

Lab ID#: BQ10002156  
Receipt Date: Feb 17, 2023  
Test Date: Mar 22, 2023

Report: 23PS2156A  
Report Date: Mar 27, 2022

DUT INFORMATION	
Brand	be quiet!
Manufacturer (OEM)	FSP
Series	Dark Power 13
Model Number	
Serial Number	335S2481000081
DUT Notes	

DUT SPECIFICATIONS	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	13-6
Rated Frequency (Hz)	50-60
Rated Power (W)	1000
Type	ATX12V
Cooling	135mm Fluid Dynamic Bearing Fan (BQ SIW3-13525-HF)
Semi-Passive Operation	x
Cable Design	Fully Modular

TEST EQUIPMENT	
Electronic Loads	Chroma 63601-5 x2 Chroma 63600-2 63640-80-80 x10 63610-80-20
AC Sources	Chroma 6530, APM SP300VAC4000W-P
Power Analyzers	RS HMC8015, N4L PPA1530, N4L PPA5530
Oscilloscopes	Picoscope 4444, Rigol DS7014, 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, Keithley 2015 - THD
UPS	FSP Champ Tower 3kVA, CyberPower OLS3000E 3kVA
Isolation Transformer	4kVA

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## RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6 (+2°C / +- 3.6°F)
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX v3.0 PSU Power Excursion	✓

### 115V

Average Efficiency	91.342%
Efficiency With 10W (≤500W) or 2% (>500W)	74.720
Average Efficiency 5VSB	79.390%
Standby Power Consumption (W)	0.0680000
Average PF	0.990
Avg Noise Output	17.93 dB(A)
Efficiency Rating (ETA)	TITANIUM
Noise Rating (LAMBDA)	A+

### 230V

Average Efficiency	93.436%
Average Efficiency 5VSB	77.348%
Standby Power Consumption (W)	0.1628000
Average PF	0.962
Avg Noise Output	18.03 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A+

## POWER SPECIFICATIONS

Rail		3.3V	5V	12V(1)	12V(2)	12V(3)	12V(4)	5VSB	-12V
Max. Power	Amps	25	25	32	32	40	40	3	0.5
	Watts	125		996				15	6
Total Max. Power (W)		1000							

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## 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
2x 6+2 pin PCIe (600mm)	2	4	16-18AWG	No
12+4 pin PCIe (600mm) (600W)	1	1	16-28AWG	No
SATA (600mm+150mm+150mm+150mm)	2	8	18AWG	No
SATA (600mm+150mm+150mm)	1	3	18AWG	No
SATA (600mm+150mm) / 4-pin Molex (+150mm+150mm)	1	2 / 2	18AWG	No
AC Power Cord (1360mm) - C13 coupler	1	1	18AWG	-

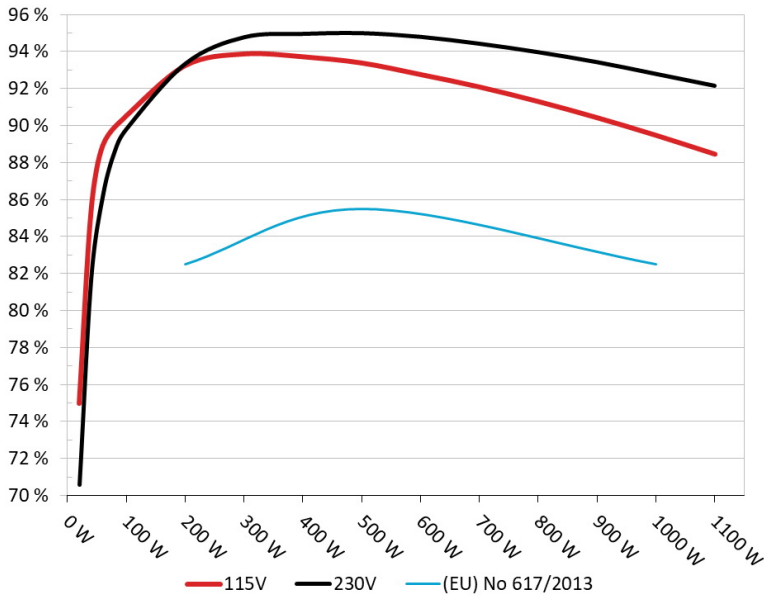
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### EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

