



Seasonic Focus GX-850 (ATX v3.0)

Serial Number

Lab ID SS85002331

Certification ID 252331

Test Result Report ID: 24PS2331A

Certificate Issue Date: Jan 23, 2024

115V

230V

Scheme: ETA-EMI PSU

115V

230V

Scheme: LAMBDA PSU

Outside Validation Scope

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 GX-850 (ATX v3.0)
OEM/ODM	Seasonic
Serial Number	
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	11-5.5

Rated Frequency (Hz)	50-60
Rated Power (W)	850
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	135mm Fluid Dynamic Bearing Fan (HA13525H12F-Z)
Semi-Passive Operation	✓ (selectable)
Cybenetics Testing Information	
Lab ID	SS85002331
Date of receipt	Jan 2, 2024
Testing Date	Jan 17, 2024
Report Issued Date	Jan 23, 2024
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	In Cable Capacitors
ATX connector 20+4 pin (620mm)	1	1	16-18AWG	No
4+4 pin EPS12V (710mm)	2	2	16AWG	No
6+2 pin PCIe (750mm)	3	3	16-18AWG	No
12+4 pin PCIe (760mm) (600W)	1	1	16-28AWG	No
SATA (510mm+150mm+150mm+150mm)	2	8	18AWG	No
SATA 3.3 (410mm+150mm)	1	2	18AWG	No
4-pin Molex (450mm+125mm+125mm)	1	3	18AWG	No

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	70	3	0.3
	Watts	100		840	15	3.6
Total Max. Power (W)		850				

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	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX v3.0 Compliance	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	88.845%
Average Noise Output (>1450 Load Combinations)	30.73dBA
Average PF (>1450 Load Combinations)	0.984
Efficiency With 10W (≤500W) or 2% (>500W) Load	71.808%
Standby Power Consumption	0.0726W
Non-Accredited	
12V Ripple (Full Load)	16.18mV
5V Ripple (Full Load)	12.14mV
3.3V Ripple (Full Load)	19.19mV
5VSB Ripple (Full Load)	21.99mV
12V Load Regulation	0.48%

5V Load Regulation	0.62%
3.3V Load Regulation	0.97%
5VSB Load Regulation	2.89%
Inrush Current	32.020A

230V

Accredited		
Average Efficiency (>1450 load combinations)	90.962%	
Average Noise Output (>1450 Load Combinations)	30.82dBA	
Average PF (>1450 Load Combinations)	0.952	
Efficiency With 10W (≤500W) or 2% (>500W) Load	68.461%	
Standby Power Consumption	0.1650W	
Non-Accredited		
12V Ripple (Full Load)	16.43mV	
5V Ripple (Full Load)	12.73mV	
3.3V Ripple (Full Load)	18.61mV	
5VSB Ripple (Full Load)	19.58mV	
12V Load Regulation	0.47%	
5V Load Regulation	0.64%	
3.3V Load Regulation	0.97%	
5VSB Load Regulation	2.83%	
Inrush Current	65.550A	
12V Transient Response (200%)	11.42V	
5V Transient Response (200%)	4.983V	
3.3V Transient Response (200%)	3.224V	
5VSB Transient Response (200%)	4.958V	
Hold-Up Time & PWR_OK Signal	19.80ms	
AC Loss to PWR_OK Hold Up Time	15.60ms	
PWR_OK Inactive to DC Loss Delay	4.20ms	
PSU Timings: T1 (20% / 100%)	85.0ms	93.0ms
PSU Timings: T3 (20% / 100%)	126.0ms	128.0ms
OPP (27.44°C / 42.67°C)	129.99%	132.16%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	19.8
AC Loss to PWR_OK Hold Up Time (ms)	15.6
PWR_OK Inactive to DC Loss Delay (ms)	4.2

Vampire Power

Tables

115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	115.15 V	115.13 V	113.85 V	115.17 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.91 Hz	59.40 Hz	60.01 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.415	1.415	1.340	1.416	1.490	PASS
Mains Voltage THD:	0.13 %	0.11 %	N/A	0.14 %	2.00 %	PASS
Real Power:	0.073 W	0.065 W	N/A	0.082 W	N/A	N/A
Apparent Power:	9.960 W	9.956 W	N/A	9.963 W	N/A	N/A
Power Factor:	0.007	N/A	N/A	N/A	N/A	N/A

