

Anex

Kinpower PS1000GM

Lab ID#: KP10002206
 Receipt Date: Jun 22, 2023
 Test Date: Jul 6, 2023

Report: 23PS2206A
 Report Date: Jul 6, 2023

DUT INFORMATION	
Brand	Kinpower
Manufacturer (OEM)	Kinpower
Series	PS-GM
Model Number	PS1000GM
Serial Number	
DUT Notes	

DUT SPECIFICATIONS	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	16
Rated Frequency (Hz)	50-60
Rated Power (W)	1000
Type	ATX12V
Cooling	140mm Rifle Bearing Fan (EFS-14E12H)
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	✓

115V

Average Efficiency	88.923%
Efficiency With 10W (≤500W) or 2% (>500W)	74.002
Average Efficiency 5VSB	82.214%
Standby Power Consumption (W)	0.0768000
Average PF	0.980
Avg Noise Output	33.44 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	Standard++

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	83.5	3	0.3
	Watts	103		1000	15	3.6
Total Max. Power (W)		1000				

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

Hold-Up Time (ms)	7.6
AC Loss to PWR_OK Hold Up Time (ms)	14.4
PWR_OK Inactive to DC Loss Delay (ms)	-6.8

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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	18-22AWG	No
4+4 pin EPS12V (700mm)	2	2	16AWG	No
6+2 pin PCIe (600mm+150mm)	2	4	16-18AWG	No
12+4 pin PCIe (600mm) (600W)	1	1	16-24AWG	No
SATA (450mm+150mm+150mm)	2	6	18AWG	No
SATA (500mm+150mm+150mm)	1	3	18AWG	No
4-pin Molex (500mm+150mm+150mm)	1	3	18AWG	No
AC Power Cord (1100mm) - C13 coupler	1	1	18AWG	-

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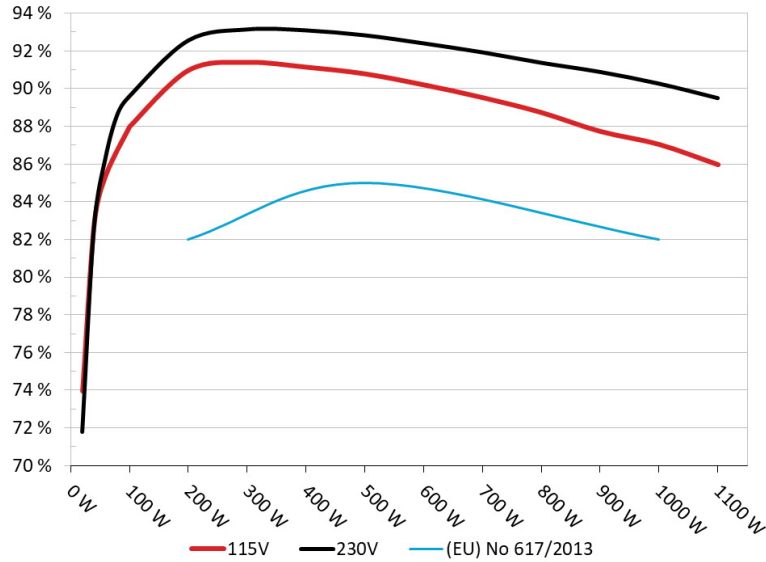
General Data	-
Manufacturer (OEM)	Kinpower
PCB Type	Double - Sided
Primary Side	-
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	2X NTC Thermistors (MF72 2.5D 13, 2.5 Ohm) & Relay
Bridge Rectifier(s)	3x LGE GBU2506L 600V, 25A @ 100°C (without heatsinks)
APFC MOSFETs	2x FXN65S55TF
APFC Boost Diode	1x Global Power G3S06510A (650V, 10A @ 150°C)
Bulk Cap(s)	2x Nichicon (400V, 470uF each or 940uF combined, 3000h @ 105°C, GN)
Main Switchers	2x Wayon WMJ28N50C4 (500V, 28A @ 25°C, Rds(on): 0.125Ohm)
APFC Controller	Champion CM6500UNX
Resonant Controller	Champion CM6901X
Topology	Primary side: APFC, Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	-
+12V MOSFETs	8x Airupton AKG40N025G (40V, 74A @ 100°C, Rds(on): 2.5mOhm)
5V & 3.3V	DC-DC Converters: 4x Excelliance EMB06N03HR (25V, 97A @ 100°C, Rds(on): 1.4mOhm) PWM Controller(s): 2x Excelliance EM5301F
Filtering Capacitors	Electrolytic: 4x ChengX (2-4000 @ 105°C, GR) 1x Teapo (2000 @ 105°C, SC) Polymer: 34x ChengX (PC Series)
Supervisor IC	IN1S429I - DCG
Fan Model	DWPH EFS-14E12H (140mm, 12V, 0.30A, Hydraulic Dynamic Bearing Fan)
5VSB Circuit	-
Standby PWM Controller	XLSEMI XL2576S

