CORSAIR

Corsair RM750x Shift (ATX v3.0)

Serial Number 22177120000051900189

Lab ID CR75002024

Certification ID 252024

Test Result Report ID: 22PS2024A

Certificate Issue Date: May 31, 2022

Scheme: ETA-EMI PSU

115V: CYBENETICS GOLD

230V: CYBENETICS GOLD 230v

Scheme: LAMBDA PSU

115V: CYBENETICS A+

230V: CYBENETICS A+ 230v

CYBENETICS ATX 3.0 PASS

Outside Validation Scope

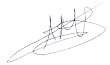
General Information

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 Shift (ATX v3.0)
OEM/ODM	CWT
Serial Number	22177120000051900189
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 (NR140P)
Semi-Passive Operation	✓
Cybenetics Testing Information	
Lab ID	CR75002024
Date of receipt	-
Testing Date	May 30, 2022
Report Issued Date	May 31, 2022
DUT Notes	CP-9020251
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	16-18AWG	No
4+4 pin EPS12V (660mm)	2	2	18AWG	No
12 pin PCIe (660mm)	1	1	16AWG	No
6+2 pin PCIe (660mm+100mm)	1	2	16-18AWG	No
6+2 pin PCIe (660mm)	1	1	16AWG	No
SATA (460mm+110mm+110mm+110mm)	3	12	18AWG	No

4 pin Molex (450mm+100mm+100mm+100mm)	1	4	18AWG	No
AC Power Cord (1370mm) - 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 SCK207R0 (7 Ohm) & Relay
Bridge Rectifier(s)	1x GBJ1506 (600V, 15A @ 100°C)
APFC MOSFETs	2x Vishay SiHF22N60E (600V, 13A @ 100°C, Rds(on): 0.18Ohm) & 1x Sync Power SPN5003 FET (for reduced no-load consumption)
APFC Boost Diode	1x On Semiconductor FFSP0865A (650V, 8A @ 155°C)
Bulk Cap(s)	2x Nippon Chemi-Con (400V, 470uF & 390uF each or 860uF combined, 2,000h @ 105°C, KMW)
Main Switchers	2x Infineon IPA60R190P6 (600V, 12.7A @ 100°C, Rds(on): 0.19Ohm)
Driver IC(s)	Champion CM6500UNX
Digital Controllers	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: 4x UBIQ QN3107M6N (30V, 70A @ 100°C, Rds(on): 2.6mOhm) PWM Controllers: UPI-Semi uP3861P
Filtering Capacitors	Electrolytic: 4x Nichicon (2–5,000h @ 105°C, HD), 1x Nichicon (5-6,000h @ 105°C, HV), 1x Nippon Chemi-Con (1-5,000h @ 105°C, KZE), 1x Nippon Chemi-Con (4-10,000h @ 105°C, KYA), 3x Nichicon (4-10,000h @ 105°C, HE) Polymer: 20x FPCAP, 5x Nippon Chemi-Con

Supervisor IC	Weltrend WT7502R
Fan controller	Microchip PIC16F1503
Fan Model	Corsair NR140P (140mm, 12V, 0.22A, Fluid Dynamic Bearing Fan)
5VSB Circuit	-
Rectifier	1x PS1045L SBR (45V, 10A)
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 v3.0 Compliance	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	88.397%
Average Noise Output (>1450 Load Combinations)	18.75dBA
Average PF (>1450 Load Combinations)	0.989
Efficiency With 10W (≤500W) or 2% (>500W) Load	76.857%
Standby Power Consumption	0.0171W
Non-Accredited	
12V Ripple (Full Load)	24.65mV
5V Ripple (Full Load)	18.19mV
3.3V Ripple (Full Load)	20.48mV
5VSB Ripple (Full Load)	23.77mV

12V Load Regulation	0.62%
5V Load Regulation	0.34%
3.3V Load Regulation	0.82%
5VSB Load Regulation	1.69%
Inrush Current	24.660A

230V

Accredited		
Average Efficiency (>1450 load combinations)	90.485%	
Average Noise Output (>1450 Load Combinations)	18.62dBA	
Average PF (>1450 Load Combinations)	0.962	
Efficiency With 10W (≤500W) or 2% (>500W) Load	75.793%	
Standby Power Consumption	0.0796W	
Non-Accredited		
12V Ripple (Full Load)	25.51mV	
5V Ripple (Full Load)	18.70mV	
3.3V Ripple (Full Load)	20.56mV	
5VSB Ripple (Full Load)	24.56mV	
12V Load Regulation	0.66%	
5V Load Regulation	0.34%	
3.3V Load Regulation	0.82%	
5VSB Load Regulation	1.67%	
Inrush Current	47.560A	
12V Transient Response (200%)	11.33V	
5V Transient Response (200%)	4.9312V	
3.3V Transient Response (200%)	3.19188V	
5VSB Transient Response (200%)	4.93166V	
Hold-Up Time & PWR_OK Signal	26.40ms	
AC Loss to PWR_OK Hold Up Time	23.20ms	
PWR_OK Inactive to DC Loss Delay	3.20ms	
PSU Timings: T1 (20% / 100%)	48.0ms	50.0ms
PSU Timings: T3 (20% / 100%)	143.0ms	142.0ms

