EFFICIENCY AND NOISE LEVEL CERTIFICATIONS

Anex

BoostBoxx PB1000P

Lab ID#: BB10002347
Receipt Date: Jan 25, 2024
Test Date: Feb 6, 2024

Report: 24PS2347A
Report Date: Feb 9, 2024

DUT INFORMATION

Brand	BoostBoxx
Manufacturer (OEM)	Great Wall
Series	PB-P
Model Number	PB1000P 89495/CSL23073
Serial Number	2N124104016
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	13-6
Rated Frequency (Hz)	60-50
Rated Power (W)	1000
Type	ATX12V
Cooling	140mm Fluid Dynamic Bearing Fan (HA1425M12B-Z)
Semi-Passive Operation	✓
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 v3.1 PSU Power Excursion	✓

230V

Average Efficiency	91.765%
Average Efficiency 5VSB	78.662%
Standby Power Consumption (W)	0.1670000
Average PF	0.952
Avg Noise Output	28.86 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A-

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	83.33	4	0.5
	Watts	130		1000	20	6
Total Max. Power (W)		1000				

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

Hold-Up Time (ms)	18.2
AC Loss to PWR_OK Hold Up Time (ms)	15.3
PWR_OK Inactive to DC Loss Delay (ms)	2.9

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CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (600mm)	1	1	18-20AWG	No
4+4 pin EPS12V (700mm)	2	2	18AWG	No
6+2 pin PCIe (700mm+150mm)	2	4	18AWG	No
12+4 pin PCIe (700mm) (600W)	1	1	16-24AWG	No
SATA (1000mm+120mm+120mm)	1	3	18AWG	No
SATA (1000mm) / 4-pin Molex (+150mm+150mm)	1	1 / 2	18AWG	No
SATA (900mm) / 4-pin Molex (+150mm) / FDD (+150mm)	1	1 / 1 / 1	18-22AWG	No
AC Power Cord (1650mm) - C13 coupler	1	1	18AWG	-

