

Anex

Corsair VS650 (#2)

Lab ID#: 556

Receipt Date: Mar 2, 2018

Test Date: Mar 9, 2018

Report:

Report Date: Mar 12, 2018

DUT INFORMATION

Brand	Corsair
Manufacturer (OEM)	HEC
Series	VS
Model Number	
Serial Number	184339863000052672386
DUT Notes	CP-9020172

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	X
Cable Design	Fixed cables

TEST EQUIPMENT

Electronic Loads	Chroma 6314A x2 63123A x6 63102A 63101A	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Chroma 61604, Keysight AC6804B	
Power Analyzers	N4L PPA1530 x2, N4L PPA5530	
Oscilloscopes	Picoscope 4444 & 3424, Keysight DSOX3024A, Rigol DS2072A	
Voltmeter	Keithley 2015 THD 6.5 Digit	
Sound Analyzer	Bruel & Kjaer 2250-L G4	
Microphone	Bruel & Kjaer Type 4955-A, Bruel & Kjaer Type 4189	
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2	

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RESULTS

Temperature Range (°C /°F)	28-30 / 82.4-86
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

115V

Average Efficiency	83.134%
Efficiency With 10W (≤500W) or 2% (>500W)	58.074
Average Efficiency 5VSB	79.790%
Standby Power Consumption (W)	0.0426307
Average PF	0.987
Avg Noise Output	33.69 dB(A)
Efficiency Rating (ETA)	BRONZE
Noise Rating (LAMBDA)	Standard++

230V

Average Efficiency	85.454%
Average Efficiency 5VSB	78.766%
Standby Power Consumption (W)	0.0954175
Average PF	0.955
Avg Noise Output	33.80 dB(A)
Efficiency Rating (ETA)	BRONZE
Noise Rating (LAMBDA)	Standard++

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				

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

Hold-Up Time (ms)	13.30
AC Loss to PWR_OK Hold Up Time (ms)	9.40
PWR_OK Inactive to DC Loss Delay (ms)	3.90

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CABLES AND CONNECTORS

Captive Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (550mm)	1	1	18-20AWG	No
4+4 pin EPS12V (610mm)	1	1	18AWG	No
6+2 pin PCIe (550mm+110mm)	1	2	18AWG	No
SATA (440mm+120mm+120mm)	2	6	18AWG	No
SATA (440mm) / 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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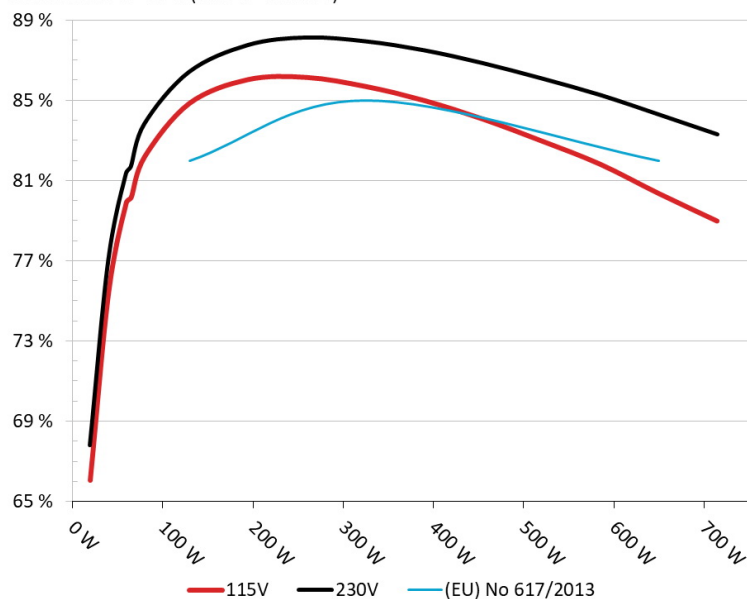
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Corsair VS650

