Corsair CX650

19214855000036630128

Lab ID CR65001684

Certification ID 251684

Test Result Report ID: 20PS1684A

Certificate Issue Date: Jul 16, 2020

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	CX650
OEM/ODM	Great Wall
Serial Number	19214855000036630128
Product Specifications	
Manufacturer-Provided Information	
□□□□ (Vrms)	100-240
□□□□ (Arms)	10-5
□□□□ (Hz)	47-63

□□□□ (W)	650
Operating Temperature (Continuous Full Load) (°C)	
□□	ATX12V
□□□□	Fixed cables
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
□□	120mm Sleeve Bearing Fan (D12SM-12)
□□□□□	✗
Cybenetics Testing Information	
Lab ID	CR65001684
Date of receipt	Jul 9, 2020
Testing Date	Jul 14, 2020
Report Issued Date	Jul 16, 2020
□□□□□	CP-9020122
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

□□□□□ (Non-accredited measurements)

Native Cables				
□□	□□□□	□□□□□□	Gauge	In Cable Caps
ATX □□ 20+4 pin (600mm)	1	1	18-20AWG	□
4+4 pin EPS 12V □□ (680mm)	1	1	18AWG	□
6+2pin PCIe□□ (600mm)	2	2	18AWG	□
SATA□□ (520mm+120mm)	1	2	18AWG	□
SATA□□ (400mm+120mm+120mm)	1	3	18AWG	□
4-pin Molex (400mm+120mm+120mm+120mm)	1	4	18AWG	□
□□□□□				

AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

□□□□

□		3.3V	5V	12V	5VSB	-12V
□□□□	□□	25	25	54	3	0.8
	□	130		648	15	9.6
□□□□□ (W)		650				

Parts Description

General Data	-
Manufacturer (OEM)	Great Wall
PCB Type	Single Sided
Primary Side	-
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor SCK-028
Bridge Rectifier(s)	2x Shindengen U15K80R (800V, 15A @ 101°C)
APFC MOSFETs	2x Vishay SiHG30N60E (600V, 18A @ 100°C, Rds(on): 0.125Ohm)
APFC Boost Diode	1x WeEn BYC15-600 (600V, 15A @ 98°C)
Bulk Cap(s)	2x Rubycon (450V, 180uF each or 360uF combined, 2,000h @ 105°C, MXH)
Main Switchers	2x STMicroelectronics STP24N60DM2 (650V, 11A @ 100°C, Rds(on): 0.20Ohm)
APFC Controller	Champion CM6500UNX & CM03AX Green PFC controller
Resonant Controller	Champion CM6901X
Topology	Primary side: APFC, Half-Bridge & LLC Resonant Converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	-
+12V MOSFETs	4x Advanced Power AP9990GP (60V, 70A @ 100°C, Rds(on): 6mOhm)
5V & 3.3V	DC-DC Converters: 6x Advanced Power AP0403GH (30V, 50A @ 100°C, Rds(on): 4.5mOhm) PWM Controllers: ANPEC APW7159C
Filtering Capacitors	Electrolytic: 2x Elite (2-5,000h @ 105°C, ED), 4x Elite (3-5,000h @ 105°C, EJ), 2x Elite (2-5,000h @ 105°C, EK), 1x Teapo (2-6,000h @ 105°C, SY), 1x Teapo (2,000h @ 105°C, TH), 2x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 1x Rubycon (3-6,000h @ 105°C, YXG) Polymer: 4x Elite, 2x United Chemi-Con
Supervisor IC	Sitronix ST9S429-PG14 (OVP, UVP, OCP, SCP, PG)

Fan Model	Yate Loon D12SM-12 (120mm, 12V, 0.30A, Rifle Bearing Fan)
5VSB Circuit	-
Rectifier(s)	1x A-Power AP04N60H-HF FET (600V, 2.2A @ 100°C, Rds(on): 2.5Ohm) & 1x PFC PFR20L45CT SBR (45V, 20A)
Standby PWM Controller	SI8016HSP8

Test Results

Temperature & Compliance Info

□□□□ (°C /°F)	28-32 / 82.4-89.6
□□ ErP Lot3/6□□	✓
□□ (EU) No 617/2013□□	✓

Performance Summary

115V

Accredited	
□□□□ (>1450 load combinations)	86.880%
Average Noise Output (>1450 Load Combinations)	32.84dBA
PF□□□ (>1450 Load Combinations)	0.990
Efficiency With 10W (≤500W) or 2% (>500W) Load	63.102%
□□□□□□	0.0582W
Non-Accredited	
12V Ripple (Full Load)	48.58mV
5V Ripple (Full Load)	15.78mV
3.3V Ripple (Full Load)	16.58mV
5VSB Ripple (Full Load)	20.33mV
12V Load Regulation	0.66%
5V Load Regulation	0.66%
3.3V Load Regulation	0.97%
5VSB Load Regulation	2.58%

