be quiet!

be quiet! Straight Power 11 1000W

285S7330000095

Lab ID 277

Certification ID 25277

Test Result Report ID: 20PS277A

Certificate Issue Date: Jan 24, 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 1000W
OEM/ODM	FSP
Serial Number	285S7330000095
Product Specifications	
Manufacturer-Provided Information	
□□□□ (Vrms)	100-240
□□□□ (Arms)	13-6.5
□□□□ (Hz)	50-60

□□□□ (W)	1000
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	277
Date of receipt	Jan 12, 2018
Testing Date	Jan 21, 2018
Report Issued Date	Jan 24, 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	□
8 pin EPS 12V □□ (700mm)	1	1	16AWG	□
6+2pin PCIe□□ (2x600mm)	3	6	18AWG	□
SATA□□ (550mm+150mm+150mm)	1	3	18AWG	□
SATA□□ (550mm+150mm+150mm+150mm)	1	4	18AWG	□
SATA□□ (550mm+150mm) / □ 4pin Molex□□ (+150mm+150mm)	2	4 / 4	18AWG	□
□ 4pin □□ (+150mm)	1	1	22AWG	□

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

□□□□

□		3.3V	5V	12V1	12V2	12V3	12V4	5VSB	-12V
□□□□	□□	25	25	22	22	30	30	3	0.5
				83.3					
	□	150		999.6				15	6
□□□□□ (W)		1000							

Parts Description

General Data	
Manufacturer (OEM)	FSP
Platform Model	no info (platform exclusively used by be quiet!)
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	2x GBJ2506 (600V, 25A @ 100°C)
APFC MOSFETS	3x STMicroelectronics STF28N60M2 (600V, 14A @ 100°C, 0.15Ohm)
APFC Boost Diode	1x ROHM SCS308AP (600V, 8A @ 135°C)
Hold-up Cap(s)	2x Nichicon (420V, 470uF, 3000h @ 105°C, GN)
Main Switchers	2x STMicroelectronics STF33N60M2 (650V, 16A @ 100°C, 0.125Ohm)
APFC Controller	Infineon ICE2PCS02
Resonant Controller	Champion CM6901
Topology	Primary side: Half-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	6x Toshiba TPHR85 04PL (SOP Advance Series, 40V, 150A @ 25°C, 0.85Ohm)
5V & 3.3V	DC-DC Converters: 6x DMN3009SK3 (30V, 60A @ 70°C, 5.5mOhm) PWM Controller: 1x Anpec APW7159C
Filtering Capacitors	Electrolytics: Nippon Chemi-Con (1-5,000 @ 105°C, KZE), Rubycon (6-10,000 @ 105°C, ZLH), Rubycon (3-6,000 @ 105°C, ZLH), Rubycon (4-10,000 @ 105°C, YXF), Polymers: FPCAP, Chemi-Con

Supervisor IC	Weltrend WT7579 (OVP, UVP, SCP, PG)
Fan Model	BQ SIW3-13525-HF-26 (135mm, 12V, 0.56A, 2600RPM, Fluid Dynamic Bearing)
5VSB Circuit	
Rectifier	1x DMN6040SK3 (30V, 13A @ 100°C, 40mOhm)
Standby PWM Controller	Power Integrations InnoSwitch-EP INN2603K

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)	88.470%
Average Noise Output (>1450 Load Combinations)	34.02dBA
PF□□□ (>1450 Load Combinations)	0.995
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
□□□□□□	0.0444W
Non-Accredited	
12V Ripple (Full Load)	34.51mV
5V Ripple (Full Load)	13.37mV
3.3V Ripple (Full Load)	19.49mV
5VSB Ripple (Full Load)	18.58mV
12V Load Regulation	0.78%
5V Load Regulation	1.78%
3.3V Load Regulation	2.86%
5VSB Load Regulation	2.69%