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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Kinpower PS1000GM
Ambient: 30°C - 40°C (86°F - 104°F)

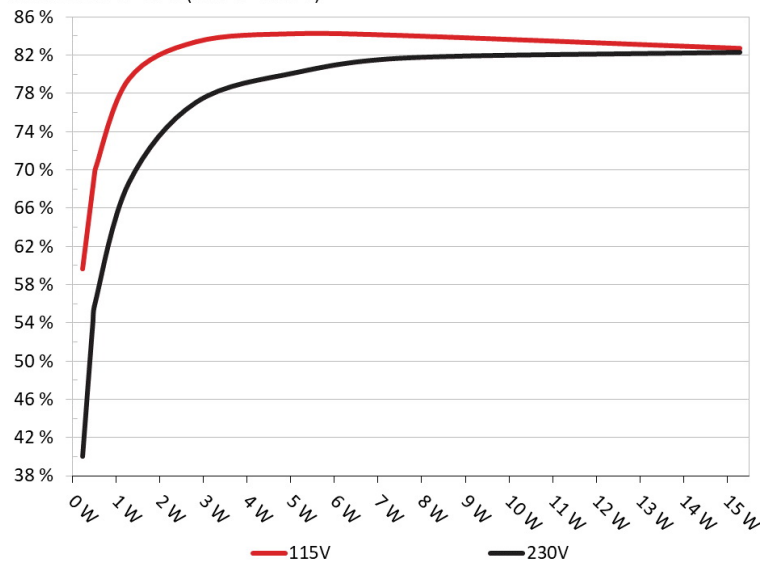


INFO

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: Kinpower PS1000GM
Ambient: 28°C - 32°C (82.4°F - 89.6°F)



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	59.679%	0.037
	5.156V	0.389W		114.84V
2	0.09A	0.464W	70.023%	0.062
	5.155V	0.663W		114.84V
3	0.55A	2.83W	83.387%	0.24
	5.145V	3.394W		114.84V
4	1A	5.136W	84.232%	0.308
	5.135V	6.097W		114.84V
5	1.5A	7.688W	84.016%	0.353
	5.125V	9.15W		114.84V
6	3A	15.28W	82.7%	0.414
	5.093V	18.475W		114.84V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.232W	40.005%	0.016
	5.156V	0.581W		229.85V
2	0.09A	0.464W	53.847%	0.024
	5.155V	0.864W		229.86V
3	0.55A	2.83W	77.046%	0.098
	5.145V	3.675W		229.84V
4	1A	5.136W	80.177%	0.149
	5.136V	6.409W		229.84V
5	1.5A	7.688W	81.702%	0.2
	5.125V	9.412W		229.84V
6	3A	15.28W	82.283%	0.295
	5.093V	18.57W		229.84V

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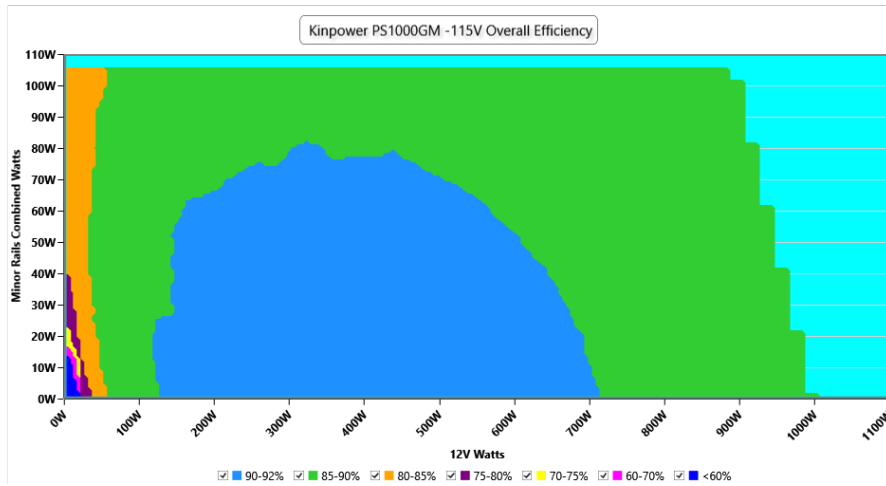
115V

