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

Corsair RM650 (2019)

Lab ID#: CR19650012
Receipt Date: Mar 21, 2019
Test Date: Feb 4, 2019

Report:
Report Date: Feb 4, 2019

DUT INFORMATION

Brand	Corsair
Manufacturer (OEM)	Channel Well Technology
Series	RM
Model Number	
Serial Number	19027120000038920015
DUT Notes	CP-9020194

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	47-63
Rated Power (W)	650
Type	ATX12V
Cooling	140mm Rifle Bearing Fan (HA1425M12F-Z)
Semi-Passive Operation	✓
Cable Design	Fully Modular

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

115V

Average Efficiency	88.767%
Efficiency With 10W (≤500W) or 2% (>500W)	75.373
Average Efficiency 5VSB	77.520%
Standby Power Consumption (W)	0.0364122
Average PF	0.991
Avg Noise Output	18.35 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	A+

230V

Average Efficiency	90.823%
Average Efficiency 5VSB	77.062%
Standby Power Consumption (W)	0.0583187
Average PF	0.962
Avg Noise Output	17.91 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	A+

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	54	3	0.3
	Watts	130		648	15	3.6
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 (610mm)	1	1	18-20AWG	No
4+4 pin EPS12V (650mm)	2	2	18AWG	No
6+2 pin PCIe (600mm+150mm)	2	4	16-18AWG	No
SATA (500mm+100mm+100mm)	2	6	18AWG	No
4 pin Molex (450mm+100mm+100mm+100mm)	1	4	18AWG	No
AC Power Cord (1420mm) - C13 coupler	1	1	16AWG	-

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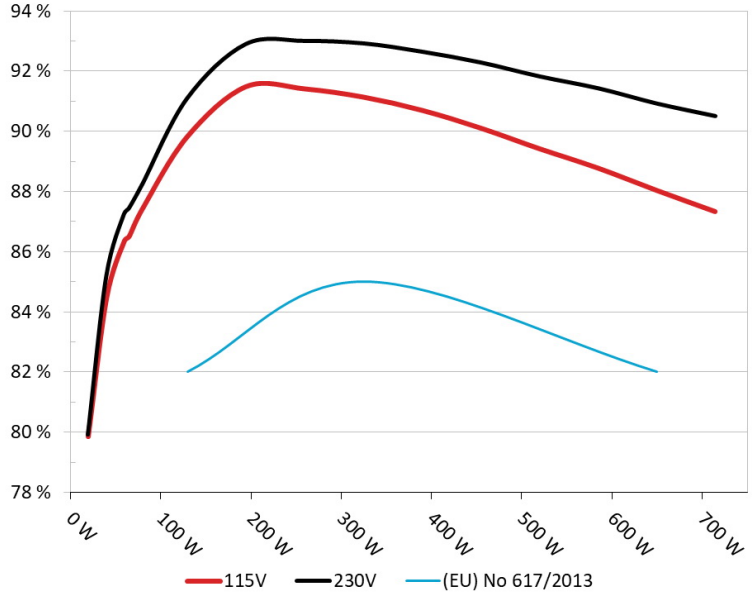
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Corsair RM650
Ambient: 37°C - 47°C (98.6°F - 116.6°F)

