Anex

Seasonic Vertex GX-1000

Lab ID#: SS10002111
Receipt Date: Dec 12, 2022
Test Date: Jan 13, 2023

Report: 23PS2111A
Report Date: Jan 16, 2023

DUT INFORMATION

Brand	Seasonic
Manufacturer (OEM)	Seasonic
Series	Vertex GX
Model Number	12102GXAFS
Serial Number	
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	13-6.5
Rated Frequency (Hz)	50-60
Rated Power (W)	1000
Type	ATX12V
Cooling	135mm Fluid Dynamic Bearing Fan (HA13525H12F-Z)
Semi-Passive Operation	✓ (selectable)
Cable Design	Fully Modular

TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x2 Chroma 63600-2 63640-80-80 x10 63610-80-20
AC Sources	Chroma 6530, APM SP300VAC4000W-P
Power Analyzers	RS HMC8015, N4L PPA1530, N4L PPA5530
Oscilloscopes	Picoscope 4444, Rigol DS7014, 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, Keithley 2015 - THD
UPS	FSP Champ Tower 3kVA, CyberPower OLS3000E 3kVA
Isolation Transformer	4kVA

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RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX 3.0 Ready	✓

115V

Average Efficiency	89.388%
Efficiency With 10W (≤500W) or 2% (>500W)	74.411
Average Efficiency 5VSB	80.303%
Standby Power Consumption (W)	0.0703000
Average PF	0.983
Avg Noise Output	23.92 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A

230V

Average Efficiency	91.420%
Average Efficiency 5VSB	78.972%
Standby Power Consumption (W)	0.1527000
Average PF	0.952
Avg Noise Output	23.87 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	25	25	83	3	0.3
	Watts	125		996	15	3.6
Total Max. Power (W)		1000				

HOLD-UP TIME & POWER OK SIGNAL (230V)

Hold-Up Time (ms)	21.2
AC Loss to PWR_OK Hold Up Time (ms)	16.7
PWR_OK Inactive to DC Loss Delay (ms)	4.5

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CABLES AND CONNECTORS

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 (760mm)	3	3	16AWG	No
12+4 pin PCIe (760mm) (600W)	1	1	16-28AWG	No
SATA 3.3 (410mm+150mm)	1	2	18AWG	No
SATA (510mm+150mm+150mm+150mm)	4	16	18AWG	No
4 pin Molex (460mm+130mm+130mm)	1	3	18AWG	No
AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