OPP (28.96°C / 43.71°C)	120.38%	122.66%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	26.4
AC Loss to PWR_OK Hold Up Time (ms)	23.2
PWR_OK Inactive to DC Loss Delay (ms)	3.2

Stromverbrauch im Ruhezustand

Tables

115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	115.13 V	115.10 V	113.85 V	115.17 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 %	0.10 %	N/A	0.18 %	2.00 %	PASS
Real Power:	0.017 W	0.013 W	N/A	0.022 W	N/A	N/A
Apparent Power:	10.168 W	10.136 W	N/A	10.200 W	N/A	N/A
Power Factor:	0.002	N/A	N/A	N/A	N/A	N/A

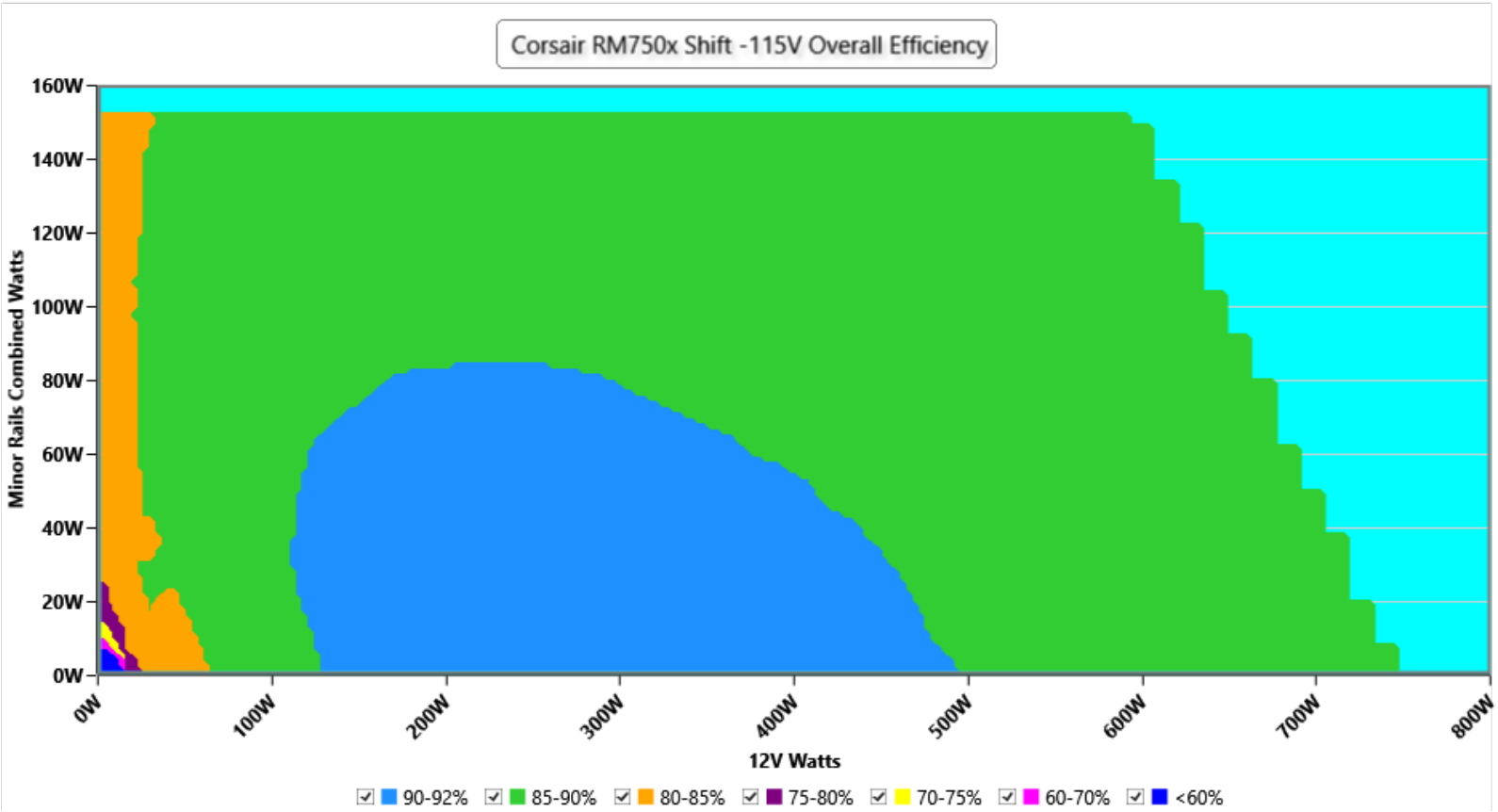
230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	230.28 V	230.18 V	227.70 V	230.34 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:	1.416	1.415	1.340	1.417	1.490	PASS
Mains Voltage THD:	0.12 %	0.10 %	N/A	0.22 %	2.00 %	PASS

Real Power:	0.080 W	0.072 W	N/A	0.095 W	N/A	N/A
Apparent Power:	34.709 W	34.485 W	N/A	34.942 W	N/A	N/A
Power Factor:	0.002	N/A	N/A	N/A	N/A	N/A

