

be quiet!

be quiet! SFX L Power 500W

Serial Number 214P7230000009

Lab ID 152

Certification ID 25152

Test Result Report ID: 20PS152A

Certificate Issue Date: Jan 8, 2018

115V

230V

Scheme: ETA-EMI PSU



115V

230V



Scheme: LAMBDA PSU

A handwritten signature in blue ink, appearing to read "A. Bitziopoulos".

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	SFX L Power 500W
OEM/ODM	High Power
Serial Number	214P7230000009
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10
Rated Frequency (Hz)	50-60

Rated Power (W)	500
Operating Temperature (Continuous Full Load) (°C)	
Type	SFX-L
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	120mm Fluid Dynamic Bearing Fan (S1201512MB)
Semi-Passive Operation	X
Cybenetics Testing Information	
Lab ID	152
Date of receipt	Dec 24, 2017
Testing Date	Jan 5, 2018
Report Issued Date	Jan 8, 2018
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors(Non-accredited measurements)

Modular Cables			
Description	Cable Count	Connector Count (Total)	Gauge
ATX connector 20+4 pin (300)	1	1	18AWG
4+4 pin EPS12V (405mm)	1	1	18AWG
6+2 pin PCIe (500mm+150mm)	1	2	18AWG
6+2 pin PCIe (405mm+150mm)	1	2	18AWG
SATA (500mm+150mm+150mm)	1	3	18AWG
SATA (300mm+150mm+150mm)	1	3	18AWG
4 pin Molex (300mm+200mm+200mm)	1	3	18AWG

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	41.7	3	0.3
	Watts	105		500	15	3.6
Total Max. Power (W)		500				

Parts Description

General Data	
Manufacturer (OEM)	CWT
Platform Model	-
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor & Diode
Bridge Rectifier(s)	2x GBU1006 (600V, 10A @ 100°C)
APFC MOSFETS	2x Infineon IPW50R280CE (550V, 11.4A @ 100°C, 0.28Ohm)
APFC Boost Diode	1x Power Integrations QH08TZ600 (600V, 8A @ 150°C)
Hold-up Cap(s)	1x Nichicon (400V, 390uF, 2000h @ 105 °C, GG)
Main Switchers	2x Vishay SiHG20N50C (560V, 11A @ 100°C, 0.27Ohm)
Combo APFC/PWM Controller	Champion CM6800TX & CM03X Green PFC controller
Topology	Primary side: Half-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	4x APEC AP9990GH-HF (60V, 100A @ 25°C, 6mOhm)
5V & 3.3V	DC-DC Converters: 6x APEC AP72T03GP (30V, 47A @ 100°C, 9.5mOhm) PWM Controller: APW7159C
Filtering Capacitors	Electrolytics: Nippon Chemi-Con (1-5,000 @ 105°C, KZE), Su' scon (2-5,000h @ 105°C, MF), TAICON (105°C) Polymers: APAQ, EneSol
Supervisor IC	Weltrend WT7502 (OVP, UVP, SCP, PG)
Fan Model	Power Logic PLA13525S12M (12V, 0.40A, 111.1CFM, 41.6 dBA, Hydro Dynamic Bearing)
5VSB Circuit	
Rectifier	1x MBR2045CT SBR (45V, 20A) & CEF04N7G (700V, 4A, 3.3Ohm)

Standby PWM Controller	On-Bright OB5269CP
-12V Circuit	
Rectifier	UTC 2SB834L

Test Results

Temperature & Compliance Info

Temperature Range (°C /°F)	28-32 / 82.4-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

Performance Summary 115V

Accredited	
Average Efficiency (>1450 load combinations)	88.280%
Average Noise Output (>1450 Load Combinations)	23.91dBA
Average PF (>1450 Load Combinations)	0.994
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
Standby Power Consumption	0.0764W
Non-Accredited	
12V Ripple (Full Load)	37.31mV
5V Ripple (Full Load)	23.41mV
3.3V Ripple (Full Load)	21.33mV
5VSB Ripple (Full Load)	21.78mV
12V Load Regulation	1.50%
5V Load Regulation	1.89%
3.3V Load Regulation	2.52%
5VSB Load Regulation	3.55%
Inrush Current	92.303A

