

## Anex

be quiet! E11-850

Lab ID#: 280

Receipt Date: -

Test Date: -

Report: 20PS280A

Report Date: Jan 24, 2000

DUT INFORMATION	
Brand	be quiet!
Manufacturer (OEM)	FSP
Series	Straight Power 11
Model Number	E11-850
Serial Number	284S7450000436
DUT Notes	

DUT SPECIFICATIONS	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	50-60
Rated Power (W)	850
Type	ATX12V
Cooling	135mm Fluid Dynamic Bearing Fan (SIW3-13525-HF-26)
Semi-Passive Operation	x
Cable Design	Fully Modular

POWER SPECIFICATIONS									
Rail		3.3V	5V	12V1	12V2	12V3	12V4	5VSB	-12V
Max. Power	Amps	25	25	21	21	26	26	3	0.5
	Watts	150		70.8				15	6
Total Max. Power (W)		850		849.6					

CABLES AND CONNECTORS				
Modular Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (600mm)	1	1	18-22AWG	No
4+4 pin EPS12V (700mm)	1	1	16AWG	No
8 pin EPS12V (700mm)	1	1	16AWG	No
6+2 pin PCIe (2x600mm)	1	2	18AWG	No
6+2 pin PCIe (600mm)	2	2	18AWG	No
SATA (550mm+150mm+150mm)	1	3	18AWG	No
SATA (550mm+150mm+150mm+150mm)	1	4	18AWG	No
SATA (550mm+150mm) / 4 pin Molex (+150mm+150mm)	2	2 / 2	18AWG	No
FDD Adapter (+150mm)	1	1	22AWG	No
AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

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RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	91.501
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	0.000
Average Efficiency 5VSB	80.551
Standby Power Consumption (W) -115V	0.0392546
Standby Power Consumption (W) -230V	0.1014110
Average PF	0.976
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	23.38
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A

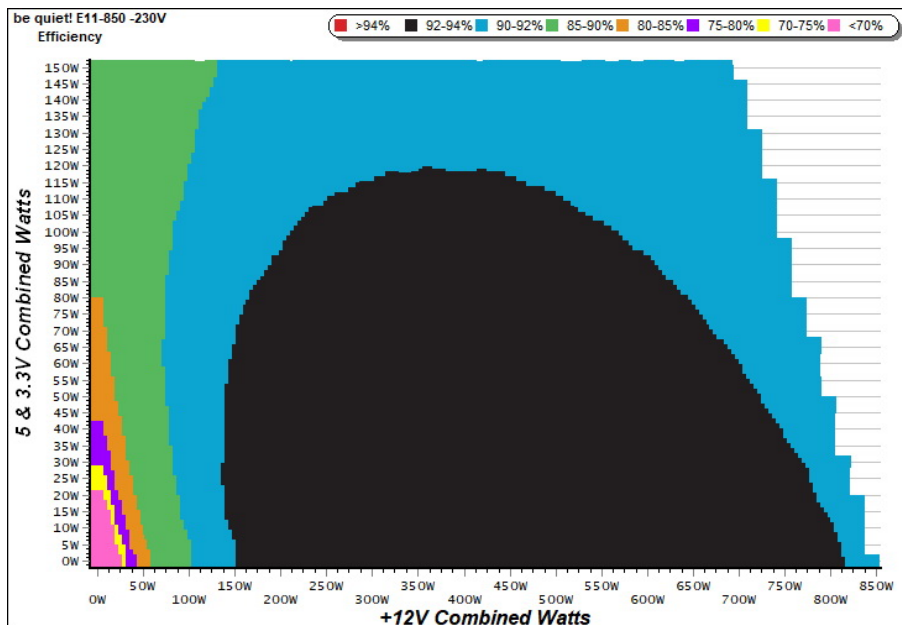
TEST EQUIPMENT		
Electronic Loads	Chroma 6314A x2 63123A x6 63102A 63101A	Chroma 63601-5 x2 Chroma 63600-2 63640-80-80 x10 63610-80-20
AC Sources	Chroma 6530, Chroma 61604	
Power Analyzers	N4L PPA1530, N4L PPA5530	
Oscilloscopes	Picoscope 4444 & 3424, Keysight DSOX3024A, Rigol DS2072A	
Voltmeter	Keithley 2015 THD 6.5 Digit	
Sound Analyzer	Bruel & Kjaer 2250-L G4	
Microphone	Bruel & Kjaer Type 4955-A, Bruel & Kjaer Type 4189	
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2	

