be quiet!

be quiet! Straight Power 11 550W

281S7420001905

Lab ID 281

Certification ID 25281

Test Result Report ID: 20PS281A

Certificate Issue Date: Jan 25, 2018

Scheme: ETA-EMI PSU

115V



230V

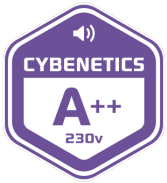


Scheme: LAMBDA PSU

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	be quiet!
Model	Straight Power 11 550W
OEM/ODM	FSP
Serial Number	281S7420001905
Product Specifications	
Manufacturer-Provided Information	
□□□□ (Vrms)	100-240
□□□□ (Arms)	8-4
□□□□ (Hz)	50-60

□□□□ (W)	550
Operating Temperature (Continuous Full Load) (°C)	
□□	ATX12V
□□□□	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
□□	135mm Fluid Dynamic Bearing Fan (SIW3-13525-HF-26)
□□□□□	✗
Cybenetics Testing Information	
Lab ID	281
Date of receipt	Jan 18, 2018
Testing Date	Jan 23, 2018
Report Issued Date	Jan 25, 2018
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

□□□□□ (Non-accredited measurements)

□□□□□				
□□	□□□□	□□□□□□	Gauge	In Cable Capacitors
ATX □□ 20+4 pin (600mm)	1	1	18-22AWG	□
4+4 pin EPS 12V □□ (700mm)	1	1	16AWG	□
6+2pin PCIe□□ (600mm)	2	2	18AWG	□
SATA□□ (550mm+150mm+150mm)	1	3	18AWG	□
SATA□□ (550mm+150mm+150mm+150mm)	1	4	18AWG	□
SATA□□ (550mm+150mm+150mm) / □ 4pin Molex□□ (+150mm)	1	3 / 1	18AWG	□
SATA□□ (550mm+150mm) / □ 4pin Molex□□ (+150mm+150mm)	1	2 / 2	18AWG	□
□ 4pin □□ (+150mm)	1	1	22AWG	□

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

□□□□

□		3.3V	5V	12V1	12V2	12V3	12V4	5VSB	-12V
□□□□	□□	24	24	18	18	20	20	3	0.3
				45.8					
	□	130		549.6				15	3.6
□□□□□ (W)		550							

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)	88.981%
Average Noise Output (>1450 Load Combinations)	13.54dBA
PF□□□ (>1450 Load Combinations)	0.993
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
□□□□□□	0.0344W
Non-Accredited	
12V Ripple (Full Load)	22.22mV
5V Ripple (Full Load)	8.14mV
3.3V Ripple (Full Load)	14.87mV
5VSB Ripple (Full Load)	18.98mV

12V Load Regulation	0.67%
5V Load Regulation	1.99%
3.3V Load Regulation	2.99%
5VSB Load Regulation	3.42%
Inrush Current	29.212A

230V

Accredited		
□□□□ (>1450 load combinations)		91.159%
Average Noise Output (>1450 Load Combinations)		13.27dBA
PF□□□ (>1450 Load Combinations)		0.967
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
□□□□□□		0.0888W
Non-Accredited		
12V Ripple (Full Load)		22.67mV
5V Ripple (Full Load)		7.19mV
3.3V Ripple (Full Load)		13.34mV
5VSB Ripple (Full Load)		18.71mV
12V Load Regulation		0.68%
5V Load Regulation		1.95%
3.3V Load Regulation		2.96%
5VSB Load Regulation		3.44%
Inrush Current		44.624A
□□□□ & PG□□		16.20ms
AC Loss to PWR_OK Hold Up Time		14.60ms
PWR_OK Inactive to DC Loss Delay		1.60ms
OPP (0.00°C / 0.00°C)	-	-

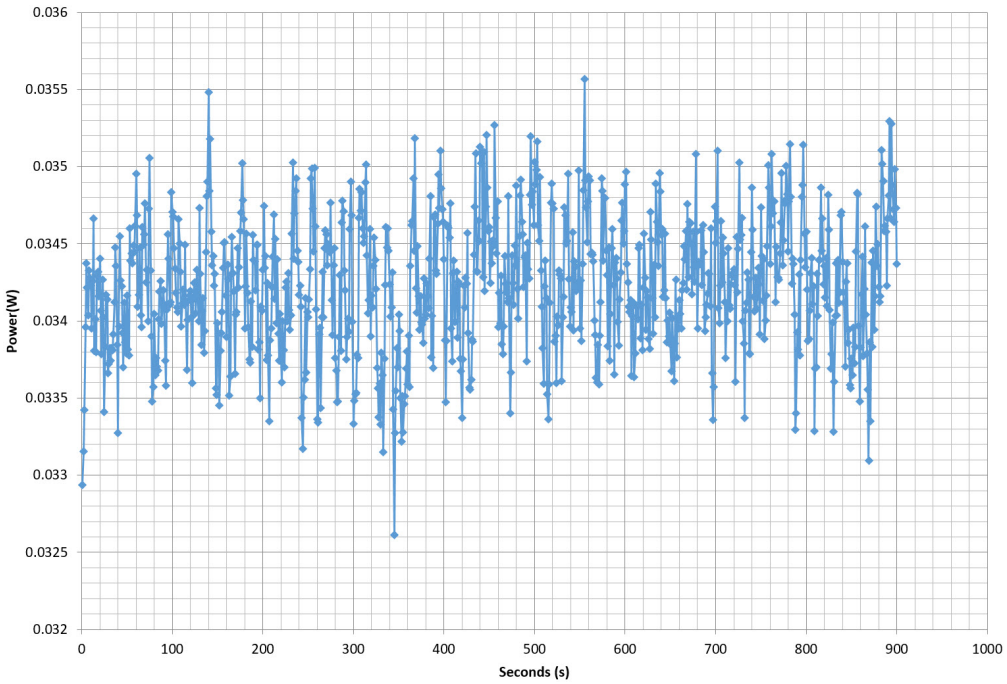
□□□□ & PG□□

Hold-Up Time (ms)	16.2
AC Loss to PWR_OK Hold Up Time (ms)	14.6
PWR_OK Inactive to DC Loss Delay (ms)	1.6