**Efficiency: be quiet! Dark Power 13 1000W**

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



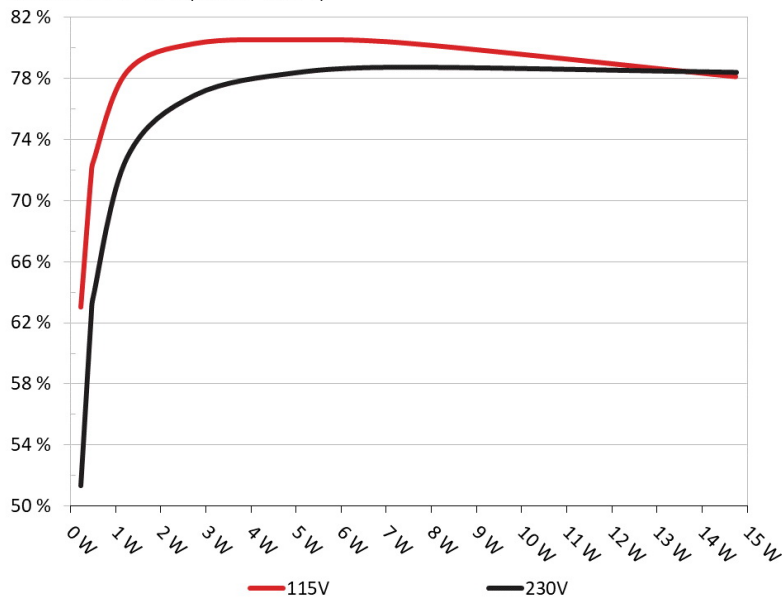
**INFO**

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! Dark Power 13 1000W**

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.226W	63.016%	0.029
	5.032V	0.359W		114.87V
2	0.09A	0.453W	71.628%	0.051
	5.03V	0.634W		114.86V
3	0.55A	2.757W	80.303%	0.228
	5.013V	3.433W		114.87V
4	1A	4.996W	80.54%	0.329
	4.996V	6.203W		114.86V
5	1.5A	7.466W	80.319%	0.392
	4.977V	9.295W		114.86V
6	3A	14.747W	78.128%	0.473
	4.916V	18.875W		114.86V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.226W	51.343%	0.011
	5.032V	0.444W		229.94V
2	0.09A	0.453W	62.334%	0.018
	5.031V	0.728W		229.95V
3	0.55A	2.756W	76.912%	0.084
	5.013V	3.585W		229.95V
4	1A	4.994W	78.382%	0.141
	4.995V	6.372W		229.95V
5	1.5A	7.464W	78.738%	0.196
	4.976V	9.479W		229.94V
6	3A	14.758W	78.402%	0.307
	4.92V	18.825W		229.95V

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# 115V

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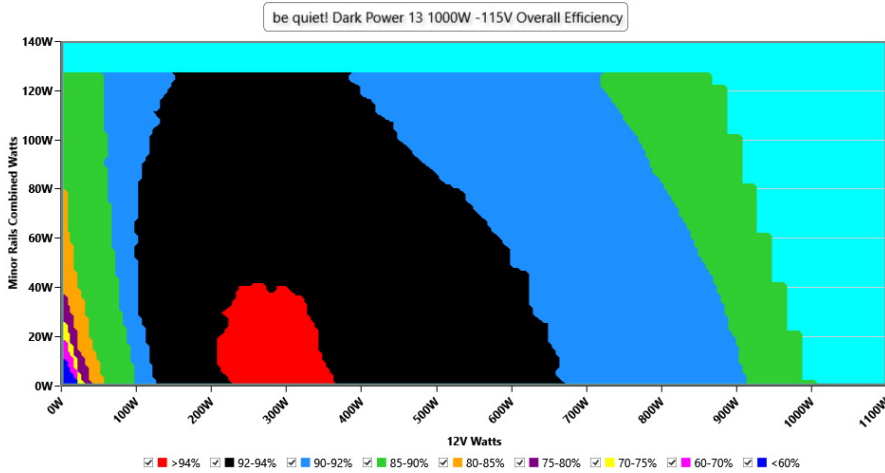
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### EFFICIENCY GRAPH 115V