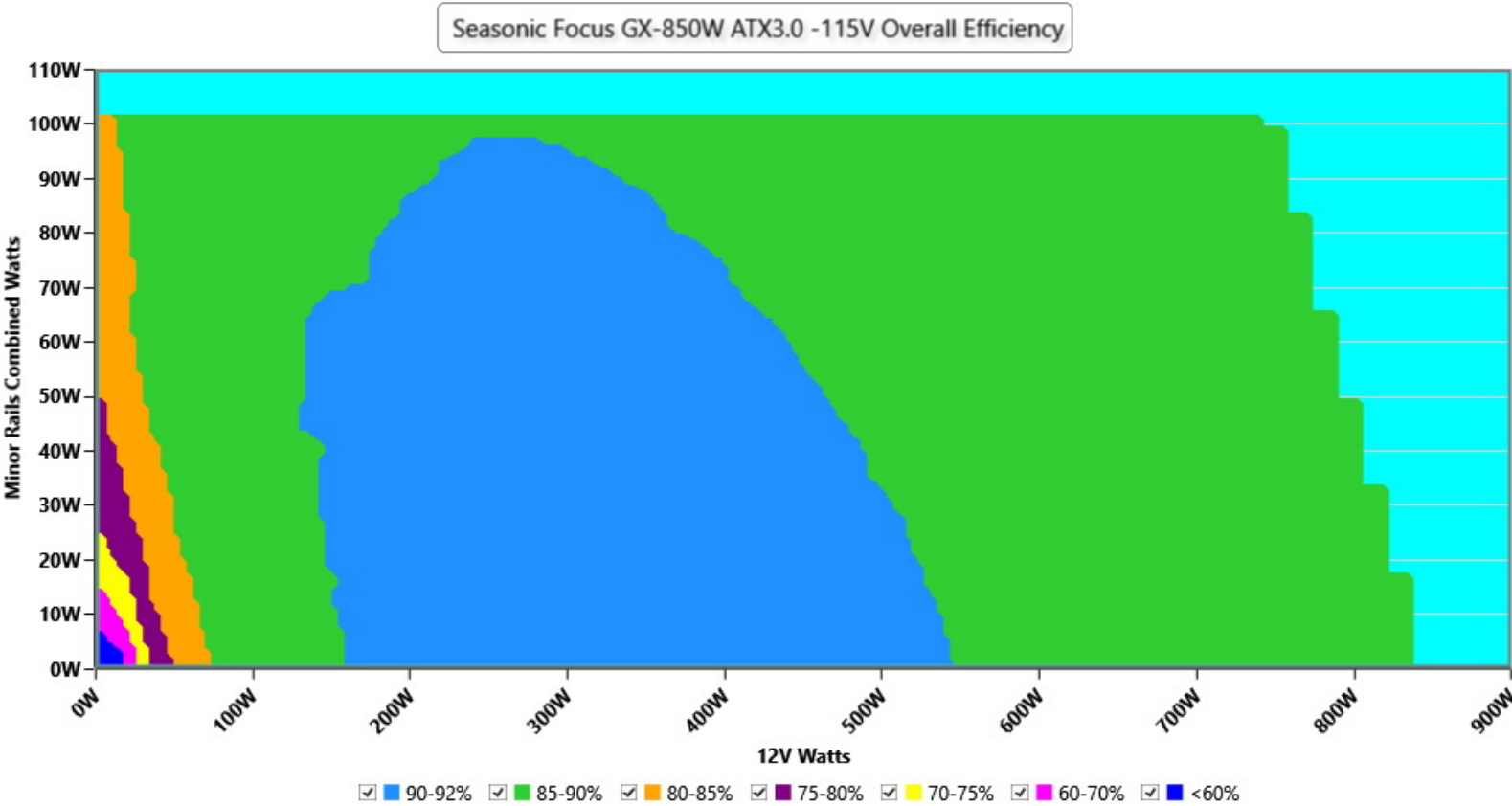
230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	230.38 V	230.36 V	227.70 V	230.40 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	50.00 Hz	49.50 Hz	50.00 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.415	1.415	1.340	1.416	1.490	PASS
Mains Voltage THD:	0.14 %	0.13 %	N/A	0.16 %	2.00 %	PASS
Real Power:	0.165 W	0.145 W	N/A	0.193 W	N/A	N/A
Apparent Power:	33.331 W	33.316 W	N/A	33.341 W	N/A	N/A

