Cybenetics

Anex

Corsair RM650x (2018)

Lab ID#: 329
Receipt Date: -
Test Date: -

Report:
Report Date: Mar 21, 2018

DUT INFORMATION

Brand	Corsair
Manufacturer (OEM)	Channel Well Technology
Series	RMx
Model Number	RM650x (2018)
Serial Number	17477136000034430139
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	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	90.322
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	0.000
Average Efficiency 5VSB	77.008
Standby Power Consumption (W) -115V	0.0339218
Standby Power Consumption (W) -230V	0.0481427
Average PF	0.962
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	14.39
Efficiency Rating (ETA)	PLATINUM
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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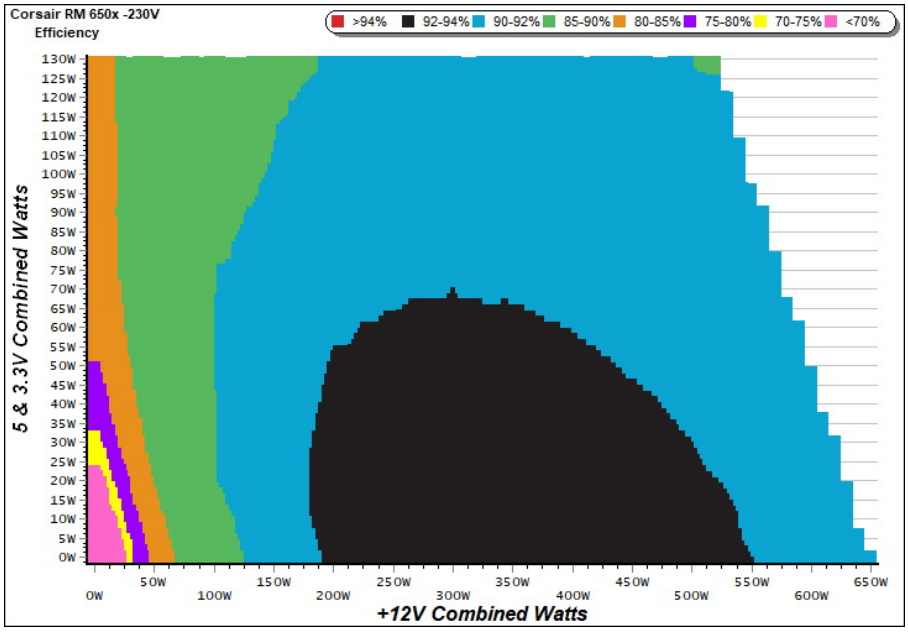
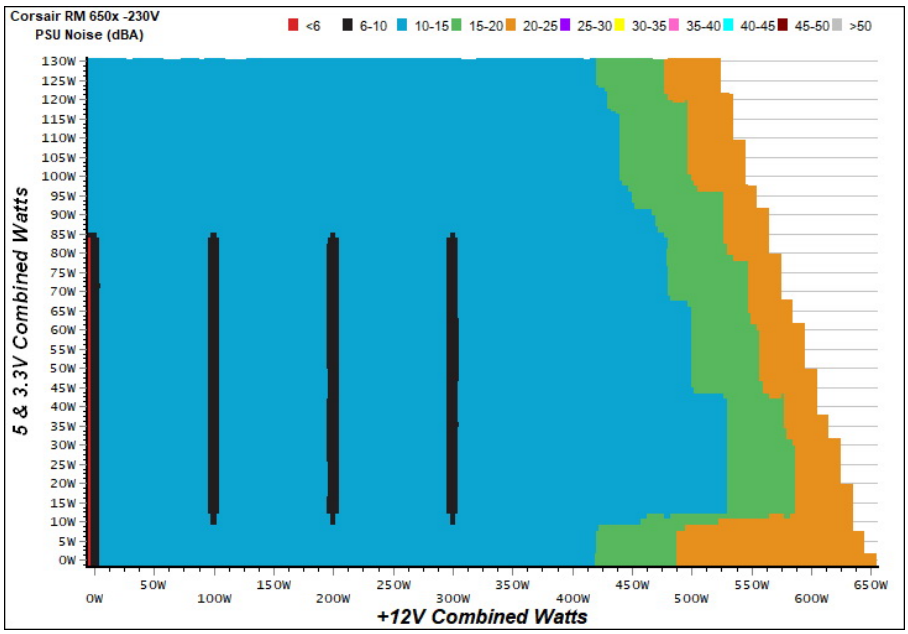
EFFICIENCY GRAPH



