



Corsair RM550x

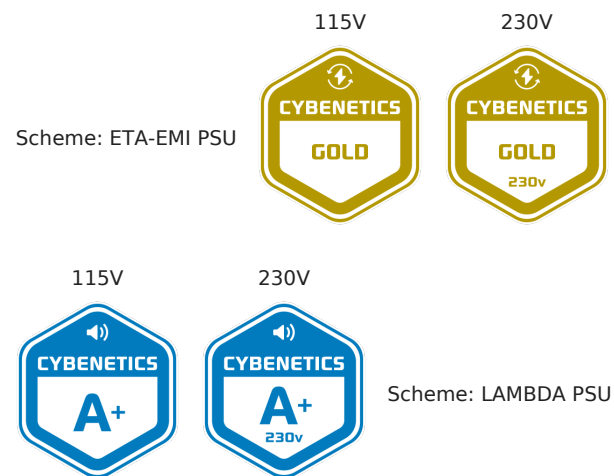
Serial Number 20277139000038950002

Lab ID CR55001733

Certification ID 251733

Test Result Report ID: 20PS1733A

Certificate Issue Date: Oct 17, 2020



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Aristeidis Bitziopoulos, Certification Body General Manager

General Information

Test Equipment

Electronic Loads	Chroma 63601-5 x2 Chroma 63600-2 Chroma 63640-80-80 x10 Chroma 63610-80-20
AC Sources	Chroma 6530, APM SP300VAC4000W-P, GW Instek ASR-3500
Power Analyzers	Rohde & Schwarz HMC8015 & NPA701
Oscilloscopes	Picoscope 4444, Siglent SDS2104X PLUS
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Temperature Logger	Picoscope TC-08
Tachometer	UNI-T UT372
Multimeters	Keysight 34465A
EMI Analyzer	TekBox TBMR-110M-EU
Isolation Transformer	4kVA
UPS	FSP Champ Tower 3kVA, CyberPower OLS3000E 3kVA
Testing Methodology	Cybenetics PSU Test Protocol

DUT Information(Non-accredited measurements)

Product Identification Details	
Brand	Corsair
Model	RM550x
OEM/ODM	Channel Well Technology
Serial Number	20277139000038950002
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	47-63

Rated Power (W)	550
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	140mm Magnetic Levitation Fan (NR140ML)
Semi-Passive Operation	✓
Cybenetics Testing Information	
Lab ID	CR55001733
Date of receipt	Oct 5, 2020
Testing Date	Oct 9, 2020
Report Issued Date	Oct 17, 2020
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors(Non-accredited measurements)

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)	1	2	16-18AWG	Yes
SATA (500mm+110mm+110mm+110mm)	1	4	18AWG	No
SATA (520mm+110mm+110mm)	1	3	18AWG	No
4 pin Molex (450mm+100mm+100mm+100mm)	1	4	18AWG	No
AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	45.8	3	0.3
	Watts	130		549.6	15	3.6
Total Max. Power (W)		550				

Parts Description

General Data	-
Manufacturer (OEM)	CWT
PCB Type	Double Sided
Primary Side	-
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor SCK-037 (3 Ohm)
Bridge Rectifier(s)	2x GBU806 (600V, 8A @ 100°C)
APFC MOSFETs	2x On Semiconductor FCPF190N60E (600V, 13.1A @ 100°C, Rds(on): 0.19Ohm)
APFC Boost Diode	1x On Semiconductor FFSP0665A (650V, 6A @ 153°C)
Bulk Cap(s)	2x Nippon Chemi-Con (400V, 330uF & 220uF each or 550uF combined, 2,000h @ 105°C, KMR)
Main Switchers	2x Infineon IPA60R190P6 (650V, 12.7A @ 100°C, Rds(on): 0.19Ohm)
APFC Controller	Champion CM6500UNX & Champion CM03X
Resonant Controller	Champion CU6901VAC
Topology	Primary side: APFC, Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	-
+12V MOSFETs	4x On Semiconductor NTMFS5C430N (40V, 131A @ 100°C, Rds(on): 1.7mOhm)
5V & 3.3V	DC-DC Converters: 2x UBIQ QM3054M6 (30V, 61A @ 100°C, Rds(on): 4.8mOhm) & 3x UBIQ QN3107M6N (30V, 70A @ 100°C, Rds(on): 2.6mOhm) PWM Controllers: UPI Semi uP3861P
Filtering Capacitors	Electrolytic: 5x Nippon Chemi-Con (1-5,000h @ 105°C, KZE), 4x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 1x Rubycon (4-10,000h @ @ 105°C, YXJ) Polymer: 24x FPCAP
Supervisor IC	Weltrend WT7502R (OVP, UVP, SCP, PG)
Fan Controller	Microchip PIC16F1503
Fan Model	Corsair NR140ML (140mm, 12V, 0.27A, Magnetic Levitation Bearing Fan)

5VSB Circuit	-
Rectifier	1x PS1045L SBR (45V, 10A) & IPS ISD04N65A (650V, 2.5A @ 100°C, Rds(on): 2.2 Ohm)
Standby PWM Controller	On-Bright OB5282

