Seasonic Focus SGX-500W (#2)

□□ R2008AA164510249

Lab ID SS50001840

□□ ID 251840

□□□□□□ ID: 21PS1840A

□□□□□□ : Apr 26, 2021

□□□□□ ETA-EMI PSU

115V



230V



115V



230V



□□□□□ LAMBDA PSU



Aristeidis Bitziopoulos, □□□□□□□

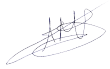
General Information

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	Seasonic
Model	Focus SGX-500W (#2)
OEM/ODM	Seasonic
Serial Number	R2008AA164510249
Product Specifications	
Manufacturer-Provided Information	
□□□□ (Vrms)	100-240
□□□□ (Arms)	6-3

□□□□ (Hz)	50-60
□□□□ (W)	500
□□□□□□□□□□ (°C)	
□□	SFX-L
□□□□	Fully Modular
□□	-
Cybenetics Measurements	
Dimensions (W x H x D)	
□□	
□□	120mm Fluid Dynamic Bearing Fan (S1201512HB)
□□□□□	✓
Cybenetics Testing Information	
Lab ID	SS50001840
Date of receipt	Feb 27, 2021
Testing Date	Apr 26, 2021
Report Issued Date	Apr 26, 2021
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

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(Non-accredited measurements)

Modular Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (360mm)	1	1	18AWG	No
4+4 pin EPS12V (410mm)	1	1	18AWG	No
6+2 pin PCIe (410mm+110mm)	1	2	18AWG	No
SATA (310mm+200mm+100mm)	1	3	18AWG	No
4-pin Molex (300mm+200mm+200mm)	1	3	18AWG	No

AC Power Cord (1400mm) - C13 coupler	1	1		18AWG	-

□□□□

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	41	3	0.3
	Watts	100		492	15	3.6
Total Max. Power (W)		500				

Test Results

Temperature & Compliance Info

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

Performance Summary

115V

Accredited	
□□□□ (>1450 load combinations)	88.959%
Average Noise Output (>1450 Load Combinations)	25.45dBA
PF□□□ (>1450 Load Combinations)	0.977
Efficiency With 10W (≤500W) or 2% (>500W) Load	63.323%
□□□□	0.0435W
Non-Accredited	
12V Ripple (Full Load)	30.28mV
5V Ripple (Full Load)	14.36mV
3.3V Ripple (Full Load)	15.78mV
5VSB Ripple (Full Load)	17.76mV
12V Load Regulation	0.11%

5V Load Regulation	0.44%
3.3V Load Regulation	2.19%
5VSB Load Regulation	2.01%
Inrush Current	64.550A

230V

Accredited		
□□□□ (>1450 load combinations)		90.836%
Average Noise Output (>1450 Load Combinations)		25.53dBA
PF□□□ (>1450 Load Combinations)		0.916
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
□□□□		0.0687W
Non-Accredited		
12V Ripple (Full Load)		32.14mV
5V Ripple (Full Load)		14.83mV
3.3V Ripple (Full Load)		17.40mV
5VSB Ripple (Full Load)		17.63mV
12V Load Regulation		0.05%
5V Load Regulation		0.42%
3.3V Load Regulation		0.84%
5VSB Load Regulation		1.88%
Inrush Current		81.240A
□□□□ & PWR_OK □□		25.60ms
AC Loss to PWR_OK Hold Up Time		21.60ms
PWR_OK Inactive to DC Loss Delay		4.00ms
PSU Timings: T1 (20% / 100%)	88.0ms	87.0ms
PSU Timings: T3 (20% / 100%)	311.0ms	310.0ms
OPP (24.61°C / 41.20°C)	139.97%	139.99%

□□□□ & PWR_OK □□

Hold-Up Time (ms)	25.6
AC Loss to PWR_OK Hold Up Time (ms)	21.6
PWR_OK Inactive to DC Loss Delay (ms)	4