#### INFO

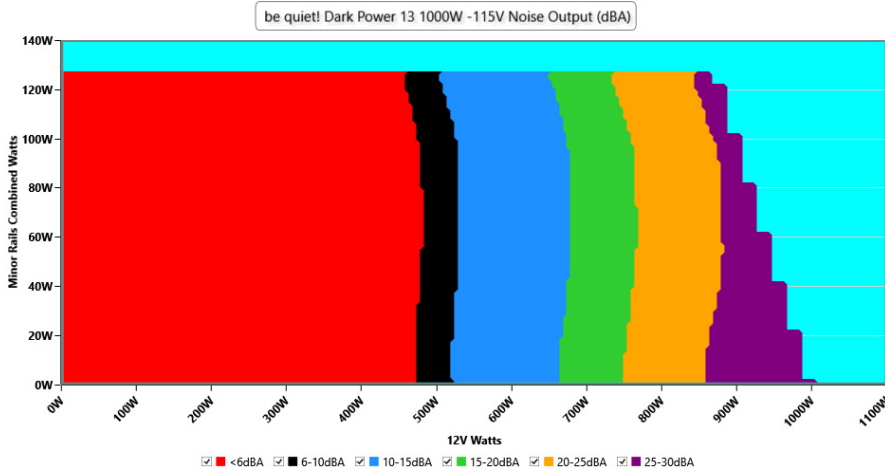
This graph depicts the PSU's efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations



### NOISE GRAPH 115V

#### INFO

The PSU's noise in its entire operational range and under 30-32 °C (+2 °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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## VAMPIRE POWER -115V

### Detailed Results

	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	114.88 V	114.82 V	113.85 V	114.94 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.98 Hz	59.40 Hz	60.02 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.418	1.417	1.340	1.421	1.490	PASS
Mains Voltage THD:	0.16 %	0.10 %	N/A	0.27 %	2.00 %	PASS
Real Power:	0.068 W	0.006 W	N/A	0.124 W	N/A	N/A
Apparent Power:	12.259 W	11.998 W	N/A	12.604 W	N/A	N/A
Power Factor:	0.008	N/A	N/A	N/A	N/A	N/A

### 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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**COMMISSION REGULATION (EU) NO 617/2013 TESTING 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%	6.508A	1.969A	1.97A	0.995A	99.969	89.893%	384	<6.0	40.34°C	0.967
	12.044V	5.078V	3.35V	5.025V	111.215				44.44°C	114.85V
20%	14.046A	2.955A	2.957A	1.197A	199.909	92.743%	385	<6.0	40.77°C	0.987
	12.033V	5.076V	3.348V	5.012V	215.561				44.99°C	114.8V
50%	37.368A	4.939A	4.953A	1.814A	499.195	92.889%	417	10.4	42.37°C	0.996
	12.007V	5.062V	3.332V	4.962V	537.405				47.87°C	114.7V
100%	76.144A	8.936A	8.998A	3.088A	999.319	88.98%	1485	39.6	45.3°C	0.994
	11.947V	5.036V	3.301V	4.858V	1123.091				55.34°C	114.51V

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# 230V

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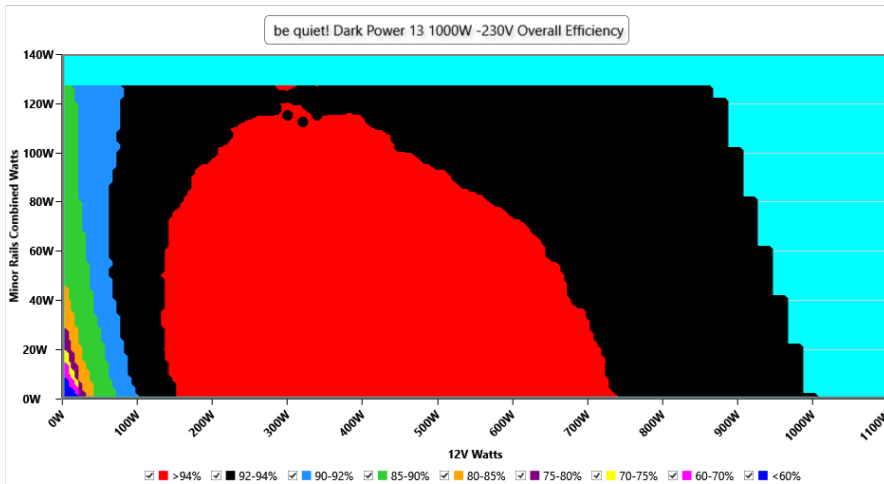
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### EFFICIENCY GRAPH 230V

