

Anex

Maxpower MP-0650W-B

Lab ID#: MP65002362
 Receipt Date: Feb 6, 2024
 Test Date: Feb 20, 2024

Report: 24PS2362A
 Report Date: Feb 22, 2024

DUT INFORMATION	
Brand	Maxpower
Manufacturer (OEM)	Maxpower
Series	Cyclops M1
Model Number	M1-650B
Serial Number	
DUT Notes	

DUT SPECIFICATIONS	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	47-63
Rated Power (W)	650
Type	ATX12V
Cooling	120mm Rifle Bearing Fan (BDH12025S)
Semi-Passive Operation	X
Cable Design	Fixed cables

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	✓

115V

Average Efficiency	85.132%
Efficiency With 10W (≤500W) or 2% (>500W)	57.798
Average Efficiency 5VSB	78.161%
Standby Power Consumption (W)	0.0647000
Average PF	0.978
Avg Noise Output	33.79 dB(A)
Efficiency Rating (ETA)	SILVER
Noise Rating (LAMBDA)	Standard++

230V

Average Efficiency	86.793%
Average Efficiency 5VSB	74.672%
Standby Power Consumption (W)	0.1705000
Average PF	0.920
Avg Noise Output	34.00 dB(A)
Efficiency Rating (ETA)	BRONZE
Noise Rating (LAMBDA)	Standard++

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	8	9	47	2	0.5
	Watts	90		564	10	6
Total Max. Power (W)		650				

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

Hold-Up Time (ms)	16
AC Loss to PWR_OK Hold Up Time (ms)	14.3
PWR_OK Inactive to DC Loss Delay (ms)	1.7

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CABLES AND CONNECTORS

Captive Cables

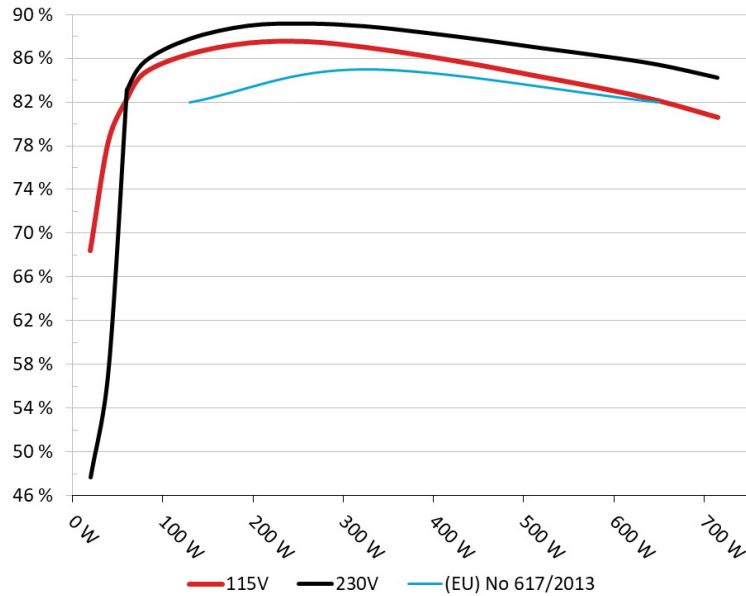
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 24 pin (550mm)	1	1	18AWG	No
4+4 pin EPS12V (690mm+145mm)	1	2	18AWG	No
6+2 pin PCIe (560mm)	1	1	18AWG	No
6+2 pin PCIe (580mm)	1	1	18AWG	No
SATA (460mm+150mm)	2	4	18AWG	No
4-pin Molex (480mm+150mm)	1	2	18AWG	No

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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Gamdias Cyclops M1 650B
Ambient: 37°C - 47°C (98.6°F - 116.6°F)

