Seasonic Vertex GX-1200

Serial Number

Lab ID SS12002149

Certification ID 252149

Test Result Report ID: 23PS2149A

Certificate Issue Date: Mar 9, 2023

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 GX-1200
OEM/ODM	Seasonic
Serial Number	
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	15-7.5

Rated Frequency (Hz)	50-60
Rated Power (W)	1200
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	SS12002149
Date of receipt	Mar 1, 2023
Testing Date	Mar 9, 2023
Report Issued Date	Mar 9, 2023
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 (780mm)	3	3	16AWG	No
12+4 pin PCIe (750mm) (600W)	1	1	16-28AWG	No
SATA (510mm+150mm+150mm+150mm)	4	16	18AWG	No
SATA 3.3 (430mm+160mm)	1	2	18AWG	No
4-pin Molex (460mm+125mm+125mm)	1	3	18AWG	No

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

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	25	25	100	3	0.3
	Watts	125		1200	15	3.6
Total Max. Power (W)		1200				

Parts Description

Manufacturer (OEM)	Seasonic
PCB Type	Double-Sided
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x CM02X (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 STMicroelectronics STPSC10H065D (650V, 10A @ 135°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
+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) 2x Nippon Chemi-Con (4-10,000h @ 105°C, KY) 8x Nippon Chemi-Con (5-6,000h @ 105°C, KZH) 2x Rubycon (3-6,000h @ 105°C, YXG) Polymer: 7x Nippon Chemi-Con, 6x FPCAP, 13x 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)

Standby PWM Controller	Excelliance MOS EM8569C

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)	88.971%
Average Noise Output (>1450 Load Combinations)	25.41dBA
Average PF (>1450 Load Combinations)	0.983
Efficiency With 10W (≤500W) or 2% (>500W) Load	76.635%
Standby Power Consumption	0.0556W
Non-Accredited	
12V Ripple (Full Load)	25.51mV
5V Ripple (Full Load)	15.55mV
3.3V Ripple (Full Load)	16.92mV
5VSB Ripple (Full Load)	38.10mV
12V Load Regulation	1.02%
5V Load Regulation	0.50%
3.3V Load Regulation	1.12%
5VSB Load Regulation	2.60%

Inrush Current	35.610A

230V

Accredited		
Average Efficiency (>1450 load combinations)		91.077%
Average Noise Output (>1450 Load Combinations)		25.48dBA
Average PF (>1450 Load Combinations)		0.955
Efficiency With 10W (≤500W) or 2% (>500W) Load		75.081%
Standby Power Consumption		0.1465W
Non-Accredited		
12V Ripple (Full Load)		27.13mV
5V Ripple (Full Load)		15.92mV
3.3V Ripple (Full Load)		17.63mV
5VSB Ripple (Full Load)		38.93mV
12V Load Regulation		1.04%
5V Load Regulation		0.48%
3.3V Load Regulation		1.12%
5VSB Load Regulation		2.60%
Inrush Current		68.470A
12V Transient Response (200%)		11.27V
5V Transient Response (200%)		4.925V
3.3V Transient Response (200%)		3.188V
5VSB Transient Response (200%)		4.911V
Hold-Up Time & PWR_OK Signal		25.30ms
AC Loss to PWR_OK Hold Up Time		20.80ms
PWR_OK Inactive to DC Loss Delay		4.50ms
PSU Timings: T1 (20% / 100%)	68.0ms	69.0ms
PSU Timings: T3 (20% / 100%)	127.0ms	128.0ms
OPP (30.05°C / 38.09°C)	134.77%	129.76%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	25.3
AC Loss to PWR_OK Hold Up Time (ms)	20.8
PWR_OK Inactive to DC Loss Delay (ms)	4.5

Vampire Power

Tables

115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	114.87 V	114.81 V	113.85 V	114.92 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.99 Hz	59.40 Hz	60.02 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.419	1.417	1.340	1.421	1.490	PASS
Mains Voltage THD:	0.15 %	0.09 %	N/A	0.27 %	2.00 %	PASS
Real Power:	0.056 W	0.018 W	N/A	0.080 W	N/A	N/A
Apparent Power:	11.135 W	11.113 W	N/A	11.162 W	N/A	N/A
Power Factor:	0.006	N/A	N/A	N/A	N/A	N/A

