



Seasonic Vertex PX-1200



Lab ID SS12002490

Certification ID 252490

Test Result Report ID: 24PS2490A

Certificate Issue Date: Jul 2, 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	Vertex PX-1200
OEM/ODM	Seasonic
Serial Number	
Product Specifications	
Manufacturer-Provided Information	
□□□□ (Vrms)	100-240
□□□□ (Arms)	15-7.5

□□□□ (Hz)	50-60
□□□□ (W)	1200
Operating Temperature (Continuous Full Load) (°C)	
□□	ATX12V
□□□□	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
□□	135mm Fluid Dynamic Bearing Fan (HA13525H12F-Z)
□□□□	✓ (selectable)
Cybenetics Testing Information	
Lab ID	SS12002490
Date of receipt	Jun 10, 2024
Testing Date	Jun 25, 2024
Report Issued Date	Jul 2, 2024
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

□□□□ (Non-accredited measurements)

□□□□				
□□	□□□□	□□□□□	Gauge	In Cable Capacitors
ATX □□ 20+4 pin (610mm)	1	1	16-18AWG	□
4+4 pin EPS 12V □□ (700mm)	2	2	16AWG	□
6+2pin PCIe□□ (750mm)	3	3	16-18AWG	□
12+4 pin PCIe (700mm) (600W)	1	1	16-28AWG	□
SATA□□ 3.3 (410mm+150mm)	1	2	18AWG	□
SATA□□ (500mm+155mm+155mm+155mm)	3	12	18AWG	□
□ 4pin Molex□□ (450mm+120mm+120mm)	1	3	18AWG	□

Protection Features(Manufacturer)

Over Power Protection	✓
Over Current (+12V) Protection	✓
Over Temperature Protection	✓
Short Circuit Protection	✓
Surge Protection	✓
Inrush Current Protection	✓
Fan Failure Protection	✗

□□□□

□		3.3V	5V	12V	5VSB	-12V
□□□□	□□	25	25	100	3	0.3
	□	125		1200	15	3.6
□□□□ (W)		1200				

Parts Description

General Data	
Manufacturer (OEM)	Seasonic
PCB Type	Double-Sided
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1xCM02X (Discharge IC)
Inrush Protection	1x NTC Thermistor MF72-5D20L (5 Ohm) & Relay
Bridge Rectifier(s)	2x
APFC MOSFETs	2x Toshiba TK31E60W (600V, 30.8A, Rds(on): 0.088Ohm)
APFC Boost Diode	1x Cree C6D10065 (650V, 10A @ 155°C)
Bulk Cap(s)	1x Nippon Chemi-Con (420V, 820uF, 2,000h @ 105°C, KHE) & 1x Nippon Chemi-Con (420V, 330uF, 2,000h @ 105°C, KMR)
Main Switchers	4x Infineon IPA60R120P7 (600V, 16A @ 100°C, Rds(on): 0.12Ohm)
APFC Controller	Champion CM6500UNX
Resonant Controller	Champion CU6901VPA
Topology	Primary side: APFC, Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters

Secondary Side	
+12V MOSFETs	8x Nexperia PSMN1R0-40YLD (40V, 198A @ 100°C, Rds(on): 1.93mOhm)
5V & 3.3V	DC-DC Converters: 6x Nexperia PSMN4R0-30YLD (30V, 67A @ 100°C, Rds(on): 6.6mOhm) PWM Controller(s): ANPEC APW7159C
Filtering Capacitors	Electrolytic: 3x Nichicon (2-5,000h @ 105°C, HD), 1x Nippon Chemi-Con (1-5,000h @ 105°C, KZE), 5x Rubycon (3-6,000h @ 105°C, YXG) 8x Rubycon (6-10,000h @ 105°C, ZLH) Polymer: 6x Nippon Chemi-Con, 22x FPCAP, 9x NIC
Supervisor IC	Weltrend WT7527RA (OVP, UVP, OCP, SCP, PG)
Fan Controller	Nuvoton M031FB0AE
Fan Model	Hong Hua HA13525H12F-Z (135mm, 12V, 0.50A, Fluid Dynamic Bearing Fan)
5VSB Circuit	
Standby PWM Controller	Excelliance MOS EM8569C

Test Results

Temperature & Compliance Info

□□□□ (°C /°F)	28-32 / 82.4-89.6
□□ ErP Lot3/6□□	✓
□□ (EU) No 617/2013□□	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX v3.0 Compliance	✓

Performance Summary

115V	
Accredited	
□□□□ (>1450 load combinations)	89.260%
Average Noise Output (>1450 Load Combinations)	22.75dBA
PF□□□ (>1450 Load Combinations)	0.987
Efficiency With 10W (≤500W) or 2% (>500W) Load	75.292%

□□□□□	0.0502W
Non-Accredited	
12V Ripple (Full Load)	23.07mV
5V Ripple (Full Load)	17.86mV
3.3V Ripple (Full Load)	23.61mV
5VSB Ripple (Full Load)	29.06mV
12V Load Regulation	1.06%
5V Load Regulation	0.52%
3.3V Load Regulation	0.97%
5VSB Load Regulation	2.41%
Inrush Current	33.570A