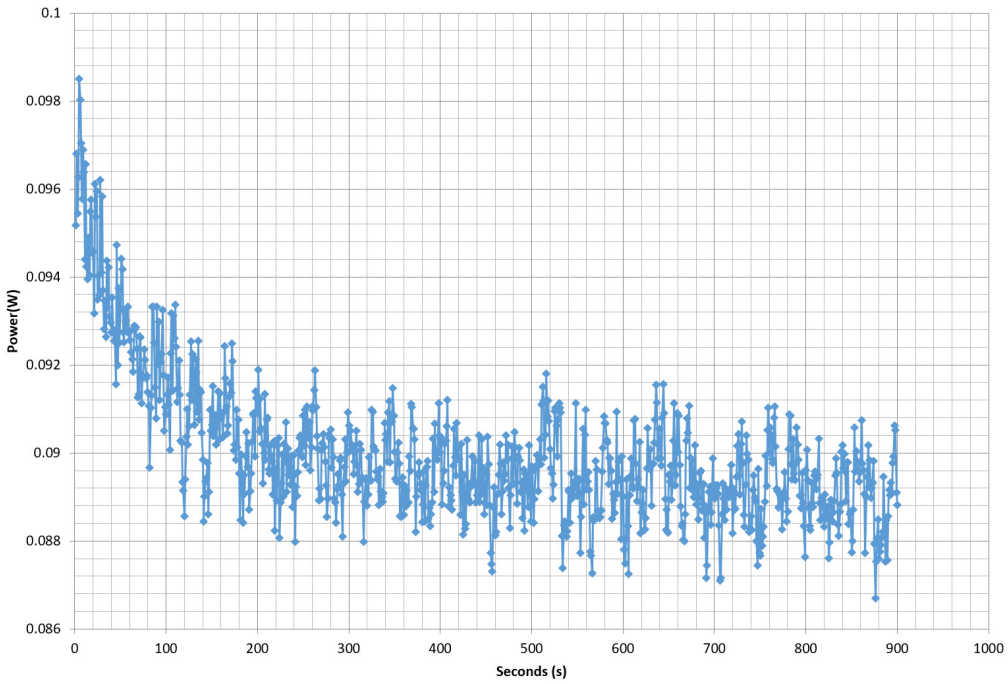
□□□□

Graphs

115V



230V



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