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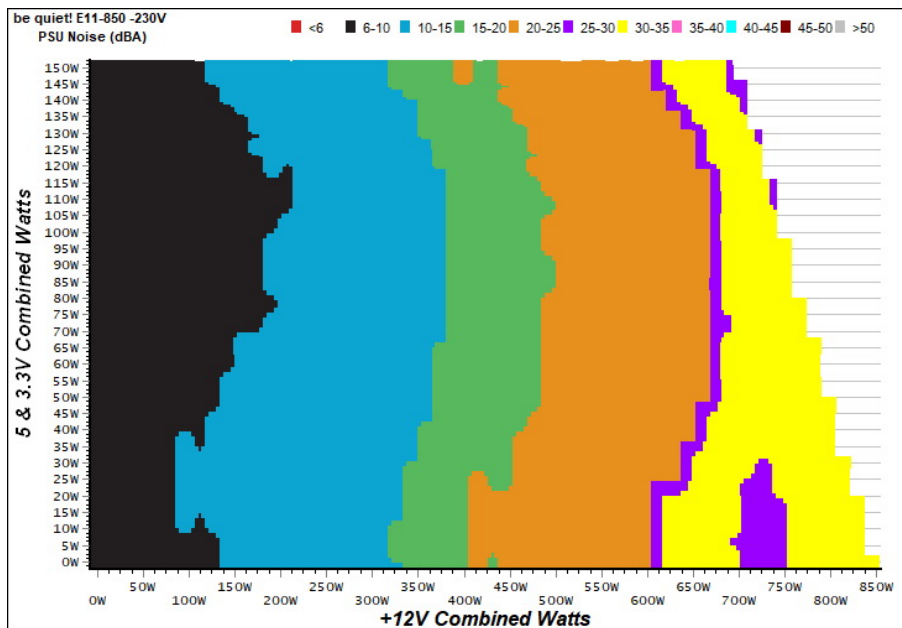
### EFFICIENCY GRAPH



#### 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



#### 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

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## 5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

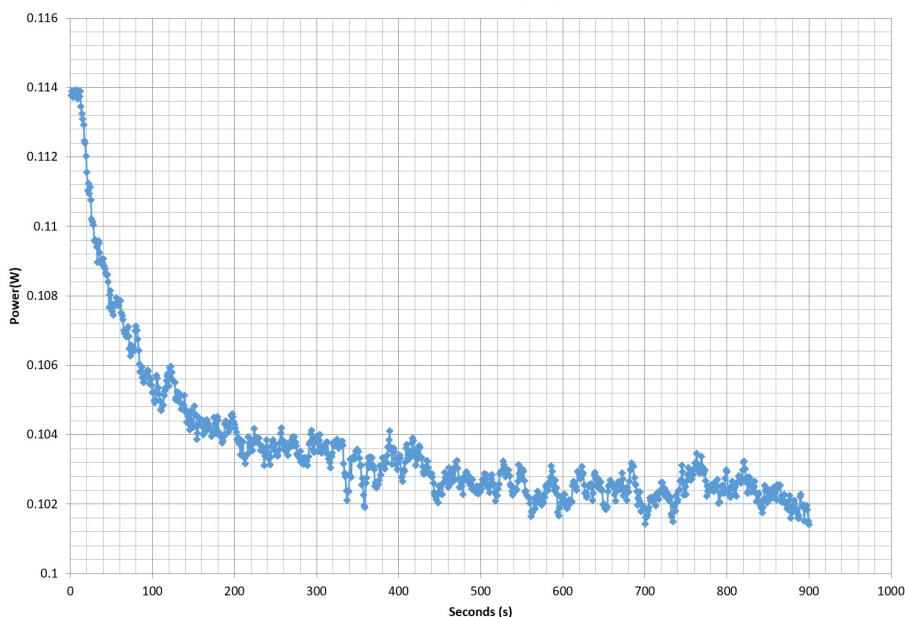
Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.215	74.138%	0.034
	5.132V	0.290		115.06V
2	0.088A	0.450	80.501%	0.064
	5.132V	0.559		115.06V
3	0.543A	2.776	84.147%	0.278
	5.117V	3.299		115.06V
4	1.002A	5.116	83.910%	0.373
	5.104V	6.097		115.06V
5	1.502A	7.651	82.189%	0.425
	5.094V	9.309		115.06V
6	3.002A	15.174	79.935%	0.487
	5.055V	18.983		115.06V

## 5VSB EFFICIENCY -230V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.215	59.722%	0.013
	5.132V	0.360		230.19V
2	0.088A	0.449	70.597%	0.023
	5.132V	0.636		230.19V
3	0.543A	2.776	81.360%	0.112
	5.117V	3.412		230.19V
4	1.003A	5.119	82.022%	0.186
	5.105V	6.241		230.20V
5	1.502A	7.655	81.994%	0.246
	5.095V	9.336		230.20V
6	3.002A	15.183	80.012%	0.349
	5.058V	18.976		230.20V

