MSI MPG A1000G

Lab ID MS10001965

Certification ID 251965

Test Result Report ID: 22PS1965A

Certificate Issue Date: Jan 21, 2022

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	MPG A1000G
OEM/ODM	CWT
Serial Number	
Product Specifications	
Manufacturer-Provided Information	
□□□□ (Vrms)	100-240
□□□□ (Arms)	13-6.5
□□□□ (Hz)	50-60

□□□□ (W)	1000
Operating Temperature (Continuous Full Load) (°C)	
□□	ATX12V
□□□□	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
□□	135mm Fluid Dynamic Bearing Fan (HA13525H12SF-Z)
□□□□□	✓ (selectable)
Cybenetics Testing Information	
Lab ID	MS10001965
Date of receipt	Jan 11, 2022
Testing Date	Jan 21, 2022
Report Issued Date	Jan 21, 2022
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

□□□□ (Non-accredited measurements)

□□□□□				
□□	□□□	□□□□□	Gauge	In Cable Capacitors
ATX □□ 20+4 pin (600mm)	1	1	16AWG	□
4+4 pin EPS 12V □□ (700mm)	2	2	18AWG	□
6+2pin PCIe□□ (600mm)	3	3	16AWG	□
6+2pin PCIe□□ (600mm+150mm)	2	4	16-18AWG	□
SATA□□ (500mm+150mm+150mm+150mm)	3	12	18AWG	□
□ 4pin Molex□□ (500mm+150mm+150mm+150mm) / FDD (+150mm)	1	4 / 1	18-20AWG	□

		3.3V	5V	12V	5VSB	-12V
		22	22	83.5	3	0.3
		120		1002	15	3.6
(W)		1000				

Parts Description

General Data	
Manufacturer (OEM)	CWT
PCB Type	Double Sided
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	1x NTC Thermistor SCK203R0 (3 Ohm) & Relay
Bridge Rectifier(s)	2x GBU1506 (800V, 15A @ 100°C)
APFC MOSFETs	2x Infineon IPA60R099P6 (600V, 24A @ 100°C, Rds(on): 0.099Ohm)
APFC Boost Diode	1x On Semiconductor FFSP1065B (650V, 10A @ 139°C)
Bulk Cap(s)	1x Nichicon (400V, 820uF, 2,000h @ 105°C, GL)
Main Switchers	2x Infineon IPA60R125P6 (600V, 19A @ 100°C, Rds(on): 0.125Ohm)
APFC Controller	Champion CM6500UNX & CM03X
Resonant Controller	Champion CU6901VA
Topology	Primary side: APFC, Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETs	8x International Rectifier IRFH7004PBF (40V, 164A @ 100°C, Rds(on): 1.4mOhm)
5V & 3.3V	DC-DC Converters: 2x UBIQ QM3054M6 (30V, 61A @ 100°C, Rds(on): 4.8mOhm) & 2x UBIQ QN3107M6N (30V, 70A @ 100°C, Rds(on): 2.6mOhm) PWM Controller(s): uPI-Semi uP3861P
Filtering Capacitors	Electrolytic: 2x Nippon Chemi-Con (105°C, W), 1x Nichicon (2-5,000h @ 105°C, HD), 2x Nippon Chemi-Con (1-5,000h @ 105°C, KZE), 2x Nichicon (4-10,000h @ 105°C, HE), 1x Nippon Chemi-Con (4-10,000h @ 105°C, KYA), 1x Rubycon (4-10,000h @ 105°C, YXJ) Polymer: 10x United Chemi-Con, 18x FPCAP
Supervisor IC	Weltrend WT7502R (OVP, UVP, SCP, PG)
Fan Controller	Microchip PIC16F1503

Fan Model	Hong Hua HA13525H12SF-Z (135mm, 12V, 0.5A, Fluid Dynamic Bearing Fan)
5VSB Circuit	
Rectifier	1x D10PS45L SBR (45V, 10A)
Standby PWM Controller	On Bright OB2365T

Test Results

Temperature & Compliance Info

□□□□ (°C /°F)	28-32 / 82.4-89.6
□□ ErP Lot3/6□□	✓
□□ (EU) No 617/2013□□	✓
ALPM (Alternative Low Power Mode) compatible	✓