Inrush Current	24.610A

230V

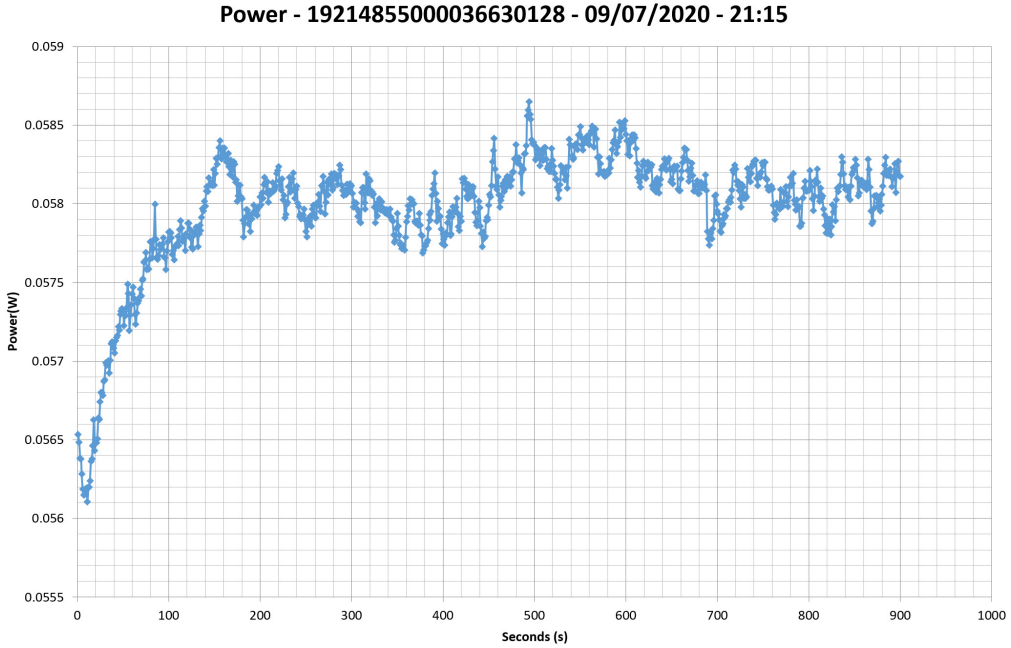
Accredited		
□□□□ (>1450 load combinations)		89.176%
Average Noise Output (>1450 Load Combinations)		32.81dBA
PF□□□ (>1450 Load Combinations)		0.958
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
□□□□□□		0.0842W
Non-Accredited		
12V Ripple (Full Load)		45.61mV
5V Ripple (Full Load)		16.88mV
3.3V Ripple (Full Load)		16.76mV
5VSB Ripple (Full Load)		17.51mV
12V Load Regulation		0.67%
5V Load Regulation		0.66%
3.3V Load Regulation		0.94%
5VSB Load Regulation		2.54%
Inrush Current		87.420A
□□□□ & PG□□		8.30ms
AC Loss to PWR_OK Hold Up Time		6.60ms
PWR_OK Inactive to DC Loss Delay		1.70ms
PSU Timings: T1 (20% / 100%)	80.0ms	80.0ms
PSU Timings: T3 (20% / 100%)	318.0ms	322.0ms
OPP (0.00°C / 0.00°C)	125.28%	-

□□□□ & PG□□

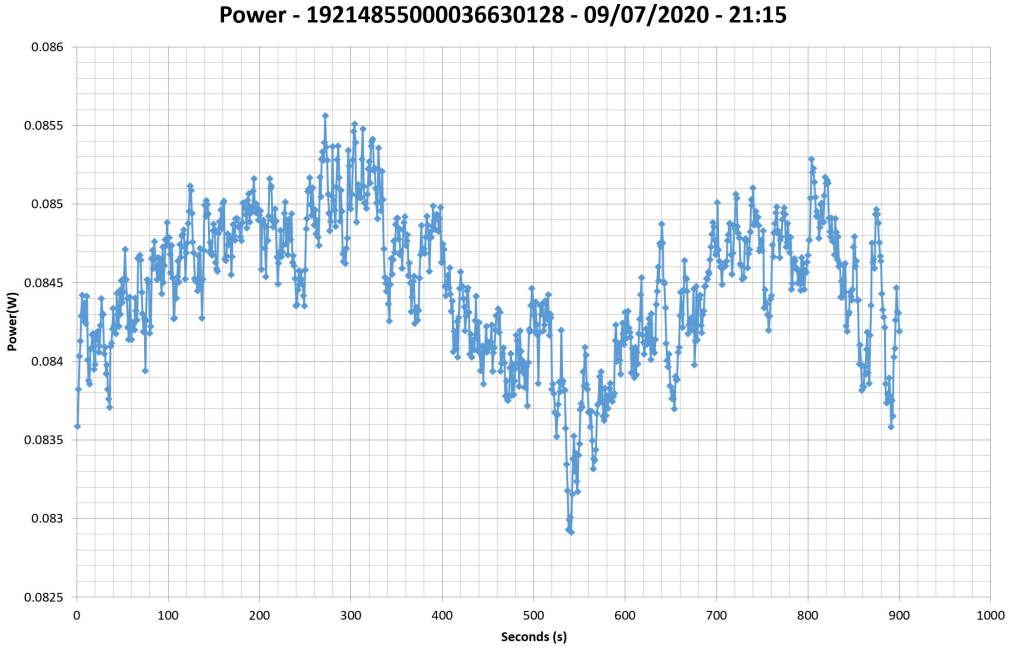
Hold-Up Time (ms)	8.3
AC Loss to PWR_OK Hold Up Time (ms)	6.6
PWR_OK Inactive to DC Loss Delay (ms)	1.7