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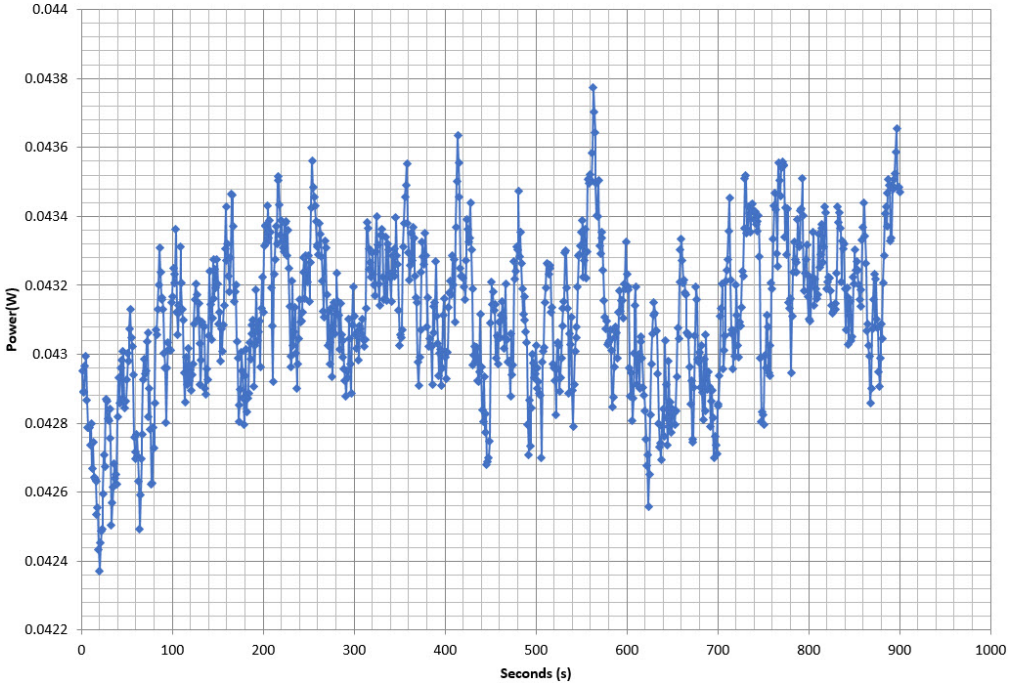
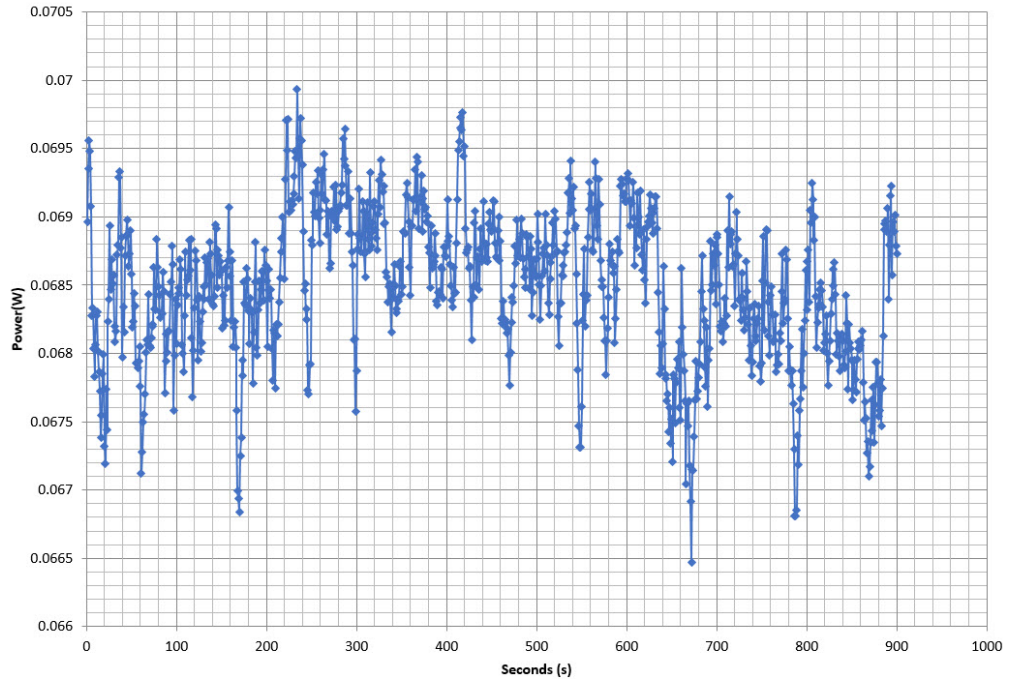
Graphs