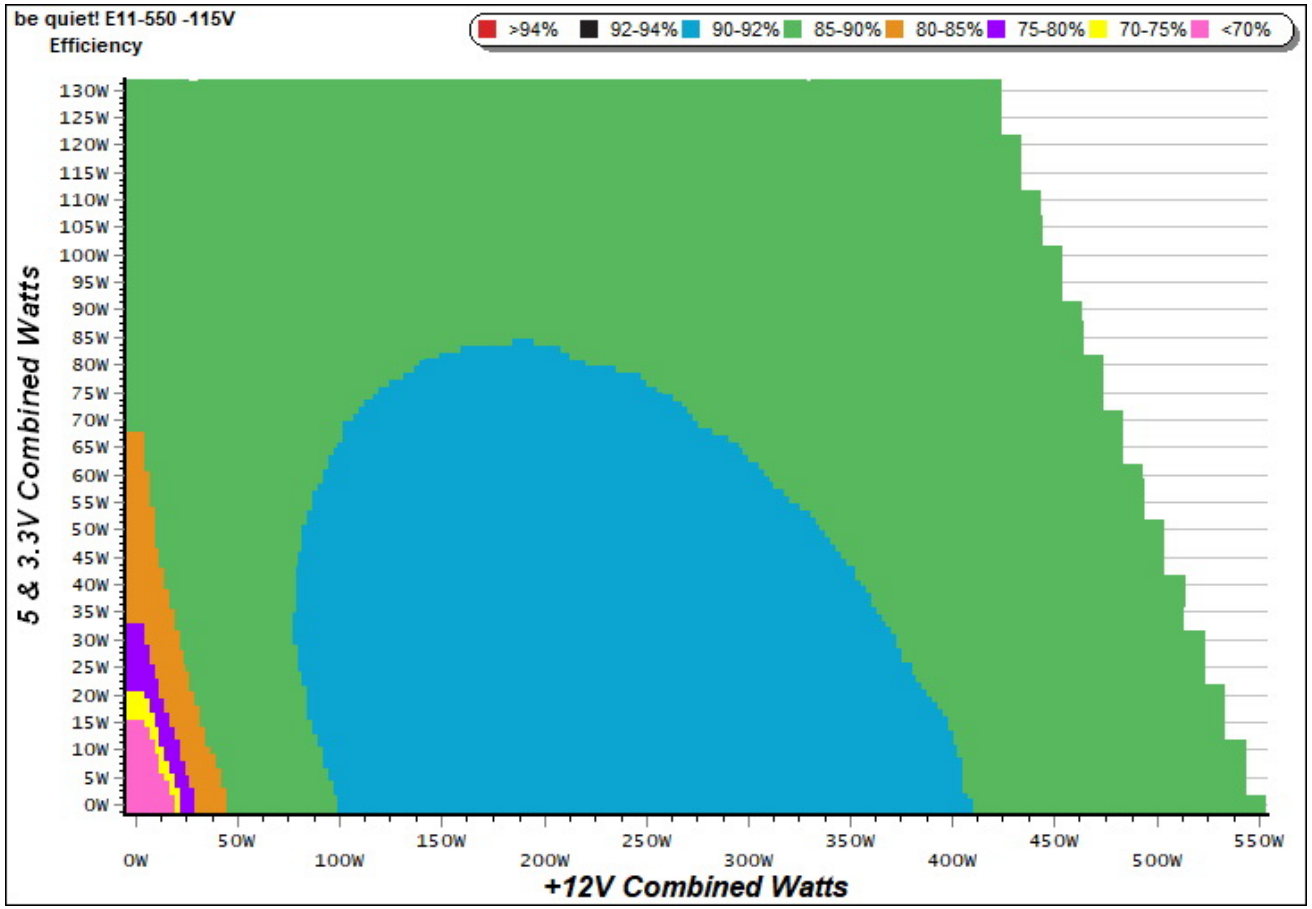
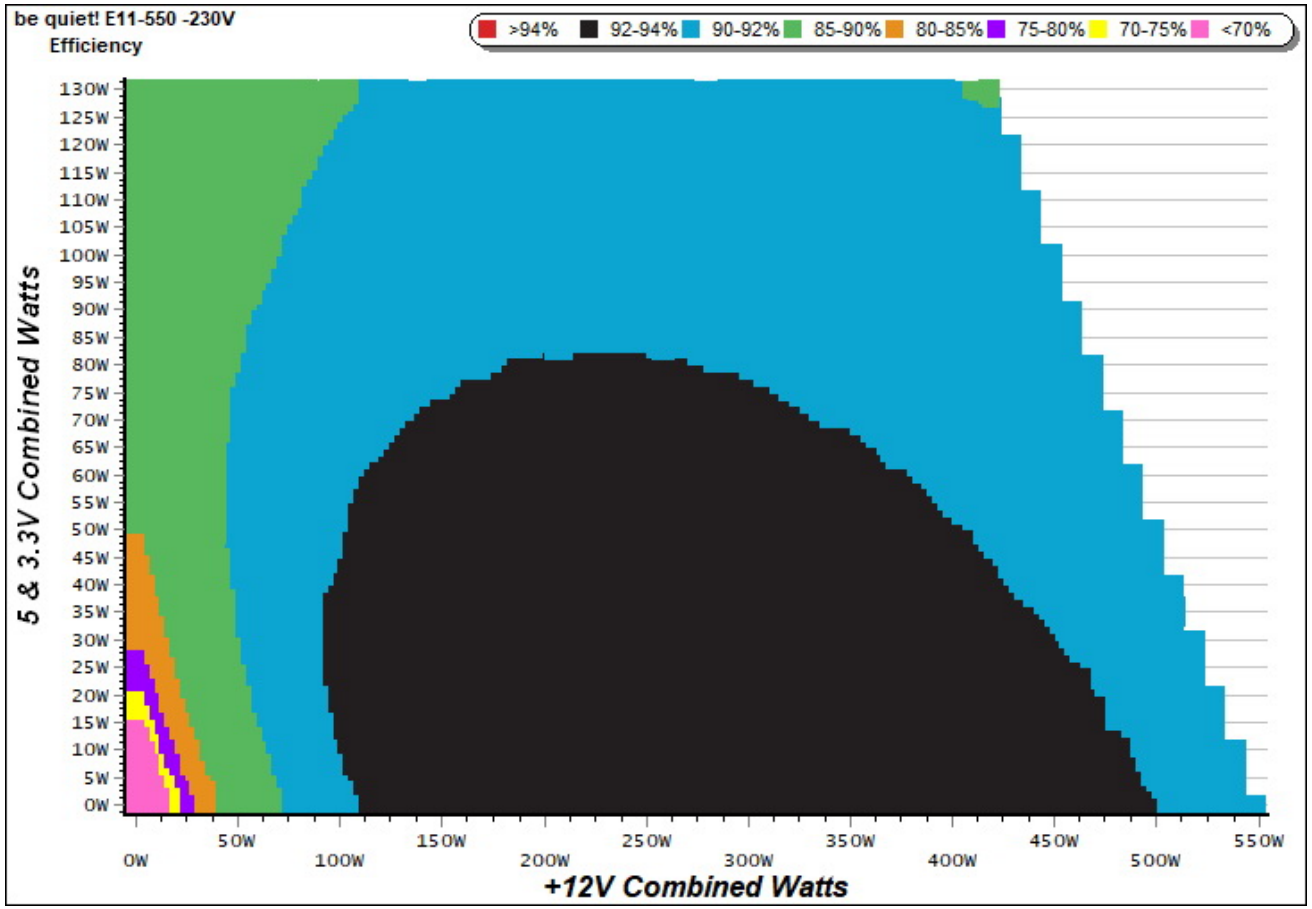
115V



