EFFICIENCY AND NOISE LEVEL CERTIFICATIONS

Anex

Corsair RM550x

Lab ID#: 76
Receipt Date: -
Test Date: -

Report:
Report Date: Jan 4, 2018

DUT INFORMATION

Brand	Corsair
Manufacturer (OEM)	Channel Well Technology
Series	RMx
Model Number	RM550x
Serial Number	16437141000018210037
DUT Notes	CP-9020090 - Retested on 11/10/2017

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	47-63
Rated Power (W)	550
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	45.8	3	0.8
	Watts	130		549.6	15	9.6
Total Max. Power (W)		550				

CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge
ATX connector 20+4 pin (600mm)	1	1	18-20AWG
4+4 pin EPS12V (650mm)	1	1	18AWG
6+2 pin PCIe (600mm+150mm)	1	2	18AWG
SATA (520mm+115mm+115mm)	2	6	18AWG
4 pin Molex (450mm+100mm+100mm+100mm)	1	4	18AWG
FDD Adapter (+100mm)	1	1	20AWG

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Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	1x GBU1506 (600V, 15A @ 100°C)
APFC MOSFETS	1x Vishay SIHG30N60E (650V, 18A @ 100°C, 0.125 Ohm)
APFC Boost Diode	1x PANJIT SiC04A065T (600V, 4A @ 150°C)
Hold-up Cap(s)	1x Nippon Chemi-Con (400V, 470uF each, 2000h @ 105°C, KMQ)
Main Switchers	2x Infineon IPA50R280CE (550V, 4.7A @ 100°C, 0.28 Ohm)
APFC Controller	Infineon ICE3PCS01G - CM03X
Switching Controller	Infineon ICE2HS01G
Topology	Primary side: Half-Bridge & LLC Resonant Converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	4x Sinopower SM4021NAKP (40V, 100A @ 100°C, 2.7 mOhm @ VGS=6V)
5V & 3.3V	DC-DC Converters: 2x M3006D & 4x M3004D fets PWM Controller: APW7159
Filtering Capacitors	Electrolytics: Chemi-Con (105°C, KZE & KZH series) Polymers: Nippon Chemi-Con
Supervisor IC	Weltrend WT7502
Fan Model	NR135L (12 V, 0.22 A, Rifle Bearing)
5VSB Circuit	
Rectifier	PFR20V45CT (45V, 20A, VF: 0.42V max @ 125°C)
Standby PWM Controller	On-Bright OB5269

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RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	88.366
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	0.000
Average Efficiency 5VSB	80.167
Standby Power Consumption (W) -115V	0.0433978
Standby Power Consumption (W) -230V	0.0747490
Average PF	0.991
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	11.20
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 4189	
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2	