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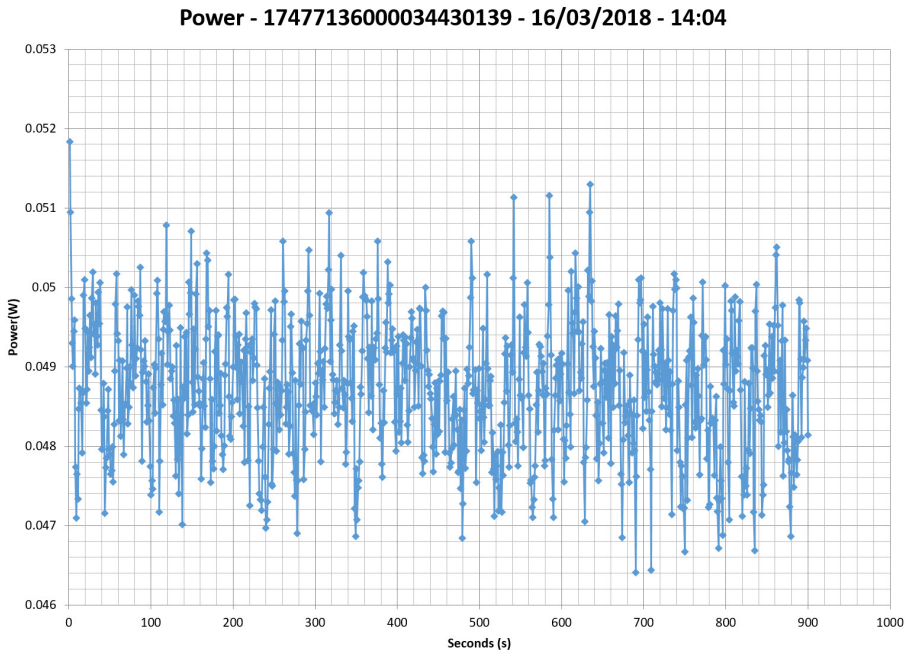
5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.213	70.764%	0.030
	5.039V	0.301		115.10V
2	0.088A	0.442	75.556%	0.058
	5.038V	0.585		115.10V
3	0.543A	2.726	78.491%	0.257
	5.024V	3.473		115.10V
4	1.002A	5.022	77.404%	0.347
	5.010V	6.488		115.10V
5	1.502A	7.504	76.933%	0.397
	4.996V	9.754		115.10V
6	3.002A	14.875	75.374%	0.462
	4.955V	19.735		115.09V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.213	66.771%	0.010
	5.039V	0.319		230.24V
2	0.088A	0.442	72.937%	0.018
	5.038V	0.606		230.24V
3	0.543A	2.726	77.421%	0.101
	5.024V	3.521		230.24V
4	1.003A	5.023	77.623%	0.169
	5.009V	6.471		230.24V
5	1.502A	7.505	77.268%	0.226
	4.996V	9.713		230.24V
6	3.002A	14.866	76.275%	0.325
	4.952V	19.490		230.24V