Power Factor:	0.005	N/A	N/A	N/A	N/A	N/A
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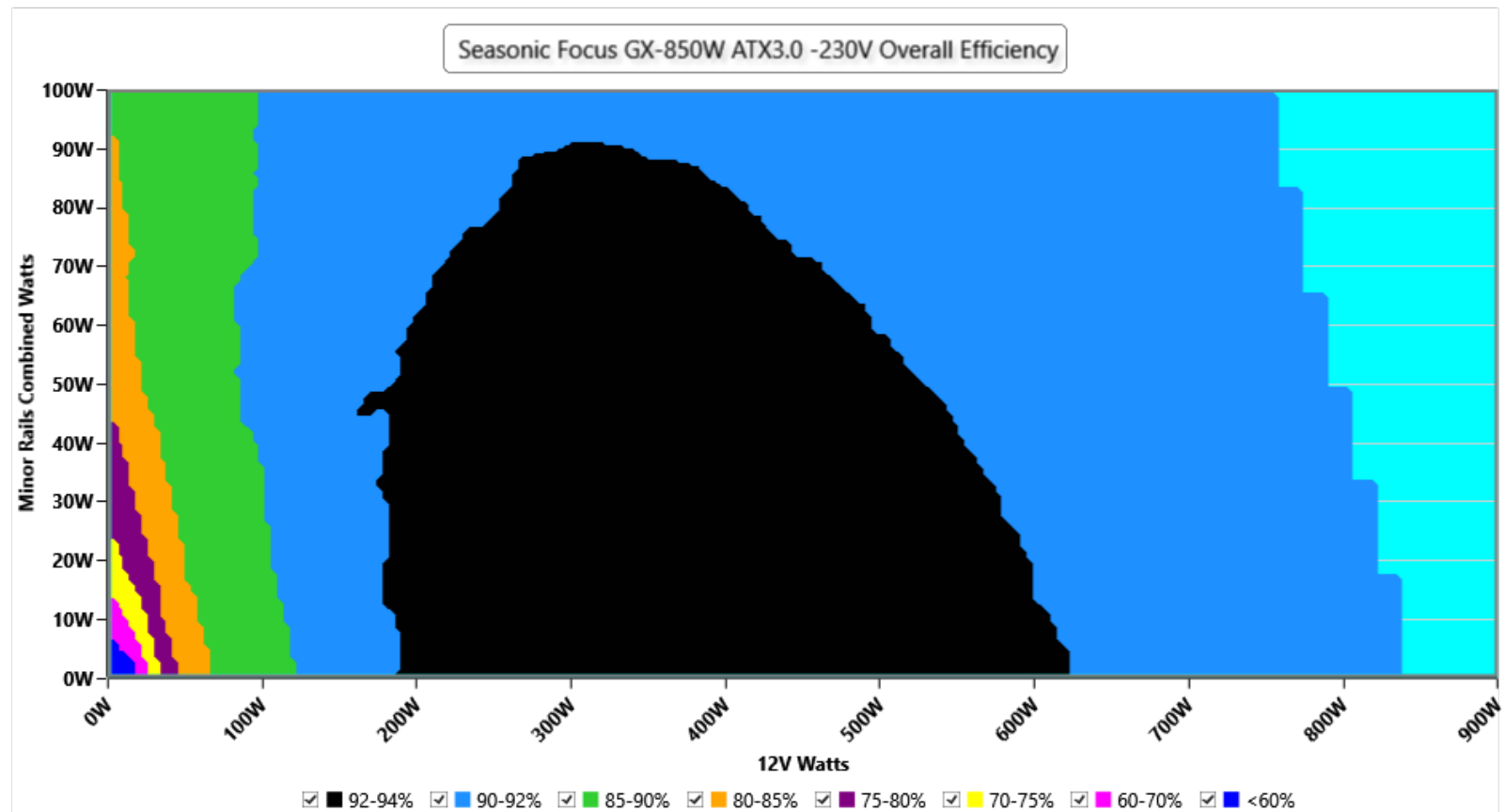
Efficiency Graph