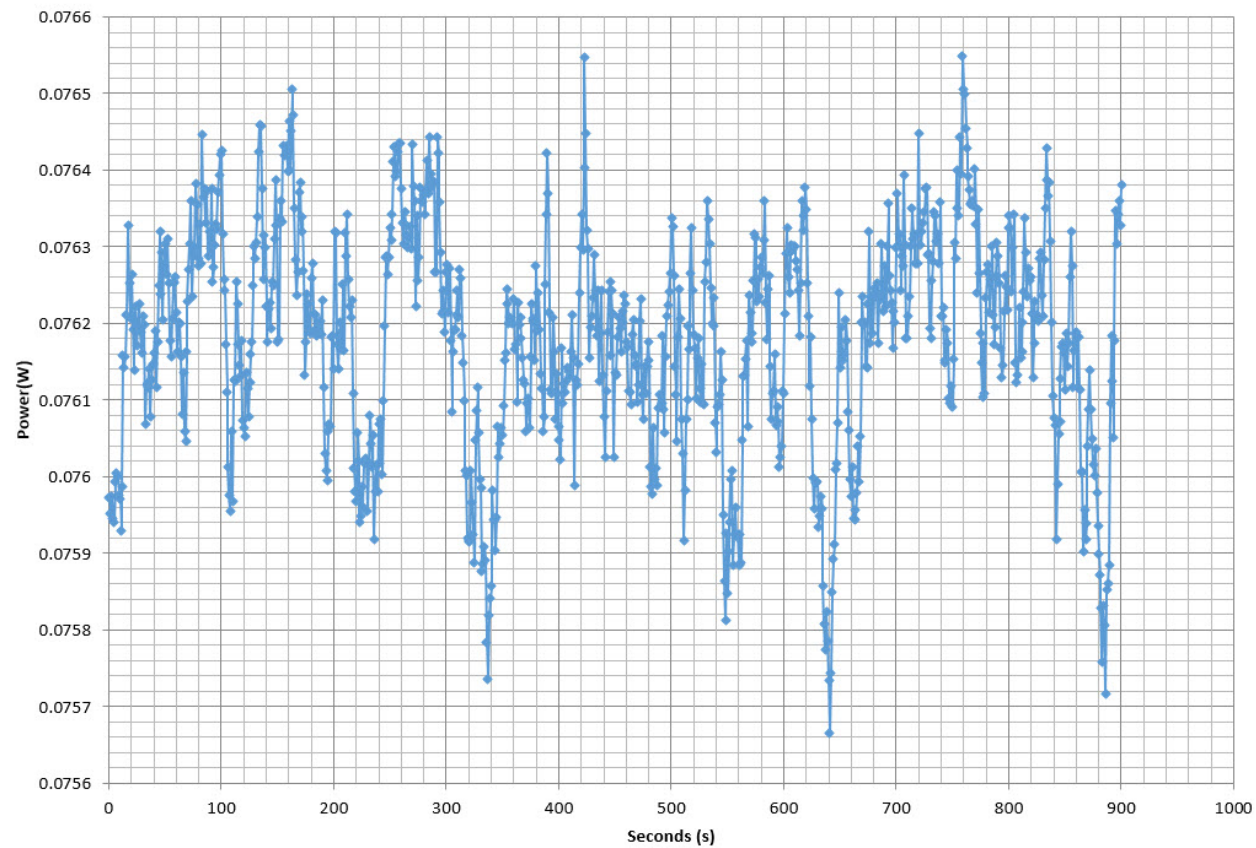
Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	18.5
AC Loss to PWR_OK Hold Up Time (ms)	16.2
PWR_OK Inactive to DC Loss Delay (ms)	2.3

