CORSAIR

Corsair RM750x (ATX v3.1)

Serial Number A7QQA404M007FC

Lab ID CR75002406

Certification ID 252406

Test Result Report ID: 24PS2406A

Certificate Issue Date: Apr 5, 2024

Scheme: ETA-EMI PSU

115V



230V



Scheme: LAMBDA PSU

115V



230V





Outside Validation Scope



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	RM750x (ATX v3.1)
OEM/ODM	Channel Well Technology
Serial Number	A7QQA404M007FC
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5

Rated Frequency (Hz)	47-63
Rated Power (W)	750
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	140mm Fluid Dynamic Bearing Fan (NR140HP)
Semi-Passive Operation	✓ (selectable)
Cybenetics Testing Information	
Lab ID	CR75002406
Date of receipt	Mar 14, 2024
Testing Date	Apr 4, 2024
Report Issued Date	Apr 5, 2024
DUT Notes	CP-9020285 (Semi-Passive Off)
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 (610mm)	1	1	16-20AWG	No
4+4 pin EPS12V (750mm)	2	2	18AWG	No
6+2 pin PCIe (650mm)	3	3	16-18AWG	No
12+2 pin PCIe (650mm) (600W)	1	1	16-24AWG	No
SATA (500mm+115mm+115mm+115mm)	2	8	18AWG	No
4-pin Molex (550mm+100mm+100mm)	1	3	18AWG	No

AC Power Cord (1400mm) - C13 coupler	1	1	18AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	62.5	3	0
	Watts	150		750	15	0
Total Max. Power (W)		750				

Parts Description

General Data	
Manufacturer (OEM)	CWT
PCB Type	Double-Sided
Primary Side	
Transient Filter	6x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	1x NTC Thermistor SCK-037 (3 Ohm @25°C) & Relay
Bridge Rectifier(s)	1x GBJ1506 (600V, 15A @ 100°C)
APFC MOSFETs	2x Infineon IPA60R190P6 (650V, 12.7A @ 100°C, Rds(on): 0.190Ohm) & 1x Sync Power SPN5003 FET (for reduced no-load consumption)
APFC Boost Diode	1x Onsemi FFSP0865A (650V, 8A @ 155°C)
Bulk Cap(s)	1x Nippon Chemi-Con (400V, 390uF, 2000h @ 105°C, KMW) 1x Nippon Chemi-Con (400V, 470uF, 2000h @ 105°C, KMW)
Main Switchers	2x Infineon IPA60R190P6 (650V, 12.7A @ 100°C, Rds(on): 0.190Ohm)
APFC Controller	Champion CM6500UNX
Resonant Controller	Champion CU6901VACNH
Topology	Primary side: APFC, Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETs	4x Toshiba TPHR8504PL (40V, 150A @ 25°C, Rds(on): 0.85mOhm)
5V & 3.3V	DC-DC Converters: 4x UBIQ QN3107M6N (30V, 70A @ 100°C, Rds(on): 2.6mOhm) PWM Controller(s): UPI-Semi uP3861P

Filtering Capacitors	Electrolytic: 4x Nichicon (3-6,000 @ 105°C, HD(M)), 3x Rubycon (6-10,000 @ 105°C, ZLH) 1x Rubycon (2-10,000 @ 105°C,YXF) 2x Nippon Chemi-Con (105°C, W) Polymer: 31x FPCAP, 2x Nippon Chemi-Con
Fan Controller	Microchip PIC16F1503
Fan Model	Corsair NR140HP (140mm, 12V, 0.33A, Fluid Dynamic Bearing Fan)
5VSB Circuit	
High Side Rectifier	1x SMC RS1M (1000V, 1A @ 100°C)
Standby PWM Controller	On-Bright OB2365T

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	✓
ATX v3.1 PSU Power Excursion	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	88.701%
Average Noise Output (>1450 Load Combinations)	19.33dBA
Average PF (>1450 Load Combinations)	0.989
Efficiency With 10W (≤500W) or 2% (>500W) Load	73.996%
Standby Power Consumption	0.0174W
Non-Accredited	
12V Ripple (Full Load)	23.08mV

5V Ripple (Full Load)	14.38mV
3.3V Ripple (Full Load)	16.13mV
5VSB Ripple (Full Load)	19.84mV
12V Load Regulation	0.65%
5V Load Regulation	0.34%
3.3V Load Regulation	0.70%
5VSB Load Regulation	0.86%
Inrush Current	-

230V

Accredited	
Average Efficiency (>1450 load combinations)	90.857%
Average Noise Output (>1450 Load Combinations)	19.14dBA
Average PF (>1450 Load Combinations)	0.960
Efficiency With 10W (≤500W) or 2% (>500W) Load	74.881%
Standby Power Consumption	0.0810W
Non-Accredited	
12V Ripple (Full Load)	23.75mV
5V Ripple (Full Load)	14.54mV
3.3V Ripple (Full Load)	17.89mV
5VSB Ripple (Full Load)	19.75mV
12V Load Regulation	0.64%
5V Load Regulation	0.36%
3.3V Load Regulation	0.70%
5VSB Load Regulation	0.88%
Inrush Current	-
12V Transient Response (200%)	11.34V
5V Transient Response (200%)	4.933V
3.3V Transient Response (200%)	3.162V
5VSB Transient Response (200%)	4.830V
Hold-Up Time & PWR_OK Signal	26.60ms
AC Loss to PWR_OK Hold Up Time	22.90ms

