Corsair HX750

Serial Number 21287146000042000191

Lab ID CR75001893

Certification ID 251893

Test Result Report ID: 21PS1893A

Certificate Issue Date: Sep 6, 2021

Scheme: ETA-EMI PSU

115V



230V



Scheme: LAMBDA PSU

115V



230V





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	HX750
OEM/ODM	Channel Well Technology
Serial Number	21287146000042000191
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	CR75001893
Date of receipt	Aug 24, 2021
Testing Date	Sep 6, 2021
Report Issued Date	Sep 6, 2021
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	No
4+4 pin EPS12V (650mm)	3	3	18AWG	No
6+2 pin PCIe (600mm+150mm)	2	4	16-18AWG	No
SATA (500mm+110mm+110mm+110mm)	1	4	18AWG	No
SATA (520mm+110mm+110mm)	2	6	18AWG	No

4 pin Molex (450mm+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	25	25	62.5	3	0.3
	Watts	150		750	15	3.6
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, 1x Champion CM02X (Discharge IC)
Inrush Protection	1x NTC Thermistor SCK207R0 (7 Ohm) & Relay
Bridge Rectifier(s)	2x GBU15L06 (600V, 15A @ 115°C)
APFC MOSFETs	2x ON Semiconductor FCPF067N65S3 (650V, 28A @ 100°C, Rds(on): 67mOhm)
APFC Boost Diode	2x Infineon IDH06G65C6(650V, 6A @ 145°C)
Bulk Cap(s)	2x Nichicon (420V, 470uF each or 940uF combined, 3,000h @ 105°C, GW)
Main Switchers	2x
Driver IC(s)	2x ON Semiconductor NCP81071
Digital Controllers	2x Texas Instruments UCD3138A
Topology	Primary side: Semi-Digital, Interleaved PFC, Half-bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	-
+12V MOSFETs	6x Infineon BSC014N04LS (40V, 125A @ 100°C, Rds(on): 1.4mOhm)
5V & 3.3V	DC-DC Converters: 6x UBIQ QM3054M6 (30V, 61A @ 100°C, Rds(on): 4.8mOhm) PWM Controllers: UPI-Semi uP3861P
Filtering Capacitors	Electrolytic: 2x Nippon Chemi-Con (1-5,000h @ 105°C, KZE), 5x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 2x Nichicon (2–5,000h @ 105°C, HD), 1x Rubycon (4-10,000h @ 105°C, YXJ), 5x Nichicon (1,000h @ 105°C, VZ) Polymer: 23x FPCAP, 16x United Chemi-Con

Supervisor IC	Weltrend WT7502R
Fan Model	Corsair NR140P (140mm, 12V, 0.22A, Fluid Dynamic Bearing Fan)
5VSB Circuit	-
Rectifier	Silan SVF4N65RD FET (650V, 2.5A @ 100°C, Rds(on): 2.7 Ohm) & 1x Galaxy Microelectronics D10S45L SBR (45V, 10A)
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	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	89.512%
Average Noise Output (>1450 Load Combinations)	21.35dBA
Average PF (>1450 Load Combinations)	0.992
Efficiency With 10W (≤500W) or 2% (>500W) Load	72.354%
Standby Power Consumption	0.0363W
Non-Accredited	
12V Ripple (Full Load)	23.46mV
5V Ripple (Full Load)	7.89mV
3.3V Ripple (Full Load)	12.81mV
5VSB Ripple (Full Load)	5.07mV
12V Load Regulation	1.21%
5V Load Regulation	0.28%

3.3V Load Regulation	1.04%
5VSB Load Regulation	1.51%
Inrush Current	24.350A

230V

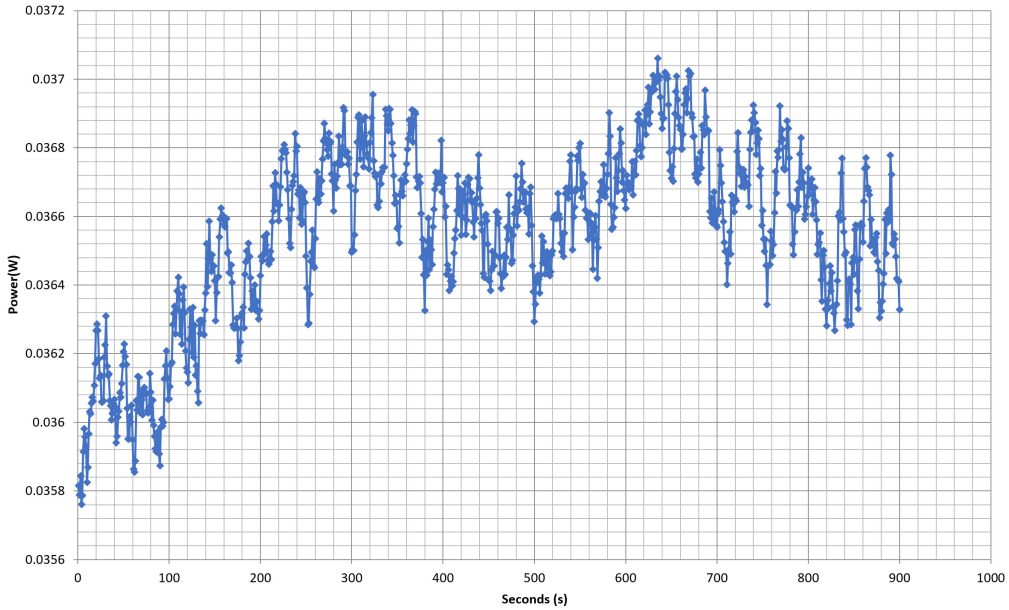
Accredited		
Average Efficiency (>1450 load combinations)		90.641%
Average Noise Output (>1450 Load Combinations)		20.75dBA
Average PF (>1450 Load Combinations)		0.950
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
Standby Power Consumption		0.0558W
Non-Accredited		
12V Ripple (Full Load)		21.21mV
5V Ripple (Full Load)		7.48mV
3.3V Ripple (Full Load)		13.92mV
5VSB Ripple (Full Load)		4.73mV
12V Load Regulation		1.19%
5V Load Regulation		0.42%
3.3V Load Regulation		1.04%
5VSB Load Regulation		1.51%
Inrush Current		86.440A
Hold-Up Time & PWR_OK Signal		24.00ms
AC Loss to PWR_OK Hold Up Time		20.90ms
PWR_OK Inactive to DC Loss Delay		3.10ms
PSU Timings: T1 (20% / 100%)	50.0ms	58.0ms
PSU Timings: T3 (20% / 100%)	150.0ms	150.0ms
OPP (26.92°C / 42.76°C)	120.38%	120.38%