Graphs

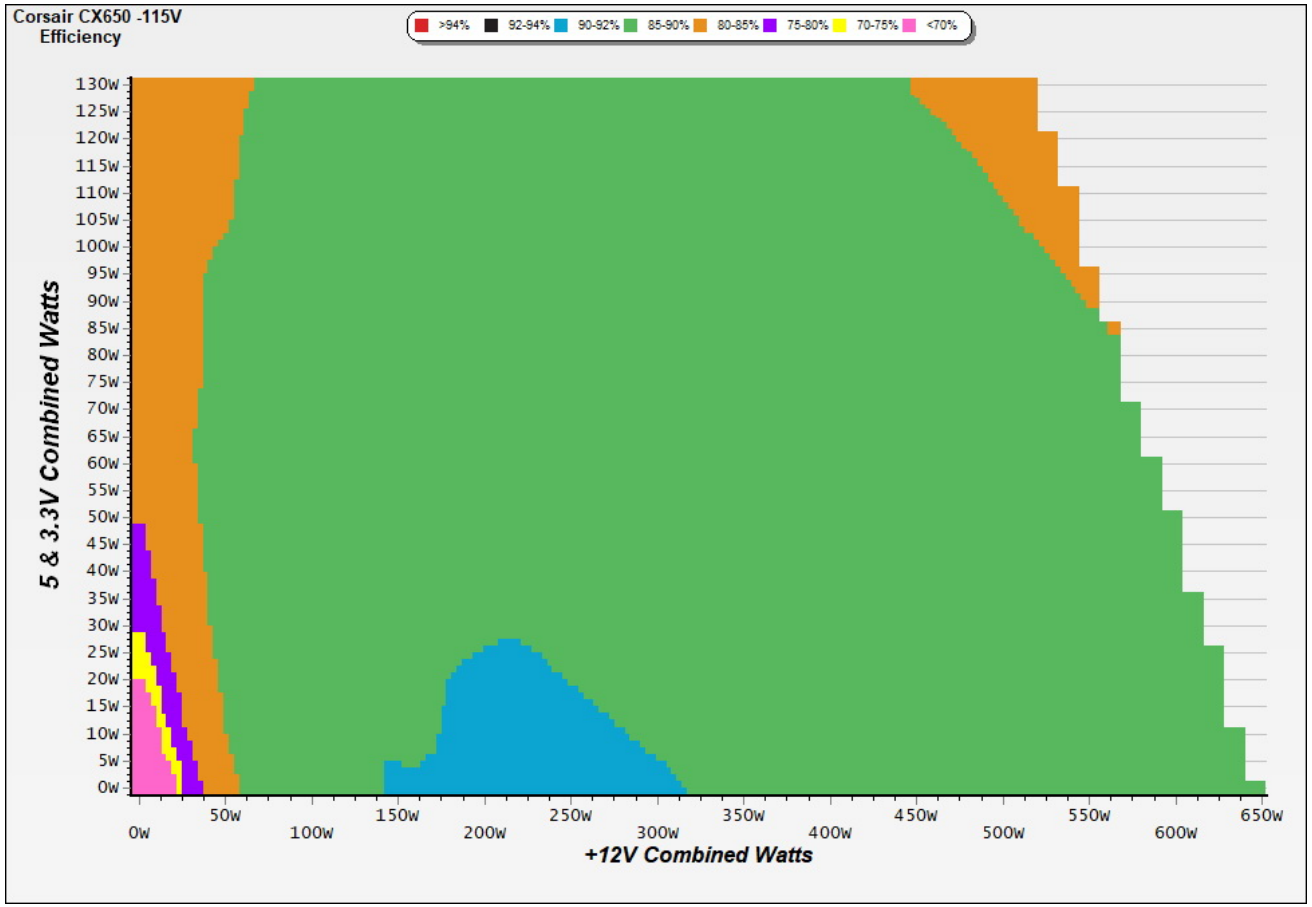
115V



230V



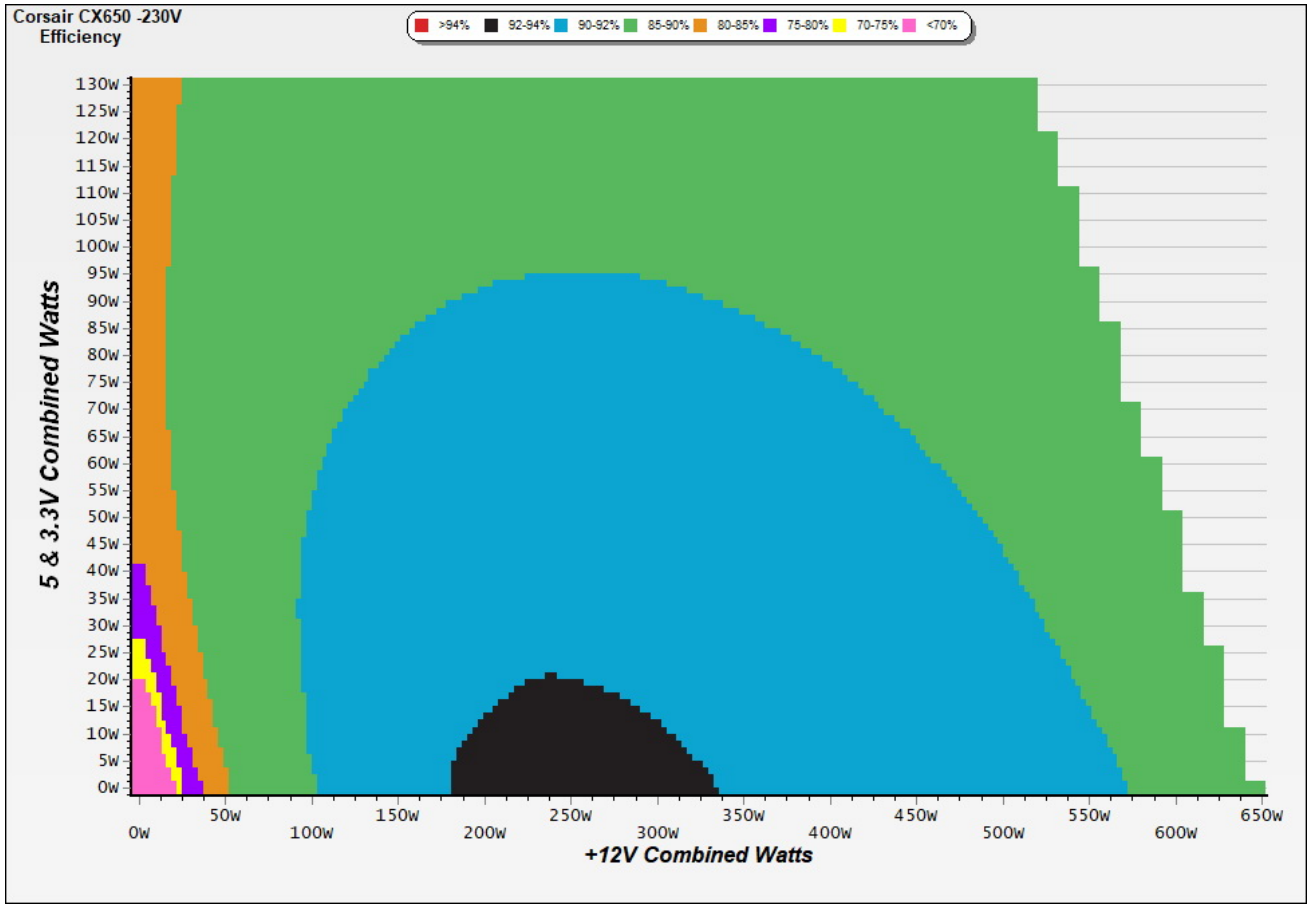