PWR_OK Inactive to DC Loss Delay		3.70ms
PSU Timings: T1 (20% / 100%)	65.0ms	64.0ms
PSU Timings: T3 (20% / 100%)	122.0ms	122.0ms
OPP (27.68°C / 42.03°C)	128.35%	128.35%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	26.6
AC Loss to PWR_OK Hold Up Time (ms)	22.9
PWR_OK Inactive to DC Loss Delay (ms)	3.7

Stromverbrauch im Ruhezustand

Tables

115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	115.06 V	115.02 V	113.85 V	115.10 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.99 Hz	59.40 Hz	60.01 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.416	1.415	1.340	1.418	1.490	PASS
Mains Voltage THD:	0.13 %	0.08 %	N/A	0.20 %	2.00 %	PASS
Real Power:	0.017 W	0.013 W	N/A	0.021 W	N/A	N/A
Apparent Power:	10.208 W	10.171 W	N/A	10.252 W	N/A	N/A
Power Factor:	0.001	N/A	N/A	N/A	N/A	N/A

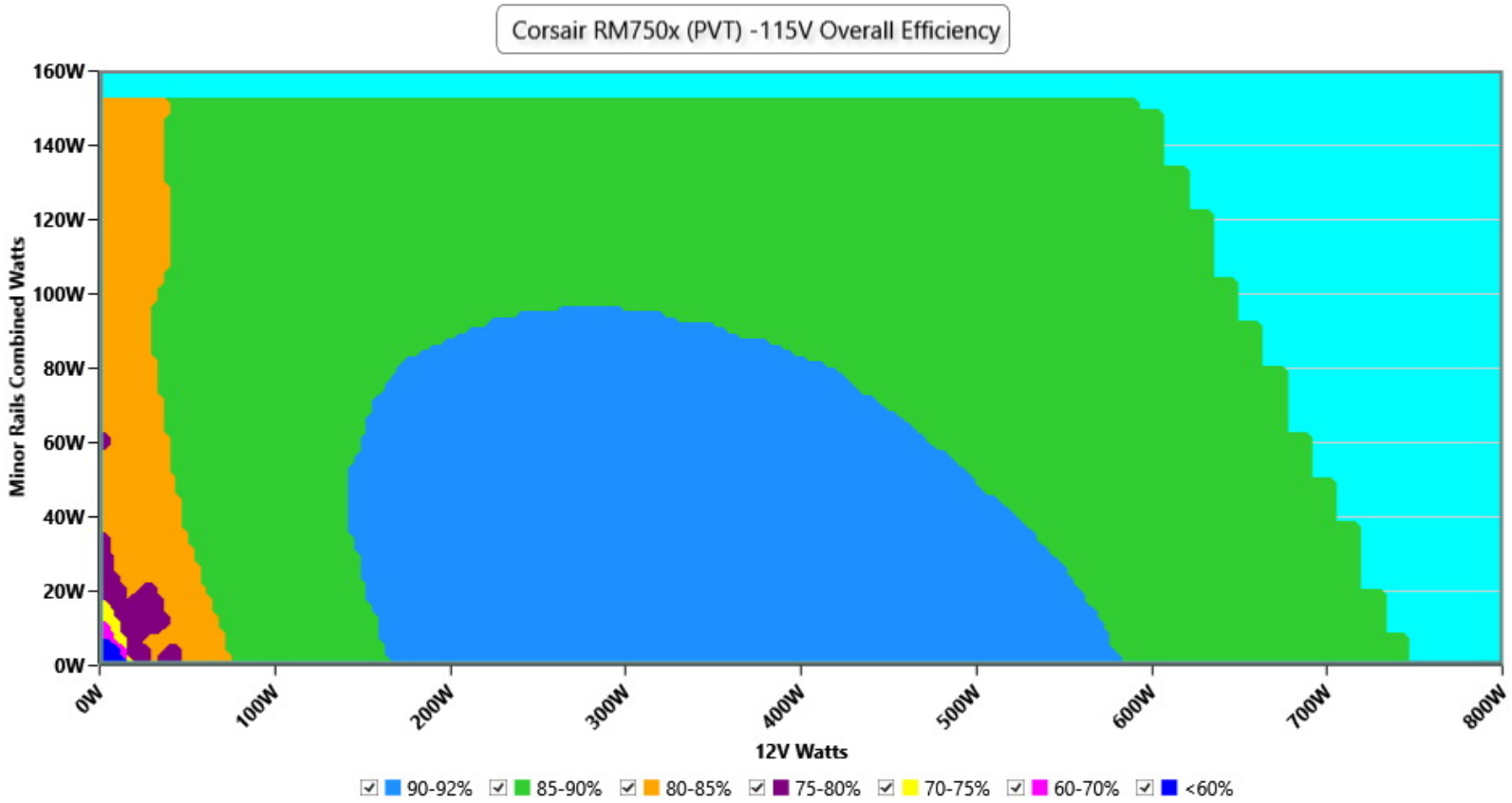
230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	231.00 V	230.88 V	227.70 V	231.06 V	232.30 V	PASS