□□

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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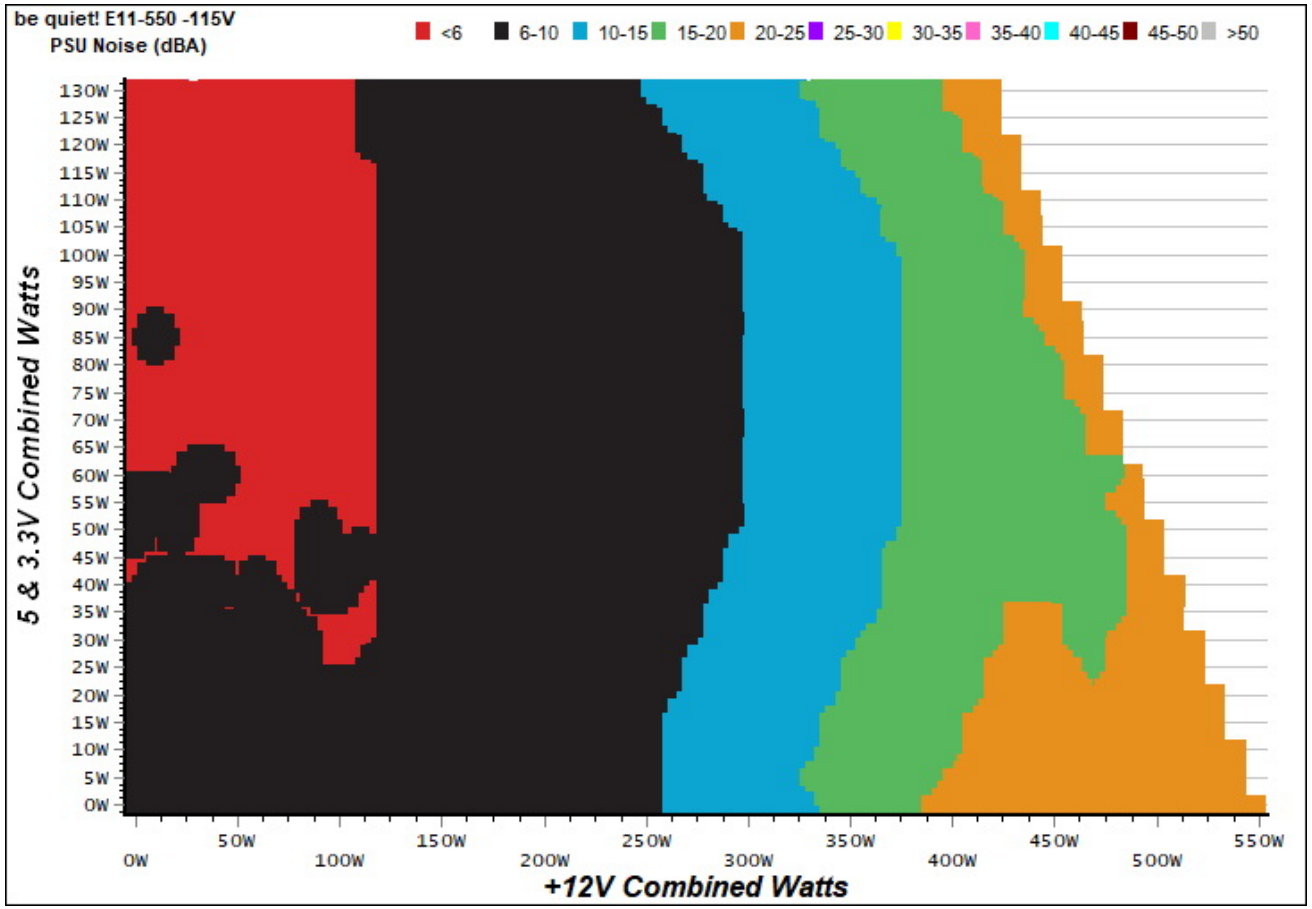
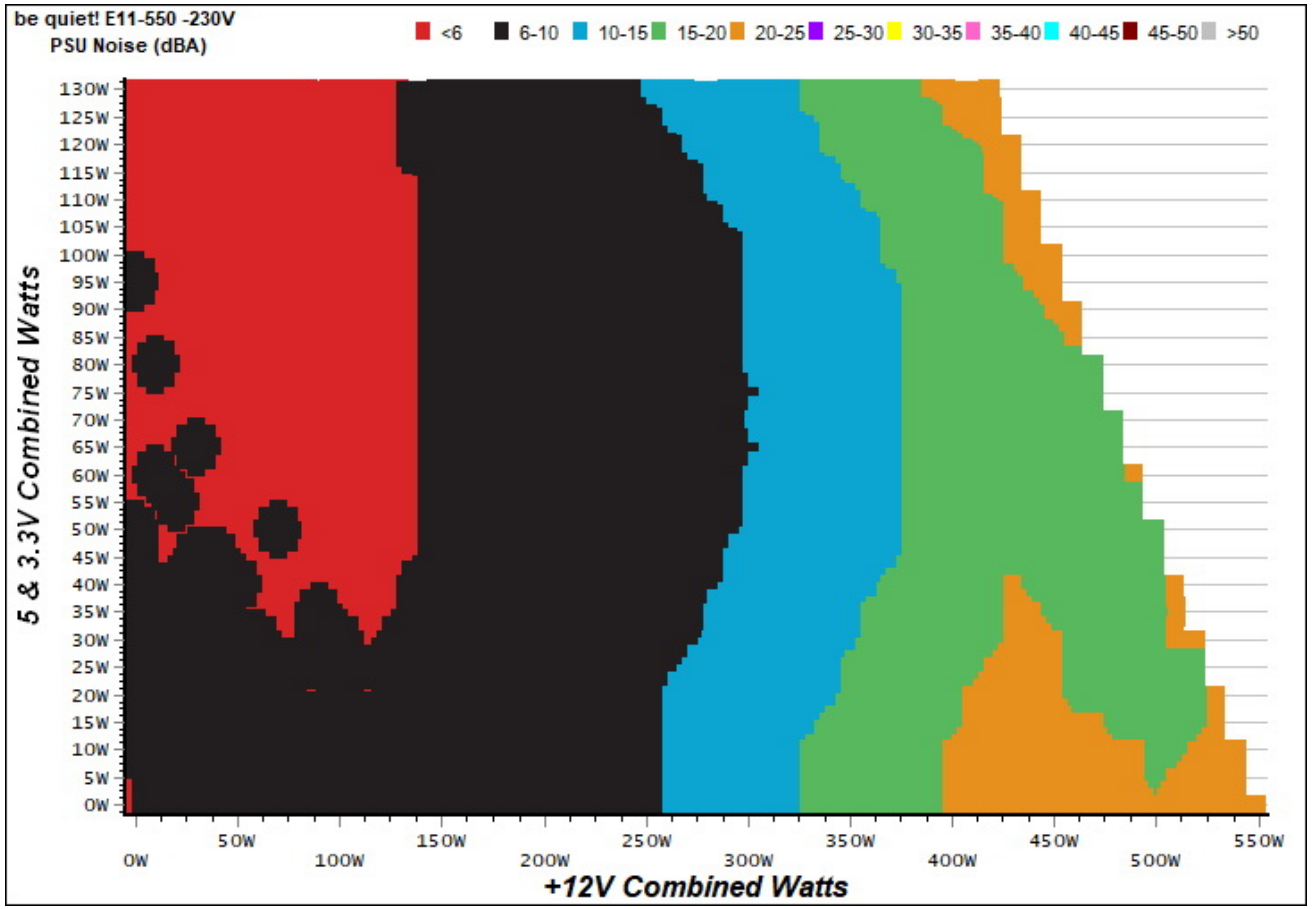
115V