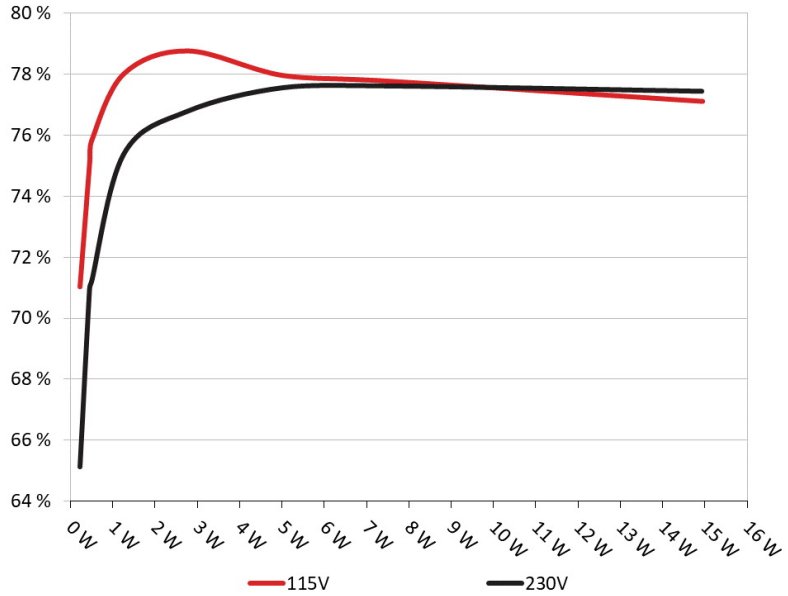


INFO

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 RM650
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	0.228	71.028%	0.032
	5.054V	0.321		115.08V
2	0.090A	0.455	75.083%	0.059
	5.053V	0.606		115.08V
3	0.550A	2.774	78.762%	0.256
	5.044V	3.522		115.07V
4	1.000A	5.032	77.955%	0.344
	5.032V	6.455		115.07V
5	1.500A	7.529	77.771%	0.393
	5.019V	9.681		115.08V
6	2.999A	14.943	77.109%	0.456
	4.982V	19.379		115.08V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.228	65.143%	0.011
	5.053V	0.350		230.21V
2	0.090A	0.455	70.983%	0.019
	5.052V	0.641		230.21V
3	0.550A	2.773	76.793%	0.100
	5.042V	3.611		230.20V
4	1.000A	5.030	77.564%	0.165
	5.030V	6.485		230.20V
5	1.500A	7.526	77.620%	0.221
	5.018V	9.696		230.20V
6	2.999A	14.933	77.445%	0.318
	4.979V	19.282		230.21V

115V

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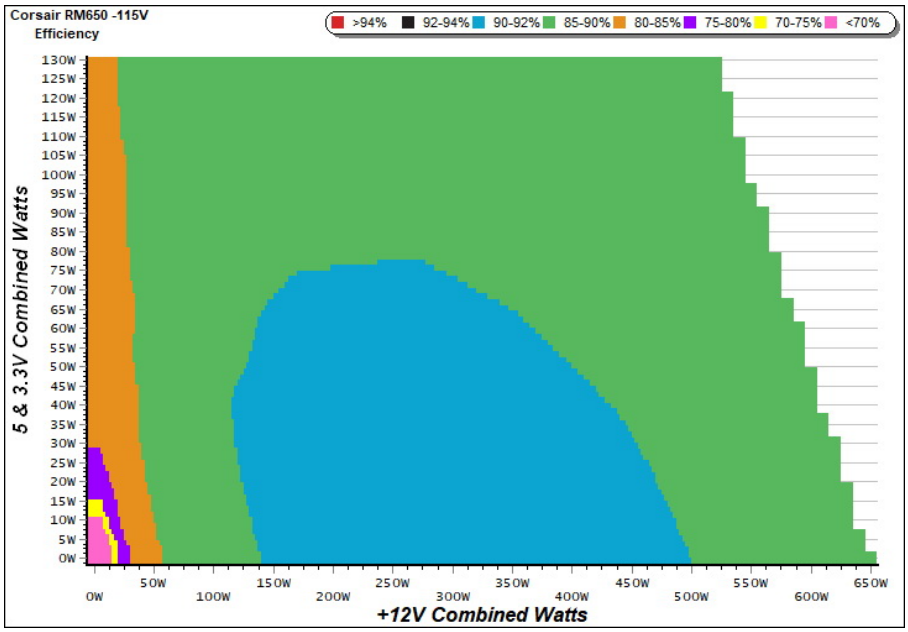
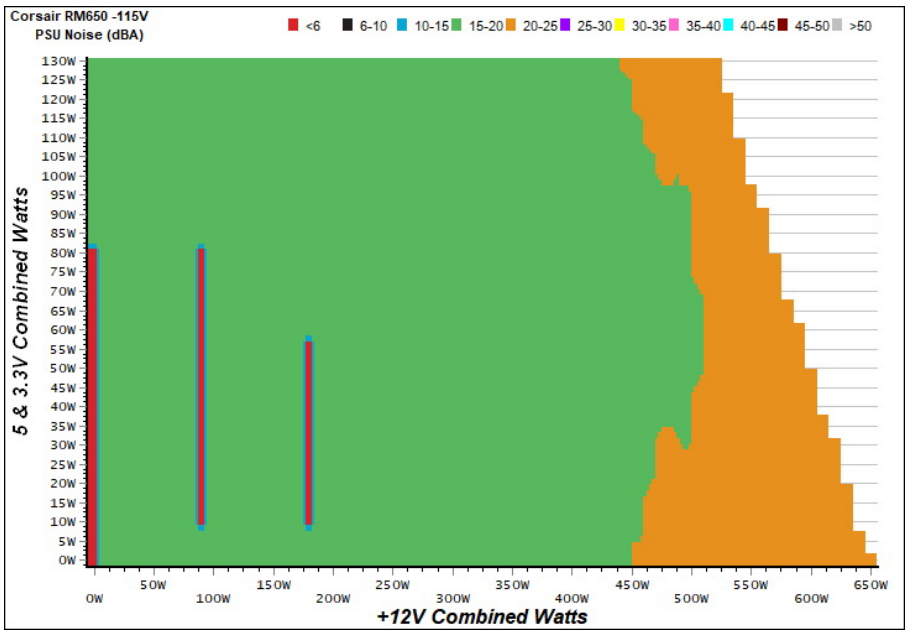
EFFICIENCY GRAPH 115V