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



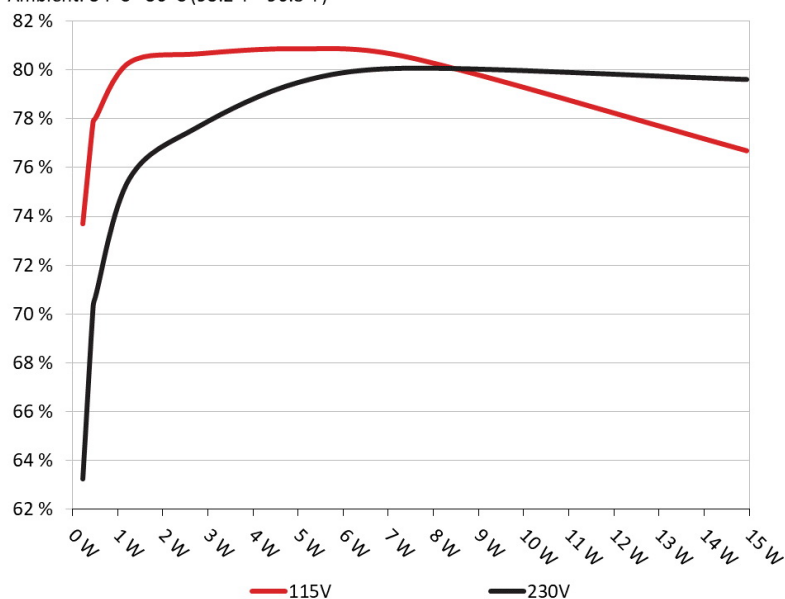
INFO

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 VS650

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

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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	73.701%	0.037
	5.043V	0.308		115.07V
2	0.090A	0.454	77.873%	0.068
	5.043V	0.583		115.07V
3	0.550A	2.769	80.658%	0.281
	5.034V	3.433		115.07V
4	1.000A	5.025	80.866%	0.363
	5.024V	6.214		115.07V
5	1.500A	7.521	80.490%	0.408
	5.014V	9.344		115.07V
6	3.000A	14.947	76.691%	0.471
	4.983V	19.490		115.07V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.227	63.231%	0.013
	5.043V	0.359		230.21V
2	0.090A	0.454	70.279%	0.023
	5.043V	0.646		230.22V
3	0.550A	2.769	77.650%	0.119
	5.034V	3.566		230.21V
4	1.000A	5.025	79.497%	0.189
	5.024V	6.321		230.21V
5	1.500A	7.521	80.070%	0.246
	5.014V	9.393		230.21V
6	3.000A	14.944	79.608%	0.341
	4.981V	18.772		230.21V

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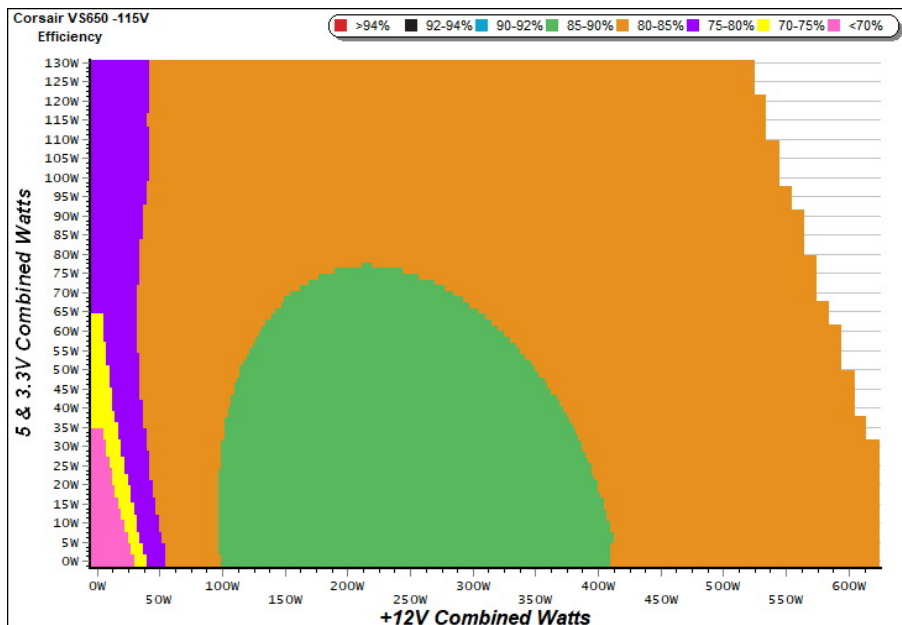
115V