Test Results

Temperature & Compliance Info

Temperature Range (°C /°F)	28-32 / 82.4-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
ALPM (Alternative Low Power Mode) compatible	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	88.356%
Average Noise Output (>1450 Load Combinations)	15.73dBA
Average PF (>1450 Load Combinations)	0.989
Efficiency With 10W (≤500W) or 2% (>500W) Load	74.197%
Standby Power Consumption	0.0310W
Non-Accredited	
12V Ripple (Full Load)	11.29mV
5V Ripple (Full Load)	11.76mV
3.3V Ripple (Full Load)	17.17mV
5VSB Ripple (Full Load)	11.00mV
12V Load Regulation	1.23%
5V Load Regulation	0.42%
3.3V Load Regulation	0.55%
5VSB Load Regulation	1.70%
Inrush Current	23.010A

230V

Accredited		
Average Efficiency (>1450 load combinations)	90.316%	
Average Noise Output (>1450 Load Combinations)	15.80dBA	
Average PF (>1450 Load Combinations)	0.962	
Efficiency With 10W (≤500W) or 2% (>500W) Load	-	
Standby Power Consumption	0.0426W	
Non-Accredited		
12V Ripple (Full Load)	11.03mV	
5V Ripple (Full Load)	12.97mV	
3.3V Ripple (Full Load)	15.55mV	
5VSB Ripple (Full Load)	12.20mV	
12V Load Regulation	1.24%	
5V Load Regulation	0.40%	
3.3V Load Regulation	0.52%	
5VSB Load Regulation	1.72%	
Inrush Current	47.750A	
Hold-Up Time & PWR_OK Signal	23.30ms	
AC Loss to PWR_OK Hold Up Time	20.60ms	
PWR_OK Inactive to DC Loss Delay	2.70ms	
PSU Timings: T1 (20% / 100%)	51.0ms	50.0ms
PSU Timings: T3 (20% / 100%)	139.0ms	139.0ms
OPP (27.00°C / 42.00°C)	127.81%	127.81%

Hold-Up Time & PWR_OK Signal

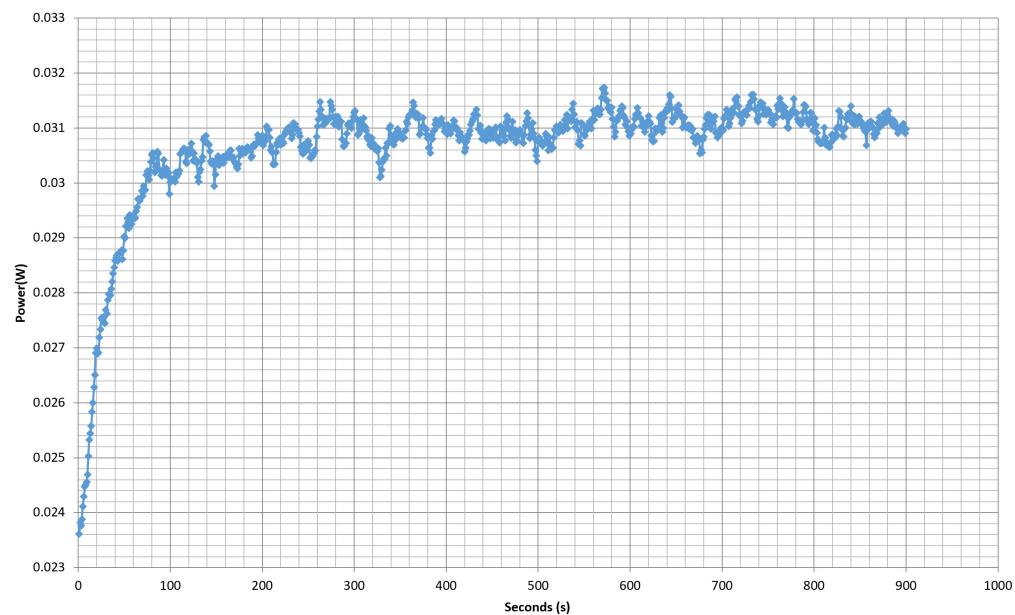
Hold-Up Time (ms)	23.3
AC Loss to PWR_OK Hold Up Time (ms)	20.6
PWR_OK Inactive to DC Loss Delay (ms)	2.7