□□

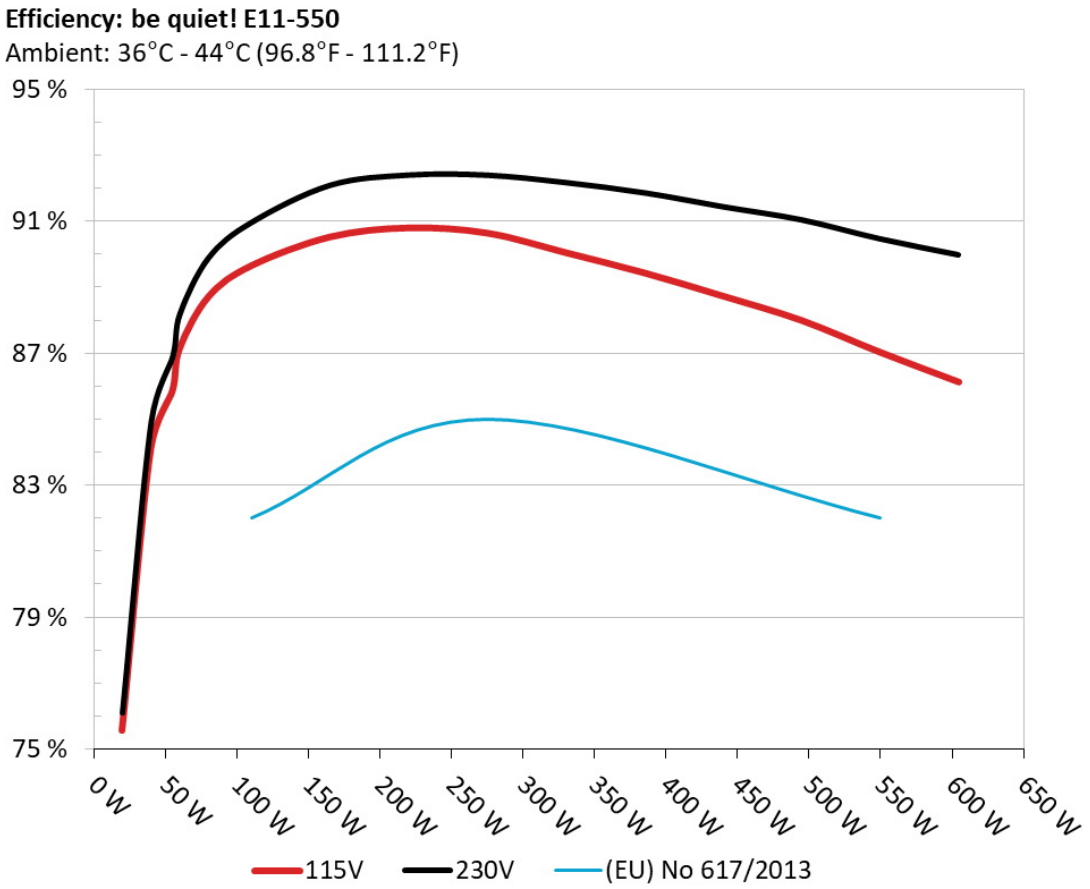
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