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

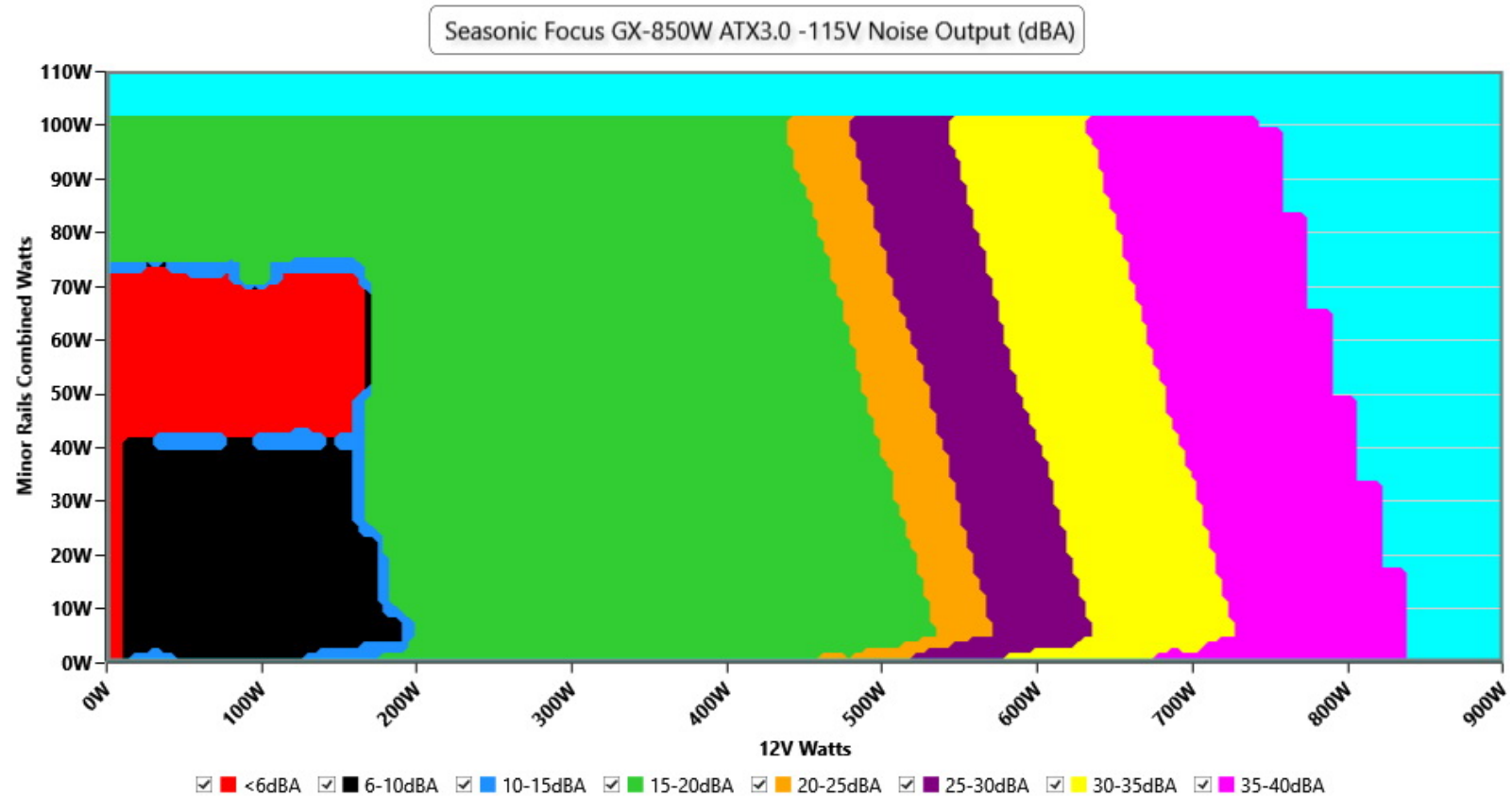


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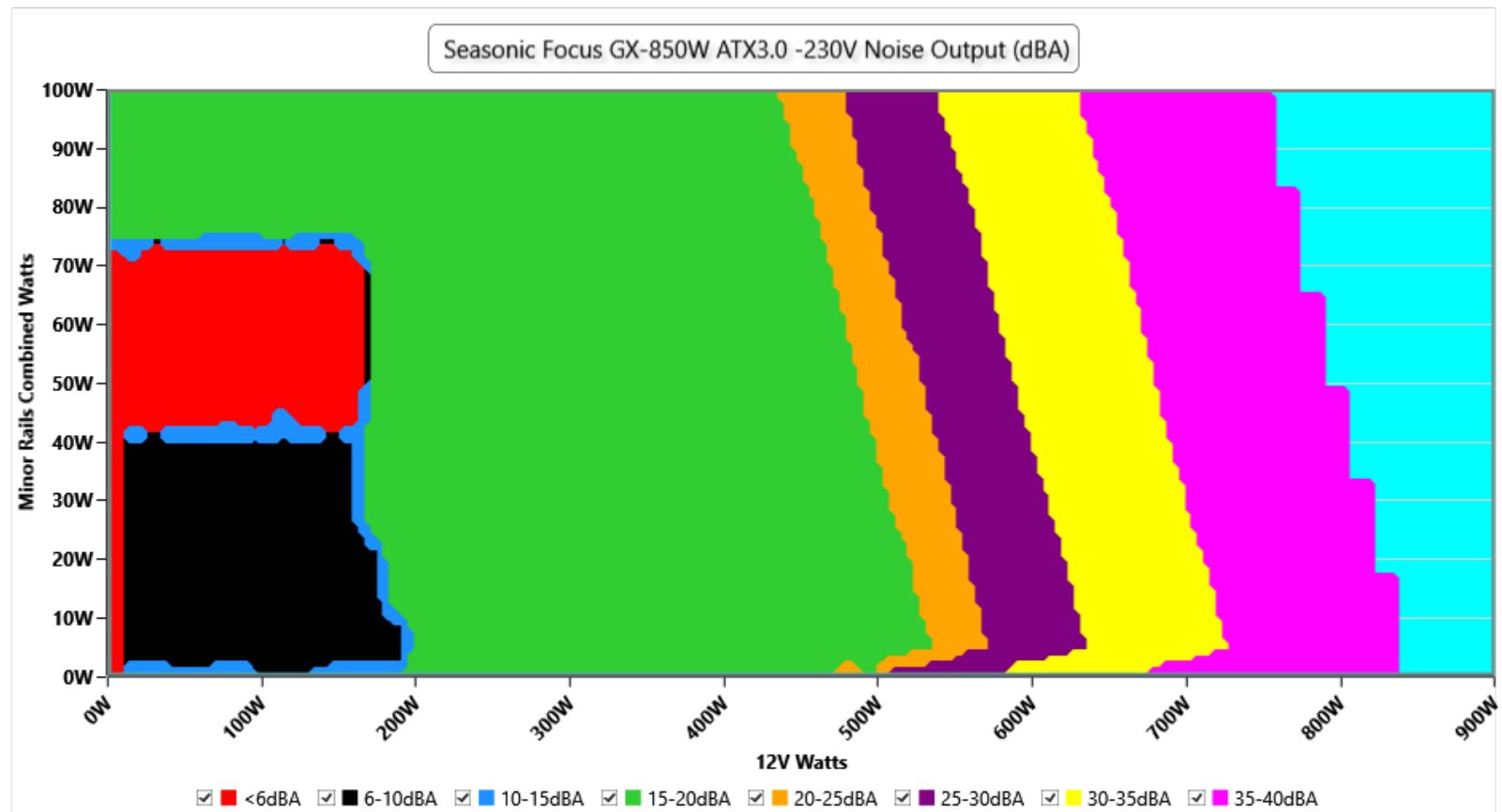
Noise Graph