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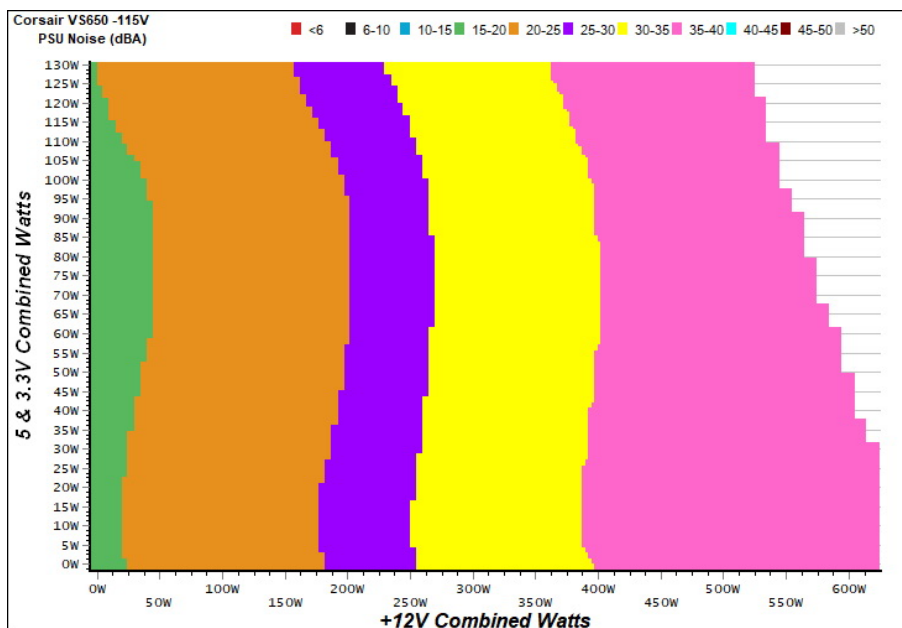
EFFICIENCY GRAPH 115V



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

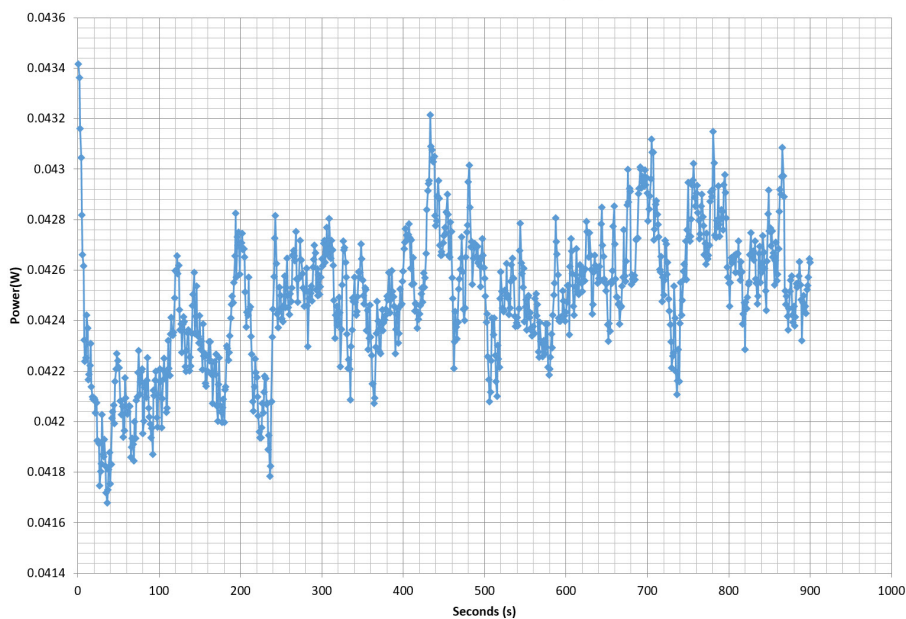
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -115V