Mains Frequency:	50.00 Hz	49.99 Hz	49.50 Hz	50.01 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.417	1.416	1.340	1.419	1.490	PASS
Mains Voltage THD:	0.17 %	0.15 %	N/A	0.27 %	2.00 %	PASS
Real Power:	0.081 W	0.072 W	N/A	0.112 W	N/A	N/A
Apparent Power:	34.855 W	34.696 W	N/A	35.030 W	N/A	N/A
Power Factor:	0.002	N/A	N/A	N/A	N/A	N/A

Efficiency Graph

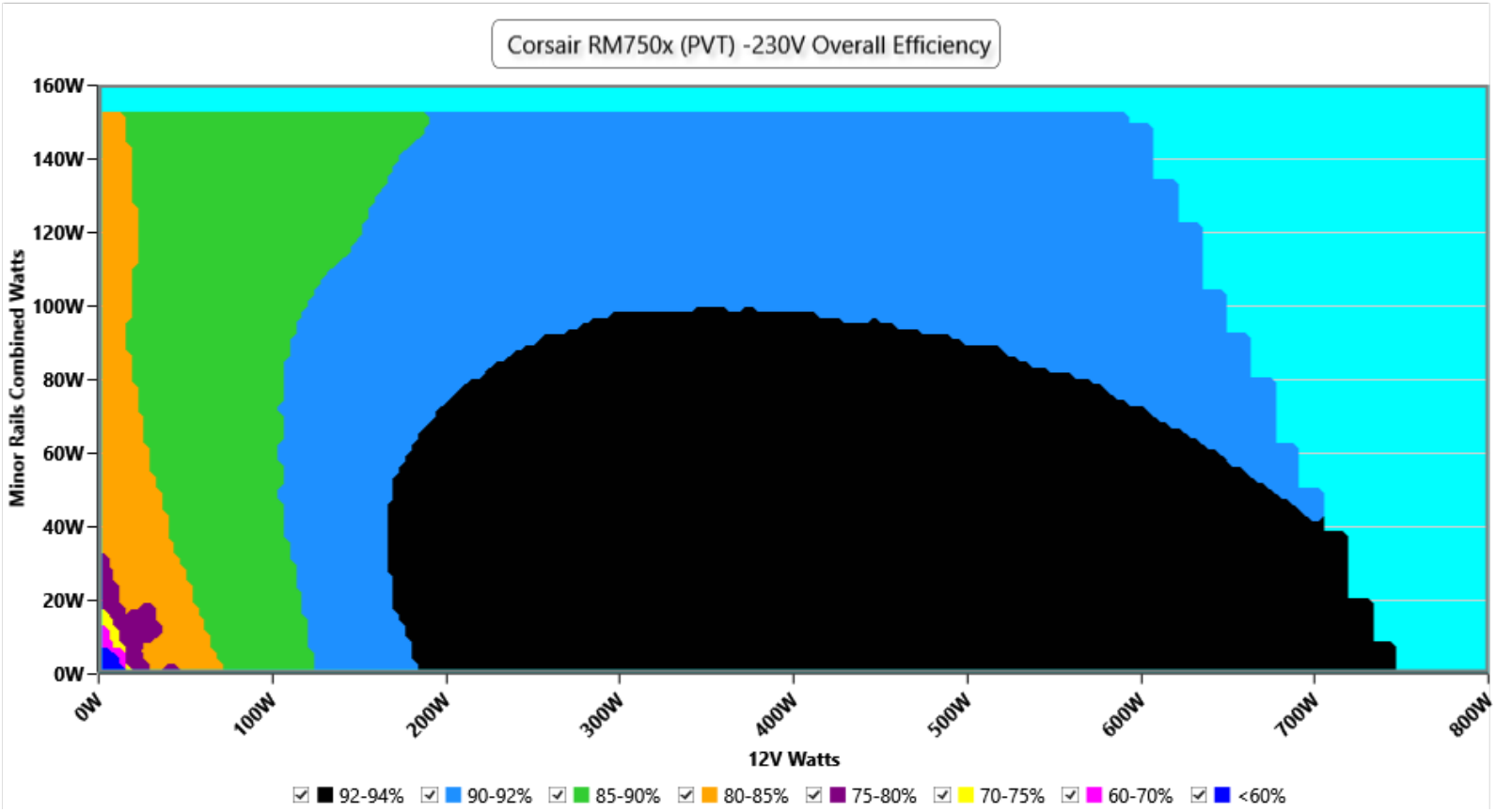
115V



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

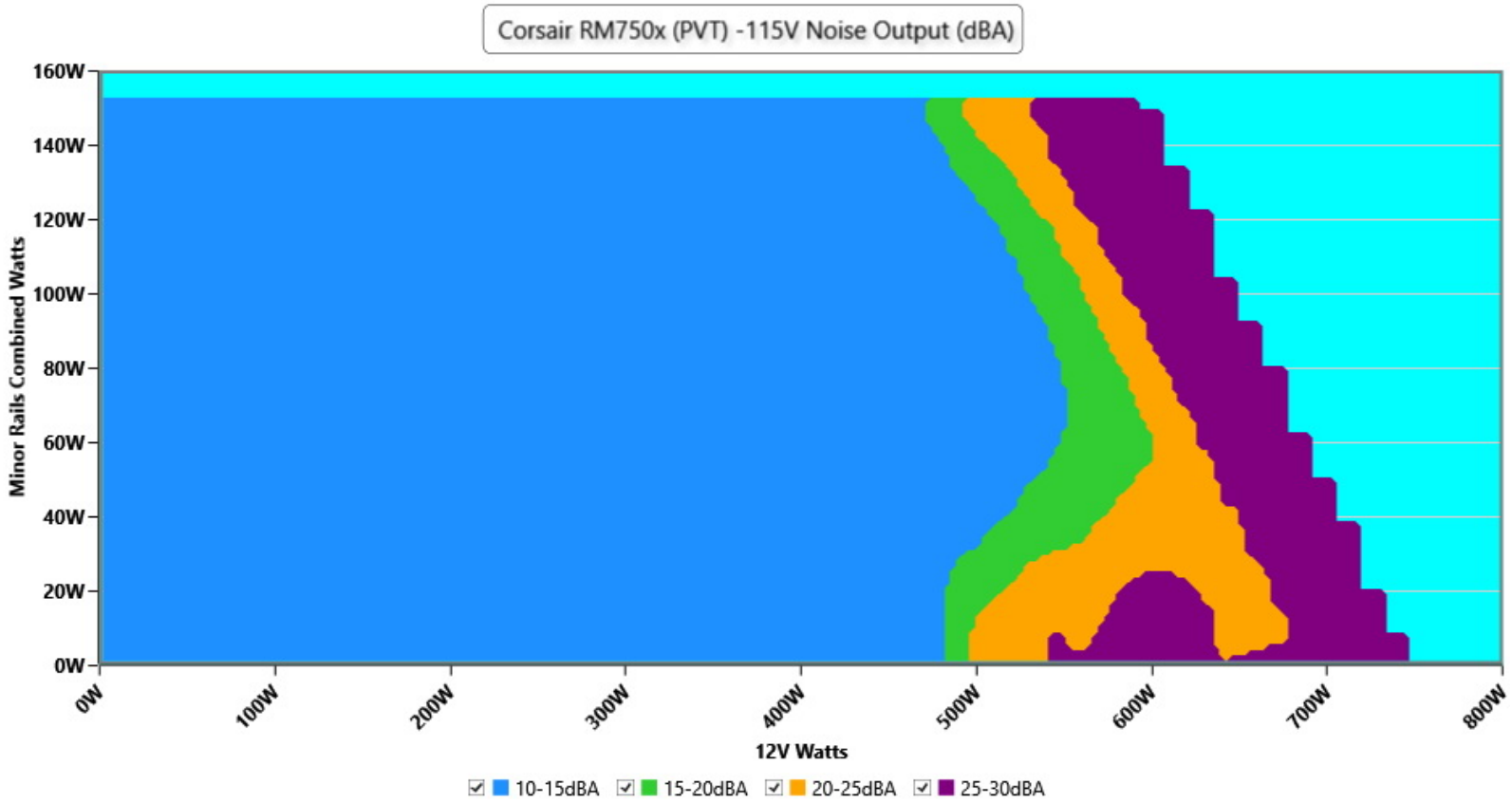


INFO

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

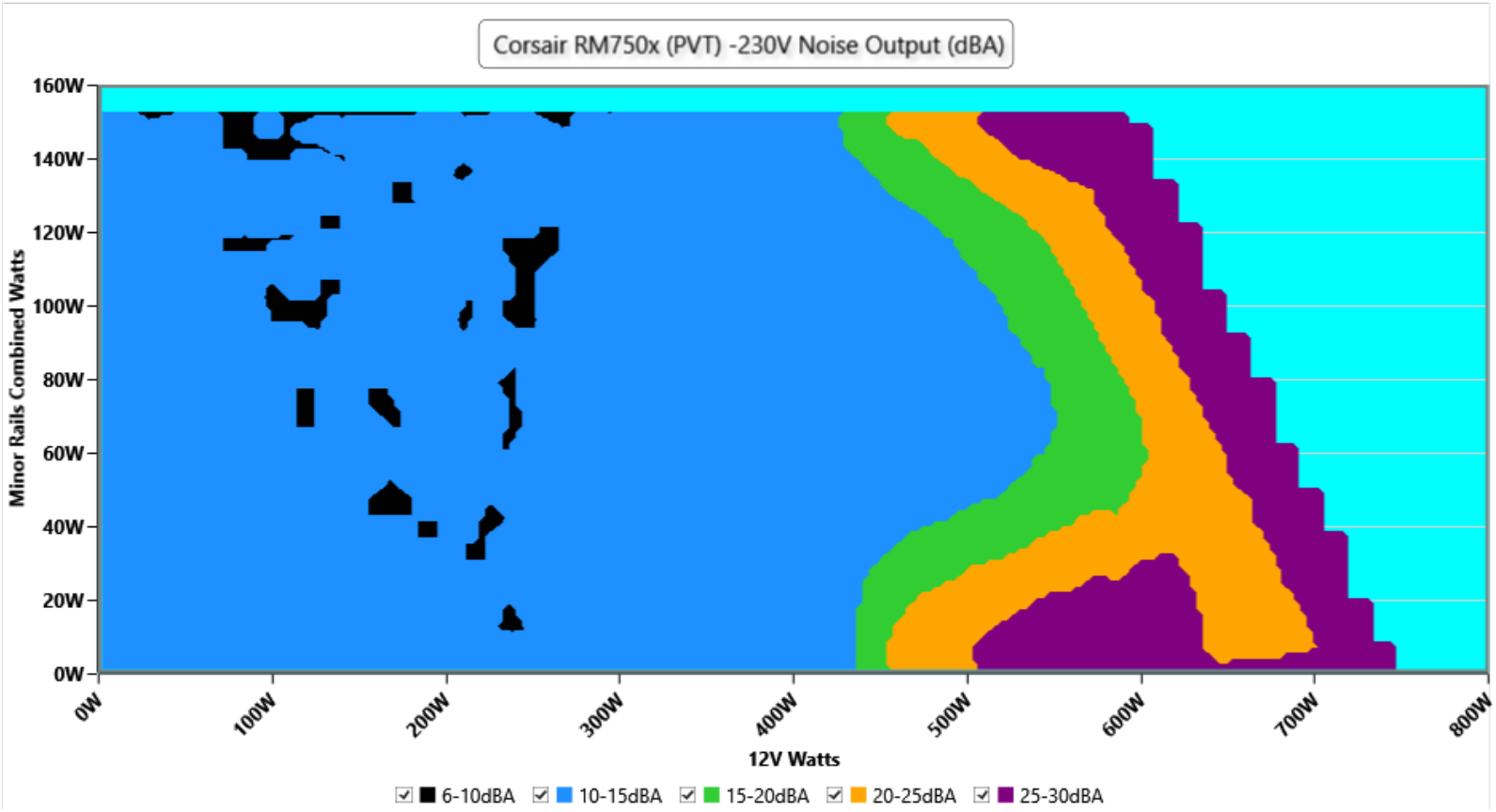
115V



INFO

The PSU`s noise in its entire operational range and under 30-32 °C 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