Graphs

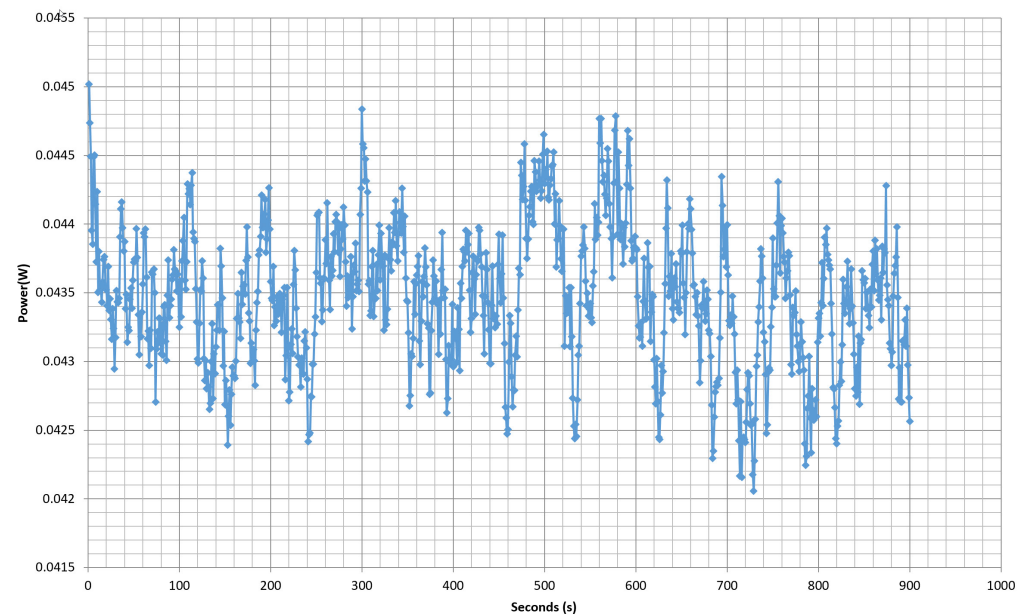
115V

Power - 20277139000038950002 - 07/10/2020 - 21:24



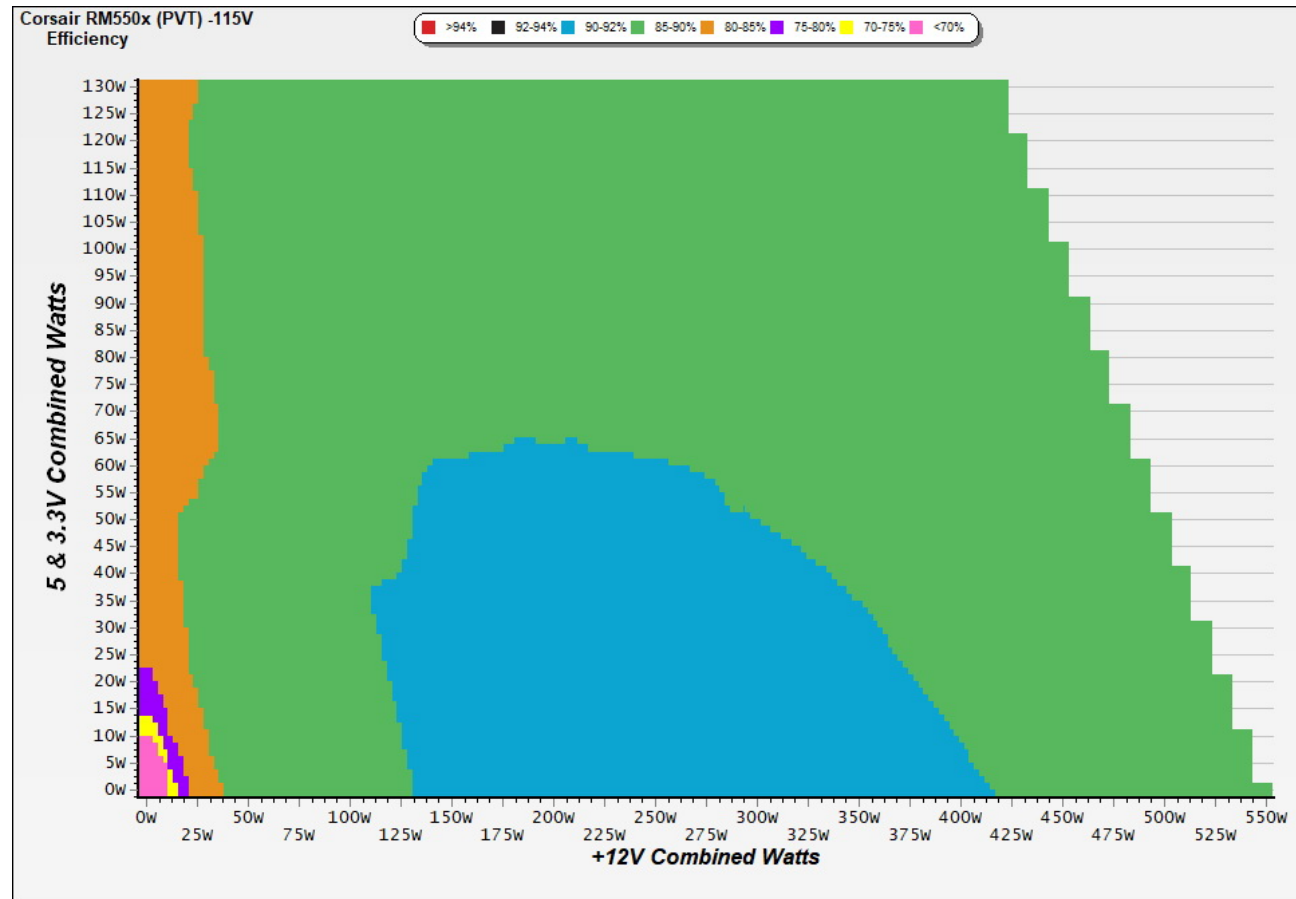
230V

Power - 20277139000038950002 - 07/10/2020 - 21:24