115V



□□

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



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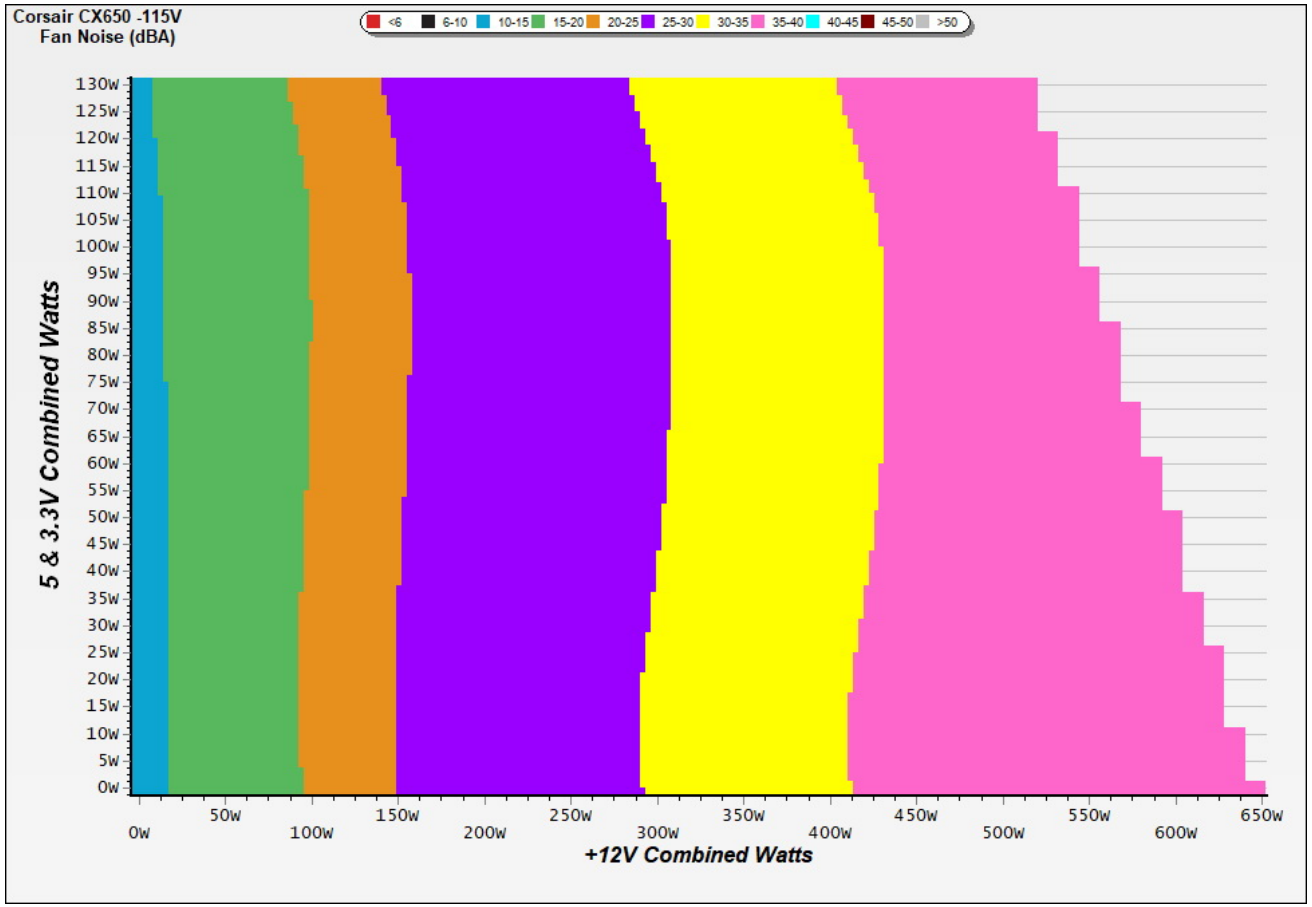
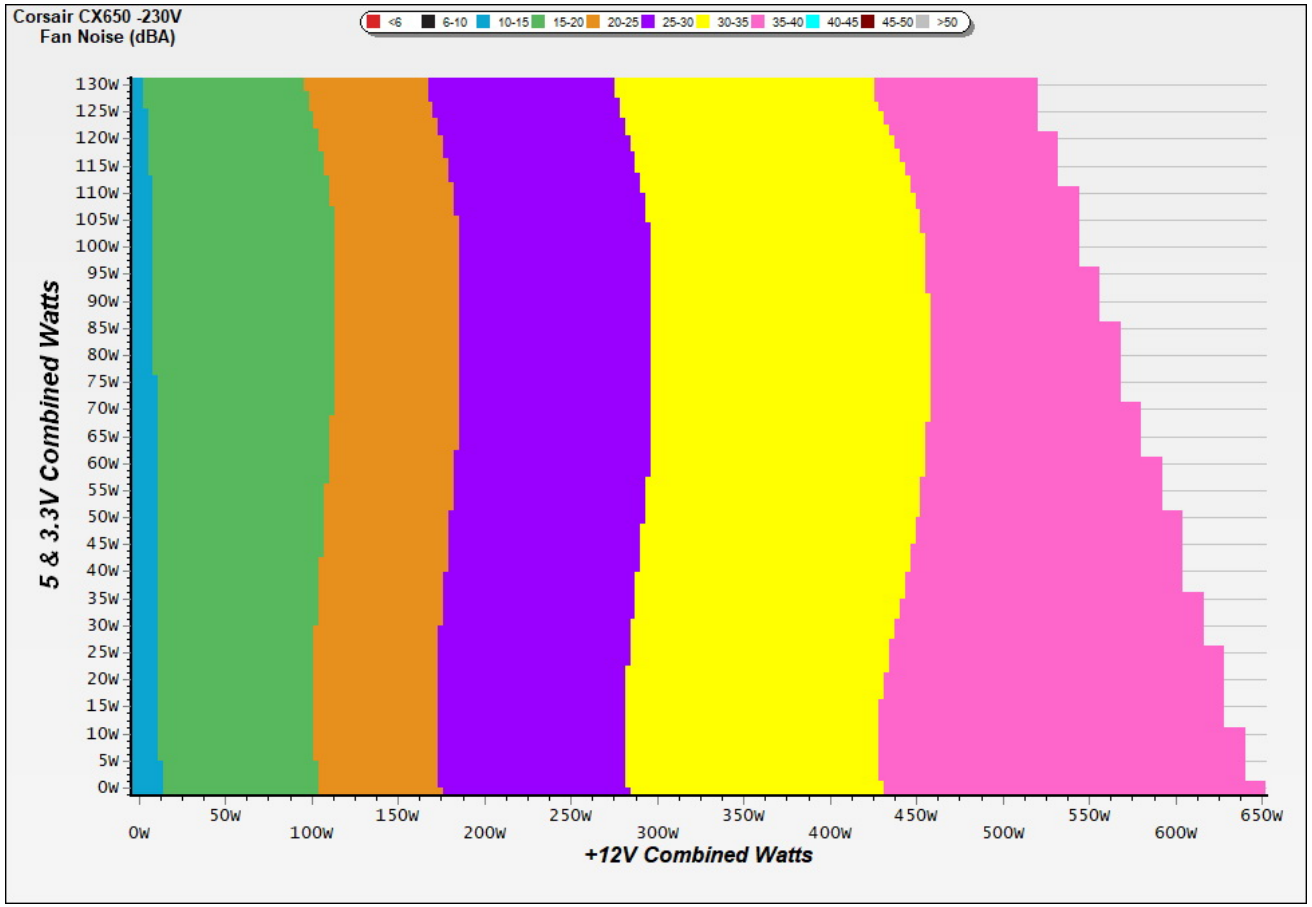
115V