VAMPIRE POWER -230V



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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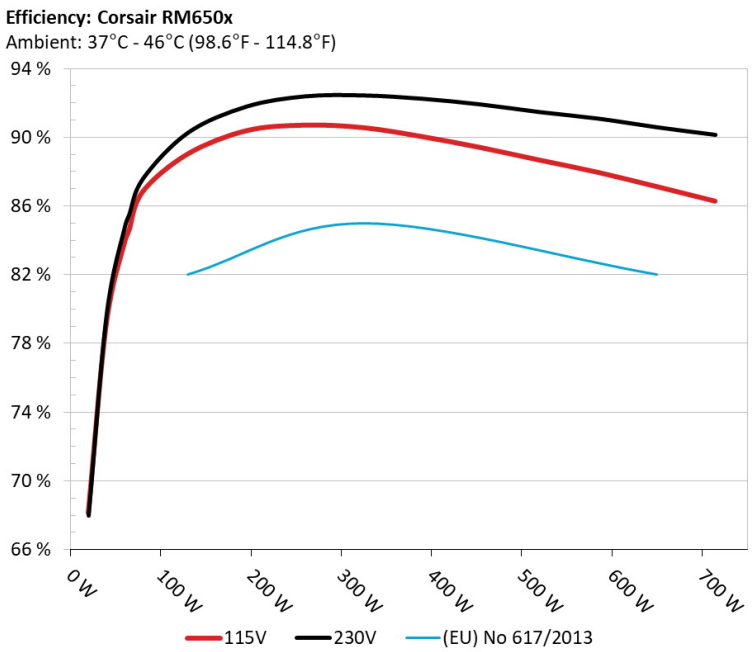
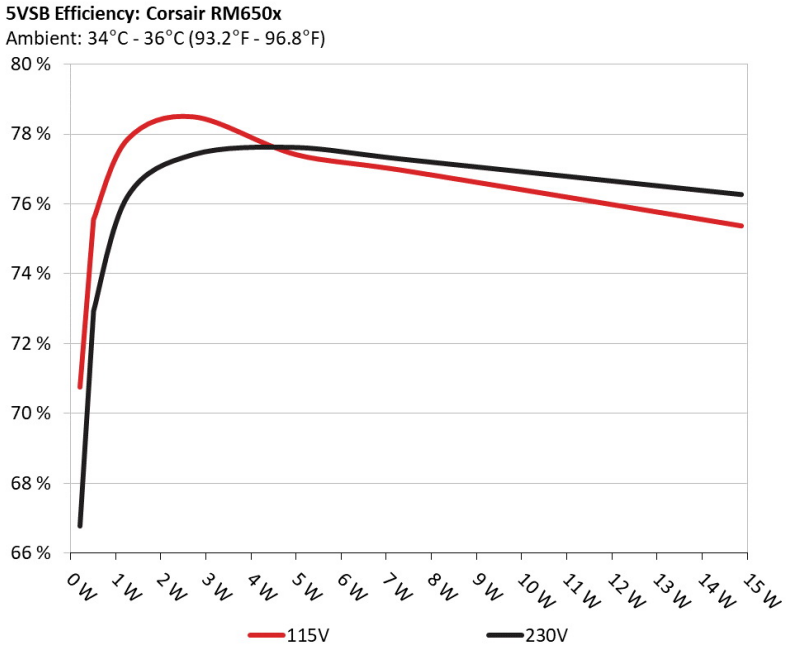
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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	3.569A	1.985A	1.998A	0.997A	64.775	85.535%	0	<6.0	44.46°C	0.806
	12.108V	5.029V	3.298V	5.005V	75.729				38.90°C	365.14V
2	8.177A	2.982A	2.997A	1.200A	129.801	90.288%	677	13.2	39.24°C	0.923
	12.099V	5.026V	3.297V	4.999V	143.764				45.00°C	230.29V
3	13.137A	3.487A	3.517A	1.401A	194.889	91.811%	633	10.9	39.86°C	0.956
	12.088V	5.021V	3.295V	4.991V	212.273				46.08°C	230.28V
4	18.099A	3.985A	4.003A	1.603A	259.756	92.405%	633	10.9	40.52°C	0.971
	12.077V	5.019V	3.293V	4.985V	281.106				47.20°C	230.28V
5	22.732A	4.979A	5.008A	1.806A	324.746	92.458%	610	10.2	41.06°C	0.978
	12.066V	5.017V	3.293V	4.979V	351.238				48.03°C	230.28V
6	27.369A	5.984A	6.013A	2.009A	389.754	92.265%	610	10.2	41.47°C	0.982
	12.056V	5.015V	3.291V	4.975V	422.431				49.26°C	230.28V
7	32.006A	6.989A	7.017A	2.210A	454.682	91.931%	785	18.1	42.08°C	0.985
	12.047V	5.013V	3.290V	4.970V	494.593				50.47°C	230.27V
8	36.656A	7.986A	8.024A	2.416A	519.627	91.490%	916	23.6	43.08°C	0.987
	12.037V	5.011V	3.288V	4.966V	567.958				51.81°C	230.27V
9	41.752A	8.487A	8.547A	2.416A	584.719	91.106%	1087	28.4	43.85°C	0.988
	12.026V	5.009V	3.288V	4.965V	641.800				52.83°C	230.28V
10	46.599A	8.994A	9.038A	3.030A	649.597	90.606%	1210	32.5	44.67°C	0.989
	12.015V	5.007V	3.285V	4.946V	716.946				54.25°C	230.28V
11	52.045A	8.998A	9.040A	3.030A	714.557	90.164%	1348	35.5	45.79°C	0.990
	12.006V	5.005V	3.284V	4.945V	792.510				56.04°C	230.29V
CL1	0.099A	16.028A	16.002A	0.004A	134.611	83.757%	633	10.9	41.80°C	0.935
	12.079V	5.020V	3.308V	5.062V	160.717				50.45°C	230.30V
CL2	53.965A	1.003A	1.002A	1.002A	662.080	91.215%	1180	31.7	44.16°C	0.989
	12.022V	5.013V	3.281V	4.988V	725.844				53.52°C	230.29V