Efficiency Graph

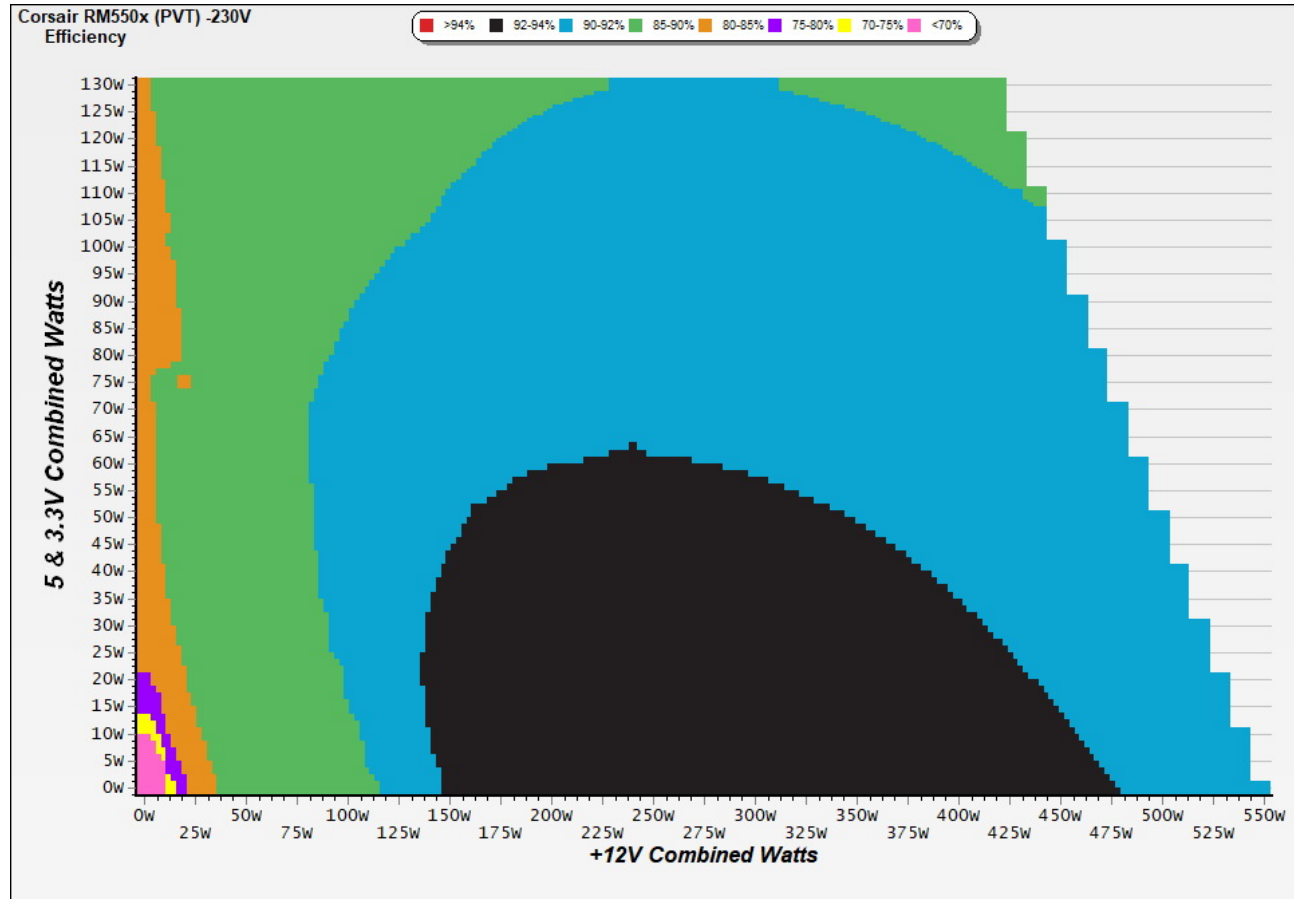
115V



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

230V

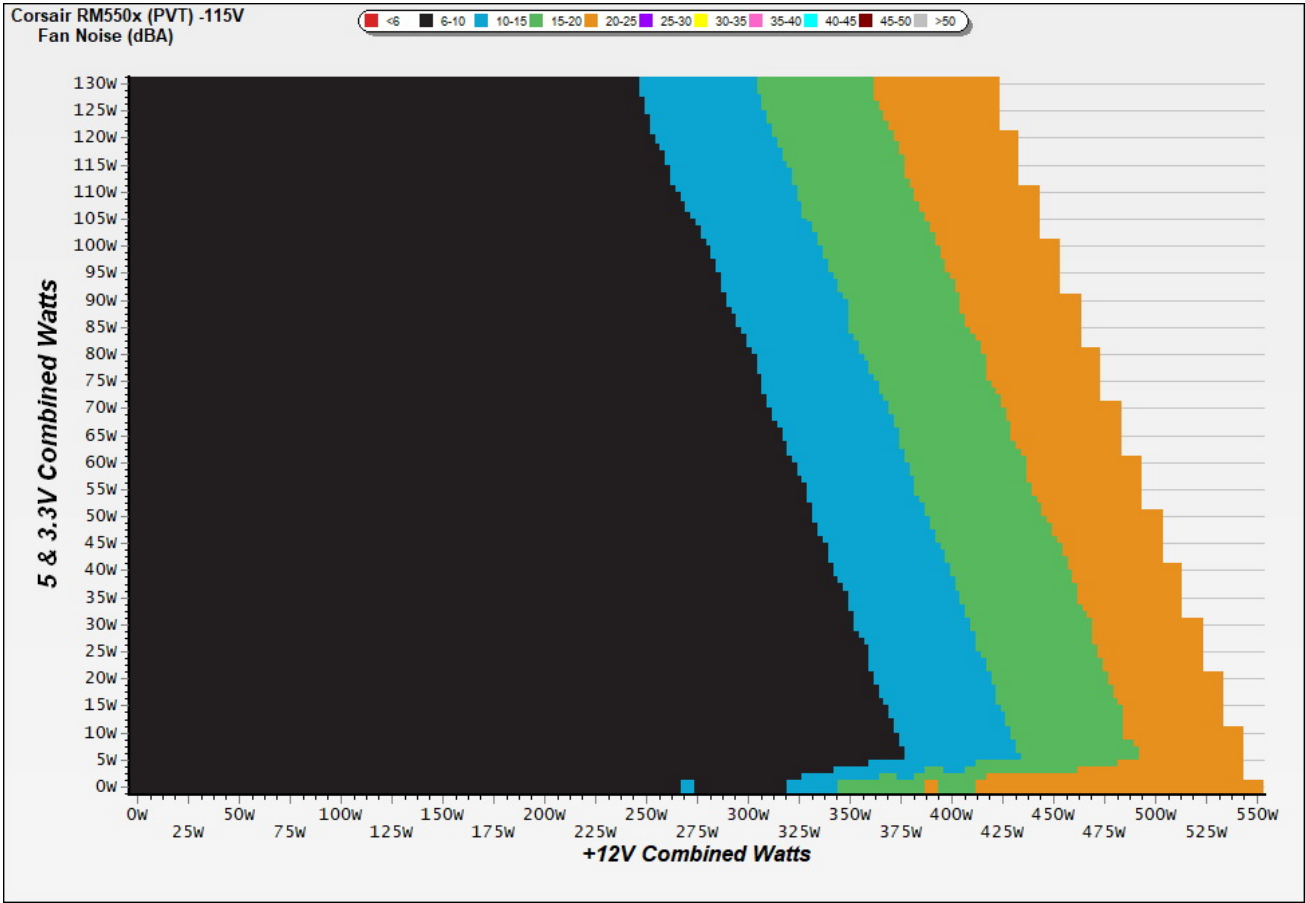