□□

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



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%	1024 RPM · 22.4 dB(A) · 33.9 °C	1024 RPM · 22.4 dB(A) · 33.9 °C	**+0.0 dB(A)**
20%	1106 RPM · 25.1 dB(A) · 34.9 °C	1106 RPM · 25.1 dB(A) · 34.9 °C	**+0.0 dB(A)**
50%	1357 RPM · 31.2 dB(A) · 36.1 °C	1357 RPM · 31.2 dB(A) · 36.1 °C	**+0.0 dB(A)**
100%	1810 RPM · 39.6 dB(A) · 39.2 °C	1810 RPM · 39.6 dB(A) · 39.2 °C	**+0.0 dB(A)**

230V

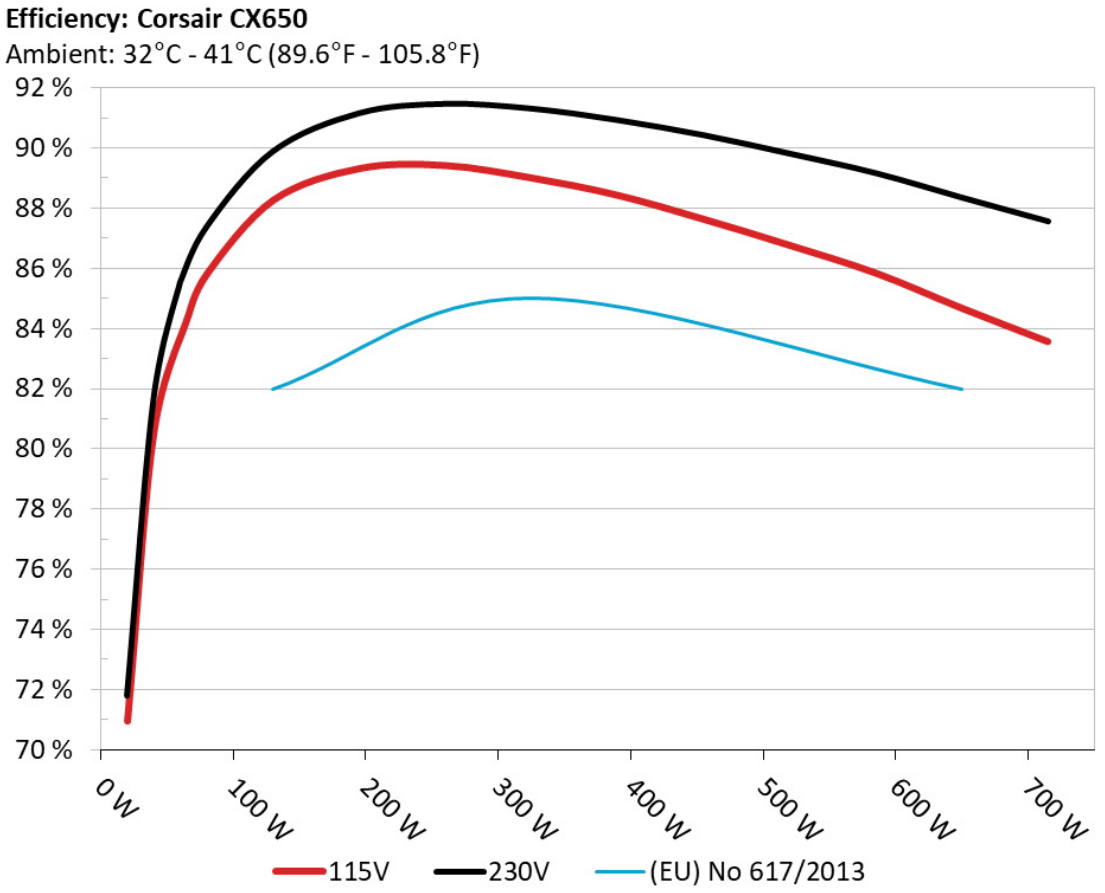
Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	1005 RPM · 21.7 dB(A) · 34.5 °C	1005 RPM · 21.7 dB(A) · 34.5 °C	**+0.0 dB(A)**
20%	1068 RPM · 23.6 dB(A) · 35.0 °C	1068 RPM · 23.6 dB(A) · 35.0 °C	**+0.0 dB(A)**
50%	1383 RPM · 32.0 dB(A) · 36.3 °C	1383 RPM · 32.0 dB(A) · 36.3 °C	**+0.0 dB(A)**
100%	1815 RPM · 39.7 dB(A) · 39.2 °C	1815 RPM · 39.7 dB(A) · 39.2 °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.

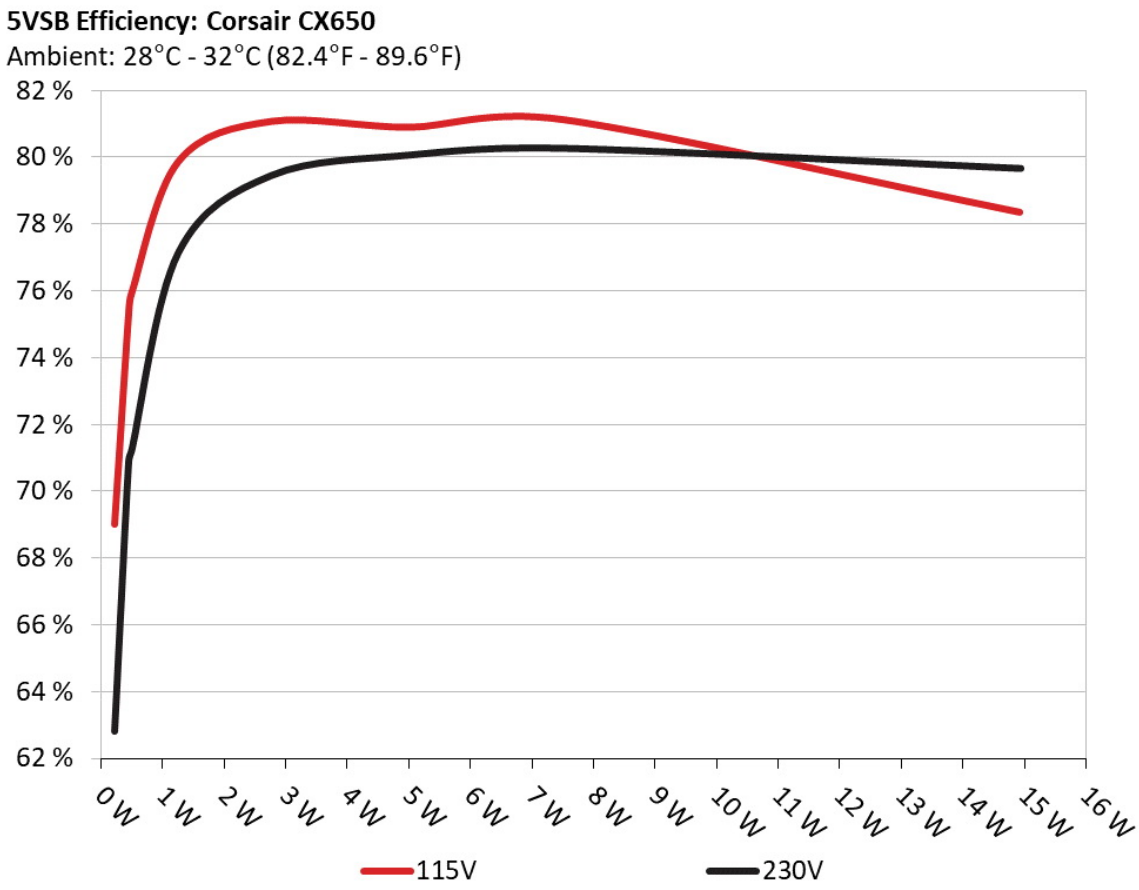
Informational. Not part of the ETA or LAMBDA rating.