Inrush Current	30.735A

230V

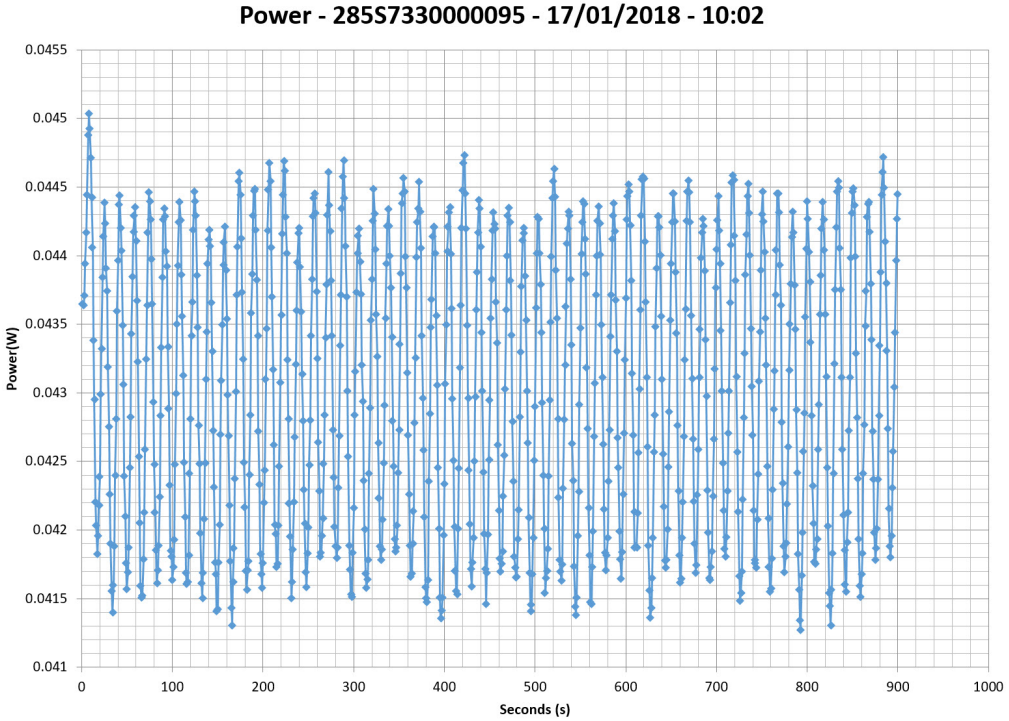
Accredited		
□□□□ (>1450 load combinations)		90.871%
Average Noise Output (>1450 Load Combinations)		34.14dBA
PF□□□ (>1450 Load Combinations)		0.976
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
□□□□□□		0.1055W
Non-Accredited		
12V Ripple (Full Load)		31.25mV
5V Ripple (Full Load)		13.29mV
3.3V Ripple (Full Load)		19.08mV
5VSB Ripple (Full Load)		17.41mV
12V Load Regulation		0.76%
5V Load Regulation		1.77%
3.3V Load Regulation		2.81%
5VSB Load Regulation		2.65%
Inrush Current		61.916A
□□□□ & PG□□		20.10ms
AC Loss to PWR_OK Hold Up Time		17.90ms
PWR_OK Inactive to DC Loss Delay		2.20ms
OPP (0.00°C / 0.00°C)	-	-

□□□□ & PG□□

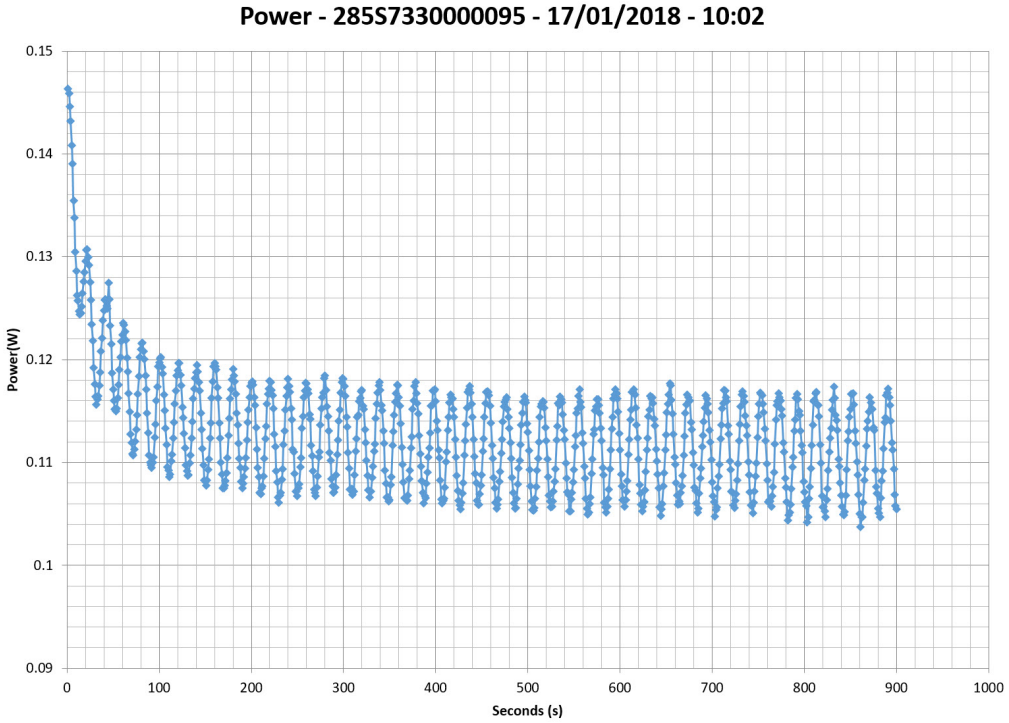
Hold-Up Time (ms)	20.1
AC Loss to PWR_OK Hold Up Time (ms)	17.9
PWR_OK Inactive to DC Loss Delay (ms)	2.2