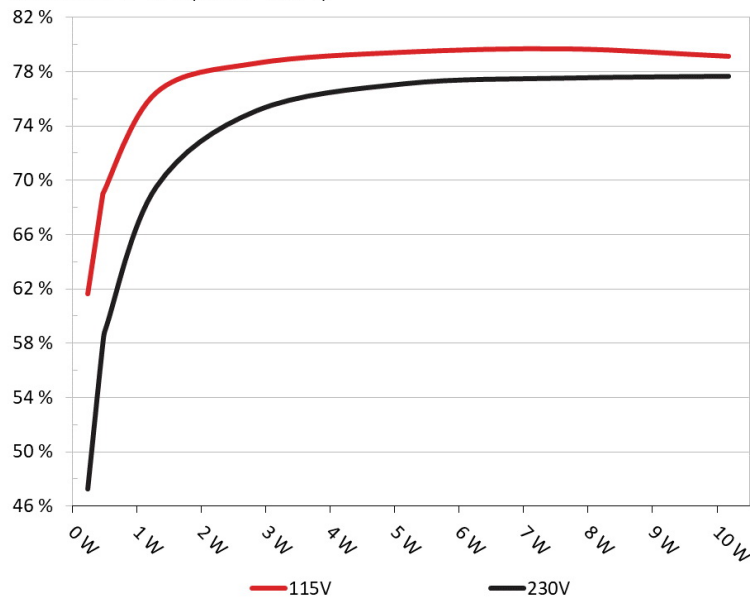


INFO

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: Gamdias Cyclops M1 650B
Ambient: 34°C - 36°C (93.2°F - 96.8°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	0.234W	61.616%	0.057
	5.204V	0.353W		114.87V
2	0.09A	0.468W	68.991%	0.106
	5.203V	0.679W		114.87V
3	0.55A	2.848W	78.632%	0.329
	5.177V	3.622W		114.87V
4	1A	5.151W	79.451%	0.386
	5.151V	6.483W		114.87V
5	1.5A	7.682W	79.693%	0.418
	5.121V	9.64W		114.87V
6	2A	10.182W	79.145%	0.438
	5.091V	12.866W		114.87V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.234W	47.272%	0.024
	5.205V	0.495W		229.95V
2	0.09A	0.468W	57.971%	0.039
	5.204V	0.808W		229.95V
3	0.55A	2.848W	75.083%	0.161
	5.178V	3.792W		229.94V
4	1A	5.152W	77.079%	0.236
	5.152V	6.686W		229.94V
5	1.5A	7.684W	77.498%	0.29
	5.122V	9.915W		229.94V
6	2A	10.185W	77.628%	0.325
	5.092V	13.119W		229.94V

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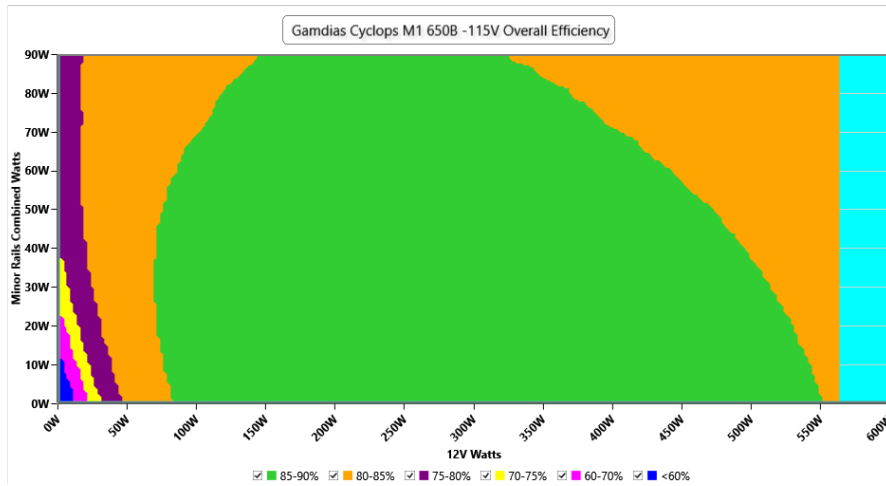
115V