Indicative Performance



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□□□□



□□

This graph depicts the efficiency levels of the 5VSB rail with 115V and 230V input

□□□□ □□ 5Vsb □□ (ErP Lot3/6 & CEC)

115V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.045A	0.227	68.997%	0.039
	5.051V	0.329		115.13V
2	0.090A	0.455	75.331%	0.069
	5.050V	0.604		115.12V
3	0.550A	2.772	81.076%	0.271
	5.039V	3.419		115.11V
4	1.000A	5.028	80.901%	0.346
	5.027V	6.215		115.11V
5	1.500A	7.523	81.128%	0.386
	5.015V	9.273		115.11V
6	3.000A	14.931	78.353%	0.444
	4.977V	19.056		115.12V

230V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.045A	0.228	62.810%	0.013
	5.051V	0.363		230.26V
2	0.090A	0.455	70.872%	0.022
	5.050V	0.642		230.26V
3	0.550A	2.772	79.450%	0.112
	5.039V	3.489		230.26V
4	1.000A	5.028	80.064%	0.180
	5.027V	6.280		230.26V
5	1.500A	7.523	80.262%	0.234
	5.015V	9.373		230.26V
6	3.001A	14.932	79.663%	0.320
	4.976V	18.744		230.26V

Supplementary Tests (For Reference)

10-110%□□□□

115V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	3.608A	1.992A	1.992A	0.996A	64.975	84.250%	1024	22.4	33.86°C	0.972
	12.023V	5.018V	3.313V	5.021V	77.122				37.24°C	115.14V
2	8.253A	2.992A	2.991A	1.198A	130.052	88.250%	1106	25.1	34.90°C	0.987
	12.014V	5.014V	3.309V	5.010V	147.367				38.85°C	115.13V
3	13.244A	3.493A	3.492A	1.400A	195.059	89.301%	1208	27.8	35.33°C	0.992
	12.006V	5.012V	3.306V	5.000V	218.429				40.69°C	115.13V
4	18.245A	3.993A	3.996A	1.604A	260.071	89.400%	1258	29.0	35.71°C	0.992
	11.996V	5.009V	3.303V	4.990V	290.908				42.25°C	115.12V
5	22.908A	4.996A	5.002A	1.808A	325.112	88.988%	1357	31.2	36.07°C	0.993
	11.987V	5.005V	3.300V	4.979V	365.345				43.08°C	115.12V
6	27.533A	6.000A	6.007A	2.000A	389.564	88.420%	1471	34.1	36.63°C	0.993
	11.979V	5.002V	3.296V	4.968V	440.582				44.79°C	115.12V
7	32.230A	7.003A	7.017A	2.220A	454.935	87.620%	1609	36.4	37.20°C	0.993
	11.971V	4.998V	3.293V	4.956V	519.215				46.58°C	115.11V
8	36.936A	8.002A	8.027A	2.428A	520.199	86.749%	1755	39.2	37.93°C	0.994
	11.962V	4.994V	3.289V	4.945V	599.657				48.27°C	115.11V
9	42.048A	8.517A	8.521A	2.431A	585.157	85.829%	1808	39.5	38.77°C	0.994
	11.954V	4.991V	3.286V	4.939V	681.772				50.21°C	115.10V
10	46.900A	9.025A	9.046A	3.052A	649.986	84.665%	1810	39.6	39.20°C	0.995
	11.946V	4.988V	3.283V	4.916V	767.715				51.25°C	115.10V
11	52.355A	9.030A	9.055A	3.056A	714.804	83.560%	1813	39.7	40.71°C	0.995
	11.939V	4.986V	3.281V	4.910V	855.438				53.58°C	115.09V
CL1	0.102A	16.005A	16.000A	0.000A	133.938	81.807%	1532	35.3	36.65°C	0.989
	12.009V	4.996V	3.297V	5.025V	163.725				43.57°C	115.13V