Graphs

115V



230V



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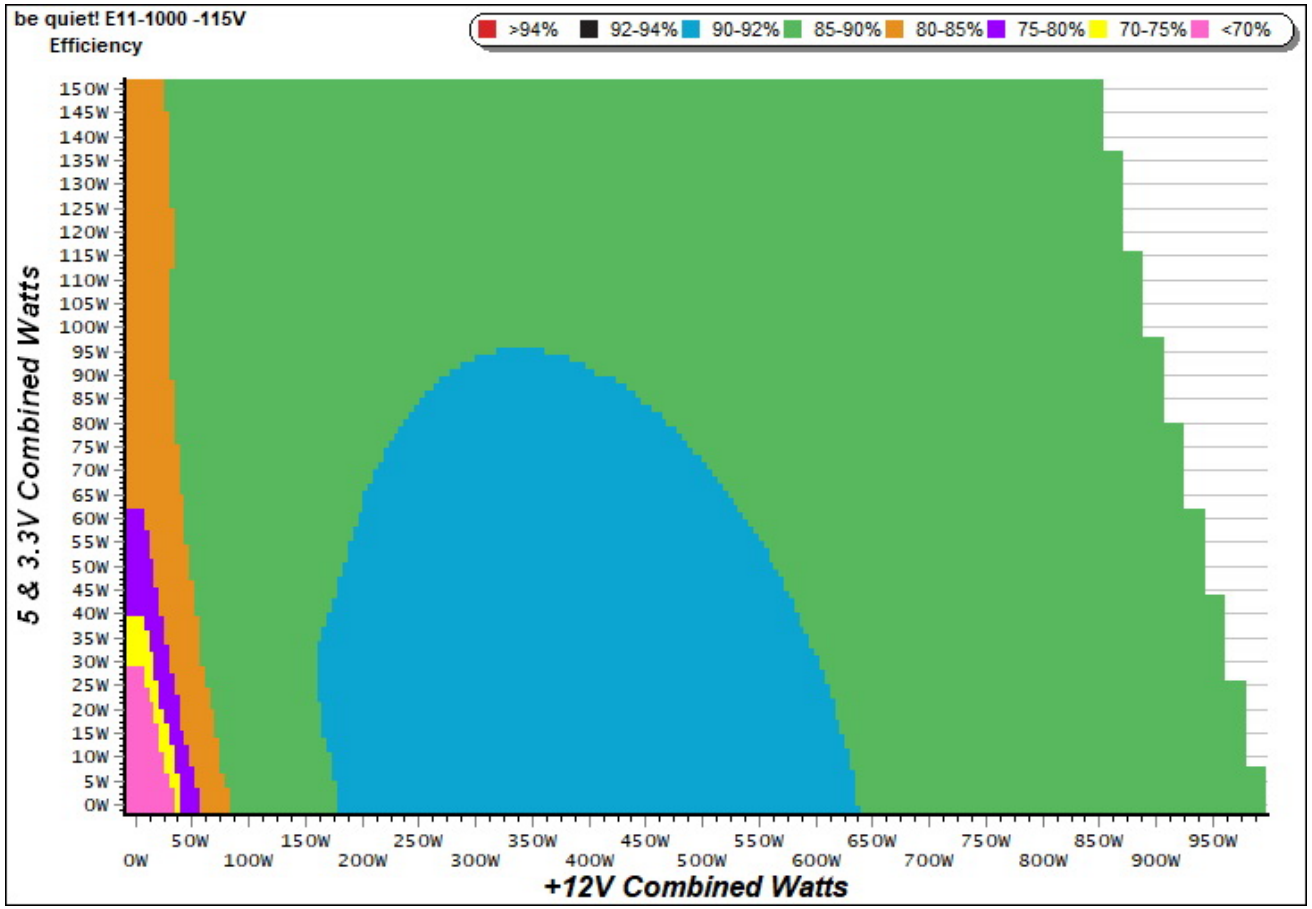
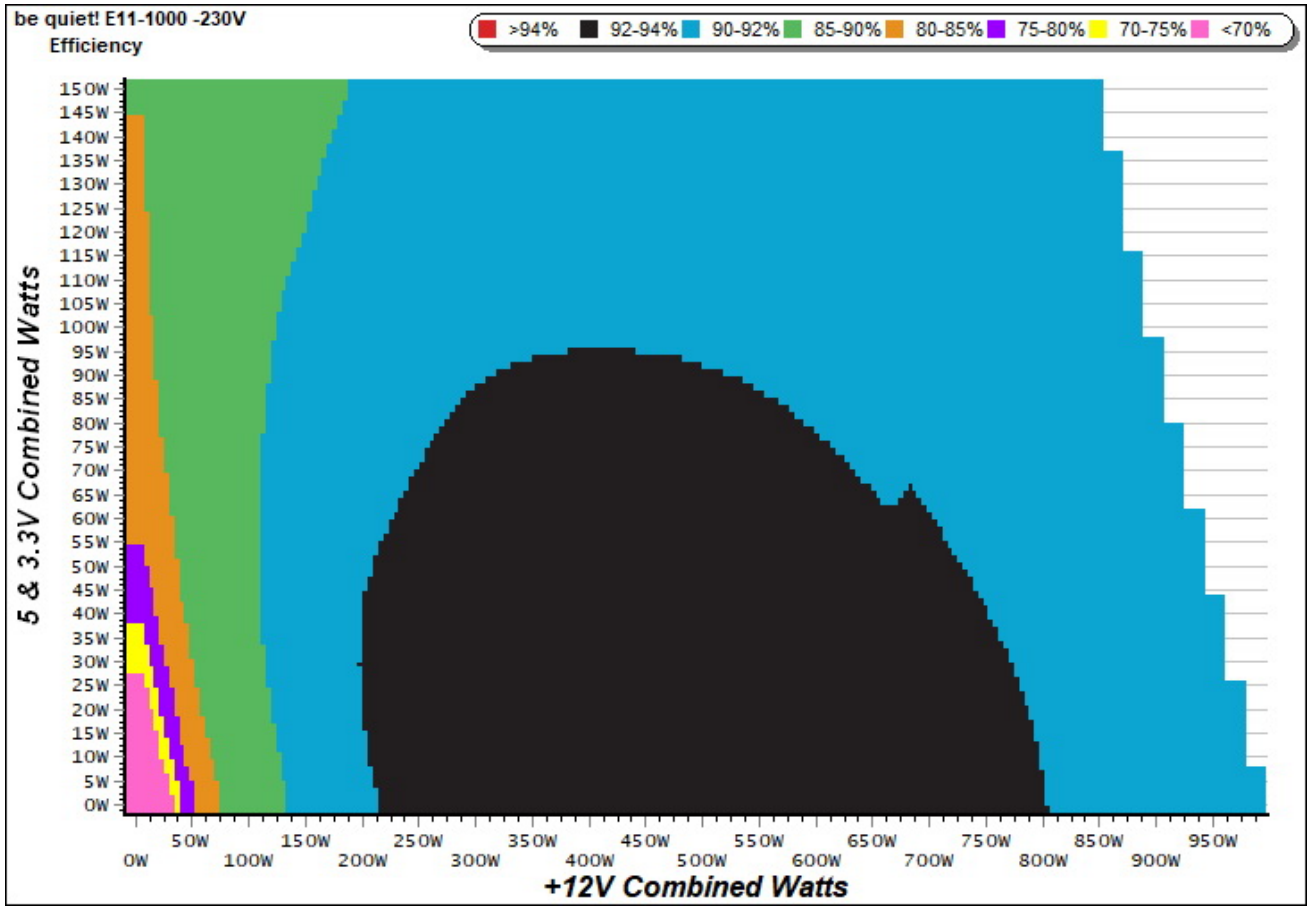
115V