115V



230V



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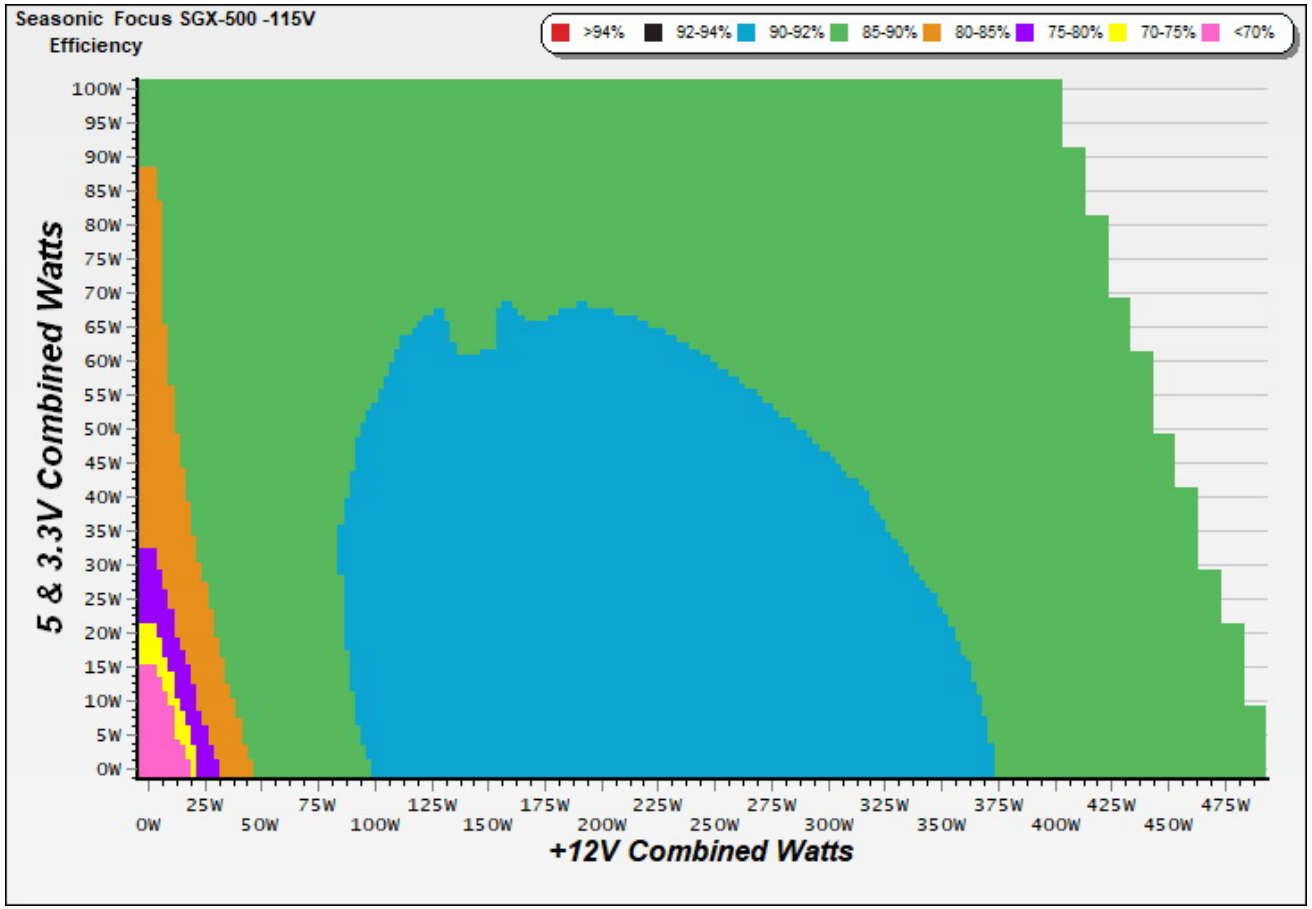
115V



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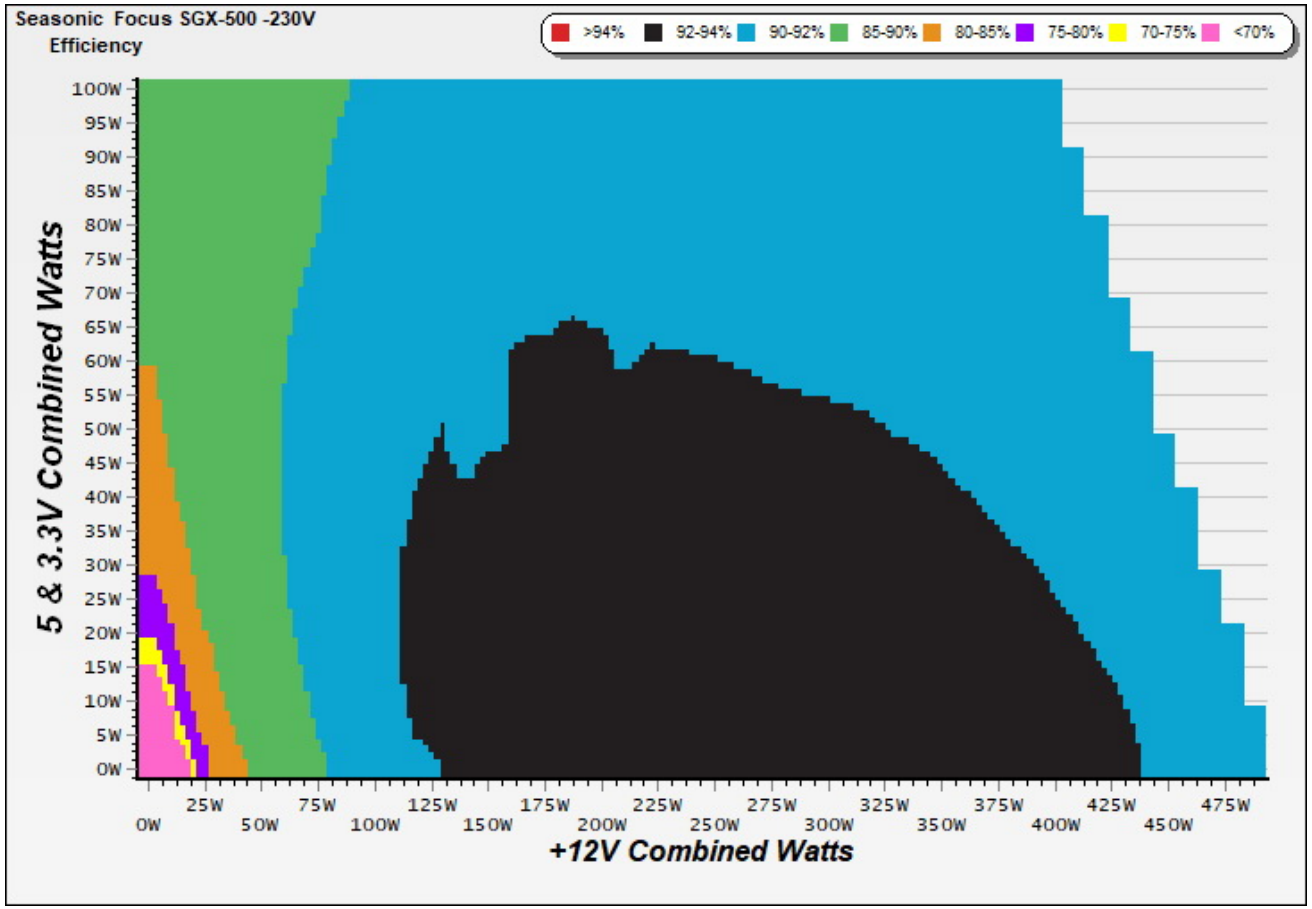
This graph depicts the PSU`s efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations

230V



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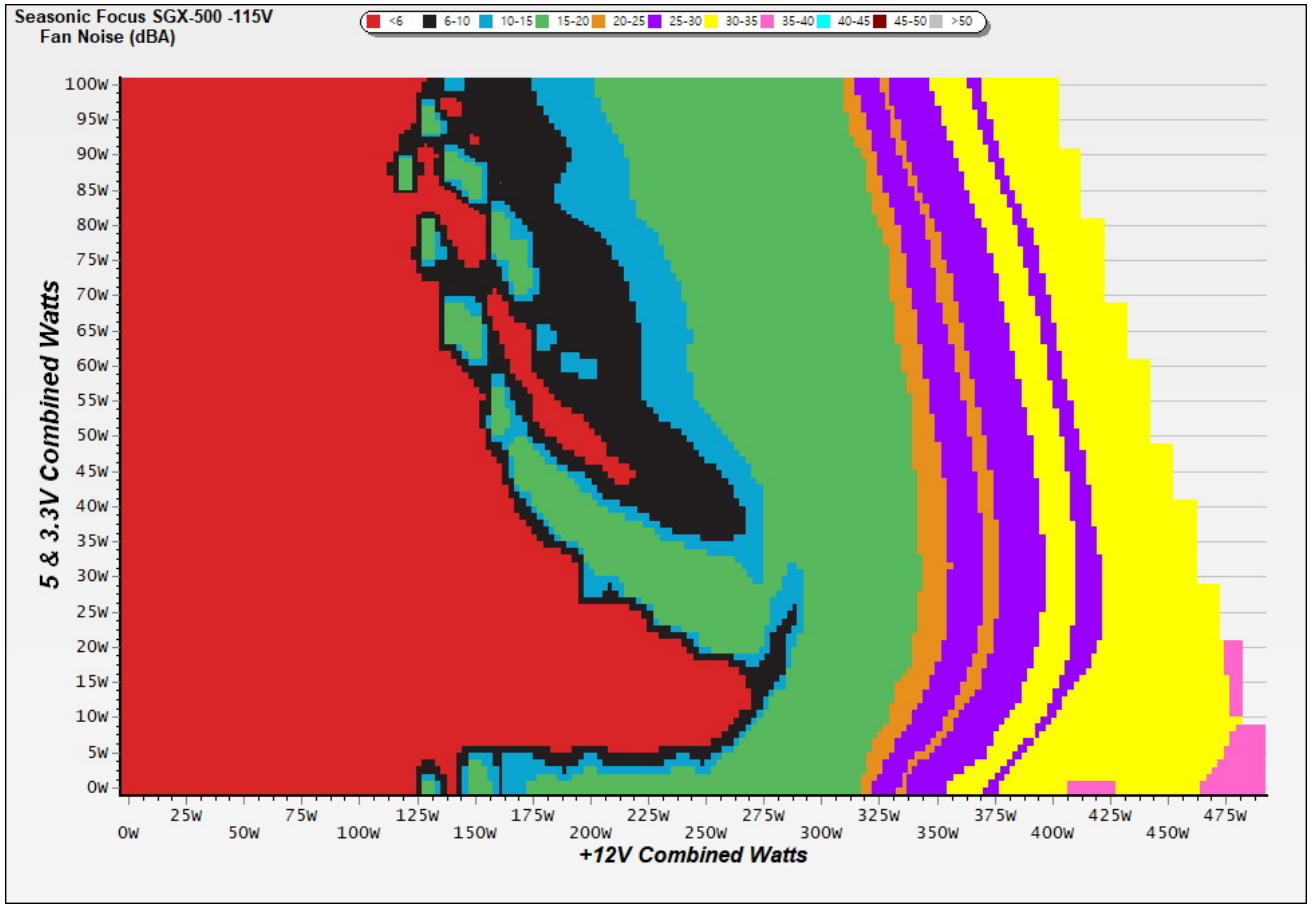
115V



