Anex

Corsair RM650x v2

Lab ID#: 262
Receipt Date: -
Test Date: -

Report:
Report Date: Mar 1, 2018

DUT INFORMATION

Brand	Corsair
Manufacturer (OEM)	Channel Well Technology
Series	RMx
Model Number	RM650x v2
Serial Number	17477136000034430179
DUT Notes	CP-9020091

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	47-63
Rated Power (W)	650
Type	ATX12V
Cooling	135mm Rifle Bearing Fan (NR135L)
Semi-Passive Operation	✓
Cable Design	Fully Modular

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

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (600mm)	1	1	18-20AWG	Yes
4+4 pin EPS12V (650mm)	1	1	18AWG	Yes
6+2 pin PCIe (600mm+150mm)	2	4	18AWG	Yes
SATA (520mm+110mm+110mm)	3	9	18AWG	No
4 pin Molex (450mm+100mm+100mm+100mm)	1	4	18AWG	No
FDD Adapter (+100mm)	1	1	20AWG	No
AC Power Cord (1430mm) - C13 coupler	1	1	18AWG	-

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RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	87.719
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	0.000
Average Efficiency 5VSB	77.527
Standby Power Consumption (W) -115V	0.0369201
Standby Power Consumption (W) -230V	0.0482886
Average PF	0.989
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	14.81
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	A++

TEST EQUIPMENT		
Electronic Loads	Chroma 6314A x2 63123A x6 63102A 63101A	Chroma 63601-5 x2 Chroma 63600-2 63640-80-80 x10 63610-80-20
AC Sources	Chroma 6530, Chroma 61604	
Power Analyzers	N4L PPA1530, 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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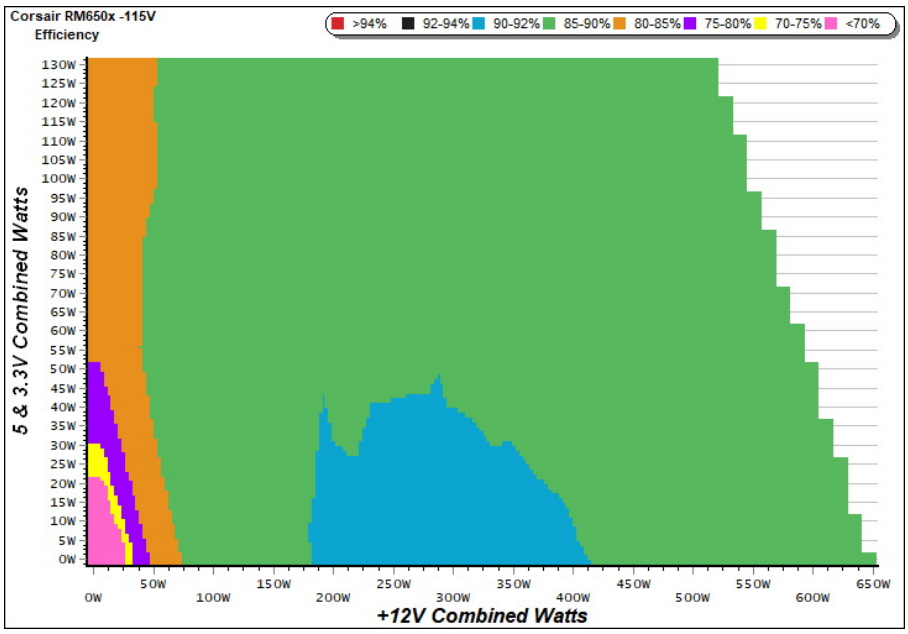
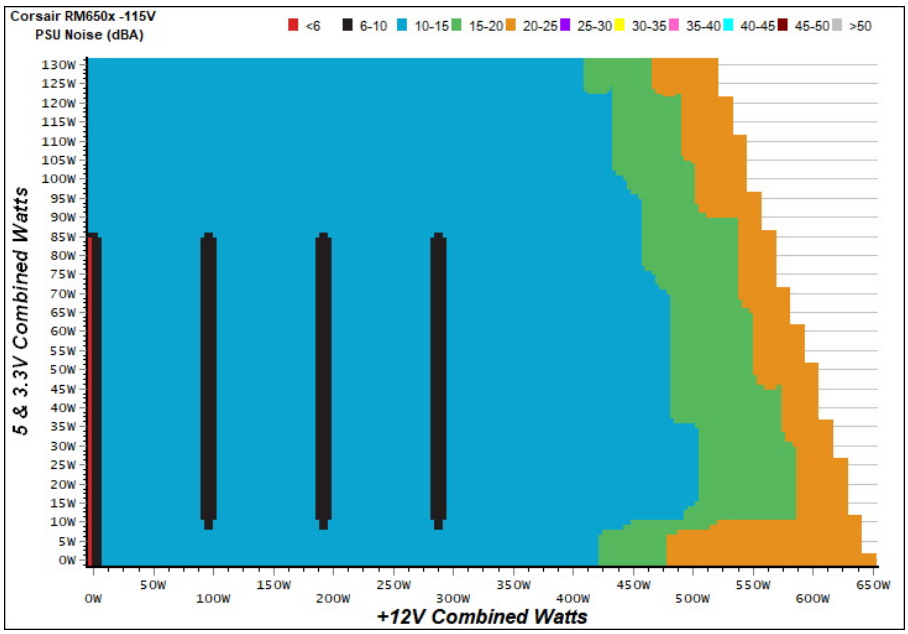
EFFICIENCY GRAPH