Efficiency Graph

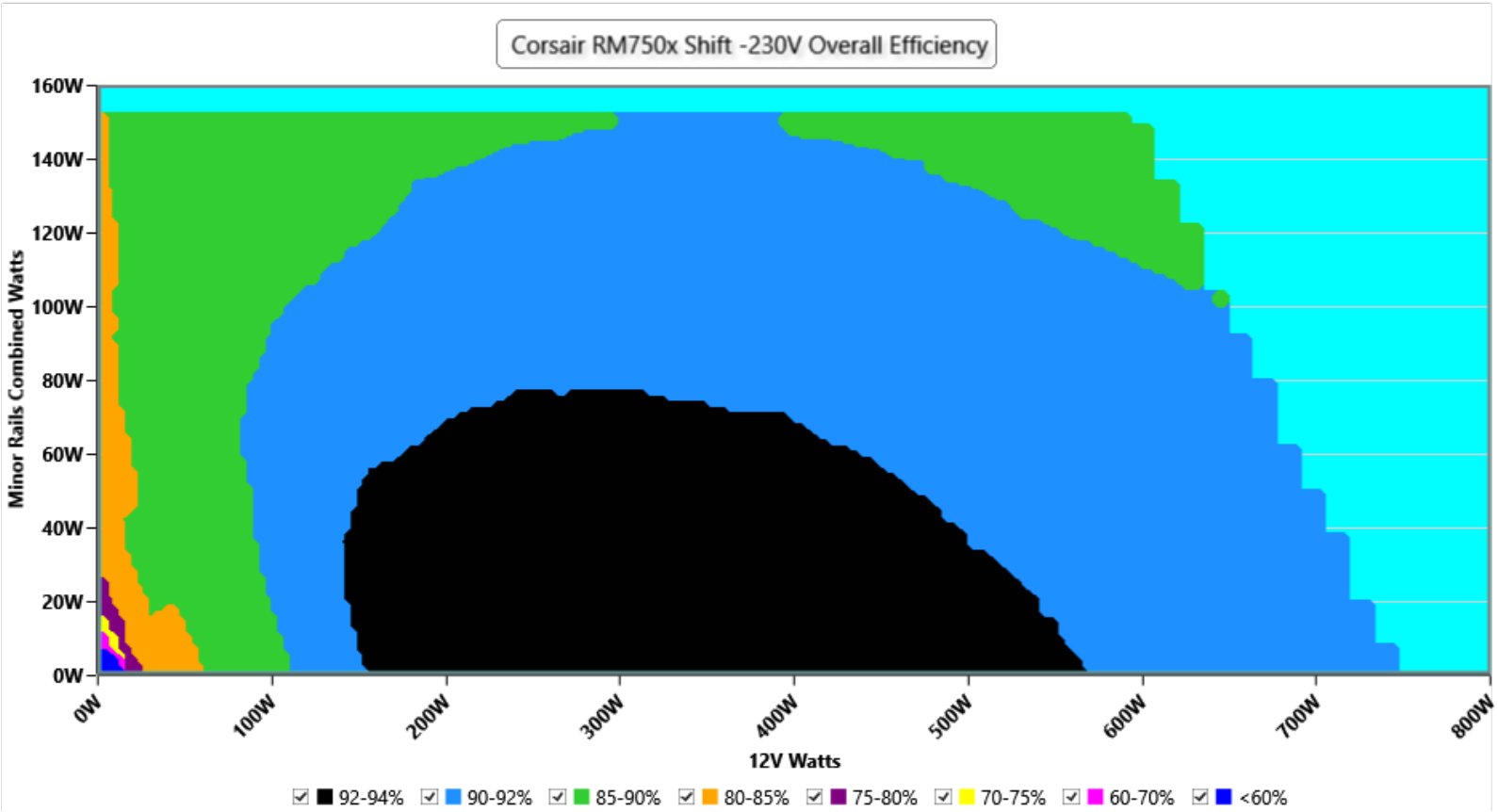
115V



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

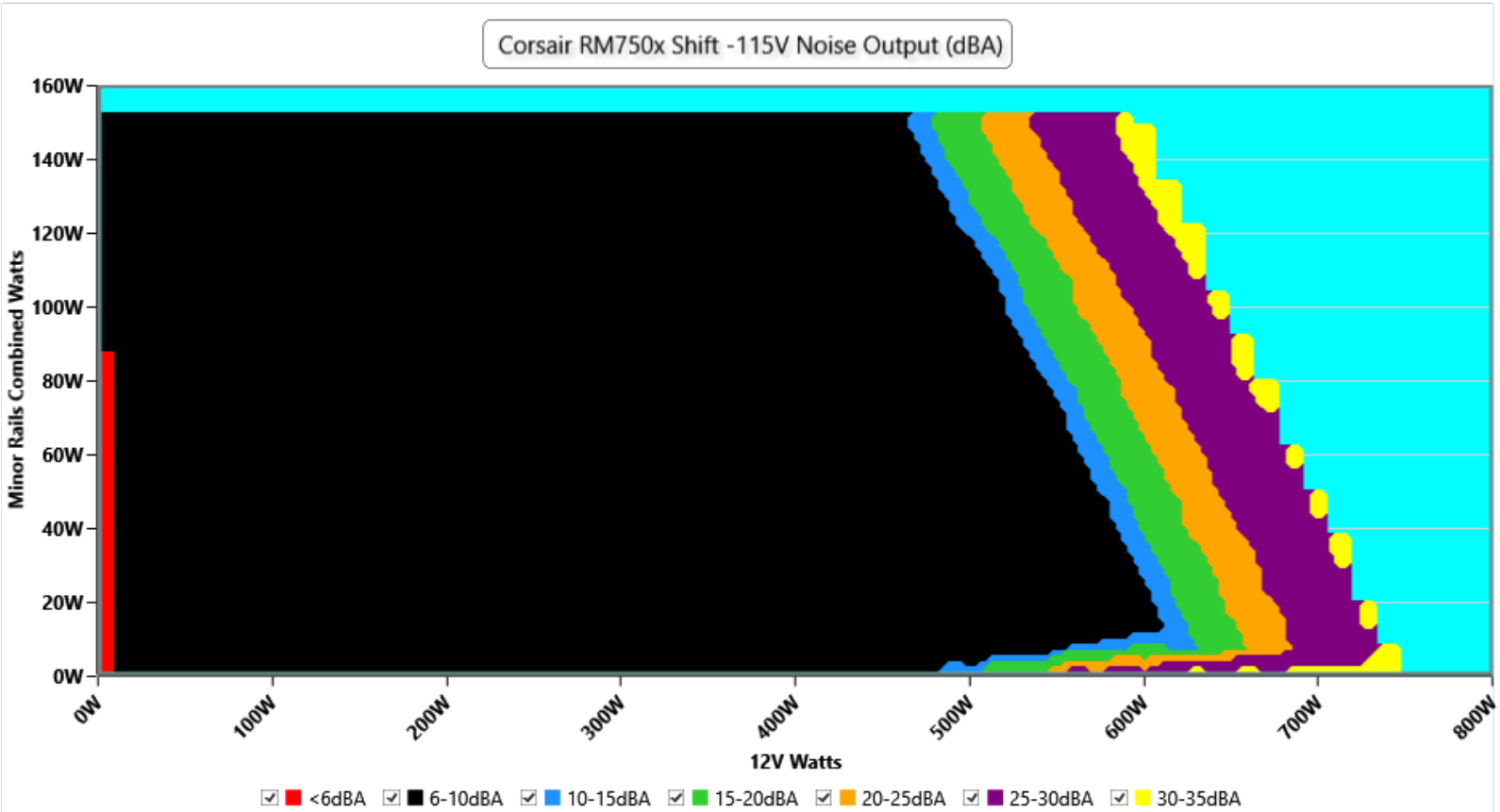


INFO

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

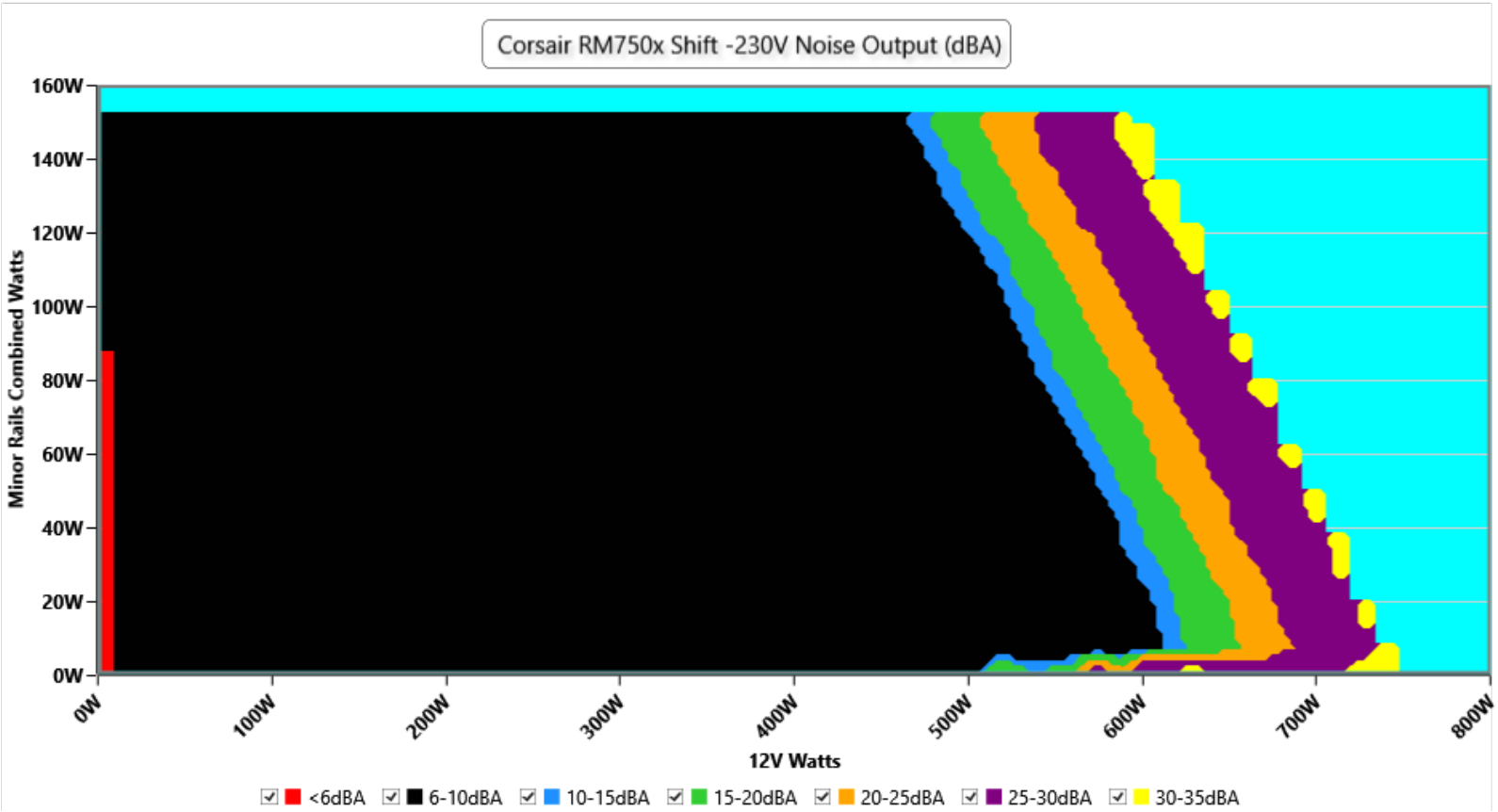
115V



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