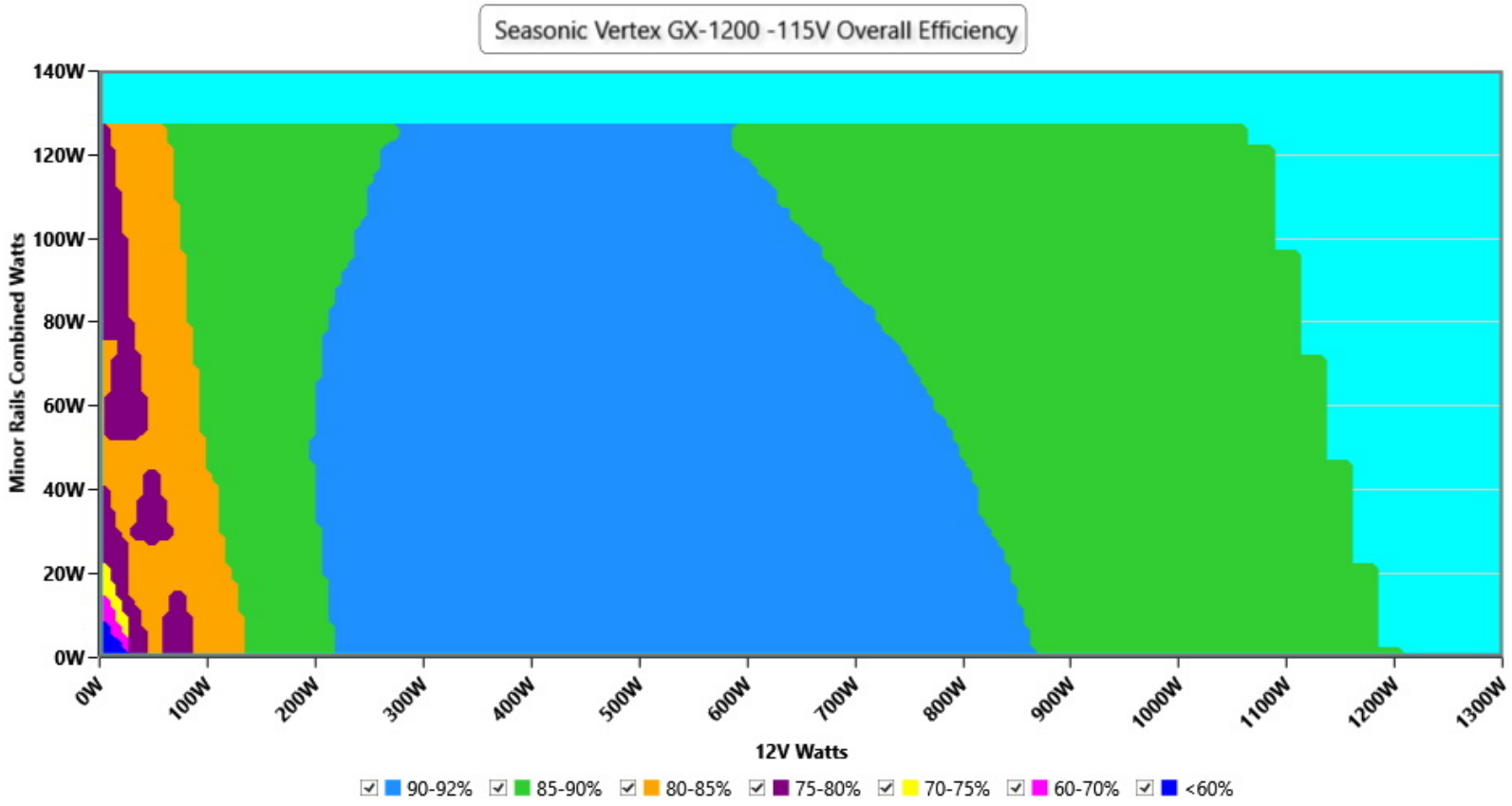
230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	229.88 V	229.82 V	227.70 V	229.94 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:	1.416	1.415	1.340	1.417	1.490	PASS
Mains Voltage THD:	0.13 %	0.09 %	N/A	0.19 %	2.00 %	PASS
Real Power:	0.146 W	0.120 W	N/A	0.180 W	N/A	N/A
Apparent Power:	37.398 W	37.371 W	N/A	37.424 W	N/A	N/A