230V

Accredited	
□□□ (>1450 load combinations)	91.493%
Average Noise Output (>1450 Load Combinations)	23.12dBA
PF□□ (>1450 Load Combinations)	0.961
Efficiency With 10W (≤500W) or 2% (>500W) Load	74.312%
□□□□□	0.1425W
Non-Accredited	
12V Ripple (Full Load)	23.50mV
5V Ripple (Full Load)	16.76mV
3.3V Ripple (Full Load)	23.46mV
5VSB Ripple (Full Load)	28.27mV
12V Load Regulation	1.06%
5V Load Regulation	0.50%
3.3V Load Regulation	0.94%
5VSB Load Regulation	2.41%
Inrush Current	67.420A
12V Transient Response (200%)	11.30V
5V Transient Response (200%)	4.896V
3.3V Transient Response (200%)	3.155V

5VSB Transient Response (200%)	4.873V	
□□□□ & PG□□	25.00ms	
AC Loss to PWR_OK Hold Up Time	20.10ms	
PWR_OK Inactive to DC Loss Delay	4.90ms	
PSU Timings: T1 (20% / 100%)	75.0ms	75.0ms
PSU Timings: T3 (20% / 100%)	127.0ms	128.0ms
12V OCP (26.0°C / 41.6°C)	130.60A (130.60%), 12.209V	124.60A (124.60%), 12.211V
5V OCP (26.0°C / 41.6°C)	33.9A (135.60%), 5.007V	33A (132.00%), 5.006V
3.3V OCP (26.0°C / 41.6°C)	35.1A (140.40%), 3.307V	35.1A (140.40%), 3.307V
5VSB OCP (26.0°C / 41.6°C)	6.3A (210.00%), 5.009V	6.4A (213.33%), 5.004V
OPP (25.53°C / 43.08°C)	133.22%	127.72%

□□□□ & PG□□

Hold-Up Time (ms)	25
AC Loss to PWR_OK Hold Up Time (ms)	20.1
PWR_OK Inactive to DC Loss Delay (ms)	4.9

□□□□

Tables

115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	115.08 V	115.04 V	113.85 V	115.12 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.95 Hz	59.40 Hz	60.02 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.416	1.415	1.340	1.418	1.490	PASS
Mains Voltage THD:	0.13 %	0.09 %	N/A	0.19 %	2.00 %	PASS
Real Power:	0.050 W	0.014 W	N/A	0.085 W	N/A	N/A
Apparent Power:	10.694 W	10.339 W	N/A	11.058 W	N/A	N/A

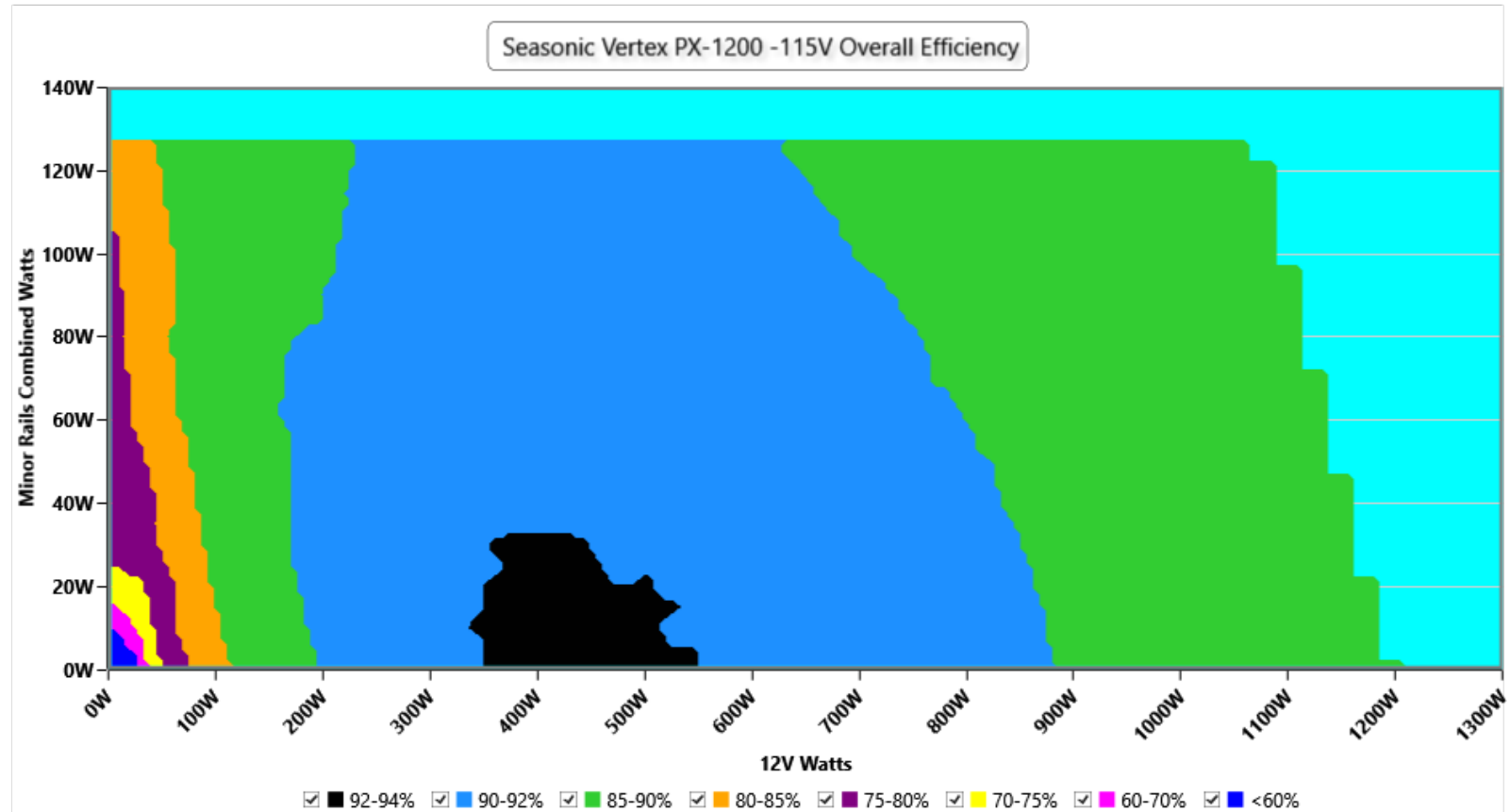
Power Factor:	0.006	N/A	N/A	N/A	N/A	N/A
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230V