□□

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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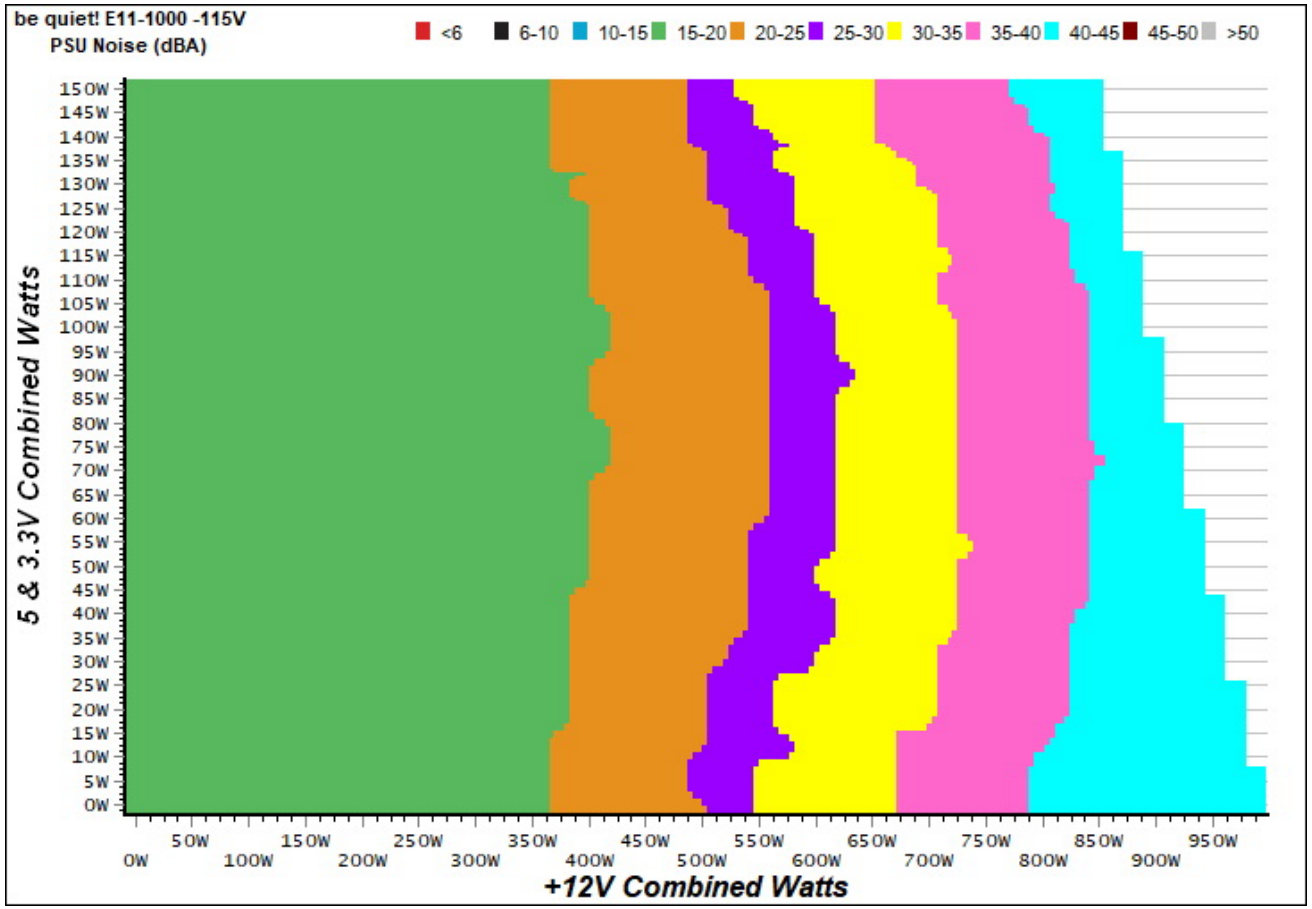
□□□□□