Power Factor:	0.004	N/A	N/A	N/A	N/A	N/A

Efficiency Graph

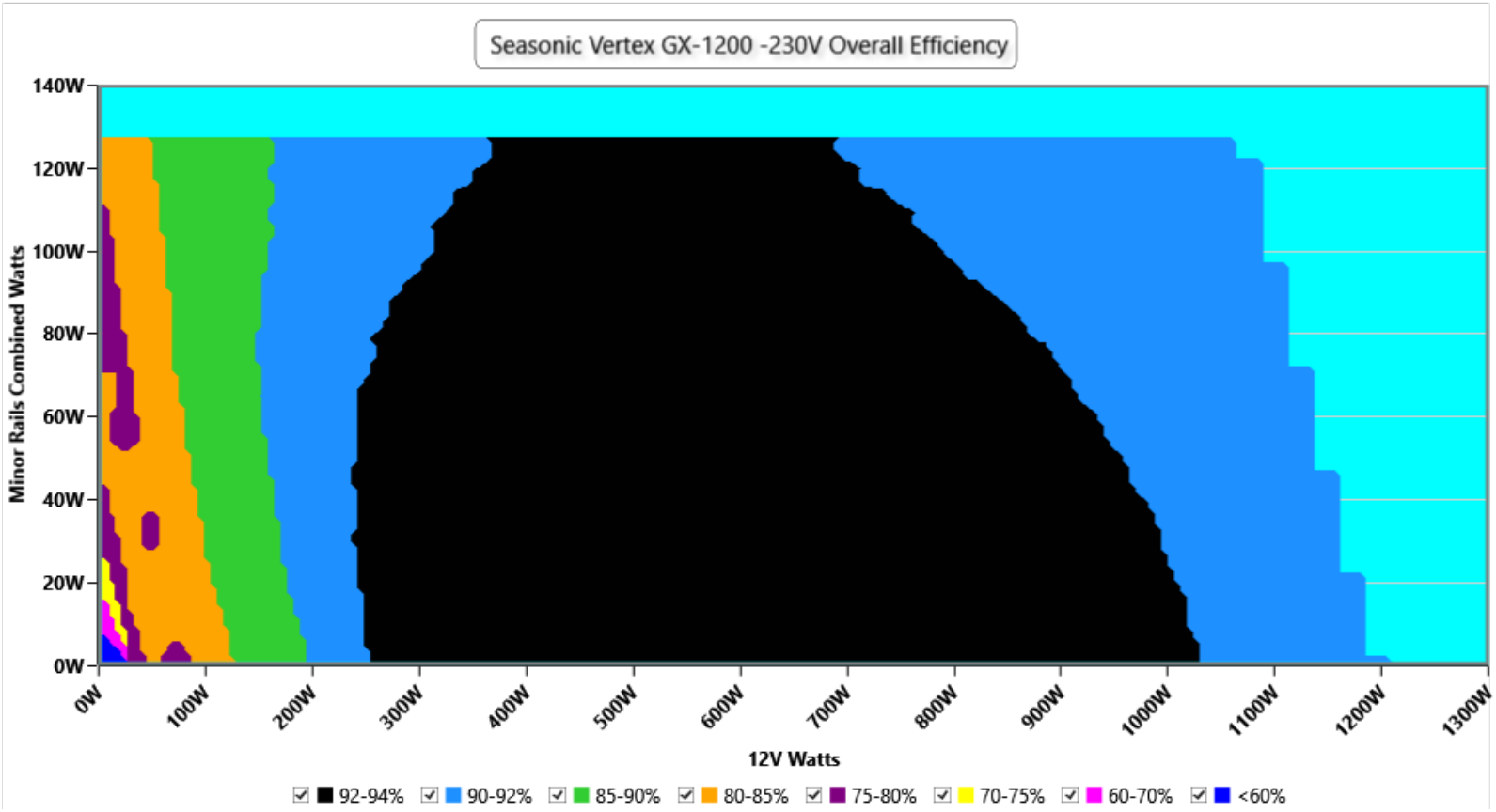
115V



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