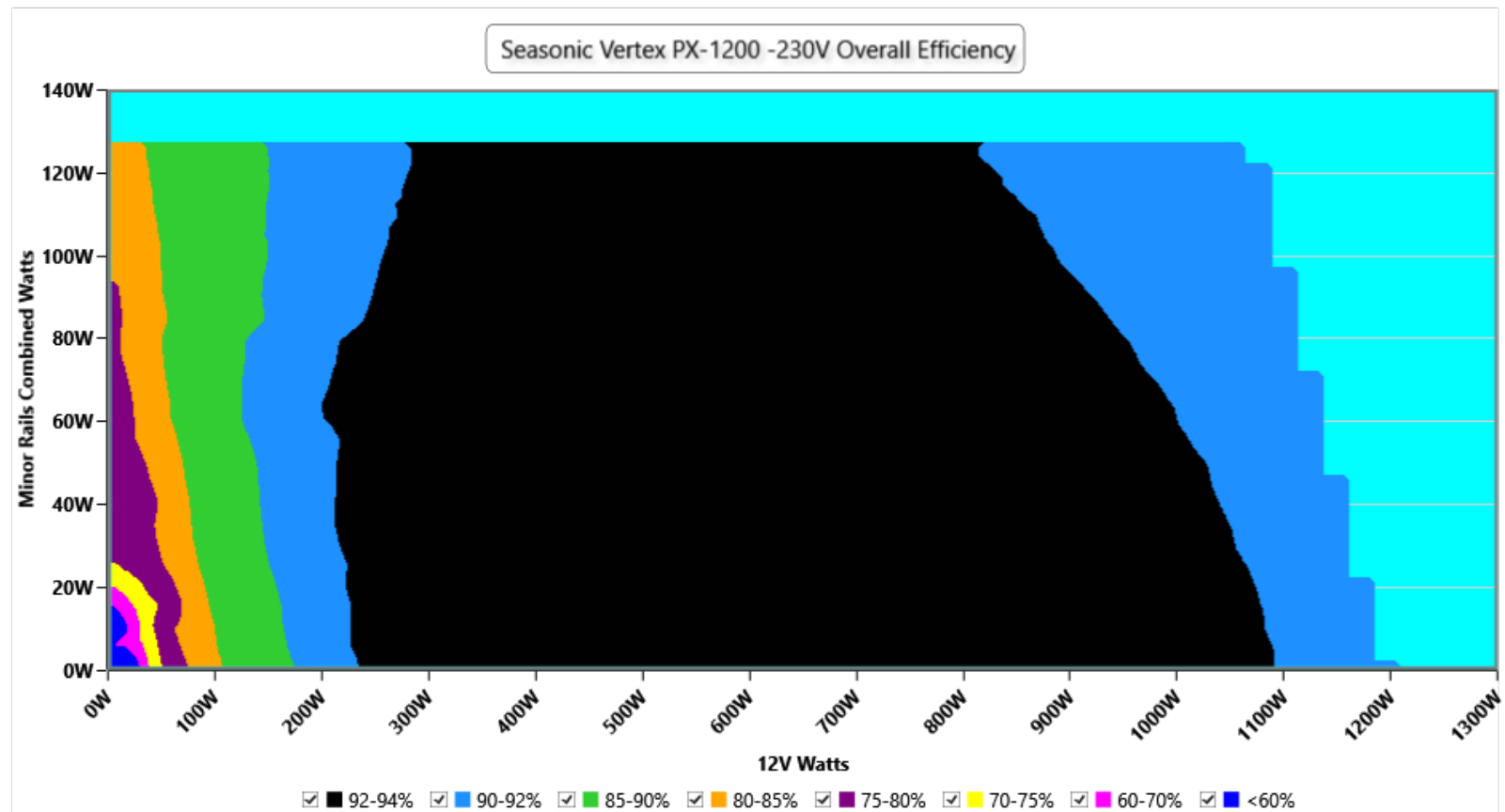
Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	231.02 V	230.93 V	227.70 V	231.08 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	49.99 Hz	49.50 Hz	50.01 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.417	1.416	1.340	1.419	1.490	PASS
Mains Voltage THD:	0.17 %	0.14 %	N/A	0.25 %	2.00 %	PASS
Real Power:	0.143 W	0.118 W	N/A	0.200 W	N/A	N/A
Apparent Power:	35.269 W	34.753 W	N/A	35.814 W	N/A	N/A
Power Factor:	0.004	N/A	N/A	N/A	N/A	N/A