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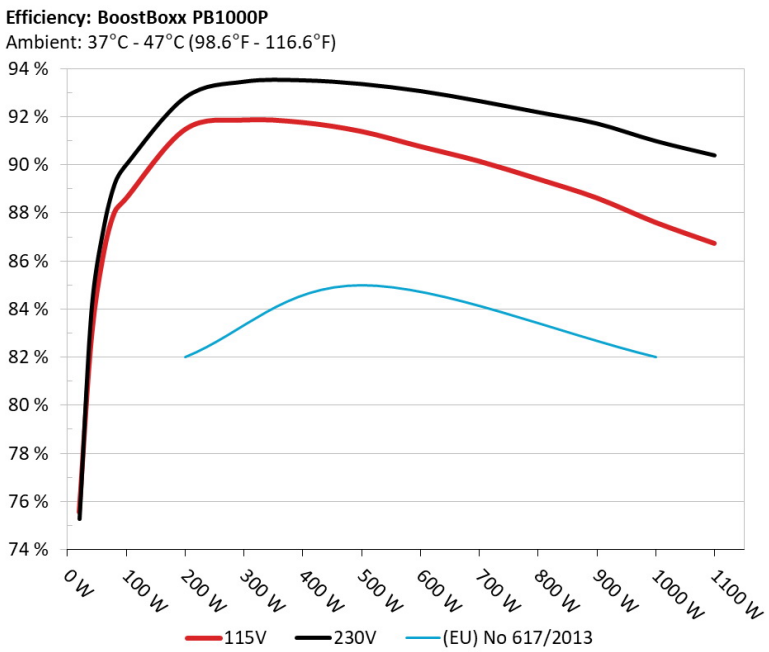
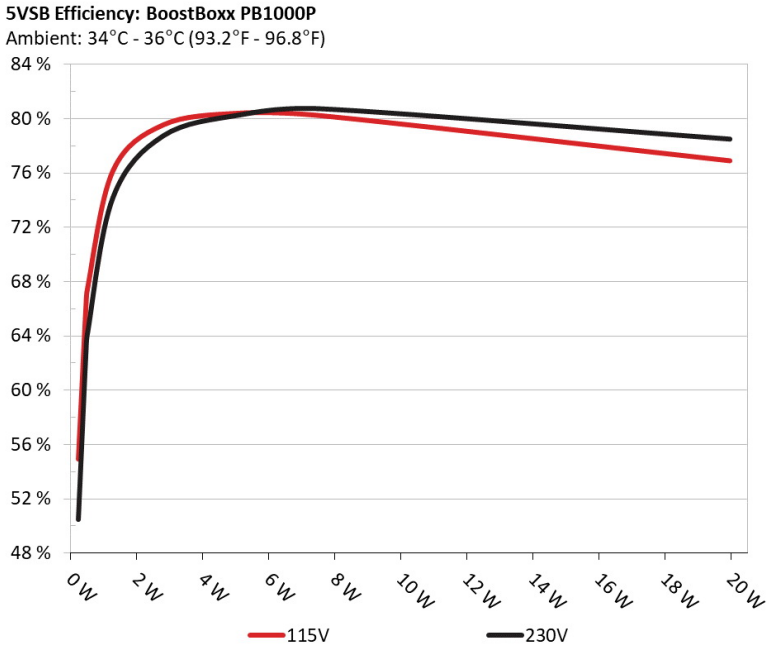
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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	0.23W	54.453%	0.046
	5.106V	0.423W		115.16V
2	0.09A	0.46W	65.751%	0.076
	5.105V	0.7W		115.16V
3	0.55A	2.801W	79.03%	0.286
	5.092V	3.544W		115.16V
4	1A	5.08W	79.887%	0.379
	5.079V	6.359W		115.16V
5	1.5A	7.598W	79.703%	0.426
	5.064V	9.533W		115.16V
6	4.001A	19.964W	76.393%	0.509
	4.99V	26.133W		115.15V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.23W	49.974%	0.015
	5.106V	0.461W		230.39V
2	0.09A	0.46W	62.308%	0.024
	5.105V	0.739W		230.39V
3	0.55A	2.801W	78.207%	0.112
	5.092V	3.582W		230.39V
4	1A	5.08W	79.729%	0.183
	5.079V	6.372W		230.39V
5	1.5A	7.598W	80.198%	0.244
	5.064V	9.473W		230.39V
6	4.001A	19.967W	77.967%	0.383
	4.991V	25.61W		230.39V

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230V

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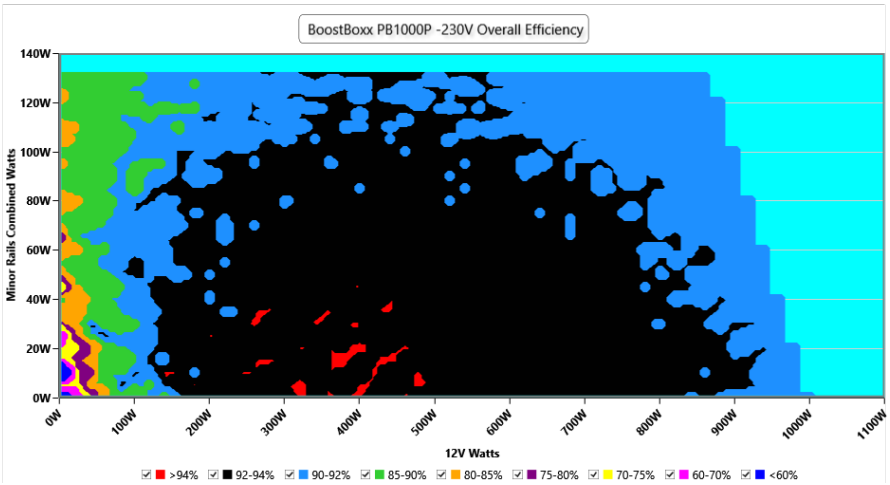
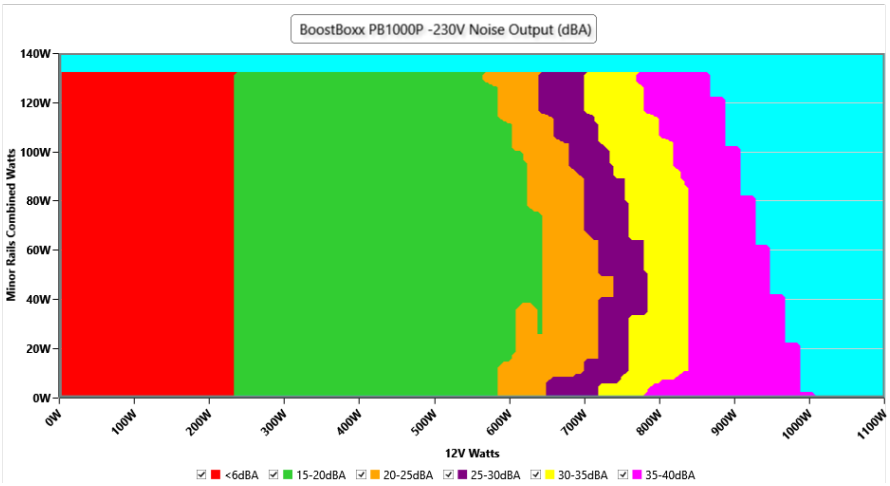
EFFICIENCY GRAPH 230V