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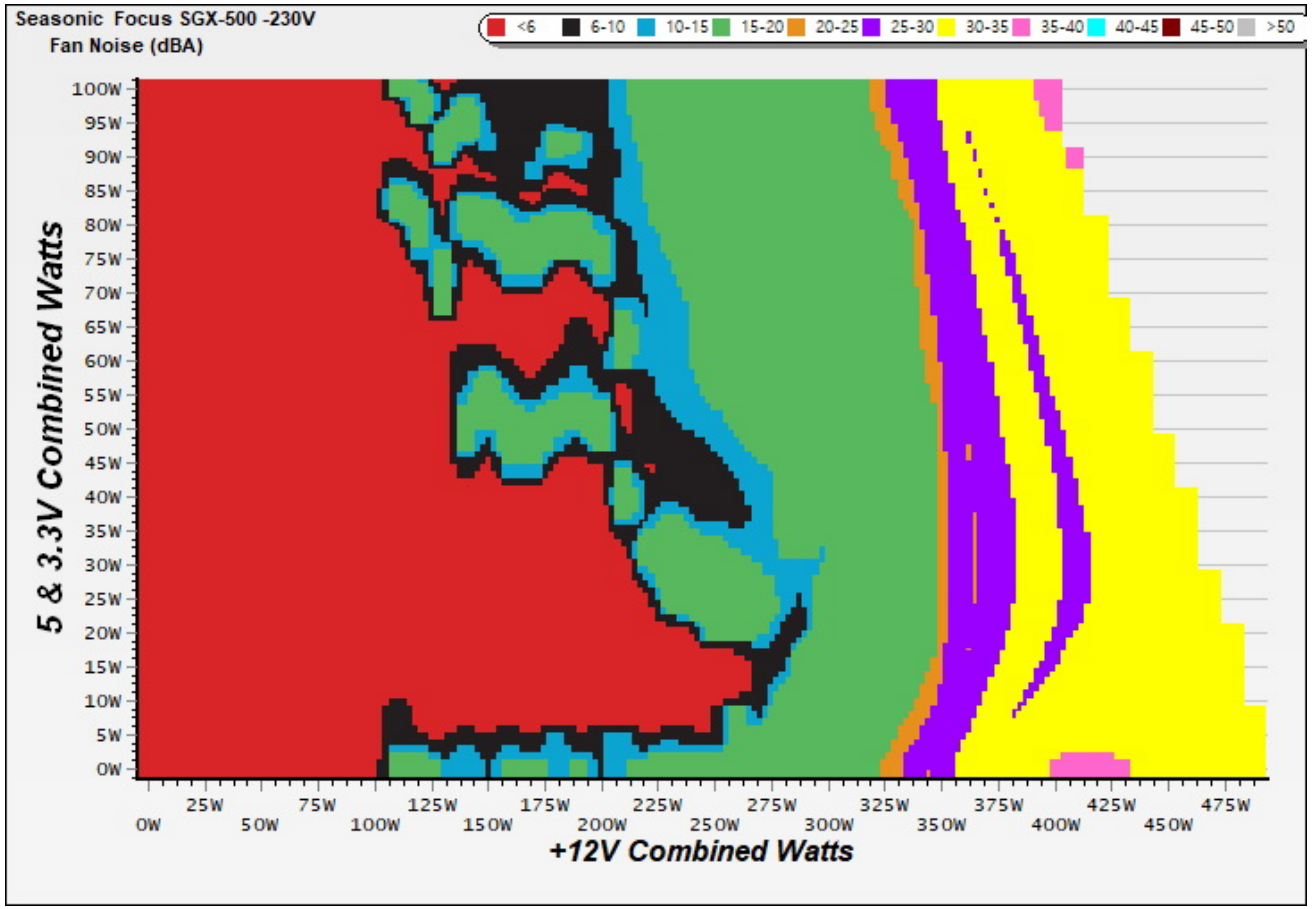
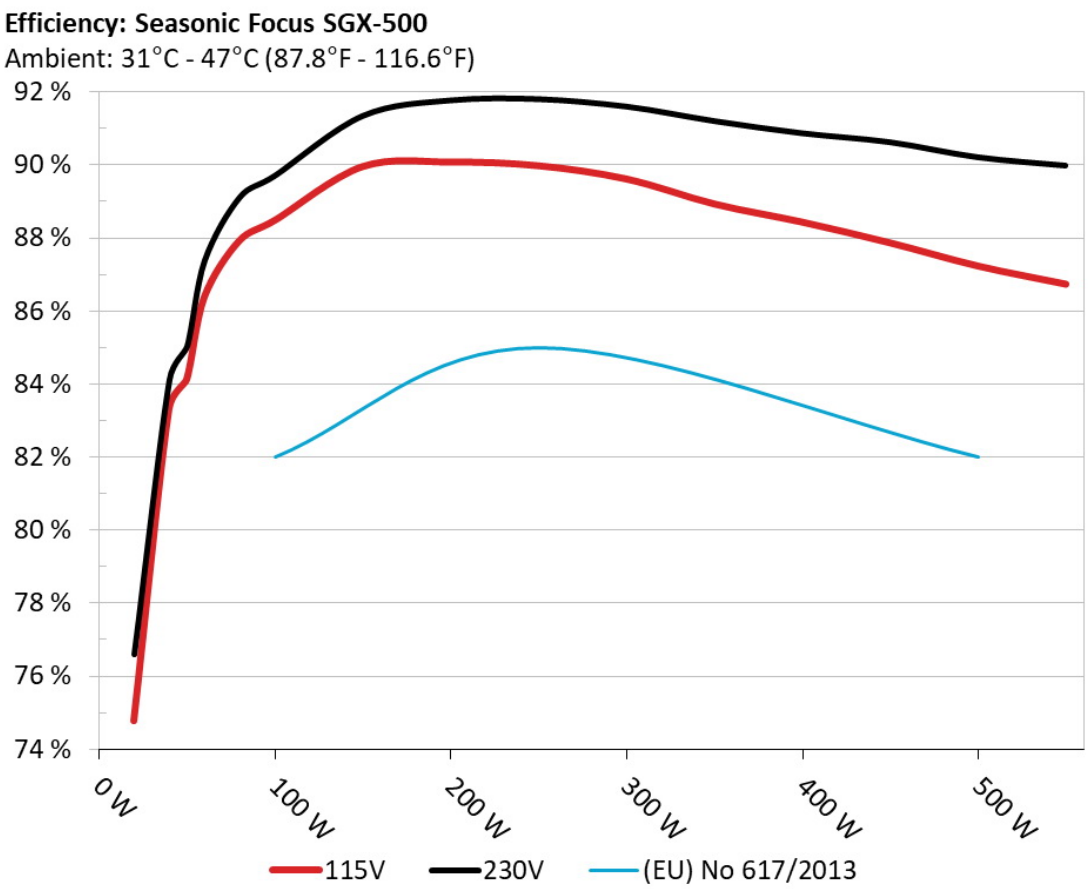
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