## VAMPIRE POWER -230V

Power - 284S7450000436 - 18/01/2018 - 11:03



### INFO

This graph is generated by the PPA Standby Power Analysis software which takes full control of the power analyzer during the whole procedure. This application features all of the EN50564 & IEC62301 test limits for standby power software testing

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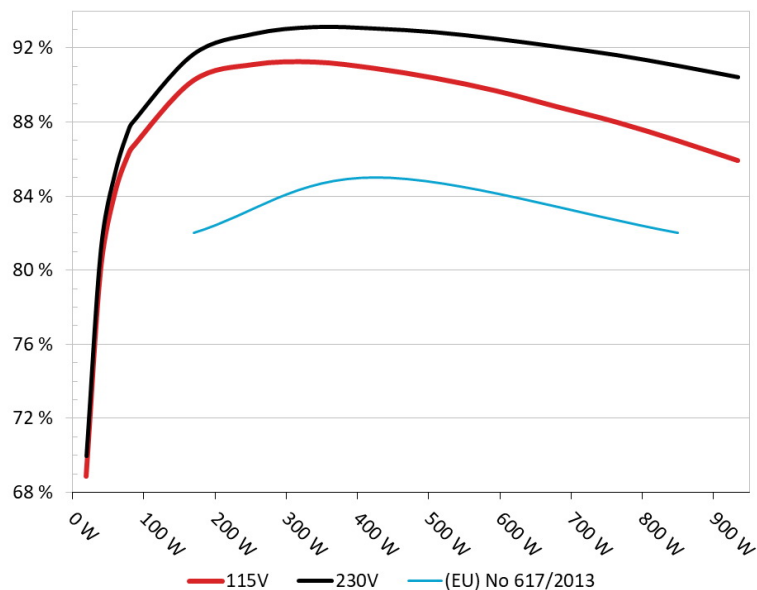
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#### EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

##### Efficiency: be quiet! E11-850

Ambient: 37°C - 47°C (98.6°F - 116.6°F)



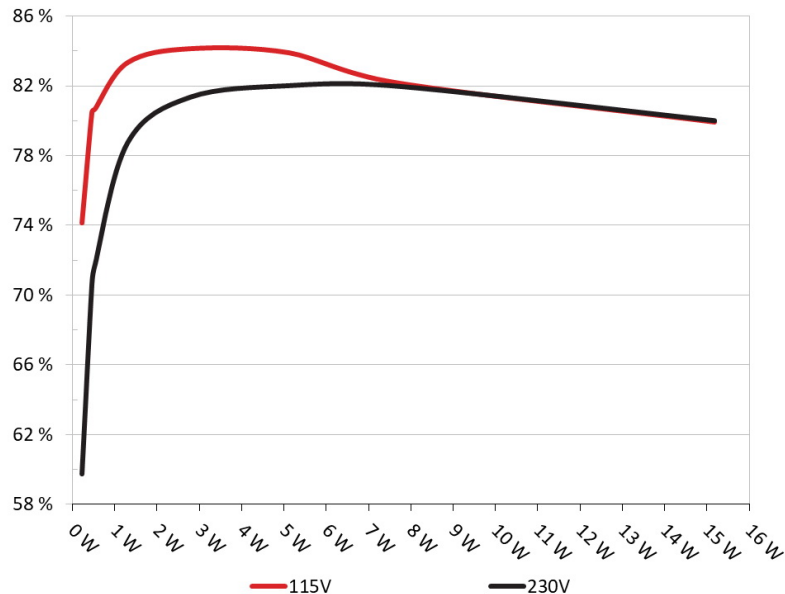
##### INFO

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

##### 5VSB Efficiency: be quiet! E11-850

Ambient: 34°C - 36°C (93.2°F - 96.8°F)