Performance Summary

115V

Accredited	
□□□□ (>1450 load combinations)	88.647%
Average Noise Output (>1450 Load Combinations)	32.16dBA
PF□□□ (>1450 Load Combinations)	0.987
Efficiency With 10W (≤500W) or 2% (>500W) Load	50.084%
□□□□□□	0.0258W
Non-Accredited	
12V Ripple (Full Load)	21.00mV
5V Ripple (Full Load)	10.07mV
3.3V Ripple (Full Load)	11.54mV
5VSB Ripple (Full Load)	10.52mV
12V Load Regulation	0.69%
5V Load Regulation	1.22%
3.3V Load Regulation	1.41%

5VSB Load Regulation	1.47%
Inrush Current	53.940A

230V

Accredited		
□□□□ (>1450 load combinations)		90.949%
Average Noise Output (>1450 Load Combinations)		32.12dBA
PF□□□ (>1450 Load Combinations)		0.965
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
□□□□□□		0.0458W
Non-Accredited		
12V Ripple (Full Load)		21.08mV
5V Ripple (Full Load)		10.24mV
3.3V Ripple (Full Load)		11.57mV
5VSB Ripple (Full Load)		20.41mV
12V Load Regulation		0.74%
5V Load Regulation		1.31%
3.3V Load Regulation		1.57%
5VSB Load Regulation		1.59%
Inrush Current		103.140A
□□□□ & PG□□		17.10ms
AC Loss to PWR_OK Hold Up Time		14.70ms
PWR_OK Inactive to DC Loss Delay		2.40ms
PSU Timings: T1 (20% / 100%)	50.0ms	50.0ms
PSU Timings: T3 (20% / 100%)	140.0ms	140.0ms
OPP (26.45°C / 44.60°C)	124.34%	124.34%