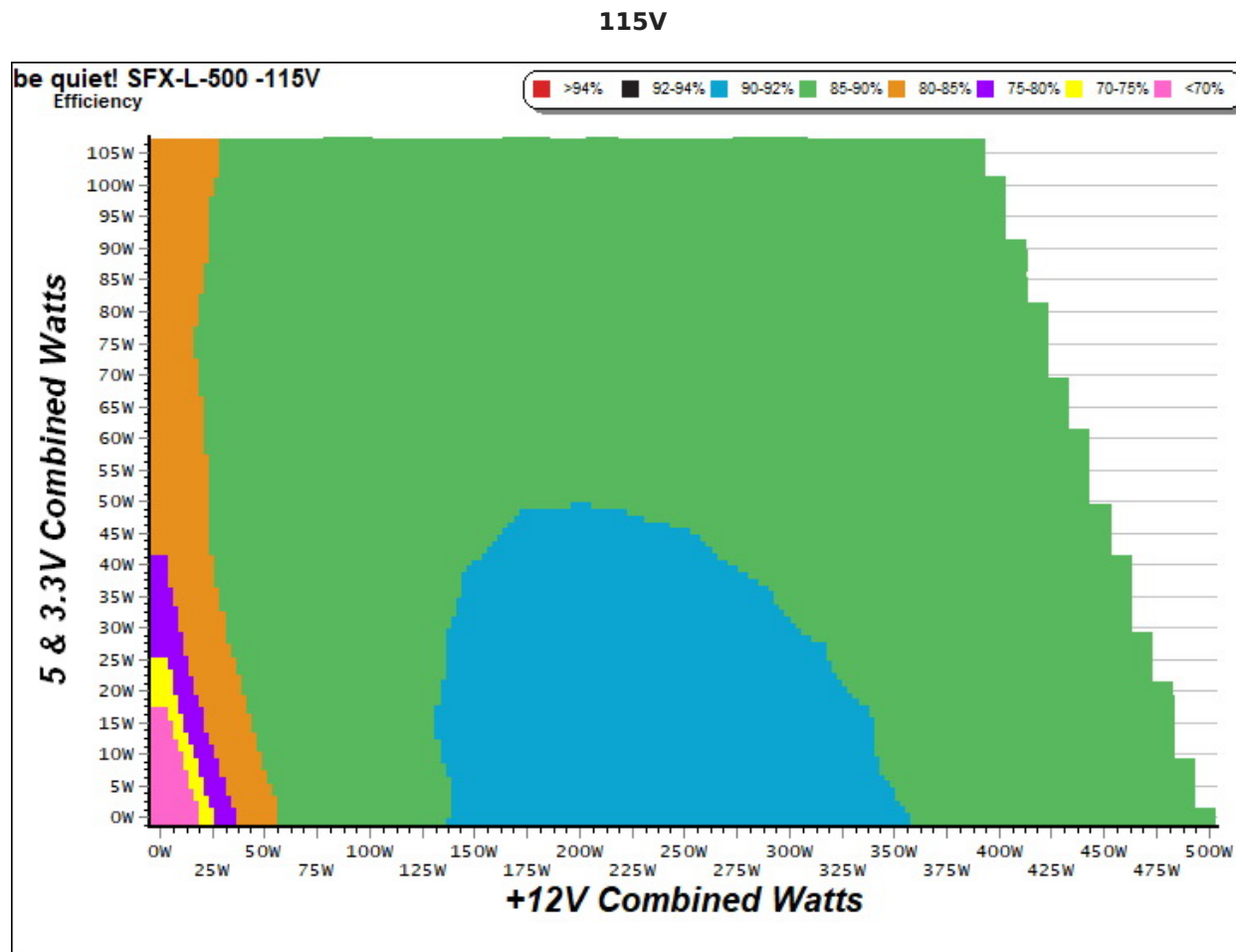
Vampire Power

Graphs 115V

Power - 214P7230000009 - 31/07/2017 - 11:54



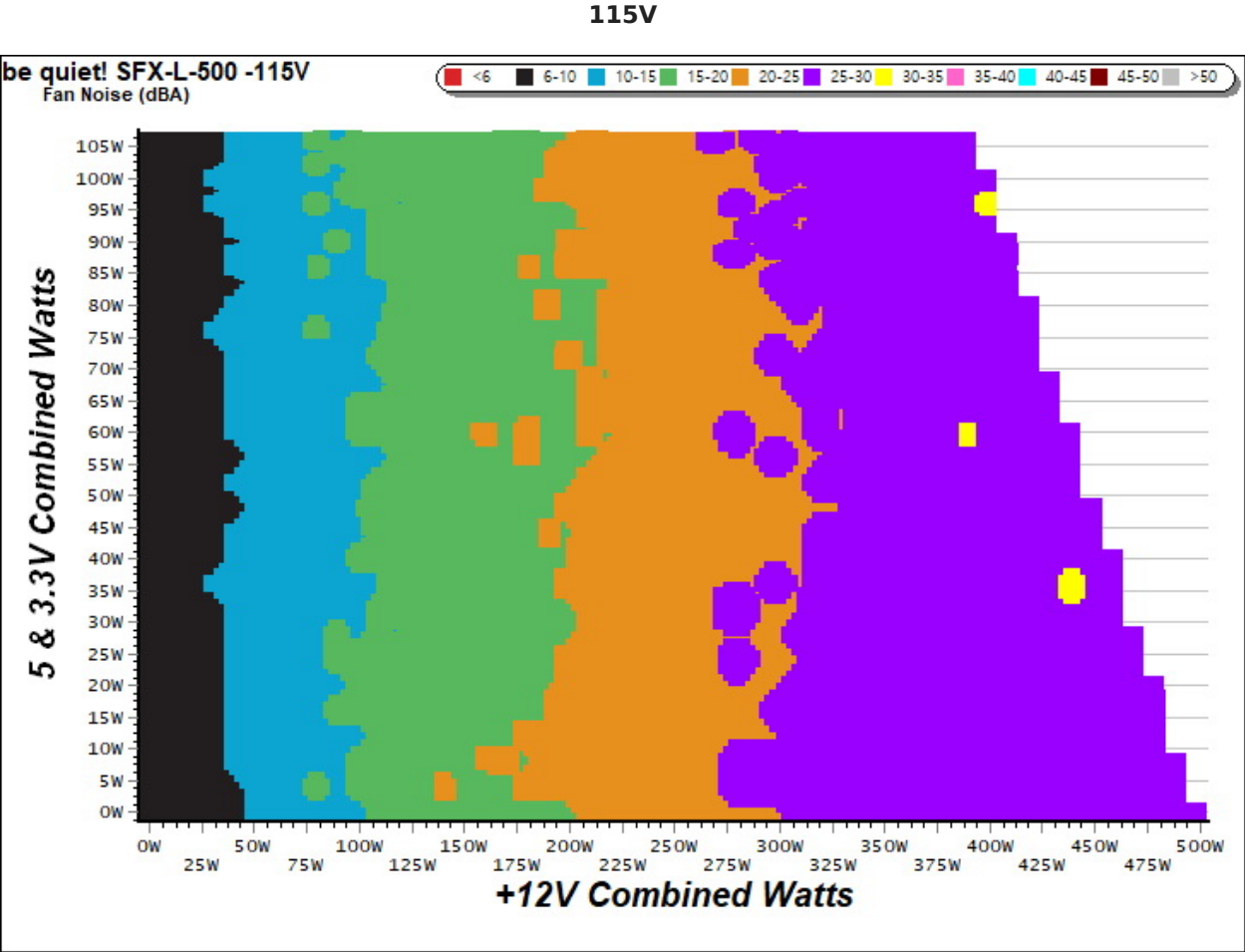