230V



INFO

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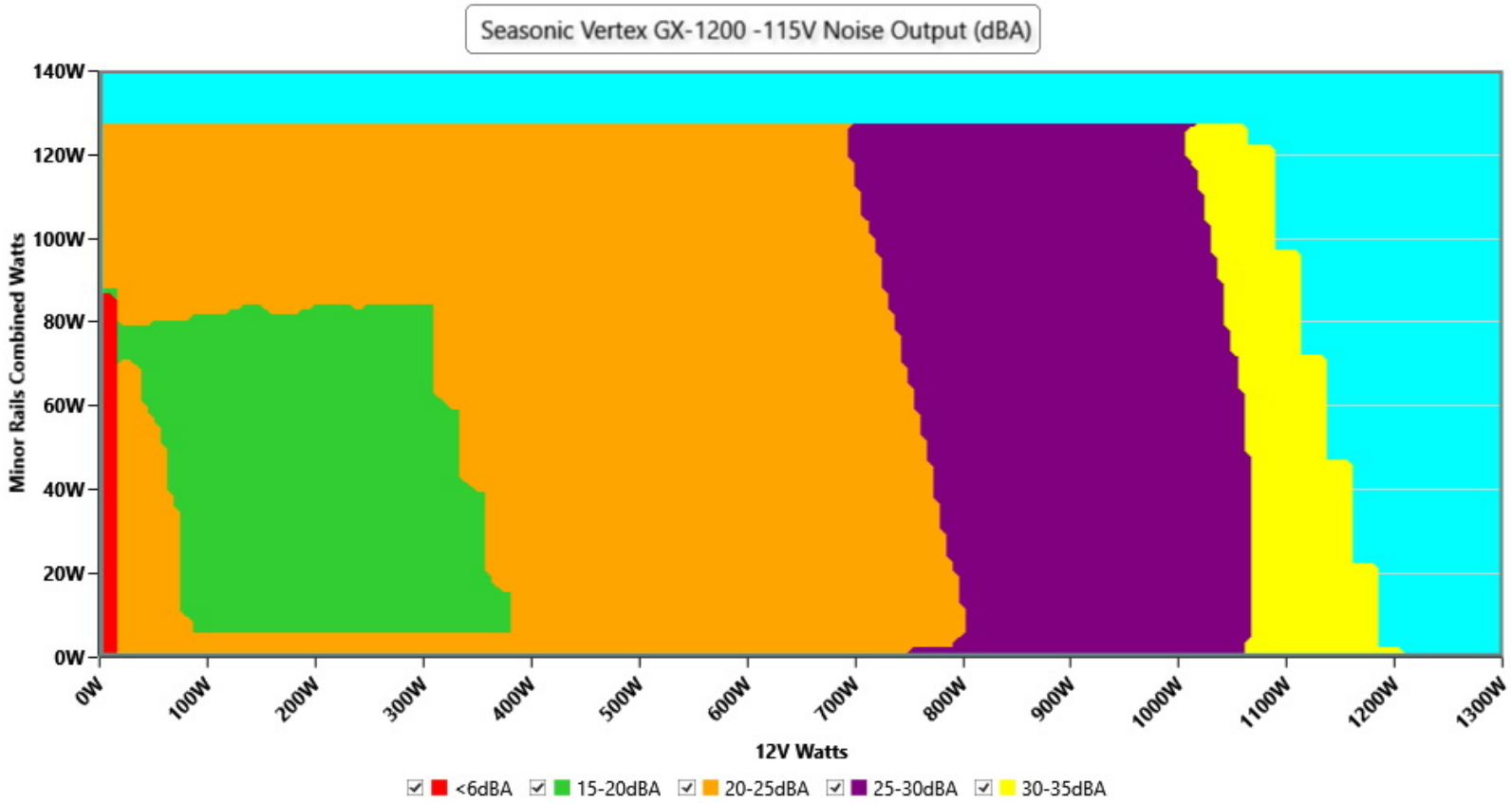
Noise Graph

