MSI MAG A650GL

Serial Number

Lab ID MS65002422

Certification ID 252422

Test Result Report ID: 24PS2422A

Certificate Issue Date: Apr 23, 2024

Scheme: ETA-EMI PSU

115V



230V



115V



230V



Scheme: LAMBDA PSU



Aristeidis Bitziopoulos, Certification Body General Manager

General Information

Test Equipment

Electronic Loads	Chroma 63601-5 x2 Chroma 63600-2 Chroma 63640-80-80 x10 Chroma 63610-80-20
AC Sources	Chroma 6530, APM SP300VAC4000W-P, GW Instek ASR-3500
Power Analyzers	Rohde & Schwarz HMC8015 & NPA701
Oscilloscopes	Picoscope 4444, 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
EMI Analyzer	TekBox TBMR-110M-EU
Isolation Transformer	4kVA
UPS	FSP Champ Tower 3kVA, CyberPower OLS3000E 3kVA
Testing Methodology	Cybenetics PSU Test Protocol

DUT Information(Non-accredited measurements)

Product Identification Details	
Brand	MSI
Model	MAG A650GL
OEM/ODM	CWT
Serial Number	
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10
Rated Frequency (Hz)	47-63

Rated Power (W)	650
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	120mm Fluid Dynamic Bearing Fan (DF1202512FDHN)
Semi-Passive Operation	✗
Cybenetics Testing Information	
Lab ID	MS65002422
Date of receipt	Apr 4, 2024
Testing Date	Apr 19, 2024
Report Issued Date	Apr 23, 2024
DUT Notes	CWT GPX PLATFORM
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors(Non-accredited measurements)

Modular Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (600mm)	1	1	18AWG	No
4+4 pin EPS12V (750mm)	2	2	18AWG	No
6+2 pin PCIe (600mm+150mm)	2	4	18AWG	No
SATA (500mm+150mm+150mm)	2	6	18AWG	No
4-pin Molex (500mm+150mm+150mm) / FDD (+155mm)	1	3 / 1	18-20AWG	No

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	54	2.5	0.3
	Watts	100		648	12.5	3.6
Total Max. Power (W)		650				

Test Results

Temperature & Compliance Info

Temperature Range (°C /°F)	28-32 / 82.4-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	88.124%
Average Noise Output (>1450 Load Combinations)	37.10dBA
Average PF (>1450 Load Combinations)	0.979
Efficiency With 10W (≤500W) or 2% (>500W) Load	61.711%
Standby Power Consumption	0.0434W
Non-Accredited	
12V Ripple (Full Load)	33.10mV
5V Ripple (Full Load)	16.67mV
3.3V Ripple (Full Load)	15.37mV
5VSB Ripple (Full Load)	18.06mV
12V Load Regulation	0.66%
5V Load Regulation	0.52%
3.3V Load Regulation	0.82%

5VSB Load Regulation	2.92%
Inrush Current	23.570A

230V

Accredited		
Average Efficiency (>1450 load combinations)		90.376%
Average Noise Output (>1450 Load Combinations)		36.78dBA
Average PF (>1450 Load Combinations)		0.930
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
Standby Power Consumption		0.1097W
Non-Accredited		
12V Ripple (Full Load)		32.96mV
5V Ripple (Full Load)		17.15mV
3.3V Ripple (Full Load)		15.34mV
5VSB Ripple (Full Load)		18.57mV
12V Load Regulation		0.68%
5V Load Regulation		0.50%
3.3V Load Regulation		0.79%
5VSB Load Regulation		2.94%
Inrush Current		53.170A
Hold-Up Time & PWR_OK Signal		14.50ms
AC Loss to PWR_OK Hold Up Time		13.30ms
PWR_OK Inactive to DC Loss Delay		1.20ms
PSU Timings: T1 (20% / 100%)	52.0ms	52.0ms
PSU Timings: T3 (20% / 100%)	326.0ms	324.0ms
OPP (26.89°C / 42.30°C)	124.16%	117.15%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	14.5
AC Loss to PWR_OK Hold Up Time (ms)	13.3

PWR_OK Inactive to DC Loss Delay (ms)	1.2

Tables

115V

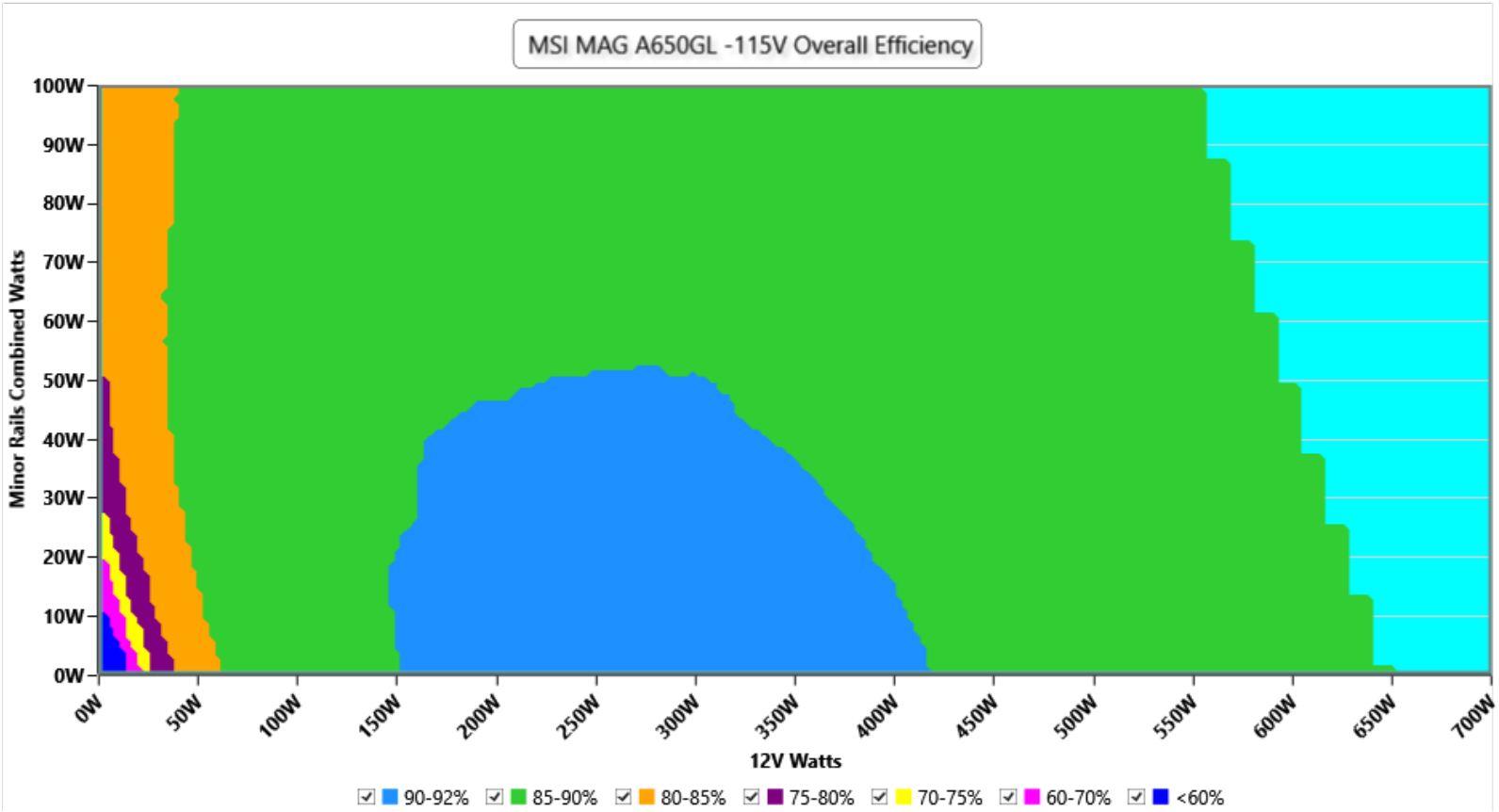
Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	115.06 V	115.03 V	113.85 V	115.11 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.99 Hz	59.40 Hz	60.01 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.416	1.415	1.340	1.418	1.490	PASS
Mains Voltage THD:	0.13 %	0.09 %	N/A	0.19 %	2.00 %	PASS
Real Power:	0.043 W	0.012 W	N/A	0.062 W	N/A	N/A
Apparent Power:	10.235 W	10.148 W	N/A	10.336 W	N/A	N/A
Power Factor:	0.006	N/A	N/A	N/A	N/A	N/A