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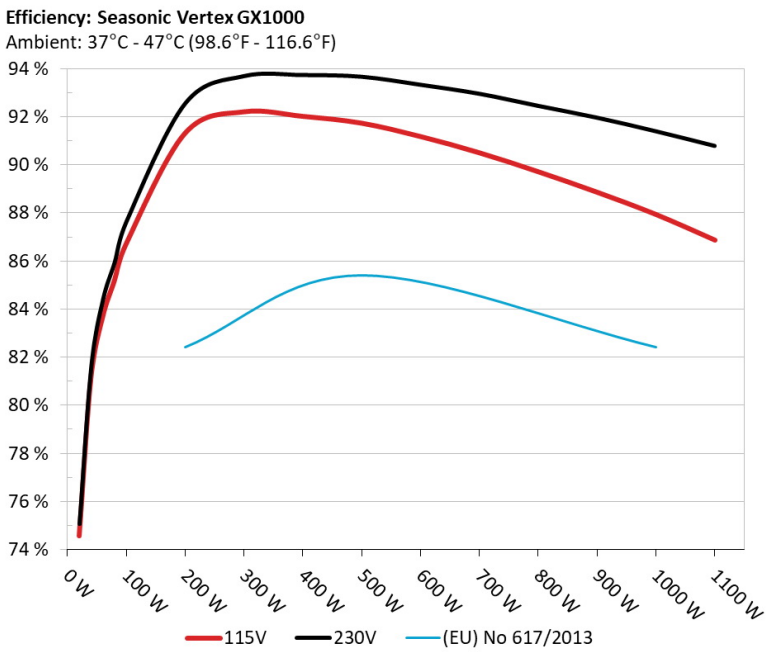
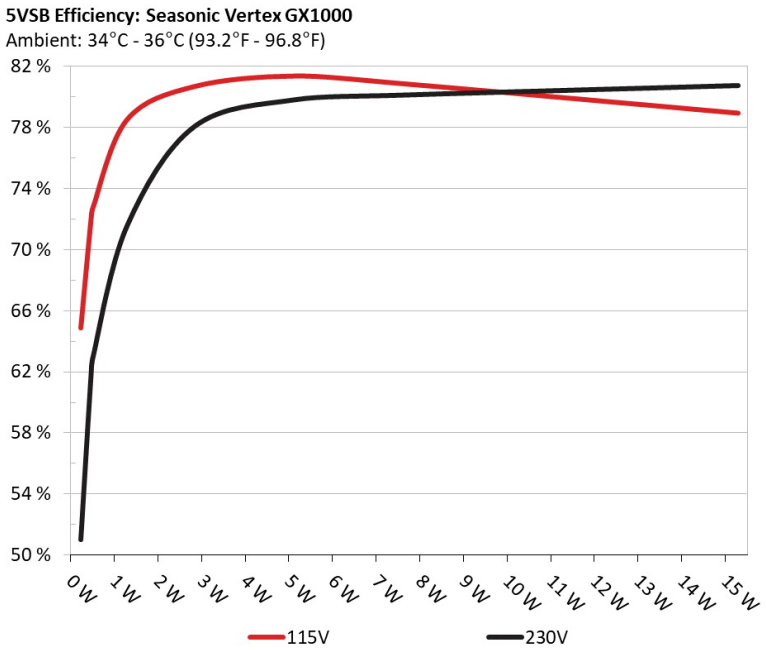
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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	0.232W	64.893%	0.034
	5.162V	0.358W		114.93V
2	0.09A	0.464W	71.961%	0.06
	5.161V	0.645W		114.93V
3	0.55A	2.833W	80.698%	0.263
	5.151V	3.511W		114.93V
4	1A	5.141W	81.386%	0.366
	5.141V	6.317W		114.94V
5	1.5A	7.695W	80.861%	0.42
	5.13V	9.516W		114.94V
6	3A	15.289W	78.955%	0.499
	5.096V	19.364W		114.94V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.232W	51.028%	0.013
	5.161V	0.456W		229.9V
2	0.09A	0.464W	61.724%	0.021
	5.161V	0.752W		229.9V
3	0.55A	2.833W	78.061%	0.097
	5.151V	3.629W		229.9V
4	1A	5.141W	79.82%	0.161
	5.141V	6.439W		229.9V
5	1.5A	7.695W	80.131%	0.211
	5.13V	9.605W		229.9V
6	3A	15.292W	80.744%	0.325
	5.097V	18.938W		229.9V