Efficiency Graph



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

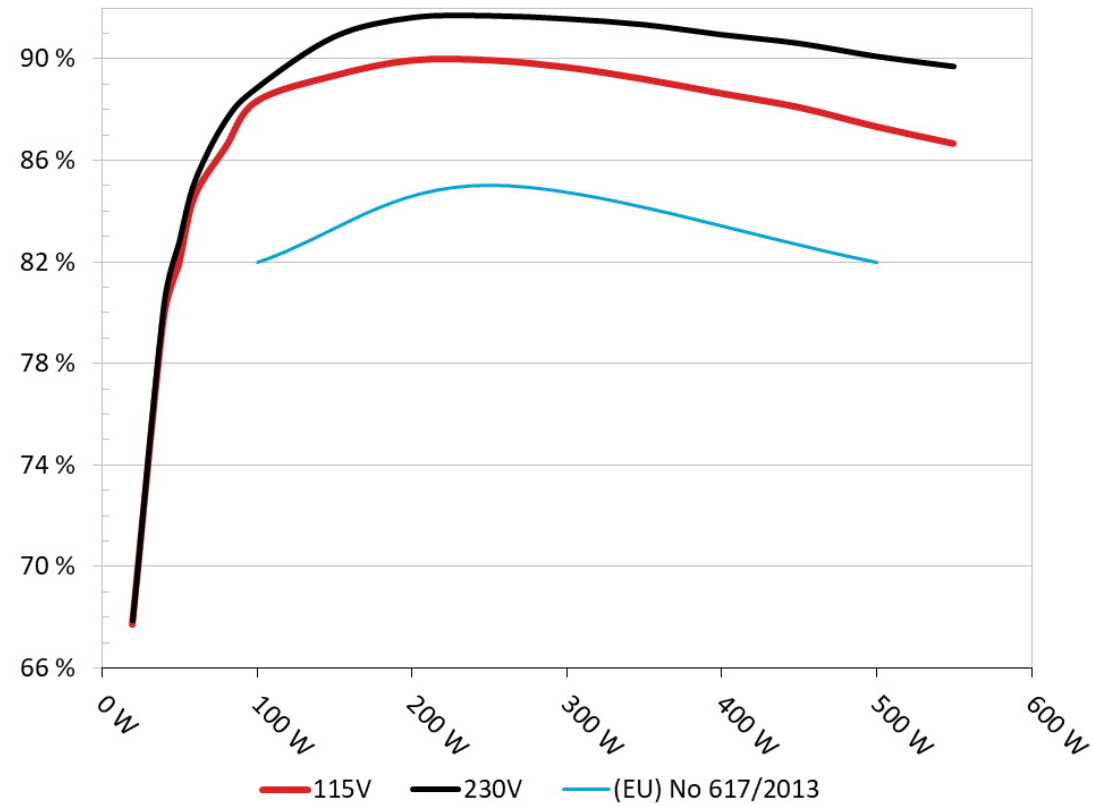
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

Indicative Performance

Efficiency under high ambient temperature

Efficiency: be quiet! SFX-L-500

Ambient: 38°C - 46°C (100.4°F - 114.8°F)