230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	231.02 V	230.91 V	227.70 V	231.08 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:	0.17 %	0.15 %	N/A	0.27 %	2.00 %	PASS
Real Power:	0.110 W	0.096 W	N/A	0.136 W	N/A	N/A
Apparent Power:	34.397 W	34.117 W	N/A	34.648 W	N/A	N/A
Power Factor:	0.003	N/A	N/A	N/A	N/A	N/A

Efficiency Graph

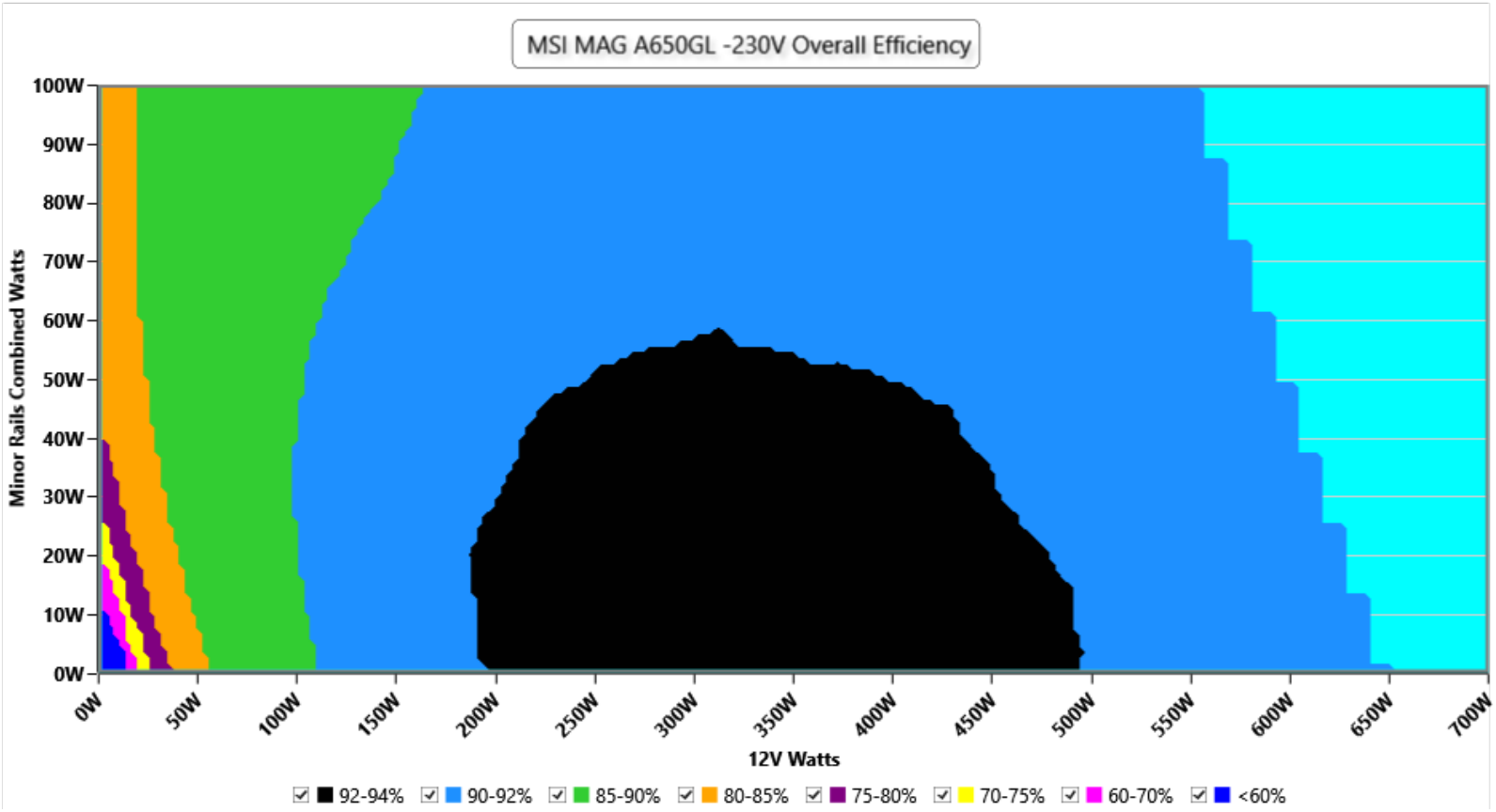
115V



INFO

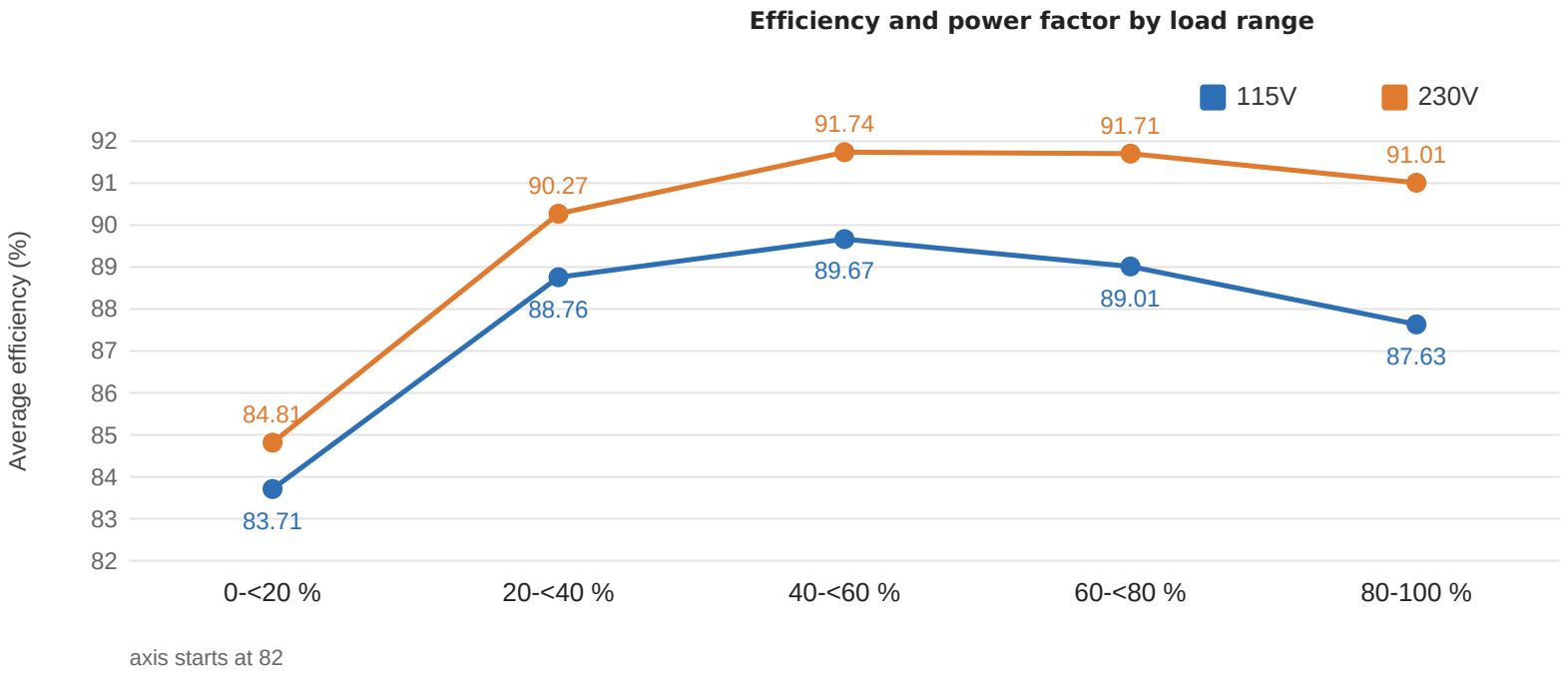
This graph depicts the PSU`s efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations

230V