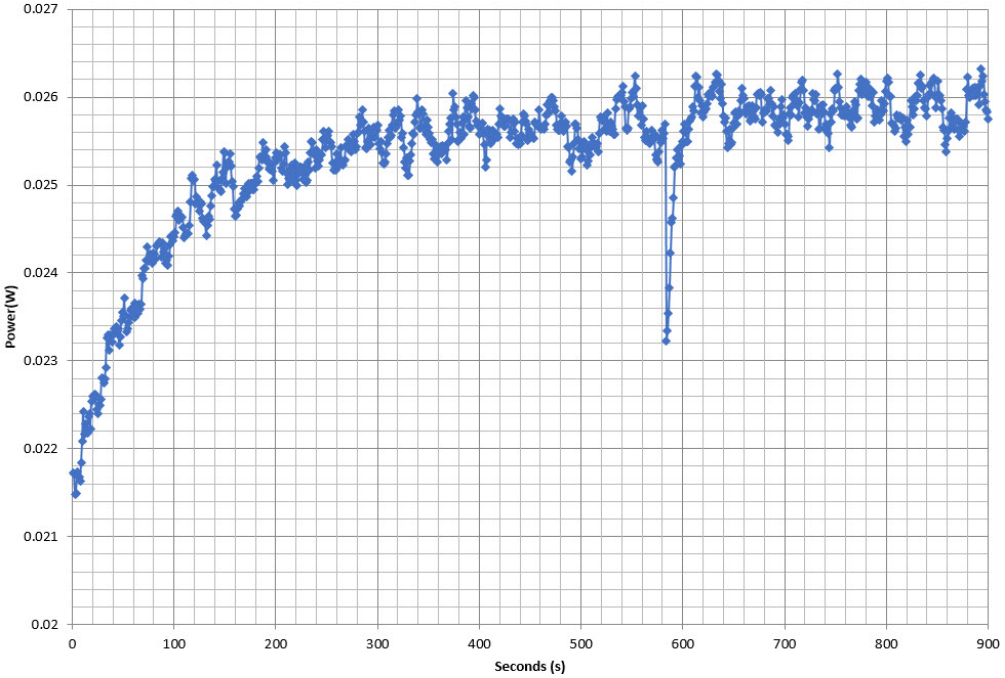
□□□□ & PG□□

Hold-Up Time (ms)	17.1
AC Loss to PWR_OK Hold Up Time (ms)	14.7

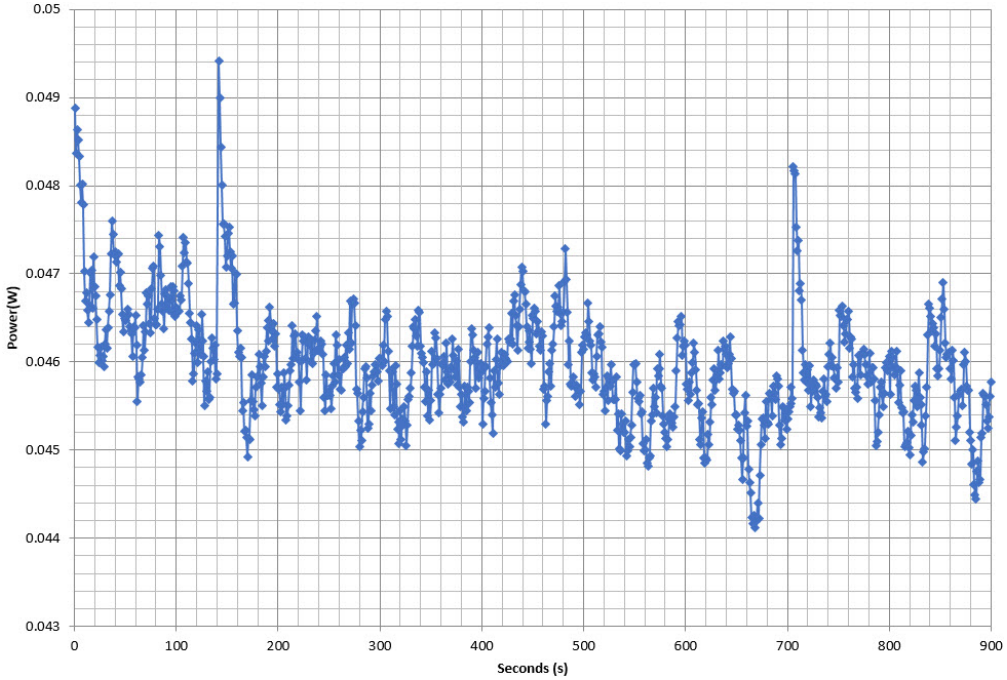
PWR_OK Inactive to DC Loss Delay (ms)	2.4

