MSI MPG A850G PCIE5

Serial Number

Lab ID MS85002404

Certification ID 252404

Test Result Report ID: 24PS2404A

Certificate Issue Date: Apr 8, 2024

Scheme: ETA-EMI PSU

115V



230V



115V

230V

Scheme: LAMBDA PSU







Outside Validation Scope



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	MPG A850G PCIE5
OEM/ODM	CWT
Serial Number	
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240

Rated Current (Arms)	10-5
Rated Frequency (Hz)	50-60
Rated Power (W)	850
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	135mm Fluid Dynamic Bearing Fan (HA13525H12SF-Z)
Semi-Passive Operation	✓ (selectable)
Cybenetics Testing Information	
Lab ID	MS85002404
Date of receipt	Mar 13, 2024
Testing Date	Apr 5, 2024
Report Issued Date	Apr 8, 2024
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	18-22AWG	No
4+4 pin EPS12V (750mm)	2	2	18AWG	No
6+2 pin PCIe (600mm+150mm)	2	4	16-18AWG	No
2x 6+2 pin PCIe (600mm)	1	2	16-18AWG	No

12+4 pin PCIe (590mm) (600W)	1	1	16-26AWG	No
SATA (500mm+150mm+150mm)	2	6	18AWG	No
SATA (500mm+150mm)	1	2	18AWG	No
4-pin Molex (500mm+150mm+150mm+150mm) / FDD (+150mm)	1	4 / 1	18-20AWG	No

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	22	22	70.8	3	0.3
	Watts	120		850	15	3.6
Total Max. Power (W)		850				

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	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX v3.1 PSU Power Excursion	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	88.498%
Average Noise Output (>1450 Load Combinations)	28.69dBA
Average PF (>1450 Load Combinations)	0.991
Efficiency With 10W (≤500W) or 2% (>500W) Load	61.779%
Standby Power Consumption	0.0175W
Non-Accredited	

12V Ripple (Full Load)	25.21mV
5V Ripple (Full Load)	14.59mV
3.3V Ripple (Full Load)	14.32mV
5VSB Ripple (Full Load)	14.06mV
12V Load Regulation	0.70%
5V Load Regulation	0.50%
3.3V Load Regulation	0.88%
5VSB Load Regulation	1.31%
Inrush Current	28.740A

230V

Accredited	
Average Efficiency (>1450 load combinations)	90.768%
Average Noise Output (>1450 Load Combinations)	28.64dBA
Average PF (>1450 Load Combinations)	0.965
Efficiency With 10W (≤500W) or 2% (>500W) Load	60.631%
Standby Power Consumption	0.0802W
Non-Accredited	
12V Ripple (Full Load)	26.51mV
5V Ripple (Full Load)	15.39mV
3.3V Ripple (Full Load)	14.10mV
5VSB Ripple (Full Load)	13.94mV
12V Load Regulation	0.72%
5V Load Regulation	0.56%
3.3V Load Regulation	0.95%
5VSB Load Regulation	1.35%
Inrush Current	48.530A
12V Transient Response (200%)	11.45V
5V Transient Response (200%)	4.946V
3.3V Transient Response (200%)	3.146V
5VSB Transient Response (200%)	4.981V
Hold-Up Time & PWR_OK Signal	16.30ms

AC Loss to PWR_OK Hold Up Time		13.90ms
PWR_OK Inactive to DC Loss Delay		2.40ms
PSU Timings: T1 (20% / 100%)	59.0ms	59.0ms
PSU Timings: T3 (20% / 100%)	124.0ms	123.0ms
OPP (27.95°C / 42.90°C)	126.19%	126.20%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	16.3
AC Loss to PWR_OK Hold Up Time (ms)	13.9
PWR_OK Inactive to DC Loss Delay (ms)	2.4

Stromverbrauch im Ruhezustand

Tables

115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	114.87 V	114.82 V	113.85 V	114.92 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.99 Hz	59.40 Hz	60.02 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	0.29 %	2.00 %	PASS
Real Power:	0.018 W	0.016 W	N/A	0.019 W	N/A	N/A
Apparent Power:	10.103 W	10.085 W	N/A	10.126 W	N/A	N/A
Power Factor:	0.002	N/A	N/A	N/A	N/A	N/A