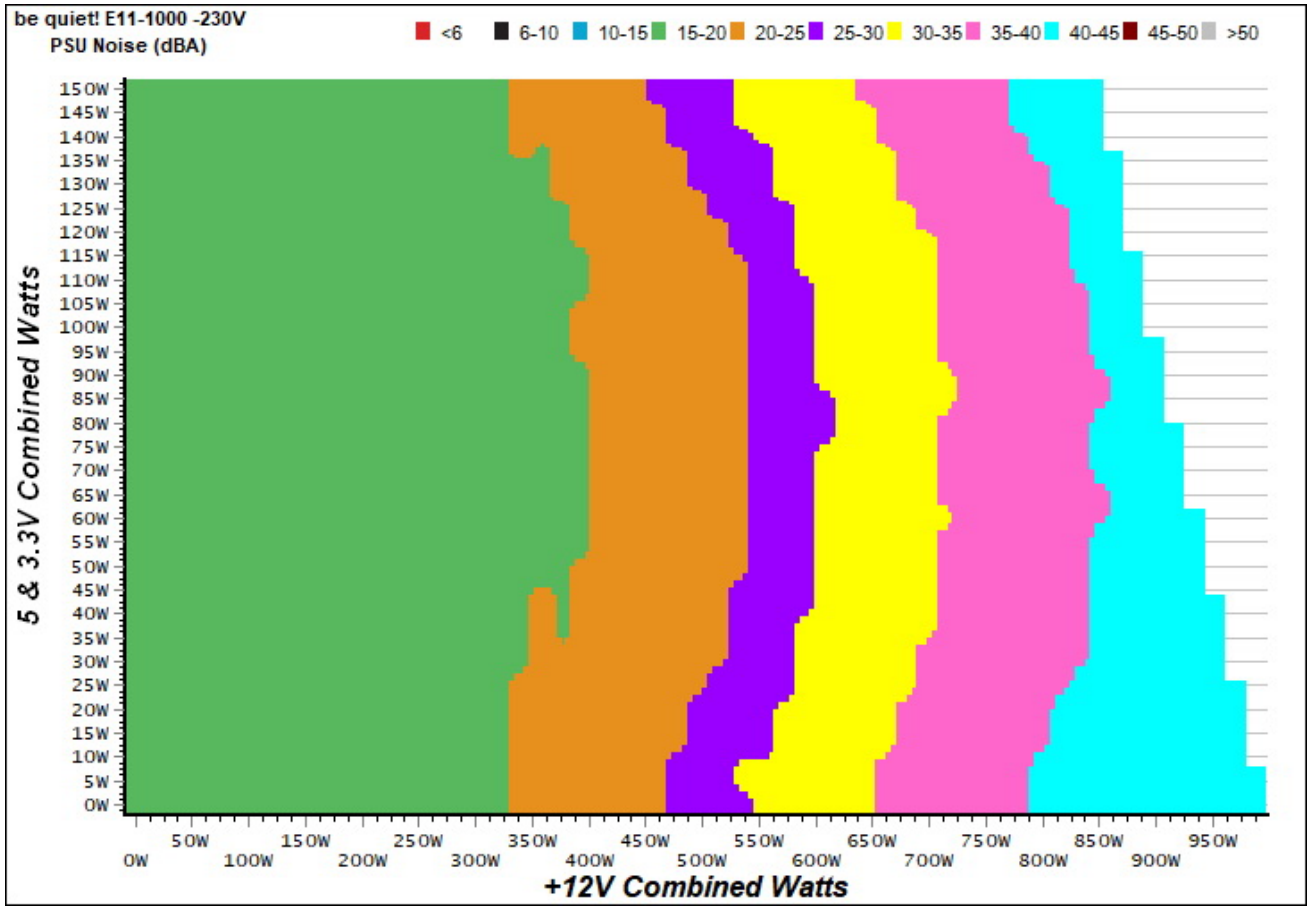
115V



□□

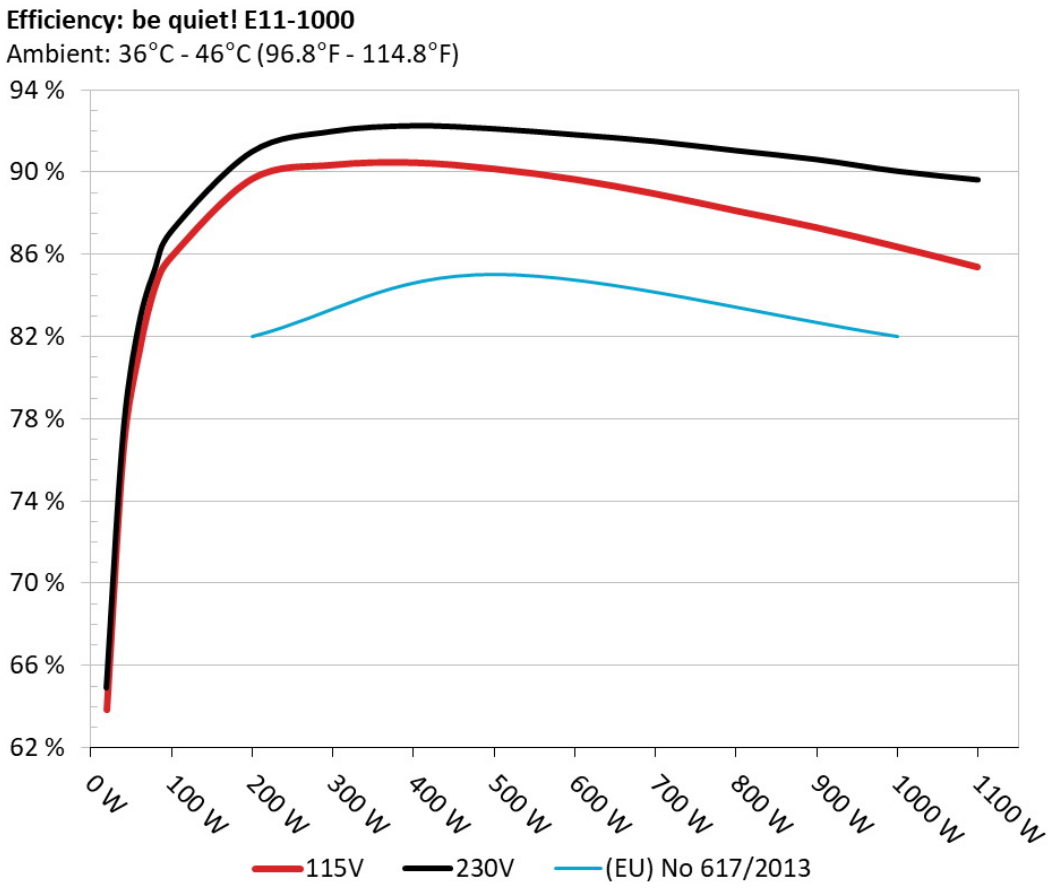
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

