

Lab ID#: 77

Receipt Date: Jan 18, 2018

Test Date: Jan 21, 2018

Report:

Report Date: Jan 24, 2018

DUT INFORMATION

Brand	Corsair
Manufacturer (OEM)	Channel Well Technology
Series	RMx
Model Number	
Serial Number	16447126000018291897
DUT Notes	CP-9020091 - 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)	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
ATX connector 20+4 pin (600mm)	1	1	18-20AWG
4+4 pin EPS12V (650mm)	1	1	18AWG
6+2 pin PCIe (600mm+150mm)	2	4	18AWG
SATA (515mm+120mm+120mm)	3	9	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
Bridge Rectifier(s)	1x GBU1506 (600V, 15A @ 100°C)
APFC MOSFETS	1x Infineon IPW60R125P6 (650V, 19A @ 100°C, 0.125 Ohm)
APFC Boost Diode	1x Vishay 8S2TH061 (600V, 8A @ 120°C)
Hold-up Cap(s)	1x Nippon Chemi-Con (400V, 680uF, 2000h @ 105°C, KMR)
Main Switchers	2x Toshiba TK18A60V (600V, 18A, 0.19 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 SinopowerSM4021NAKP (40V, 100A @ 100°C, 2.7 mOhm @ VGS=6V)
5V & 3.3V	DC-DC Converters: 2x QM3006D & 4x QM3004D 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

RESULTS

Temperature Range (°C / °F)	30-32 / 86-89.6 (+-2°C / +- 3.6°F)
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

115V

Average Efficiency	88.365%
Efficiency With 10W (≤500W) or 2% (>500W)	0.000
Average Efficiency 5VSB	80.485%
Standby Power Consumption (W)	0.0417362
Average PF	0.992
Avg Noise Output	13.11 dB(A)
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	Brüel & Kjær 2250-L G4	
Microphone	Brüel & Kjær Type 4189	
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2	

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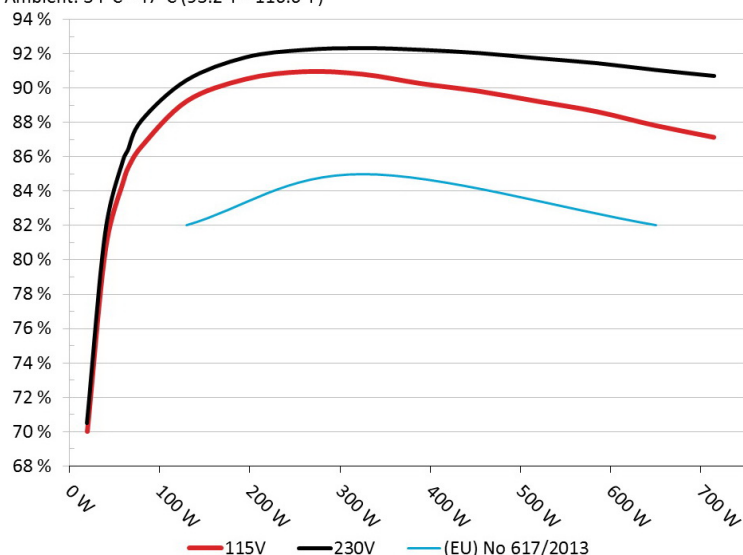
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Corsair RM650x

Ambient: 34°C - 47°C (93.2°F - 116.6°F)



