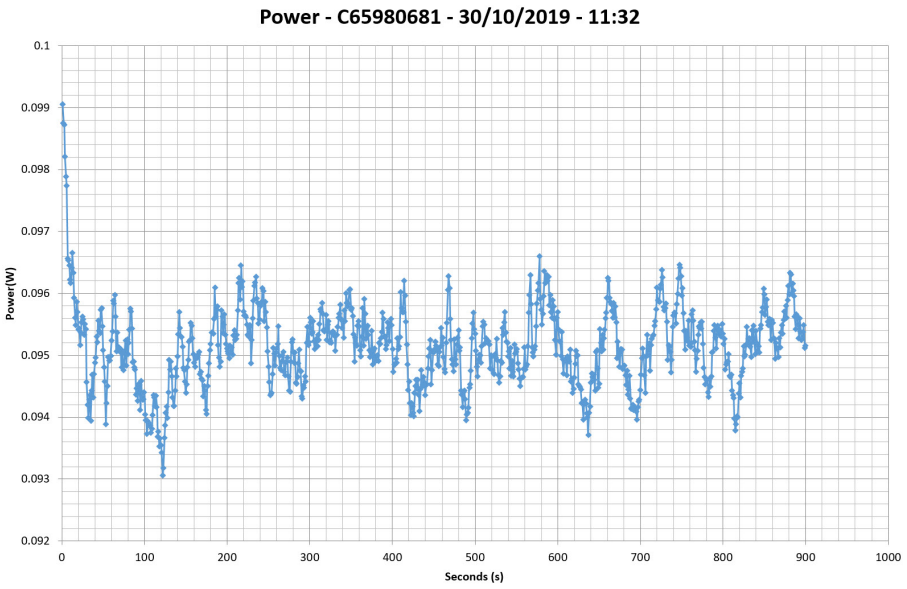

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10-110% LOAD TESTS 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	3.536A	1.971A	1.974A	0.984A	64.763	80.428%	696	16.6	35.34°C	0.871
	12.206V	5.077V	3.341V	5.082V	80.523				39.42°C	230.32V
2	8.075A	2.964A	2.966A	1.184A	129.278	86.082%	724	16.9	35.98°C	0.923
	12.184V	5.061V	3.335V	5.067V	150.180				40.62°C	230.31V
3	13.029A	3.466A	3.454A	1.386A	194.385	87.903%	797	18.8	36.28°C	0.946
	12.156V	5.049V	3.330V	5.053V	221.136				41.24°C	230.31V
4	18.016A	3.974A	3.969A	1.588A	259.618	88.512%	962	23.7	36.38°C	0.959
	12.123V	5.036V	3.325V	5.038V	293.313				42.23°C	230.31V
5	22.690A	4.980A	4.972A	1.793A	324.909	88.531%	1159	31.5	37.56°C	0.967
	12.094V	5.019V	3.318V	5.022V	366.999				44.20°C	230.31V
6	27.312A	5.998A	5.977A	1.998A	389.426	88.280%	1295	32.3	37.75°C	0.973
	12.069V	5.002V	3.312V	5.005V	441.127				44.89°C	230.31V
7	32.014A	7.022A	6.991A	2.206A	454.746	87.827%	1452	34.5	38.06°C	0.978
	12.046V	4.984V	3.305V	4.988V	517.774				45.77°C	230.31V
8	36.715A	8.053A	8.006A	2.415A	520.051	87.238%	1637	37.9	38.84°C	0.981
	12.029V	4.967V	3.298V	4.970V	596.128				47.25°C	230.30V
9	41.855A	8.581A	8.504A	2.421A	584.979	86.655%	1772	40.1	39.47°C	0.984
	12.005V	4.954V	3.292V	4.958V	675.067				48.80°C	230.30V
10	46.730A	9.114A	9.038A	3.041A	649.818	85.924%	1908	42.6	39.69°C	0.986
	11.986V	4.938V	3.286V	4.935V	756.274				49.60°C	230.32V
11	52.195A	9.133A	9.052A	3.048A	714.635	85.270%	1994	42.8	40.52°C	0.987
	11.973V	4.927V	3.281V	4.923V	838.085				51.03°C	230.32V
CL1	0.142A	16.000A	15.999A	0.000A	134.366	79.639%	1047	26.1	37.51°C	0.932
	12.177V	4.974V	3.316V	5.053V	168.718				44.40°C	230.30V
CL2	52.007A	1.002A	0.997A	1.000A	637.023	86.880%	1877	42.5	39.06°C	0.985
	11.993V	5.003V	3.303V	4.998V	733.219				49.85°C	230.31V

