

Anex

Zalman GigaMax III 850W

Lab ID#: ZL85002187
Receipt Date: May 22, 2023
Test Date: May 30, 2023

Report: 23PS2187A
Report Date: May 30, 2023

DUT INFORMATION		DUT SPECIFICATIONS	
Brand	Zalman	Rated Voltage (Vrms)	200-240
Manufacturer (OEM)		Rated Current (Arms)	7
Series	GigaMax III	Rated Frequency (Hz)	50-60
Model Number	ZM850-GV3	Rated Power (W)	850
Serial Number		Type	ATX12V
DUT Notes		Cooling	120mm Fluid Dynamic Bearing Fan (D12BM-12)
		Semi-Passive Operation	X
		Cable Design	Semi 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	87.798%
Average Efficiency 5VSB	77.297%
Standby Power Consumption (W)	0.1458000
Average PF	0.965
Avg Noise Output	32.57 dB(A)
Efficiency Rating (ETA)	SILVER
Noise Rating (LAMBDA)	Standard++

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	62.5	3	0.3
	Watts	130		850	15	3.6
Total Max. Power (W)		850				

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

Hold-Up Time (ms)	16.4
AC Loss to PWR_OK Hold Up Time (ms)	15.2
PWR_OK Inactive to DC Loss Delay (ms)	1.2

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CABLES AND CONNECTORS

Captive Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (550mm)	1	1	18-22AWG	No
8 pin EPS12V (750mm) / 4+4 pin EPS12V(+150mm)	1	2	18AWG	No
SATA (460mm+150mm+150mm)	2	6	18AWG	No
4-pin Molex (460mm+150mm+150mm)	1	3	18AWG	No

Modular Cables

6+2 pin PCIe (550mm+150mm)	1	2	18AWG	No
6+2 pin PCIe (550mm)	2	2	18AWG	No
12+4 pin PCIe (610mm) (600W)	1	1	16-24AWG	No

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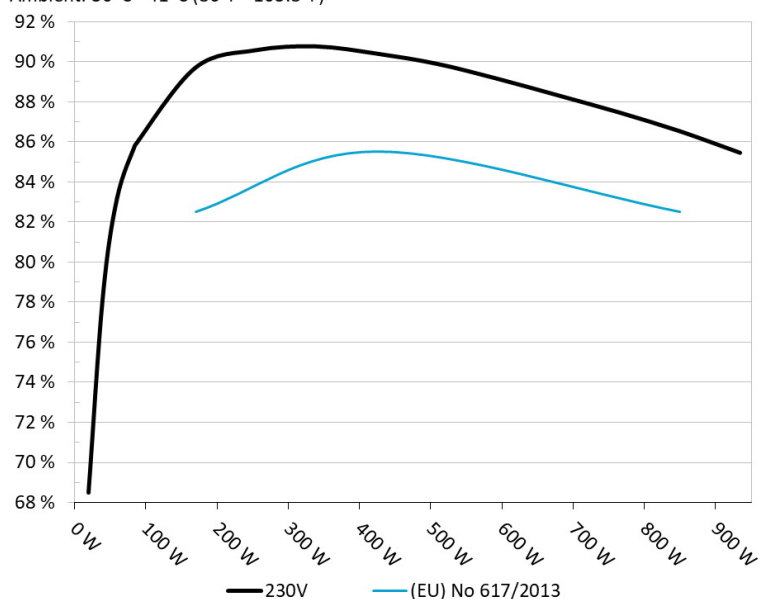
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Zalman GigaMax II 850W

Ambient: 30°C - 41°C (86°F - 105.8°F)