115V



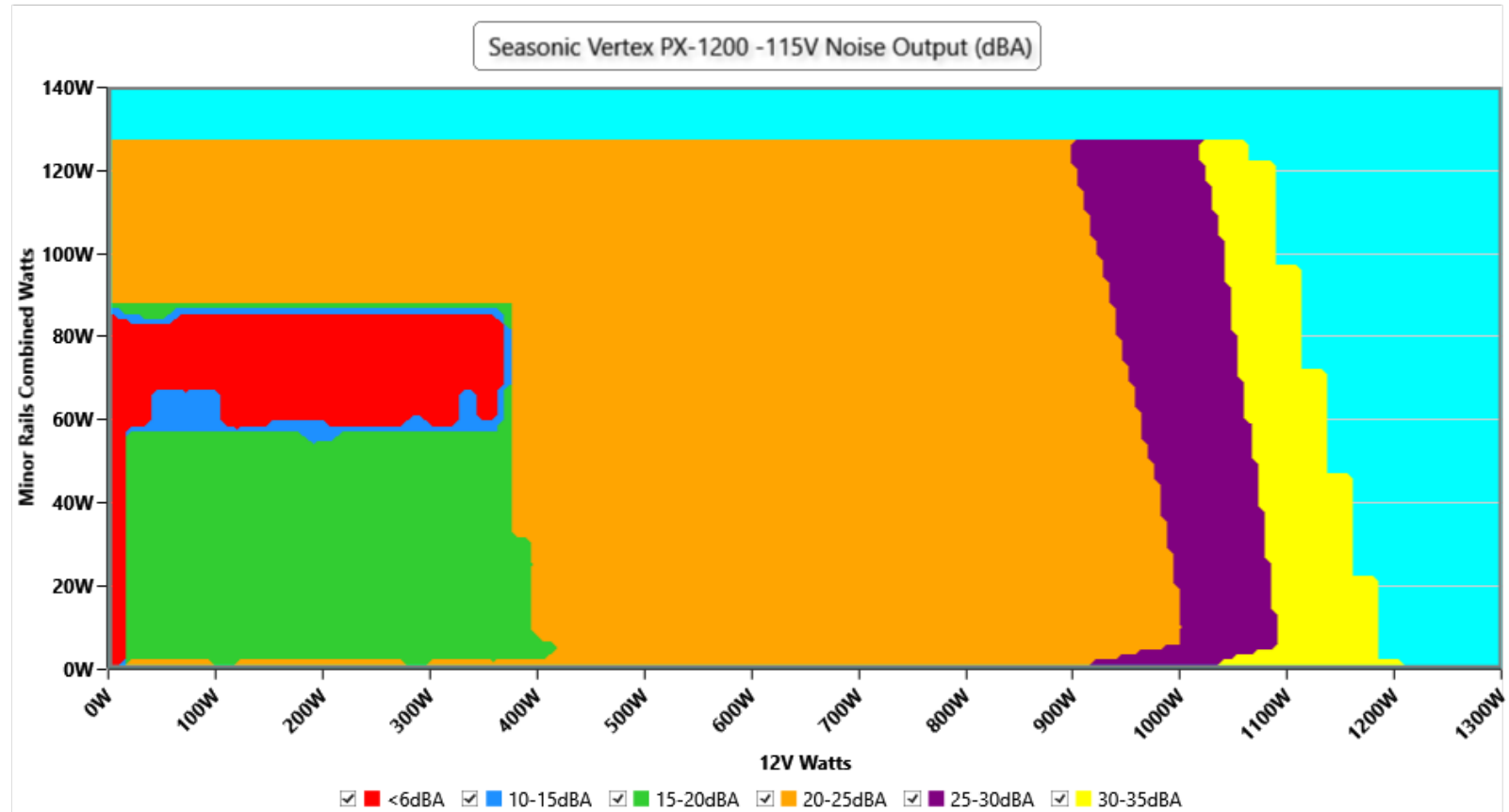
This graph depicts the PSU's efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations



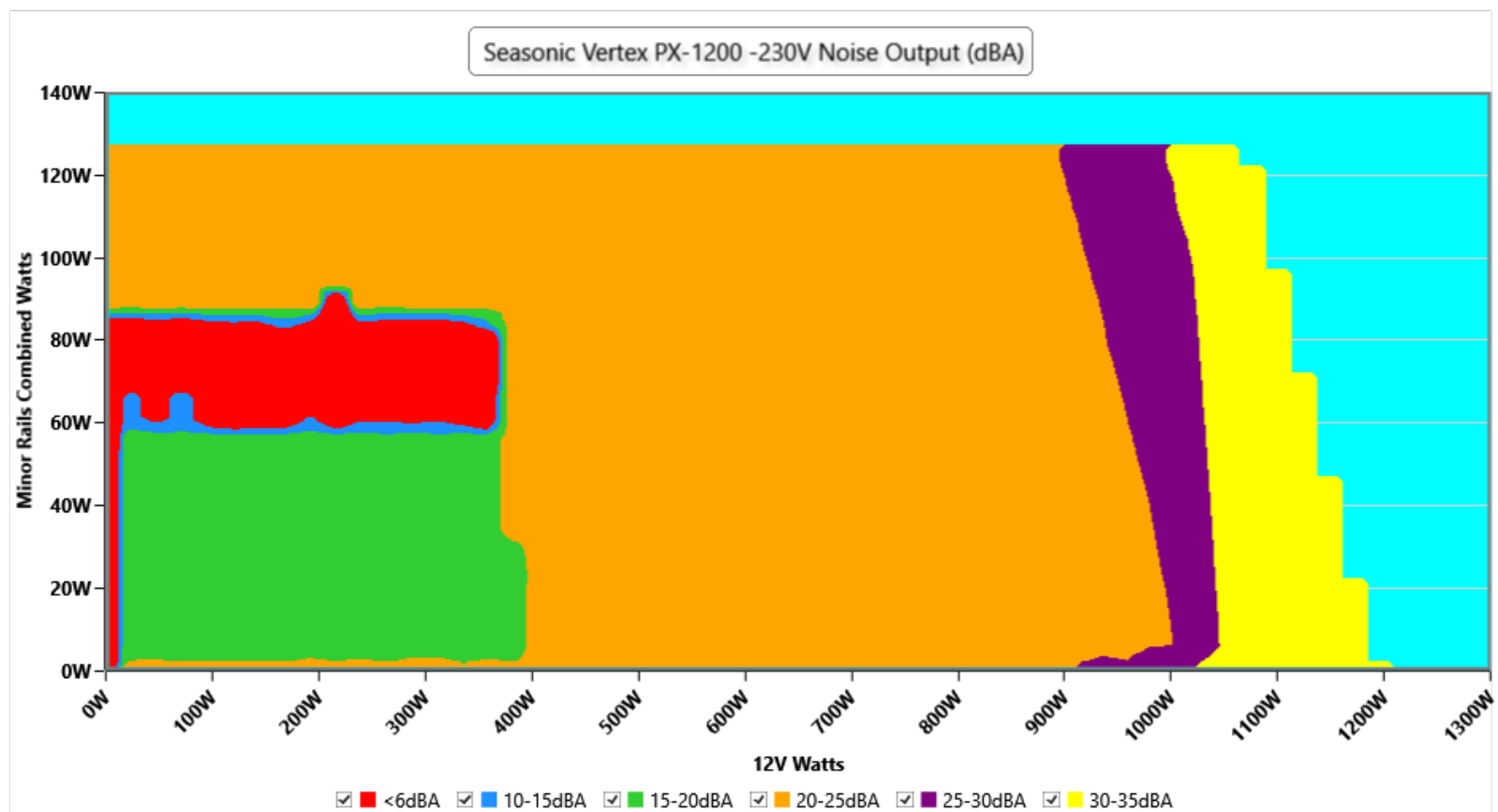
This graph depicts the PSU's efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations



115V



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



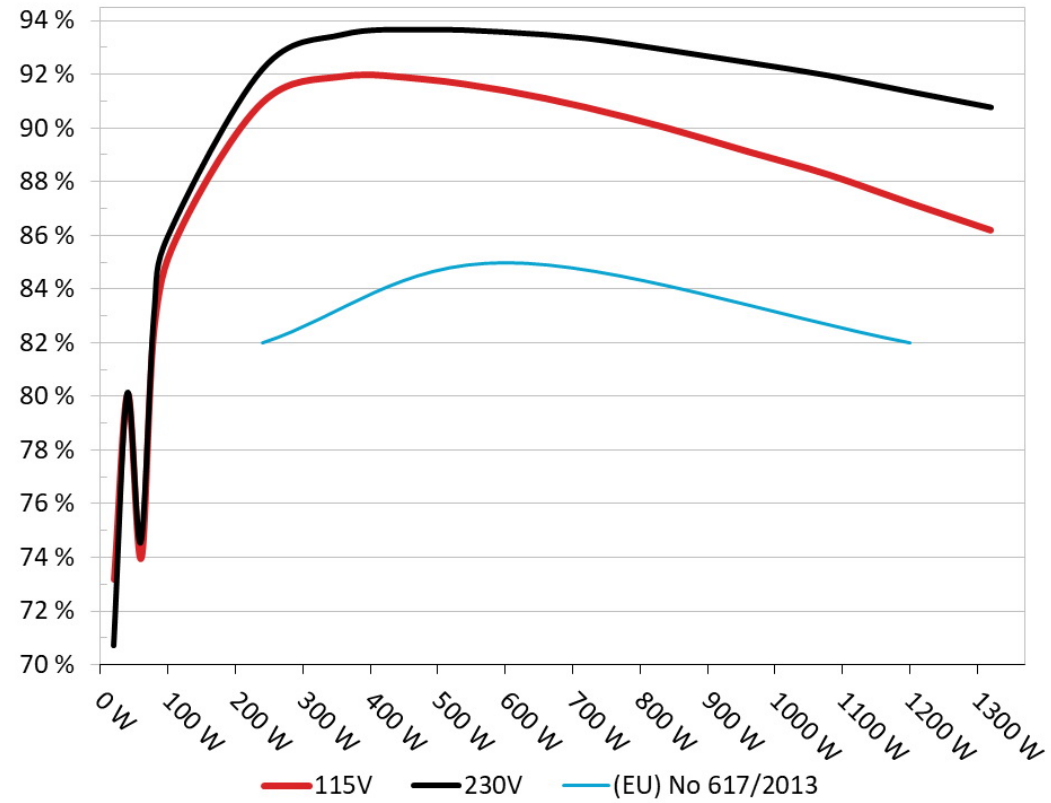
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Indicative Performance