Power - 184339863000052672386 - 29/11/2018 - 11:07



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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Corsair VS650 (#2)

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	3.533A	1.977A	1.948A	0.999A	64.781	80.131%	739	17.6	34.89°C	0.966
	12.225V	5.056V	3.385V	5.005V	80.844				40.29°C	115.09V
2	8.062A	2.975A	2.931A	1.203A	129.252	84.824%	814	19.1	35.15°C	0.975
	12.201V	5.042V	3.373V	4.988V	152.377				41.69°C	115.09V
3	13.020A	3.472A	3.419A	1.409A	194.380	86.012%	943	23.5	36.10°C	0.981
	12.164V	5.041V	3.363V	4.971V	225.992				43.08°C	115.09V
4	18.004A	3.969A	3.936A	1.615A	259.607	86.121%	1145	28.4	37.55°C	0.987
	12.131V	5.039V	3.353V	4.955V	301.445				45.39°C	115.09V
5	22.654A	4.972A	4.937A	1.823A	324.910	85.671%	1256	31.4	37.86°C	0.991
	12.113V	5.029V	3.341V	4.938V	379.254				46.29°C	115.09V
6	27.269A	5.976A	5.947A	2.034A	389.428	84.977%	1389	33.7	38.00°C	0.993
	12.088V	5.020V	3.329V	4.918V	458.276				47.01°C	115.09V
7	31.970A	6.987A	6.966A	2.246A	454.762	84.051%	1537	36.5	38.45°C	0.995
	12.063V	5.010V	3.316V	4.899V	541.053				48.20°C	115.09V
8	36.692A	8.002A	7.990A	2.460A	520.057	82.958%	1700	39.5	39.83°C	0.995
	12.037V	4.999V	3.303V	4.879V	626.893				50.38°C	115.09V
9	41.881A	8.499A	8.507A	2.468A	584.989	81.800%	1836	41.3	39.98°C	0.995
	11.998V	5.001V	3.291V	4.863V	715.145				51.55°C	115.10V
10	46.815A	9.000A	9.058A	3.104A	649.836	80.345%	1960	42.7	40.93°C	0.997
	11.965V	5.000V	3.278V	4.833V	808.807				53.47°C	115.10V
11	52.447A	8.984A	9.090A	3.114A	714.660	78.970%	2014	42.8	41.38°C	0.997
	11.916V	5.009V	3.267V	4.818V	904.971				54.45°C	115.10V
CL1	0.144A	16.000A	15.997A	0.000A	126.874	76.526%	1334	33.1	37.55°C	0.976
	12.692V	4.481V	3.335V	4.959V	165.792				46.54°C	115.11V
CL2	52.006A	1.002A	0.999A	1.000A	624.900	81.103%	1868	42.5	41.10°C	0.996
	11.757V	5.234V	3.309V	4.916V	770.501				53.28°C	115.11V