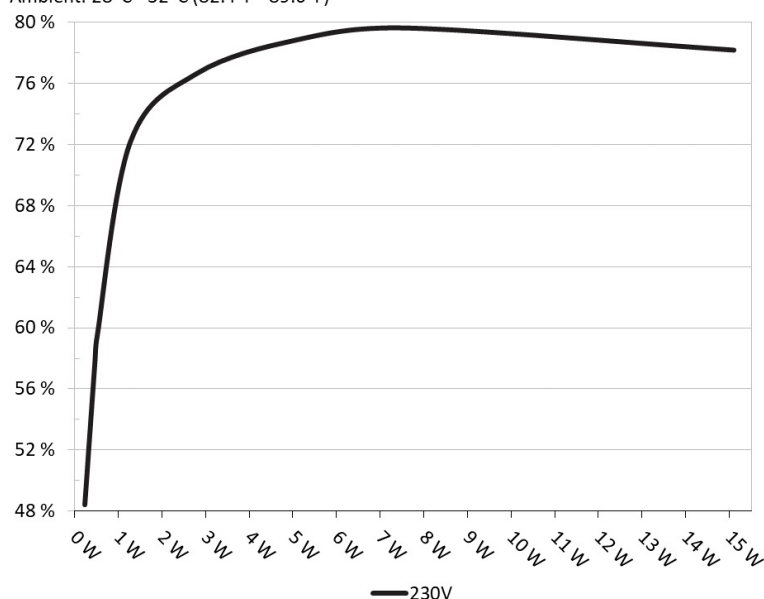
INFO

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: Zalman GigaMax II 850W

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.23W	48.644%	0.016
	5.119V	0.473W		229.79V
2	0.09A	0.461W	57.978%	0.026
	5.119V	0.796W		229.81V
3	0.55A	2.808W	76.856%	0.114
	5.106V	3.654W		229.8V
4	1A	5.093W	79.043%	0.182
	5.093V	6.443W		229.79V
5	1.5A	7.619W	79.814%	0.211
	5.079V	9.547W		229.79V
6	3A	15.104W	78.37%	0.313
	5.035V	19.272W		229.79V

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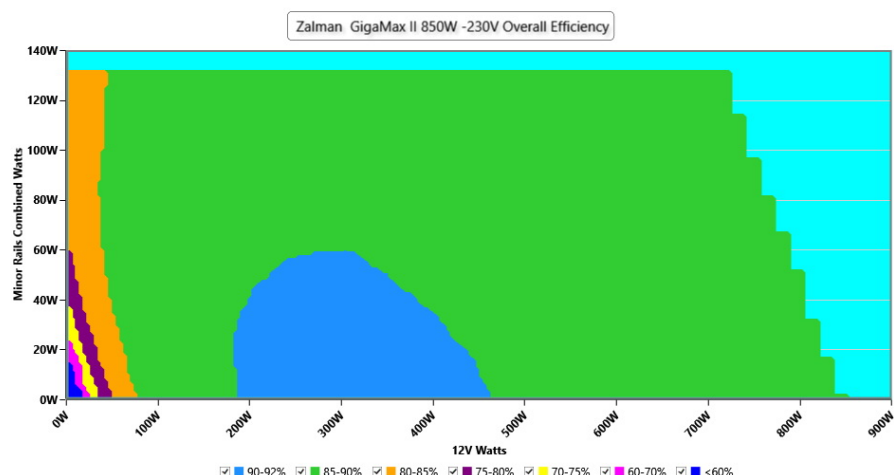
230V

