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

SeaSonic Prime Connect 750W

Lab ID#: SS75001620
Receipt Date: Mar 5, 2020
Test Date: Mar 11, 2020

Report: 20PS1620A
Report Date: Mar 13, 2020

DUT INFORMATION

Brand	SeaSonic
Manufacturer (OEM)	Seasonic
Series	Prime Connect
Model Number	SSR-750FA
Serial Number	R1912AA1A4300060
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	50-60
Rated Power (W)	750
Type	ATX12V
Cooling	135mm Fluid Dynamic Bearing Fan (HA13525H12F-Z)
Semi-Passive Operation	✓ (selectable)
Cable Design	Semi Modular

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	62	3	0.3
	Watts	100		744	15	3.6
Total Max. Power (W)		750				

CABLES AND CONNECTORS

Native Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Caps
Main connector 20 pin and 10 pin sense (220mm)	1	1	16-24AWG	No

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	Gauge
ATX connector 20+4 pin (210mm)	1	1	18AWG	No
4+4 pin EPS12V (240mm)	2	2	16AWG	No
6+2 pin PCIe (280mm)	2	2	16-18AWG	No
6+2 pin PCIe (320mm)	2	2	16-18AWG	No
SATA (300mm+70mm+70mm+70mm)	1	4	18AWG	No
SATA (200mm+40mm)	1	2	18AWG	No
SATA (120mm+110mm)	1	2	18AWG	No
4 pin Molex (450mm+120mm+120mm)	1	3	18AWG	No
4 pin Molex to SATA 3.3V Adapter (150mm+150mm)	1	2	18AWG	No
AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

SeaSonic Prime Connect 750W

General Data	-
Manufacturer (OEM)	Seasonic
PCB Type	Double Sided
Primary Side	-
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x Discharge IC
Inrush Protection	NTC Thermistor (MF72 5D-20L) & Relay
Bridge Rectifier(s)	2x GBU1508 (800V, 15A @ 100°C)
APFC MOSFETs	2x Infineon IPA50R190CE (550V, 15.7A @ 100°C, 0.19Ohm)
APFC Boost Diode	1x STMicroelectronics STTH8S06D (600V, 8A @ 25°C)
Hold-up Cap(s)	1x Hitachi (400V, 820uF, 2,000h @ 105°C, HU)
Main Switchers	4x Great Power GPT10N50AD (500V, 9.7A, 0.7Ohm)
APFC Controller	Champion CM6500UNX
Resonant Controller	Champion CM6901T6X
Topology	Primary side: Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	-
+12V MOSFETs	4x Nexperia PSMN2R6-40YS (40V, 100A @ 100°C, 5.3mOhm @ 175°C)
5V & 3.3V	DC-DC Converters: 6x Nexperia PSMN4R0-30YLD (30V, 67A @ 100°C, 6.6mOhm @ 150°C) PWM Controllers: ANPEC APW7159C
Filtering Capacitors	Electrolytic: 7x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 4x Nippon Chemi-Con (105°C, W), 2x Nippon Chemi-Con (1-5,000h @ 105°C, KZE) Polymer: 28x FPCAP, 6x United Chemi-Con
Supervisor IC	Weltrend WT7527V (OCP, OVP, UVP, SCP, PG)
Fan Model	Hong Hua HA13525H12F-Z (135mm, 12V, 0.50A, 2,000rpm, Fluid Dynamic Bearing Fan)
5VSB Circuit	-
Rectifier	1xMCC MBR1045ULPS SBR (45V, 10A @ 90°C)
Standby PWM Controller	Excelliance MOS Corp EM8569

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EFFICIENCY AND NOISE REPORT IN ACCORDANCE WITH
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SeaSonic Prime Connect 750W

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	✓

115V

Average Efficiency	88.396%
Efficiency With 10W (≤500W) or 2% (>500W)	61.248
Average Efficiency 5VSB	76.099%
Standby Power Consumption (W)	0.0426750
Average PF	0.984
Avg Noise Output	35.75 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	S+

230V

Average Efficiency	90.634%
Average Efficiency 5VSB	75.775%
Standby Power Consumption (W)	0.0687695
Average PF	0.947
Avg Noise Output	34.47 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	S++

TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Keysight AC6804B
Power Analyzers	N4L PPA1530 x2
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2
Tachometer	UNI-T UT372 x2
Digital Multimeter	Keysight U1273AX, Fluke 289, Keithley 2015 - THD
UPS	CyberPower OLS3000E 3kVA x2
Transformer	3kVA x2