230V



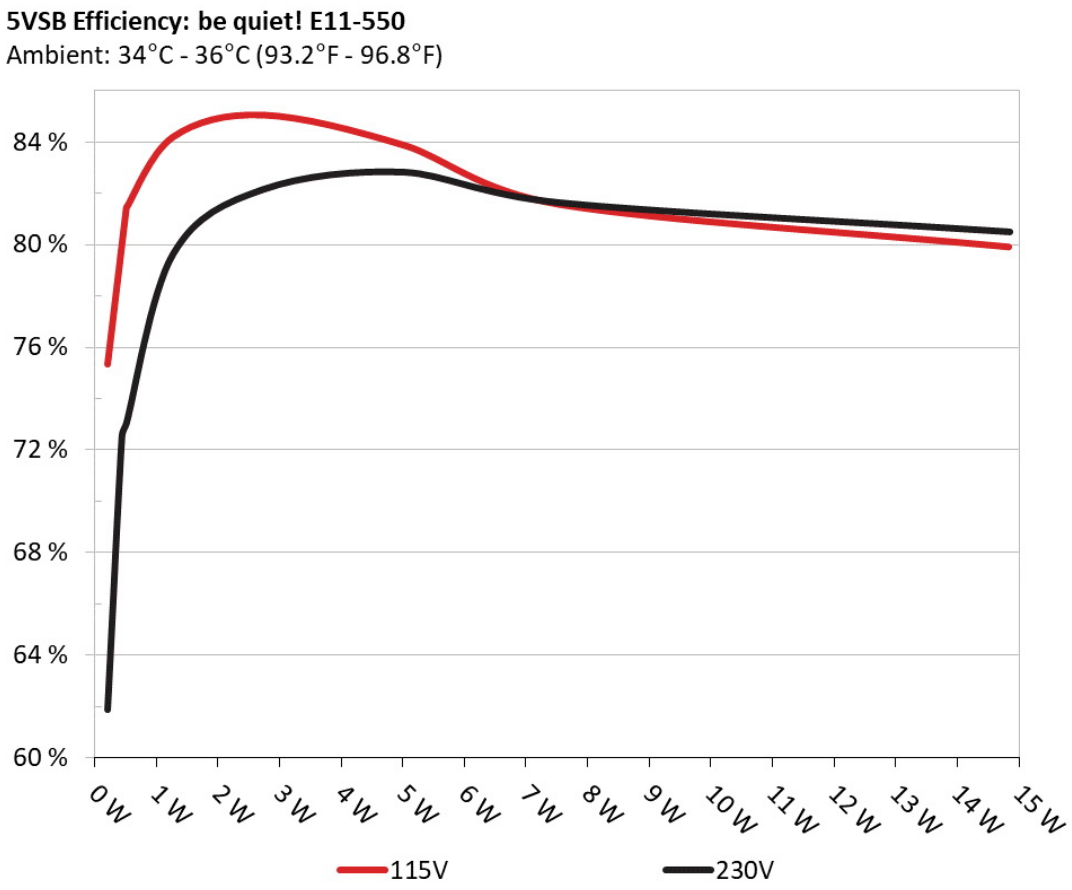
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

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	0.042A	0.211	75.357%	0.040
	5.069V	0.280		115.04V
2	0.087A	0.443	81.434%	0.075
	5.068V	0.544		115.05V
3	0.542A	2.736	85.048%	0.295
	5.045V	3.217		115.04V
4	1.002A	5.039	83.858%	0.378
	5.028V	6.009		115.04V
5	1.502A	7.524	81.579%	0.423
	5.010V	9.223		115.04V
6	3.002A	14.836	79.918%	0.480
	4.942V	18.564		115.04V

230V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.042A	0.211	61.877%	0.015
	5.070V	0.341		230.17V
2	0.087A	0.443	72.504%	0.026
	5.069V	0.611		230.17V
3	0.542A	2.736	82.137%	0.129
	5.047V	3.331		230.16V
4	1.002A	5.033	82.807%	0.206
	5.023V	6.078		230.17V
5	1.502A	7.529	81.624%	0.266
	5.013V	9.224		230.17V
6	3.002A	14.847	80.485%	0.355
	4.946V	18.447		230.17V

Supplementary Tests (For Reference)

10-110%□□□□

115V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	2.766A	1.994A	1.956A	0.996A	54.835	85.847%	240	6.0	37.91°C	0.969
	12.013V	5.023V	3.369V	5.021V	63.875				45.92°C	115.06V
2	6.576A	2.990A	2.945A	1.196A	109.806	89.636%	240	6.0	38.12°C	0.990
	12.004V	5.013V	3.359V	5.005V	122.502				46.34°C	115.03V
3	10.741A	3.497A	3.463A	1.401A	164.945	90.510%	240	6.0	39.03°C	0.993
	11.996V	5.004V	3.349V	4.996V	182.239				47.56°C	115.02V
4	14.900A	4.005A	3.950A	1.605A	219.806	90.786%	350	7.7	39.96°C	0.995
	11.988V	4.993V	3.339V	4.983V	242.114				48.90°C	115.02V
5	18.727A	5.014A	4.954A	1.810A	274.789	90.630%	490	11.6	40.19°C	0.996
	11.979V	4.981V	3.329V	4.968V	303.199				49.42°C	115.03V
6	22.556A	6.036A	5.967A	2.016A	329.718	90.037%	632	13.3	40.91°C	0.997
	11.968V	4.969V	3.316V	4.954V	366.203				50.41°C	115.03V
7	26.389A	7.054A	6.985A	2.226A	384.671	89.424%	800	18.1	41.53°C	0.997
	11.960V	4.959V	3.305V	4.938V	430.164				51.33°C	115.02V
8	30.235A	8.089A	8.014A	2.435A	439.679	88.720%	968	23.3	42.44°C	0.997
	11.949V	4.948V	3.293V	4.922V	495.582				52.99°C	115.06V
9	34.512A	8.608A	8.558A	2.440A	494.746	87.982%	1133	27.7	43.19°C	0.997
	11.942V	4.938V	3.284V	4.915V	562.328				54.15°C	115.05V
10	38.531A	9.135A	9.074A	3.071A	549.579	87.019%	1295	32.3	43.72°C	0.997
	11.935V	4.928V	3.273V	4.883V	631.562				55.56°C	115.04V
11	43.170A	9.152A	9.094A	3.074A	604.508	86.120%	1400	33.5	44.20°C	0.997
	11.925V	4.919V	3.265V	4.878V	701.935				56.42°C	115.04V
CL1	0.103A	16.028A	16.005A	0.005A	133.976	84.665%	1012	25.4	42.18°C	0.992
	11.989V	4.969V	3.316V	5.040V	158.242				51.46°C	115.03V