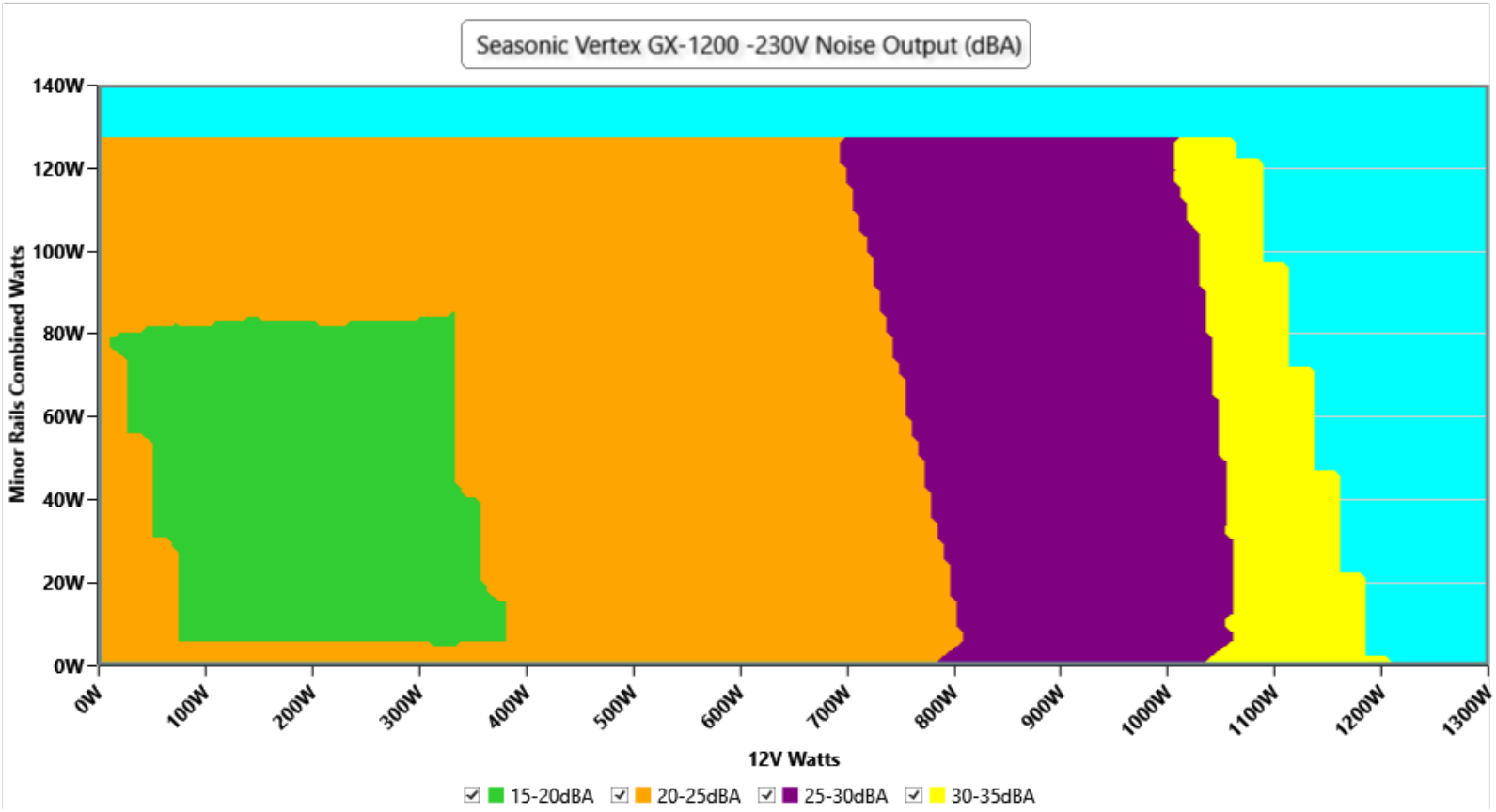
115V



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

230V

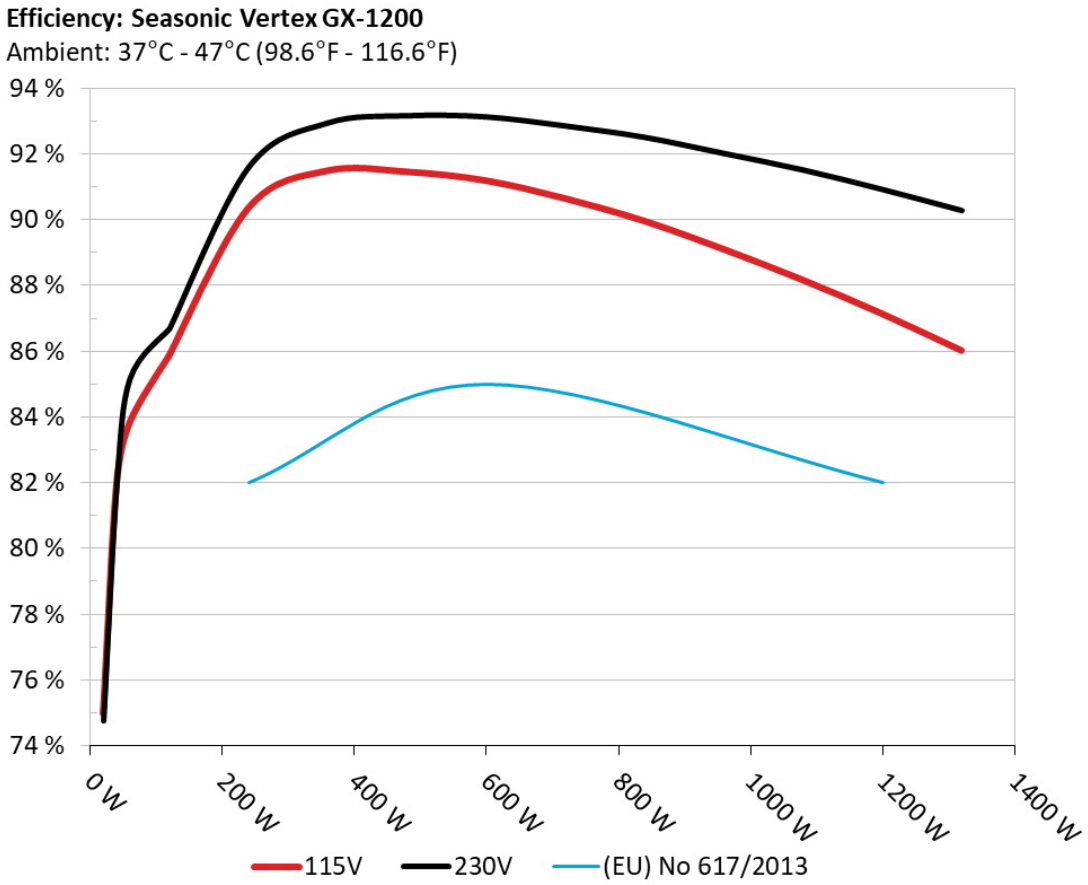


INFO

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

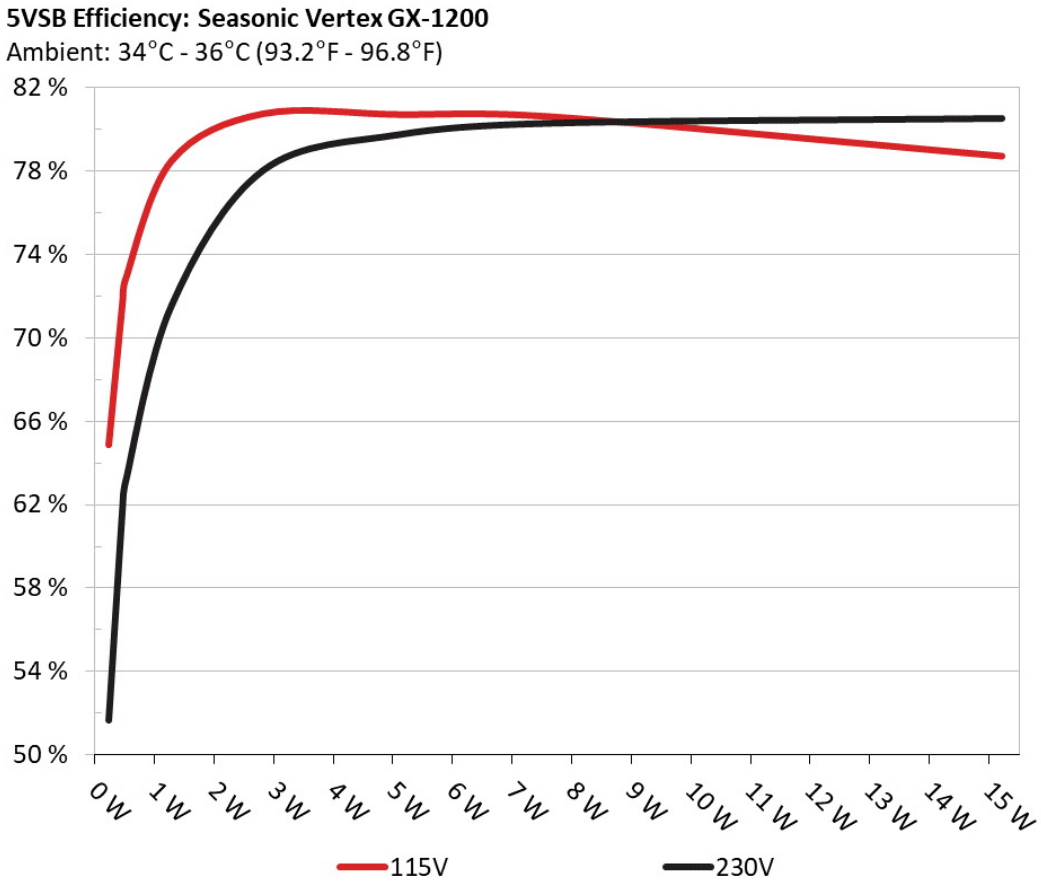
Efficiency under high ambient temperature



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

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

115V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231W	65.349%	0.032
	5.137V	0.353W		114.88V
2	0.09A	0.462W	72.178%	0.057
	5.136V	0.64W		114.87V
3	0.55A	2.82W	81.212%	0.25
	5.127V	3.473W		114.86V
4	1A	5.117W	81.176%	0.355
	5.116V	6.303W		114.87V
5	1.5A	7.658W	81.07%	0.413
	5.105V	9.447W		114.86V
6	3A	15.214W	79.182%	0.495
	5.071V	19.213W		114.87V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231W	52.17%	0.012
	5.137V	0.444W		229.88V
2	0.09A	0.462W	62.347%	0.02
	5.136V	0.742W		229.88V
3	0.55A	2.819W	78.504%	0.093
	5.126V	3.591W		229.87V
4	1A	5.117W	80.229%	0.155
	5.117V	6.378W		229.88V
5	1.5A	7.659W	80.768%	0.214
	5.106V	9.481W		229.88V
6	3A	15.218W	80.997%	0.324
	5.073V	18.783W		229.89V