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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	1.174A	0.491A	0.469A	0.199A	19.444	66.055%	669	15.2	0.924
	12.223V	5.090V	3.396V	5.035V	29.436				115.09V
2	2.418A	0.984A	0.970A	0.398A	39.825	75.420%	689	16.2	0.947
	12.215V	5.080V	3.392V	5.026V	52.804				115.09V
3	3.597A	1.478A	1.445A	0.598A	59.328	79.866%	703	16.7	0.960
	12.216V	5.069V	3.388V	5.017V	74.284				115.09V
4	4.846A	1.976A	1.949A	0.799A	79.781	82.170%	728	16.9	0.965
	12.214V	5.059V	3.383V	5.007V	97.093				115.09V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	7.1 mV	8.1 mV	19.2 mV	13.2 mV	Pass
20% Load	6.4 mV	8.3 mV	24.4 mV	16.2 mV	Pass
30% Load	8.6 mV	8.9 mV	24.4 mV	16.8 mV	Pass
40% Load	12.4 mV	10.4 mV	24.8 mV	16.0 mV	Pass
50% Load	15.1 mV	12.1 mV	30.0 mV	19.5 mV	Pass
60% Load	16.7 mV	13.3 mV	33.2 mV	18.9 mV	Pass
70% Load	18.7 mV	13.4 mV	33.9 mV	19.7 mV	Pass
80% Load	21.1 mV	14.4 mV	38.3 mV	21.6 mV	Pass
90% Load	22.4 mV	16.8 mV	39.6 mV	23.1 mV	Pass
100% Load	36.9 mV	23.9 mV	48.4 mV	27.2 mV	Pass
110% Load	41.4 mV	27.1 mV	48.7 mV	36.4 mV	Pass
Crossload 1	14.5 mV	36.5 mV	31.6 mV	17.0 mV	Pass
Crossload 2	39.2 mV	29.5 mV	40.3 mV	18.1 mV	Pass

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Corsair VS650 (#2)