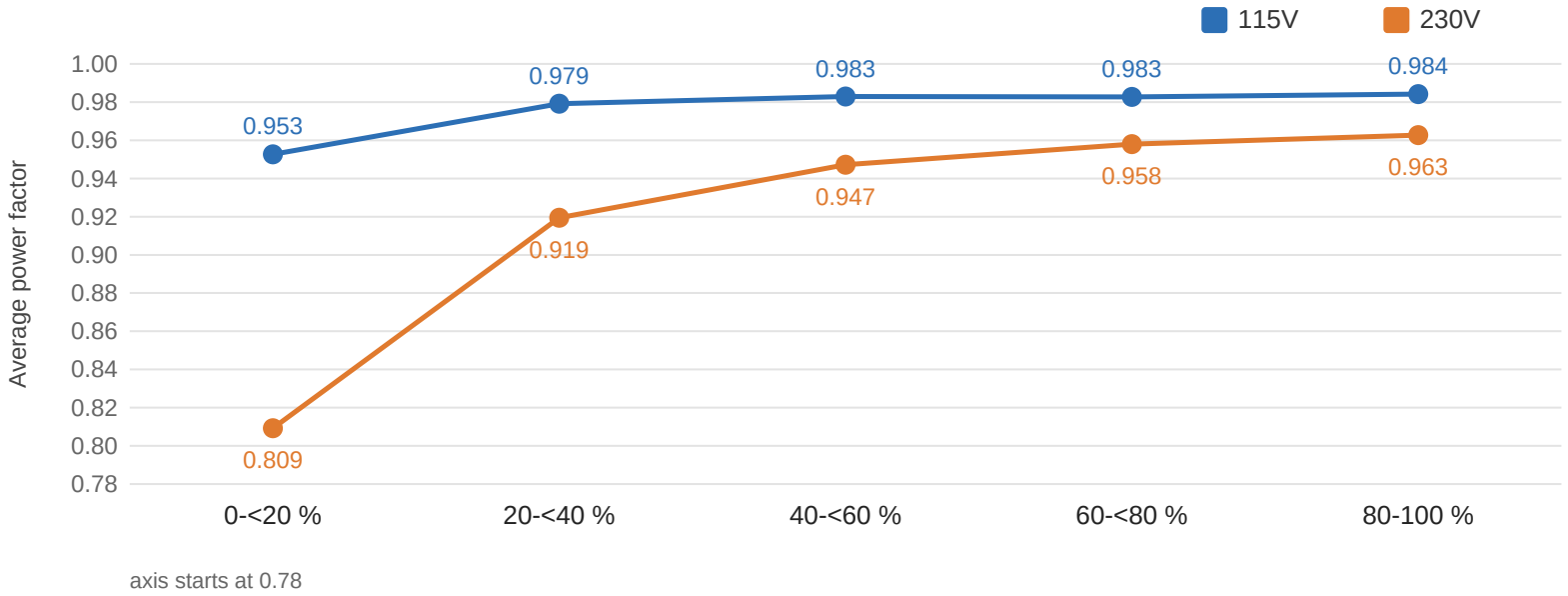


INFO

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



axis starts at 82



axis starts at 0.78

Load range	Points	Efficiency 115V	Efficiency 230V	PF 115V	PF 230V
0-<20 %	195 / 195	83.71%	84.81%	0.953	0.809
20-<40 %	340 / 340	88.76%	90.27%	0.979	0.919
40-<60 %	332 / 332	89.67%	91.74%	0.983	0.947
60-<80 %	339 / 339	89.01%	91.71%	0.983	0.958
80-100 %	343 / 343	87.63%	91.01%	0.984	0.963
70-100 % (High-Load)	509 / 509	87.98%	91.19%	0.984	0.962
All (published average)	1549 / 1549	88.12%	90.38%	0.979	0.930