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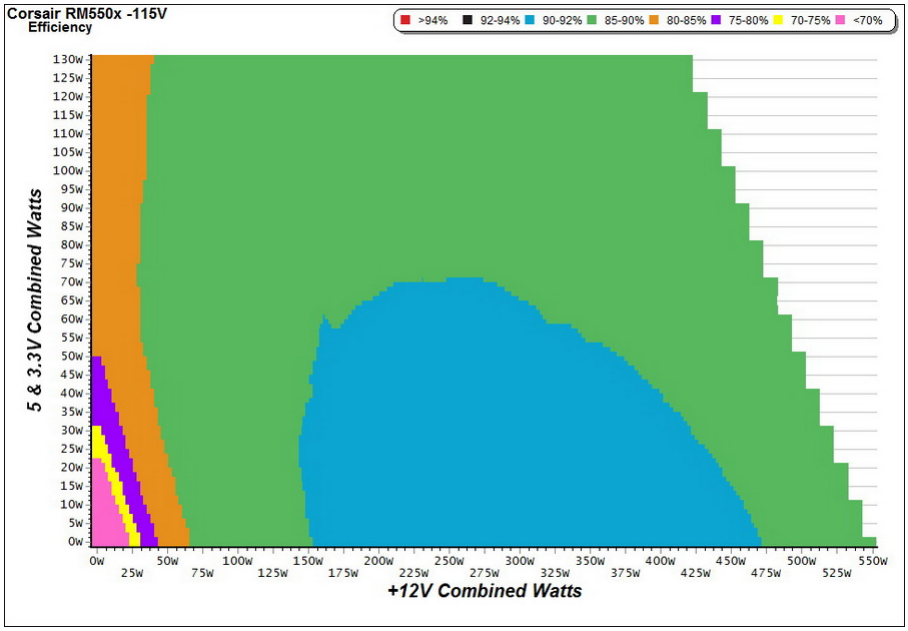
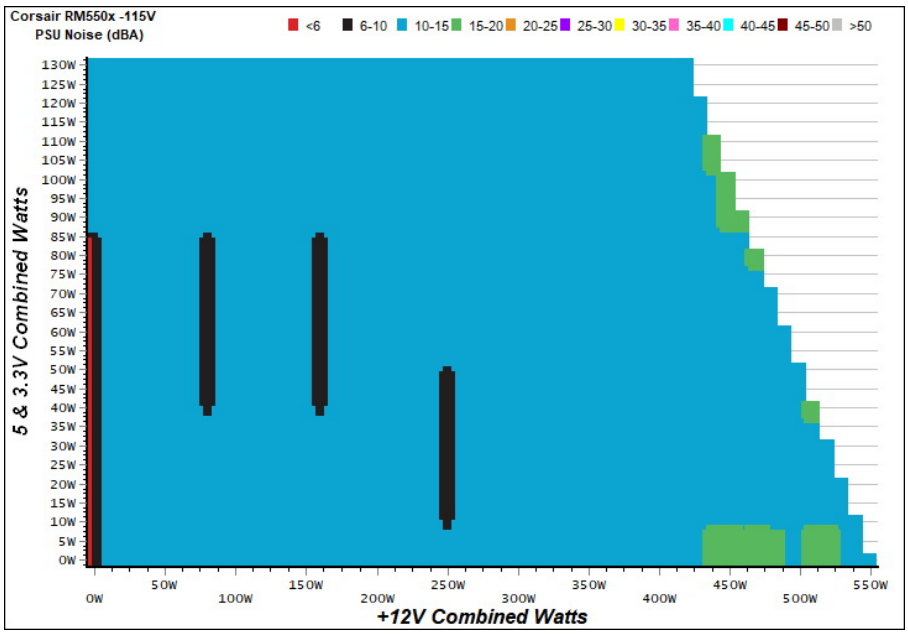
EFFICIENCY GRAPH



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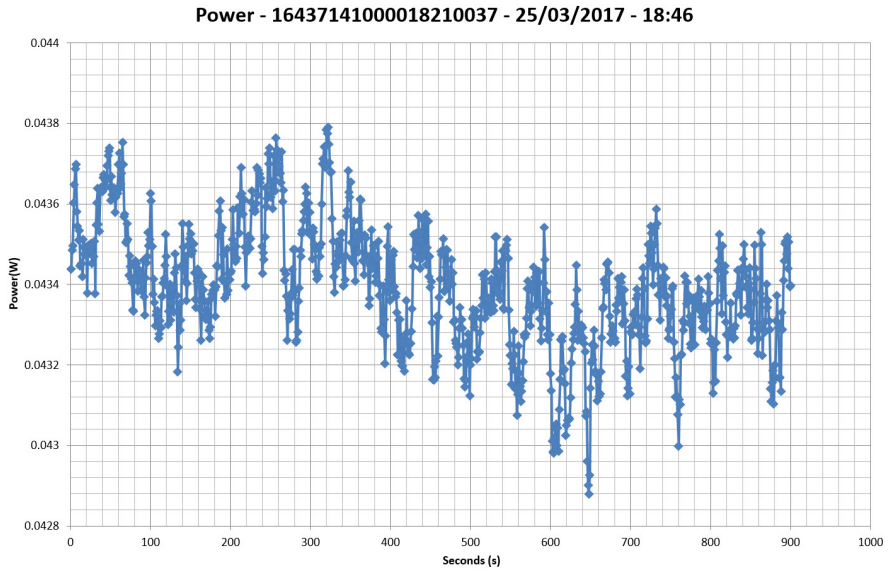
5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.211	69.868%	0.031
	5.065V	0.302		115.10V
2	0.087A	0.441	75.773%	0.058
	5.064V	0.582		115.10V
3	0.532A	2.687	80.449%	0.252
	5.053V	3.340		115.09V
4	3.001A	14.977	79.437%	0.454
	4.990V	18.854		115.08V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.210	61.047%	0.010
	5.066V	0.344		230.24V
2	0.087A	0.441	70.223%	0.019
	5.064V	0.628		230.24V
3	0.532A	2.686	78.423%	0.098
	5.052V	3.425		230.24V
4	3.001A	14.974	79.497%	0.321
	4.989V	18.836		230.22V