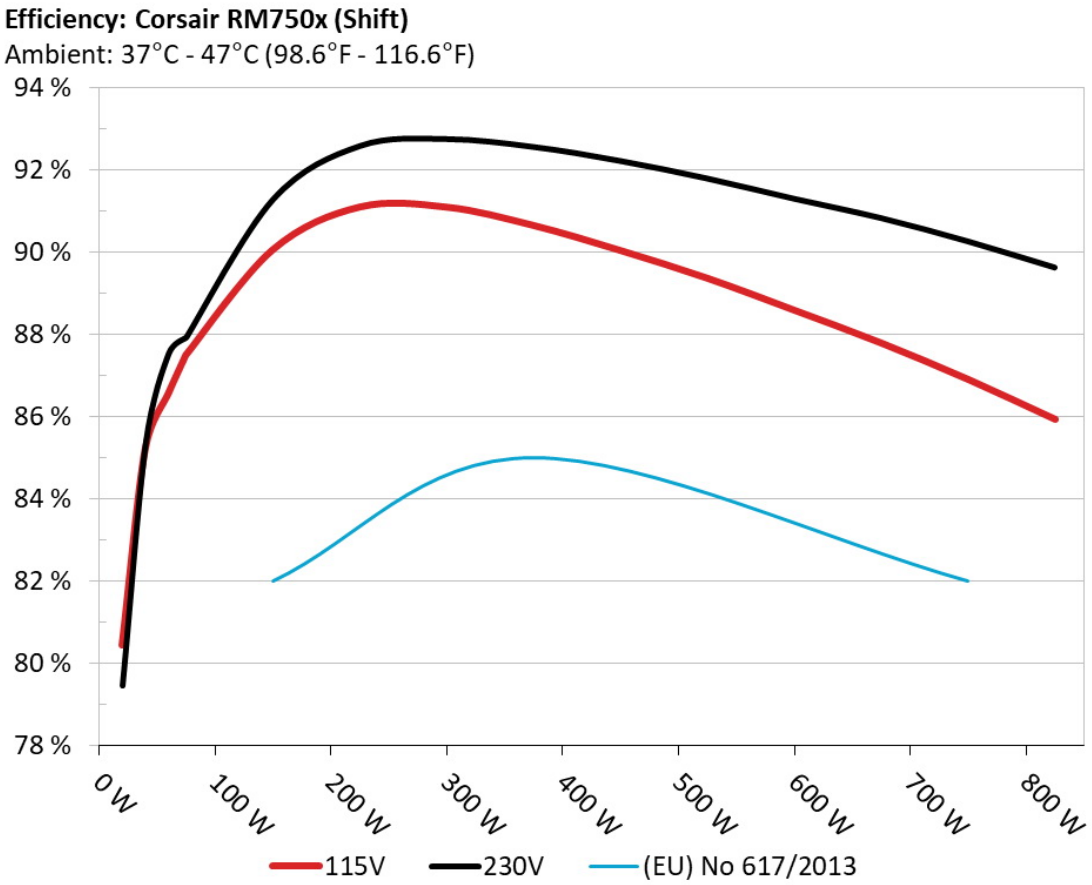


INFO

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

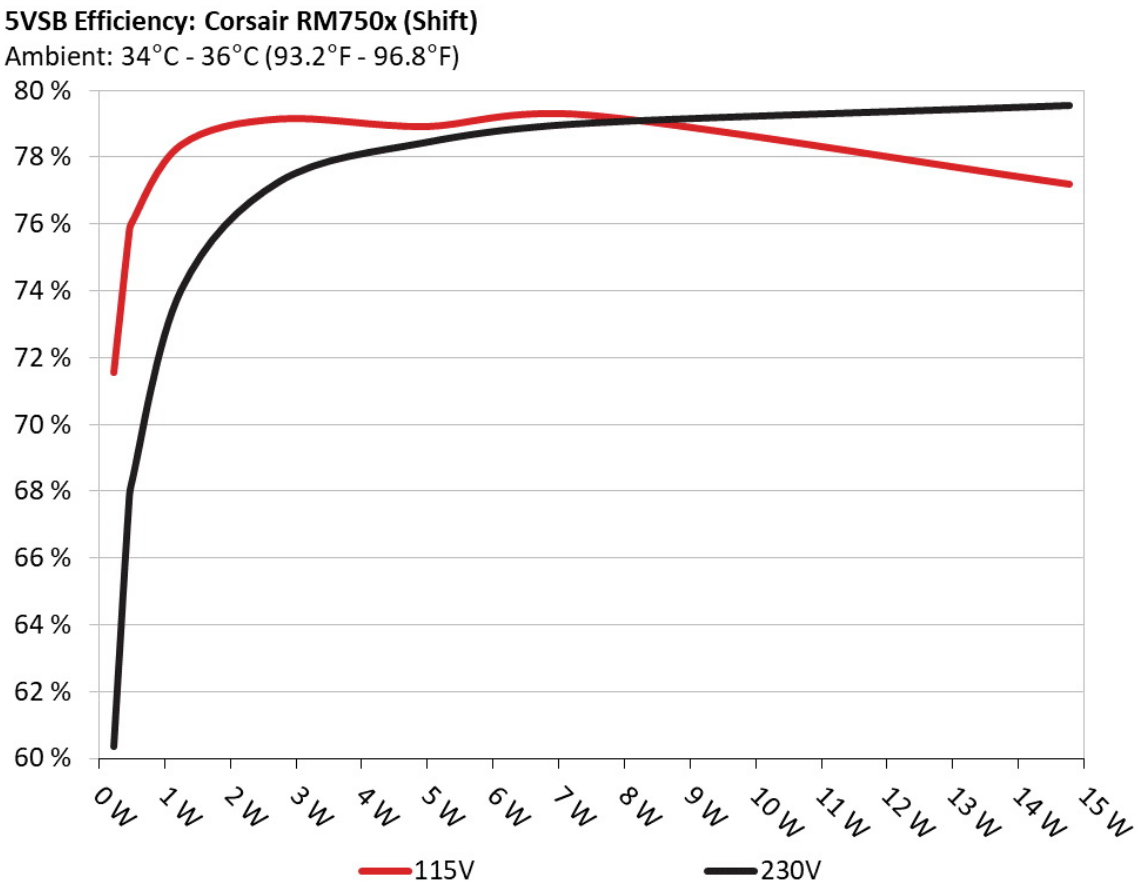
Efficiency under high ambient temperature



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	0.226W	71.537%	0.031
	5.008V	0.316W		115.13V
2	0.09A	0.451W	75.612%	0.058
	5.007V	0.596W		115.13V
3	0.55A	2.748W	79.161%	0.266
	4.994V	3.471W		115.13V
4	1A	4.983W	78.931%	0.371
	4.982V	6.313W		115.13V
5	1.5A	7.453W	79.275%	0.427
	4.968V	9.402W		115.13V
6	3.001A	14.782W	77.199%	0.505
	4.926V	19.147W		115.13V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.226W	60.343%	0.011
	5.008V	0.374W		230.29V
2	0.09A	0.451W	67.511%	0.019
	5.007V	0.668W		230.29V
3	0.55A	2.748W	77.26%	0.098
	4.994V	3.557W		230.29V
4	1A	4.983W	78.435%	0.165
	4.982V	6.353W		230.29V
5	1.5A	7.453W	79.008%	0.224
	4.968V	9.434W		230.29V
6	3.001A	14.781W	79.538%	0.334
	4.926V	18.584W		230.29V