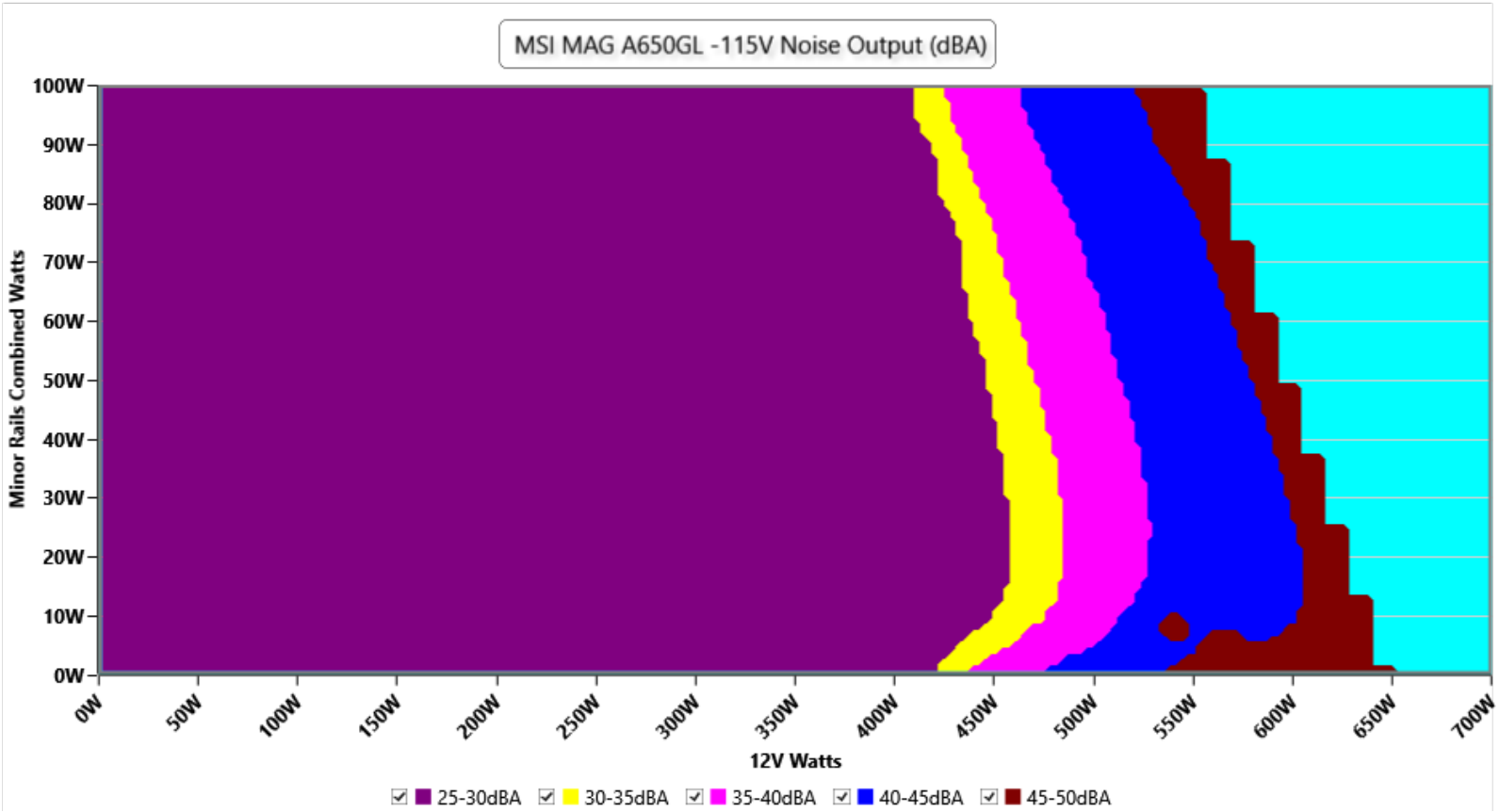
INFO

The average efficiency and power factor in five ranges of load. Calculated from the 1549 (115V) and 1549 (230V) load combinations of the certification sweep, the same data that ETA and LAMBDA use (test 0 excluded). Load is the total DC output as a share of the rated 650 W. These are plain averages of the valid readings, as for the ETA rating, so the ranges combined give back the published averages.

Informational. Not part of the ETA or LAMBDA rating.