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115V

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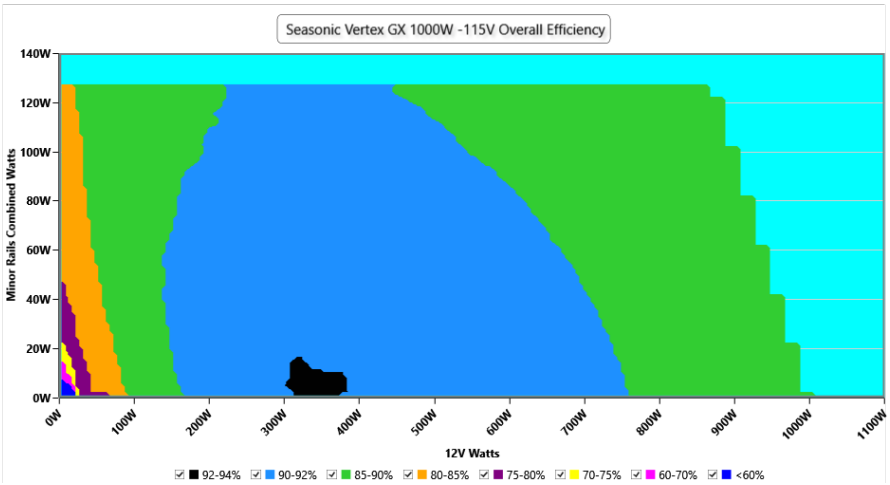
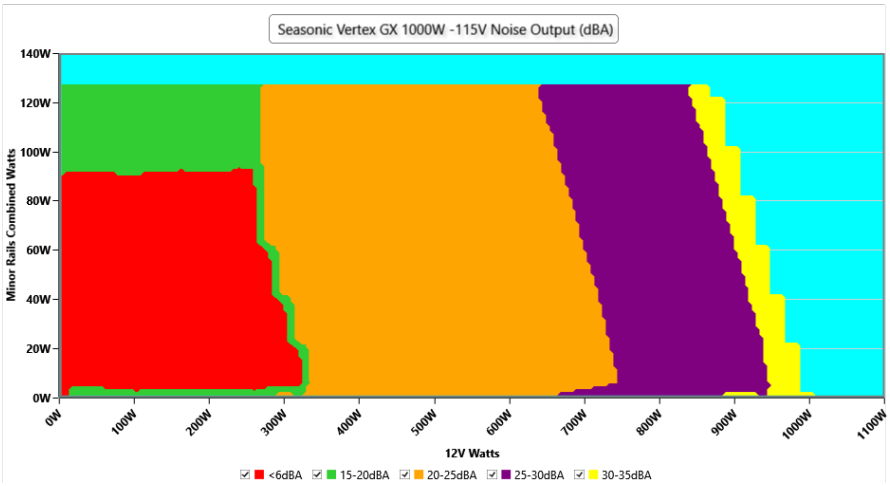
EFFICIENCY GRAPH 115V



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 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

Detailed Results

	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	114.93 V	114.89 V	113.85 V	114.96 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.98 Hz	59.40 Hz	60.02 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.416	1.415	1.340	1.417	1.490	PASS
Mains Voltage THD:	0.14 %	0.12 %	N/A	0.18 %	2.00 %	PASS
Real Power:	0.070 W	0.062 W	N/A	0.081 W	N/A	N/A
Apparent Power:	10.477 W	10.457 W	N/A	10.499 W	N/A	N/A
Power Factor:	0.007	N/A	N/A	N/A	N/A	N/A

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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10-110% 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%	6.436A	1.971A	1.978A	0.974A	99.981	86.33%	0	<6.0	44.55°C	0.964
	12.180V	5.071V	3.336V	5.131V	115.812				40.25°C	114.9V
20%	13.905A	2.959A	2.971A	1.172A	199.926	90.924%	0	<6.0	45.46°C	0.979
	12.157V	5.069V	3.332V	5.121V	219.875				40.85°C	114.89V
30%	21.715A	3.453A	3.469A	1.37A	299.978	91.813%	0	<6.0	46.13°C	0.985
	12.154V	5.067V	3.329V	5.11V	326.73				41.02°C	114.87V
40%	29.492A	3.949A	3.969A	1.569A	399.559	91.623%	749	20.2	41.93°C	0.986
	12.151V	5.064V	3.325V	5.1V	436.087				47.45°C	114.85V
50%	36.937A	4.939A	4.968A	1.768A	499.264	91.341%	745	20.0	42.12°C	0.987
	12.149V	5.061V	3.321V	5.09V	546.593				48.21°C	114.83V
60%	44.445A	5.93A	5.968A	1.969A	599.801	90.782%	743	20.0	42.75°C	0.988
	12.150V	5.059V	3.318V	5.079V	660.703				49.37°C	114.79V
70%	51.875A	6.922A	6.97A	2.17A	699.532	90.108%	830	23.4	43.3°C	0.989
	12.152V	5.057V	3.314V	5.068V	776.319				50.37°C	114.77V
80%	59.373A	7.916A	7.972A	2.273A	799.568	89.319%	909	26.4	44.27°C	0.991
	12.155V	5.055V	3.311V	5.059V	895.184				52.32°C	114.74V
90%	67.193A	8.412A	8.463A	2.376A	899.326	88.469%	1111	32.3	44.86°C	0.992
	12.157V	5.052V	3.307V	5.051V	1016.55				53.93°C	114.71V
100%	74.823A	8.911A	8.988A	2.981A	999.356	87.544%	1302	37.7	45.69°C	0.993
	12.158V	5.05V	3.304V	5.032V	1141.544				55.73°C	114.68V
110%	82.381A	9.907A	10.089A	2.985A	1099.987	86.472%	1551	42.5	46.53°C	0.993
	12.159V	5.047V	3.3V	5.025V	1272.069				57.41°C	114.65V
CL1	0.115A	14.891A	14.894A	0A	126.303	83.525%	699	18.0	42.36°C	0.975
	12.193V	5.058V	3.33V	5.138V	151.216				47.82°C	114.89V
CL2	0.115A	24.75A	0A	0A	126.418	82.119%	878	25.4	40.99°C	0.973
	12.192V	5.052V	3.336V	5.145V	153.95				48.01°C	114.9V
CL3	0.114A	0A	24.77A	0A	83.876	75.015%	876	25.3	39.81°C	0.964
	12.182V	5.075V	3.33V	5.139V	111.807				48.84°C	114.91V
CL4	82.275A	0A	0A	0A	999.938	88.227%	1210	34.8	56.81°C	0.992
	12.153V	5.064V	3.31V	5.105V	1133.377				45.92°C	114.68V