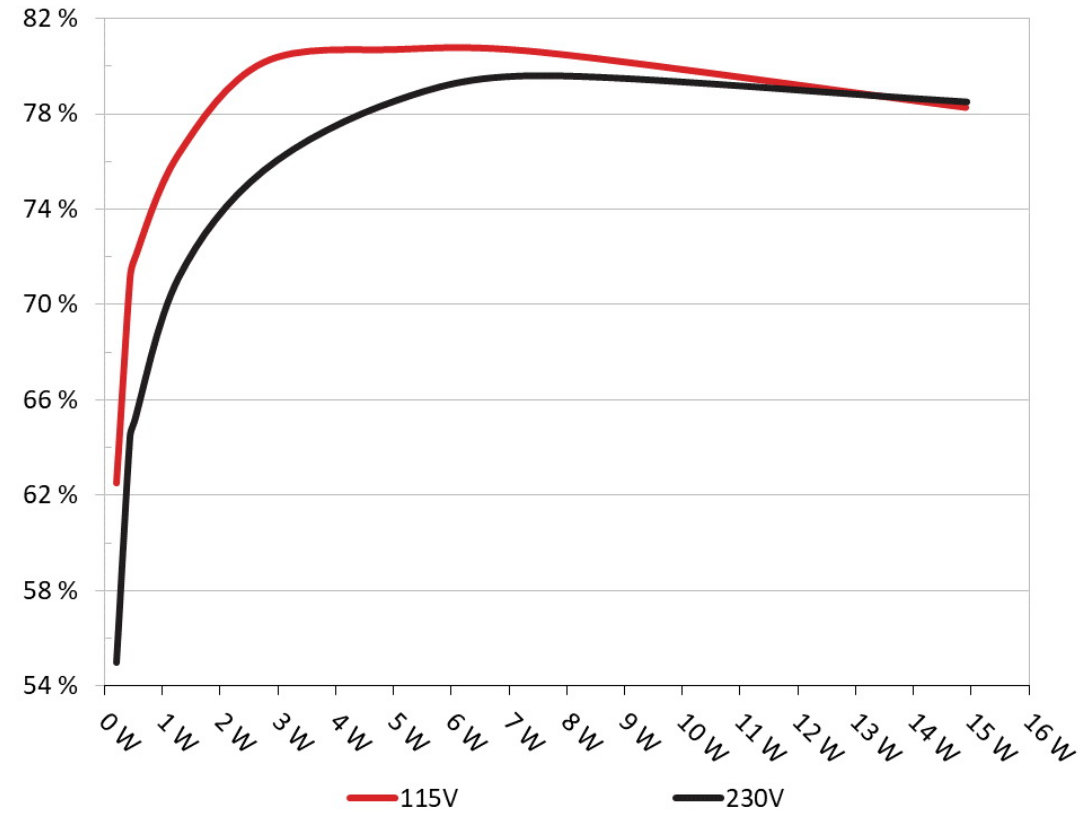
INFO

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! SFX-L-500

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.

5VSB Efficiency (ERP LOT 3/6 & CEC) 115V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.041A	0.210	62.500%	0.048
	5.111V	0.336		115.20V

2	0.087A	0.442	71.061%	0.085
	5.109V	0.622		115.20V
3	0.541A	2.755	80.157%	0.268
	5.088V	3.437		115.18V
4	1.001A	5.074	80.706%	0.318
	5.067V	6.287		115.18V
5	1.501A	7.571	80.585%	0.343
	5.044V	9.395		115.18V
6	3.001A	14.914	78.268%	0.382
	4.970V	19.055		115.18V

Supplementary Tests (For Reference)

Typical Load Tests 115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	Fan Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	2.306A	1.976A	1.958A	0.990A	49.753	81.915%	1320	25.8	38.70°C	0.968
	12.211V	5.073V	3.361V	5.039V	60.737				40.92°C	115.22V
2	5.650A	2.961A	2.948A	1.190A	99.752	88.305%	1320	25.8	38.86°C	0.992
	12.193V	5.063V	3.354V	5.026V	112.963				41.34°C	115.22V
3	9.335A	3.468A	3.465A	1.395A	149.861	89.320%	1393	27.2	39.10°C	0.992
	12.186V	5.054V	3.345V	5.009V	167.779				41.70°C	115.21V
4	13.031A	3.965A	3.950A	1.600A	199.750	89.920%	1455	29.5	39.56°C	0.995
	12.168V	5.047V	3.338V	4.995V	222.143				42.26°C	115.21V
5	16.556A	4.972A	4.956A	1.805A	249.753	89.927%	1544	29.6	39.94°C	0.996
	12.034V	5.034V	3.329V	4.981V	277.730				42.88°C	115.21V
6	19.801A	5.977A	5.965A	2.010A	299.735	89.649%	1530	29.5	40.69°C	0.997
	12.117V	5.024V	3.318V	4.968V	334.341				43.77°C	115.21V
7	23.184A	6.988A	6.978A	2.219A	349.731	89.183%	1613	30.9	41.56°C	0.998
	12.104V	5.013V	3.309V	4.953V	392.149				44.84°C	115.21V
8	26.571A	7.999A	7.998A	2.426A	399.684	88.623%	1706	32.6	42.26°C	0.998
	12.092V	5.003V	3.299V	4.939V	450.995				45.69°C	115.21V