CL2	54.017A	1.000A	0.999A	1.000A	658.981	85.327%	1812	39.6	39.93°C	0.995
	11.952V	5.001V	3.294V	4.978V	772.300				51.77°C	115.10V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	3.608A	1.993A	1.992A	0.996A	64.972	85.537%	1005	21.7	34.51°C	0.809
	12.021V	5.018V	3.313V	5.021V	75.958				37.70°C	230.26V
2	8.255A	2.990A	2.992A	1.198A	130.045	89.886%	1068	23.6	34.97°C	0.920
	12.011V	5.014V	3.309V	5.010V	144.677				38.68°C	230.26V
3	13.248A	3.493A	3.493A	1.400A	195.054	91.155%	1150	26.3	35.38°C	0.954
	12.002V	5.011V	3.306V	5.000V	213.980				39.55°C	230.26V
4	18.247A	3.994A	3.997A	1.604A	260.064	91.467%	1239	28.6	35.50°C	0.968
	11.994V	5.009V	3.303V	4.989V	284.325				40.60°C	230.26V
5	22.909A	4.996A	5.004A	1.808A	325.106	91.307%	1383	32.0	36.25°C	0.976
	11.986V	5.005V	3.300V	4.978V	356.057				42.37°C	230.26V
6	27.536A	5.999A	6.008A	2.000A	389.542	90.928%	1477	34.4	36.72°C	0.980
	11.977V	5.002V	3.296V	4.967V	428.408				43.70°C	230.26V
7	32.237A	7.005A	7.015A	2.220A	454.927	90.424%	1589	36.1	37.04°C	0.983
	11.968V	4.998V	3.293V	4.956V	503.107				45.23°C	230.26V
8	36.944A	8.002A	8.029A	2.428A	520.189	89.808%	1740	38.7	37.66°C	0.985
	11.959V	4.994V	3.289V	4.945V	579.224				46.88°C	230.26V
9	42.058A	8.518A	8.521A	2.431A	585.156	89.156%	1812	39.6	38.30°C	0.986
	11.951V	4.991V	3.286V	4.939V	656.331				48.61°C	230.25V
10	46.914A	9.025A	9.048A	3.052A	649.974	88.345%	1815	39.7	39.15°C	0.988
	11.942V	4.988V	3.283V	4.917V	735.725				50.28°C	230.25V
11	52.371A	9.030A	9.055A	3.056A	714.787	87.557%	1815	39.7	40.60°C	0.989
	11.935V	4.986V	3.281V	4.910V	816.363				53.10°C	230.26V
CL1	0.101A	16.005A	16.000A	0.000A	133.926	83.235%	1503	34.6	36.97°C	0.933
	12.008V	4.996V	3.297V	5.025V	160.901				42.79°C	230.26V

CL2	54.021A	1.000A	1.002A	1.000A	658.724	89.017%	1813	39.7	39.63°C	0.988
	11.948V	5.001V	3.295V	4.978V	739.996				50.52°C	230.25V

The results above are not used in the certification process

20-80□□□□□

115V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	PF/AC □□
1	1.236A	0.498A	0.498A	0.198A	20.003	70.965%	862	16.3	0.860
	12.016V	5.022V	3.316V	5.046V	28.187				115.14V
2	2.470A	0.994A	0.996A	0.397A	39.995	80.578%	910	18.2	0.943
	12.025V	5.021V	3.315V	5.039V	49.635				115.14V
3	3.708A	1.493A	1.494A	0.596A	60.027	84.311%	991	21.6	0.967
	12.024V	5.019V	3.313V	5.032V	71.197				115.15V
4	4.939A	1.994A	1.993A	0.796A	79.977	85.799%	1028	22.5	0.977
	12.021V	5.018V	3.312V	5.025V	93.214				115.14V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	PF/AC □□
1	1.236A	0.498A	0.498A	0.198A	20.001	71.786%	868	16.7	0.503
	12.014V	5.023V	3.316V	5.045V	27.862				230.26V
2	2.469A	0.995A	0.997A	0.397A	39.991	81.641%	932	19.6	0.682
	12.025V	5.021V	3.315V	5.039V	48.984				230.26V
3	3.708A	1.493A	1.493A	0.596A	60.022	85.428%	994	21.6	0.789
	12.023V	5.019V	3.314V	5.032V	70.260				230.26V
4	4.940A	1.993A	1.992A	0.796A	79.972	87.375%	1010	21.8	0.849
	12.019V	5.018V	3.312V	5.025V	91.527				230.26V

The results above are not used in the certification process

□□□□

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	20.50mV	9.20mV	9.70mV	8.70mV	Pass
20% Load	20.10mV	10.00mV	10.50mV	9.80mV	Pass
30% Load	21.00mV	10.40mV	11.00mV	10.50mV	Pass
40% Load	20.50mV	10.80mV	11.00mV	11.80mV	Pass
50% Load	22.00mV	11.00mV	12.00mV	13.00mV	Pass
60% Load	25.80mV	11.80mV	13.30mV	14.80mV	Pass
70% Load	29.00mV	12.90mV	12.90mV	17.50mV	Pass
80% Load	31.20mV	13.80mV	14.70mV	17.10mV	Pass
90% Load	34.40mV	14.50mV	15.20mV	19.20mV	Pass
100% Load	48.60mV	15.80mV	16.60mV	20.30mV	Pass
110% Load	49.60mV	16.40mV	17.30mV	21.80mV	Pass
Crossload1	28.40mV	11.90mV	15.40mV	13.10mV	Pass
Crossload2	48.90mV	15.10mV	15.40mV	20.40mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	19.50mV	8.80mV	10.20mV	8.90mV	Pass
20% Load	20.30mV	8.90mV	9.80mV	9.40mV	Pass
30% Load	18.20mV	9.80mV	10.10mV	10.50mV	Pass
40% Load	18.80mV	10.30mV	11.20mV	11.10mV	Pass
50% Load	20.40mV	10.40mV	11.80mV	12.30mV	Pass
60% Load	23.20mV	10.70mV	12.80mV	12.70mV	Pass
70% Load	26.60mV	11.40mV	12.90mV	14.80mV	Pass
80% Load	29.00mV	13.10mV	14.10mV	15.10mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	33.30mV	14.00mV	14.60mV	16.40mV	Pass
100% Load	45.60mV	16.90mV	16.80mV	17.50mV	Pass
110% Load	48.20mV	16.50mV	17.50mV	18.80mV	Pass
Crossload1	27.70mV	11.50mV	15.10mV	13.40mV	Pass
Crossload2	46.00mV	14.60mV	15.80mV	18.30mV	Pass

The results above are not used in the certification process

Corsair CX650

Top side

Power specifications label

本测试报告中包含的所有数据和图表均可在以下条件下由任何人使用：使用过程需提及测试结果由Cybenetics提供。
在任何情况下都应提供原始测试结果文档的网站链接

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