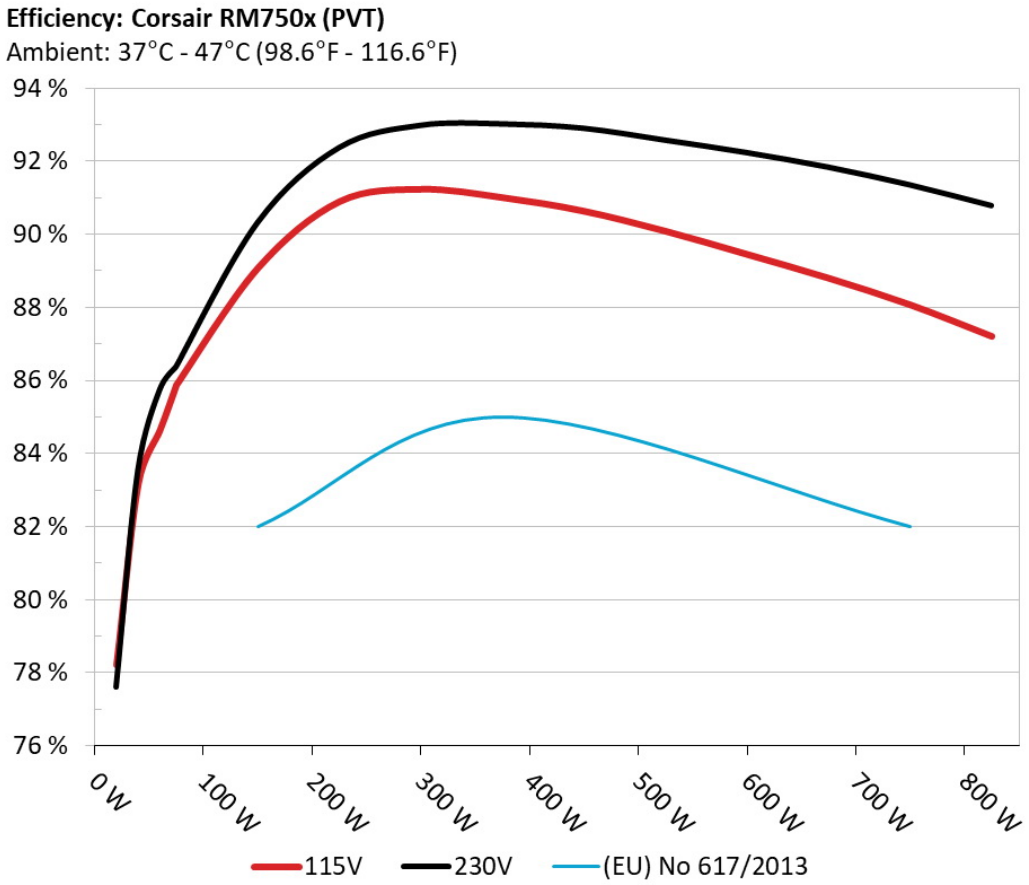


INFO

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

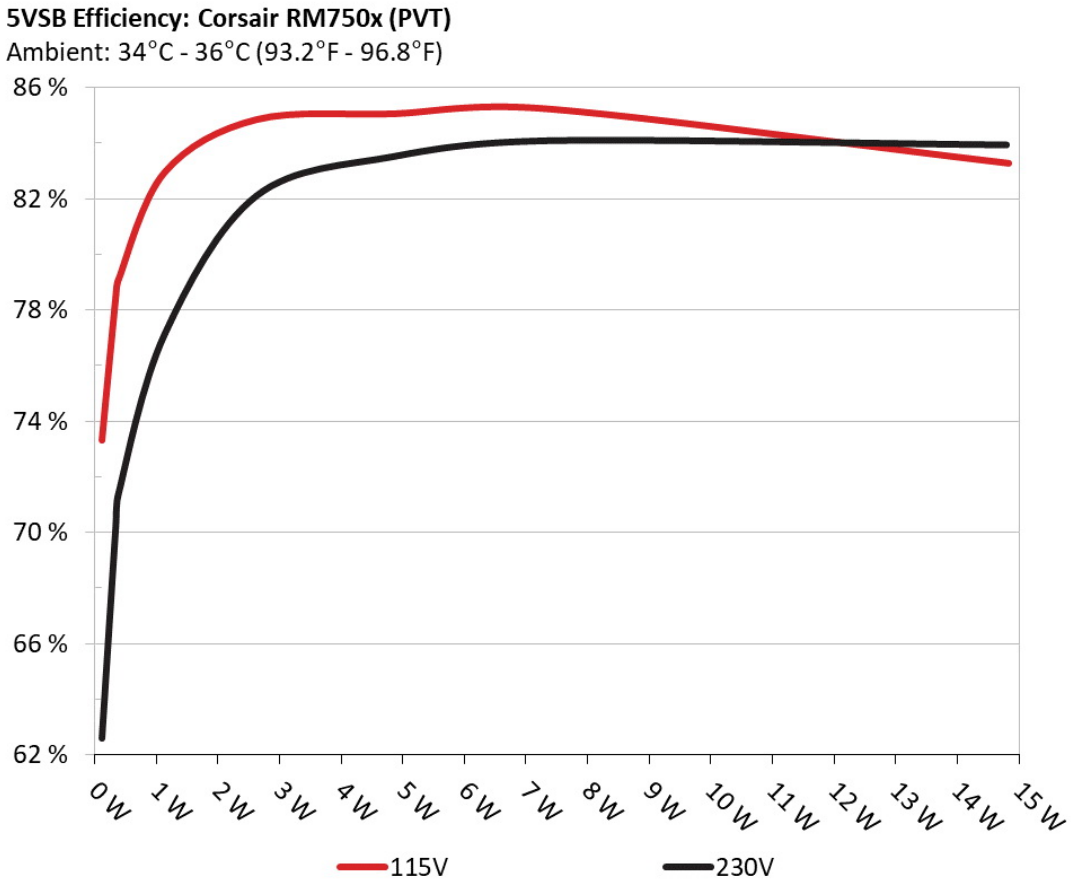
Efficiency under high ambient temperature



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

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

115V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.223W	73.315%	0.029
	4.961V	0.304W		114.93V
2	0.09A	0.446W	78.484%	0.054
	4.961V	0.568W		114.93V
3	0.55A	2.729W	84.86%	0.243
	4.962V	3.216W		114.92V
4	1A	4.963W	85.068%	0.337
	4.963V	5.834W		114.91V
5	1.5A	7.448W	85.248%	0.379
	4.965V	8.737W		114.91V
6	3A	14.929W	83.289%	0.453
	4.977V	17.926W		114.91V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.223W	62.594%	0.01
	4.957V	0.359W		229.88V
2	0.09A	0.446W	70.225%	0.018
	4.958V	0.636W		229.89V
3	0.55A	2.727W	82.121%	0.091
	4.959V	3.322W		229.88V
4	1A	4.959W	83.542%	0.153
	4.959V	5.938W		229.88V
5	1.5A	7.439W	84.109%	0.194
	4.959V	8.846W		229.88V
6	3A	14.891W	83.96%	0.3
	4.964V	17.737W		229.88V

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
10%	4.432A	1.967A	1.997A	1.011A	75	84.817%	0	<6.0	44.3°C	0.971
	12.047V	5.084V	3.304V	4.947V	88.423				40.01°C	114.9V
20%	9.885A	2.952A	2.999A	1.214A	149.936	89.068%	0	<6.0	45.22°C	0.986
	12.042V	5.082V	3.301V	4.941V	168.338				40.71°C	114.86V
30%	15.715A	3.444A	3.5A	1.419A	224.94	90.885%	0	<6.0	45.9°C	0.992
	12.019V	5.081V	3.3V	4.935V	247.5				40.81°C	114.84V
40%	21.548A	3.938A	4.003A	1.622A	300.032	91.222%	451	6.6	41.51°C	0.989