INFO

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Noise Graph

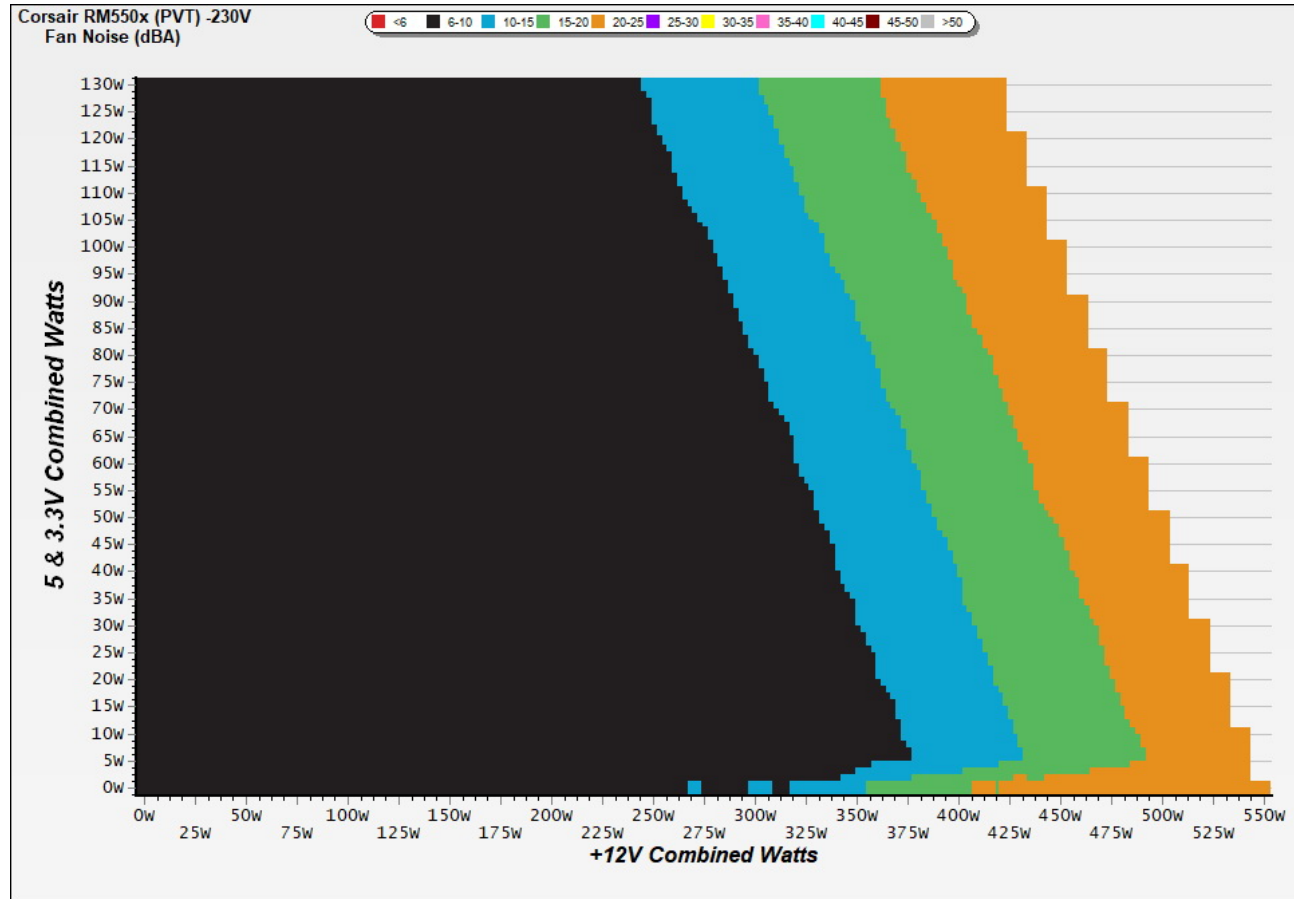
115V



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

230V



INFO