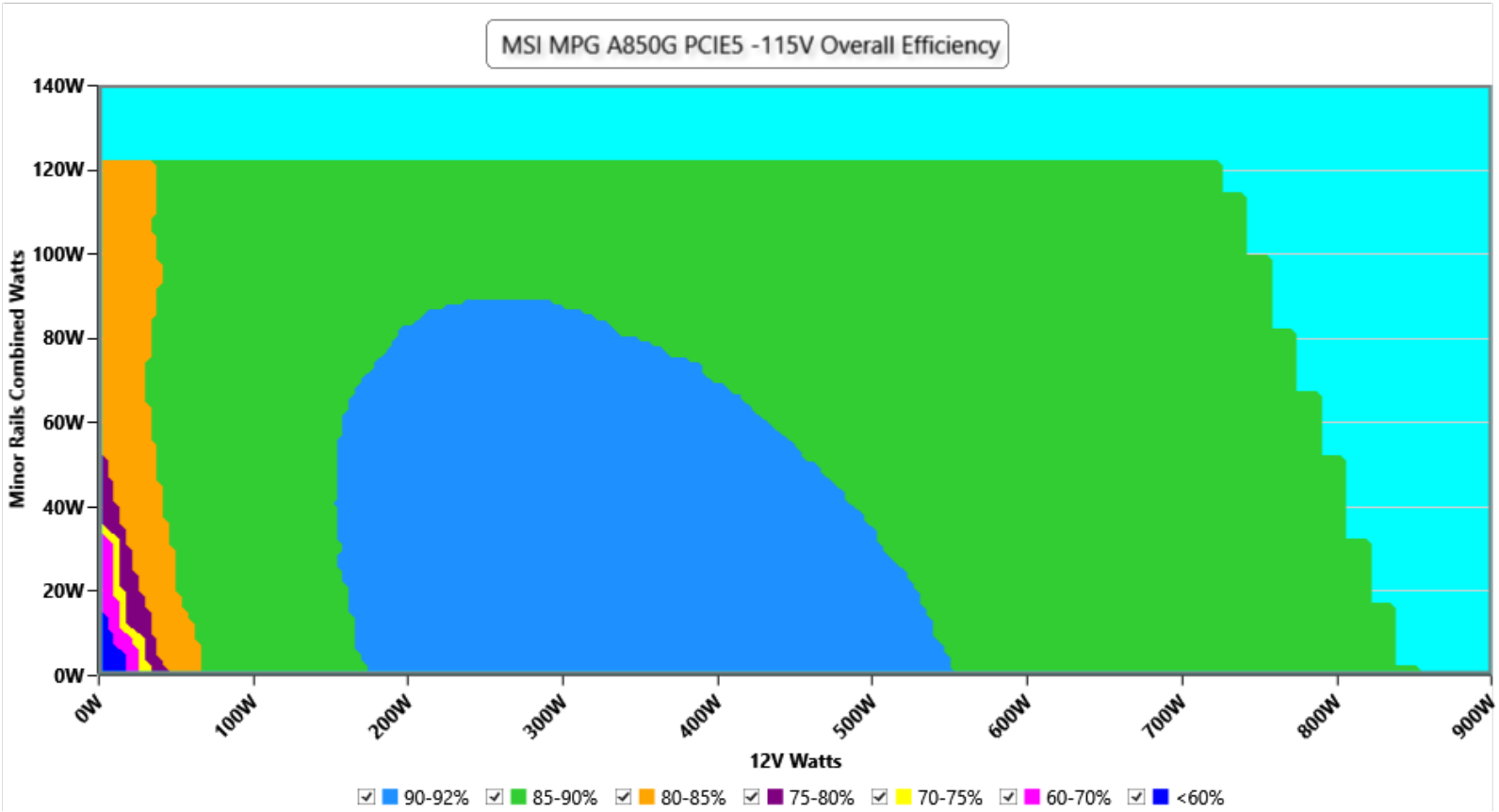
230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result

Mains Voltage RMS:	229.98 V	229.90 V	227.70 V	230.03 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:	0.14 %	0.11 %	N/A	0.21 %	2.00 %	PASS
Real Power:	0.080 W	0.068 W	N/A	0.097 W	N/A	N/A
Apparent Power:	34.101 W	34.074 W	N/A	34.136 W	N/A	N/A
Power Factor:	0.002	N/A	N/A	N/A	N/A	N/A