##### INFO

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

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### 10-110% LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	5.219A	1.991A	1.979A	0.981A	84.837	88.005%	464	12.0	37.03°C	0.838
	12.118V	5.025V	3.330V	5.095V	96.400				42.82°C	230.19V
2	11.462A	2.988A	2.978A	1.177A	169.656	91.665%	520	13.3	37.44°C	0.953
	12.109V	5.016V	3.320V	5.087V	185.083				43.66°C	230.20V
3	18.087A	3.497A	3.499A	1.376A	254.917	92.768%	597	16.1	37.96°C	0.975
	12.099V	5.007V	3.312V	5.076V	274.791				44.64°C	230.20V
4	24.696A	4.007A	3.994A	1.575A	339.799	93.133%	715	18.8	38.40°C	0.985
	12.091V	4.998V	3.303V	5.067V	364.852				45.59°C	230.21V
5	30.971A	5.009A	5.009A	1.779A	424.639	93.052%	860	24.5	38.95°C	0.990
	12.081V	4.988V	3.294V	5.055V	456.344				46.56°C	230.21V
6	37.266A	6.028A	6.027A	1.981A	509.661	92.853%	1070	26.6	39.76°C	0.993
	12.072V	4.977V	3.284V	5.044V	548.890				47.69°C	230.21V
7	43.560A	7.041A	7.052A	2.183A	594.481	92.501%	1250	31.9	40.61°C	0.995
	12.062V	4.968V	3.275V	5.032V	642.677				48.91°C	230.21V
8	49.872A	8.070A	8.084A	2.385A	679.443	92.074%	1520	36.7	41.37°C	0.995
	12.052V	4.958V	3.265V	5.023V	737.928				49.90°C	230.20V
9	56.612A	8.590A	8.631A	2.390A	764.374	91.617%	1725	39.7	42.38°C	0.995
	12.043V	4.949V	3.255V	5.017V	834.318				51.21°C	230.21V
10	63.119A	9.111A	9.149A	3.003A	849.218	91.047%	1970	43.3	43.39°C	0.996
	12.033V	4.940V	3.247V	4.992V	932.728				52.41°C	230.21V
11	70.233A	9.128A	9.171A	3.005A	934.179	90.429%	2010	43.6	44.77°C	0.996
	12.024V	4.932V	3.238V	4.986V	1033.053				54.95°C	230.22V
CL1	0.101A	18.030A	18.002A	0.004A	150.564	85.168%	1565	37.5	43.68°C	0.951
	12.094V	4.988V	3.299V	5.105V	176.784				49.75°C	230.22V
CL2	70.790A	1.003A	1.002A	1.002A	865.606	91.437%	2000	43.5	44.70°C	0.996
	12.040V	4.955V	3.260V	5.048V	946.670				53.18°C	230.24V

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## 20-80W LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.206A	0.490A	0.477A	0.196A	19.689	69.971%	418	10.2	0.543
	12.127V	5.034V	3.339V	5.123V	28.139				230.17V
2	2.435A	0.989A	0.988A	0.391A	39.794	81.098%	418	10.2	0.718
	12.124V	5.031V	3.336V	5.114V	49.069				230.17V
3	3.668A	1.486A	1.498A	0.586A	59.920	85.276%	430	11.0	0.769
	12.121V	5.029V	3.334V	5.108V	70.266				230.18V
4	4.886A	1.989A	1.978A	0.780A	79.776	87.707%	430	11.0	0.828
	12.119V	5.025V	3.332V	5.100V	90.957				230.18V

## RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	21.6 mV	5.1 mV	11.0 mV	16.0 mV	Pass
20% Load	17.5 mV	4.3 mV	8.8 mV	24.7 mV	Pass
30% Load	15.8 mV	4.9 mV	9.4 mV	30.0 mV	Pass
40% Load	17.4 mV	5.4 mV	10.8 mV	33.4 mV	Pass
50% Load	19.3 mV	6.3 mV	12.5 mV	37.7 mV	Pass
60% Load	22.1 mV	7.2 mV	13.2 mV	40.9 mV	Pass
70% Load	23.7 mV	8.5 mV	13.0 mV	44.3 mV	Pass
80% Load	25.5 mV	8.8 mV	13.5 mV	46.2 mV	Pass
90% Load	27.2 mV	9.2 mV	15.1 mV	48.2 mV	Pass
100% Load	29.1 mV	9.3 mV	16.0 mV	25.3 mV	Pass
110% Load	31.5 mV	9.7 mV	17.4 mV	28.2 mV	Pass
Crossload 1	20.1 mV	5.8 mV	10.1 mV	10.0 mV	Pass
Crossload 2	28.9 mV	8.5 mV	15.1 mV	26.6 mV	Pass

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## HOLD-UP TIME & POWER OK SIGNAL (230V)

Hold-Up Time (ms)	17.88
AC Loss to PWR_OK Hold Up Time (ms)	17.18
PWR_OK Inactive to DC Loss Delay (ms)	0.70



Top side

be quiet! STRAIGHT POWER 11									
AC Input	100 - 240Vac				50 - 60Hz		10 - 5A		
DC Output	3.3V	5V	12V1	12V2	12V3	12V4	-12V	5VSB	
Max. Current	25A	25A	21A	21A	26A	26A	0.5A	3A	
			70.8A						
Max. Combined Power	150W		849.6W				6W	15W	
			850W						

Vorsicht! Die Abdeckung des Netzteils unter keinen Umständen selbst abnehmen! Reparaturen bitte nur durch ausgebildetes Fachpersonal vornehmen lassen. Es sind keine zu wartenden Bauteile vorhanden.

Cautions! Don't done by qualifi maintenance.

Attention ! Veuillez est habilité à e ne requièrent a

This device complies with P to the following two condit interference, and (2) it received, including interfe Product concept

S/N: 284S7450000436

Power specifications label

## CERTIFICATIONS



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