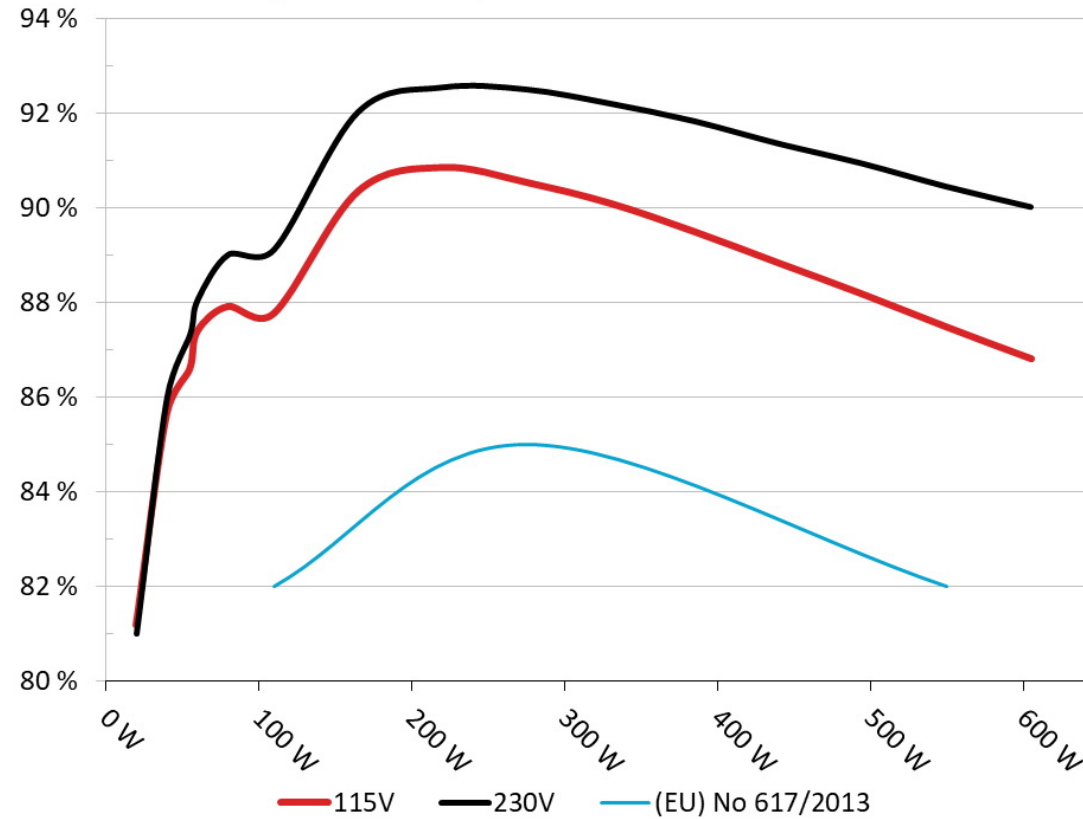
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Indicative Performance

Efficiency under high ambient temperature

Efficiency: Corsair RM550x (PVT)