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



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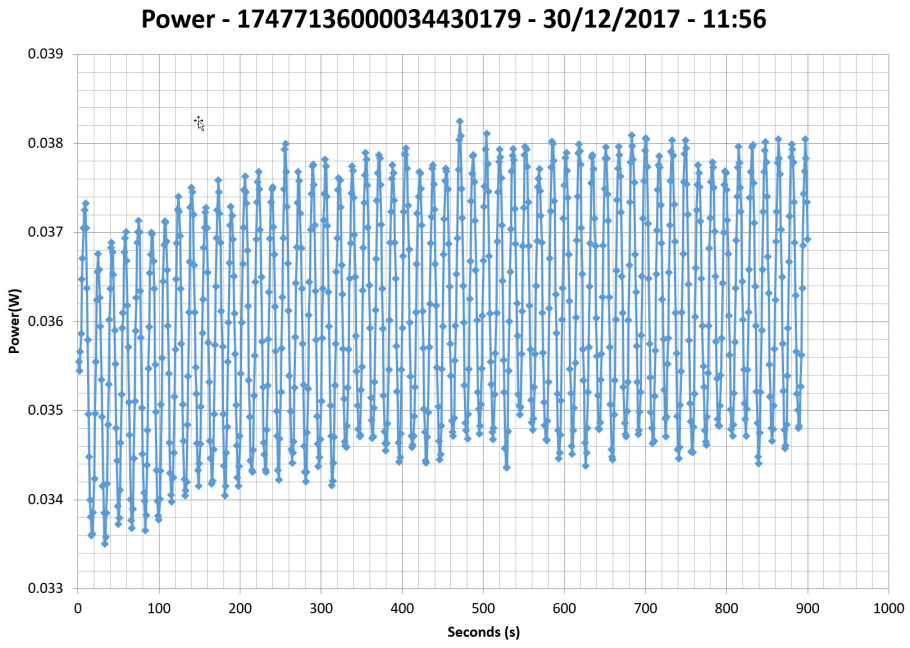
5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.227	71.160%	0.024
	5.038V	0.319		115.27V
2	0.090A	0.453	75.374%	0.045
	5.037V	0.601		115.28V
3	0.550A	2.763	79.011%	0.216
	5.023V	3.497		115.26V
4	1.000A	5.010	77.989%	0.313
	5.010V	6.424		115.27V
5	1.500A	7.496	77.622%	0.373
	4.997V	9.657		115.25V
6	2.999A	14.861	76.101%	0.450
	4.955V	19.528		115.24V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.227	65.418%	0.009
	5.038V	0.347		230.82V
2	0.090A	0.453	72.019%	0.017
	5.036V	0.629		230.82V
3	0.550A	2.762	77.628%	0.088
	5.022V	3.558		230.82V
4	1.000A	5.009	78.095%	0.147
	5.009V	6.414		230.81V
5	1.500A	7.494	77.819%	0.203
	4.996V	9.630		230.81V
6	3.000A	14.851	76.900%	0.308
	4.951V	19.312		230.81V