115V



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



INFO

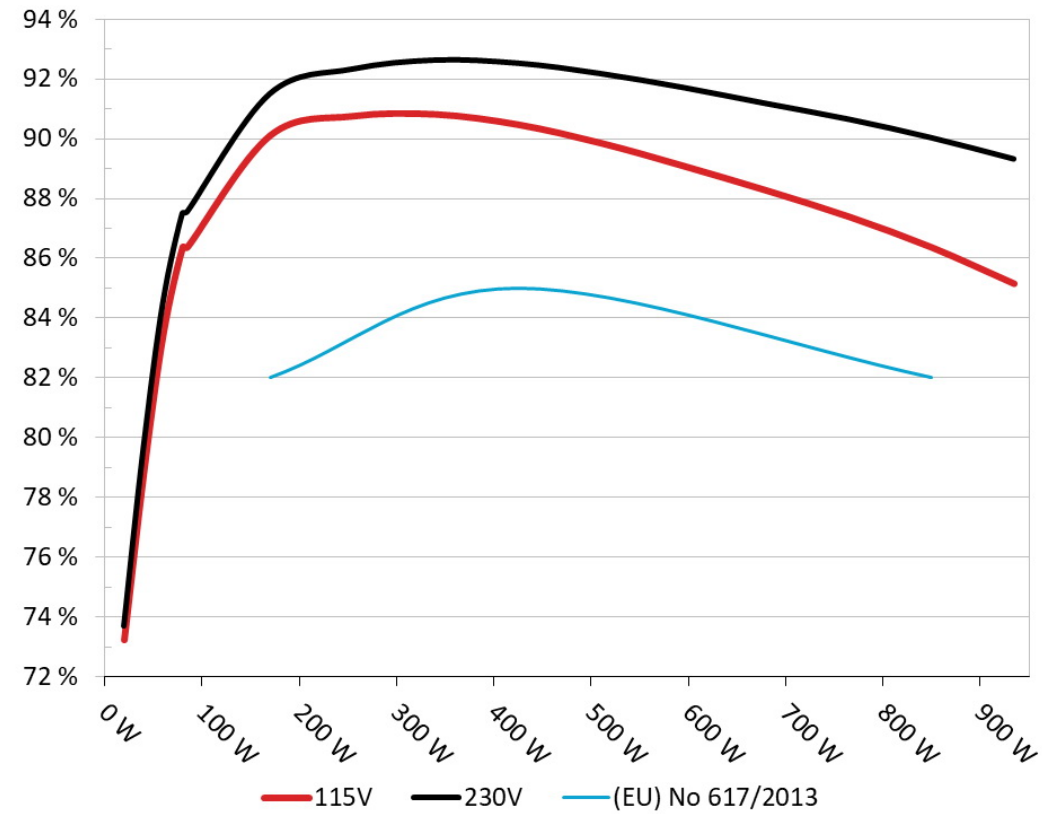
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Indicative Performance