	12.012V	5.079V	3.298V	4.932V	328.922				47.04°C	114.81V
50%	26.982A	4.925A	5.008A	1.827A	374.445	90.997%	469	7.5	42.09°C	0.99
	12.006V	5.077V	3.295V	4.928V	411.494				48.1°C	114.78V
60%	32.464A	5.912A	6.015A	2A	449.228	90.627%	693	19.5	42.64°C	0.991
	12.000V	5.075V	3.292V	4.923V	495.696				49.15°C	114.77V
70%	37.952A	6.9A	7.023A	2.236A	524.306	90.08%	1007	31.5	43.4°C	0.992
	11.994V	5.073V	3.29V	4.919V	582.044				50.43°C	114.72V
80%	43.512A	7.887A	8.032A	2.34A	599.498	89.447%	1237	37.2	43.66°C	0.993
	11.987V	5.071V	3.287V	4.915V	670.23				51.75°C	114.7V
90%	49.409A	8.382A	8.524A	2.444A	674.53	88.795%	1509	42.1	44.22°C	0.994
	11.982V	5.069V	3.285V	4.911V	759.648				53.31°C	114.67V
100%	55.111A	8.879A	9.047A	3.056A	749.766	88.065%	1730	45.2	45.59°C	0.994
	11.977V	5.067V	3.283V	4.909V	851.372				55.65°C	114.64V
110%	60.681A	9.868A	10.151A	3.06A	824.786	87.204%	2042	49.5	46.57°C	0.995
	11.972V	5.066V	3.281V	4.903V	945.81				57.48°C	114.61V
CL1	0.116A	17.81A	18.174A	0A	151.301	82.461%	1001	31.2	41.48°C	0.987
	12.033V	5.07V	3.28V	4.934V	183.485				46.95°C	114.85V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL2	0.115A	19.677A	0A	0A	101.364	82.444%	784	23.5	42.04°C	0.982
	12.042V	5.081V	3.298V	4.943V	122.948				49.08°C	114.88V
CL3	0.115A	0A	20.075A	0A	67.4	76.005%	528	10.1	41.42°C	0.971
	12.043V	5.08V	3.288V	4.942V	88.679				50.5°C	114.89V
CL4	62.546A	0A	0A	0A	749.564	88.858%	1502	41.9	44.56°C	0.994
	11.984V	5.078V	3.298V	4.908V	843.563				55.53°C	114.65V