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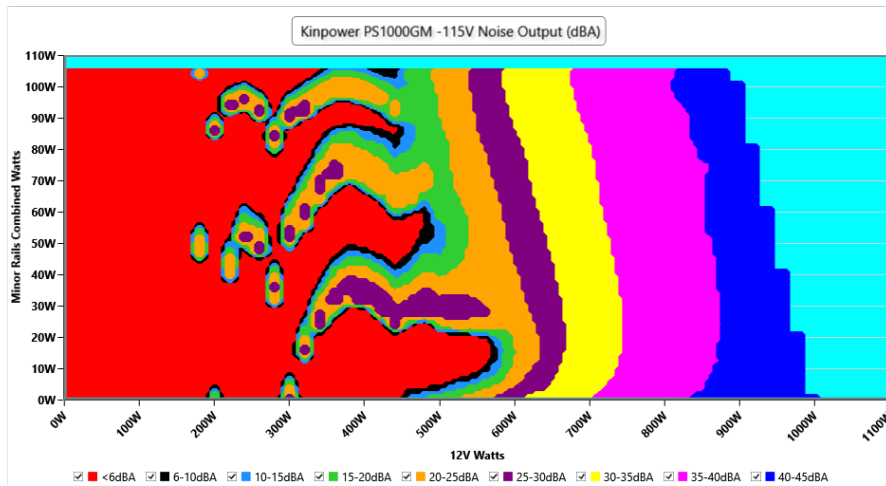
EFFICIENCY GRAPH 115V



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:	114.86 V	114.80 V	113.85 V	114.91 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:	1.419	1.417	1.340	1.421	1.490	PASS
Mains Voltage THD:	0.15 %	0.09 %	N/A	0.26 %	2.00 %	PASS
Real Power:	0.077 W	0.018 W	N/A	0.128 W	N/A	N/A
Apparent Power:	11.392 W	11.363 W	N/A	11.427 W	N/A	N/A
Power Factor:	0.008	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%	6.382A	1.934A	1.966A	0.976A	99.995	87.99%	0	<6.0	38.65°C	0.928
	12.284V	5.169V	3.357V	5.124V	113.645				34.42°C	114.83V
20%	13.770A	2.91A	2.962A	1.175A	199.948	90.958%	0	<6.0	39.47°C	0.964
	12.276V	5.154V	3.342V	5.106V	219.828				34.88°C	114.8V
30%	21.520A	3.404A	3.468A	1.376A	299.999	91.384%	0	<6.0	40.47°C	0.978
	12.265V	5.142V	3.33V	5.089V	328.283				35.41°C	114.76V
40%	29.249A	3.898A	3.978A	1.578A	399.581	91.131%	802	18.2	35.85°C	0.985
	12.253V	5.131V	3.318V	5.072V	438.472				41.38°C	114.73V
50%	36.671A	4.887A	4.996A	1.781A	499.284	90.778%	771	16.8	36.3°C	0.99
	12.238V	5.116V	3.303V	5.054V	550.007				42.19°C	114.69V
60%	44.183A	5.882A	6.024A	1.986A	599.851	90.189%	1177	29.7	36.95°C	0.993
	12.223V	5.101V	3.287V	5.035V	665.103				43.49°C	114.66V
70%	51.645A	6.884A	7.063A	2.193A	699.577	89.516%	1452	35.3	37.03°C	0.995
	12.208V	5.085V	3.271V	5.017V	781.515				44.07°C	114.62V
80%	59.190A	7.892A	8.112A	2.3A	799.611	88.724%	1662	38.9	37.71°C	0.996
	12.193V	5.07V	3.254V	5V	901.243				45.77°C	114.58V
90%	67.077A	8.405A	8.639A	2.409A	899.396	87.725%	1730	40.1	38.31°C	0.993
	12.179V	5.057V	3.241V	4.983V	1025.238				47.34°C	114.55V
100%	74.786A	8.923A	9.203A	3.028A	999.405	87.033%	1730	40.1	39.53°C	0.996
	12.165V	5.043V	3.227V	4.954V	1148.308				49.62°C	114.5V
110%	82.444A	9.952A	10.378A	3.039A	1100.035	85.956%	1730	40.1	40.05°C	0.997
	12.150V	5.025V	3.208V	4.936V	1279.751				50.99°C	114.46V
CL1	0.114A	12.196A	12.463A	0A	104.308	80.771%	1073	26.6	34.14°C	0.932
	12.281V	5.084V	3.282V	5.129V	129.144				39.66°C	114.81V
CL2	0.113A	19.699A	0A	0A	101.353	78.993%	0	<6.0	43.01°C	0.931
	12.288V	5.074V	3.318V	5.136V	128.314				35.94°C	114.82V
CL3	0.113A	0A	20.246A	0A	67.385	71.72%	0	<6.0	43.68°C	0.913
	12.277V	5.101V	3.26V	5.133V	93.96				34.65°C	114.83V
CL4	82.087A	0A	0A	0.008A	1000.002	87.686%	1739	40.2	39.23°C	0.995
	12.181V	5.11V	3.294V	5.034V	1140.444				50.18°C	114.51V