Graphs

115V

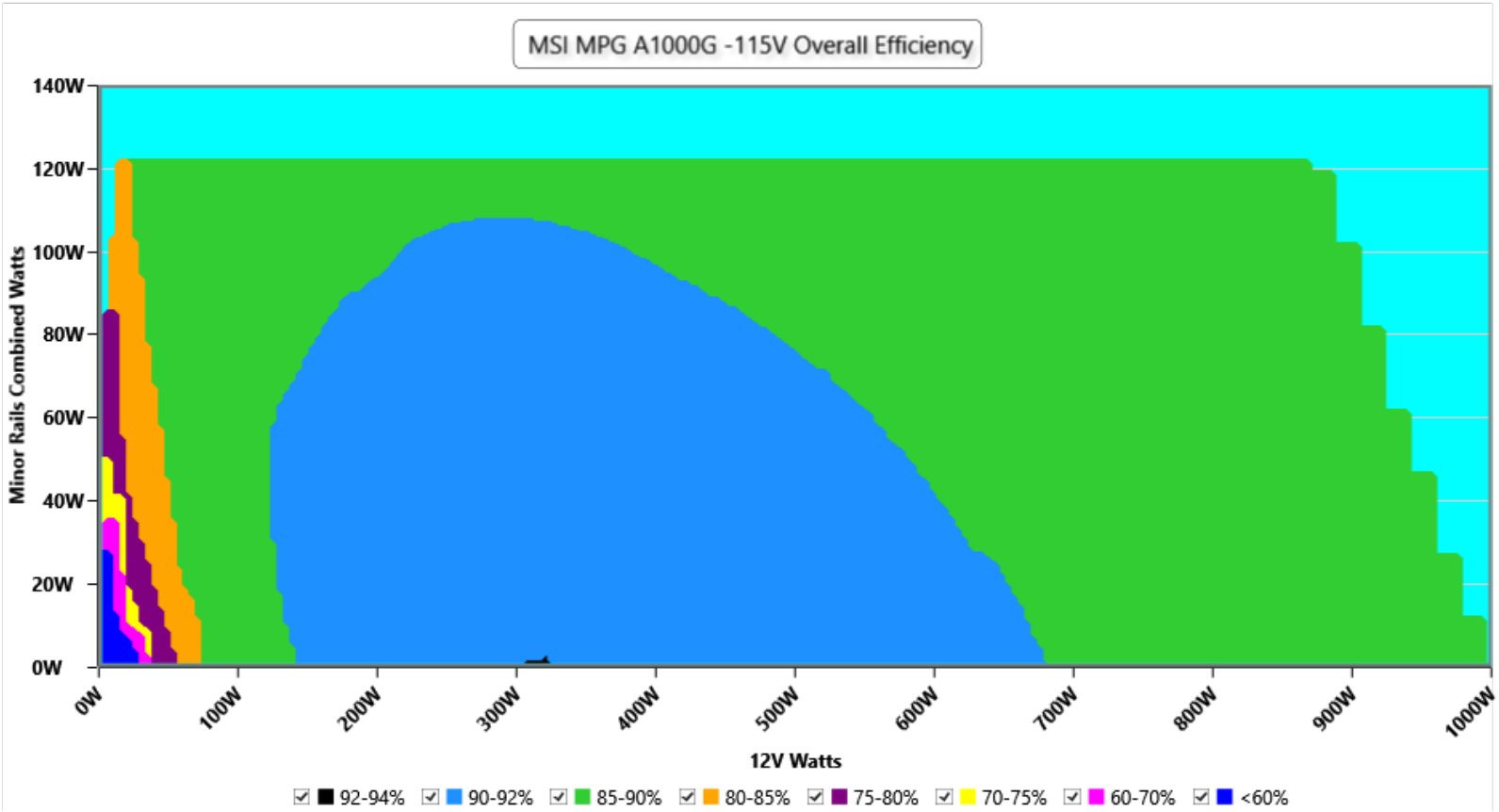


230V



□□□□□□

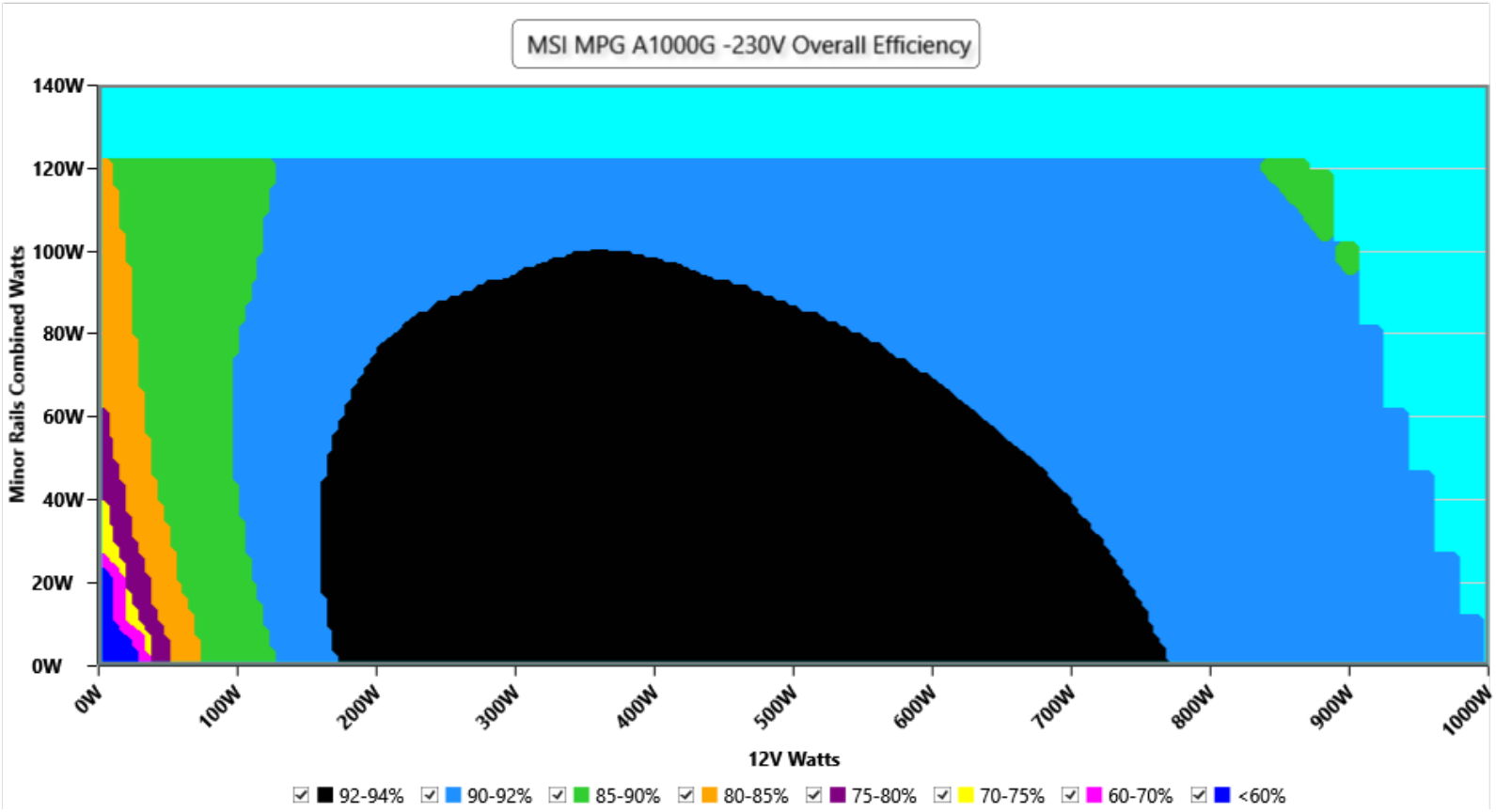