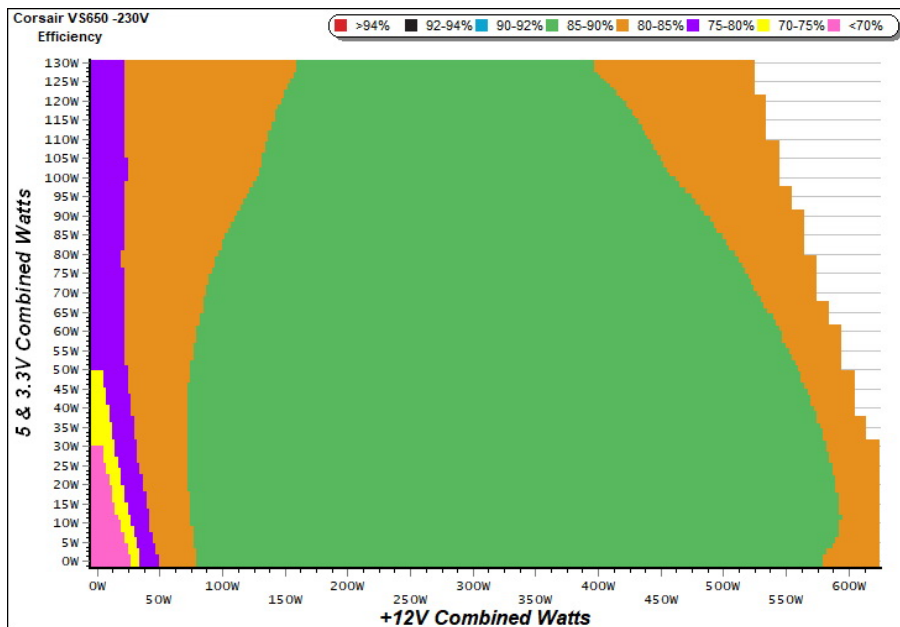
230V

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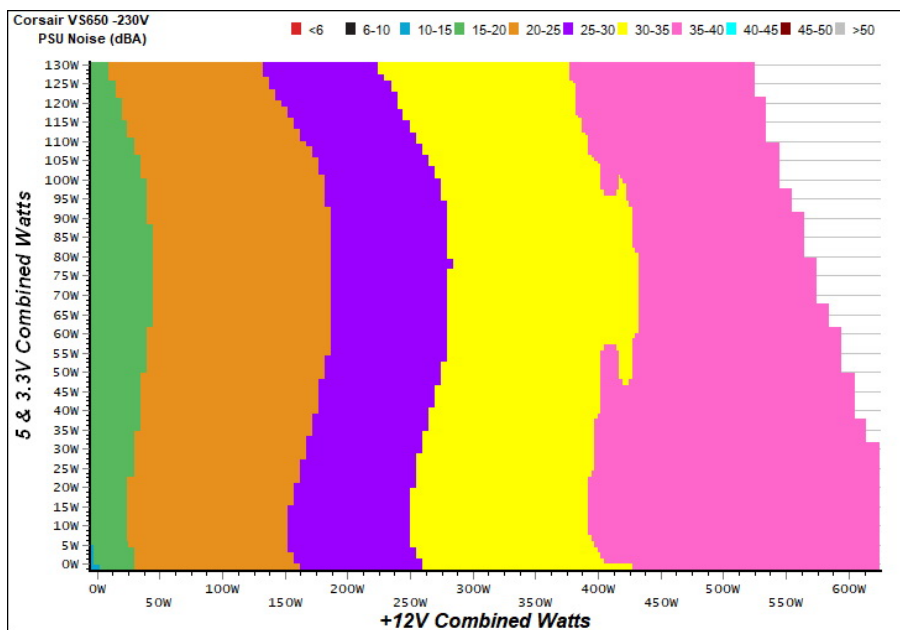
EFFICIENCY GRAPH 230V



INFO

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NOISE GRAPH 230V



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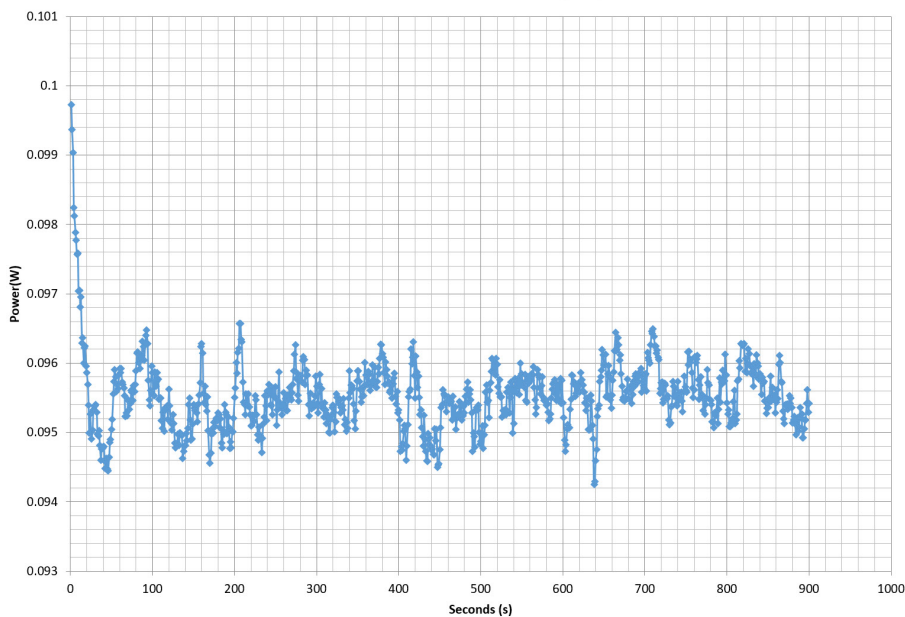
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10-110% LOAD TESTS 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	3.515A	1.972A	1.946A	0.999A	64.531	81.701%	759	17.9	34.34°C	0.863
	12.225V	5.057V	3.385V	5.005V	78.984				37.68°C	230.12V
2	8.043A	2.972A	2.932A	1.203A	129.009	86.428%	796	18.8	34.95°C	0.912
	12.201V	5.043V	3.373V	4.987V	149.268				39.11°C	230.12V
3	13.001A	3.470A	3.415A	1.408A	194.130	87.771%	919	22.8	35.26°C	0.936
	12.165V	5.041V	3.362V	4.971V	221.178				39.95°C	230.13V
4	17.983A	3.966A	3.933A	1.615A	259.362	88.149%	1049	26.2	35.57°C	0.951
	12.133V	5.039V	3.353V	4.955V	294.232				40.78°C	230.13V
5	22.635A	4.968A	4.935A	1.823A	324.658	87.956%	1223	30.2	35.95°C	0.968
	12.113V	5.030V	3.341V	4.939V	369.113				42.52°C	230.14V
6	27.246A	5.975A	5.946A	2.033A	389.193	87.513%	1363	33.5	36.13°C	0.973
	12.090V	5.020V	3.329V	4.919V	444.724				43.26°C	230.13V
7	31.943A	6.986A	6.963A	2.246A	454.526	86.871%	1524	36.3	37.06°C	0.979
	12.066V	5.010V	3.317V	4.900V	523.217				45.07°C	230.14V
8	36.665A	7.998A	7.988A	2.460A	519.832	86.106%	1654	38.1	37.75°C	0.981
	12.040V	5.000V	3.304V	4.879V	603.709				46.09°C	230.14V
9	41.850A	8.493A	8.505A	2.467A	584.772	85.280%	1797	40.3	38.39°C	0.983
	12.002V	5.003V	3.292V	4.864V	685.710				47.67°C	230.15V
10	46.784A	8.994A	9.055A	3.103A	649.608	84.306%	1936	42.7	39.31°C	0.985
	11.968V	5.003V	3.280V	4.834V	770.539				49.53°C	230.15V
11	52.407A	8.974A	9.085A	3.113A	714.431	83.317%	2026	42.8	40.76°C	0.987
	11.921V	5.014V	3.268V	4.819V	857.488				52.13°C	230.15V
CL1	0.127A	15.999A	15.997A	0.000A	126.829	77.841%	1466	34.9	35.55°C	0.923
	12.685V	4.493V	3.334V	4.955V	162.933				42.78°C	230.15V
CL2	51.990A	1.001A	0.997A	1.000A	624.759	84.727%	1853	42.1	39.15°C	0.985
	11.762V	5.233V	3.310V	4.915V	737.379				49.96°C	230.17V