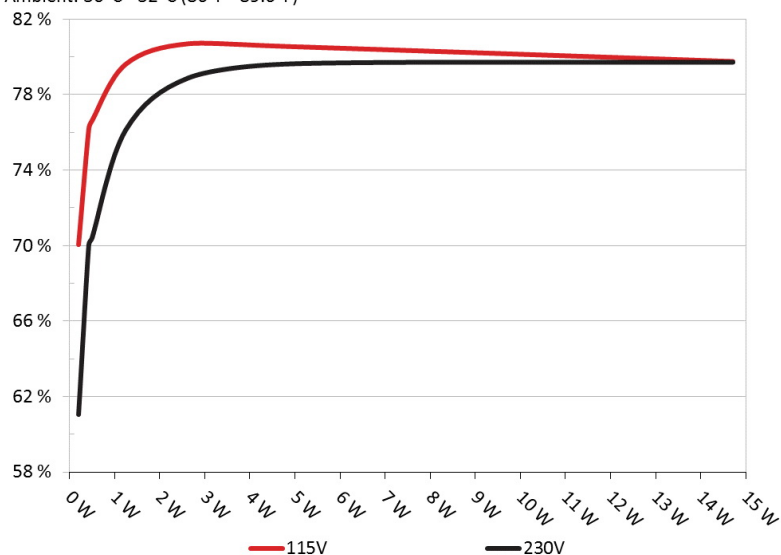
INFO

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 RM650x

Ambient: 30°C - 32°C (86°F - 89.6°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	0.102A	0.505	76.631%	0.065
	4.974V	0.659		115.06V
2	0.252A	1.250	79.618%	0.144
	4.971V	1.570		115.06V
3	1.002A	4.961	80.549%	0.348
	4.952V	6.159		115.08V
4	3.002A	14.711	79.765%	0.459
	4.901V	18.443		115.07V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.207	61.062%	0.010
	4.975V	0.339		230.13V
2	0.087A	0.433	70.407%	0.018
	4.974V	0.615		230.25V
3	0.532A	2.639	78.894%	0.095
	4.962V	3.345		230.25V
4	3.002A	14.706	79.725%	0.318
	4.899V	18.446		230.26V

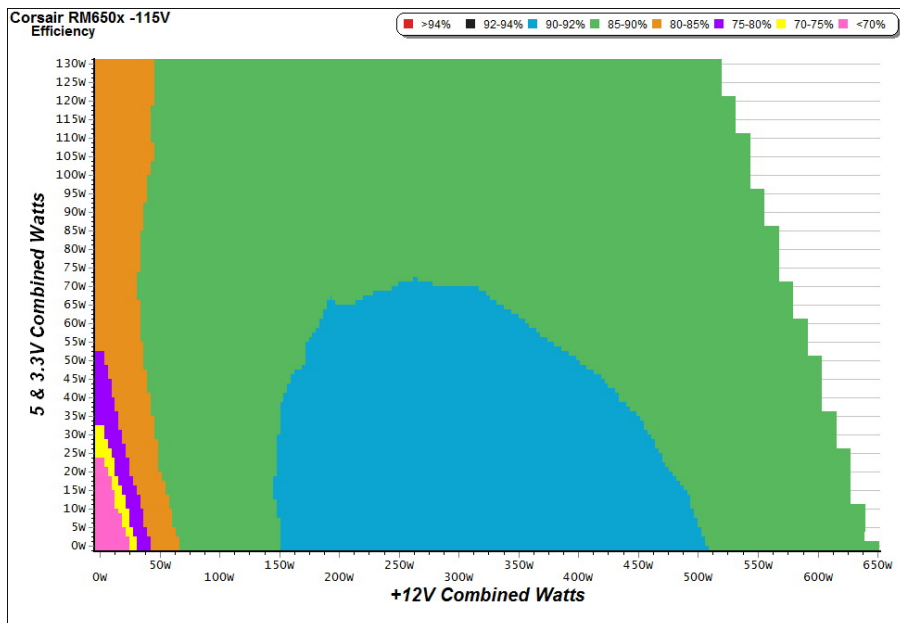
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115V