115V



□□

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

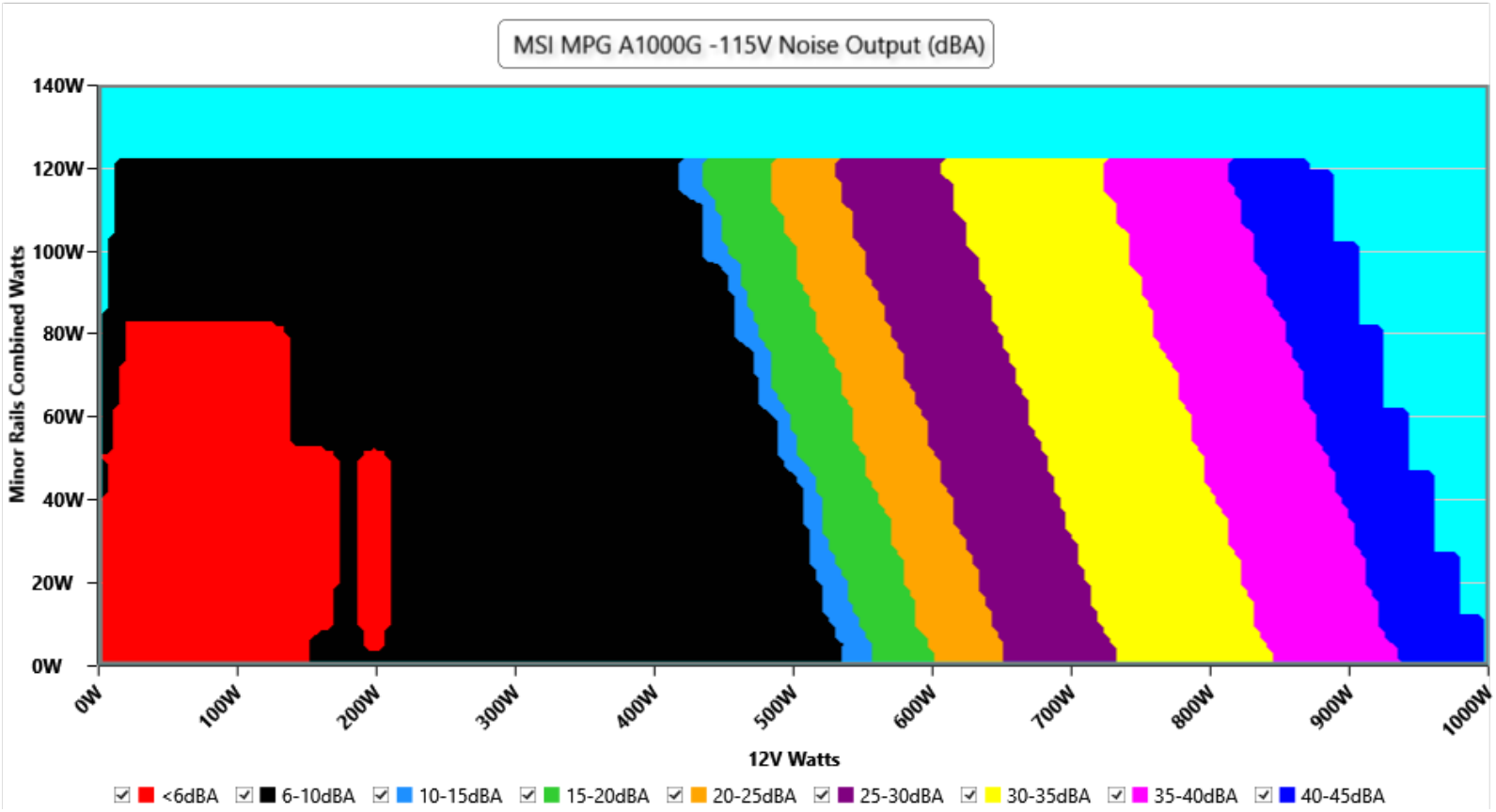
230V