Efficiency: Seasonic Vertex PX-1200

Ambient: 36°C - 46°C (96.8°F - 114.8°F)

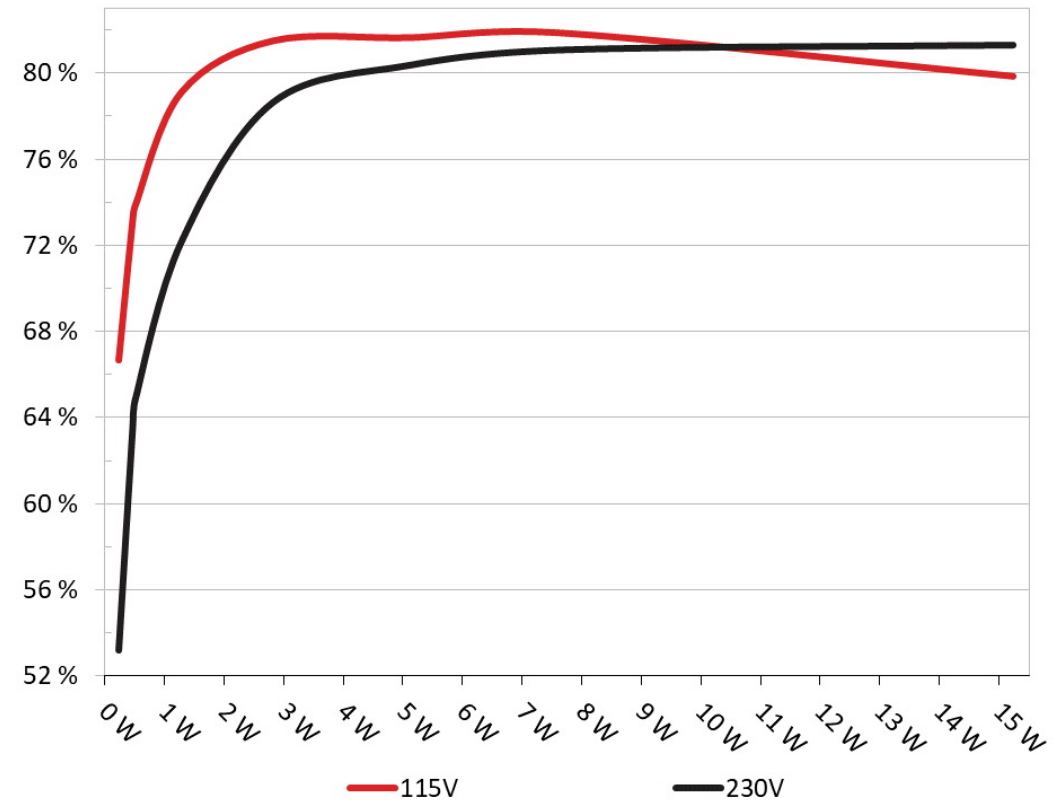


The PSU's efficiency under high ambient temperatures with 115V and 230V input. For this graph the results of the 10-110% load regulation table are used

5Vsb

5VSB Efficiency: Seasonic Vertex PX-1200

Ambient: 34°C - 36°C (93.2°F - 96.8°F)



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

5Vsb (ErP Lot3/6 & CEC)

115V

#	5VSB	DC/AC (%)		PF/AC
1	0.045A	0.231W	66.663%	0.034
	5.14V	0.347W		114.88V
2	0.09A	0.463W	73.137%	0.06
	5.139V	0.633W		114.88V
3	0.55A	2.821W	81.519%	0.26
	5.13V	3.46W		114.86V
4	1A	5.12W	81.663%	0.353
	5.12V	6.27W		114.86V
5	1.5A	7.666W	81.88%	0.411
	5.11V	9.362W		114.86V
6	3A	15.232W	79.868%	0.486
	5.077V	19.071W		114.85V

230V

#	5VSB	DC/AC (%)		PF/AC
1	0.045A	0.231W	53.18%	0.013
	5.14V	0.435W		229.94V
2	0.09A	0.463W	63.448%	0.021
	5.139V	0.73W		229.95V
3	0.55A	2.821W	78.628%	0.099
	5.129V	3.589W		229.93V
4	1A	5.12W	80.35%	0.165
	5.12V	6.372W		229.93V
5	1.5A	7.665W	81.06%	0.218
	5.11V	9.455W		229.94V
6	3A	15.238W	81.284%	0.328
	5.079V	18.748W		229.94V

Protection Features

OCP (Cold @ 26.0°C)	12V: 130.60A (130.60%), 12.209V 5V: 33.9A (135.60%), 5.007V 3.3V: 35.1A (140.40%), 3.307V 5VSB: 6.3A (210.00%), 5.009V
OCP (Hot) @ 41.6°C	12V: 124.60A (124.60%), 12.211V 5V: 33A (132.00%), 5.006V 3.3V: 35.1A (140.40%), 3.307V 5VSB: 6.4A (213.33%), 5.004V
OPP (Cold @ 25.5°C)	1598.70W (133.22%)
OPP (Hot @ 43.1°C)	1532.70W (127.72%)
OTP	✓ (120°C @ Heat Sink)
SCP	12V to Earth: ✓ 5V to Earth: ✓ 3.3V to Earth: ✓ 5VSB to Earth: ✓ -12V to Earth: ✓
PWR_OK	Proper Operation
NLO	✓
Fan Failure Protection	✗
SIP	Surge: MOV Inrush: NTC & Bypass Relay