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



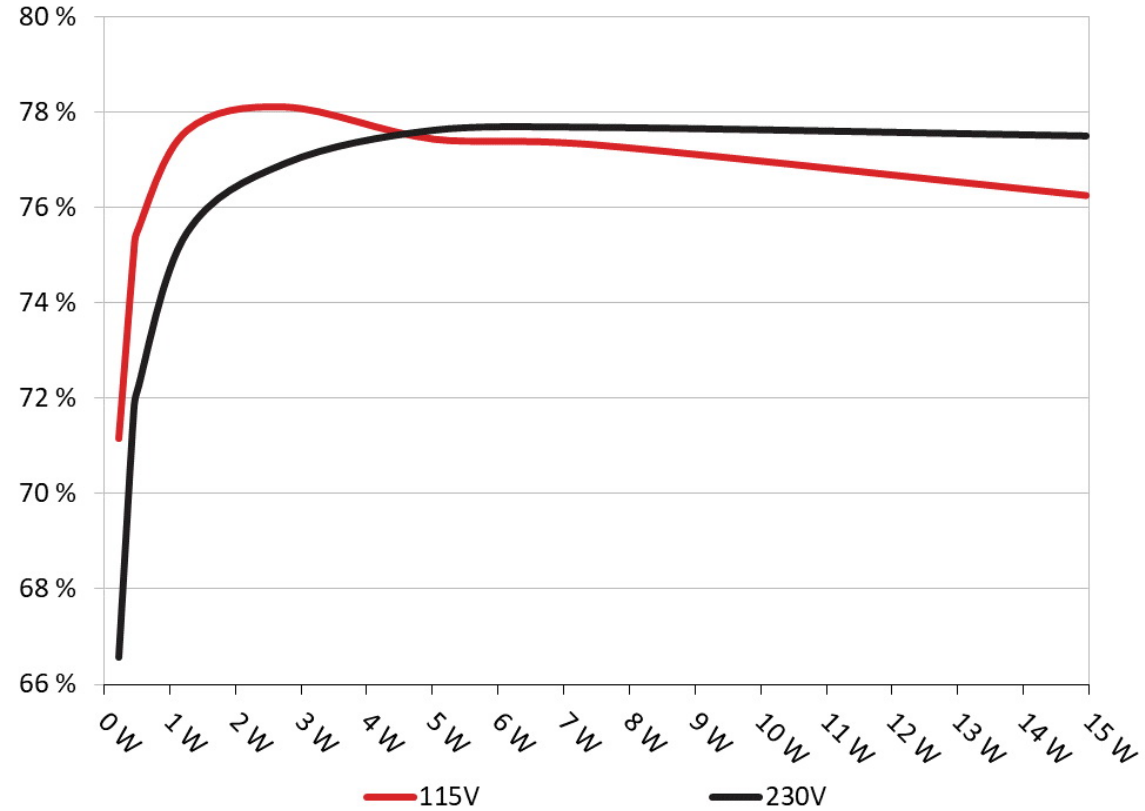
INFO

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 RM550x (PVT)

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

5VSB Efficiency (ERP LOT 3/6 & CEC)

115V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.227	71.160%	0.045
	5.048V	0.319		115.17V
2	0.090A	0.454	75.041%	0.084
	5.046V	0.605		115.17V
3	0.550A	2.770	78.094%	0.305
	5.036V	3.547		115.17V
4	1.000A	5.027	77.422%	0.379
	5.026V	6.493		115.16V
5	1.500A	7.525	77.298%	0.419
	5.016V	9.735		115.16V
6	3.001A	14.954	76.245%	0.476
	4.983V	19.613		115.15V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.227	66.569%	0.015
	5.047V	0.341		230.35V
2	0.090A	0.454	71.722%	0.027
	5.046V	0.633		230.35V
3	0.550A	2.771	76.929%	0.142
	5.037V	3.602		230.36V
4	1.000A	5.029	77.620%	0.233
	5.028V	6.479		230.36V
5	1.500A	7.527	77.678%	0.290
	5.017V	9.690		230.36V
6	3.000A	14.957	77.497%	0.388
	4.985V	19.300		230.36V

Supplementary Tests (For Reference)

Typical Load Tests

115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	2.786A	1.985A	2.008A	0.996A	54.971	86.589%	0	<6.0	45.47°C	0.969
	11.976V	5.040V	3.286V	5.023V	63.485				40.38°C	115.14V
2	6.530A	2.979A	3.016A	1.196A	110.046	87.769%	0	<6.0	46.11°C	0.986
	12.118V	5.038V	3.284V	5.019V	125.381				40.75°C	115.14V
3	10.660A	3.477A	3.519A	1.397A	165.045	90.347%	0	<6.0	47.58°C	0.991
	12.100V	5.035V	3.282V	5.013V	182.678				41.15°C	115.12V
4	14.794A	3.975A	4.023A	1.598A	220.050	90.851%	0	<6.0	48.51°C	0.992
	12.089V	5.033V	3.280V	5.008V	242.209				41.61°C	115.13V
5	18.585A	4.971A	5.036A	1.800A	275.049	90.537%	0	<6.0	50.00°C	0.994
	12.081V	5.031V	3.278V	5.003V	303.796				42.75°C	115.10V
6	22.387A	5.967A	6.042A	2.001A	330.042	90.092%	521	10.2	43.42°C	0.995
	12.071V	5.029V	3.277V	4.998V	366.339				51.38°C	115.08V
7	26.204A	6.966A	7.055A	2.203A	385.133	89.492%	679	18.6	43.61°C	0.994
	12.059V	5.028V	3.276V	4.994V	430.355				52.58°C	115.07V
8	30.031A	7.964A	8.067A	2.406A	440.285	88.830%	816	24.5	44.00°C	0.994
	12.049V	5.026V	3.274V	4.989V	495.647				53.65°C	115.08V
9	34.244A	8.465A	8.559A	2.407A	494.826	88.177%	1119	33.5	44.16°C	0.995
	12.040V	5.023V	3.272V	4.987V	561.171				55.00°C	115.13V
10	38.265A	8.965A	9.081A	3.018A	550.042	87.478%	1252	36.3	45.40°C	0.995
	12.030V	5.021V	3.270V	4.972V	628.778				56.72°C	115.11V
11	42.884A	8.969A	9.088A	3.019A	605.271	86.810%	1431	39.6	46.59°C	0.996
	12.022V	5.018V	3.269V	4.970V	697.237				59.25°C	115.11V
CL1	0.116A	16.003A	16.000A	0.000A	134.363	83.451%	545	11.5	42.59°C	0.989
	12.100V	5.032V	3.277V	5.061V	161.008				50.21°C	115.16V

CL2	45.857A	1.000A	1.001A	1.000A	565.598	88.117%	1153	34.2	45.19°C	0.995
	12.044V	5.019V	3.272V	5.002V	641.874				56.23°C	115.08V