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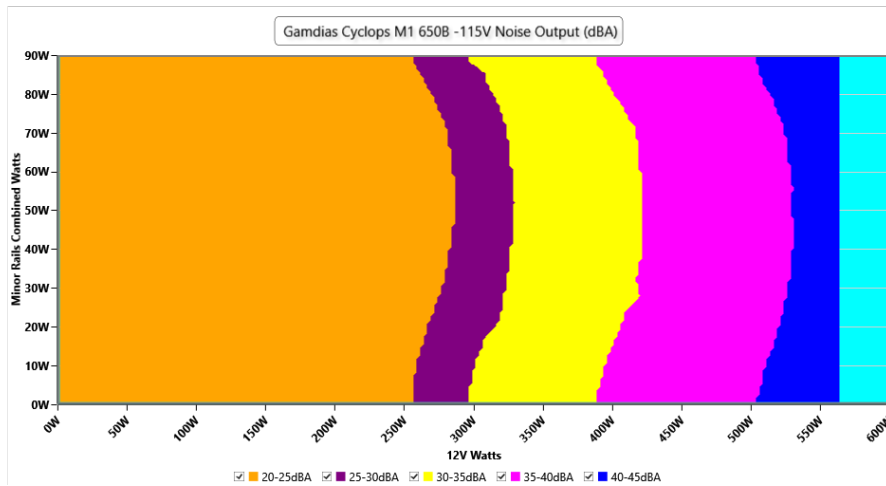
EFFICIENCY GRAPH 115V



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:	114.89 V	114.83 V	113.85 V	114.95 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.98 Hz	59.40 Hz	60.01 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.419	1.417	1.340	1.422	1.490	PASS
Mains Voltage THD:	0.15 %	0.09 %	N/A	0.27 %	2.00 %	PASS
Real Power:	0.065 W	0.038 W	N/A	0.091 W	N/A	N/A
Apparent Power:	6.173 W	6.145 W	N/A	6.204 W	N/A	N/A
Power Factor:	0.009	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%	3.510A	1.916A	1.928A	0.976A	64.999	82.224%	948	22.6	40.29°C	0.927
	12.365V	5.22V	3.423V	5.122V	79.05				44.52°C	114.85V
20%	8.025A	2.884A	2.903A	1.177A	129.928	86.383%	964	23.0	40.84°C	0.961
	12.340V	5.201V	3.41V	5.097V	150.409				45.43°C	114.83V
30%	12.901A	3.375A	3.398A	1.38A	194.931	87.392%	1143	27.6	41.49°C	0.977
	12.315V	5.186V	3.399V	5.073V	223.051				46.56°C	114.81V
40%	17.790A	3.866A	3.896A	1.583A	260.007	87.518%	1043	24.7	41.78°C	0.985
	12.300V	5.174V	3.388V	5.054V	297.086				47.31°C	114.79V
50%	22.372A	4.853A	4.889A	1.791A	325.006	86.998%	1474	34.5	42.08°C	0.989
	12.269V	5.152V	3.375V	5.025V	373.582				48.14°C	114.76V
60%	26.912A	5.846A	5.889A	2A	389.351	86.231%	1676	37.5	42.78°C	0.99
	12.245V	5.133V	3.362V	5V	451.522				49.37°C	114.74V
70%	31.554A	6.848A	6.898A	2.212A	454.66	85.316%	1827	40.7	43.37°C	0.001
	12.219V	5.112V	3.349V	4.973V	532.918				50.45°C	114.82V
80%	36.213A	7.855A	7.913A	2.322A	519.476	84.298%	1897	41.0	43.86°C	0.992
	12.194V	5.092V	3.336V	4.953V	616.245				51.96°C	114.68V
90%	41.287A	8.371A	8.422A	2.432A	584.872	83.278%	1905	41.1	44.47°C	0.992
	12.168V	5.077V	3.324V	4.934V	702.314				53.49°C	114.66V
100%	46.525A	8.89A	8.961A	2A	649.403	82.116%	1906	41.2	45.38°C	0.993
	12.140V	5.061V	3.314V	4.946V	790.843				55.41°C	114.63V
110%	51.340A	9.922A	10.088A	2A	714.793	80.607%	1906	41.2	46.67°C	0.994
	12.108V	5.039V	3.301V	4.93V	886.766				57.6°C	114.6V
CL1	1.948A	10.589A	10.549A	0.489A	116.404	80.089%	1224	29.7	40.06°C	0.96
	12.319V	5.118V	3.384V	5.113V	145.346				45.57°C	114.83V
CL2	1.943A	8.077A	0.965A	0.486A	71.5	81.158%	983	23.4	40.09°C	0.933
	12.353V	5.163V	3.419V	5.141V	88.099				47.18°C	114.85V
CL3	1.942A	0.958A	6.27A	0.486A	52.901	79.325%	949	22.7	40.42°C	0.917
	12.357V	5.222V	3.413V	5.143V	66.689				49.43°C	114.85V
CL4	52.493A	0.971A	0.985A	0.493A	649.911	83.595%	1906	41.2	45.31°C	0.993
	12.175V	5.152V	3.349V	5.07V	777.469				56.29°C	114.64V