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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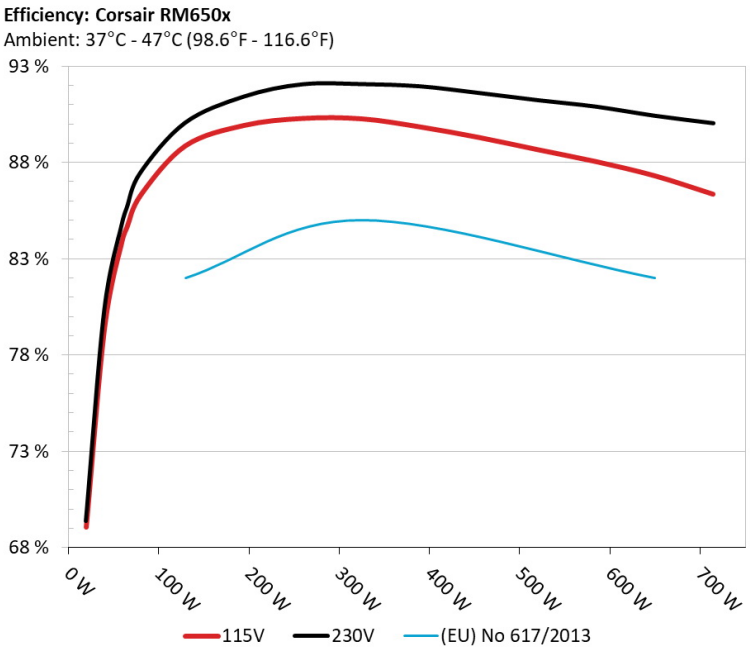
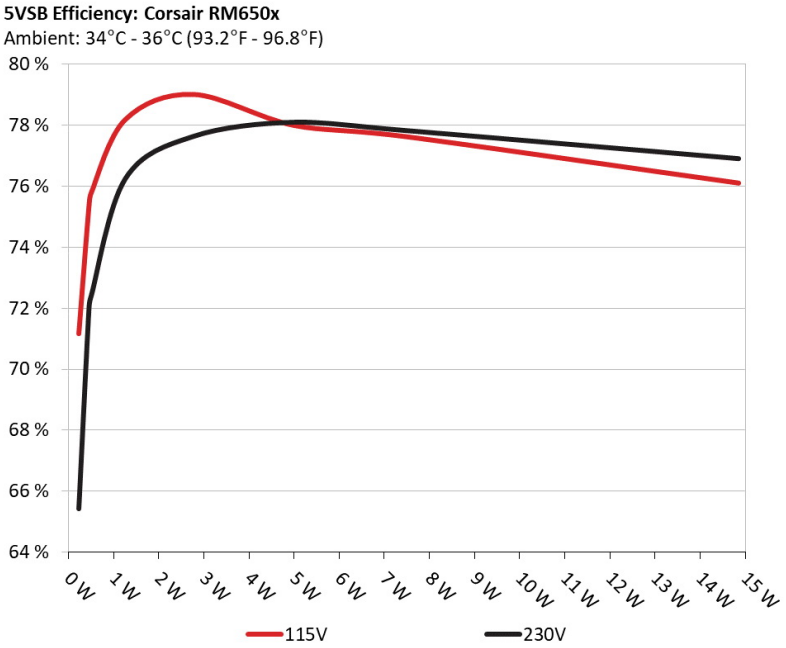
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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

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10-110% LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	3.557A	1.976A	1.986A	0.993A	64.631	84.659%	0	<6.0	47.33°C	0.961
	12.104V	5.056V	3.317V	5.035V	76.343				37.97°C	115.28V
2	8.125A	2.966A	2.982A	1.193A	129.172	88.871%	0	<6.0	47.65°C	0.984
	12.097V	5.055V	3.316V	5.032V	145.348				38.19°C	115.19V
3	13.081A	3.462A	3.467A	1.393A	194.263	89.932%	610	10.2	38.54°C	0.990
	12.100V	5.053V	3.314V	5.025V	216.012				48.21°C	115.10V
4	18.054A	3.958A	3.985A	1.594A	259.513	90.298%	633	10.9	38.93°C	0.992
	12.093V	5.050V	3.312V	5.019V	287.397				48.76°C	114.99V
5	22.697A	4.950A	4.984A	1.795A	324.807	90.277%	610	10.2	39.94°C	0.993
	12.086V	5.049V	3.310V	5.015V	359.790				49.80°C	115.01V
6	27.282A	5.943A	5.983A	1.996A	389.332	89.857%	677	13.2	40.30°C	0.992
	12.079V	5.048V	3.308V	5.011V	433.279				50.59°C	114.91V
7	31.939A	6.935A	6.984A	2.197A	454.668	89.310%	811	19.1	41.41°C	0.993
	12.072V	5.047V	3.307V	5.008V	509.092				51.86°C	114.81V
8	36.600A	7.927A	7.985A	2.399A	519.975	88.675%	995	26.3	42.95°C	0.994
	12.065V	5.046V	3.305V	5.004V	586.386				53.64°C	114.81V
9	41.661A	8.425A	8.474A	2.399A	584.897	88.052%	1172	31.4	44.37°C	0.995
	12.059V	5.045V	3.304V	5.004V	664.265				55.38°C	114.71V
10	46.463A	8.922A	8.993A	3.008A	649.720	87.321%	1329	35.3	45.91°C	0.995
	12.053V	5.044V	3.302V	4.988V	744.063				57.16°C	114.60V
11	51.867A	8.924A	8.997A	3.009A	714.547	86.363%	1440	37.0	46.67°C	0.996
	12.047V	5.043V	3.301V	4.986V	827.376				58.60°C	114.60V
CL1	0.730A	16.002A	16.000A	0.000A	142.687	82.482%	714	16.5	43.36°C	0.988
	12.082V	5.052V	3.314V	5.091V	172.991				50.55°C	115.14V
CL2	54.170A	1.000A	0.998A	1.000A	666.654	87.577%	1329	35.3	46.45°C	0.995
	12.060V	5.046V	3.303V	5.022V	761.224				55.42°C	114.58V