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 (+-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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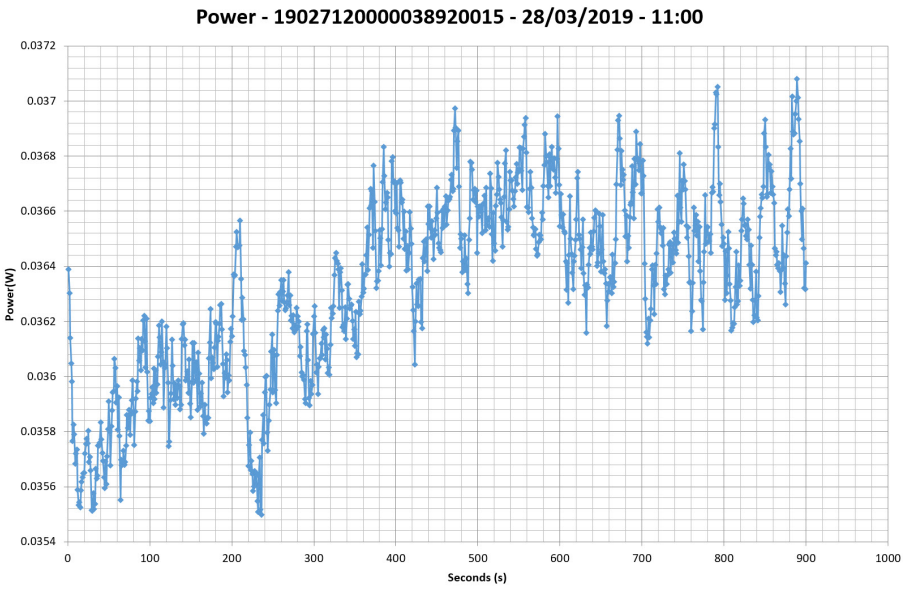
VAMPIRE POWER -115V



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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230V

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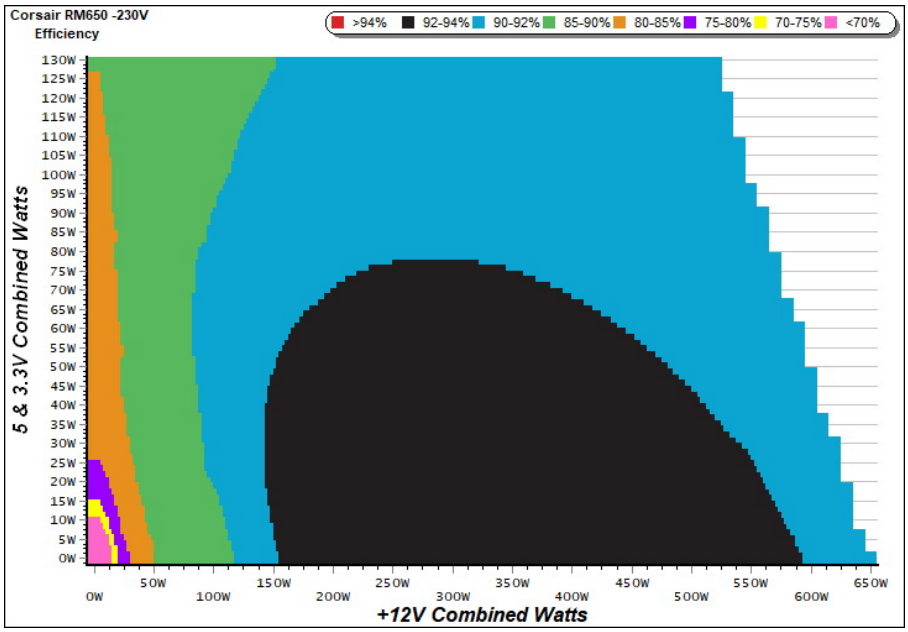
EFFICIENCY GRAPH 230V