Hold-Up Time & PWR_OK Signal

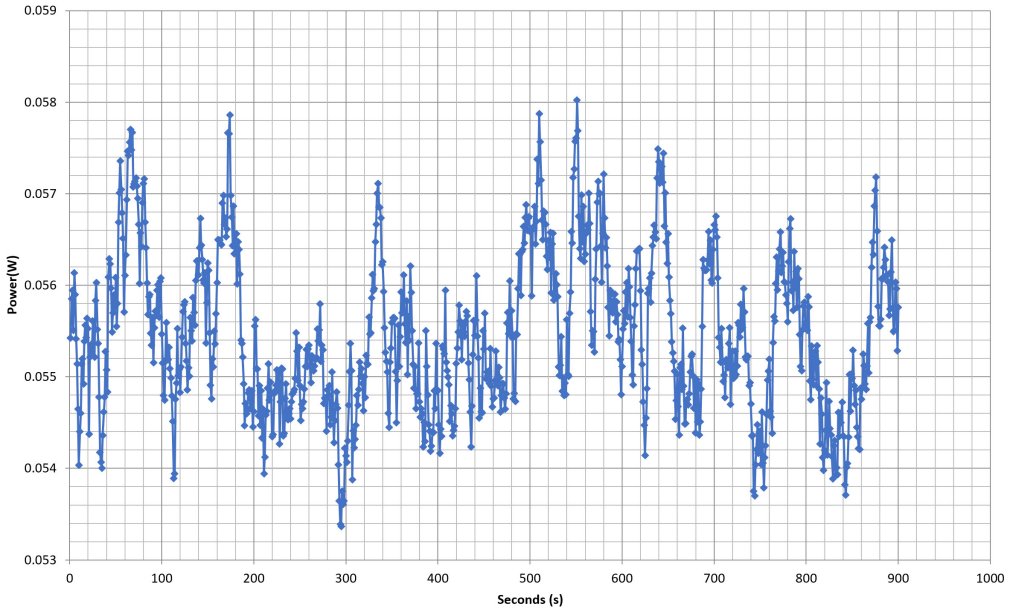
Hold-Up Time (ms)	24
AC Loss to PWR_OK Hold Up Time (ms)	20.9
PWR_OK Inactive to DC Loss Delay (ms)	3.1