Supplementary Tests (For Reference)

10-110%□□□□

115V

□□	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
10%	8.055A	1.986A	1.985A	0.977A	119.976	86.318%	0	<6.0	42.98°C	0.974
	12.213V	5.035V	3.325V	5.115V	138.994				40.09°C	114.81V

20%	17.134A	2.981A	2.98A	1.175A	239.925	90.97%	0	<6.0	44.06°C	0.985
	12.199V	5.032V	3.322V	5.105V	263.741				40.78°C	114.77V
30%	26.495A	3.479A	3.479A	1.374A	359.111	91.941%	0	<6.0	46.52°C	0.99
	12.193V	5.03V	3.32V	5.095V	390.592				41.18°C	114.74V
40%	35.960A	3.979A	3.981A	1.573A	479.474	91.832%	799	22	41.8°C	0.989
	12.188V	5.027V	3.316V	5.085V	522.124				58.06°C	114.69V
50%	45.032A	4.977A	4.982A	1.774A	599.223	91.409%	794	21.7	42.4°C	0.99
	12.185V	5.024V	3.312V	5.074V	655.538				59.64°C	114.65V
60%	54.163A	5.976A	5.985A	1.975A	719.751	90.784%	787	21.3	42.57°C	0.991
	12.184V	5.021V	3.308V	5.064V	792.814				63.91°C	114.61V
70%	63.231A	6.975A	6.99A	2.177A	839.506	90.016%	780	21.2	43.47°C	0.993
	12.184V	5.019V	3.305V	5.052V	932.617				69.54°C	114.56V
80%	72.355A	7.974A	7.994A	2.28A	959.492	89.138%	775	20.7	43.79°C	0.994
	12.185V	5.016V	3.302V	5.044V	1076.412				76.97°C	114.53V
90%	81.798A	8.475A	8.486A	2.383A	1079.303	88.274%	1116	32.1	44.08°C	0.995
	12.186V	5.014V	3.299V	5.035V	1222.673				76.79°C	114.48V
100%	91.061A	8.978A	9.01A	2.991A	1199.327	87.225%	1615	42.6	45.91°C	0.996
	12.186V	5.012V	3.296V	5.016V	1374.986				75.77°C	114.43V
110%	100.269A	9.982A	10.115A	2.995A	1319.968	86.204%	2097	49.4	46.17°C	0.996
	12.184V	5.009V	3.292V	5.009V	1531.227				73.34°C	114.38V
CL1	0.114A	15.001A	14.961A	0A	126.295	81.536%	800	22	40.68°C	0.977
	12.215V	5.019V	3.315V	5.127V	154.896				55.64°C	114.8V
CL2	0.113A	24.898A	0A	0A	126.254	80.107%	801	22	40.99°C	0.978
	12.215V	5.015V	3.329V	5.132V	157.61				54.05°C	114.81V
CL3	0.113A	0A	24.889A	0A	83.884	73.359%	798	21.9	40.85°C	0.971
	12.209V	5.038V	3.315V	5.128V	114.348				53.52°C	114.82V
CL4	98.499A	0A	0A	0A	1199.905	87.854%	1202	34.4	45.8°C	0.995
	12.182V	5.026V	3.307V	5.084V	1365.802				77.58°C	114.44V

The results above are not used in the certification process

230V

項目	12V	5V	3.3V	5VSB	DC/AC (項目)	項目	項目 (RPM)	項目 (dB[A])	項目 (項目 /項目)	PF/AC 項目
10%	8.057A	1.986A	1.985A	0.978A	119.983	87.234%	0	<6.0	45.87°C	0.863
	12.212V	5.035V	3.325V	5.115V	137.541				40.12°C	229.92V
20%	17.136A	2.981A	2.98A	1.175A	239.933	92.175%	0	<6.0	46.58°C	0.943
	12.198V	5.032V	3.322V	5.105V	260.308				40.6°C	229.9V
30%	26.499A	3.479A	3.479A	1.374A	359.136	93.479%	0	<6.0	47.22°C	0.966
	12.192V	5.03V	3.32V	5.095V	384.187				41.31°C	229.88V
40%	35.965A	3.979A	3.981A	1.574A	479.506	93.663%	638	14.5	41.82°C	0.976
	12.187V	5.027V	3.316V	5.084V	511.946				54.96°C	229.87V
50%	45.038A	4.977A	4.982A	1.774A	599.253	93.57%	791	21.5	42.39°C	0.981
	12.184V	5.024V	3.312V	5.074V	640.433				55.21°C	229.85V
60%	54.171A	5.975A	5.985A	1.975A	719.768	93.335%	786	21.3	42.79°C	0.984
	12.183V	5.022V	3.308V	5.063V	771.167				57.78°C	229.83V
70%	63.237A	6.975A	6.99A	2.178A	839.51	92.905%	780	21.2	43.3°C	0.986
	12.183V	5.019V	3.305V	5.052V	903.625				61.87°C	229.81V
80%	72.359A	7.973A	7.994A	2.28A	959.492	92.437%	774	20.7	43.6°C	0.988
	12.184V	5.017V	3.302V	5.043V	1037.989				66.99°C	229.79V
90%	81.803A	8.475A	8.486A	2.384A	1079.291	91.949%	1098	31.6	44.55°C	0.989
	12.185V	5.015V	3.299V	5.035V	1173.785				68.02°C	229.77V
100%	91.062A	8.978A	9.01A	2.991A	1199.328	91.349%	1523	41.3	45.87°C	0.989
	12.185V	5.012V	3.296V	5.015V	1312.911				67.17°C	229.75V
110%	100.272A	9.982A	10.114A	2.995A	1319.969	90.763%	2098	49.5	46.35°C	0.99
	12.183V	5.009V	3.292V	5.008V	1454.295				65.2°C	229.73V
CL1	0.114A	15A	14.959A	0A	126.295	82.197%	800	22	41.43°C	0.884
	12.214V	5.02V	3.315V	5.127V	153.652				54.6°C	229.93V
CL2	0.113A	24.897A	0A	0A	126.257	80.786%	801	22	40.67°C	0.886
	12.214V	5.015V	3.329V	5.132V	156.288				53.52°C	229.93V
CL3	0.113A	0A	24.89A	0A	83.884	73.933%	798	21.9	40.93°C	0.826
	12.209V	5.038V	3.314V	5.128V	113.46				52.4°C	229.93V