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
10%	4.434A	1.967A	1.998A	1.011A	75.007	85.283%	0	<6.0	44.26°C	0.83
	12.046V	5.085V	3.304V	4.946V	87.95				40°C	229.87V
20%	9.888A	2.952A	2.999A	1.214A	149.958	90.31%	450	6.6	40.98°C	0.927
	12.041V	5.082V	3.301V	4.942V	166.054				45.57°C	229.86V
30%	15.720A	3.445A	3.501A	1.418A	224.961	92.363%	449	6.6	41.28°C	0.956
	12.017V	5.08V	3.299V	4.937V	243.563				46.28°C	229.85V
40%	21.554A	3.939A	4.004A	1.622A	300.058	92.976%	449	6.6	41.88°C	0.968
	12.010V	5.078V	3.297V	4.933V	322.725				47.46°C	229.83V
50%	26.992A	4.926A	5.009A	1.827A	374.525	93.013%	450	6.6	42.3°C	0.975
	12.004V	5.076V	3.295V	4.928V	402.661				48.39°C	229.82V
60%	32.474A	5.913A	6.016A	2A	449.289	92.895%	732	21.3	42.66°C	0.979
	11.998V	5.075V	3.292V	4.923V	483.653				49.23°C	229.81V
70%	37.962A	6.901A	7.024A	2.236A	524.381	92.571%	1025	32.3	43.29°C	0.981
	11.992V	5.073V	3.289V	4.919V	566.465				50.37°C	229.79V
80%	43.523A	7.888A	8.033A	2.34A	599.559	92.229%	1225	36.9	43.52°C	0.983
	11.986V	5.071V	3.287V	4.915V	650.078				51.55°C	229.78V
90%	49.419A	8.383A	8.525A	2.444A	674.595	91.831%	1507	42.1	44.62°C	0.985
	11.981V	5.069V	3.285V	4.91V	734.603				53.69°C	229.77V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
100%	55.119A	8.879A	9.048A	3.057A	749.826	91.344%	1752	45.6	45.59°C	0.986
	11.976V	5.067V	3.283V	4.908V	820.882				55.68°C	229.75V
110%	60.690A	9.869A	10.152A	3.06A	824.839	90.779%	2044	49.5	46.56°C	0.987
	11.971V	5.066V	3.28V	4.903V	908.623				57.48°C	229.74V
CL1	0.117A	17.811A	18.177A	0A	151.305	83.79%	924	29.0	40.35°C	0.935
	12.032V	5.069V	3.279V	4.934V	180.58				45.85°C	229.86V
CL2	0.116A	19.677A	0A	0A	101.365	83.627%	735	21.4	41.55°C	0.889
	12.041V	5.08V	3.297V	4.943V	121.209				48.57°C	229.86V
CL3	0.115A	0A	20.078A	0A	67.405	76.439%	512	9.3	41.39°C	0.83
	12.042V	5.082V	3.288V	4.943V	88.182				50.45°C	229.87V
CL4	62.551A	0A	0A	0A	749.575	92.166%	1448	41.2	44.09°C	0.985
	11.983V	5.078V	3.297V	4.909V	813.282				55.05°C	229.75V

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])	Temps (In/Out)	PF/AC Volts
20W	1.232A	0.492A	0.499A	0.2A	19.986	78.227%	0	<6.0	39.64°C	0.84
	12.050V	5.083V	3.306V	4.951V	25.563				36.56°C	114.89V
40W	2.712A	0.689A	0.699A	0.303A	39.996	83.187%	0	<6.0	41.01°C	0.934
	12.053V	5.083V	3.306V	4.951V	48.081				37.53°C	114.9V
60W	4.192A	0.885A	0.898A	0.404A	59.996	84.647%	0	<6.0	41.9°C	0.963
	12.055V	5.083V	3.306V	4.95V	70.879				38.06°C	114.89V
80W	5.670A	1.082A	1.098A	0.505A	79.942	85.874%	0	<6.0	43.01°C	0.974
	12.046V	5.084V	3.305V	4.948V	93.096				39.03°C	114.87V