Graphs

115V

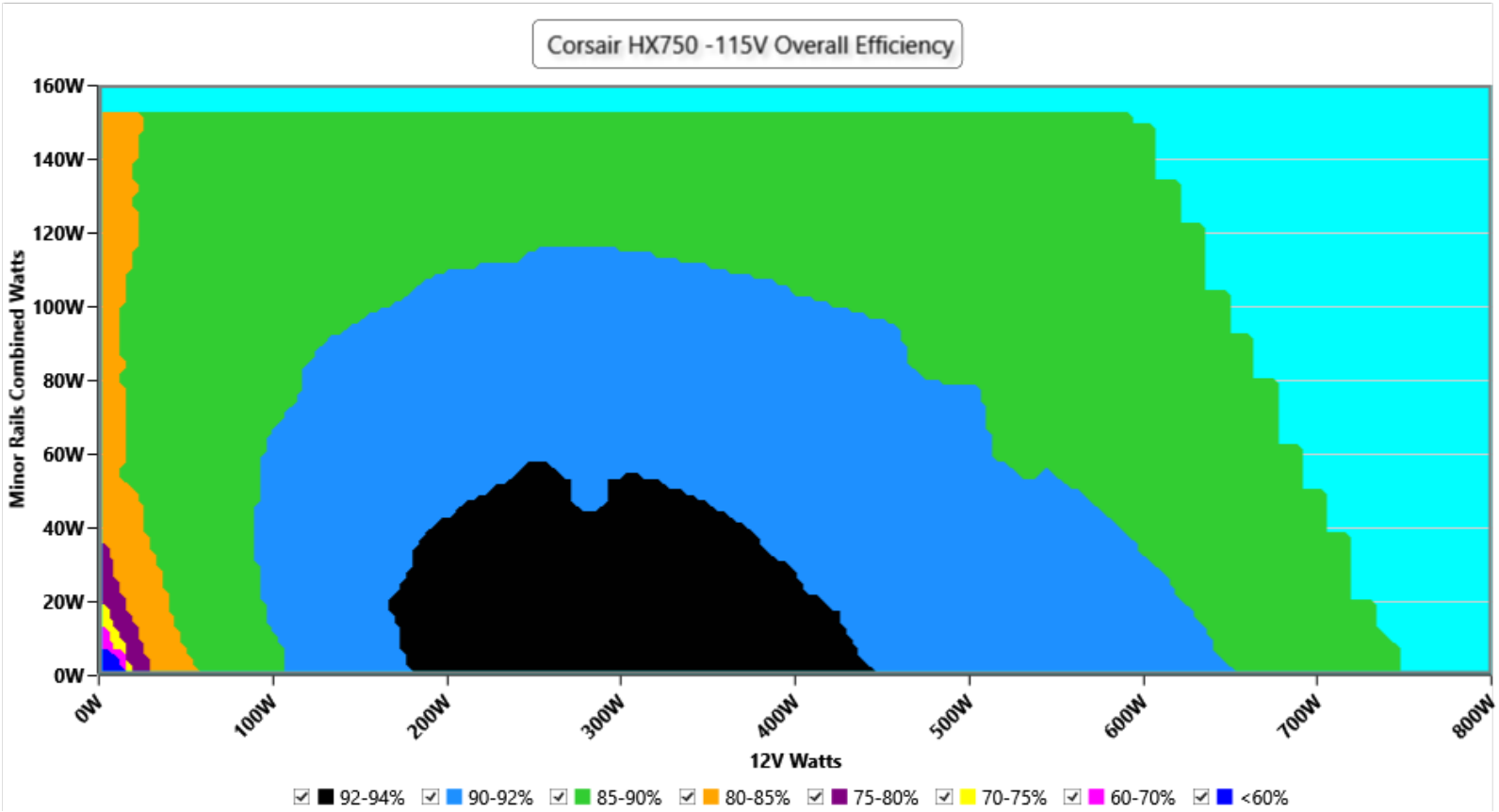


230V



Efficiency Graph

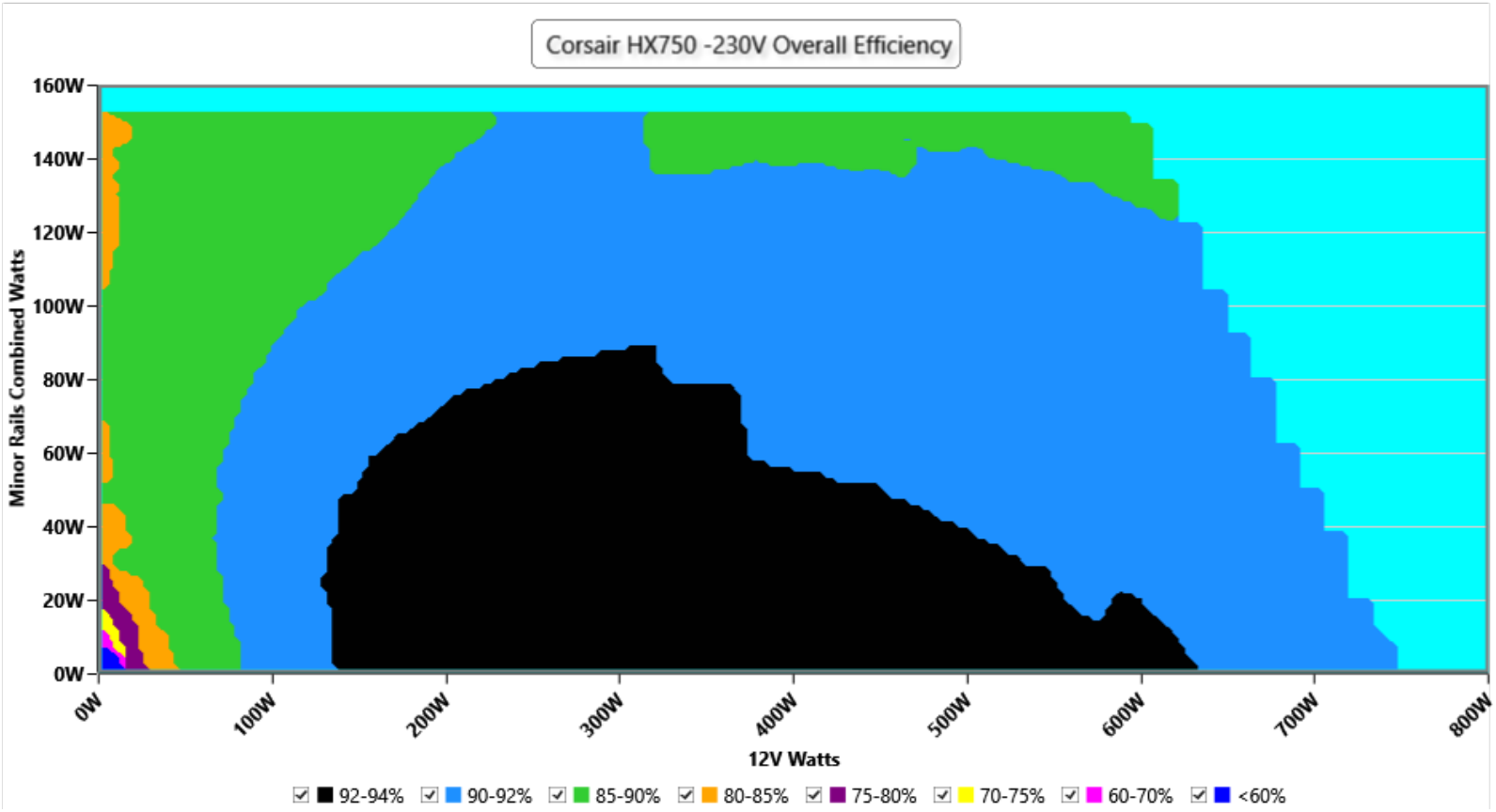
115V



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

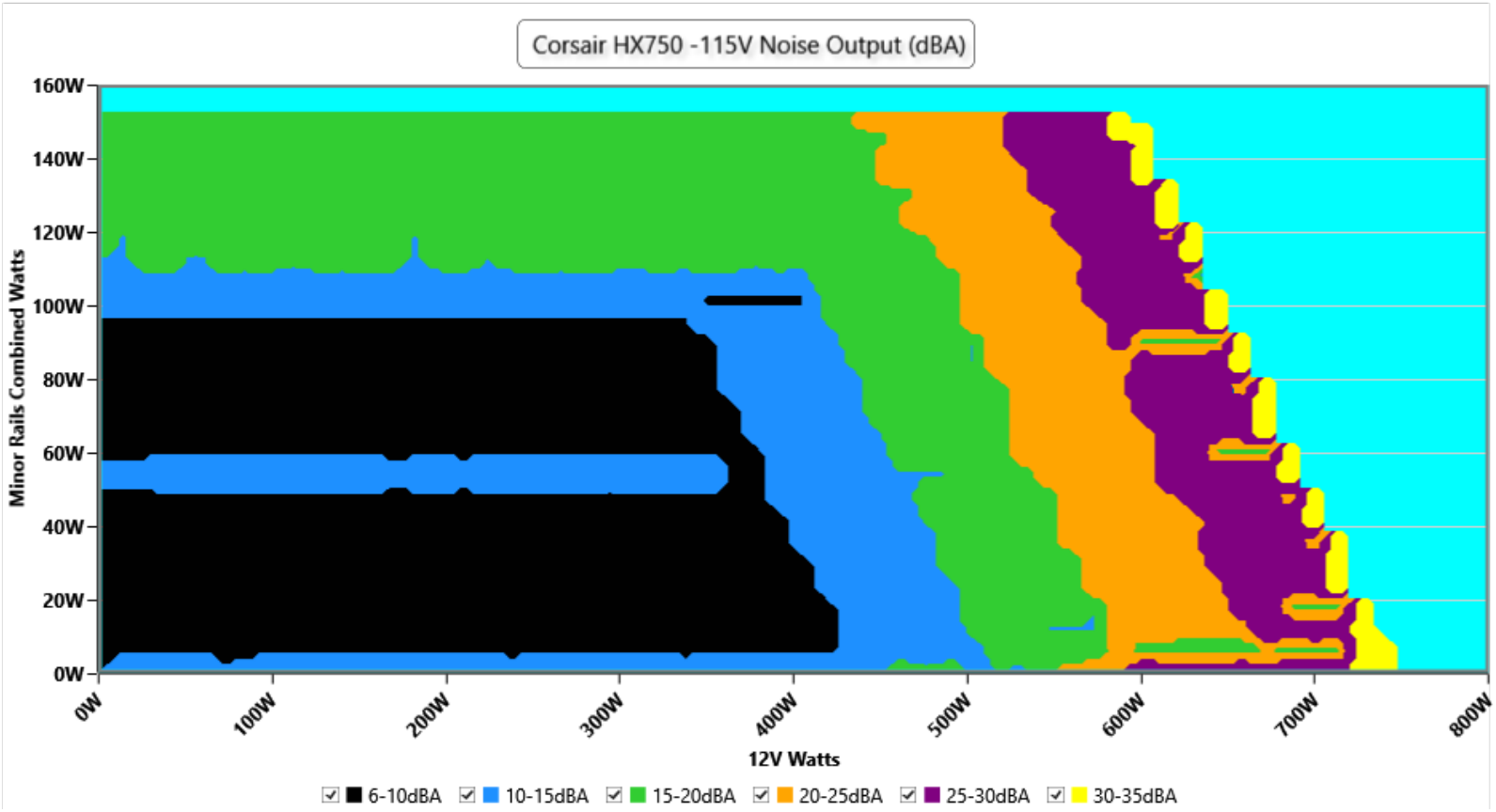


INFO

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

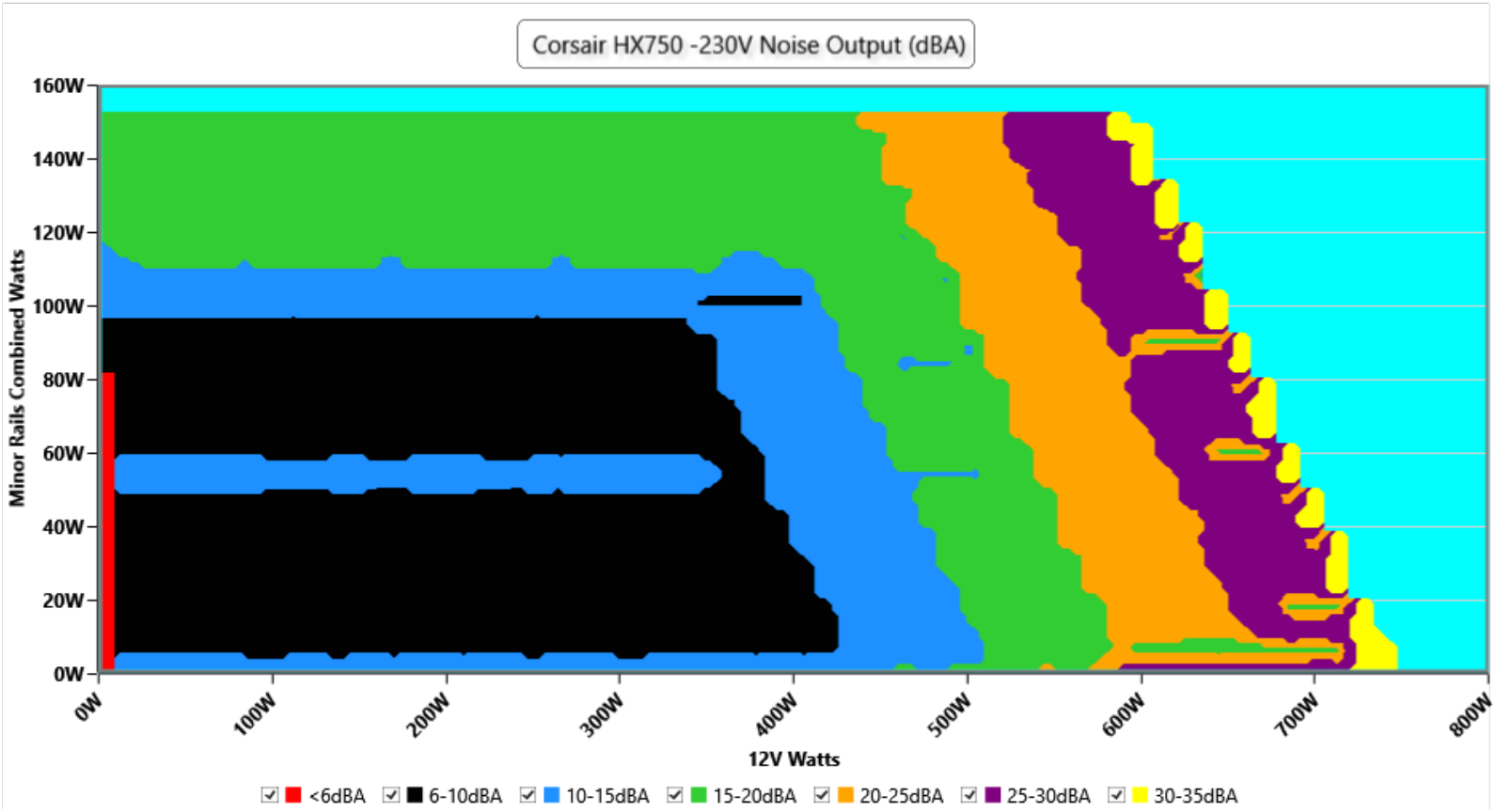
115V



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

Noise under high ambient temperature (indicative)

115V

Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	0 RPM · <6.0 dB(A) · 44.5 °C	0 RPM · <6.0 dB(A) · 44.5 °C	fan off in both
20%	0 RPM · <6.0 dB(A) · 45.8 °C	0 RPM · <6.0 dB(A) · 45.8 °C	fan off in both
50%	0 RPM · <6.0 dB(A) · 49.1 °C	0 RPM · <6.0 dB(A) · 49.1 °C	fan off in both
100%	1229 RPM · 35.0 dB(A) · 45.6 °C	1229 RPM · 35.0 dB(A) · 45.6 °C	**+0.0 dB(A)**

230V

Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	0 RPM · <6.0 dB(A) · 45.2 °C	0 RPM · <6.0 dB(A) · 45.2 °C	fan off in both
20%	0 RPM · <6.0 dB(A) · 45.8 °C	0 RPM · <6.0 dB(A) · 45.8 °C	fan off in both
50%	0 RPM · <6.0 dB(A) · 49.4 °C	0 RPM · <6.0 dB(A) · 49.4 °C	fan off in both
100%	1229 RPM · 35.0 dB(A) · 45.9 °C	1229 RPM · 35.0 dB(A) · 45.9 °C	**+0.0 dB(A)**