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20-80W 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	1.226A	0.493A	0.494A	0.194A	19.99	74.169%	0	<6.0	39.81°C	0.828
	12.104V	5.075V	3.339V	5.154V	26.956				36.72°C	114.93V
40W	2.699A	0.69A	0.692A	0.291A	39.991	80.771%	0	<6.0	40.75°C	0.916
	12.109V	5.074V	3.339V	5.151V	49.515				37.41°C	114.92V
60W	4.172A	0.886A	0.889A	0.388A	59.99	83.295%	0	<6.0	42.34°C	0.946
	12.108V	5.074V	3.338V	5.147V	72.018				38.54°C	114.92V
80W	5.609A	1.084A	1.087A	0.486A	79.929	84.798%	0	<6.0	43.5°C	0.959
	12.177V	5.073V	3.337V	5.144V	94.263				39.54°C	114.9V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	9.52mV	7.00mV	13.19mV	10.34mV	Pass
20% Load	17.37mV	6.08mV	9.67mV	7.83mV	Pass
30% Load	11.74mV	6.08mV	10.07mV	8.80mV	Pass
40% Load	11.51mV	7.81mV	11.45mV	21.70mV	Pass
50% Load	10.90mV	8.12mV	11.55mV	22.77mV	Pass
60% Load	11.21mV	8.33mV	12.68mV	23.44mV	Pass
70% Load	11.67mV	8.73mV	12.89mV	23.85mV	Pass
80% Load	12.33mV	9.04mV	15.60mV	23.23mV	Pass
90% Load	13.10mV	9.65mV	16.11mV	24.62mV	Pass
100% Load	19.39mV	12.24mV	19.17mV	25.99mV	Pass
110% Load	20.23mV	14.51mV	21.56mV	27.00mV	Pass
Crossload1	27.07mV	10.04mV	16.68mV	22.20mV	Pass
Crossload2	26.02mV	10.01mV	13.19mV	20.88mV	Pass
Crossload3	8.08mV	7.86mV	19.74mV	21.44mV	Pass
Crossload4	18.85mV	11.31mV	16.58mV	26.33mV	Pass

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230V

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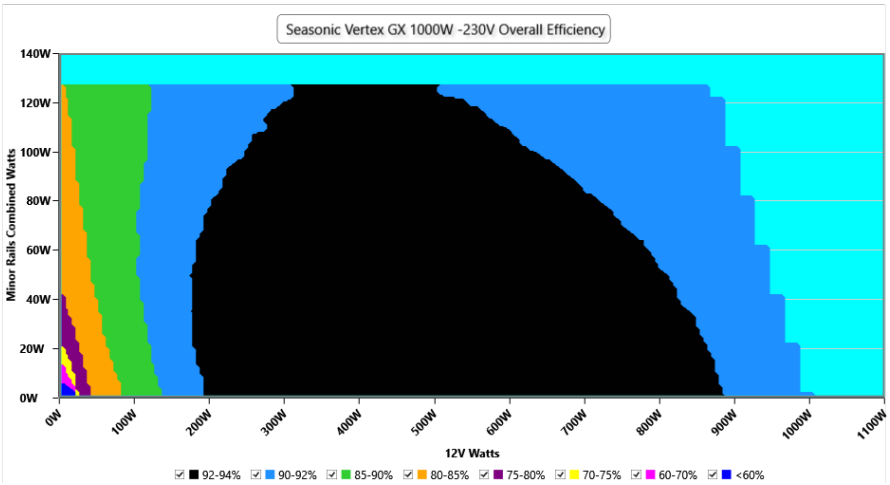
EFFICIENCY GRAPH 230V