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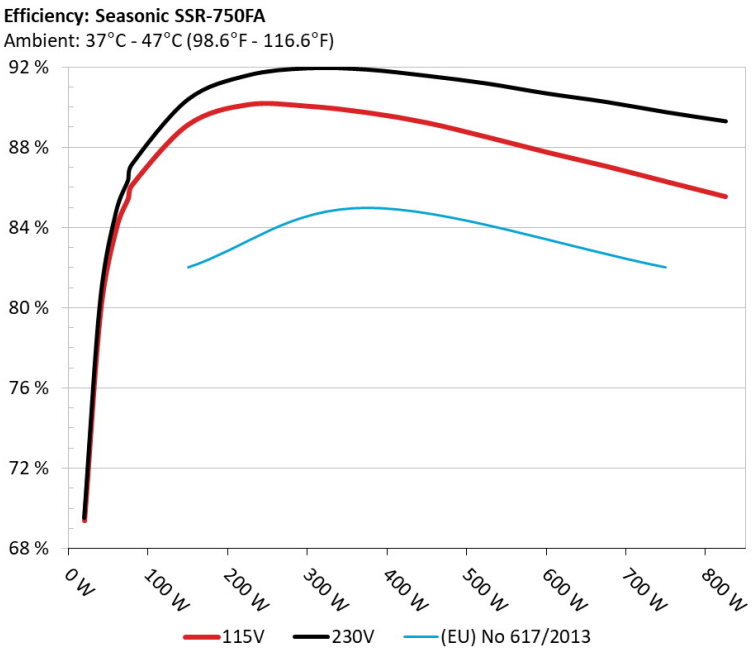
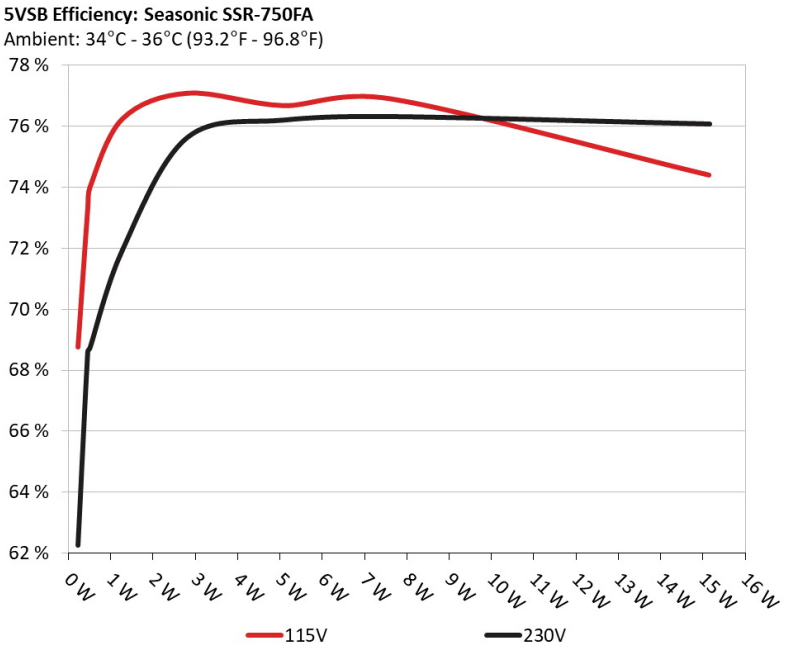
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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



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	0.231	68.750%	0.055
	5.124V	0.336		115.15V
2	0.090A	0.461	73.291%	0.099
	5.122V	0.629		115.15V
3	0.550A	2.811	77.077%	0.340
	5.110V	3.647		115.14V
4	1.000A	5.100	76.669%	0.413
	5.099V	6.652		115.14V
5	1.500A	7.633	76.891%	0.451
	5.088V	9.927		115.14V
6	3.000A	15.137	74.394%	0.505
	5.045V	20.347		115.12V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231	62.264%	0.018
	5.123V	0.371		230.33V
2	0.090A	0.461	68.601%	0.033
	5.121V	0.672		230.33V
3	0.550A	2.811	75.626%	0.160
	5.109V	3.717		230.33V
4	1.000A	5.100	76.199%	0.243
	5.098V	6.693		230.33V
5	1.500A	7.632	76.312%	0.300
	5.087V	10.001		230.33V
6	3.000A	15.153	76.069%	0.380
	5.051V	19.920		230.33V