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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	1.208A	0.482A	0.489A	0.194A	19.998	73.948%	0	<6.0	33.49°C	0.734
	12.298V	5.188V	3.374V	5.151V	27.045				30.43°C	114.87V
40W	2.660A	0.675A	0.685A	0.292A	39.999	82.905%	0	<6.0	35.09°C	0.846
	12.286V	5.184V	3.371V	5.146V	48.25				31.81°C	114.86V
60W	4.114A	0.868A	0.882A	0.389A	59.999	85.438%	0	<6.0	36.59°C	0.888
	12.283V	5.181V	3.368V	5.142V	70.226				32.8°C	114.85V
80W	5.562A	1.062A	1.079A	0.487A	79.942	87.976%	0	<6.0	37.86°C	0.913
	12.282V	5.177V	3.365V	5.137V	90.865				33.88°C	114.84V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	16.3 mV	14.3 mV	12.7 mV	9.6 mV	Pass
20% Load	14.7 mV	17.5 mV	14.1 mV	12.8 mV	Pass
30% Load	13.9 mV	19.7 mV	15.7 mV	16.7 mV	Pass
40% Load	15.0 mV	23.3 mV	16.0 mV	21.6 mV	Pass
50% Load	17.0 mV	27.5 mV	19.9 mV	25.4 mV	Pass
60% Load	18.8 mV	30.4 mV	21.7 mV	30.0 mV	Pass
70% Load	22.1 mV	34.7 mV	21.4 mV	34.5 mV	Pass
80% Load	23.2 mV	39.1 mV	23.1 mV	38.5 mV	Pass
90% Load	26.7 mV	40.4 mV	24.0 mV	44.4 mV	Pass
100% Load	33.2 mV	46.0 mV	27.8 mV	50.5 mV	Fail
110% Load	38.1 mV	50.6 mV	31.0 mV	54.3 mV	Fail
Crossload 1	24.0 mV	51.6 mV	35.6 mV	14.1 mV	Fail
Crossload 2	25.5 mV	35.0 mV	174.9 mV	14.4 mV	Fail
Crossload 3	18.5 mV	45.5 mV	17.8 mV	12.8 mV	Pass
Crossload 4	31.8 mV	18.4 mV	15.8 mV	50.8 mV	Fail

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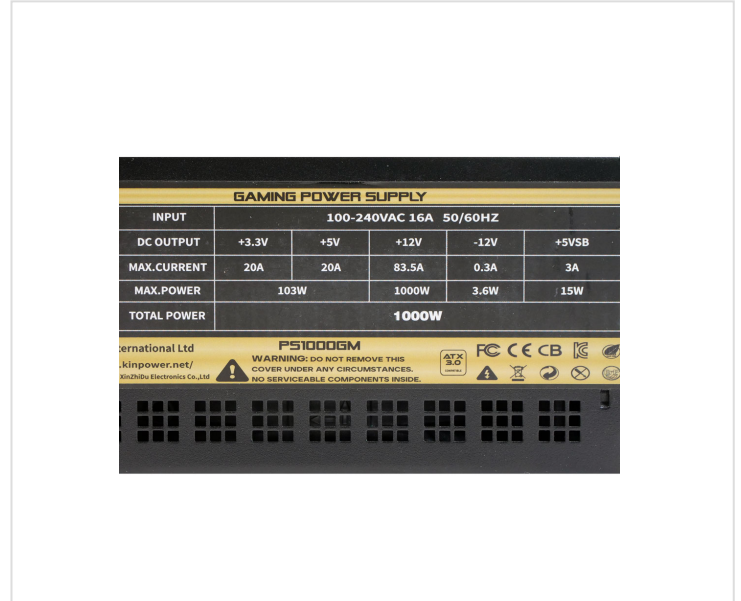
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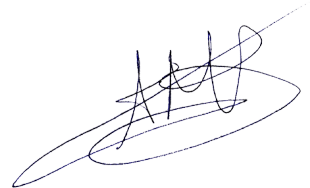
Kinpower PS1000GM



Top side



Power specifications label



Aristeidis Bitziopoulos
Lab Director

CERTIFICATIONS 115V



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