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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	1.198A	0.477A	0.481A	0.193A	20.007	68.443%	932	22	36.59°C	0.812
	12.398V	5.244V	3.433V	5.184V	29.232				39.64°C	115.17V
40W	2.640A	0.668A	0.673A	0.29A	40.005	78.398%	938	22.2	37.51°C	0.921
	12.382V	5.237V	3.43V	5.172V	51.029				40.9°C	115.16V
60W	4.084A	0.861A	0.867A	0.388A	60.004	82.537%	940	22.3	38.41°C	0.963
	12.371V	5.232V	3.426V	5.162V	72.7				42.21°C	115.16V
80W	5.528A	1.053A	1.061A	0.485A	79.972	84.666%	940	22.3	39.57°C	0.961
	12.361V	5.226V	3.421V	5.151V	94.458				43.56°C	115.15V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	15.88mV	22.26mV	15.56mV	10.64mV	Pass
20% Load	16.86mV	20.40mV	15.98mV	10.38mV	Pass
30% Load	17.79mV	21.95mV	16.50mV	11.20mV	Pass
40% Load	20.31mV	21.95mV	16.86mV	11.98mV	Pass
50% Load	21.70mV	22.31mV	18.72mV	11.67mV	Pass
60% Load	24.18mV	24.88mV	20.37mV	13.47mV	Pass
70% Load	8.97mV	12.21mV	9.57mV	10.89mV	Pass
80% Load	30.42mV	27.82mV	23.06mV	14.56mV	Pass
90% Load	33.15mV	27.46mV	25.55mV	16.10mV	Pass
100% Load	43.79mV	33.66mV	29.93mV	17.81mV	Pass
110% Load	48.08mV	32.95mV	30.66mV	18.90mV	Pass
Crossload1	21.45mV	32.21mV	23.46mV	13.36mV	Pass
Crossload2	18.67mV	24.83mV	16.29mV	10.94mV	Pass
Crossload3	17.17mV	20.25mV	16.70mV	10.32mV	Pass
Crossload4	42.54mV	27.61mV	23.35mV	16.07mV	Pass

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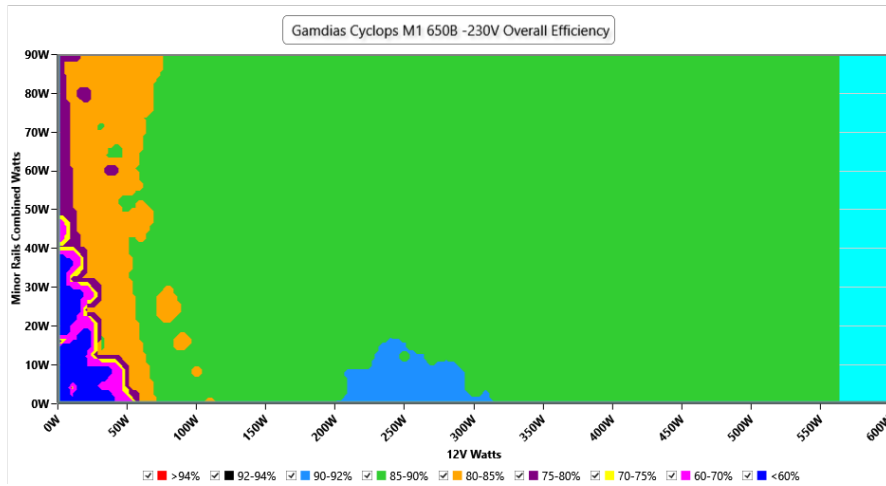
230V