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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	1.181A	0.490A	0.473A	0.196A	19.519	62.599%	683	15.9	0.689
	12.225V	5.095V	3.347V	5.107V	31.181				230.33V
2	2.423A	0.983A	0.985A	0.392A	39.891	74.987%	677	15.6	0.812
	12.214V	5.088V	3.345V	5.099V	53.197				230.33V
3	3.602A	1.476A	1.465A	0.589A	59.365	79.841%	687	16.1	0.862
	12.207V	5.081V	3.342V	5.092V	74.354				230.33V
4	4.851A	1.970A	1.974A	0.787A	79.779	82.712%	696	16.6	0.890
	12.201V	5.075V	3.340V	5.084V	96.454				230.32V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	11.60mV	15.80mV	15.40mV	12.00mV	Pass
20% Load	17.20mV	16.90mV	16.00mV	13.40mV	Pass
30% Load	16.70mV	18.60mV	17.40mV	14.50mV	Pass
40% Load	21.40mV	20.10mV	17.40mV	14.40mV	Pass
50% Load	21.90mV	21.00mV	18.40mV	16.10mV	Pass
60% Load	24.30mV	23.50mV	20.00mV	16.10mV	Pass
70% Load	27.80mV	24.40mV	21.30mV	17.70mV	Pass
80% Load	29.10mV	26.00mV	24.80mV	20.90mV	Pass
90% Load	31.70mV	27.70mV	26.90mV	23.80mV	Pass
100% Load	54.00mV	32.20mV	27.50mV	24.90mV	Pass
110% Load	57.70mV	32.10mV	27.80mV	24.90mV	Pass
Crossload1	41.60mV	32.40mV	27.30mV	20.60mV	Pass
Crossload2	51.70mV	24.30mV	21.00mV	18.60mV	Pass

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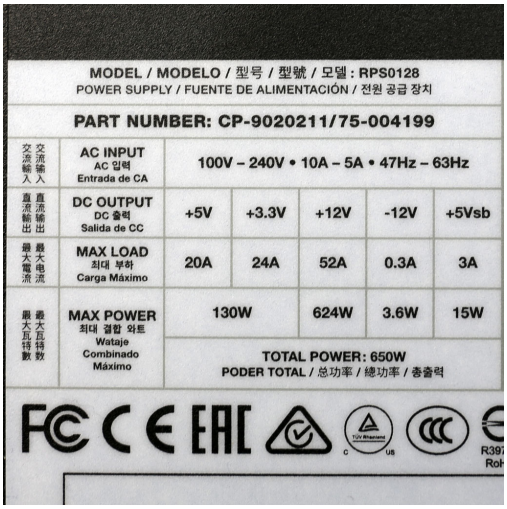
Top side


MODEL / MODELO / 型号 / 型號 / 모델 : RPS0128
POWER SUPPLY / FUENTE DE ALIMENTACIÓN / 전원 공급 장치

PART NUMBER: CP-9020211/75-004199

交流輸入 直流輸出	AC INPUT AC 입력 Entrada de CA	100V – 240V • 10A – 5A • 47Hz – 63Hz				
直流輸出	DC OUTPUT DC 출력 Salida de CC	+5V	+3.3V	+12V	-12V	+5Vsb
最大電流	MAX LOAD 최대 부하 Carga Máximo	20A	24A	52A	0.3A	3A
最大瓦特數	MAX POWER 최대 결합 와트 Wataje Combinado Máximo	130W		624W	3.6W	15W
		TOTAL POWER: 650W PODER TOTAL / 总功率 / 總功率 / 총출력				

Power specifications label

CERTIFICATIONS 115V

CERTIFICATIONS 230V