230V



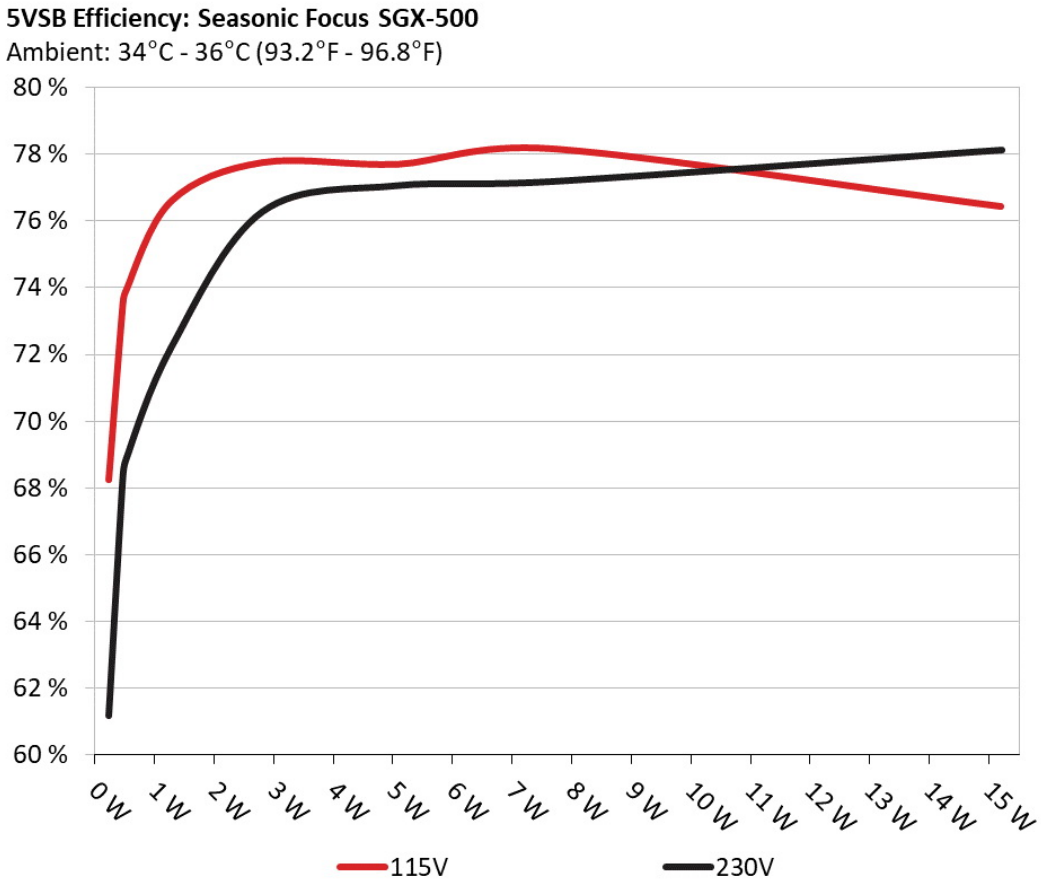
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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□□



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

5VSB□□□ ERP LOT 3/6□ CEC□

115V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	68.249%	0.053
	5.123V	0.337		115.14V
2	0.090A	0.461	73.408%	0.097
	5.122V	0.628		115.14V
3	0.550A	2.812	77.744%	0.332
	5.114V	3.617		115.14V
4	1.000A	5.106	77.693%	0.402
	5.106V	6.572		115.15V
5	1.500A	7.647	78.158%	0.438
	5.098V	9.784		115.15V
6	2.999A	15.204	76.429%	0.489
	5.069V	19.893		115.15V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	61.170%	0.019
	5.122V	0.376		230.30V
2	0.090A	0.461	68.195%	0.033
	5.121V	0.676		230.30V
3	0.550A	2.812	76.289%	0.159
	5.113V	3.686		230.30V
4	1.000A	5.105	77.068%	0.240
	5.106V	6.624		230.31V
5	1.500A	7.646	77.186%	0.296
	5.097V	9.906		230.31V
6	2.999A	15.215	78.130%	0.371
	5.073V	19.474		230.31V