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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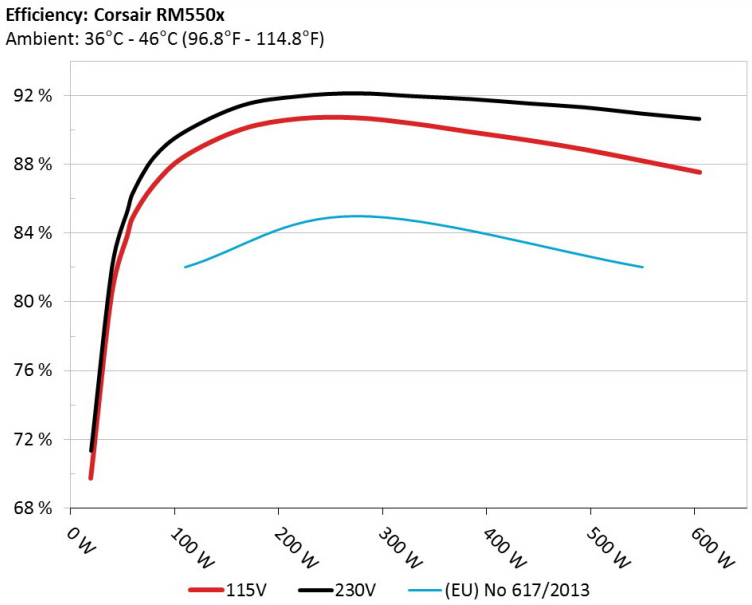
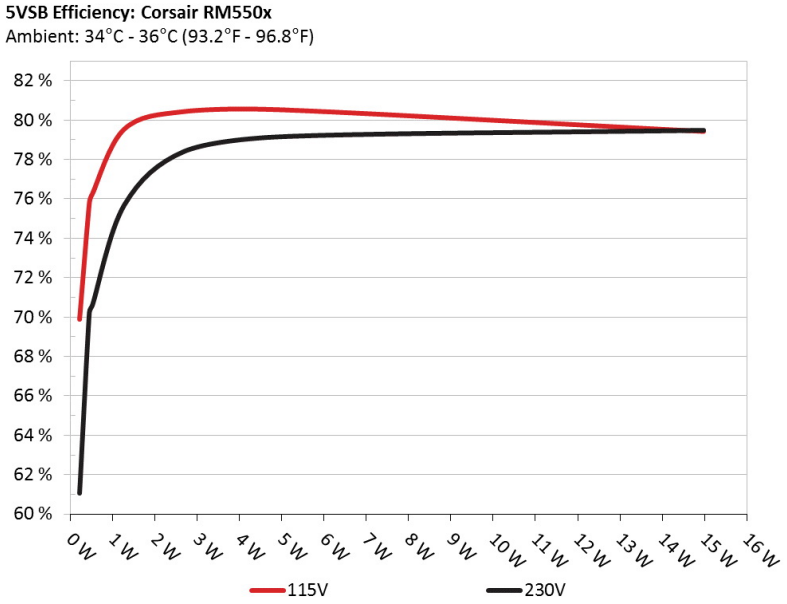
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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	2.766A	2.003A	1.999A	1.006A	54.862	83.889%	0	<6.0	49.59°C	0.948
	12.026V	4.993V	3.300V	4.970V	65.398				39.36°C	115.05V
2	6.575A	3.005A	3.004A	1.207A	109.819	88.489%	0	<6.0	50.78°C	0.982
	12.010V	4.983V	3.293V	4.960V	124.105				40.47°C	115.04V
3	10.741A	3.512A	3.527A	1.412A	164.875	90.071%	0	<6.0	52.79°C	0.990
	11.995V	4.973V	3.285V	4.947V	183.050				41.93°C	115.04V
4	14.913A	4.024A	4.025A	1.620A	219.818	90.681%	0	<6.0	55.05°C	0.994
	11.979V	4.965V	3.279V	4.937V	242.409				43.91°C	115.04V
5	18.754A	5.040A	5.042A	1.825A	274.809	90.733%	0	<6.0	57.46°C	0.995
	11.963V	4.956V	3.270V	4.925V	302.876				45.82°C	115.04V
6	22.605A	6.065A	6.066A	2.035A	329.868	90.396%	610	10.2	40.75°C	0.996
	11.948V	4.946V	3.263V	4.911V	364.914				52.83°C	115.04V
7	26.460A	7.084A	7.096A	2.241A	384.769	89.904%	610	10.2	41.63°C	0.996
	11.932V	4.937V	3.254V	4.901V	427.976				53.94°C	115.03V
8	30.322A	8.122A	8.132A	2.454A	439.733	89.431%	610	10.2	42.63°C	0.996
	11.916V	4.927V	3.247V	4.888V	491.701				55.16°C	115.03V
9	34.643A	8.647A	8.674A	2.455A	494.756	88.880%	610	10.2	43.38°C	0.996
	11.897V	4.918V	3.239V	4.883V	556.657				56.73°C	115.04V
10	38.718A	9.169A	9.191A	3.086A	549.629	88.226%	785	18.1	44.37°C	0.996
	11.879V	4.909V	3.231V	4.858V	622.975				57.99°C	115.06V
11	43.405A	9.181A	9.210A	3.089A	604.573	87.561%	943	24.5	45.93°C	0.996
	11.862V	4.903V	3.225V	4.851V	690.458				59.67°C	115.08V
CL1	0.099A	16.027A	16.004A	0.000A	132.227	82.589%	591	9.7	44.26°C	0.989
	11.985V	4.923V	3.258V	4.985V	160.102				54.35°C	115.09V
CL2	45.785A	1.004A	1.004A	1.001A	557.127	88.912%	785	18.1	45.73°C	0.996
	11.881V	4.943V	3.254V	4.921V	626.603				58.64°C	115.10V