230V



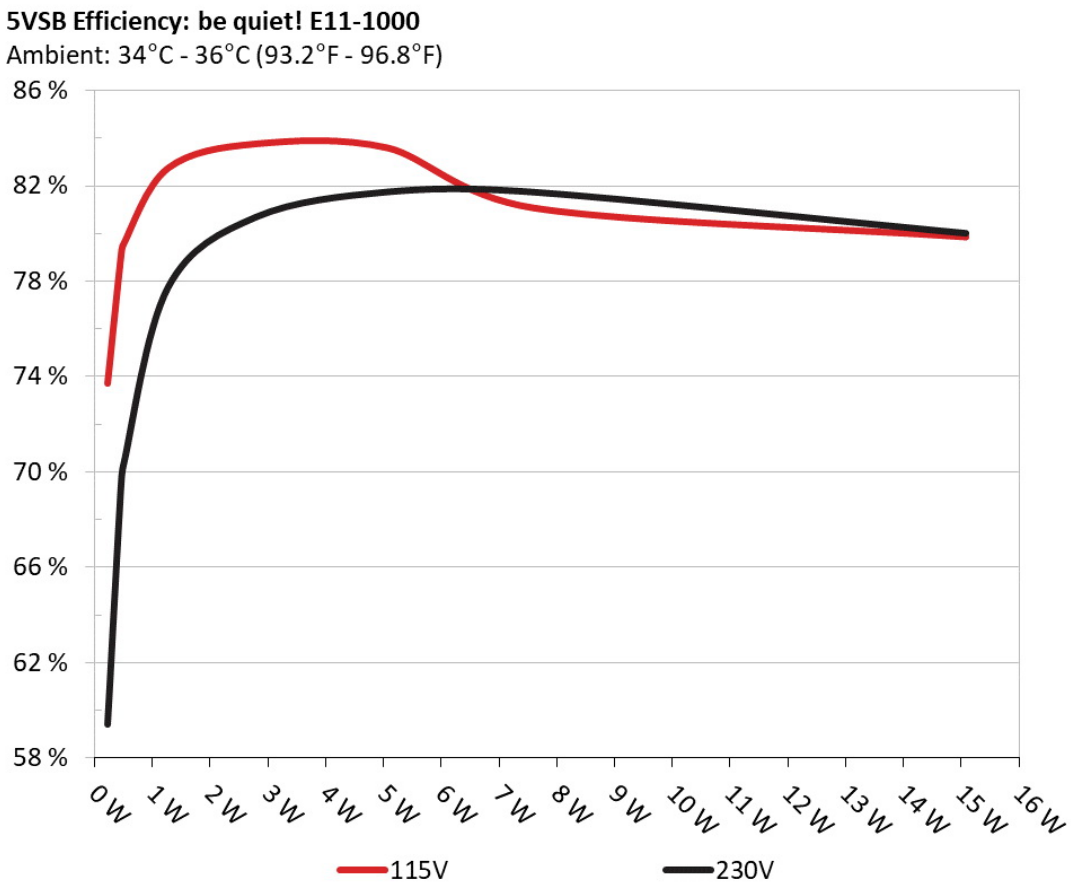
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