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 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

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VAMPIRE POWER -230V

Detailed Results

	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	230.38 V	230.38 V	227.70 V	230.42 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:	0.167 W	0.141 W	N/A	0.202 W	N/A	N/A
Apparent Power:	30.204 W	30.193 W	N/A	30.215 W	N/A	N/A
Power Factor:	0.006	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 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%	6.484A	1.985A	1.988A	0.987A	100.013	90.023%	0	<6.0	44.41°C	0.811
	12.095V	5.038V	3.32V	5.069V	111.166				40.18°C	230.38V
20%	13.992A	2.98A	2.985A	1.187A	199.97	92.814%	0	<6.0	45.23°C	0.876
	12.082V	5.036V	3.317V	5.055V	215.711				40.7°C	230.38V
30%	21.864A	3.477A	3.486A	1.388A	300.021	93.463%	0	<6.0	46.28°C	0.926
	12.073V	5.034V	3.314V	5.043V	321.089				41.28°C	230.36V
40%	29.724A	3.979A	3.99A	1.591A	399.739	93.516%	763	17.6	41.52°C	0.966
	12.062V	5.028V	3.309V	5.03V	427.517				47.04°C	230.35V
50%	37.246A	4.977A	4.993A	1.794A	499.466	93.364%	760	17.6	42.19°C	0.985
	12.053V	5.024V	3.305V	5.017V	535.022				48.22°C	230.34V
60%	44.855A	5.977A	5.999A	1.999A	600.012	93.068%	874	21.6	42.67°C	0.991
	12.043V	5.021V	3.301V	5.003V	644.743				49.19°C	230.32V
70%	52.401A	6.977A	7.008A	2.205A	699.75	92.654%	1184	30.9	43.25°C	0.993
	12.035V	5.018V	3.297V	4.989V	755.267				50.35°C	230.31V
80%	60.033A	7.977A	8.016A	2.31A	799.779	92.189%	1460	37.2	43.85°C	0.994
	12.024V	5.015V	3.293V	4.978V	867.461				51.93°C	230.29V
90%	68.007A	8.479A	8.511A	2.416A	899.574	91.719%	1711	41.9	44.66°C	0.994
	12.015V	5.012V	3.29V	4.968V	980.883				53.71°C	230.28V
100%	75.444A	8.982A	9.038A	4.075A	999.773	90.988%	1940	45.5	45.83°C	0.995
	11.997V	5.01V	3.286V	4.909V	1098.808				55.91°C	230.27V
110%	83.137A	9.987A	10.146A	4.083A	1099.604	90.394%	2014	46.2	46.76°C	0.996
	11.984V	5.007V	3.282V	4.899V	1216.614				57.69°C	230.26V
CL1	0.121A	15.616A	15.617A	0A	131.364	85.747%	761	17.6	40.61°C	0.846
	12.067V	5.014V	3.304V	5.084V	153.284				46.07°C	230.38V
CL2	0.118A	19.957A	0A	0A	101.426	84.545%	761	17.6	40.29°C	0.82
	12.087V	5.01V	3.322V	5.095V	120.001				47.38°C	230.39V
CL3	0.116A	0A	19.996A	0A	67.393	80.64%	760	17.6	40.59°C	0.777
	12.089V	5.038V	3.3V	5.09V	83.711				49.61°C	230.38V
CL4	83.153A	0A	0A	0.003A	1000.103	91.855%	1870	44.3	45.6°C	0.995
	12.027V	5.025V	3.297V	5.042V	1088.777				56.58°C	230.28V