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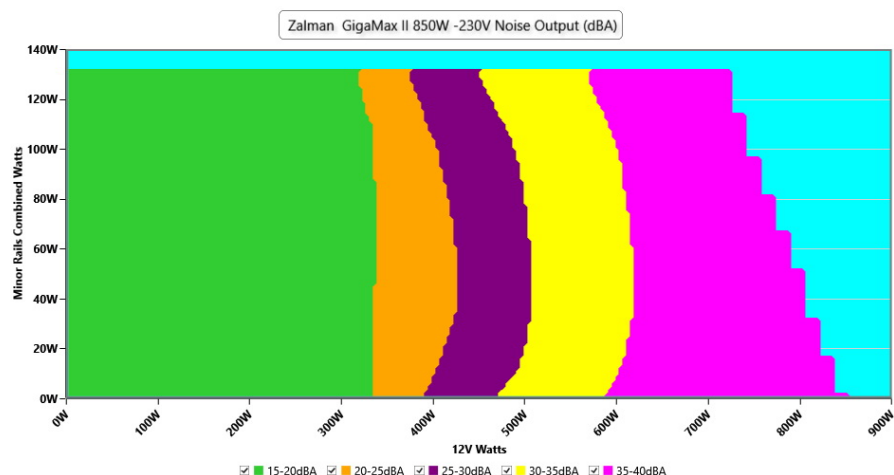
EFFICIENCY GRAPH 230V



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:	229.79 V	229.76 V	227.70 V	229.85 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:	1.416	1.415	1.340	1.417	1.490	PASS
Mains Voltage THD:	0.14 %	0.12 %	N/A	0.17 %	2.00 %	PASS
Real Power:	0.146 W	0.100 W	N/A	0.204 W	N/A	N/A
Apparent Power:	35.652 W	35.594 W	N/A	35.708 W	N/A	N/A
Power Factor:	0.005	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%	5.192A	1.959A	1.967A	0.984A	84.999	85.303%	771	19.5	34.21°C	0.864
	12.211V	5.104V	3.356V	5.08V	99.644				38.42°C	229.78V
20%	11.400A	2.948A	2.961A	1.185A	169.936	89.213%	773	19.6	34.5°C	0.941
	12.196V	5.088V	3.344V	5.064V	190.484				39.16°C	229.77V
30%	17.970A	3.448A	3.465A	1.387A	254.942	90.09%	775	19.6	35.19°C	0.963
	12.181V	5.075V	3.334V	5.049V	282.987				40.27°C	229.75V
40%	24.563A	3.95A	3.971A	1.59A	340.025	90.275%	780	19.7	35.86°C	0.973
	12.166V	5.063V	3.324V	5.033V	376.654				41.31°C	229.74V
50%	30.807A	4.954A	4.983A	1.794A	424.82	89.915%	1001	26.4	36.4°C	0.979
	12.150V	5.047V	3.311V	5.016V	472.467				42.26°C	229.72V
60%	37.045A	5.965A	6.001A	2A	509.347	89.404%	1248	31.1	36.53°C	0.983
	12.135V	5.03V	3.299V	5V	569.715				42.82°C	229.71V
70%	43.367A	6.982A	7.025A	2.208A	594.654	88.655%	1452	35.9	37.32°C	0.985
	12.119V	5.013V	3.289V	4.983V	670.754				44.35°C	229.69V
80%	49.712A	8.001A	8.056A	2.316A	679.479	87.827%	1626	38.8	37.92°C	0.987
	12.102V	4.996V	3.277V	4.966V	773.661				45.99°C	229.67V
90%	56.470A	8.529A	8.572A	2.424A	764.93	86.976%	1771	40.9	38.45°C	0.989
	12.085V	4.982V	3.266V	4.951V	879.477				47.54°C	229.65V
100%	62.980A	9.057A	9.126A	3.049A	849.74	86.044%	1845	43.5	39.39°C	0.991
	12.068V	4.968V	3.254V	4.92V	987.567				49.43°C	229.63V
110%	69.373A	10.105A	10.281A	3.057A	934.32	84.968%	1852	43.7	40.59°C	0.992
	12.051V	4.947V	3.239V	4.907V	1099.62				51.52°C	229.62V
CL1	0.114A	15.772A	15.731A	0.001A	131.299	82.212%	796	20.0	34.56°C	0.926
	12.207V	4.964V	3.281V	5.083V	159.709				39.98°C	229.76V
CL2	0.113A	20.053A	0A	0A	101.341	81.707%	774	19.6	34.53°C	0.898
	12.216V	4.984V	3.316V	5.097V	124.032				41.55°C	229.77V
CL3	0.113A	0A	20.035A	0.001A	67.4	76.213%	769	19.5	34.34°C	0.842
	12.215V	5.049V	3.295V	5.098V	88.438				43.43°C	229.78V
CL4	70.379A	0A	0A	0.001A	849.535	86.094%	1810	42.0	39.33°C	0.991
	12.071V	5.054V	3.295V	5.029V	986.761				50.29°C	229.64V