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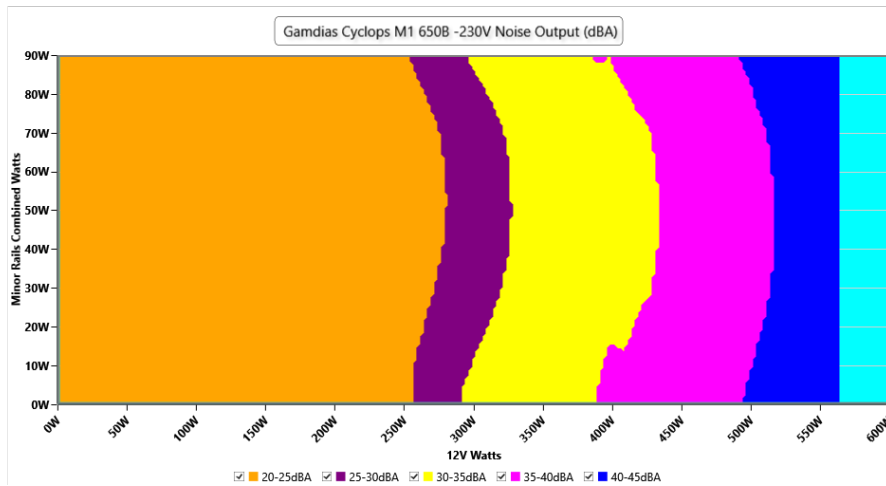
EFFICIENCY GRAPH 230V



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:	229.96 V	229.89 V	227.70 V	230.01 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:	1.417	1.416	1.340	1.419	1.490	PASS
Mains Voltage THD:	0.13 %	0.08 %	N/A	0.19 %	2.00 %	PASS
Real Power:	0.171 W	0.116 W	N/A	0.231 W	N/A	N/A
Apparent Power:	20.962 W	20.915 W	N/A	21.031 W	N/A	N/A
Power Factor:	0.007	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%	3.510A	1.916A	1.929A	0.976A	64.998	83.123%	947	22.6	40.37°C	0.646
	12.364V	5.22V	3.422V	5.121V	78.194				44.63°C	229.94V
20%	8.025A	2.885A	2.904A	1.177A	129.926	87.824%	960	22.9	40.7°C	0.858
	12.340V	5.2V	3.409V	5.096V	147.937				45.28°C	229.93V
30%	12.900A	3.375A	3.398A	1.38A	194.925	89.02%	1111	26.9	41.39°C	0.929
	12.316V	5.186V	3.399V	5.073V	218.962				46.39°C	229.92V
40%	17.798A	3.868A	3.897A	1.584A	260.008	89.211%	1347	32.0	41.81°C	0.951
	12.294V	5.171V	3.387V	5.049V	291.455				47.32°C	229.91V
50%	22.372A	4.853A	4.89A	1.791A	325.001	88.96%	1536	35.8	42.23°C	0.961
	12.270V	5.152V	3.374V	5.024V	365.332				48.3°C	229.9V
60%	26.913A	5.847A	5.891A	2A	389.34	88.391%	1721	38.2	42.73°C	0.967
	12.244V	5.131V	3.361V	4.998V	440.476				49.26°C	229.88V
70%	31.556A	6.85A	6.9A	2.213A	454.655	87.713%	1867	40.9	43.34°C	0.972
	12.218V	5.11V	3.348V	4.971V	518.344				50.35°C	229.88V
80%	36.220A	7.859A	7.917A	2.323A	519.469	86.973%	1903	41.1	43.78°C	0.976
	12.192V	5.09V	3.334V	4.95V	597.277				51.79°C	229.87V
90%	41.298A	8.375A	8.426A	2.434A	584.871	86.261%	1910	41.3	44.95°C	0.979
	12.165V	5.074V	3.323V	4.93V	678.029				54.01°C	229.85V
100%	46.537A	8.895A	8.965A	2A	649.393	85.448%	1911	41.3	45.61°C	0.981
	12.137V	5.059V	3.313V	4.943V	759.985				55.69°C	229.84V
110%	51.351A	9.926A	10.091A	2A	714.784	84.26%	1911	41.3	46.87°C	0.984
	12.105V	5.037V	3.299V	4.927V	848.311				57.8°C	229.83V
CL1	1.950A	10.594A	10.548A	0.489A	116.404	81.283%	1430	33.8	40.27°C	0.851
	12.310V	5.116V	3.384V	5.108V	143.215				45.81°C	229.94V
CL2	1.944A	8.077A	0.965A	0.486A	71.501	82.184%	1025	24.3	40.27°C	0.682
	12.351V	5.163V	3.419V	5.14V	87.001				47.37°C	229.94V
CL3	1.942A	0.958A	6.27A	0.486A	52.903	76.634%	959	22.9	41.37°C	0.593
	12.354V	5.222V	3.413V	5.142V	65.791				50.43°C	229.95V
CL4	52.501A	0.971A	0.985A	0.493A	649.92	86.821%	1906	41.2	45.45°C	0.981
	12.173V	5.152V	3.349V	5.069V	748.58				56.43°C	229.84V