#### INFO

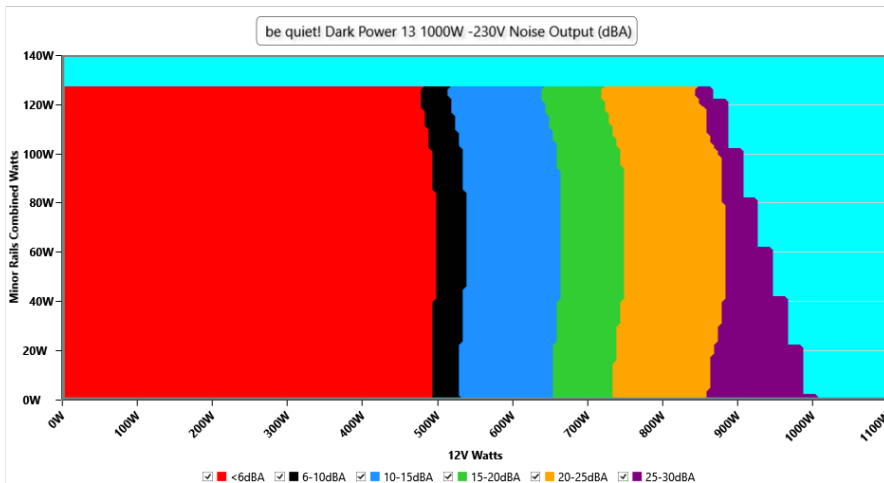
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### NOISE GRAPH 230V

#### INFO

The PSU's noise in its entire operational range and under 30-32 °C (+2 °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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## VAMPIRE POWER -230V

### Detailed Results

	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	229.95 V	229.88 V	227.70 V	230.01 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	49.99 Hz	49.50 Hz	50.01 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.417	1.415	1.340	1.418	1.490	PASS
Mains Voltage THD:	0.16 %	0.13 %	N/A	0.24 %	2.00 %	PASS
Real Power:	0.163 W	0.075 W	N/A	0.248 W	N/A	N/A
Apparent Power:	41.420 W	41.090 W	N/A	41.732 W	N/A	N/A
Power Factor:	0.004	N/A	N/A	N/A	N/A	N/A

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**COMMISSION REGULATION (EU) NO 617/2013 TESTING 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%	6.432A	1.967A	1.97A	0.994A	99.972	89.323%	419	6.6	40.28°C	0.861
	12.185V	5.083V	3.349V	5.029V	111.923				44.47°C	229.94V
20%	14.047A	2.953A	2.957A	1.196A	199.912	92.842%	391	<6.0	40.87°C	0.946
	12.032V	5.08V	3.347V	5.016V	215.325				45.48°C	229.92V
50%	37.373A	4.933A	4.951A	1.812A	499.183	94.492%	477	11.0	42.08°C	0.981
	12.006V	5.068V	3.332V	4.968V	528.278				48.22°C	229.87V
100%	76.142A	8.923A	8.993A	3.082A	999.3	92.296%	1513	40.4	45.35°C	0.984
	11.946V	5.043V	3.302V	4.867V	1082.713				55.43°C	229.79V

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EFFICIENCY AND NOISE REPORT IN ACCORDANCE WITH  
CYBENETICS ETA AND CYBENETICS LAMBDA PROCEDURE

be quiet! Dark Power 13 1000W

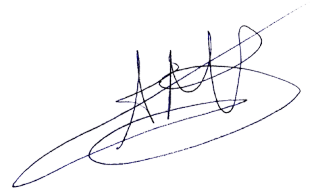


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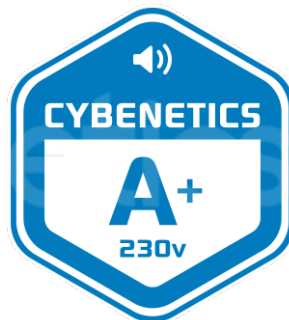
Power specifications label

## CERTIFICATIONS 115V

**Aristeidis Bitziopoulos**  
Lab Director

## CERTIFICATIONS 230V



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