Noise Graph

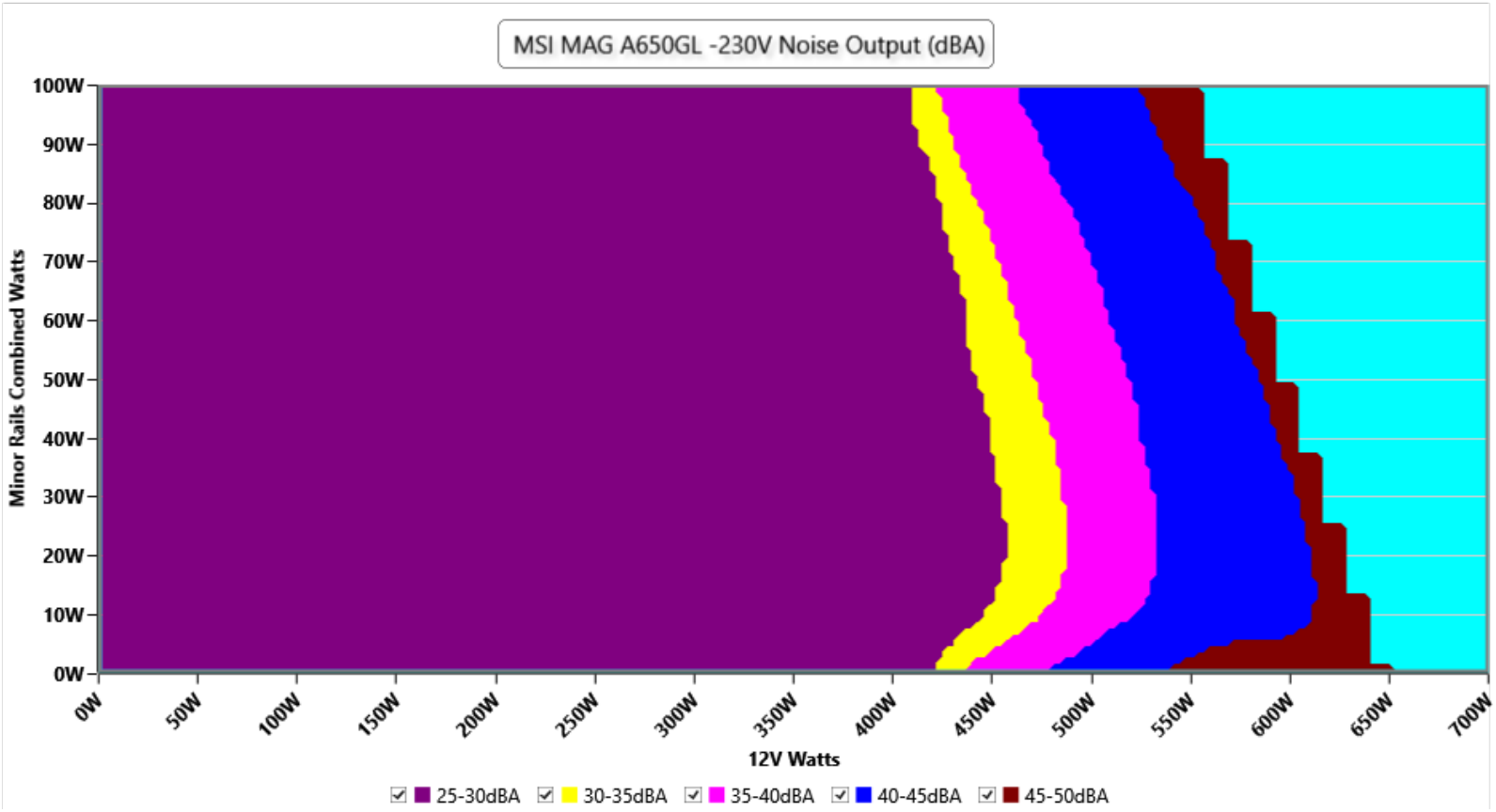
115V



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

230V



INFO

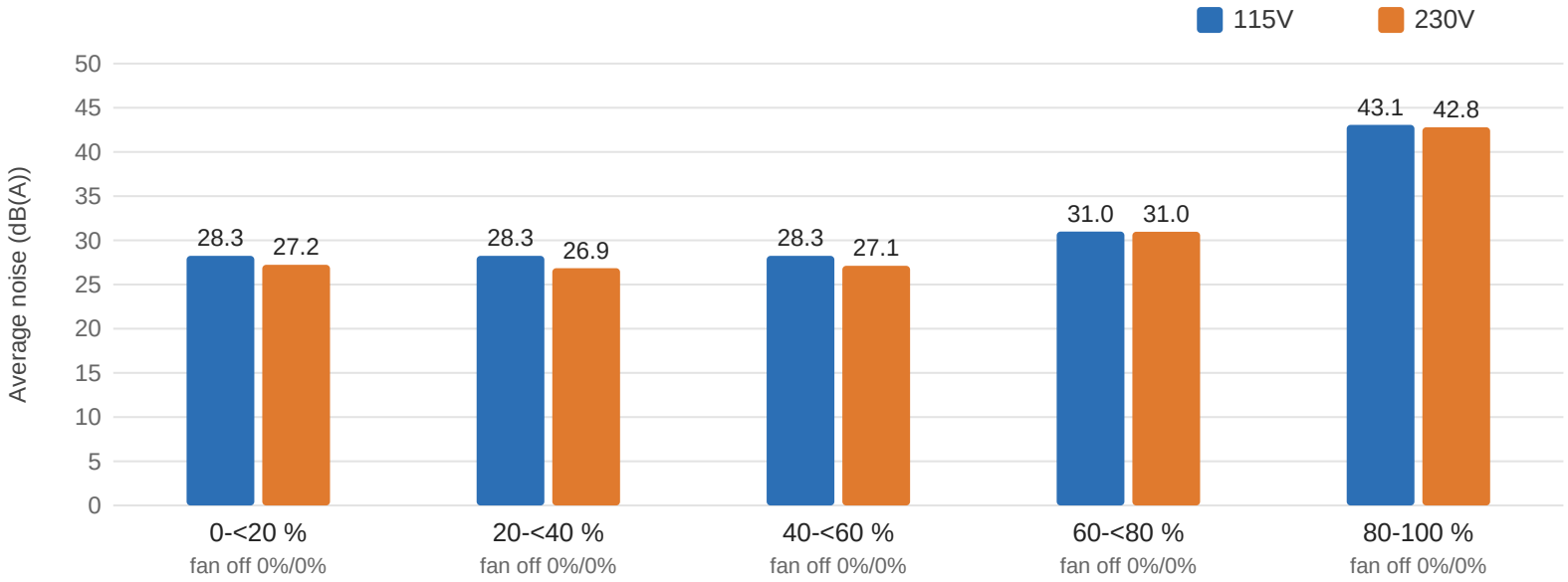
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Noise by load range

High-Load Index (70-100 % load)

Noise **41.5 dB(A)** at 115V and **41.3 dB(A)** at 230V · loudest point 47.7 dB(A)

Efficiency 87.98% / 91.19% · power factor 0.984 / 0.962 (115V / 230V)



Load range	Noise 115V avg (loudest)	Noise 230V avg (loudest)	Fan off 115V / 230V
0-<20 %	28.3 (28.3)	27.2 (28.3)	0% / 0%
20-<40 %	28.3 (28.3)	26.9 (28.3)	0% / 0%
40-<60 %	28.3 (28.3)	27.1 (28.3)	0% / 0%
60-<80 %	31.0 (44.1)	31.0 (43.4)	0% / 0%
80-100 %	43.1 (47.7)	42.8 (46.2)	0% / 0%
70-100 % (High-Load)	41.5 (47.7)	41.3 (46.2)	0% / 0%
All (published average)	37.1 (47.7)	36.8 (46.2)	0% / 0%

INFO

The average noise in five ranges of load, the share of points with the fan stopped (semi-passive operation), and the High-Load Index: the same figures for all points at 70 % of the rated output and above. Calculated from the 1549 (115V) and 1549 (230V) load combinations of the certification sweep, the same data that ETA and LAMBDA use (test 0 excluded). Load is the total DC output as a share of the rated 650 W. Noise is averaged on the energy scale, as for LAMBDA, so the ranges combined give back the published average noise. Each load combination is held for about five seconds; the stabilized readings at fixed loads are under "Noise under high ambient temperature".