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115V

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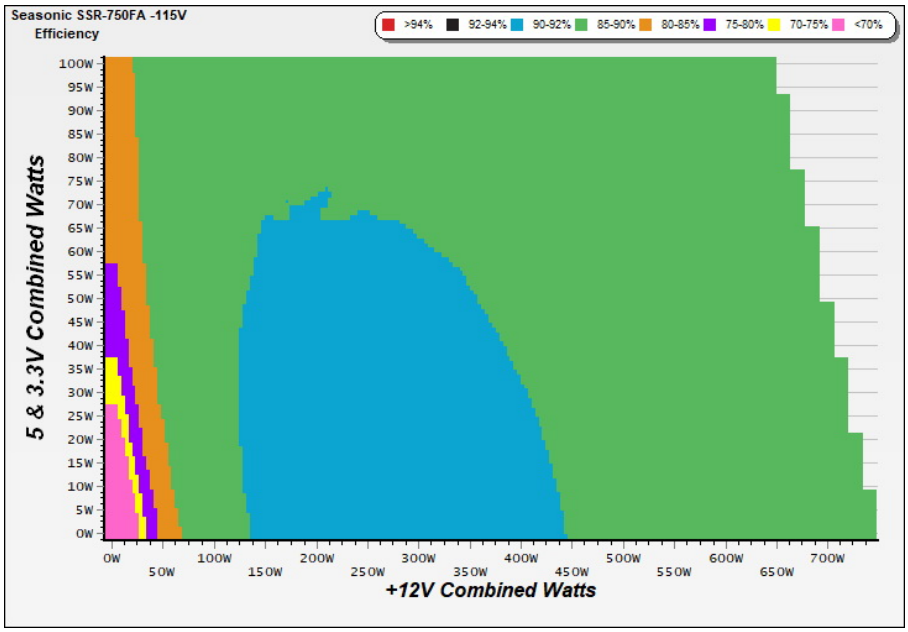
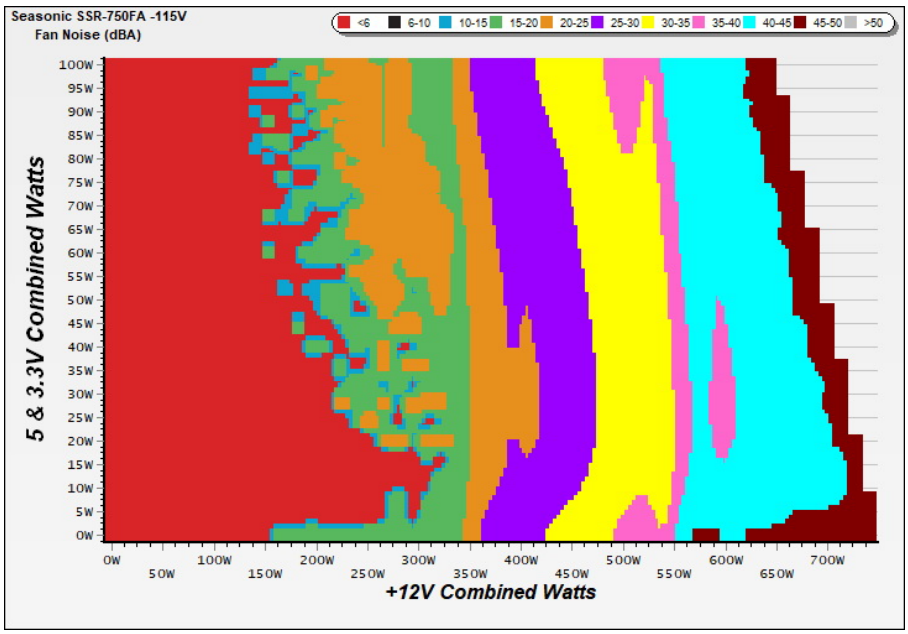
EFFICIENCY GRAPH 115V