Supplementary Tests (For Reference)

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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	2.360A	1.983A	1.985A	0.980A	49.986	84.133%	0	<6.0	36.38°C	0.930
	12.029V	5.042V	3.325V	5.101V	59.413				40.77°C	115.14V
2	10.397A	2.722A	1.502A	1.315A	100.418	88.503%	0	<6.0	26.71°C	0.629
	12.018V	5.041V	3.326V	5.107V	113.463				31.48°C	115.14V
3	9.468A	3.473A	3.479A	1.377A	149.937	89.966%	0	<6.0	36.58°C	0.983
	12.031V	5.039V	3.320V	5.084V	166.660				41.92°C	115.13V
4	13.198A	3.973A	3.978A	1.576A	199.975	90.091%	850	17.3	42.40°C	0.985
	12.031V	5.035V	3.318V	5.075V	221.970				48.96°C	115.13V
5	16.584A	4.968A	4.976A	1.776A	249.997	89.989%	952	20.1	42.63°C	0.986
	12.031V	5.032V	3.316V	5.066V	277.808				49.47°C	115.13V
6	19.960A	5.964A	5.976A	1.977A	299.941	89.626%	1129	27.6	43.35°C	0.985
	12.031V	5.031V	3.313V	5.057V	334.658				50.33°C	115.14V
7	23.351A	6.963A	7.098A	2.179A	350.033	88.941%	1500	36.2	43.49°C	0.985
	12.031V	5.028V	3.256V	5.046V	393.556				51.04°C	115.14V
8	26.722A	7.962A	7.987A	2.382A	399.867	88.443%	1642	40.5	44.46°C	0.985
	12.031V	5.026V	3.304V	5.036V	452.120				52.74°C	115.14V
9	30.515A	8.458A	8.478A	2.385A	449.602	87.879%	1909	43.2	44.77°C	0.985
	12.031V	5.024V	3.302V	5.030V	511.616				53.55°C	115.15V
10	34.075A	8.960A	9.000A	2.990A	499.633	87.243%	2052	44.4	45.66°C	0.985
	12.031V	5.023V	3.299V	5.015V	572.690				55.80°C	115.15V
11	38.229A	8.961A	9.003A	2.994A	549.641	86.745%	2108	44.8	46.46°C	0.986
	12.032V	5.022V	3.298V	5.010V	633.631				57.91°C	115.14V
CL1	0.116A	11.999A	11.998A	0.000A	101.435	84.177%	1159	29.5	46.47°C	0.975
	12.035V	5.034V	3.303V	5.100V	120.502				53.26°C	115.17V

CL2	40.996A	1.000A	1.000A	1.000A	506.721	88.176%	2104	44.6	45.67°C	0.985
	12.034V	5.032V	3.316V	5.057V	574.672				57.56°C	115.15V

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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	2.360A	1.983A	1.986A	0.980A	49.983	85.033%	0	<6.0	38.52°C	0.664
	12.028V	5.042V	3.324V	5.100V	58.781				42.96°C	230.27V
2	5.744A	2.976A	2.982A	1.178A	99.991	89.717%	0	<6.0	38.74°C	0.838
	12.029V	5.040V	3.320V	5.091V	111.452				43.36°C	230.27V
3	9.468A	3.473A	3.481A	1.377A	149.937	91.354%	0	<6.0	39.43°C	0.903
	12.031V	5.039V	3.318V	5.083V	164.127				44.54°C	230.27V
4	13.198A	3.973A	3.981A	1.576A	199.968	91.779%	597	7.8	41.78°C	0.932
	12.031V	5.036V	3.316V	5.075V	217.881				47.59°C	230.27V
5	16.584A	4.969A	4.980A	1.776A	249.992	91.811%	950	19.9	42.65°C	0.947
	12.030V	5.032V	3.313V	5.066V	272.290				49.26°C	230.27V
6	19.960A	5.965A	5.982A	1.977A	299.938	91.608%	1135	28.1	43.45°C	0.956
	12.031V	5.031V	3.310V	5.057V	327.414				50.54°C	230.27V
7	23.348A	6.961A	6.985A	2.178A	349.999	91.211%	1456	33.5	43.85°C	0.962
	12.031V	5.029V	3.307V	5.048V	383.724				51.85°C	230.27V
8	26.708A	7.960A	7.987A	2.380A	399.712	90.878%	1625	39.5	43.91°C	0.966
	12.031V	5.027V	3.304V	5.039V	439.835				52.54°C	230.27V
9	30.502A	8.456A	8.476A	2.383A	449.428	90.635%	1858	41.8	44.64°C	0.969
	12.031V	5.025V	3.302V	5.034V	495.865				54.26°C	230.27V
10	34.059A	8.956A	8.998A	2.988A	499.448	90.221%	2046	44.2	44.65°C	0.971
	12.032V	5.024V	3.300V	5.019V	553.582				55.56°C	230.27V
11	38.218A	8.959A	9.001A	2.990A	549.464	89.993%	2097	44.4	46.19°C	0.973
	12.032V	5.022V	3.298V	5.014V	610.563				57.97°C	230.27V
CL1	0.115A	11.998A	11.997A	0.000A	101.410	85.692%	935	19.2	39.73°C	0.850
	12.033V	5.034V	3.304V	5.101V	118.342				46.20°C	230.27V