CL2	45.802A	1.001A	1.004A	1.002A	560.138	87.744%	1295	32.3	43.21°C	0.997
	11.940V	4.953V	3.300V	4.981V	638.379				54.15°C	115.04V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	2.766A	1.994A	1.957A	0.995A	54.831	86.889%	240	6.0	38.95°C	0.819
	12.011V	5.023V	3.370V	5.023V	63.105				46.39°C	230.25V
2	6.576A	2.991A	2.945A	1.196A	109.809	90.946%	240	6.0	39.22°C	0.923
	12.003V	5.013V	3.360V	5.007V	120.741				46.87°C	230.26V
3	10.739A	3.499A	3.460A	1.401A	164.902	92.073%	290	6.5	39.60°C	0.956
	11.994V	5.004V	3.350V	4.995V	179.100				47.57°C	230.26V
4	14.903A	4.006A	3.948A	1.603A	219.785	92.382%	394	8.9	40.09°C	0.972
	11.985V	4.993V	3.339V	4.984V	237.909				48.40°C	230.26V
5	18.723A	5.014A	4.952A	1.810A	274.700	92.378%	540	10.4	40.42°C	0.983
	11.977V	4.981V	3.329V	4.969V	297.365				49.12°C	230.26V
6	22.556A	6.038A	5.967A	2.016A	329.711	92.155%	665	14.1	41.09°C	0.987
	11.967V	4.970V	3.316V	4.954V	357.777				50.12°C	230.26V
7	26.393A	7.056A	6.987A	2.225A	384.681	91.845%	850	17.4	41.40°C	0.990
	11.958V	4.959V	3.305V	4.939V	418.836				50.69°C	230.26V
8	30.227A	8.089A	8.014A	2.435A	439.612	91.424%	1012	25.4	41.72°C	0.992
	11.950V	4.948V	3.293V	4.922V	480.849				51.48°C	230.26V
9	34.507A	8.609A	8.556A	2.440A	494.683	91.026%	1194	29.5	42.72°C	0.992
	11.942V	4.938V	3.284V	4.915V	543.453				52.84°C	230.26V
10	38.534A	9.136A	9.075A	3.070A	549.542	90.452%	1349	32.3	43.56°C	0.993
	11.933V	4.928V	3.273V	4.883V	607.554				54.28°C	230.25V
11	43.158A	9.153A	9.095A	3.074A	604.413	89.968%	1400	33.5	44.75°C	0.993
	11.926V	4.919V	3.265V	4.877V	671.809				55.83°C	230.26V
CL1	0.100A	16.028A	16.004A	0.004A	133.931	86.131%	1070	25.5	42.48°C	0.949
	11.988V	4.969V	3.316V	5.040V	155.496				51.62°C	230.32V

CL2	45.785A	1.003A	1.003A	1.002A	560.033	91.218%	1361	32.4	44.09°C	0.993
	11.942V	4.953V	3.300V	4.980V	613.947				54.35°C	230.26V

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	1.216A	0.491A	0.471A	0.196A	19.668	75.571%	240	6.0	0.892
	12.019V	5.032V	3.378V	5.056V	26.026				115.08V
2	2.456A	0.990A	0.978A	0.396A	39.784	84.097%	240	6.0	0.953
	12.015V	5.028V	3.374V	5.046V	47.307				115.07V
3	3.699A	1.485A	1.481A	0.596A	59.882	87.128%	240	6.0	0.971
	12.012V	5.023V	3.369V	5.035V	68.729				115.07V
4	4.934A	1.994A	1.961A	0.796A	79.859	88.691%	240	6.0	0.981
	12.009V	5.019V	3.365V	5.024V	90.042				115.05V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	PF/AC □□
1	1.212A	0.493A	0.470A	0.196A	19.627	76.100%	240	6.0	0.551
	12.018V	5.033V	3.379V	5.058V	25.791				230.23V
2	2.456A	0.989A	0.977A	0.396A	39.775	84.919%	240	6.0	0.742
	12.014V	5.029V	3.374V	5.047V	46.839				265.12V
3	3.698A	1.489A	1.481A	0.596A	59.890	88.186%	240	6.0	0.835
	12.011V	5.024V	3.370V	5.036V	67.913				230.24V
4	4.932A	1.994A	1.960A	0.796A	79.831	89.874%	240	6.0	0.884
	12.008V	5.020V	3.367V	5.023V	88.825				230.25V