Efficiency Graph

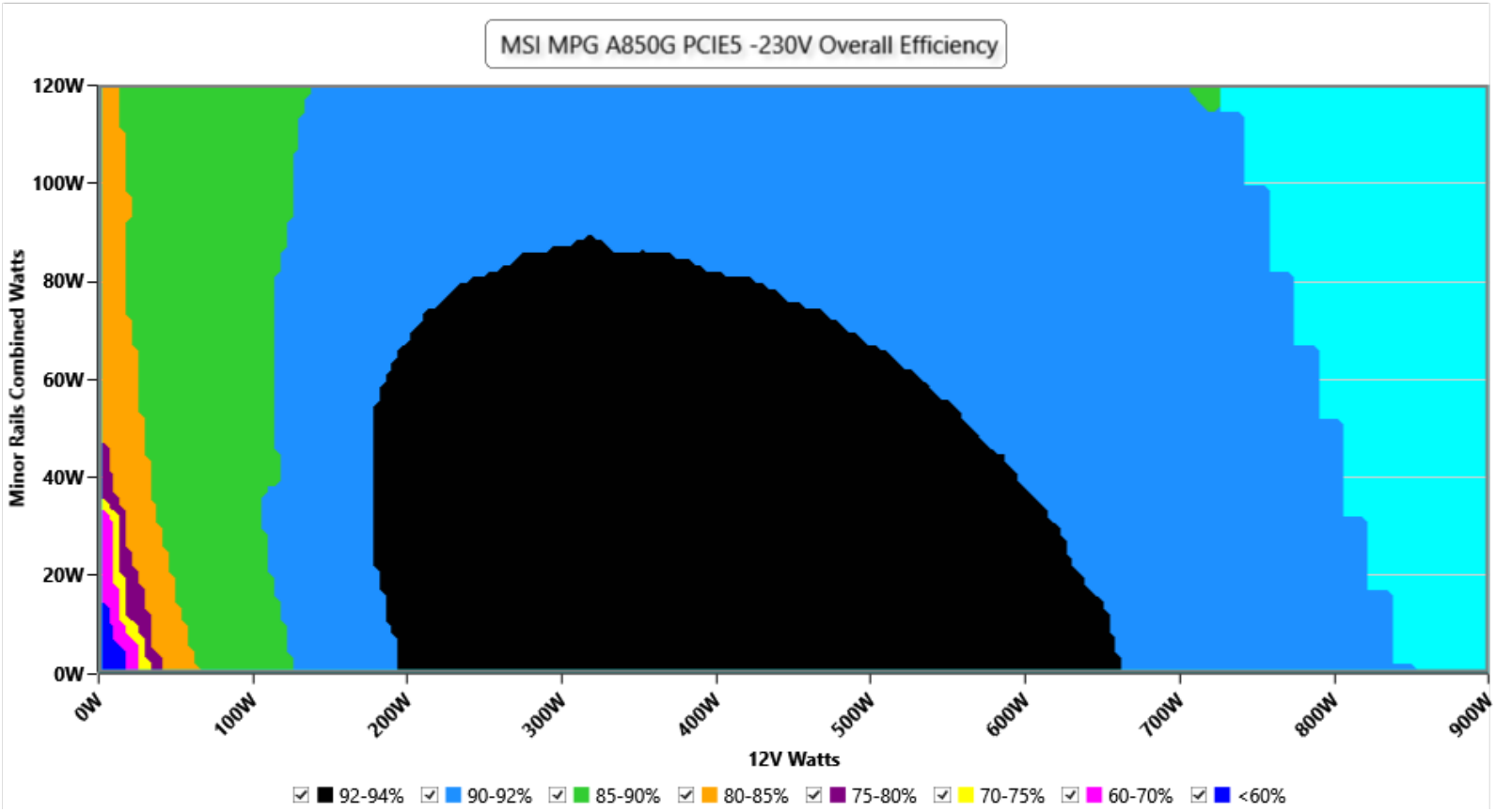
115V



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

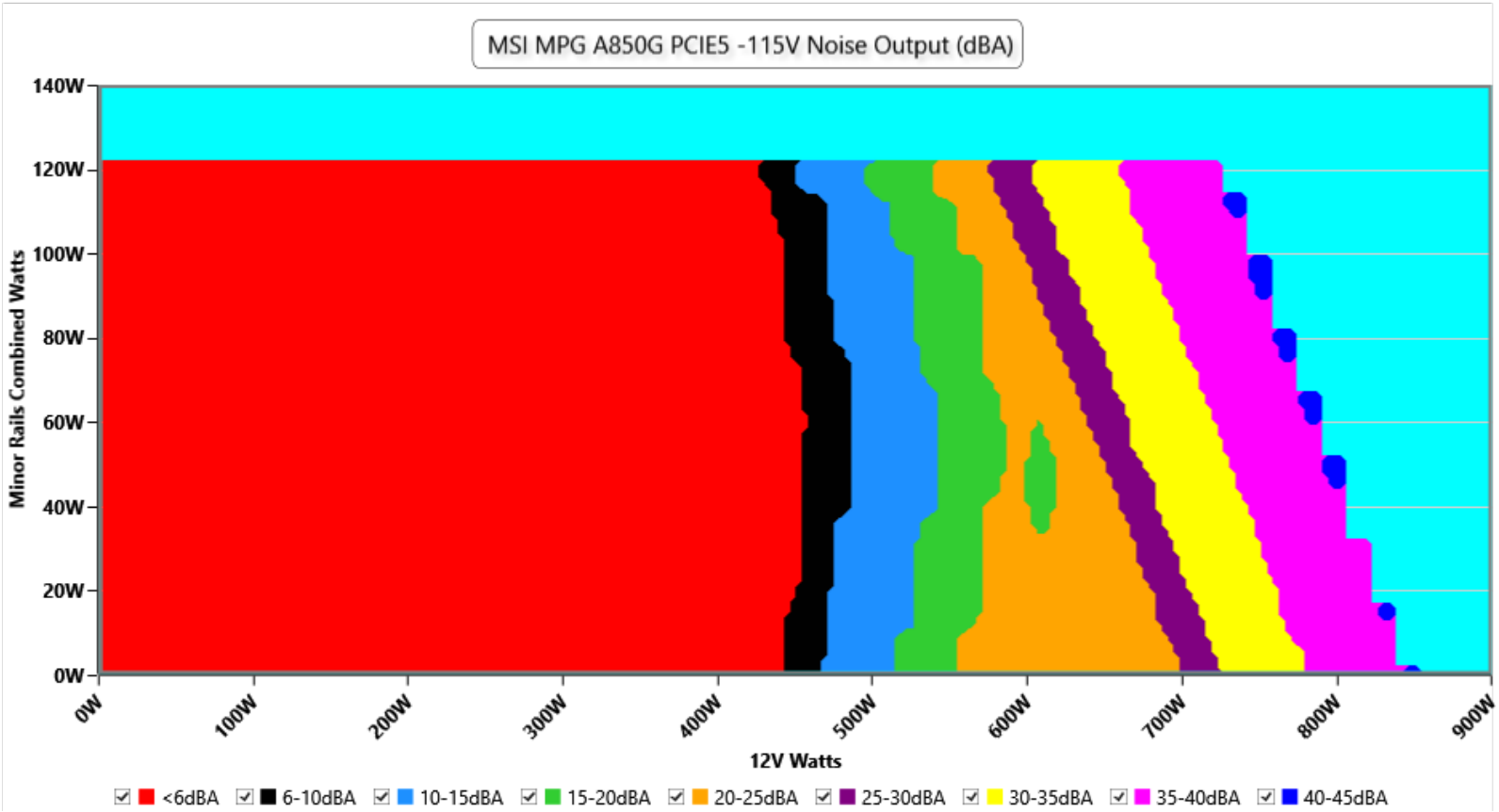


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Noise Graph

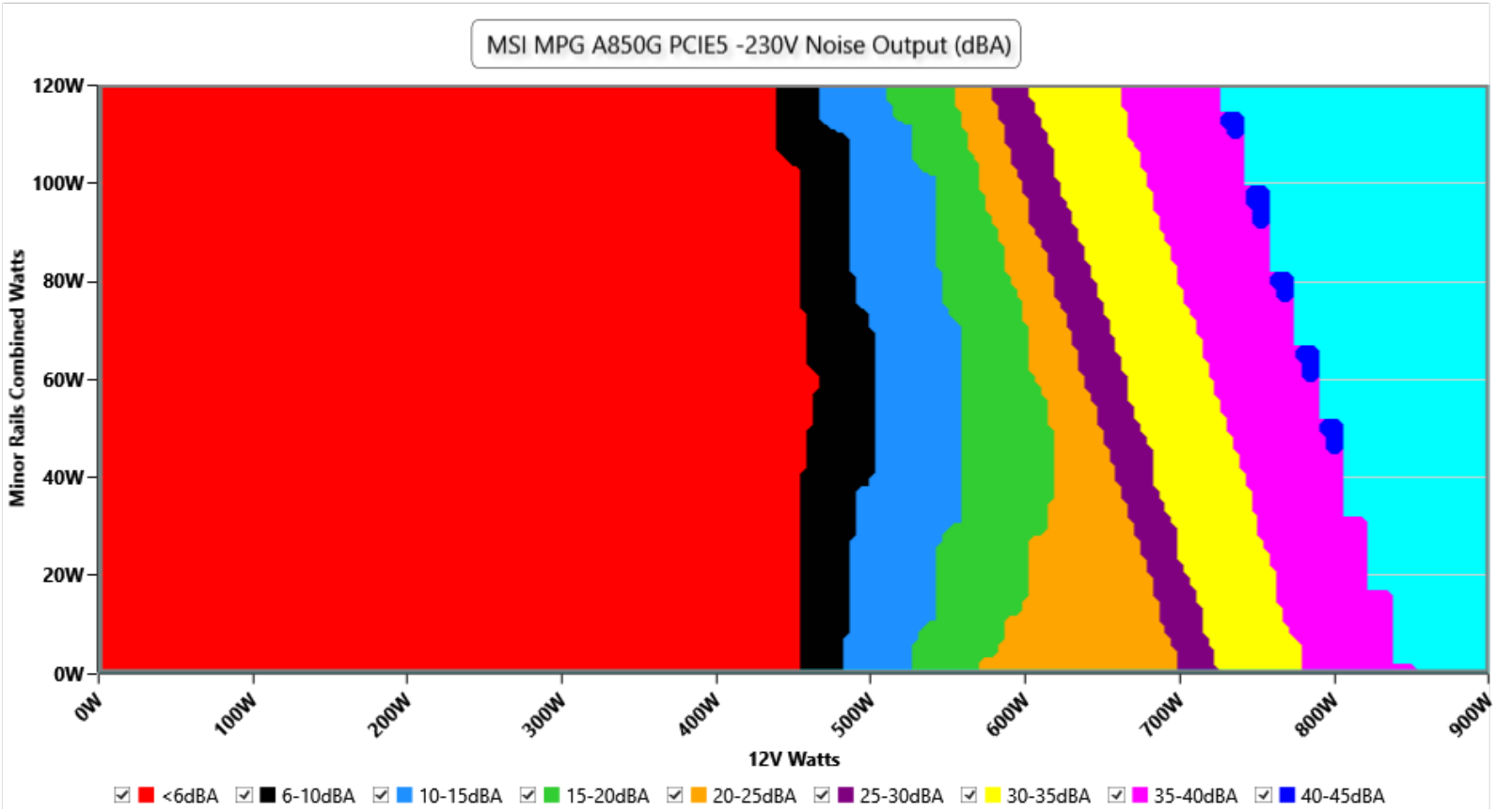
115V



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 under high ambient temperature (indicative)

115V

Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	0 RPM · <6.0 dB(A) · 44.3 °C	0 RPM · <6.0 dB(A) · 44.3 °C	fan off in both