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%	8.062A	1.99A	1.984A	0.979A	119.969	83.646%	0	<6.0	44.48°C	0.98
	12.201V	5.025V	3.327V	5.108V	143.422				40.11°C	114.82V
20%	17.131A	2.986A	2.979A	1.177A	239.914	90.339%	0	<6.0	45.65°C	0.975
	12.202V	5.022V	3.323V	5.097V	265.569				40.85°C	114.78V
30%	26.517A	3.485A	3.479A	1.377A	359.066	91.471%	0	<6.0	46.39°C	0.981
	12.181V	5.021V	3.32V	5.085V	392.546				41.24°C	114.74V
40%	35.982A	3.985A	3.979A	1.576A	479.442	91.441%	829	23.4	41.79°C	0.985
	12.179V	5.019V	3.317V	5.075V	524.321				47.31°C	114.71V
50%	45.065A	4.984A	4.98A	1.777A	599.208	91.176%	824	23.1	42.01°C	0.987
	12.176V	5.015V	3.313V	5.064V	657.2				48.13°C	114.66V
60%	54.192A	5.984A	5.983A	1.979A	719.736	90.63%	822	23.0	42.64°C	0.989
	12.177V	5.013V	3.31V	5.052V	794.145				49.27°C	114.63V
70%	63.242A	6.986A	6.988A	2.182A	839.491	89.947%	881	25.5	43.22°C	0.991
	12.182V	5.011V	3.306V	5.041V	933.321				50.23°C	114.58V
80%	72.346A	7.988A	7.995A	2.286A	959.505	89.09%	946	27.8	43.75°C	0.992
	12.186V	5.008V	3.302V	5.031V	1077.014				51.76°C	114.54V
90%	81.754A	8.49A	8.488A	2.389A	1079.322	88.158%	1104	32.2	44.13°C	0.993
	12.192V	5.006V	3.298V	5.022V	1224.308				53.15°C	114.5V
100%	90.963A	8.993A	9.014A	2.999A	1199.38	87.132%	1204	34.6	45.75°C	0.994
	12.199V	5.004V	3.295V	5.001V	1376.504				55.84°C	114.44V
110%	100.122A	9.999A	10.119A	3.004A	1320.034	86.012%	1850	47.6	46.55°C	0.994
	12.202V	5.001V	3.291V	4.994V	1534.712				57.48°C	114.39V
CL1	0.113A	15.031A	14.963A	0.001A	126.302	79.067%	779	21.2	41.36°C	0.982
	12.220V	5.01V	3.315V	5.119V	159.743				46.85°C	114.82V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL2	0.113A	24.954A	0A	0.001A	126.259	78.074%	974	28.4	40.78°C	0.981
	12.221V	5.004V	3.327V	5.125V	161.716				47.83°C	114.81V
CL3	0.113A	0A	24.924A	0.001A	83.892	70.793%	973	28.4	41.97°C	0.969
	12.212V	5.027V	3.31V	5.119V	118.502				50.99°C	114.83V
CL4	98.446A	0A	0A	0A	1199.926	87.853%	1150	33.1	45.88°C	0.993
	12.189V	5.016V	3.305V	5.074V	1365.84				56.86°C	114.44V

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%	8.062A	1.99A	1.983A	0.979A	119.963	84.958%	0	<6.0	44.64°C	0.874
	12.200V	5.025V	3.327V	5.109V	141.199				40.32°C	229.87V
20%	17.135A	2.986A	2.978A	1.177A	239.907	91.602%	0	<6.0	45.69°C	0.939
	12.199V	5.023V	3.324V	5.098V	261.894				40.83°C	229.85V
30%	26.522A	3.485A	3.478A	1.376A	359.033	92.942%	0	<6.0	46.49°C	0.957
	12.178V	5.021V	3.32V	5.087V	386.291				41.33°C	229.82V
40%	35.996A	3.985A	3.979A	1.576A	479.425	93.164%	828	23.3	41.82°C	0.967
	12.174V	5.018V	3.317V	5.076V	514.591				47.34°C	229.8V
50%	45.072A	4.984A	4.98A	1.777A	599.182	93.13%	823	23.1	42.09°C	0.971
	12.173V	5.016V	3.313V	5.065V	643.383				48.23°C	229.79V
60%	54.200A	5.984A	5.983A	1.979A	719.713	92.853%	822	23.0	42.79°C	0.976
	12.175V	5.013V	3.31V	5.053V	775.11				49.34°C	229.77V
70%	63.250A	6.985A	6.988A	2.182A	839.469	92.508%	882	25.5	43.35°C	0.979
	12.180V	5.011V	3.306V	5.042V	907.45				50.38°C	229.75V
80%	72.344A	7.987A	7.994A	2.285A	959.487	92.018%	945	27.7	43.79°C	0.981
	12.186V	5.008V	3.302V	5.032V	1042.718				51.88°C	229.73V
90%	81.761A	8.489A	8.487A	2.389A	1079.295	91.516%	1079	31.6	44.4°C	0.982
	12.191V	5.006V	3.299V	5.023V	1179.354				53.49°C	229.71V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
100%	90.969A	8.993A	9.013A	2.999A	1199.351	90.925%	1192	34.3	45.46°C	0.984
	12.198V	5.004V	3.295V	5.002V	1319.051				55.5°C	229.69V
110%	100.118A	9.998A	10.118A	3.003A	1319.995	90.284%	1737	44.1	46.58°C	0.985
	12.202V	5.001V	3.291V	4.995V	1462.052				57.48°C	229.67V
CL1	0.113A	15.03A	14.963A	0.001A	126.308	80.04%	773	21.0	41.18°C	0.89
	12.230V	5.011V	3.315V	5.119V	157.81				46.63°C	229.87V
CL2	0.113A	24.953A	0A	0.001A	126.26	79.131%	974	28.4	40.71°C	0.892
	12.225V	5.004V	3.327V	5.125V	159.557				47.87°C	229.86V
CL3	0.113A	0A	24.925A	0.001A	83.892	71.71%	974	28.4	42.83°C	0.84
	12.214V	5.027V	3.31V	5.119V	116.992				52.01°C	229.87V
CL4	98.445A	0A	0A	0A	1199.917	91.489%	1149	33.1	45.92°C	0.983
	12.189V	5.016V	3.305V	5.074V	1311.548				56.85°C	229.69V