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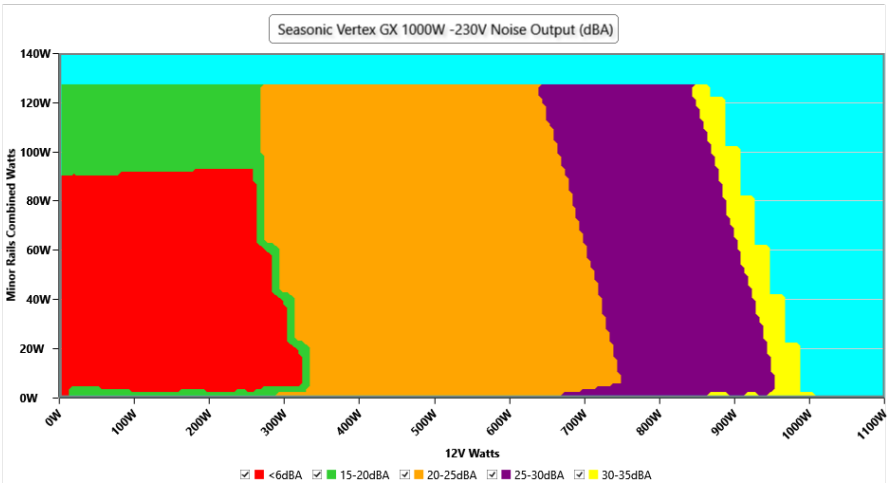
NOISE GRAPH 230V



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VAMPIRE POWER -230V

Detailed Results

	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	229.88 V	229.85 V	227.70 V	229.94 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	50.00 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:	0.14 %	0.12 %	N/A	0.16 %	2.00 %	PASS
Real Power:	0.153 W	0.129 W	N/A	0.188 W	N/A	N/A
Apparent Power:	36.060 W	36.029 W	N/A	36.101 W	N/A	N/A
Power Factor:	0.004	N/A	N/A	N/A	N/A	N/A