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20-80W LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.175A	0.491A	0.480A	0.198A	19.302	69.074%	0	<6.0	0.819
	12.110V	5.054V	3.317V	5.049V	27.944				115.34V
2	2.433A	0.987A	0.995A	0.397A	39.748	79.475%	0	<6.0	0.925
	12.107V	5.054V	3.317V	5.046V	50.013				115.31V
3	3.620A	1.480A	1.475A	5.042A	59.193	83.957%	0	<6.0	0.956
	12.105V	5.054V	3.317V	5.042V	70.504				115.29V
4	4.879A	1.977A	1.988A	0.794A	79.638	86.310%	0	<6.0	0.969
	12.103V	5.055V	3.317V	5.039V	92.270				115.25V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	1.9 mV	5.7 mV	2.5 mV	1.7 mV	Pass
20% Load	2.3 mV	3.2 mV	2.7 mV	2.2 mV	Pass
30% Load	10.0 mV	3.4 mV	3.0 mV	2.7 mV	Pass
40% Load	8.2 mV	4.6 mV	3.6 mV	3.6 mV	Pass
50% Load	7.8 mV	5.0 mV	3.6 mV	3.4 mV	Pass
60% Load	9.2 mV	16.3 mV	7.5 mV	15.1 mV	Pass
70% Load	7.5 mV	7.5 mV	7.0 mV	5.5 mV	Pass
80% Load	7.5 mV	5.5 mV	5.8 mV	3.4 mV	Pass
90% Load	7.5 mV	5.8 mV	6.8 mV	3.9 mV	Pass
100% Load	8.0 mV	7.4 mV	6.8 mV	5.6 mV	Pass
110% Load	8.5 mV	6.9 mV	6.3 mV	4.3 mV	Pass
Crossload 1	4.9 mV	6.3 mV	7.1 mV	3.4 mV	Pass
Crossload 2	7.6 mV	4.8 mV	4.4 mV	3.7 mV	Pass

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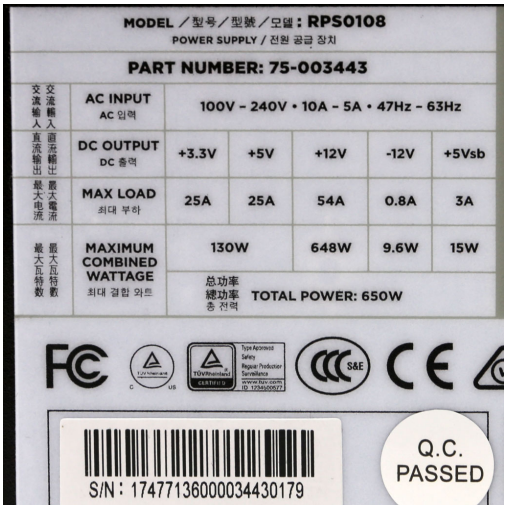
HOLD-UP TIME & POWER OK SIGNAL (230V)	
Hold-Up Time (ms)	21.80
AC Loss to PWR_OK Hold Up Time (ms)	18.60
PWR_OK Inactive to DC Loss Delay (ms)	3.20

Top side



Power specifications table

CERTIFICATIONS

CYBENETICS GOLD

CYBENETICS A++