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	1.228A	0.497A	0.495A	0.195A	19.988	74.98%	0	<6.0	39.62°C	0.81
	12.078V	5.029V	3.332V	5.131V	26.655				36.55°C	114.85V
40W	2.704A	0.696A	0.693A	0.292A	39.99	81.899%	0	<6.0	40.59°C	0.916
	12.084V	5.028V	3.331V	5.128V	48.828				37.29°C	114.84V
60W	4.180A	0.895A	0.892A	0.39A	59.99	83.813%	0	<6.0	42.17°C	0.95
	12.087V	5.027V	3.33V	5.124V	71.574				38.43°C	114.84V
80W	5.650A	1.094A	1.09A	0.488A	79.922	85.862%	0	<6.0	43.25°C	0.966
	12.086V	5.027V	3.329V	5.121V	93.084				39.29°C	114.83V

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	1.228A	0.497A	0.495A	0.195A	19.985	74.767%	0	<6.0	39.68°C	0.425
	12.074V	5.028V	3.332V	5.132V	26.728				36.62°C	229.88V
40W	2.705A	0.696A	0.693A	0.292A	39.987	81.948%	0	<6.0	41.15°C	0.61
	12.081V	5.028V	3.331V	5.129V	48.798				37.86°C	229.88V
60W	4.182A	0.895A	0.892A	0.39A	59.988	85.169%	0	<6.0	41.91°C	0.719
	12.083V	5.027V	3.33V	5.125V	70.432				38.39°C	229.87V
80W	5.652A	1.094A	1.09A	0.488A	79.918	86.693%	0	<6.0	43.54°C	0.786
	12.082V	5.027V	3.33V	5.122V	92.184				39.68°C	229.87V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	16.16mV	11.65mV	12.47mV	24.63mV	Pass
20% Load	22.82mV	10.57mV	10.82mV	19.03mV	Pass
30% Load	18.57mV	10.21mV	10.52mV	19.14mV	Pass
40% Load	17.80mV	11.65mV	10.77mV	32.68mV	Pass
50% Load	17.64mV	12.68mV	11.80mV	34.17mV	Pass
60% Load	18.21mV	12.83mV	12.78mV	35.51mV	Pass
70% Load	17.95mV	13.24mV	13.39mV	35.66mV	Pass
80% Load	18.36mV	13.39mV	16.21mV	36.58mV	Pass
90% Load	18.05mV	13.86mV	14.98mV	37.81mV	Pass
100% Load	25.51mV	15.55mV	16.92mV	38.10mV	Pass
110% Load	27.33mV	16.72mV	17.44mV	37.87mV	Pass
Crossload1	16.58mV	15.37mV	19.39mV	34.03mV	Pass
Crossload2	18.67mV	25.61mV	16.78mV	34.07mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	15.14mV	14.52mV	18.16mV	34.07mV	Pass
Crossload4	25.52mV	15.40mV	13.62mV	37.96mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	15.70mV	11.86mV	11.85mV	23.50mV	Pass
20% Load	23.02mV	10.93mV	10.57mV	19.03mV	Pass
30% Load	16.47mV	9.96mV	10.11mV	18.83mV	Pass
40% Load	16.72mV	11.65mV	10.88mV	32.89mV	Pass
50% Load	16.73mV	12.73mV	11.90mV	34.94mV	Pass
60% Load	17.34mV	12.88mV	12.83mV	35.87mV	Pass
70% Load	16.88mV	13.24mV	13.19mV	36.28mV	Pass
80% Load	17.85mV	13.34mV	15.19mV	37.61mV	Pass
90% Load	18.21mV	13.81mV	16.47mV	38.43mV	Pass
100% Load	27.13mV	15.92mV	17.63mV	38.93mV	Pass
110% Load	28.00mV	15.11mV	17.54mV	39.26mV	Pass
Crossload1	17.11mV	14.16mV	18.02mV	35.35mV	Pass
Crossload2	19.95mV	26.58mV	16.52mV	35.25mV	Pass
Crossload3	16.27mV	13.80mV	18.78mV	34.22mV	Pass
Crossload4	27.17mV	14.88mV	13.65mV	38.42mV	Pass

The results above are not used in the certification process

Seasonic Vertex GX-1200

Top side

Power specifications label

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 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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