9	30.391A	8.513A	8.534A	2.430A	449.704	88.077%	1738	32.9	43.40°C	0.998
	12.080V	4.993V	3.291V	4.934V	510.579				46.93°C	115.21V
10	33.962A	9.040A	9.047A	3.062A	499.615	87.314%	1776	33.5	44.79°C	0.999
	12.069V	4.983V	3.282V	4.895V	572.208				48.44°C	115.21V
11	38.138A	9.057A	9.066A	3.065A	549.596	86.648%	1865	35.0	46.09°C	0.999
	12.058V	4.975V	3.275V	4.887V	634.283				50.16°C	115.21V
CL1	0.096A	13.020A	13.004A	0.004A	109.880	82.171%	1650	31.4	43.27°C	0.992
	12.179V	5.023V	3.329V	5.107V	133.721				45.87°C	115.22V
CL2	41.619A	1.004A	1.001A	1.001A	516.001	88.246%	1755	33.4	45.03°C	0.999
	12.078V	5.016V	3.306V	4.977V	584.732				47.92°C	115.21V

The results above are not used in the certification process

Light Load Tests 115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	Fan Noise (dB[A])	PF/AC Volts
1	1.196A	0.493A	0.470A	0.195A	19.655	67.717%	1227	24.2	0.914
	12.187V	5.083V	3.371V	5.075V	29.025				115.22V
2	2.413A	0.981A	0.976A	0.390A	39.723	79.703%	1260	24.4	0.959
	12.217V	5.079V	3.367V	5.065V	49.839				115.22V
3	3.638A	1.468A	1.483A	0.590A	59.826	84.563%	1245	24.3	0.979
	12.207V	5.073V	3.363V	5.055V	70.747				115.22V
4	4.850A	1.976A	1.963A	0.790A	79.761	86.487%	1260	24.4	0.981
	12.199V	5.069V	3.359V	5.044V	92.223				115.22V

The results above are not used in the certification process

Ripple Measurements 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	7.1 mV	8.6 mV	5.6 mV	6.5 mV	Pass
20% Load	9.2 mV	10.7 mV	7.0 mV	7.9 mV	Pass
30% Load	11.7 mV	10.8 mV	7.9 mV	8.7 mV	Pass
40% Load	14.0 mV	11.3 mV	9.2 mV	10.4 mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
50% Load	18.9 mV	14.9 mV	11.4 mV	11.9 mV	Pass
60% Load	23.2 mV	16.9 mV	13.6 mV	13.8 mV	Pass
70% Load	26.1 mV	18.7 mV	15.1 mV	15.5 mV	Pass
80% Load	28.6 mV	19.8 mV	16.8 mV	17.0 mV	Pass
90% Load	32.0 mV	21.7 mV	18.6 mV	18.7 mV	Pass
100% Load	37.3 mV	23.4 mV	21.2 mV	21.8 mV	Pass
110% Load	42.0 mV	23.8 mV	22.8 mV	23.5 mV	Pass
Crossload 1	13.0 mV	15.8 mV	12.8 mV	12.3 mV	Pass
Crossload 2	37.1 mV	20.8 mV	17.0 mV	19.4 mV	Pass

The results above are not used in the certification process

be quiet! SFX L Power 500W



Top side

All data and graphs included in this test report can be used by any individual on the following conditions:

- › It should be mentioned that the test results are provided by Cybenetics
- › The link to the original test results document should be provided in any case

CYBENETICS LTD Syrou 6, Latsia, 2231, Nicosia Cyprus

be quiet! SFX L POWER

AC Input	100 - 240Vac 50 - 60Hz 10A				
DC Output	3.3V	5V	12V	-12V	5VSB
Max. Current	20A	20A	41.7A	0.3A	3A
Max. Combined Power	105W		500W	3.6W	15W
500W					

Caution! Don't remove the cover by yourself! Fixing has to be done by qualified personnel only. No parts were used that need any maintenance.

Attention ! Veuillez ne pas ouvrir le bloc. Seul du personnel qualifié est habilité à effectuer des réparations. Les composants utilisés ne requièrent aucun entretien.


214P7230000009

Power specifications label

Cybenetics runs voluntary certification programs for power supplies - ETA for efficiency, LAMBDA for noise and SAFE for safety and correct operation - and for cooling products, with DELTA for chassis soundproofing and PHI for fan airflow and static pressure. THETA rates cooler performance on AMD AM5 and Intel LGA1851 outside ISO 17065 and accreditation scope

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