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	0.045A	0.230	73.718%	0.025
	5.109V	0.312		115.26V
2	0.090A	0.460	79.038%	0.046
	5.110V	0.582		115.26V
3	0.550A	2.803	83.772%	0.221
	5.097V	3.346		115.25V
4	1.000A	5.081	83.597%	0.320
	5.082V	6.078		115.25V
5	1.500A	7.610	81.078%	0.386
	5.074V	9.386		115.24V
6	2.999A	15.081	79.861%	0.464
	5.029V	18.884		115.23V

230V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.045A	0.230	59.432%	0.011
	5.107V	0.387		230.71V
2	0.090A	0.460	69.382%	0.018
	5.108V	0.663		230.63V
3	0.550A	2.802	80.703%	0.090
	5.095V	3.472		230.70V
4	1.000A	5.082	81.757%	0.151
	5.082V	6.216		230.70V
5	1.500A	7.603	81.744%	0.207
	5.068V	9.301		230.70V
6	2.999A	15.083	80.020%	0.317
	5.029V	18.849		230.69V

Supplementary Tests (For Reference)

10-110%□□□□

115V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	6.499A	1.984A	1.971A	0.986A	99.922	85.911%	725	19.3	37.58°C	0.977
	12.054V	5.036V	3.345V	5.070V	116.309				45.60°C	115.23V
2	14.011A	2.983A	2.966A	1.185A	199.636	89.681%	830	21.2	38.05°C	0.996
	12.044V	5.027V	3.335V	5.063V	222.608				46.54°C	115.09V
3	21.865A	3.486A	3.455A	1.386A	299.152	90.354%	1002	27.9	38.79°C	0.996
	12.036V	5.018V	3.326V	5.051V	331.088				47.57°C	115.05V
4	29.796A	3.992A	3.978A	1.587A	399.552	90.469%	1252	32.5	39.53°C	0.997
	12.027V	5.010V	3.317V	5.042V	441.644				48.91°C	114.90V
5	37.376A	5.000A	4.990A	1.790A	499.690	90.169%	1570	38.4	40.66°C	0.998
	12.018V	5.000V	3.307V	5.030V	554.169				50.42°C	114.85V
6	44.971A	6.011A	6.006A	1.994A	599.811	89.655%	1920	43.3	41.55°C	0.998
	12.008V	4.991V	3.296V	5.017V	669.023				51.78°C	114.70V
7	52.543A	7.027A	7.027A	2.198A	699.556	88.955%	2200	47.4	42.44°C	0.998
	11.999V	4.981V	3.286V	5.005V	786.413				53.61°C	114.55V
8	60.193A	8.048A	8.059A	2.405A	800.073	88.126%	2495	49.2	43.87°C	0.998
	11.989V	4.972V	3.276V	4.991V	907.879				55.61°C	114.49V
9	68.184A	8.565A	8.574A	2.408A	899.356	87.316%	2495	49.2	44.20°C	0.998
	11.980V	4.963V	3.266V	4.984V	1030.001				57.30°C	114.32V
10	76.051A	9.086A	9.119A	3.023A	999.571	86.380%	2495	49.2	45.48°C	0.998
	11.964V	4.953V	3.256V	4.963V	1157.180				59.56°C	114.29V
11	84.477A	9.101A	9.147A	3.027A	1099.632	85.392%	2495	49.2	45.88°C	0.998
	11.955V	4.945V	3.247V	4.957V	1287.751				60.65°C	114.10V
CL1	0.731A	18.002A	18.000A	0.000A	158.534	83.111%	1885	42.6	41.86°C	0.992
	12.039V	5.004V	3.314V	5.077V	190.750				52.77°C	115.12V

CL2	83.338A	1.000A	1.000A	1.000A	1011.063	86.573%	2495	49.2	45.82°C	0.998
	11.973V	4.968V	3.269V	5.019V	1167.867				60.45°C	114.25V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	6.506A	1.985A	1.973A	0.987A	100.027	87.139%	835	21.2	38.50°C	0.884
	12.055V	5.036V	3.344V	5.069V	114.790				46.00°C	230.85V
2	14.017A	2.984A	2.969A	1.186A	199.737	91.006%	920	23.8	39.14°C	0.954
	12.045V	5.027V	3.334V	5.062V	219.476				46.95°C	230.76V
3	21.873A	3.488A	3.457A	1.387A	299.242	92.000%	1105	30.6	39.70°C	0.974
	12.035V	5.018V	3.325V	5.049V	325.264				48.21°C	230.68V
4	29.804A	3.993A	3.979A	1.588A	399.628	92.274%	1352	33.6	40.51°C	0.985
	12.026V	5.010V	3.316V	5.041V	433.088				49.67°C	230.70V
5	37.387A	5.000A	4.990A	1.790A	499.740	92.128%	1590	38.6	41.16°C	0.990
	12.016V	5.000V	3.306V	5.029V	542.441				50.83°C	230.63V
6	44.981A	6.010A	6.007A	1.994A	599.835	91.841%	1855	42.4	41.68°C	0.993
	12.006V	4.990V	3.296V	5.017V	653.123				51.69°C	230.55V
7	52.555A	7.028A	7.031A	2.199A	699.557	91.514%	2125	45.1	41.98°C	0.996
	11.996V	4.981V	3.285V	5.004V	764.429				52.28°C	230.48V
8	60.214A	8.048A	8.061A	2.405A	800.075	91.063%	2400	48.5	42.30°C	0.996
	11.985V	4.971V	3.275V	4.991V	878.595				52.94°C	230.41V
9	68.209A	8.566A	8.574A	2.408A	899.372	90.635%	2495	49.2	42.81°C	0.996
	11.976V	4.962V	3.265V	4.985V	992.305				53.75°C	230.42V
10	76.055A	9.088A	9.123A	3.025A	999.778	90.064%	2495	49.2	43.03°C	0.996
	11.966V	4.952V	3.255V	4.960V	1110.073				54.88°C	230.34V
11	84.492A	9.102A	9.146A	3.026A	1099.630	89.643%	2495	49.2	43.36°C	0.997
	11.953V	4.944V	3.247V	4.957V	1226.678				55.57°C	230.28V
CL1	0.728A	18.002A	17.997A	0.000A	158.489	84.440%	1885	42.6	41.96°C	0.944
	12.039V	5.004V	3.314V	5.077V	187.695				49.75°C	230.89V