CL4	98.508A	0A	0A	0A	1199.899	91.898%	1169	33.7	45.49°C	0.989
	12.181V	5.026V	3.307V	5.084V	1305.688				66.85°C	229.75V

The results above are not used in the certification process

20-80□□□□

115V

□□	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□ (RPM)	□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
20W	1.228A	0.496A	0.496A	0.195A	19.992	73.177%	0	<6.0	40.64°C	0.771
	12.092V	5.038V	3.328V	5.137V	27.32				36.29°C	114.84V
40W	2.704A	0.695A	0.694A	0.292A	39.992	80.084%	0	<6.0	40.36°C	0.902
	12.087V	5.037V	3.327V	5.134V	49.935				37.09°C	114.84V
60W	4.137A	0.893A	0.892A	0.39A	59.993	73.97%	0	<6.0	40.88°C	0.952
	12.213V	5.037V	3.327V	5.131V	81.105				38.27°C	114.83V
80W	5.591A	1.092A	1.091A	0.488A	79.928	82.706%	0	<6.0	41.19°C	0.959
	12.215V	5.036V	3.327V	5.128V	96.645				39.4°C	114.83V

The results above are not used in the certification process

230V

□□	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□ (RPM)	□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
20W	1.228A	0.496A	0.496A	0.195A	19.993	70.702%	0	<6.0	40.82°C	0.413
	12.090V	5.037V	3.327V	5.136V	27.111				36.29°C	229.93V
40W	2.704A	0.695A	0.694A	0.292A	39.994	80.097%	0	<6.0	43.47°C	0.582
	12.085V	5.037V	3.327V	5.133V	49.93				37.14°C	229.93V
60W	4.138A	0.894A	0.893A	0.39A	59.994	74.555%	0	<6.0	43.72°C	0.737
	12.211V	5.036V	3.327V	5.13V	80.507				38.31°C	229.93V
80W	5.593A	1.092A	1.091A	0.488A	79.932	83.122%	0	<6.0	45.3°C	0.787
	12.212V	5.036V	3.327V	5.128V	96.165				39.47°C	229.93V

The results above are not used in the certification process



115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	11.8 mV	15.6 mV	18.4 mV	12.3 mV	Pass
20% Load	16.8 mV	10.8 mV	16.3 mV	10.8 mV	Pass
30% Load	15.4 mV	9.8 mV	15.6 mV	12.8 mV	Pass
40% Load	14.3 mV	12.8 mV	17.6 mV	26.0 mV	Pass
50% Load	15.1 mV	12.9 mV	18.3 mV	26.1 mV	Pass
60% Load	15.1 mV	14.3 mV	18.4 mV	26.0 mV	Pass
70% Load	15.8 mV	13.4 mV	19.1 mV	27.3 mV	Pass
80% Load	16.3 mV	14.7 mV	19.5 mV	26.3 mV	Pass
90% Load	17.2 mV	15.2 mV	20.7 mV	26.6 mV	Pass
100% Load	23.1 mV	17.9 mV	23.6 mV	29.1 mV	Pass
110% Load	25.0 mV	19.3 mV	26.3 mV	29.3 mV	Pass
Crossload 1	12.8 mV	14.4 mV	23.6 mV	27.5 mV	Pass
Crossload 2	15.9 mV	23.4 mV	24.3 mV	25.6 mV	Pass
Crossload 3	12.4 mV	12.1 mV	24.0 mV	24.3 mV	Pass
Crossload 4	23.5 mV	16.4 mV	20.5 mV	25.0 mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	11.7 mV	15.4 mV	18.7 mV	12.4 mV	Pass
20% Load	18.1 mV	10.3 mV	16.1 mV	11.4 mV	Pass
30% Load	14.1 mV	10.4 mV	15.6 mV	12.7 mV	Pass
40% Load	14.7 mV	12.1 mV	18.1 mV	24.7 mV	Pass
50% Load	14.6 mV	12.3 mV	17.8 mV	24.6 mV	Pass
60% Load	15.3 mV	13.7 mV	18.4 mV	25.9 mV	Pass