20%	0 RPM · <6.0 dB(A) · 45.4 °C	0 RPM · <6.0 dB(A) · 45.4 °C	fan off in both
50%	393 RPM · <6.0 dB(A) · 42.1 °C	393 RPM · <6.0 dB(A) · 42.1 °C	<6.0 in both
100%	1496 RPM · 43.3 dB(A) · 45.8 °C	1496 RPM · 43.3 dB(A) · 45.8 °C	**+0.0 dB(A)**

230V

Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	0 RPM · <6.0 dB(A) · 44.5 °C	0 RPM · <6.0 dB(A) · 44.5 °C	fan off in both
20%	0 RPM · <6.0 dB(A) · 45.2 °C	0 RPM · <6.0 dB(A) · 45.2 °C	fan off in both
50%	394 RPM · <6.0 dB(A) · 42.2 °C	394 RPM · <6.0 dB(A) · 42.2 °C	<6.0 in both
100%	1451 RPM · 42.4 dB(A) · 45.9 °C	1451 RPM · 42.4 dB(A) · 45.9 °C	**+0.0 dB(A)**

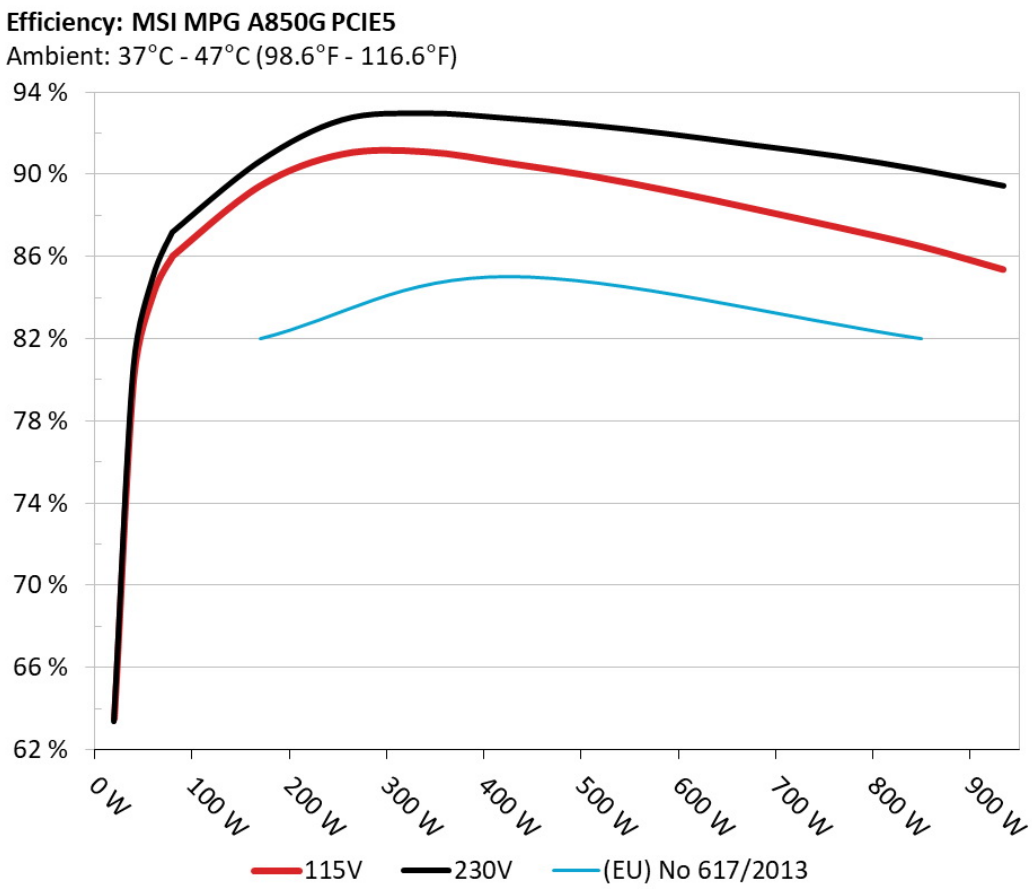
INFO

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: the fan is stopped or too quiet to measure (the fan speed column says which); 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