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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	1.226A	0.496A	0.497A	0.196A	20.004	75.266%	0	<6.0	39.93°C	0.495
	12.113V	5.038V	3.322V	5.1V	26.081				36.85°C	230.39V
40W	2.700A	0.695A	0.695A	0.294A	40.001	83.848%	0	<6.0	41.17°C	0.667
	12.109V	5.038V	3.322V	5.095V	47.796				37.85°C	230.39V
60W	4.174A	0.893A	0.894A	0.393A	60	87.237%	0	<6.0	42.08°C	0.744
	12.105V	5.039V	3.322V	5.091V	68.891				38.64°C	230.38V
80W	5.646A	1.092A	1.093A	0.492A	79.959	89.223%	0	<6.0	43.25°C	0.785
	12.102V	5.038V	3.321V	5.086V	89.682				39.39°C	230.38V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	20.71mV	8.01mV	5.44mV	10.90mV	Pass
20% Load	8.40mV	7.09mV	4.63mV	12.94mV	Pass
30% Load	12.36mV	8.37mV	5.34mV	14.42mV	Pass
40% Load	15.67mV	8.87mV	5.85mV	14.01mV	Pass
50% Load	17.50mV	10.30mV	6.61mV	14.62mV	Pass
60% Load	19.79mV	10.51mV	7.43mV	19.31mV	Pass
70% Load	21.83mV	11.53mV	7.93mV	18.70mV	Pass
80% Load	29.16mV	13.46mV	13.07mV	21.96mV	Pass
90% Load	29.16mV	13.21mV	13.94mV	24.66mV	Pass
100% Load	36.73mV	15.58mV	14.34mV	36.46mV	Pass
110% Load	40.18mV	16.56mV	16.49mV	39.87mV	Pass
Crossload1	27.29mV	14.67mV	15.83mV	10.37mV	Pass
Crossload2	22.24mV	14.79mV	5.80mV	9.02mV	Pass
Crossload3	20.30mV	12.40mV	18.01mV	8.71mV	Pass
Crossload4	37.04mV	13.33mV	9.29mV	20.00mV	Pass

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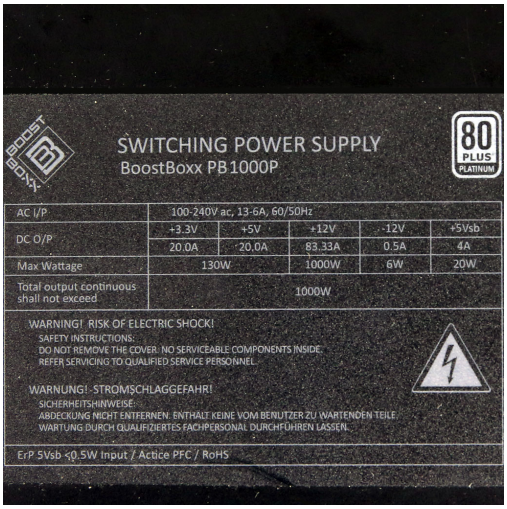
Top side



Power specifications label

Aristeidis Bitziopoulos
Lab Director

CERTIFICATIONS 230V