Informational. Not part of the ETA or LAMBDA rating.

Noise under high ambient temperature (indicative)

115V

Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	1139 RPM · 29.5 dB(A) · 40.1 °C	1139 RPM · 29.5 dB(A) · 40.1 °C	**+0.0 dB(A)**
20%	1144 RPM · 29.6 dB(A) · 40.9 °C	1144 RPM · 29.6 dB(A) · 40.9 °C	**+0.0 dB(A)**
50%	1154 RPM · 29.9 dB(A) · 42.4 °C	1154 RPM · 29.9 dB(A) · 42.4 °C	**+0.0 dB(A)**
100%	2409 RPM · 48.5 dB(A) · 44.6 °C	2409 RPM · 48.5 dB(A) · 44.6 °C	**+0.0 dB(A)**

230V

Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	1144 RPM · 29.6 dB(A) · 40.3 °C	1144 RPM · 29.6 dB(A) · 40.3 °C	**+0.0 dB(A)**
20%	1148 RPM · 29.8 dB(A) · 40.7 °C	1148 RPM · 29.8 dB(A) · 40.7 °C	**+0.0 dB(A)**
50%	1157 RPM · 29.9 dB(A) · 42.1 °C	1157 RPM · 29.9 dB(A) · 42.1 °C	**+0.0 dB(A)**
100%	2415 RPM · 48.7 dB(A) · 45.2 °C	2415 RPM · 48.7 dB(A) · 45.2 °C	**+0.0 dB(A)**

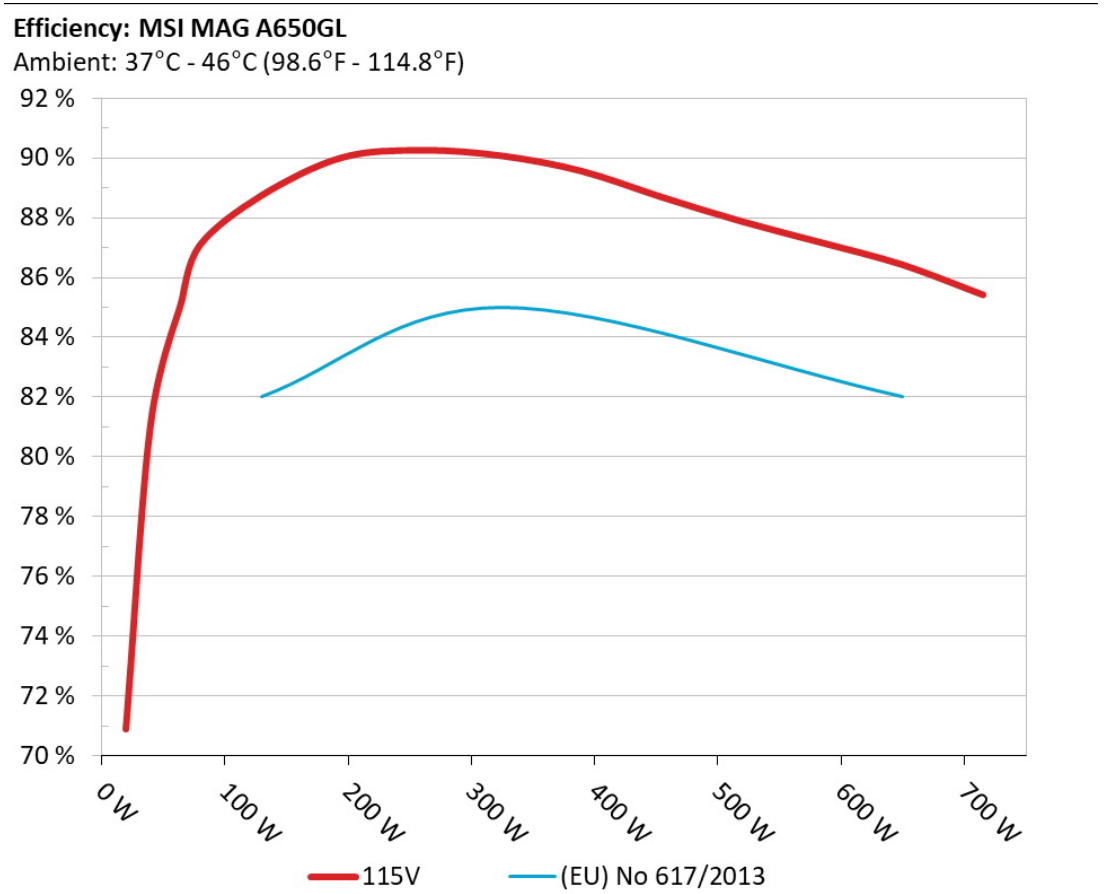
INFO

Fan speed, noise and the measured intake temperature at 10, 20, 50 and 100 % load, from the two load regulation tests: at normal ambient (about 30-32 °C) and at high ambient (about 40-47 °C). These are stabilized readings at fixed loads, not averages over the certification sweep, so they are indicative of how the fan behaves when it is hot. "<6.0" is the floor of our sound meter, with the fan stopped; with the fan stopped, the intake sensor can read higher than the chamber air.

Informational. Not part of the ETA or LAMBDA rating.