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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	1.215A	0.490A	0.481A	0.201A	19.677	69.752%	0	<6.0	0.857
	12.039V	5.005V	3.309V	4.997V	28.210				115.04V
2	2.457A	0.995A	0.996A	0.400A	39.827	80.512%	0	<6.0	0.922
	12.033V	5.000V	3.305V	4.990V	49.467				115.05V
3	3.698A	1.496A	1.513A	0.600A	59.931	84.928%	0	<6.0	0.951
	12.027V	4.995V	3.300V	4.983V	70.567				115.04V
4	4.930A	2.003A	1.998A	0.801A	79.831	86.783%	0	<6.0	0.968
	12.021V	4.989V	3.298V	4.975V	91.989				115.04V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	4.9 mV	7.0 mV	9.8 mV	6.0 mV	Pass
20% Load	6.6 mV	7.2 mV	9.8 mV	6.2 mV	Pass
30% Load	7.3 mV	7.5 mV	9.7 mV	6.2 mV	Pass
40% Load	9.0 mV	7.0 mV	9.0 mV	6.4 mV	Pass
50% Load	11.0 mV	7.0 mV	9.2 mV	6.5 mV	Pass
60% Load	9.3 mV	11.6 mV	9.5 mV	9.8 mV	Pass
70% Load	9.7 mV	10.5 mV	10.4 mV	9.0 mV	Pass
80% Load	9.1 mV	7.7 mV	9.9 mV	7.6 mV	Pass
90% Load	10.3 mV	7.5 mV	9.4 mV	7.5 mV	Pass
100% Load	13.7 mV	9.1 mV	9.0 mV	8.2 mV	Pass
110% Load	14.4 mV	9.5 mV	9.3 mV	8.6 mV	Pass
Crossload 1	8.8 mV	10.1 mV	8.1 mV	8.1 mV	Pass
Crossload 2	12.8 mV	8.6 mV	8.8 mV	7.8 mV	Pass

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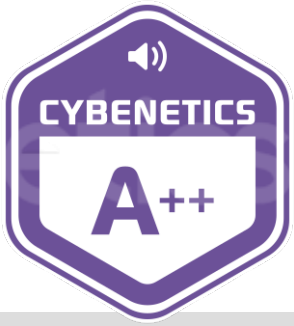
HOLD-UP TIME & POWER OK SIGNAL (230V)	
Hold-Up Time (ms)	19.2
AC Loss to PWR_OK Hold Up Time (ms)	17.2
PWR_OK Inactive to DC Loss Delay (ms)	2.0

Top side

Power specifications label

CERTIFICATIONS



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