CL2	40.981A	1.000A	1.000A	1.000A	506.456	91.240%	1957	43.8	43.18°C	0.971
	12.032V	5.031V	3.317V	5.060V	555.082				53.55°C	230.27V

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115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.233A	0.495A	0.495A	0.195A	19.978	74.782%	0	<6.0	0.762
	12.024V	5.046V	3.331V	5.118V	26.715				115.14V
2	2.468A	0.991A	0.991A	0.391A	39.967	83.332%	0	<6.0	0.904
	12.024V	5.045V	3.329V	5.112V	47.961				115.14V
3	3.705A	1.488A	1.488A	0.587A	59.998	86.389%	0	<6.0	0.947
	12.026V	5.041V	3.326V	5.107V	69.451				115.14V
4	4.935A	1.984A	1.985A	0.784A	79.950	87.935%	0	<6.0	0.965
	12.027V	5.041V	3.324V	5.101V	90.919				115.14V

□□□□□□□□□□

230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.233A	0.495A	0.495A	0.195A	19.974	76.590%	0	<6.0	0.448
	12.028V	5.047V	3.330V	5.117V	26.079				230.28V
2	2.466A	0.991A	0.991A	0.391A	39.963	84.118%	0	<6.0	0.599
	12.028V	5.046V	3.328V	5.112V	47.508				230.29V
3	3.704A	1.487A	1.488A	0.587A	59.995	87.385%	0	<6.0	0.710
	12.028V	5.042V	3.325V	5.106V	68.656				230.28V
4	4.934A	1.984A	1.986A	0.784A	79.947	89.122%	0	<6.0	0.788
	12.028V	5.041V	3.323V	5.101V	89.705				230.27V

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115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	10.10mV	8.11mV	7.19mV	10.83mV	Pass
20% Load	5.52mV	7.18mV	6.23mV	7.55mV	Pass
30% Load	13.72mV	9.25mV	9.13mV	11.49mV	Pass
40% Load	14.27mV	9.48mV	9.81mV	12.55mV	Pass
50% Load	15.84mV	10.60mV	10.56mV	13.18mV	Pass
60% Load	15.94mV	11.00mV	11.67mV	13.63mV	Pass
70% Load	17.54mV	11.66mV	12.68mV	13.05mV	Pass
80% Load	18.90mV	12.25mV	14.37mV	14.64mV	Pass
90% Load	20.27mV	12.37mV	14.75mV	14.82mV	Pass
100% Load	30.28mV	14.36mV	15.78mV	17.76mV	Pass
110% Load	31.25mV	14.45mV	16.64mV	18.20mV	Pass
Crossload1	19.99mV	11.10mV	15.82mV	11.66mV	Pass
Crossload2	29.03mV	12.29mV	11.17mV	17.08mV	Pass

□□□□□□□□□□

230V

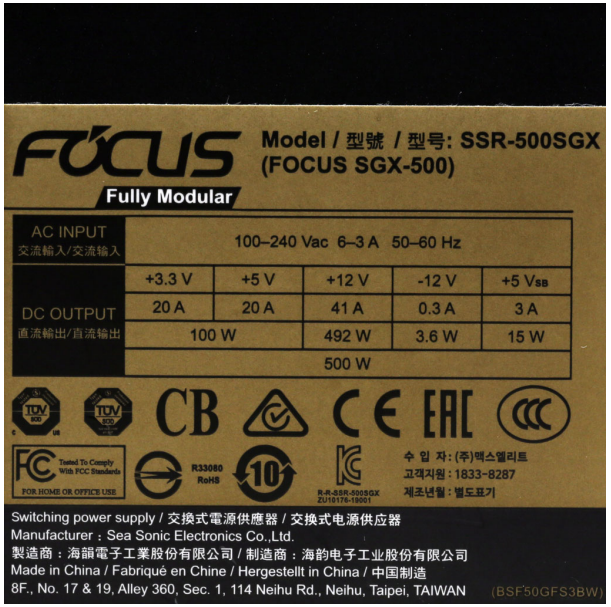
Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	14.74mV	8.20mV	7.43mV	11.28mV	Pass
20% Load	18.54mV	8.65mV	8.62mV	11.87mV	Pass
30% Load	19.19mV	9.10mV	9.28mV	11.99mV	Pass
40% Load	20.22mV	9.79mV	9.81mV	12.72mV	Pass
50% Load	21.80mV	10.95mV	10.82mV	12.96mV	Pass
60% Load	23.77mV	11.49mV	12.01mV	13.59mV	Pass
70% Load	25.47mV	12.30mV	12.84mV	14.38mV	Pass
80% Load	27.23mV	12.97mV	15.45mV	14.70mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	28.90mV	13.18mV	15.82mV	14.73mV	Pass
100% Load	32.14mV	14.83mV	17.40mV	17.63mV	Pass
110% Load	32.42mV	15.41mV	17.49mV	17.06mV	Pass
Crossload1	19.99mV	11.07mV	16.97mV	12.55mV	Pass
Crossload2	30.40mV	12.98mV	11.97mV	15.80mV	Pass

Seasonic Focus SGX-500W (#2)



Top side



Power specifications label

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