Indicative Performance

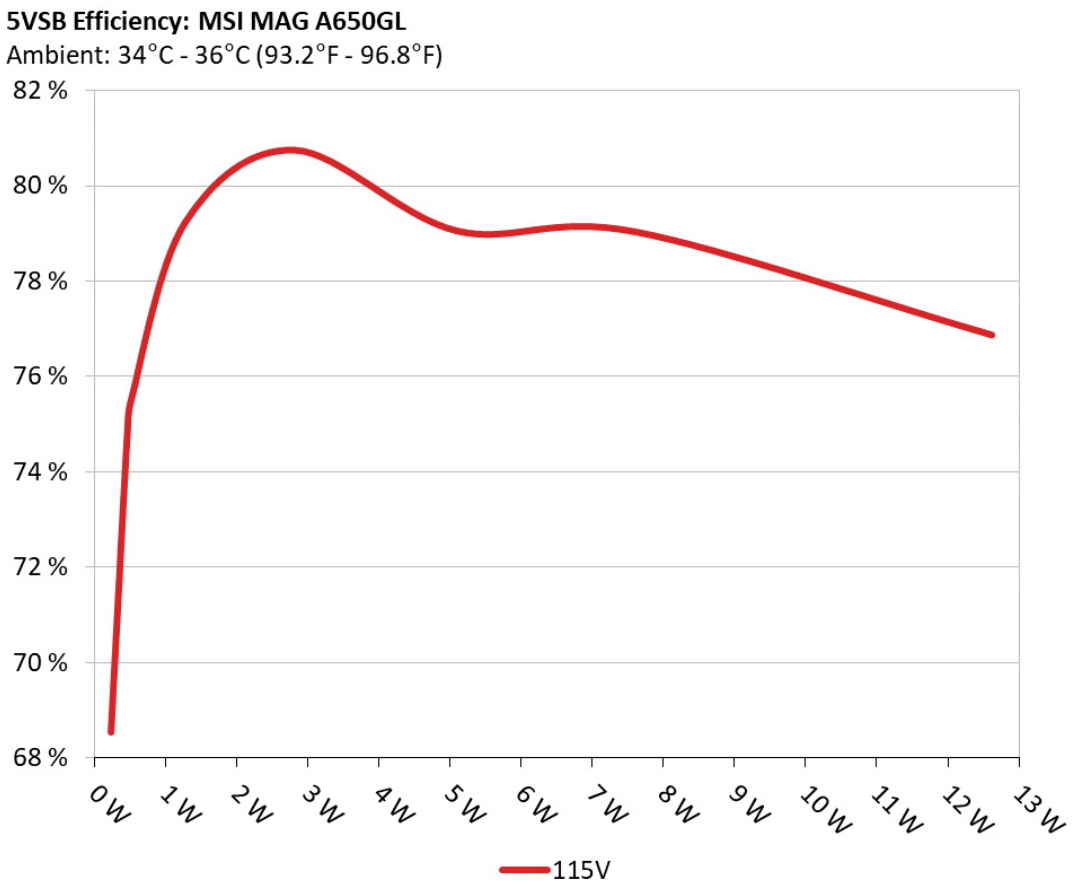
Efficiency under high ambient temperature



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

5VSB Efficiency (ERP LOT 3/6 & CEC)

115V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.23W	68.55%	0.033
	5.113V	0.335W		114.94V
2	0.09A	0.46W	74.842%	0.06
	5.111V	0.614W		114.94V
3	0.55A	2.804W	80.762%	0.263
	5.099V	3.472W		114.92V
4	1A	5.087W	79.068%	0.352
	5.087V	6.434W		114.91V
5	1.5A	7.61W	79.045%	0.407
	5.073V	9.627W		114.91V
6	2.5A	12.613W	76.884%	0.462
	5.046V	16.406W		114.9V

Supplementary Tests (For Reference)

Typical 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%	3.612A	1.994A	1.981A	0.985A	64.997	85.059%	1139	29.5	40.05°C	0.955
	12.016V	5.015V	3.331V	5.075V	76.417				44.33°C	114.88V
20%	8.248A	2.992A	2.974A	1.185A	129.926	88.73%	1144	29.6	40.9°C	0.973
	12.007V	5.012V	3.328V	5.062V	146.428				45.58°C	114.86V
30%	13.240A	3.493A	3.472A	1.387A	194.925	89.999%	1146	29.7	41.33°C	0.978
	11.999V	5.01V	3.326V	5.048V	216.587				46.33°C	114.84V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
40%	18.247A	3.993A	3.971A	1.589A	260.007	90.248%	1145	29.7	41.65°C	0.981
	11.991V	5.009V	3.325V	5.035V	288.104				47.27°C	114.82V
50%	22.908A	4.994A	4.967A	1.793A	324.998	90.057%	1154	29.9	42.36°C	0.984
	11.982V	5.006V	3.322V	5.021V	360.878				48.45°C	114.8V
60%	27.520A	5.995A	5.966A	1.997A	389.308	89.551%	1156	29.9	42.87°C	0.983
	11.973V	5.004V	3.319V	5.007V	434.733				49.39°C	114.77V
70%	32.221A	6.999A	6.966A	2.203A	454.611	88.678%	1706	40.8	43.24°C	0.982
	11.965V	5.002V	3.316V	4.992V	512.653				50.3°C	114.74V
80%	36.930A	8.001A	7.968A	2.308A	519.44	87.862%	2200	46.2	43.65°C	0.982
	11.956V	4.998V	3.313V	4.981V	591.203				51.68°C	114.72V
90%	42.045A	8.505A	8.456A	2.414A	584.846	87.146%	2407	48.5	44.35°C	0.985
	11.948V	4.996V	3.311V	4.971V	671.109				53.4°C	114.69V
100%	47.102A	9.009A	8.975A	2.52A	649.578	86.417%	2409	48.5	44.63°C	0.987
	11.940V	4.994V	3.309V	4.959V	751.672				54.79°C	114.67V
110%	51.899A	10.016A	10.073A	2.525A	715.009	85.41%	2411	48.6	42.81°C	0.987
	11.931V	4.991V	3.306V	4.951V	837.152				53.72°C	114.65V
CL1	0.115A	12.044A	11.985A	0A	101.288	83.25%	1153	29.9	40.46°C	0.968
	12.001V	4.998V	3.313V	5.085V	121.669				49.93°C	114.86V
CL2	0.115A	19.998A	0A	0A	101.338	80.738%	1152	29.9	41.14°C	0.969
	12.004V	4.998V	3.326V	5.09V	125.515				50.57°C	114.87V
CL3	0.115A	0A	19.943A	0A	67.394	75.329%	1127	29.1	40.12°C	0.959
	12.003V	5.01V	3.31V	5.091V	89.466				50.2°C	114.89V
CL4	54.354A	0A	0A	0A	649.495	87.568%	2400	48.4	42.85°C	0.987
	11.949V	5.014V	3.328V	5.037V	741.707				52.11°C	114.68V