The results above are not used in the certification process

230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	2.786A	1.984A	2.009A	0.996A	54.973	87.316%	0	<6.0	45.38°C	0.816
	11.977V	5.040V	3.286V	5.024V	62.959				40.03°C	230.40V
2	6.530A	2.979A	3.013A	1.196A	110.049	89.119%	0	<6.0	46.86°C	0.922
	12.120V	5.038V	3.284V	5.019V	123.485				40.93°C	230.40V
3	10.660A	3.477A	3.520A	1.397A	165.052	92.034%	0	<6.0	47.74°C	0.952
	12.100V	5.036V	3.282V	5.013V	179.338				41.29°C	230.40V
4	14.794A	3.975A	4.026A	1.598A	220.057	92.551%	0	<6.0	48.46°C	0.967
	12.089V	5.033V	3.280V	5.007V	237.768				41.64°C	230.39V
5	18.585A	4.971A	5.036A	1.800A	275.053	92.509%	0	<6.0	49.62°C	0.975
	12.081V	5.031V	3.279V	5.003V	297.326				42.35°C	230.39V
6	22.389A	5.967A	6.044A	2.001A	330.050	92.209%	425	8.5	42.51°C	0.981
	12.070V	5.029V	3.277V	4.998V	357.938				50.55°C	230.39V
7	26.205A	6.965A	7.055A	2.203A	385.140	91.835%	657	17.6	43.14°C	0.985
	12.059V	5.028V	3.276V	4.994V	419.384				51.55°C	230.38V
8	30.039A	7.963A	8.066A	2.406A	440.314	91.360%	810	24.2	43.94°C	0.987
	12.047V	5.026V	3.274V	4.989V	481.954				53.59°C	230.38V
9	34.255A	8.465A	8.558A	2.407A	494.853	90.941%	1047	31.4	44.93°C	0.988
	12.037V	5.023V	3.272V	4.987V	544.145				55.47°C	230.38V
10	38.275A	8.967A	9.083A	3.018A	550.073	90.450%	1205	35.2	45.22°C	0.990
	12.027V	5.021V	3.271V	4.972V	608.152				56.74°C	230.36V
11	42.887A	8.971A	9.088A	3.019A	605.318	90.020%	1431	39.6	46.53°C	0.991
	12.022V	5.018V	3.269V	4.970V	672.428				59.39°C	230.34V
CL1	0.113A	16.003A	16.001A	0.000A	134.362	84.712%	542	11.4	42.46°C	0.948
	12.100V	5.033V	3.278V	5.062V	158.611				49.78°C	230.41V

CL2	45.862A	1.001A	0.999A	1.000A	565.609	91.176%	1151	34.2	45.79°C	0.990
	12.043V	5.018V	3.272V	5.001V	620.347				56.31°C	230.35V

The results above are not used in the certification process

Light Load Tests

115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.238A	0.494A	0.500A	0.198A	19.999	81.191%	0	<6.0	0.876
	11.994V	5.060V	3.298V	5.058V	24.632				115.18V
2	2.477A	0.992A	1.004A	0.397A	39.989	85.650%	0	<6.0	0.951
	11.985V	5.042V	3.288V	5.036V	46.689				115.17V
3	3.722A	1.488A	1.508A	0.597A	60.018	87.394%	0	<6.0	0.971
	11.972V	5.040V	3.286V	5.031V	68.675				115.14V
4	4.960A	1.985A	2.009A	0.796A	79.967	87.915%	0	<6.0	0.979
	11.969V	5.038V	3.285V	5.026V	90.959				115.13V

The results above are not used in the certification process

230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.238A	0.494A	0.501A	0.198A	20.000	80.985%	0	<6.0	0.539
	11.992V	5.061V	3.298V	5.059V	24.696				230.40V
2	2.477A	0.992A	1.005A	0.397A	39.990	85.987%	0	<6.0	0.737
	11.984V	5.042V	3.288V	5.037V	46.507				230.40V
3	3.722A	1.489A	1.507A	0.597A	60.019	88.056%	0	<6.0	0.831
	11.972V	5.040V	3.286V	5.031V	68.160				230.40V
4	4.960A	1.985A	2.010A	0.796A	79.968	89.011%	0	<6.0	0.881
	11.968V	5.039V	3.285V	5.027V	89.841				230.40V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	4.30mV	3.10mV	2.80mV	4.60mV	Pass
20% Load	3.80mV	3.70mV	2.80mV	4.20mV	Pass
30% Load	10.00mV	3.60mV	2.90mV	4.30mV	Pass
40% Load	8.30mV	3.60mV	2.90mV	4.50mV	Pass
50% Load	7.20mV	3.80mV	3.40mV	4.30mV	Pass
60% Load	6.80mV	3.80mV	4.10mV	4.40mV	Pass
70% Load	6.50mV	4.00mV	3.70mV	4.60mV	Pass
80% Load	6.50mV	4.40mV	6.60mV	4.80mV	Pass
90% Load	8.30mV	11.30mV	15.00mV	10.50mV	Pass
100% Load	11.30mV	11.80mV	17.20mV	11.00mV	Pass
110% Load	10.30mV	5.60mV	8.00mV	5.40mV	Pass
Crossload1	4.80mV	4.40mV	7.80mV	4.70mV	Pass
Crossload2	10.10mV	8.30mV	11.40mV	8.20mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	4.40mV	3.10mV	2.70mV	4.80mV	Pass
20% Load	3.80mV	3.40mV	2.90mV	4.20mV	Pass
30% Load	11.30mV	4.10mV	3.00mV	4.40mV	Pass
40% Load	7.20mV	3.40mV	2.80mV	3.80mV	Pass
50% Load	8.50mV	4.00mV	3.20mV	4.60mV	Pass
60% Load	7.50mV	4.00mV	3.90mV	4.30mV	Pass
70% Load	7.10mV	4.10mV	3.40mV	4.60mV	Pass
80% Load	7.30mV	4.80mV	7.60mV	5.70mV	Pass