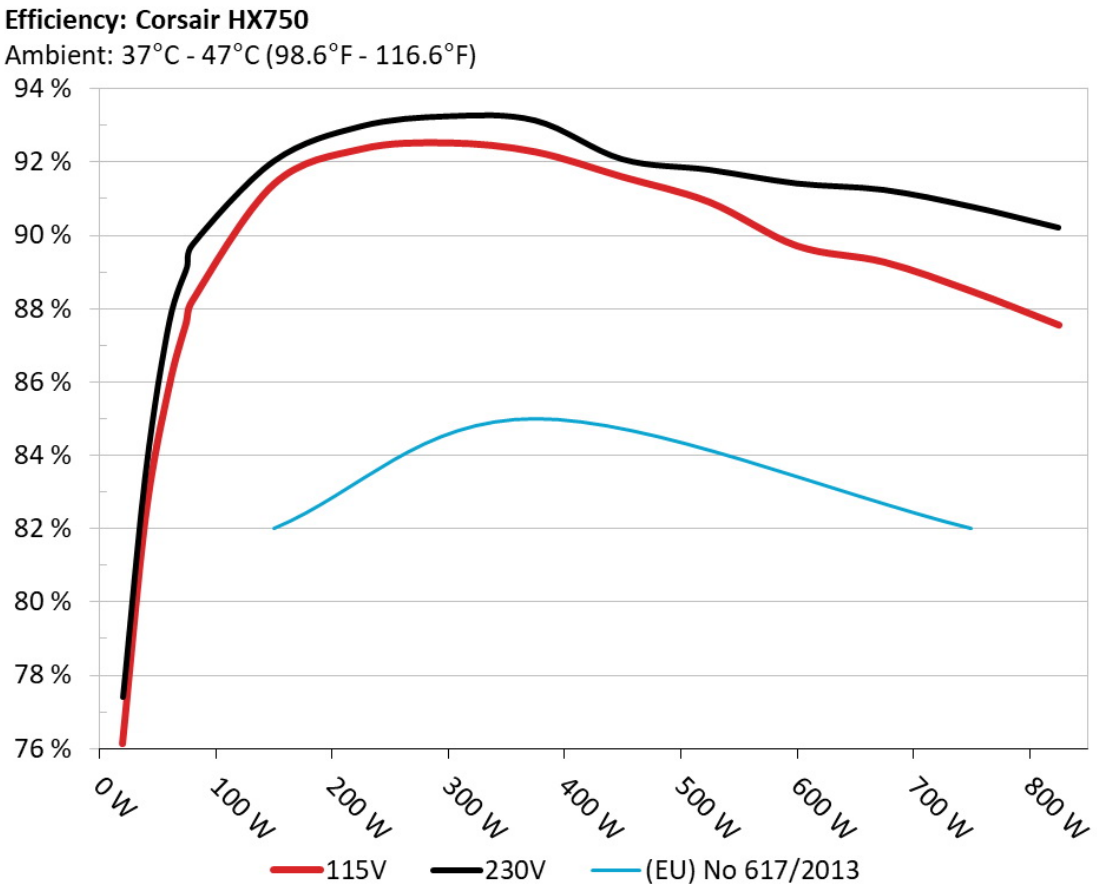
INFO

Fan speed, noise and the measured intake temperature at 10, 20, 50 and 100 % load, from the two load regulation tests: at normal ambient (about 30-32 °C) and at high ambient (about 40-47 °C). These are stabilized readings at fixed loads, not averages over the certification sweep, so they are indicative of how the fan behaves when it is hot. "<6.0" is the floor of our sound meter: the fan is stopped or too quiet to measure (the fan speed column says which); with the fan stopped, the intake sensor can read higher than the chamber air.

Informational. Not part of the ETA or LAMBDA rating.

Indicative Performance

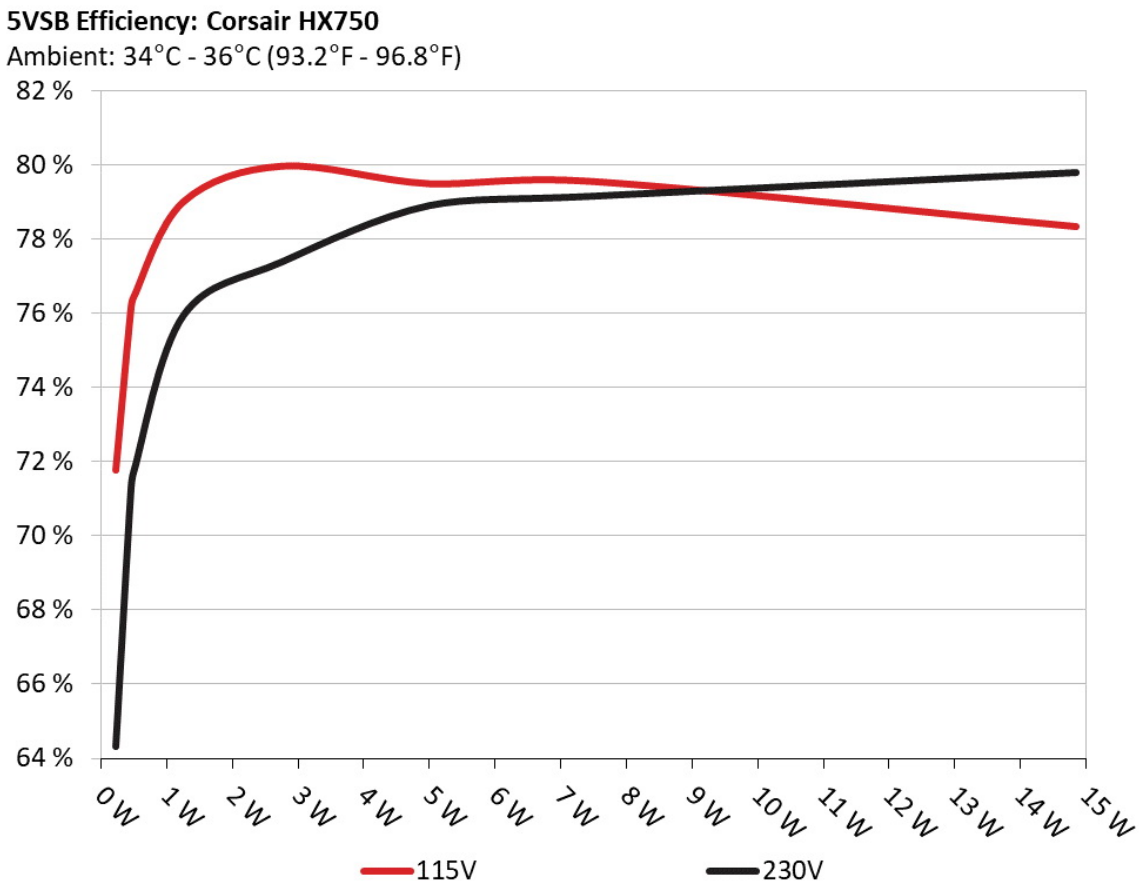
Efficiency under high ambient temperature



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

5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts	
1	0.045A	0.226W	71.769%	0.03
	5.027V	0.315W		115.14V
2	0.09A	0.453W	76.065%	0.057
	5.026V	0.596W		115.14V
3	0.55A	2.759W	79.972%	0.263
	5.014V	3.45W		115.14V
4	1A	5.004W	79.499%	0.368
	5.002V	6.294W		115.14V
5	1.5A	7.486W	79.56%	0.428
	4.99V	9.409W		115.14V
6	3.001A	14.857W	78.342%	0.503
	4.951V	18.965W		115.14V