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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	1.200A	0.477A	0.48A	0.193A	20.007	47.69%	939	22.3	36.58°C	0.327
	12.389V	5.242V	3.434V	5.181V	27.64				39.64°C	230.41V
40W	2.641A	0.668A	0.674A	0.29A	40.005	57.676%	940	22.3	37.21°C	0.637
	12.379V	5.237V	3.43V	5.172V	69.364				40.54°C	230.4V
60W	4.086A	0.861A	0.867A	0.388A	60.005	83.4%	940	22.3	38.4°C	0.651
	12.369V	5.231V	3.425V	5.161V	71.945				41.89°C	230.43V
80W	5.529A	1.053A	1.061A	0.485A	79.973	85.741%	941	22.3	39.21°C	0.735
	12.360V	5.226V	3.421V	5.151V	93.274				43.09°C	230.42V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	15.88mV	20.40mV	15.36mV	10.27mV	Pass
20% Load	17.12mV	20.30mV	15.46mV	10.12mV	Pass
30% Load	17.79mV	19.79mV	16.13mV	10.58mV	Pass
40% Load	19.23mV	20.71mV	16.44mV	11.04mV	Pass
50% Load	22.32mV	22.36mV	17.94mV	11.61mV	Pass
60% Load	24.03mV	24.32mV	19.14mV	12.39mV	Pass
70% Load	26.86mV	23.49mV	20.99mV	12.90mV	Pass
80% Load	28.72mV	25.04mV	21.51mV	13.21mV	Pass
90% Load	31.97mV	25.19mV	23.58mV	14.19mV	Pass
100% Load	41.24mV	31.56mV	26.48mV	15.49mV	Pass
110% Load	49.38mV	32.25mV	27.97mV	15.80mV	Pass
Crossload1	19.21mV	32.17mV	24.78mV	12.37mV	Pass
Crossload2	16.65mV	24.68mV	16.55mV	10.58mV	Pass
Crossload3	16.19mV	19.37mV	16.08mV	10.38mV	Pass
Crossload4	39.86mV	24.87mV	22.07mV	13.49mV	Pass

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

Anex

Maxpower MP-0650W-B

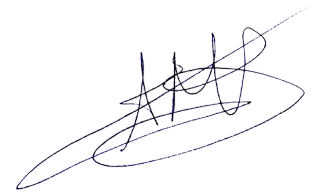


Top side



Power specifications label

CERTIFICATIONS 115V

Aristeidis Bitziopoulos
Lab Director

CERTIFICATIONS 230V



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