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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	1.156A	0.487A	0.468A	0.199A	19.199	67.817%	669	15.2	0.653
	12.223V	5.089V	3.396V	5.035V	28.310				230.11V
2	2.400A	0.979A	0.968A	0.398A	39.575	77.039%	685	16.0	0.793
	12.216V	5.079V	3.392V	5.026V	51.370				230.12V
3	3.578A	1.477A	1.441A	0.598A	59.077	81.348%	708	16.8	0.850
	12.216V	5.069V	3.388V	5.017V	72.623				230.12V
4	4.835A	1.975A	1.946A	0.799A	79.617	83.849%	758	17.9	0.885
	12.212V	5.059V	3.382V	5.006V	94.953				230.16V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.5 mV	7.7 mV	19.2 mV	14.0 mV	Pass
20% Load	9.2 mV	8.4 mV	21.1 mV	16.4 mV	Pass
30% Load	10.5 mV	9.2 mV	21.7 mV	16.7 mV	Pass
40% Load	13.3 mV	10.3 mV	25.5 mV	16.3 mV	Pass
50% Load	15.4 mV	10.8 mV	28.2 mV	19.1 mV	Pass
60% Load	18.6 mV	11.4 mV	32.0 mV	21.3 mV	Pass
70% Load	22.4 mV	12.7 mV	33.2 mV	21.7 mV	Pass
80% Load	25.2 mV	14.1 mV	37.5 mV	19.8 mV	Pass
90% Load	27.1 mV	15.8 mV	40.7 mV	19.6 mV	Pass
100% Load	38.7 mV	23.5 mV	44.4 mV	24.1 mV	Pass
110% Load	46.0 mV	27.0 mV	47.2 mV	25.8 mV	Pass
Crossload 1	15.2 mV	41.0 mV	28.5 mV	17.9 mV	Pass
Crossload 2	39.4 mV	30.1 mV	37.9 mV	16.7 mV	Pass

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Corsair VS650 (#2)



Top side



Power specifications label

CERTIFICATIONS 115V




Aristeidis Bitziopoulos
Lab Director

CERTIFICATIONS 230V



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