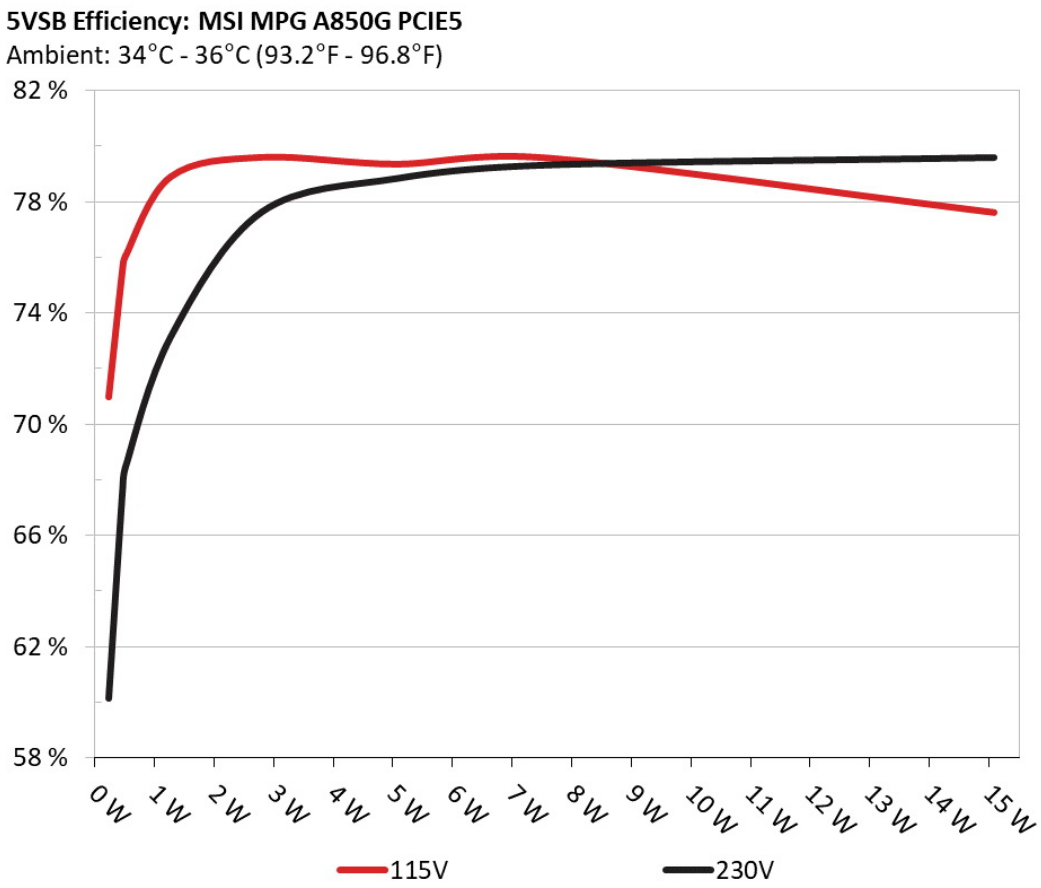
Efficiency under high ambient temperature



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	0.229W	70.983%	0.032
	5.096V	0.323W		114.86V
2	0.09A	0.459W	75.56%	0.059
	5.095V	0.607W		114.86V
3	0.55A	2.796W	79.596%	0.273
	5.084V	3.513W		114.87V
4	1A	5.073W	79.348%	0.381
	5.073V	6.393W		114.86V
5	1.5A	7.592W	79.571%	0.43
	5.061V	9.541W		114.86V
6	3A	15.077W	77.614%	0.512
	5.025V	19.425W		114.86V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.229W	60.157%	0.011
	5.095V	0.381W		229.94V
2	0.09A	0.459W	67.611%	0.02
	5.094V	0.679W		229.94V
3	0.55A	2.796W	77.64%	0.102
	5.083V	3.601W		229.94V
4	1A	5.073W	78.846%	0.17
	5.072V	6.434W		229.94V
5	1.5A	7.592W	79.327%	0.232
	5.06V	9.571W		229.94V
6	3.001A	15.076W	79.594%	0.331
	5.025V	18.941W		229.94V