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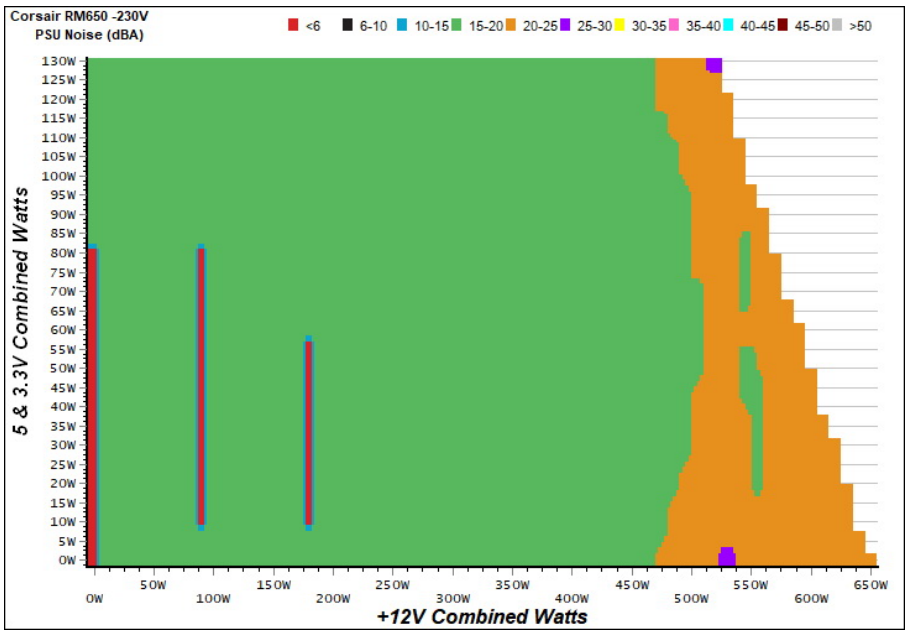
NOISE GRAPH 230V



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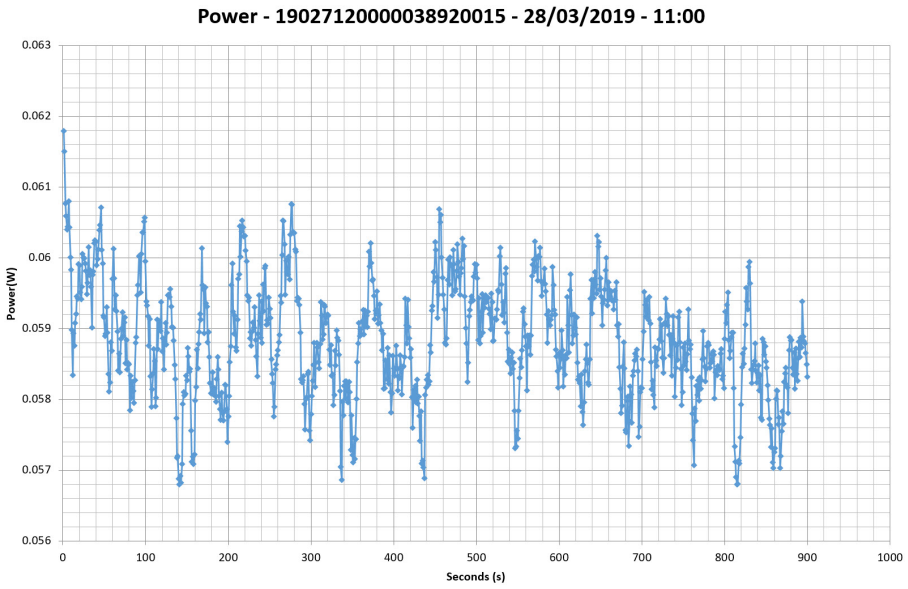
VAMPIRE POWER -230V



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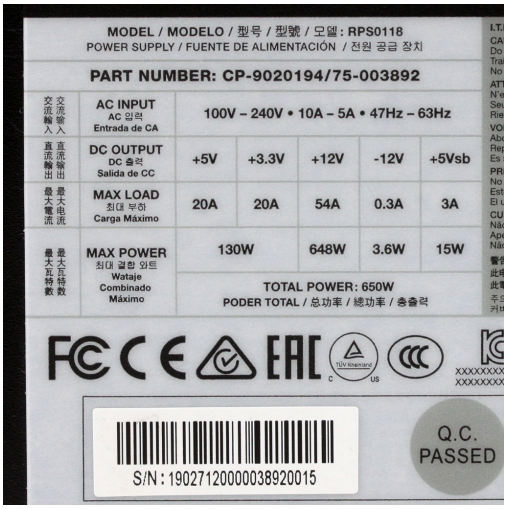
Top side



Power specifications label

CERTIFICATIONS 115V

CYBENETICS GOLD

CYBENETICS A+

CERTIFICATIONS 230V

CYBENETICS GOLD 230v

CYBENETICS A+ 230v

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Lab Director