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%	4.408A	1.976A	2A	1.006A	75.019	86.24%	0	<6.0	44.19°C	0.972
	12.116V	5.063V	3.301V	4.971V	86.989				40.13°C	115.11V
20%	9.832A	2.964A	3.002A	1.211A	149.986	90.057%	0	<6.0	45.23°C	0.987
	12.111V	5.061V	3.298V	4.957V	166.546				40.87°C	115.1V
30%	15.632A	3.459A	3.505A	1.416A	224.999	91.095%	0	<6.0	45.75°C	0.992
	12.087V	5.059V	3.296V	4.945V	246.99				41.02°C	115.08V
40%	21.430A	3.954A	4.009A	1.622A	300.101	91.092%	0	<6.0	46.31°C	0.989
	12.081V	5.058V	3.293V	4.932V	329.444				41.23°C	115.05V
50%	26.853A	4.945A	5.016A	1.83A	374.763	90.65%	0	<6.0	47.56°C	0.99
	12.075V	5.057V	3.29V	4.919V	413.414				42.09°C	115.03V
60%	32.300A	5.936A	6.025A	2A	449.53	90.043%	493	7.7	42.6°C	0.991
	12.071V	5.055V	3.287V	4.917V	499.242				48.68°C	115.01V
70%	37.728A	6.929A	7.036A	2.211A	524.611	89.369%	494	7.7	43.3°C	0.992
	12.073V	5.052V	3.284V	4.978V	587.014				50.64°C	114.99V
80%	43.270A	7.923A	8.047A	2.314A	599.816	88.588%	640	15.9	43.69°C	0.993
	12.062V	5.051V	3.281V	4.971V	677.086				51.71°C	114.97V
90%	49.142A	8.422A	8.542A	2.419A	674.84	87.791%	897	26.9	44.34°C	0.994
	12.053V	5.048V	3.278V	4.961V	768.689				53.36°C	114.94V
100%	54.837A	8.922A	9.068A	3.04A	750.064	86.904%	1104	33.3	45.33°C	0.994
	12.042V	5.046V	3.275V	4.936V	863.094				55.46°C	114.91V
110%	60.400A	9.918A	10.177A	3.044A	825.078	85.936%	1387	39.9	46.57°C	0.995
	12.032V	5.043V	3.272V	4.928V	960.112				57.47°C	114.89V
CL1	0.116A	17.885A	18.142A	0A	151.336	83.71%	493	7.7	42.98°C	0.987
	12.098V	5.051V	3.285V	4.972V	180.784				48.63°C	115.09V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL2	0.116A	19.794A	0A	0A	101.437	82.855%	492	7.6	43.5°C	0.983
	12.121V	5.054V	3.302V	4.99V	122.427				50.09°C	115.1V
CL3	0.116A	0A	20.086A	0A	67.394	78.618%	491	7.5	44.6°C	0.972
	12.116V	5.067V	3.286V	4.986V	85.725				52.75°C	115.11V
CL4	62.266A	0A	0.001A	0.001A	749.792	87.846%	1013	30.7	45.75°C	0.994
	12.042V	5.057V	3.285V	5.04V	853.527				55.26°C	114.92V

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%	4.408A	1.976A	1.998A	1.006A	75.017	86.735%	0	<6.0	45.4°C	0.832
	12.118V	5.06V	3.303V	4.97V	86.493				40.15°C	230.29V
20%	9.830A	2.965A	3A	1.211A	149.985	91.281%	0	<6.0	46.53°C	0.929
	12.114V	5.059V	3.3V	4.956V	164.31				40.85°C	230.28V
30%	15.629A	3.461A	3.503A	1.416A	224.995	92.583%	0	<6.0	47.37°C	0.958
	12.090V	5.057V	3.297V	4.944V	243.019				41.3°C	230.27V
40%	21.423A	3.956A	4.007A	1.623A	300.098	92.751%	0	<6.0	48.24°C	0.97
	12.085V	5.056V	3.295V	4.931V	323.555				41.61°C	230.26V
50%	26.845A	4.947A	5.013A	1.83A	374.755	92.559%	0	<6.0	49.04°C	0.976
	12.078V	5.055V	3.292V	4.918V	404.88				42.02°C	230.25V
60%	32.300A	5.94A	6.022A	2A	449.522	92.22%	494	7.7	42.99°C	0.98
	12.070V	5.052V	3.289V	4.918V	487.447				50.59°C	230.24V
70%	37.733A	6.934A	7.033A	2.211A	524.606	91.792%	494	7.7	43.15°C	0.982
	12.071V	5.049V	3.285V	4.978V	571.511				51.25°C	230.23V
80%	43.279A	7.928A	8.044A	2.314A	599.811	91.298%	715	19.2	43.98°C	0.984
	12.059V	5.048V	3.282V	4.971V	656.975				52.66°C	230.22V
90%	49.161A	8.428A	8.538A	2.42A	674.841	90.829%	892	26.8	44.15°C	0.985
	12.049V	5.045V	3.279V	4.961V	742.975				53.51°C	230.21V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
100%	54.849A	8.928A	9.065A	3.04A	750.063	90.26%	1127	34.0	45.35°C	0.986
	12.039V	5.043V	3.277V	4.936V	831.01				55.43°C	230.2V
110%	60.416A	9.925A	10.173A	3.045A	825.08	89.623%	1412	40.4	46.52°C	0.987
	12.029V	5.04V	3.273V	4.928V	920.615				57.43°C	230.19V
CL1	0.116A	17.898A	18.135A	0A	151.338	85.013%	493	7.7	42.4°C	0.937
	12.096V	5.047V	3.286V	4.972V	178.019				48.9°C	230.27V
CL2	0.116A	19.809A	0A	0A	101.443	84.032%	492	7.6	43.13°C	0.893
	12.121V	5.05V	3.304V	4.99V	120.719				50.46°C	230.28V
CL3	0.116A	0A	20.077A	0A	67.395	78.994%	491	7.5	44.83°C	0.83
	12.114V	5.063V	3.287V	4.986V	85.315				53.08°C	230.29V
CL4	62.279A	0A	0.001A	0.001A	749.819	91.072%	1012	30.7	45.25°C	0.986
	12.039V	5.053V	3.286V	5.039V	823.328				55.26°C	230.2V