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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	1.215A	0.488A	0.49A	0.196A	20.003	68.007%	764	19.4	30.01°C	0.528
	12.225V	5.124V	3.369V	5.11V	29.413				33.1°C	229.78V
40W	2.676A	0.683A	0.686A	0.294A	39.998	77.774%	763	19.4	31.29°C	0.706
	12.218V	5.121V	3.367V	5.106V	51.428				34.6°C	229.78V
60W	4.136A	0.879A	0.883A	0.392A	59.995	82.701%	764	19.4	32.06°C	0.798
	12.215V	5.117V	3.364V	5.101V	72.544				35.57°C	229.78V
80W	5.594A	1.075A	1.08A	0.491A	79.938	85.335%	768	19.5	33.08°C	0.853
	12.212V	5.113V	3.361V	5.096V	93.678				36.89°C	229.79V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	14.02mV	13.08mV	16.42mV	14.22mV	Pass
20% Load	14.07mV	14.31mV	17.70mV	14.63mV	Pass
30% Load	14.58mV	15.27mV	18.21mV	17.03mV	Pass
40% Load	16.01mV	16.04mV	19.13mV	18.52mV	Pass
50% Load	18.47mV	17.06mV	20.21mV	21.13mV	Pass
60% Load	15.45mV	14.40mV	18.62mV	19.23mV	Pass
70% Load	22.66mV	19.16mV	22.82mV	21.53mV	Pass
80% Load	26.91mV	19.57mV	27.78mV	23.84mV	Pass
90% Load	31.77mV	20.59mV	28.80mV	21.89mV	Pass
100% Load	39.99mV	26.77mV	31.79mV	31.65mV	Pass
110% Load	45.86mV	25.94mV	33.77mV	29.83mV	Pass
Crossload1	17.55mV	20.66mV	22.73mV	16.28mV	Pass
Crossload2	16.22mV	22.32mV	18.62mV	14.22mV	Pass
Crossload3	13.66mV	12.67mV	21.18mV	14.73mV	Pass
Crossload4	43.34mV	24.99mV	24.40mV	23.69mV	Pass

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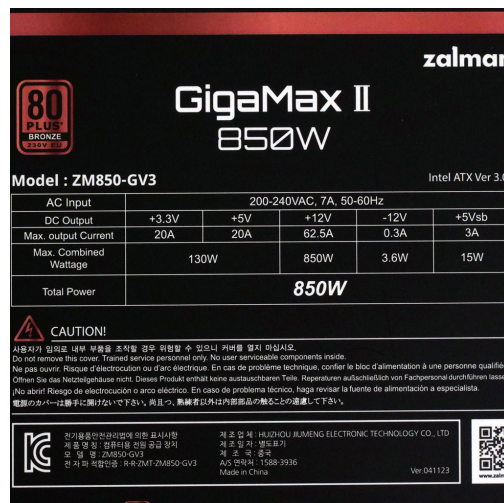
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Top side

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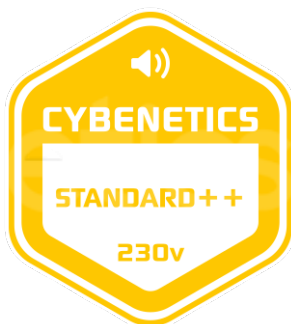


Power specifications label



Aristeidis Bitziopoulos
Lab Director

CERTIFICATIONS 230V



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