Efficiency under high ambient temperature

Efficiency: Seasonic Focus GX-850 ATX3.0

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



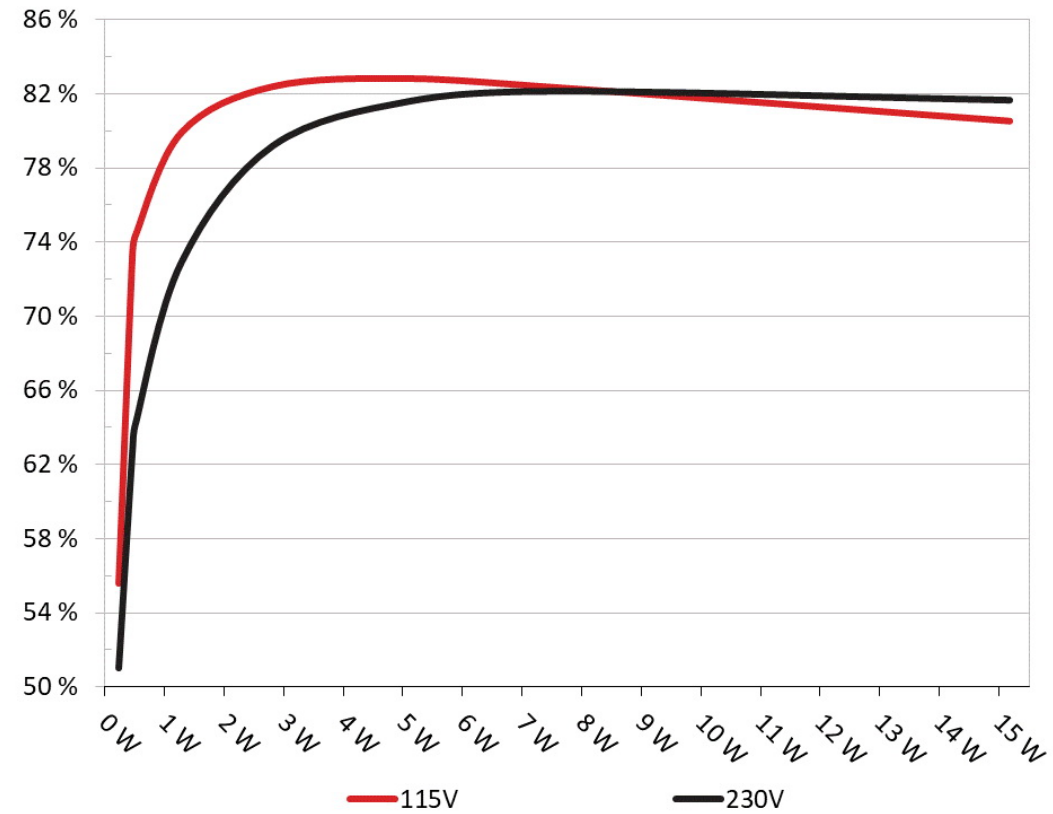
INFO

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: Seasonic Focus GX-850 ATX3.0

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	0.045A	0.231W	55.116%	0.029
	5.134V	0.287W		115.17V
2	0.09A	0.462W	72.995%	0.063
	5.132V	0.633W		115.17V
3	0.55A	2.817W	81.902%	0.265
	5.121V	3.439W		115.17V
4	1A	5.111W	82.33%	0.364
	5.11V	6.208W		115.17V
5	1.5A	7.647W	81.835%	0.415
	5.097V	9.345W		115.17V
6	3.001A	15.179W	80.041%	0.483
	5.059V	18.966W		115.16V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231W	50.495%	0.014
	5.134V	0.458W		230.4V
2	0.09A	0.462W	62.315%	0.022
	5.132V	0.742W		230.4V
3	0.55A	2.817W	78.709%	0.102
	5.121V	3.58W		230.41V
4	1A	5.111W	81.111%	0.168
	5.11V	6.303W		230.4V
5	1.5A	7.648W	81.65%	0.227
	5.097V	9.367W		230.4V
6	3.001A	15.183W	81.168%	0.332
	5.06V	18.71W		230.4V

Supplementary Tests (For Reference)