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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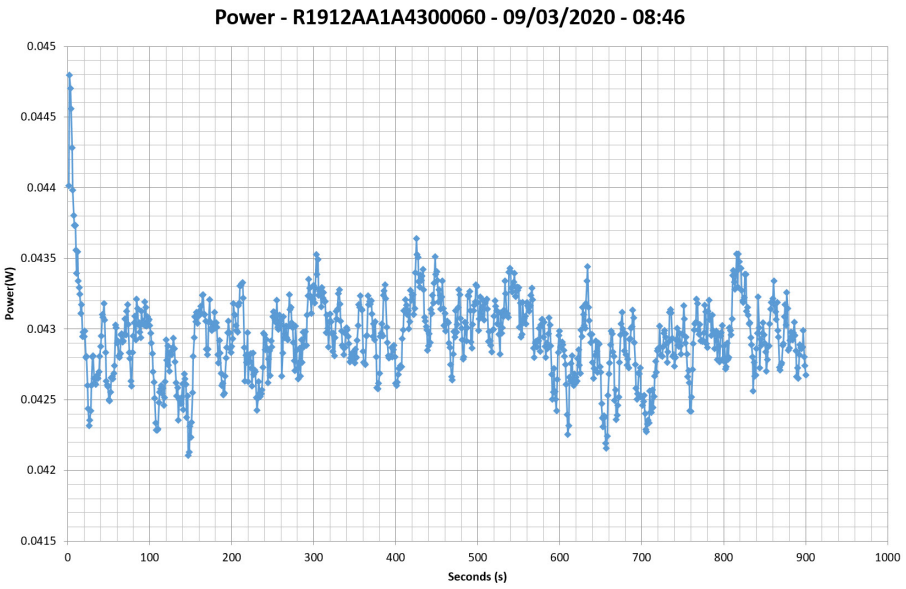
VAMPIRE POWER -115V



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
1	4.424A	1.989A	1.982A	0.983A	74.957	85.471%	0	<6.0	45.55°C	0.968
	12.059V	5.030V	3.330V	5.090V	87.699				40.57°C	115.14V
2	9.880A	2.985A	2.974A	1.184A	150.026	89.140%	0	<6.0	46.54°C	0.981
	12.057V	5.027V	3.327V	5.070V	168.304				41.24°C	115.11V
5	26.892A	4.984A	4.969A	1.794A	374.529	89.751%	872	29.3	42.61°C	0.988
	12.049V	5.018V	3.320V	5.017V	417.297				49.38°C	115.10V
10	54.861A	8.997A	8.983A	3.054A	749.847	86.308%	1941	51.1	45.21°C	0.991
	12.033V	5.002V	3.306V	4.913V	868.799				55.62°C	115.06V

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230V

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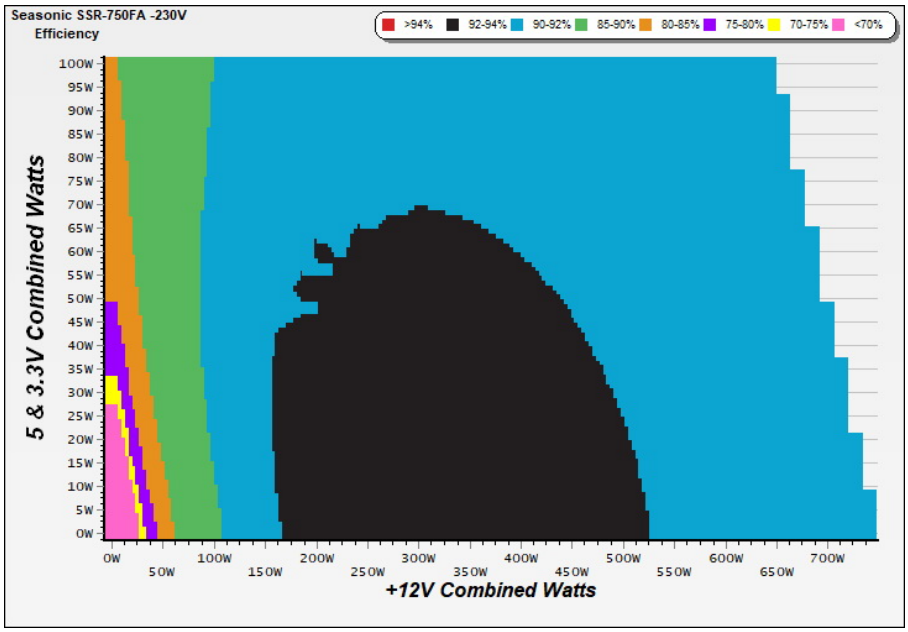
EFFICIENCY GRAPH 230V