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10-110% LOAD TESTS 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%	6.438A	1.972A	1.979A	0.975A	100.006	87.242%	0	<6.0	44.88°C	0.845
	12.179V	5.071V	3.335V	5.131V	114.633				40.52°C	229.88V
20%	13.909A	2.959A	2.971A	1.172A	199.963	92.146%	0	<6.0	45.72°C	0.925
	12.155V	5.069V	3.332V	5.12V	217.002				40.97°C	229.87V
30%	21.721A	3.454A	3.47A	1.37A	300.026	93.273%	0	<6.0	46.39°C	0.952
	12.153V	5.067V	3.328V	5.109V	321.661				41.31°C	229.86V
40%	29.504A	3.95A	3.97A	1.569A	399.659	93.317%	749	20.2	41.77°C	0.964
	12.150V	5.064V	3.325V	5.099V	428.274				47.31°C	229.85V
50%	36.949A	4.94A	4.969A	1.769A	499.364	93.246%	745	20.0	42.45°C	0.971
	12.148V	5.061V	3.321V	5.089V	535.536				48.46°C	229.83V
60%	44.454A	5.932A	5.97A	1.969A	599.909	92.911%	742	19.9	43.09°C	0.976
	12.149V	5.058V	3.317V	5.078V	645.68				49.79°C	229.82V
70%	51.890A	6.924A	6.972A	2.171A	699.644	92.539%	829	23.4	43.25°C	0.979
	12.151V	5.056V	3.314V	5.067V	756.055				50.26°C	229.81V
80%	59.390A	7.918A	7.975A	2.274A	799.68	92.037%	907	26.4	43.86°C	0.981
	12.153V	5.054V	3.31V	5.059V	868.864				52.07°C	229.8V
90%	67.212A	8.414A	8.466A	2.376A	899.417	91.548%	1073	31.4	44.71°C	0.983
	12.155V	5.052V	3.307V	5.05V	982.46				53.75°C	229.79V
100%	74.836A	8.913A	8.989A	2.982A	999.431	90.983%	1254	36.2	45.34°C	0.984
	12.157V	5.05V	3.303V	5.031V	1098.479				55.39°C	229.78V
110%	82.395A	9.908A	10.09A	2.985A	1100.038	90.372%	1523	42.3	46.98°C	0.985
	12.157V	5.047V	3.3V	5.025V	1217.229				57.91°C	229.76V
CL1	0.115A	14.891A	14.895A	0A	126.306	84.649%	697	17.5	44°C	0.885
	12.193V	5.058V	3.33V	5.138V	149.208				49.49°C	229.88V
CL2	0.115A	24.748A	0A	0A	126.419	83.205%	878	25.4	42.81°C	0.888
	12.192V	5.052V	3.336V	5.145V	151.936				49.83°C	229.87V
CL3	0.114A	0A	24.77A	0A	83.876	75.823%	876	25.3	41.56°C	0.838
	12.184V	5.076V	3.33V	5.139V	110.612				50.61°C	229.88V
CL4	82.274A	0A	0A	0A	999.889	91.606%	1181	34.0	44.66°C	0.983
	12.153V	5.064V	3.31V	5.105V	1091.506				55.61°C	229.77V

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Anex

Seasonic Vertex GX-1000

20-80W LOAD TESTS 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	0.493A	0.494A	0.194A	20.001	74.667%	0	<6.0	40.53°C	0.462
	12.103V	5.075V	3.339V	5.154V	26.79				37.43°C	229.89V
40W	2.700A	0.69A	0.692A	0.291A	40.001	81.211%	0	<6.0	41.13°C	0.646
	12.106V	5.074V	3.338V	5.151V	49.251				37.87°C	229.88V
60W	4.174A	0.887A	0.89A	0.389A	60	83.994%	0	<6.0	41.93°C	0.745
	12.106V	5.073V	3.338V	5.147V	71.433				38.44°C	229.88V
80W	5.611A	1.084A	1.088A	0.486A	79.953	85.547%	0	<6.0	42.99°C	0.805
	12.176V	5.073V	3.337V	5.144V	93.462				39.26°C	229.88V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	7.98mV	6.69mV	11.30mV	9.42mV	Pass
20% Load	18.81mV	5.92mV	9.10mV	7.52mV	Pass
30% Load	12.46mV	6.23mV	9.82mV	8.55mV	Pass
40% Load	12.15mV	8.07mV	11.00mV	19.81mV	Pass
50% Load	11.23mV	7.46mV	11.20mV	20.47mV	Pass
60% Load	11.38mV	7.71mV	11.15mV	21.39mV	Pass
70% Load	11.79mV	7.92mV	12.88mV	21.39mV	Pass
80% Load	12.05mV	8.79mV	14.42mV	21.80mV	Pass
90% Load	12.28mV	9.40mV	16.16mV	22.21mV	Pass
100% Load	19.99mV	12.94mV	19.59mV	25.75mV	Pass
110% Load	20.65mV	14.83mV	21.49mV	26.93mV	Pass
Crossload1	31.77mV	9.74mV	15.90mV	21.61mV	Pass
Crossload2	26.63mV	10.01mV	12.88mV	20.57mV	Pass
Crossload3	7.62mV	7.51mV	18.26mV	21.29mV	Pass
Crossload4	20.16mV	12.71mV	18.60mV	26.76mV	Pass

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Anex

Seasonic Vertex GX-1000

Top side

Power specifications label

CERTIFICATIONS 115V

CERTIFICATIONS 230V

Aristeidis Bitziopoulos
Lab Director

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