The results above are not used in the certification process

□□□□

115V

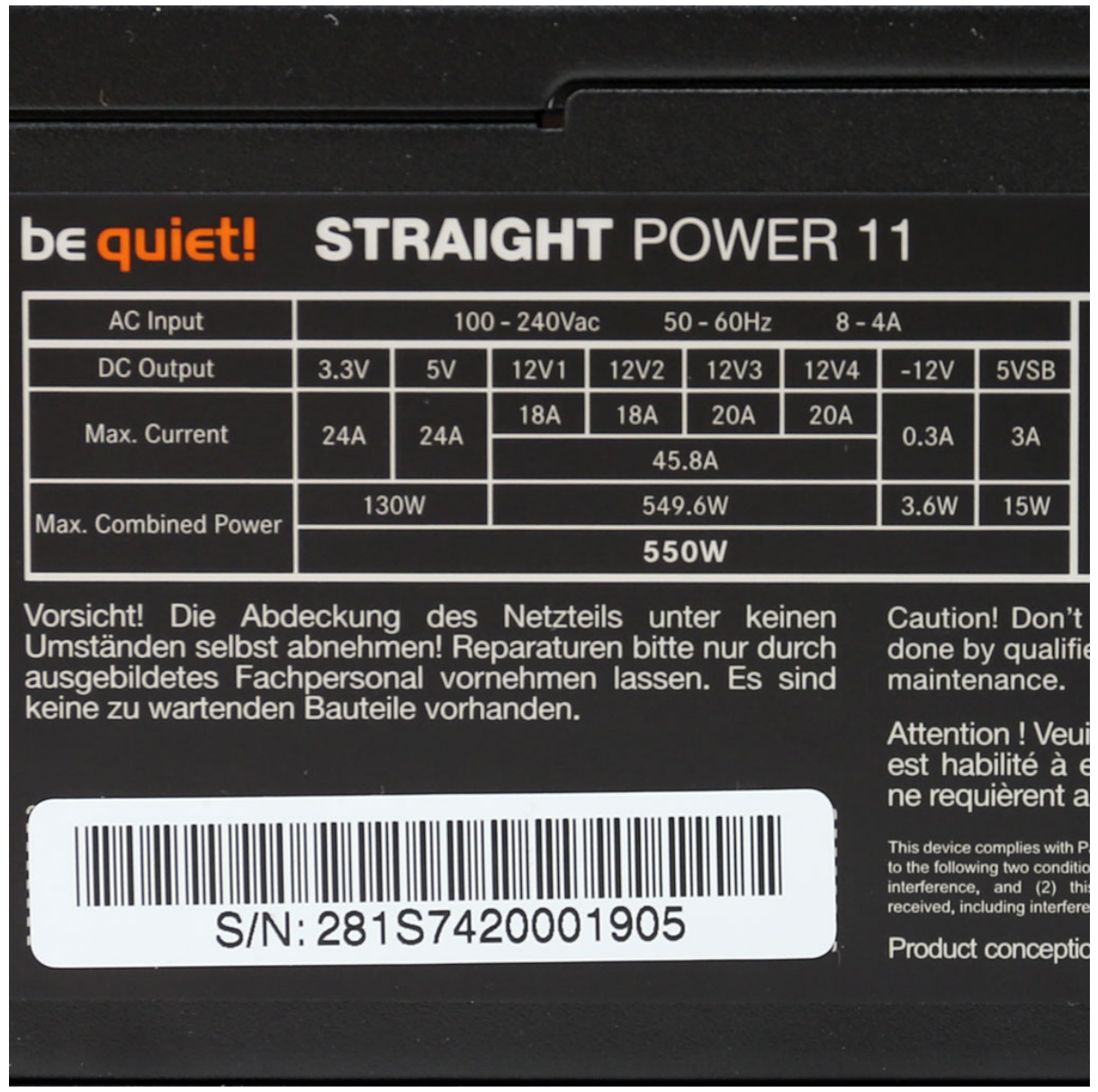
Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	21.5 mV	5.1 mV	9.4 mV	9.3 mV	Pass
20% Load	16.6 mV	4.3 mV	9.1 mV	10.5 mV	Pass
30% Load	16.2 mV	4.4 mV	9.3 mV	12.4 mV	Pass
40% Load	17.8 mV	5.2 mV	10.8 mV	12.8 mV	Pass
50% Load	16.7 mV	5.3 mV	11.5 mV	13.8 mV	Pass
60% Load	17.9 mV	5.6 mV	11.2 mV	16.0 mV	Pass
70% Load	18.9 mV	6.2 mV	11.7 mV	16.2 mV	Pass
80% Load	19.9 mV	6.3 mV	13.3 mV	15.7 mV	Pass
90% Load	21.0 mV	6.6 mV	13.7 mV	16.6 mV	Pass
100% Load	22.2 mV	8.1 mV	14.9 mV	19.0 mV	Pass
110% Load	23.9 mV	8.1 mV	14.7 mV	18.7 mV	Pass
Crossload 1	16.9 mV	6.4 mV	10.7 mV	7.8 mV	Pass
Crossload 2	22.2 mV	6.8 mV	14.1 mV	13.5 mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	21.6 mV	5.3 mV	9.3 mV	8.9 mV	Pass
20% Load	14.4 mV	5.1 mV	7.9 mV	10.3 mV	Pass
30% Load	14.6 mV	4.2 mV	8.8 mV	12.2 mV	Pass
40% Load	16.3 mV	4.7 mV	9.9 mV	12.8 mV	Pass
50% Load	16.2 mV	5.7 mV	10.4 mV	13.1 mV	Pass
60% Load	17.1 mV	5.7 mV	10.1 mV	16.1 mV	Pass
70% Load	18.0 mV	5.9 mV	11.0 mV	15.2 mV	Pass
80% Load	19.4 mV	7.0 mV	13.3 mV	16.0 mV	Pass





Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	20.4 mV	7.1 mV	12.2 mV	16.4 mV	Pass
100% Load	22.7 mV	7.2 mV	13.3 mV	18.7 mV	Pass
110% Load	24.1 mV	7.9 mV	12.8 mV	19.3 mV	Pass
Crossload 1	13.8 mV	6.5 mV	9.2 mV	7.7 mV	Pass
Crossload 2	22.2 mV	6.5 mV	11.5 mV	13.2 mV	Pass

The results above are not used in the certification process

be quiet! Straight Power 11 550W

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

Cybenetics 提供自愿性认证计划：电源方面有 ETA (效率)、LAMBDA (噪声) 与 SAFE (安全与正确运行)；散热产品方面有 DELTA (机箱隔音) 与 PHI (风扇风量与静压)

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