230V

5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts	
1	0.045A	0.227W	64.327%	0.01
	5.029V	0.353W		230.29V
2	0.09A	0.453W	71.114%	0.018
	5.027V	0.637W		230.29V
3	0.55A	2.759W	77.378%	0.097
	5.014V	3.566W		230.29V
4	1A	5.004W	78.894%	0.163
	5.003V	6.343W		230.29V
5	1.5A	7.485W	79.146%	0.223
	4.989V	9.457W		230.29V
6	3.001A	14.855W	79.782%	0.335
	4.951V	18.62W		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%	4.454A	1.992A	2.008A	1A	75.014	87.652%	0	<6.0	44.53°C	0.973
	11.993V	5.021V	3.287V	5V	85.581				40.03°C	115.13V
20%	9.943A	2.987A	3.014A	1.201A	149.973	91.405%	0	<6.0	45.84°C	0.994
	11.976V	5.023V	3.285V	4.997V	164.074				40.8°C	115.13V
30%	15.799A	3.485A	3.519A	1.402A	224.989	92.364%	0	<6.0	47.39°C	0.995
	11.958V	5.022V	3.283V	4.993V	243.608				41.55°C	115.12V
40%	21.679A	3.983A	4.024A	1.604A	300.081	92.535%	0	<6.0	48.34°C	0.996
	11.942V	5.022V	3.28V	4.987V	324.301				41.94°C	115.12V
50%	27.192A	4.978A	5.035A	1.806A	374.745	92.29%	0	<6.0	49.05°C	0.996
	11.924V	5.023V	3.277V	4.984V	406.049				42.04°C	115.11V
60%	32.741A	5.976A	6.048A	2A	449.637	91.607%	609	12.0	42.63°C	0.996
	11.908V	5.021V	3.274V	4.979V	490.834				50.39°C	115.11V
70%	38.318A	6.974A	7.063A	2.213A	524.612	90.918%	721	18.0	43.52°C	0.997
	11.887V	5.02V	3.271V	4.973V	577.016				51.86°C	115.1V
80%	43.991A	7.974A	8.079A	2.314A	599.828	89.722%	828	23.2	44.04°C	0.998
	11.864V	5.019V	3.268V	4.97V	668.538				53.04°C	115.09V
90%	49.340A	8.475A	8.575A	2.417A	674.851	89.279%	1041	30.1	44.56°C	0.998
	12.005V	5.017V	3.265V	4.967V	755.885				54.54°C	115.08V
100%	55.095A	8.975A	9.103A	3.03A	750.083	88.482%	1229	35.0	45.62°C	0.999
	11.986V	5.016V	3.263V	4.951V	847.723				55.95°C	115.07V
110%	60.749A	9.975A	10.215A	3.03A	825.094	87.561%	1214	34.5	46.61°C	0.999
	11.964V	5.015V	3.26V	4.952V	942.261				57.51°C	115.07V
CL1	0.117A	17.928A	18.208A	0A	151.337	83.898%	778	20.6	42.41°C	0.995
	11.971V	5.039V	3.273V	5.069V	180.382				49.46°C	115.13V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL2	0.117A	24.706A	0A	0A	126.447	83.822%	829	23.2	43.99°C	0.993
	11.986V	5.061V	3.286V	5.109V	150.851				51.81°C	115.13V
CL3	0.117A	0A	25.188A	0A	83.895	75.134%	1122	32.5	44.75°C	0.986
	11.984V	5.014V	3.275V	5.009V	111.667				53.35°C	115.13V
CL4	62.529A	0A	0A	0A	749.837	89.252%	1086	31.5	45.78°C	0.999
	11.992V	5.014V	3.276V	5.01V	840.135				55.43°C	115.07V

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%	4.456A	1.991A	2.009A	1A	75.025	89.137%	0	<6.0	45.24°C	0.711
	11.990V	5.023V	3.286V	5.002V	84.171				40.37°C	230.3V
20%	9.949A	2.987A	3.016A	1.201A	150.005	92.035%	0	<6.0	45.83°C	0.912
	11.972V	5.023V	3.283V	4.999V	162.982				40.63°C	230.29V
30%	15.806A	3.485A	3.521A	1.402A	225.028	92.983%	0	<6.0	47.42°C	0.947
	11.955V	5.023V	3.281V	4.994V	242.011				41.43°C	230.29V
40%	21.690A	3.984A	4.027A	1.604A	300.132	93.256%	0	<6.0	48.56°C	0.964
	11.937V	5.022V	3.278V	4.989V	321.834				41.93°C	230.29V
50%	27.212A	4.98A	5.039A	1.806A	374.851	93.14%	0	<6.0	49.43°C	0.973
	11.919V	5.022V	3.275V	4.985V	402.456				42.29°C	230.29V
60%	32.771A	5.979A	6.052A	2A	449.722	92.082%	611	12.1	42.76°C	0.978
	11.899V	5.019V	3.272V	4.98V	488.391				50.67°C	230.29V
70%	38.340A	6.98A	7.068A	2.212A	524.686	91.793%	722	18.0	43.05°C	0.981
	11.882V	5.016V	3.269V	4.974V	571.593				51.64°C	230.29V
80%	43.997A	7.981A	8.085A	2.314A	599.897	91.421%	829	23.2	43.71°C	0.984
	11.864V	5.015V	3.266V	4.971V	656.184				52.7°C	230.29V
90%	49.344A	8.483A	8.581A	2.417A	674.919	91.245%	1041	30.1	44.34°C	0.986
	12.005V	5.013V	3.263V	4.968V	739.675				53.82°C	230.28V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
100%	55.097A	8.984A	9.109A	3.03A	750.148	90.789%	1229	35.0	45.93°C	0.988
	11.986V	5.011V	3.261V	4.952V	826.252				55.83°C	230.28V
110%	60.754A	9.985A	10.221A	3.03A	825.158	90.214%	1484	40.0	46.71°C	0.993
	11.963V	5.01V	3.258V	4.953V	914.701				57.57°C	230.28V
CL1	0.117A	17.937A	18.22A	0A	151.345	84.428%	778	20.6	42.61°C	0.922
	11.969V	5.036V	3.271V	5.07V	179.262				49.04°C	230.29V
CL2	0.117A	24.732A	0A	0A	126.453	84.282%	830	23.3	43.13°C	0.903
	11.983V	5.056V	3.284V	5.11V	150.038				50.35°C	230.29V
CL3	0.117A	0A	25.206A	0A	83.896	76.064%	1123	32.5	44.16°C	0.756
	11.982V	5.015V	3.273V	5.01V	110.296				52.76°C	230.29V
CL4	62.532A	0A	0A	0A	749.866	91.504%	1086	31.5	45.74°C	0.988
	11.992V	5.014V	3.274V	5.01V	819.491				55.3°C	230.28V