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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	1.207A	0.492A	0.483A	0.196A	19.671	67.983%	0	<6.0	0.486
	12.111V	5.029V	3.299V	5.024V	28.935				230.38V
2	2.435A	0.989A	0.999A	0.396A	39.742	79.736%	0	<6.0	0.677
	12.109V	5.029V	3.299V	5.019V	49.842				230.34V
3	3.671A	1.487A	1.516A	0.596A	59.910	84.821%	0	<6.0	0.786
	12.107V	5.028V	3.299V	5.013V	70.631				230.34V
4	4.891A	1.986A	1.999A	0.796A	79.766	87.598%	0	<6.0	0.849
	12.104V	5.028V	3.298V	5.008V	91.059				230.32V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	4.0 mV	3.9 mV	11.0 mV	4.3 mV	Pass
20% Load	6.0 mV	4.4 mV	11.0 mV	5.2 mV	Pass
30% Load	10.2 mV	4.2 mV	11.4 mV	4.4 mV	Pass
40% Load	9.8 mV	5.1 mV	12.1 mV	6.7 mV	Pass
50% Load	9.0 mV	4.7 mV	11.6 mV	4.8 mV	Pass
60% Load	10.4 mV	15.0 mV	13.3 mV	14.9 mV	Pass
70% Load	9.1 mV	12.9 mV	12.2 mV	11.9 mV	Pass
80% Load	8.1 mV	5.3 mV	11.9 mV	5.1 mV	Pass
90% Load	8.1 mV	4.6 mV	11.0 mV	4.5 mV	Pass
100% Load	8.4 mV	5.5 mV	15.4 mV	5.4 mV	Pass
110% Load	9.4 mV	6.8 mV	13.5 mV	6.8 mV	Pass
Crossload 1	5.8 mV	6.1 mV	12.8 mV	6.3 mV	Pass
Crossload 2	8.2 mV	5.6 mV	13.9 mV	5.9 mV	Pass

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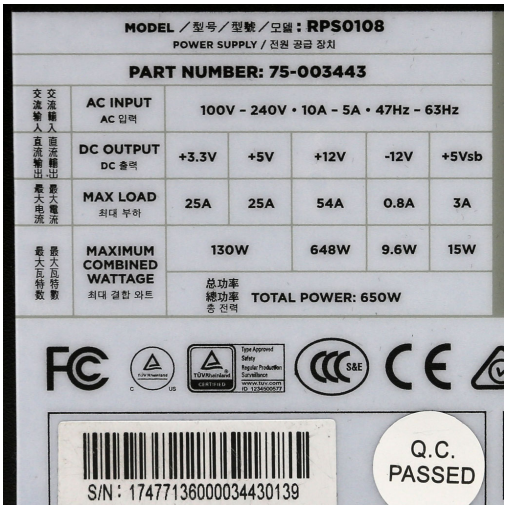
HOLD-UP TIME & POWER OK SIGNAL (230V)	
Hold-Up Time (ms)	21.5
AC Loss to PWR_OK Hold Up Time (ms)	20.5
PWR_OK Inactive to DC Loss Delay (ms)	1.0

Top side



Power specifications table

CERTIFICATIONS

CYBENETICS PLATINUM 230v

CYBENETICS A++ 230v

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Syrou 6, Latsia, 2231, Nicosia Cyprus