Typical Load Tests

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%	5.236A	1.987A	1.984A	0.98A	85.007	86.369%	0	<6.0	44.63°C	0.969
	12.109V	5.033V	3.326V	5.103V	98.424				40.42°C	115.14V
20%	11.504A	2.983A	2.979A	1.179A	169.98	90.096%	0	<6.0	45.38°C	0.98
	12.090V	5.03V	3.323V	5.091V	188.667				40.78°C	115.13V
30%	18.112A	3.481A	3.479A	1.379A	254.999	90.74%	688	16.9	41.16°C	0.985
	12.088V	5.028V	3.32V	5.079V	281.025				46.23°C	115.09V
40%	24.724A	3.98A	3.979A	1.579A	340.099	90.802%	687	16.9	41.64°C	0.986
	12.089V	5.026V	3.318V	5.067V	374.555				47.27°C	115.07V
50%	30.991A	4.978A	4.979A	1.781A	425.144	90.456%	683	16.7	42.54°C	0.987
	12.088V	5.024V	3.314V	5.054V	469.997				48.57°C	115.04V
60%	37.215A	5.978A	5.981A	1.984A	509.685	89.843%	677	16.4	42.73°C	0.988
	12.089V	5.02V	3.311V	5.041V	567.308				49.33°C	115.02V
70%	43.502A	6.98A	6.986A	2.188A	595.002	89.074%	869	16.1	43.29°C	0.99
	12.089V	5.017V	3.308V	5.028V	667.974				50.3°C	114.99V
80%	49.790A	7.98A	7.99A	2.292A	679.812	88.258%	1075	31.3	43.77°C	0.991
	12.089V	5.013V	3.304V	5.018V	770.261				51.79°C	114.96V
90%	56.478A	8.483A	8.482A	2.397A	765.235	87.377%	1330	37.4	44.36°C	0.992
	12.088V	5.011V	3.301V	5.008V	875.797				53.41°C	114.93V
100%	62.895A	8.987A	9.006A	3.01A	850.052	86.353%	1533	41.5	45.42°C	0.992
	12.089V	5.008V	3.298V	4.984V	984.392				55.47°C	114.89V
110%	69.176A	9.992A	10.108A	3.015A	934.595	85.144%	1628	44.6	46.76°C	0.993
	12.090V	5.004V	3.294V	4.976V	1097.672				57.7°C	114.87V
CL1	0.116A	12.006A	11.974A	0A	101.309	84.607%	600	12.3	41.07°C	0.974
	12.100V	5.014V	3.315V	5.117V	119.741				46.55°C	115.14V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL2	0.116A	19.957A	0A	0A	101.401	83.416%	772	20.8	40.39°C	0.975
	12.097V	5.011V	3.326V	5.122V	121.563				47.46°C	115.13V
CL3	0.116A	0A	19.929A	0A	67.397	77.984%	779	21.2	40.06°C	0.965
	12.103V	5.029V	3.311V	5.118V	86.425				49.08°C	115.14V
CL4	70.304A	0A	0A	0A	849.775	87.094%	1515	41.3	45.59°C	0.992
	12.087V	5.023V	3.308V	5.07V	975.697				56.54°C	114.89V

The results above are not used in the certification process

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%	5.236A	1.988A	1.985A	0.98A	85.006	87.548%	0	<6.0	44.67°C	0.852
	12.109V	5.032V	3.326V	5.102V	97.104				40.46°C	230.4V
20%	11.502A	2.984A	2.98A	1.179A	169.971	91.489%	0	<6.0	45.11°C	0.926
	12.090V	5.029V	3.323V	5.09V	185.786				40.59°C	230.39V
30%	18.110A	3.482A	3.479A	1.379A	254.986	92.317%	688	16.9	41.13°C	0.951
	12.088V	5.027V	3.32V	5.079V	276.201				46.18°C	230.38V
40%	24.721A	3.98A	3.98A	1.579A	340.077	92.616%	688	16.9	41.96°C	0.963
	12.089V	5.026V	3.317V	5.067V	367.187				47.48°C	230.37V
50%	30.983A	4.978A	4.98A	1.781A	425.066	92.514%	684	16.7	42.22°C	0.969
	12.089V	5.023V	3.314V	5.055V	459.468				48.25°C	230.36V
60%	37.208A	5.978A	5.982A	1.984A	509.604	92.167%	679	16.4	42.74°C	0.974
	12.088V	5.02V	3.311V	5.042V	552.918				49.34°C	230.35V
70%	43.496A	6.979A	6.986A	2.187A	594.937	91.699%	872	24.6	43.44°C	0.977
	12.089V	5.016V	3.307V	5.03V	648.791				50.47°C	230.33V
80%	49.789A	7.979A	7.991A	2.292A	679.771	91.167%	1080	31.4	43.85°C	0.98
	12.088V	5.013V	3.304V	5.019V	745.632				51.89°C	230.32V
90%	56.477A	8.482A	8.482A	2.396A	765.213	90.638%	1334	37.5	44.2°C	0.982
	12.088V	5.011V	3.301V	5.009V	844.254				53.28°C	230.31V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
100%	62.898A	8.986A	9.006A	3.009A	850.033	90.022%	1532	41.5	45.21°C	0.983
	12.088V	5.008V	3.298V	4.986V	944.248				55.28°C	230.29V
110%	69.179A	9.991A	10.108A	3.014A	934.6	89.313%	1627	44.6	46.59°C	0.984
	12.090V	5.005V	3.294V	4.978V	1046.432				57.52°C	230.28V
CL1	0.116A	11.996A	11.97A	0A	101.298	85.735%	615	13.2	41.18°C	0.878
	12.094V	5.018V	3.316V	5.117V	118.152				46.62°C	230.39V
CL2	0.116A	19.954A	0A	0A	101.401	84.493%	772	20.8	40.31°C	0.88
	12.096V	5.012V	3.326V	5.122V	120.014				47.44°C	230.4V
CL3	0.116A	0A	19.929A	0A	67.395	78.865%	782	21.2	40.17°C	0.829
	12.103V	5.029V	3.311V	5.118V	85.459				49.19°C	230.4V
CL4	70.309A	0A	0A	0A	849.718	90.695%	1517	41.4	45.59°C	0.983
	12.086V	5.023V	3.308V	5.071V	936.893				56.57°C	230.3V