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%	5.235A	1.98A	2.002A	0.987A	85.008	86.036%	0	<6.0	44.26°C	0.978
	12.112V	5.05V	3.298V	5.064V	98.806				40.02°C	114.84V
20%	11.486A	2.972A	3.005A	1.187A	169.958	89.45%	0	<6.0	45.39°C	0.99
	12.106V	5.049V	3.295V	5.054V	190.001				40.86°C	114.81V
30%	18.109A	3.467A	3.508A	1.37A	254.97	90.994%	0	<6.0	46.38°C	0.993
	12.088V	5.048V	3.293V	5.112V	280.204				41.31°C	114.78V
40%	24.752A	3.963A	4.011A	1.564A	340.065	91.108%	0	<6.0	47.44°C	0.992
	12.074V	5.048V	3.291V	5.117V	373.255				41.89°C	114.75V
50%	31.031A	4.955A	5.018A	1.762A	424.956	90.555%	393	<6.0	42.08°C	0.992
	12.067V	5.047V	3.289V	5.108V	469.279				48.16°C	114.72V
60%	37.287A	5.948A	6.026A	1.962A	509.484	89.937%	496	9.2	42.78°C	0.993
	12.060V	5.045V	3.286V	5.097V	566.492				49.29°C	114.7V
70%	43.616A	6.941A	7.036A	2.163A	594.796	89.163%	725	21.1	43°C	0.994
	12.052V	5.044V	3.284V	5.087V	667.089				50.05°C	114.66V
80%	49.957A	7.933A	8.046A	2.265A	679.618	88.309%	923	29.2	43.84°C	0.994
	12.045V	5.043V	3.281V	5.079V	769.592				51.9°C	114.63V
90%	56.701A	8.431A	8.54A	2.367A	765.034	87.423%	1202	37.0	44.85°C	0.995
	12.037V	5.041V	3.279V	5.071V	875.091				53.87°C	114.59V
100%	63.176A	8.93A	9.064A	2.97A	849.76	86.503%	1496	43.3	45.83°C	0.996
	12.031V	5.04V	3.277V	5.051V	982.35				55.87°C	114.56V
110%	69.529A	9.925A	10.17A	2.973A	934.264	85.38%	1769	47.7	46.56°C	0.996
	12.024V	5.038V	3.274V	5.046V	1094.243				57.48°C	114.53V
CL1	0.115A	14.296A	14.485A	0A	121.288	83.269%	395	<6.0	40.73°C	0.988
	12.104V	5.05V	3.293V	5.076V	145.657				46.24°C	114.82V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL2	0.114A	21.747A	0A	0A	111.341	81.638%	394	<6.0	40.59°C	0.987
	12.111V	5.056V	3.304V	5.082V	136.384				47.62°C	114.83V
CL3	0.114A	0A	22.073A	0A	73.98	76.388%	394	<6.0	41.54°C	0.978
	12.108V	5.065V	3.289V	5.079V	96.849				50.57°C	114.84V
CL4	70.596A	0A	0A	0A	849.406	87.482%	1341	40.3	45.92°C	0.995
	12.032V	5.061V	3.29V	5.132V	970.959				56.86°C	114.58V

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%	5.233A	1.979A	2A	0.988A	85.002	87.176%	0	<6.0	44.45°C	0.858
	12.115V	5.055V	3.3V	5.064V	97.506				40.21°C	229.93V
20%	11.480A	2.969A	3.002A	1.187A	169.916	90.625%	0	<6.0	45.21°C	0.944
	12.109V	5.053V	3.297V	5.053V	187.495				40.69°C	229.92V
30%	18.098A	3.464A	3.505A	1.367A	254.9	92.642%	0	<6.0	46.06°C	0.967
	12.092V	5.052V	3.295V	5.12V	275.145				41.05°C	229.91V
40%	24.739A	3.959A	4.008A	1.563A	339.974	92.957%	0	<6.0	47.41°C	0.977
	12.077V	5.052V	3.293V	5.117V	365.731				41.86°C	229.9V
50%	31.005A	4.952A	5.014A	1.762A	424.7	92.715%	394	<6.0	42.21°C	0.982
	12.069V	5.05V	3.291V	5.108V	458.072				48.3°C	229.89V
60%	37.263A	5.945A	6.023A	1.962A	509.247	92.378%	557	11.7	42.67°C	0.985
	12.061V	5.047V	3.288V	5.098V	551.262				49.22°C	229.87V
70%	43.595A	6.938A	7.032A	2.162A	594.564	91.928%	735	21.5	43.23°C	0.986
	12.053V	5.045V	3.285V	5.088V	646.776				50.31°C	229.86V
80%	49.936A	7.93A	8.041A	2.264A	679.394	91.398%	924	29.2	43.77°C	0.988
	12.045V	5.044V	3.282V	5.08V	743.338				51.85°C	229.85V
90%	56.682A	8.428A	8.535A	2.366A	764.823	90.863%	1137	35.6	44.33°C	0.989
	12.038V	5.042V	3.28V	5.072V	841.736				53.39°C	229.83V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
100%	63.165A	8.928A	9.061A	2.969A	849.639	90.208%	1451	42.4	45.89°C	0.99
	12.031V	5.04V	3.277V	5.052V	941.858				55.91°C	229.82V
110%	69.525A	9.923A	10.167A	2.972A	934.21	89.431%	1765	47.6	46.95°C	0.99
	12.023V	5.039V	3.275V	5.046V	1044.613				57.86°C	229.8V
CL1	0.114A	14.294A	14.483A	0A	121.284	84.578%	395	<6.0	40.53°C	0.919
	12.105V	5.051V	3.293V	5.076V	143.399				46.07°C	229.94V
CL2	0.114A	21.741A	0A	0A	111.319	82.825%	395	<6.0	40.2°C	0.911
	12.112V	5.057V	3.305V	5.082V	134.403				47.26°C	229.94V
CL3	0.114A	0A	22.072A	0A	73.979	77.223%	394	<6.0	40.52°C	0.855
	12.108V	5.066V	3.289V	5.079V	95.799				49.55°C	229.94V
CL4	70.594A	0A	0A	0A	849.389	91.047%	1342	40.3	45.95°C	0.99
	12.033V	5.06V	3.29V	5.132V	932.914				56.89°C	229.82V