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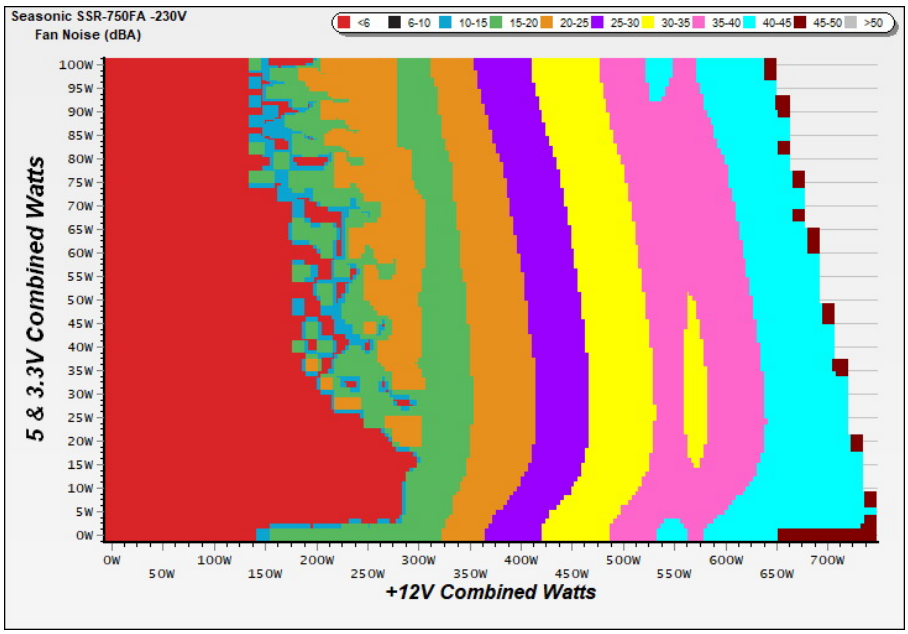
NOISE GRAPH 230V



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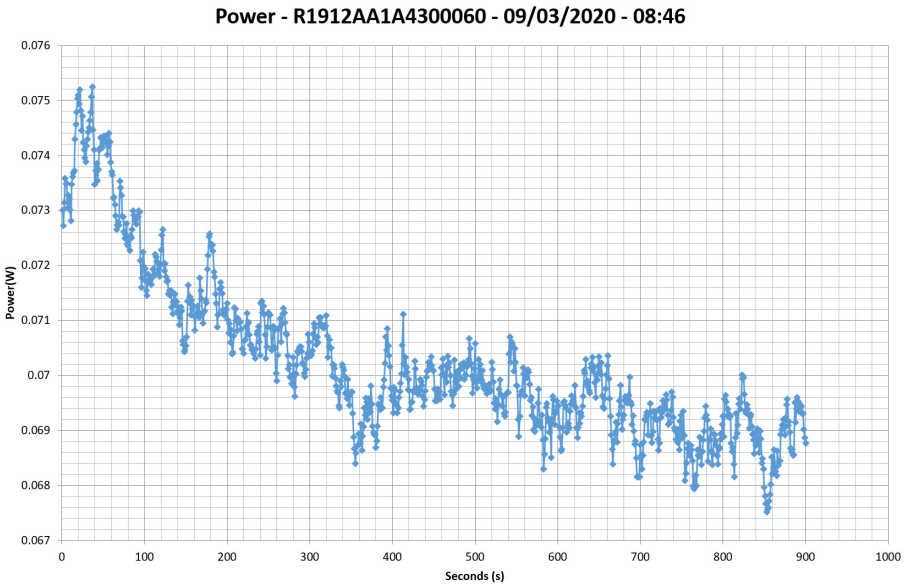
VAMPIRE POWER -230V



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Cybenetics offers the ETA and Lambda voluntary certification programs, through which the efficient and silent power supplies are promoted

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4004 MESA GEITONIA, LIMASSOL, CYPRUS

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
1	4.425A	1.988A	1.981A	0.983A	74.961	86.357%	0	<6.0	45.19°C	0.822
	12.059V	5.030V	3.331V	5.089V	86.804				40.19°C	230.35V
2	9.881A	2.985A	2.976A	1.184A	150.036	90.386%	570	18.9	41.05°C	0.913
	12.056V	5.027V	3.327V	5.071V	165.994				46.34°C	230.34V
5	26.901A	4.982A	4.970A	1.795A	374.606	91.882%	890	29.7	42.59°C	0.967
	12.048V	5.018V	3.320V	5.015V	407.702				49.50°C	230.34V
10	54.873A	8.998A	8.984A	3.055A	749.944	89.762%	1942	51.1	45.64°C	0.982
	12.032V	5.002V	3.306V	4.911V	835.478				55.81°C	230.30V

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SeaSonic Prime Connect 750W

Top side

Power specifications label

CERTIFICATIONS 115V

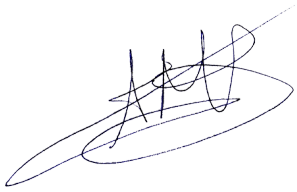
CYBENETICS GOLD

CYBENETICS STANDARD+

CERTIFICATIONS 230V

CYBENETICS GOLD 230v

CYBENETICS STANDARD++ 230v



Aris Mpitsiopoulos
Lab Director

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