CL2	83.333A	1.000A	0.998A	1.000A	1010.745	90.547%	2495	49.2	42.66°C	0.996
	11.970V	4.968V	3.269V	5.019V	1116.261				53.41°C	230.35V

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	1.184A	0.493A	0.475A	0.196A	19.351	63.837%	677	18.2	0.865
	12.053V	5.046V	3.354V	5.100V	30.313				115.33V
2	2.451A	0.989A	0.983A	0.393A	39.824	76.468%	677	18.2	0.936
	12.052V	5.043V	3.352V	5.093V	52.079				115.30V
3	3.643A	1.486A	1.459A	0.590A	59.305	81.240%	677	18.2	0.958
	12.058V	5.041V	3.349V	5.085V	73.000				115.28V
4	4.905A	1.982A	1.970A	0.788A	79.717	84.490%	677	18.2	0.969
	12.056V	5.038V	3.347V	5.080V	94.351				115.25V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	PF/AC □□
1	1.194A	0.495A	0.475A	0.196A	19.481	64.917%	677	18.2	0.520
	12.053V	5.045V	3.353V	5.098V	30.009				230.91V
2	2.460A	0.992A	0.983A	0.393A	39.946	77.158%	677	18.2	0.705
	12.053V	5.042V	3.351V	5.091V	51.772				230.90V
3	3.651A	1.488A	1.464A	0.590A	59.422	82.531%	725	19.3	0.783
	12.057V	5.040V	3.349V	5.084V	72.000				230.88V
4	4.912A	1.985A	1.973A	0.788A	79.827	85.325%	755	20.8	0.841
	12.057V	5.038V	3.346V	5.078V	93.556				230.86V

The results above are not used in the certification process

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	21.9 mV	5.0 mV	6.8 mV	11.2 mV	Pass
20% Load	17.6 mV	5.0 mV	6.7 mV	10.3 mV	Pass
30% Load	17.9 mV	6.3 mV	7.7 mV	13.5 mV	Pass
40% Load	19.5 mV	6.9 mV	8.5 mV	17.0 mV	Pass
50% Load	21.1 mV	7.9 mV	10.7 mV	18.2 mV	Pass
60% Load	23.8 mV	9.5 mV	13.9 mV	13.6 mV	Pass
70% Load	26.2 mV	11.8 mV	15.1 mV	15.0 mV	Pass
80% Load	29.4 mV	11.8 mV	17.3 mV	15.7 mV	Pass
90% Load	31.8 mV	11.7 mV	18.2 mV	16.3 mV	Pass
100% Load	34.5 mV	13.4 mV	19.5 mV	18.6 mV	Pass
110% Load	37.2 mV	14.4 mV	19.9 mV	20.5 mV	Pass
Crossload 1	18.6 mV	8.7 mV	11.9 mV	7.3 mV	Pass
Crossload 2	34.5 mV	11.1 mV	15.6 mV	17.3 mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	22.6 mV	4.8 mV	6.3 mV	8.4 mV	Pass
20% Load	15.8 mV	5.0 mV	6.8 mV	10.7 mV	Pass
30% Load	16.1 mV	6.2 mV	7.4 mV	12.9 mV	Pass
40% Load	18.2 mV	7.2 mV	8.7 mV	18.1 mV	Pass
50% Load	19.4 mV	8.6 mV	10.8 mV	13.0 mV	Pass
60% Load	21.4 mV	9.4 mV	14.3 mV	13.9 mV	Pass
70% Load	23.9 mV	11.8 mV	14.6 mV	15.4 mV	Pass
80% Load	26.2 mV	12.2 mV	17.6 mV	13.8 mV	Pass





Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	28.7 mV	12.8 mV	19.3 mV	14.8 mV	Pass
100% Load	31.3 mV	13.3 mV	19.1 mV	17.4 mV	Pass
110% Load	34.7 mV	13.5 mV	20.7 mV	17.5 mV	Pass
Crossload 1	17.6 mV	8.7 mV	11.4 mV	7.1 mV	Pass
Crossload 2	31.7 mV	10.8 mV	16.2 mV	16.8 mV	Pass

The results above are not used in the certification process

be quiet! Straight Power 11 1000W

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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