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	1.226A	0.494A	0.499A	0.197A	20.003	63.53%	0	<6.0	39.64°C	0.888
	12.115V	5.064V	3.306V	5.089V	31.485				36.56°C	114.86V
40W	2.698A	0.691A	0.699A	0.295A	40.003	80.11%	0	<6.0	41.13°C	0.946
	12.113V	5.065V	3.306V	5.085V	49.934				37.89°C	114.85V
60W	4.172A	0.89A	0.9A	0.394A	60.003	84.183%	0	<6.0	42.65°C	0.964
	12.112V	5.055V	3.301V	5.081V	71.276				38.87°C	114.85V
80W	5.640A	1.089A	1.1A	0.492A	79.954	86.192%	0	<6.0	43.51°C	0.977
	12.112V	5.052V	3.299V	5.077V	92.764				39.54°C	114.84V

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	1.224A	0.493A	0.499A	0.197A	19.986	63.403%	0	<6.0	39.67°C	0.52
	12.118V	5.067V	3.308V	5.089V	31.522				36.58°C	229.95V
40W	2.697A	0.691A	0.698A	0.295A	39.989	80.602%	0	<6.0	40.71°C	0.676
	12.117V	5.068V	3.308V	5.085V	49.614				37.36°C	229.94V
60W	4.170A	0.889A	0.899A	0.394A	59.992	84.979%	0	<6.0	42.04°C	0.784
	12.117V	5.06V	3.303V	5.081V	70.596				38.53°C	229.94V
80W	5.637A	1.088A	1.1A	0.492A	79.935	87.298%	0	<6.0	43.09°C	0.845
	12.116V	5.056V	3.301V	5.077V	91.566				39.22°C	229.94V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	8.76mV	9.79mV	9.36mV	5.68mV	Pass
20% Load	9.38mV	9.43mV	9.93mV	5.89mV	Pass
30% Load	22.82mV	10.25mV	9.72mV	7.33mV	Pass
40% Load	16.07mV	10.30mV	9.88mV	7.90mV	Pass
50% Load	15.76mV	11.28mV	10.81mV	7.59mV	Pass
60% Load	15.14mV	10.92mV	13.08mV	8.78mV	Pass
70% Load	15.14mV	13.71mV	15.05mV	9.09mV	Pass
80% Load	15.50mV	12.62mV	12.62mV	9.39mV	Pass
90% Load	15.19mV	12.83mV	12.26mV	10.01mV	Pass
100% Load	25.21mV	14.59mV	14.32mV	14.06mV	Pass
110% Load	25.69mV	15.25mV	15.27mV	13.48mV	Pass
Crossload1	11.34mV	14.91mV	13.28mV	10.22mV	Pass
Crossload2	12.99mV	20.40mV	10.29mV	10.43mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	9.33mV	11.38mV	14.43mV	10.58mV	Pass
Crossload4	22.21mV	13.02mV	12.64mV	14.01mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	9.85mV	9.07mV	9.88mV	6.04mV	Pass
20% Load	9.13mV	9.94mV	9.26mV	5.84mV	Pass
30% Load	26.02mV	9.84mV	9.72mV	5.99mV	Pass
40% Load	16.53mV	10.41mV	10.24mV	7.38mV	Pass
50% Load	15.90mV	11.59mV	10.50mV	7.33mV	Pass
60% Load	15.09mV	12.05mV	13.24mV	8.05mV	Pass
70% Load	15.19mV	12.73mV	14.94mV	8.11mV	Pass
80% Load	15.24mV	12.57mV	12.10mV	9.14mV	Pass
90% Load	16.64mV	12.88mV	12.52mV	9.45mV	Pass
100% Load	26.51mV	15.39mV	14.10mV	13.94mV	Pass
110% Load	26.85mV	16.17mV	14.57mV	13.51mV	Pass
Crossload1	10.40mV	15.40mV	12.94mV	10.83mV	Pass
Crossload2	13.04mV	20.45mV	10.03mV	10.38mV	Pass
Crossload3	9.64mV	10.82mV	15.36mV	10.32mV	Pass
Crossload4	22.36mV	12.63mV	12.65mV	12.74mV	Pass

The results above are not used in the certification process

MSI MPG A850G PCIE5



Top side



Power specifications label

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