The results above are not used in the certification process

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%	3.612A	1.994A	1.981A	0.985A	64.998	86.095%	1144	29.6	40.33°C	0.775
	12.014V	5.016V	3.332V	5.075V	75.493				44.57°C	229.88V
20%	8.248A	2.992A	2.974A	1.185A	129.929	90.167%	1148	29.8	40.73°C	0.888
	12.006V	5.013V	3.329V	5.061V	144.096				45.34°C	229.86V
30%	13.243A	3.492A	3.472A	1.387A	194.931	91.561%	1152	29.9	41.24°C	0.922
	11.998V	5.011V	3.327V	5.047V	212.905				46.32°C	229.86V
40%	18.249A	3.993A	3.971A	1.589A	260.012	92.103%	1154	29.9	41.63°C	0.938
	11.991V	5.009V	3.325V	5.034V	282.296				47.21°C	229.83V
50%	22.910A	4.993A	4.967A	1.793A	325.007	92.195%	1157	29.9	42.11°C	0.948
	11.982V	5.007V	3.322V	5.02V	352.528				48.11°C	229.83V
60%	27.522A	5.995A	5.965A	1.997A	389.318	91.967%	1162	30.0	42.62°C	0.954
	11.973V	5.005V	3.32V	5.007V	423.324				49.16°C	229.82V
70%	32.222A	6.999A	6.967A	2.203A	454.618	91.391%	1719	41.0	43.11°C	0.958
	11.964V	5.002V	3.316V	4.992V	497.462				50.2°C	229.81V
80%	36.931A	8A	7.967A	2.308A	519.433	90.919%	2204	46.2	43.61°C	0.961
	11.956V	4.999V	3.313V	4.981V	571.321				51.66°C	229.78V
90%	42.045A	8.504A	8.455A	2.414A	584.829	90.542%	2415	48.7	44.33°C	0.963
	11.948V	4.997V	3.311V	4.97V	645.921				53.39°C	229.79V
100%	47.107A	9.008A	8.975A	2.521A	649.599	90.129%	2415	48.7	45.16°C	0.965
	11.939V	4.995V	3.309V	4.959V	720.755				55.27°C	229.77V
110%	51.908A	10.015A	10.072A	2.526A	715.033	89.604%	2414	48.6	43.78°C	0.966
	11.930V	4.992V	3.306V	4.949V	798.001				54.7°C	229.76V
CL1	0.116A	12.043A	11.984A	0A	101.292	83.97%	1168	30.4	41.77°C	0.866
	12.000V	4.998V	3.313V	5.085V	120.633				50.18°C	229.87V
CL2	0.115A	19.998A	0A	0A	101.339	81.682%	1168	30.4	40.55°C	0.87
	12.003V	4.998V	3.326V	5.089V	124.067				50.19°C	229.87V
CL3	0.115A	0A	19.943A	0A	67.396	76.222%	1143	29.6	40.27°C	0.812
	12.003V	5.01V	3.31V	5.091V	88.423				48.8°C	229.87V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL4	54.357A	0A	0A	0A	649.506	91.185%	2417	48.7	43.86°C	0.965
	11.949V	5.014V	3.328V	5.036V	712.303				53.41°C	229.78V

The results above are not used in the certification process

Light 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	1.236A	0.498A	0.495A	0.196A	19.995	70.878%	1089	28.0	36°C	0.842
	12.014V	5.02V	3.336V	5.104V	28.21				39.05°C	114.9V
40W	2.720A	0.697A	0.693A	0.294A	39.995	81.057%	1124	29.0	37.88°C	0.924
	12.016V	5.018V	3.335V	5.099V	49.342				41.19°C	114.89V
60W	4.204A	0.897A	0.891A	0.393A	59.995	85.178%	1128	29.1	38.19°C	0.953
	12.018V	5.018V	3.334V	5.094V	70.434				41.74°C	114.88V
80W	5.685A	1.096A	1.089A	0.491A	79.937	87.07%	1134	29.4	39.59°C	0.959
	12.015V	5.017V	3.333V	5.088V	91.808				43.44°C	114.88V

The results above are not used in the certification process

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	1.236A	0.498A	0.495A	0.196A	19.996	70.768%	1117	28.8	36.51°C	0.471
	12.014V	5.02V	3.335V	5.105V	28.256				39.58°C	229.88V
40W	2.720A	0.697A	0.693A	0.294A	39.996	81.725%	1129	29.1	37.7°C	0.648
	12.016V	5.019V	3.335V	5.098V	48.941				40.95°C	229.88V
60W	4.204A	0.897A	0.891A	0.393A	59.995	85.823%	1132	29.3	38.75°C	0.755
	12.018V	5.018V	3.334V	5.093V	69.907				42.27°C	229.88V
80W	5.682A	1.096A	1.089A	0.491A	79.93	87.119%	1074	27.5	39.2°C	0.817
	12.020V	5.015V	3.332V	5.093V	91.75				42.88°C	229.91V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	30.01mV	17.11mV	17.14mV	18.11mV	Pass
20% Load	35.95mV	17.01mV	16.88mV	18.52mV	Pass
30% Load	34.93mV	17.11mV	17.24mV	20.82mV	Pass
40% Load	25.31mV	12.92mV	12.23mV	17.03mV	Pass
50% Load	17.48mV	13.39mV	12.58mV	16.88mV	Pass
60% Load	16.61mV	13.23mV	13.35mV	18.82mV	Pass
70% Load	19.63mV	13.74mV	13.50mV	16.88mV	Pass
80% Load	20.24mV	14.61mV	14.99mV	17.08mV	Pass
90% Load	21.16mV	16.40mV	15.09mV	18.21mV	Pass
100% Load	33.10mV	16.67mV	15.37mV	18.06mV	Pass
110% Load	34.67mV	17.56mV	16.06mV	19.82mV	Pass
Crossload1	44.66mV	15.65mV	17.56mV	15.19mV	Pass
Crossload2	38.41mV	21.76mV	12.74mV	15.14mV	Pass
Crossload3	35.39mV	12.82mV	17.60mV	14.37mV	Pass
Crossload4	32.97mV	15.80mV	14.20mV	18.44mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	34.06mV	12.11mV	11.77mV	13.86mV	Pass
20% Load	36.56mV	12.41mV	12.63mV	14.07mV	Pass
30% Load	35.33mV	12.01mV	12.23mV	15.55mV	Pass
40% Load	20.02mV	10.63mV	11.15mV	15.19mV	Pass
50% Load	17.02mV	12.21mV	11.82mV	15.55mV	Pass
60% Load	17.74mV	13.74mV	13.30mV	18.57mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
70% Load	15.36mV	12.16mV	10.79mV	12.79mV	Pass
80% Load	18.86mV	15.12mV	12.53mV	15.09mV	Pass
90% Load	22.29mV	15.94mV	13.86mV	20.36mV	Pass
100% Load	32.96mV	17.15mV	15.34mV	18.57mV	Pass
110% Load	35.42mV	19.04mV	16.04mV	19.24mV	Pass
Crossload1	43.98mV	15.53mV	15.57mV	15.92mV	Pass
Crossload2	37.23mV	22.74mV	12.02mV	14.99mV	Pass
Crossload3	36.72mV	12.67mV	17.60mV	14.32mV	Pass
Crossload4	32.86mV	15.91mV	14.50mV	17.58mV	Pass

The results above are not used in the certification process

MSI MAG A650GL



Top side



Power specifications label

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