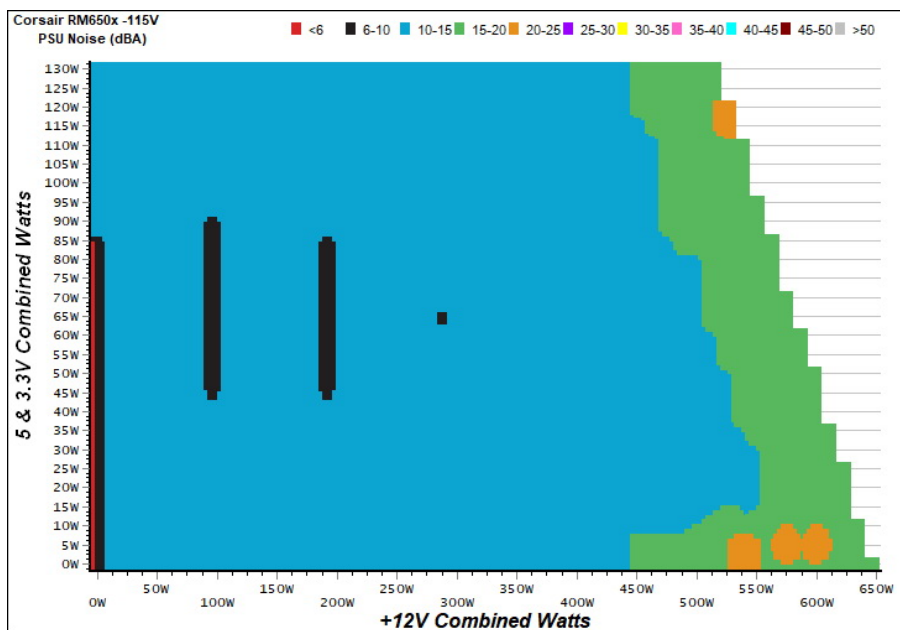
EFFICIENCY GRAPH 115V



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

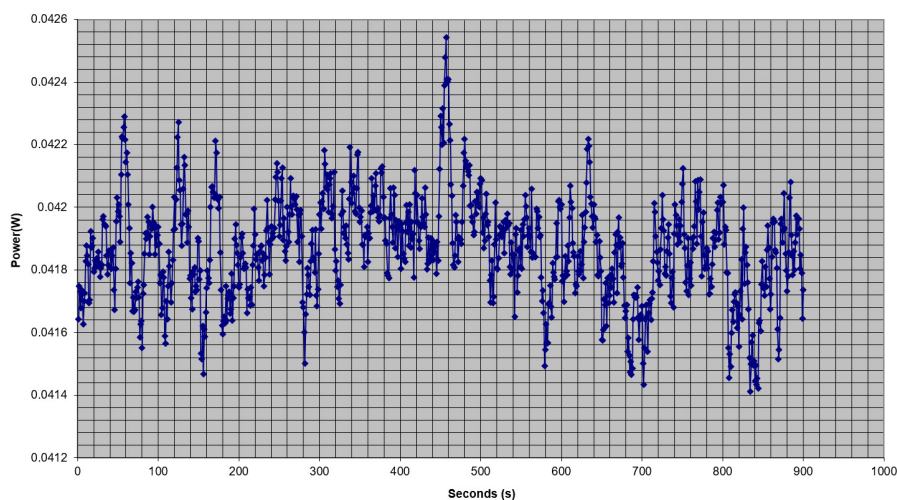
The PSU's noise in its entire operational range and under 30-32 °C (+2 °C) ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -115V

Power - 16447126000018291897 - 23/03/2017 - 11:02



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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COMMISSION REGULATION (EU) NO 617/2013 TESTING 115V

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EFFICIENCY AND NOISE REPORT IN ACCORDANCE WITH CYBENETICS ETA AND CYBENETICS LAMBDA PROCEDURE

Corsair RM650x

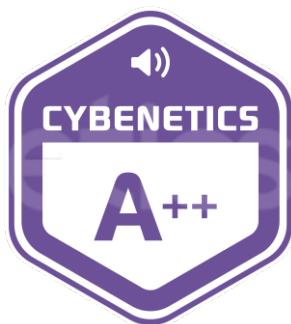


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Power specifications table

CERTIFICATIONS 115V




Aris Mpitsiopoulos
Lab Director

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