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
20W	1.232A	0.492A	0.499A	0.2A	19.992	77.598%	0	<6.0	39.7°C	0.455
	12.049V	5.083V	3.305V	4.951V	25.762				36.59°C	229.89V
40W	2.712A	0.688A	0.699A	0.303A	40.002	83.525%	0	<6.0	40.49°C	0.661
	12.051V	5.084V	3.306V	4.95V	47.899				37.2°C	229.88V
60W	4.192A	0.885A	0.899A	0.404A	60.002	85.736%	0	<6.0	42.03°C	0.775
	12.053V	5.084V	3.305V	4.949V	69.986				38.5°C	229.88V
80W	5.672A	1.082A	1.098A	0.505A	79.954	86.365%	0	<6.0	42.82°C	0.84
	12.045V	5.084V	3.305V	4.948V	92.579				39.02°C	229.87V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	12.38mV	10.68mV	11.30mV	11.92mV	Pass
20% Load	19.08mV	12.26mV	13.20mV	13.61mV	Pass
30% Load	15.70mV	12.98mV	11.92mV	14.78mV	Pass
40% Load	13.15mV	9.45mV	10.49mV	11.15mV	Pass
50% Load	16.47mV	12.93mV	13.45mV	14.99mV	Pass
60% Load	15.35mV	12.21mV	13.25mV	13.45mV	Pass
70% Load	15.45mV	12.98mV	13.51mV	14.32mV	Pass
80% Load	16.47mV	12.92mV	13.66mV	14.58mV	Pass
90% Load	17.65mV	14.30mV	15.55mV	14.73mV	Pass
100% Load	23.08mV	14.38mV	16.13mV	19.84mV	Pass
110% Load	23.73mV	14.59mV	16.18mV	19.40mV	Pass
Crossload1	15.89mV	14.14mV	17.30mV	15.40mV	Pass
Crossload2	13.76mV	15.84mV	13.50mV	14.63mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	14.12mV	12.52mV	16.73mV	14.83mV	Pass
Crossload4	22.78mV	14.33mV	15.41mV	14.73mV	Pass

The results above are not used in the certification process

230V

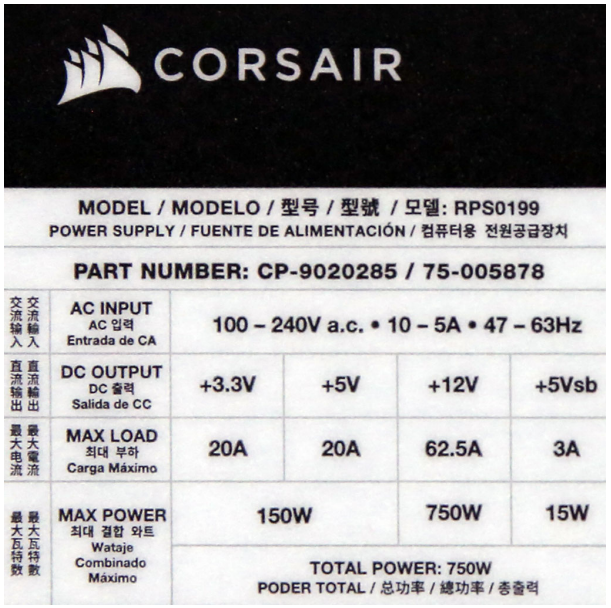
Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	14.22mV	12.31mV	12.63mV	13.50mV	Pass
20% Load	15.35mV	10.27mV	10.23mV	11.15mV	Pass
30% Load	16.99mV	12.67mV	13.04mV	13.76mV	Pass
40% Load	15.09mV	12.41mV	13.50mV	14.12mV	Pass
50% Load	15.04mV	12.31mV	13.50mV	14.48mV	Pass
60% Load	15.71mV	13.33mV	13.61mV	13.86mV	Pass
70% Load	15.65mV	12.52mV	13.45mV	14.42mV	Pass
80% Load	17.40mV	13.90mV	16.52mV	15.24mV	Pass
90% Load	17.55mV	13.39mV	15.14mV	13.97mV	Pass
100% Load	23.75mV	14.54mV	17.89mV	19.75mV	Pass
110% Load	24.71mV	15.33mV	17.26mV	20.10mV	Pass
Crossload1	14.36mV	14.45mV	17.63mV	14.97mV	Pass
Crossload2	13.82mV	16.81mV	13.91mV	15.09mV	Pass
Crossload3	14.22mV	12.41mV	15.81mV	14.37mV	Pass
Crossload4	23.37mV	14.48mV	15.65mV	15.26mV	Pass

The results above are not used in the certification process

Corsair RM750x (ATX v3.1)



Top side



Power specifications label

Cybenetics bietet freiwillige Zertifizierungsprogramme für Netzteile – ETA für Effizienz, LAMBDA für Lautstärke und SAFE für Sicherheit und korrekten Betrieb – sowie für Kühlprodukte mit DELTA für die Schalldämmung von Gehäusen und PHI für Luftstrom und statischen Druck von Lüftern

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