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	0.494A	0.5A	0.2A	20.016	80.449%	0	<6.0	39.68°C	0.838
	12.060V	5.062V	3.302V	5V	24.882				36.6°C	115.13V
40W	2.710A	0.692A	0.7A	0.3A	40.017	85.222%	0	<6.0	41.92°C	0.934
	12.067V	5.062V	3.302V	4.995V	46.955				38.55°C	115.13V
60W	4.185A	0.889A	0.9A	0.401A	60.018	86.572%	0	<6.0	42.37°C	0.964
	12.078V	5.062V	3.302V	4.99V	69.327				38.63°C	115.12V
80W	5.642A	1.087A	1.1A	0.502A	79.989	87.498%	0	<6.0	43.05°C	0.975
	12.114V	5.062V	3.302V	4.986V	91.419				39.08°C	115.11V

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	0.494A	0.499A	0.2A	20.01	79.443%	0	<6.0	40.33°C	0.458
	12.061V	5.06V	3.304V	5V	25.19				37.2°C	230.3V
40W	2.710A	0.692A	0.699A	0.3A	40.011	85.34%	0	<6.0	40.83°C	0.663
	12.067V	5.059V	3.304V	4.995V	46.886				37.22°C	230.29V
60W	4.186A	0.89A	0.899A	0.401A	60.012	87.537%	0	<6.0	41.56°C	0.777
	12.075V	5.059V	3.304V	4.99V	68.559				37.55°C	230.29V
80W	5.642A	1.087A	1.099A	0.502A	79.977	87.919%	0	<6.0	43.24°C	0.842
	12.113V	5.06V	3.303V	4.986V	90.965				38.76°C	230.29V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.50mV	4.80mV	7.57mV	7.32mV	Pass
20% Load	10.39mV	5.62mV	9.00mV	8.75mV	Pass
30% Load	11.21mV	6.34mV	9.05mV	10.49mV	Pass
40% Load	12.08mV	7.61mV	9.67mV	11.57mV	Pass
50% Load	13.35mV	14.66mV	15.85mV	12.85mV	Pass
60% Load	14.64mV	9.76mV	11.30mV	14.43mV	Pass
70% Load	15.81mV	11.44mV	12.42mV	17.50mV	Pass
80% Load	17.35mV	14.76mV	16.00mV	17.61mV	Pass
90% Load	19.24mV	13.28mV	15.80mV	19.70mV	Pass
100% Load	24.65mV	18.19mV	20.48mV	23.77mV	Pass
110% Load	26.20mV	19.12mV	22.61mV	26.31mV	Pass
Crossload1	20.00mV	7.37mV	11.89mV	12.92mV	Pass
Crossload2	12.28mV	6.13mV	9.00mV	11.82mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	6.81mV	4.70mV	10.94mV	10.64mV	Pass
Crossload4	24.60mV	16.59mV	17.23mV	22.58mV	Pass

The results above are not used in the certification process

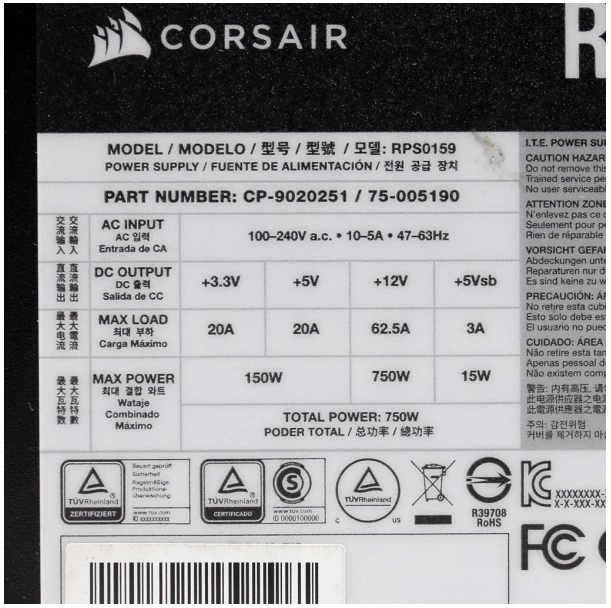
230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.60mV	4.80mV	8.03mV	7.98mV	Pass
20% Load	9.11mV	5.82mV	8.59mV	8.34mV	Pass
30% Load	11.64mV	6.38mV	9.26mV	10.29mV	Pass
40% Load	11.87mV	7.97mV	9.82mV	11.77mV	Pass
50% Load	12.79mV	14.51mV	15.85mV	13.61mV	Pass
60% Load	14.58mV	9.65mV	11.51mV	14.94mV	Pass
70% Load	15.71mV	11.34mV	12.58mV	16.32mV	Pass
80% Load	17.19mV	14.30mV	15.49mV	17.65mV	Pass
90% Load	19.04mV	14.25mV	16.31mV	19.35mV	Pass
100% Load	25.51mV	18.70mV	20.56mV	24.56mV	Pass
110% Load	26.98mV	18.65mV	22.82mV	26.21mV	Pass
Crossload1	21.06mV	7.57mV	12.10mV	12.83mV	Pass
Crossload2	12.69mV	6.89mV	9.10mV	11.31mV	Pass
Crossload3	6.70mV	4.55mV	10.74mV	10.54mV	Pass
Crossload4	24.73mV	16.64mV	17.26mV	22.13mV	Pass

The results above are not used in the certification process

Corsair RM750x Shift (ATX v3.0)

Top side



Power specifications label

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CYBENETICS LTD Syrou 6, Latsia, 2231, Nicosia Cyprus

www.cybenetics.com - info@cybenetics.com