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	1.238A	0.497A	0.5A	0.199A	20.009	76.132%	0	<6.0	39.54°C	0.684
	12.007V	5.03V	3.297V	5.026V	26.279				37.35°C	115.13V
40W	2.724A	0.696A	0.701A	0.299A	40.01	82.376%	0	<6.0	40.88°C	0.781
	12.002V	5.03V	3.296V	5.024V	48.569				38.25°C	115.13V
60W	4.212A	0.896A	0.903A	0.399A	60.01	85.872%	0	<6.0	42.2°C	0.933
	11.998V	5.021V	3.29V	5.012V	69.884				38.83°C	115.13V
80W	5.698A	1.096A	1.104A	0.499A	79.972	88.221%	0	<6.0	43.82°C	0.974
	11.993V	5.02V	3.289V	5.008V	90.648				39.94°C	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])	Temps (In/Out)	PF/AC Volts
20W	1.238A	0.497A	0.501A	0.199A	20.017	77.395%	0	<6.0	39.14°C	0.426
	12.005V	5.032V	3.295V	5.027V	25.865				37.04°C	230.3V
40W	2.726A	0.696A	0.701A	0.299A	40.018	83.659%	0	<6.0	40.46°C	0.587
	12.000V	5.031V	3.294V	5.025V	47.834				37.7°C	230.3V
60W	4.214A	0.896A	0.904A	0.399A	60.02	87.665%	0	<6.0	41.81°C	0.672
	11.995V	5.023V	3.288V	5.015V	68.467				38.4°C	230.3V
80W	5.702A	1.096A	1.105A	0.499A	79.996	89.761%	0	<6.0	43.13°C	0.72
	11.989V	5.022V	3.287V	5.011V	89.123				39.14°C	230.3V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	13.46mV	4.39mV	9.82mV	3.53mV	Pass
20% Load	13.46mV	4.64mV	14.68mV	3.33mV	Pass
30% Load	14.53mV	4.75mV	9.72mV	3.48mV	Pass
40% Load	15.66mV	5.11mV	10.38mV	3.53mV	Pass
50% Load	18.60mV	5.06mV	10.07mV	3.94mV	Pass
60% Load	15.40mV	5.57mV	10.13mV	3.89mV	Pass
70% Load	17.45mV	5.31mV	10.13mV	3.79mV	Pass
80% Load	15.61mV	5.87mV	11.92mV	3.89mV	Pass
90% Load	16.84mV	6.18mV	11.71mV	4.04mV	Pass
100% Load	23.46mV	7.89mV	12.81mV	5.07mV	Pass
110% Load	23.25mV	7.51mV	12.61mV	4.92mV	Pass
Crossload1	18.35mV	7.30mV	13.74mV	3.75mV	Pass
Crossload2	14.38mV	6.69mV	10.03mV	3.89mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	12.90mV	4.70mV	12.68mV	3.17mV	Pass
Crossload4	21.49mV	6.74mV	11.34mV	4.36mV	Pass

The results above are not used in the certification process

230V

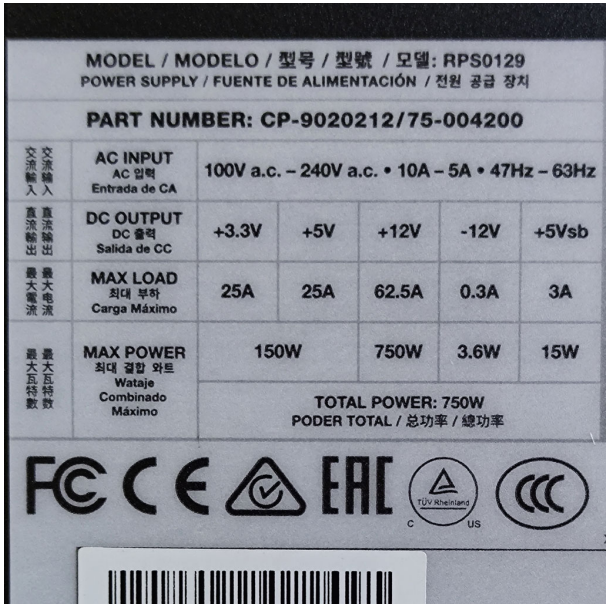
Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	10.80mV	4.34mV	9.15mV	3.22mV	Pass
20% Load	12.08mV	4.70mV	10.13mV	4.25mV	Pass
30% Load	12.23mV	4.39mV	9.26mV	3.53mV	Pass
40% Load	15.45mV	4.95mV	9.51mV	3.69mV	Pass
50% Load	14.79mV	5.47mV	10.48mV	3.58mV	Pass
60% Load	14.94mV	5.72mV	11.20mV	4.14mV	Pass
70% Load	15.30mV	5.82mV	10.23mV	4.10mV	Pass
80% Load	15.35mV	5.87mV	11.30mV	3.94mV	Pass
90% Load	16.07mV	6.69mV	11.20mV	4.45mV	Pass
100% Load	21.21mV	7.48mV	13.92mV	4.73mV	Pass
110% Load	23.83mV	7.91mV	13.26mV	4.99mV	Pass
Crossload1	17.09mV	6.62mV	13.04mV	4.98mV	Pass
Crossload2	17.14mV	7.05mV	9.26mV	4.71mV	Pass
Crossload3	11.26mV	4.60mV	11.87mV	4.09mV	Pass
Crossload4	21.88mV	6.77mV	11.75mV	4.26mV	Pass

The results above are not used in the certification process

Corsair HX750



Top side



Power specifications label