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)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
20W	1.233A	0.496A	0.495A	0.195A	20.009	73.239%	0	<6.0	39.72°C	0.88
	12.051V	5.039V	3.33V	5.128V	27.317				36.65°C	115.17V
40W	2.700A	0.695A	0.694A	0.293A	40.006	78.801%	0	<6.0	41.07°C	0.94
	12.108V	5.038V	3.329V	5.124V	50.767				37.62°C	115.16V
60W	4.174A	0.894A	0.892A	0.391A	60.005	83.456%	0	<6.0	42.28°C	0.959
	12.108V	5.036V	3.328V	5.12V	71.9				38.48°C	115.15V
80W	5.644A	1.093A	1.091A	0.489A	79.973	86.364%	0	<6.0	43.39°C	0.968
	12.109V	5.035V	3.328V	5.116V	92.601				39.46°C	115.14V

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
20W	1.232A	0.496A	0.495A	0.195A	20.006	73.71%	0	<6.0	39.79°C	0.516
	12.053V	5.04V	3.33V	5.127V	27.141				36.7°C	230.4V
40W	2.700A	0.695A	0.694A	0.293A	40.004	79.637%	0	<6.0	40.64°C	0.704
	12.109V	5.038V	3.329V	5.123V	50.234				37.34°C	230.4V
60W	4.173A	0.894A	0.892A	0.391A	60.002	84.497%	0	<6.0	41.8°C	0.789
	12.109V	5.035V	3.328V	5.12V	71.008				38.29°C	230.4V
80W	5.644A	1.093A	1.091A	0.489A	79.968	87.496%	0	<6.0	42.98°C	0.842
	12.110V	5.034V	3.327V	5.116V	91.396				39.17°C	230.4V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	5.44mV	5.81mV	7.22mV	8.10mV	Pass
20% Load	10.80mV	7.65mV	6.61mV	7.64mV	Pass
30% Load	7.53mV	6.84mV	8.24mV	9.63mV	Pass
40% Load	7.58mV	7.29mV	9.46mV	10.70mV	Pass
50% Load	8.65mV	8.87mV	10.78mV	11.77mV	Pass
60% Load	9.56mV	8.72mV	11.34mV	12.33mV	Pass
70% Load	9.52mV	9.23mV	12.26mV	13.55mV	Pass
80% Load	10.33mV	10.35mV	16.89mV	15.33mV	Pass
90% Load	11.19mV	10.56mV	17.14mV	17.37mV	Pass
100% Load	16.18mV	12.14mV	19.19mV	21.99mV	Pass
110% Load	16.21mV	13.11mV	20.20mV	25.56mV	Pass
Crossload1	19.62mV	8.54mV	13.58mV	8.91mV	Pass
Crossload2	16.25mV	8.88mV	6.10mV	8.15mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	6.46mV	6.88mV	15.77mV	9.32mV	Pass
Crossload4	16.68mV	10.78mV	13.85mV	19.38mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	4.53mV	5.20mV	6.21mV	7.49mV	Pass
20% Load	11.82mV	7.80mV	6.51mV	7.34mV	Pass
30% Load	8.48mV	6.68mV	7.98mV	9.17mV	Pass
40% Load	8.09mV	8.01mV	9.16mV	10.55mV	Pass
50% Load	8.55mV	8.47mV	10.43mV	11.97mV	Pass
60% Load	8.80mV	9.54mV	11.59mV	12.38mV	Pass
70% Load	9.21mV	9.23mV	12.51mV	13.60mV	Pass
80% Load	10.02mV	10.46mV	16.33mV	14.42mV	Pass
90% Load	10.64mV	10.71mV	17.44mV	16.30mV	Pass
100% Load	16.43mV	12.73mV	18.61mV	19.58mV	Pass
110% Load	18.21mV	13.01mV	20.25mV	21.45mV	Pass
Crossload1	22.87mV	8.24mV	13.14mV	8.48mV	Pass
Crossload2	19.06mV	7.65mV	5.90mV	7.74mV	Pass
Crossload3	5.44mV	6.58mV	16.12mV	9.68mV	Pass
Crossload4	16.64mV	10.59mV	13.90mV	17.83mV	Pass

The results above are not used in the certification process

Seasonic Focus GX-850 (ATX v3.0)



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

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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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