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

□□□□□

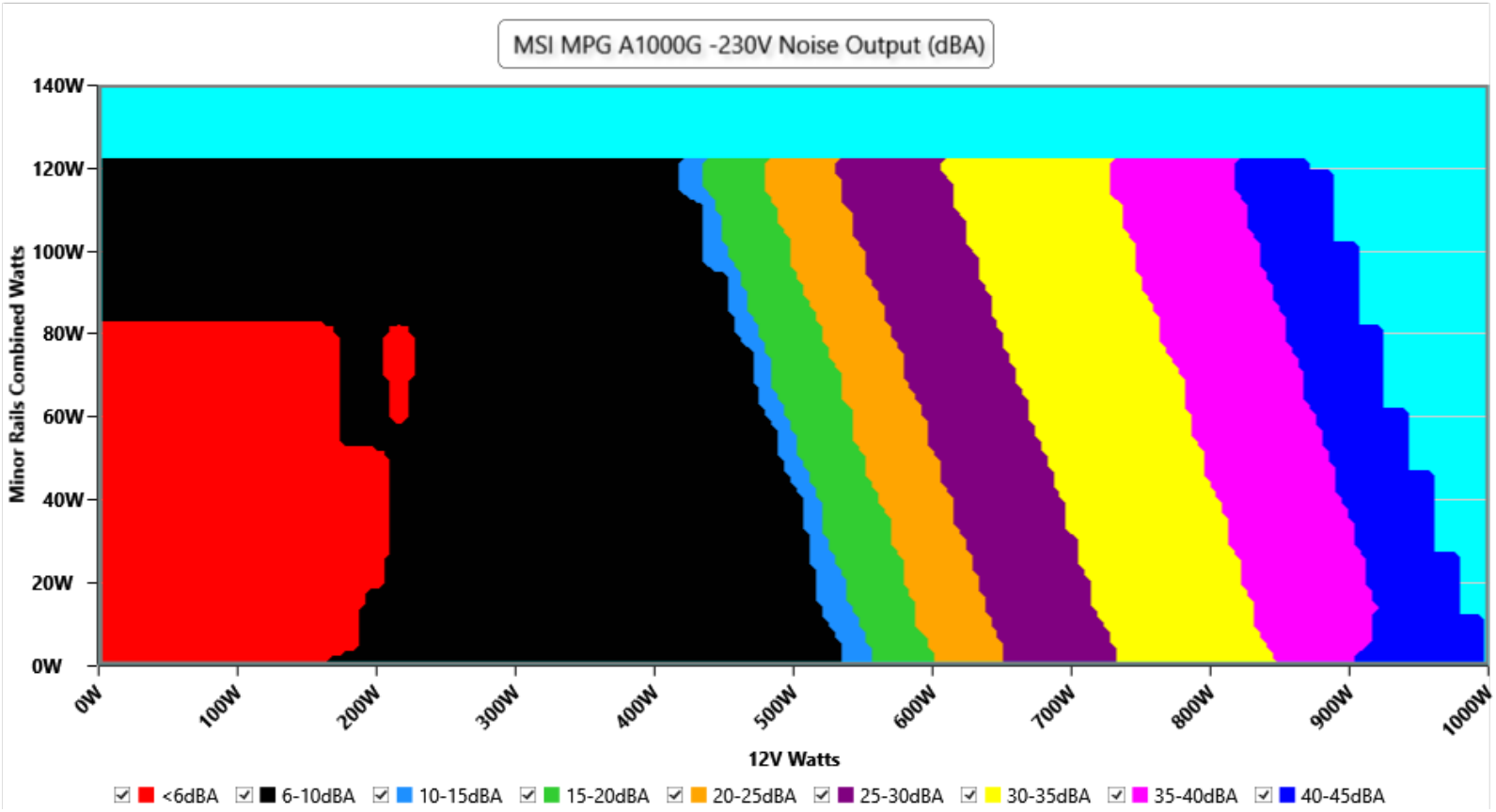
115V



□□

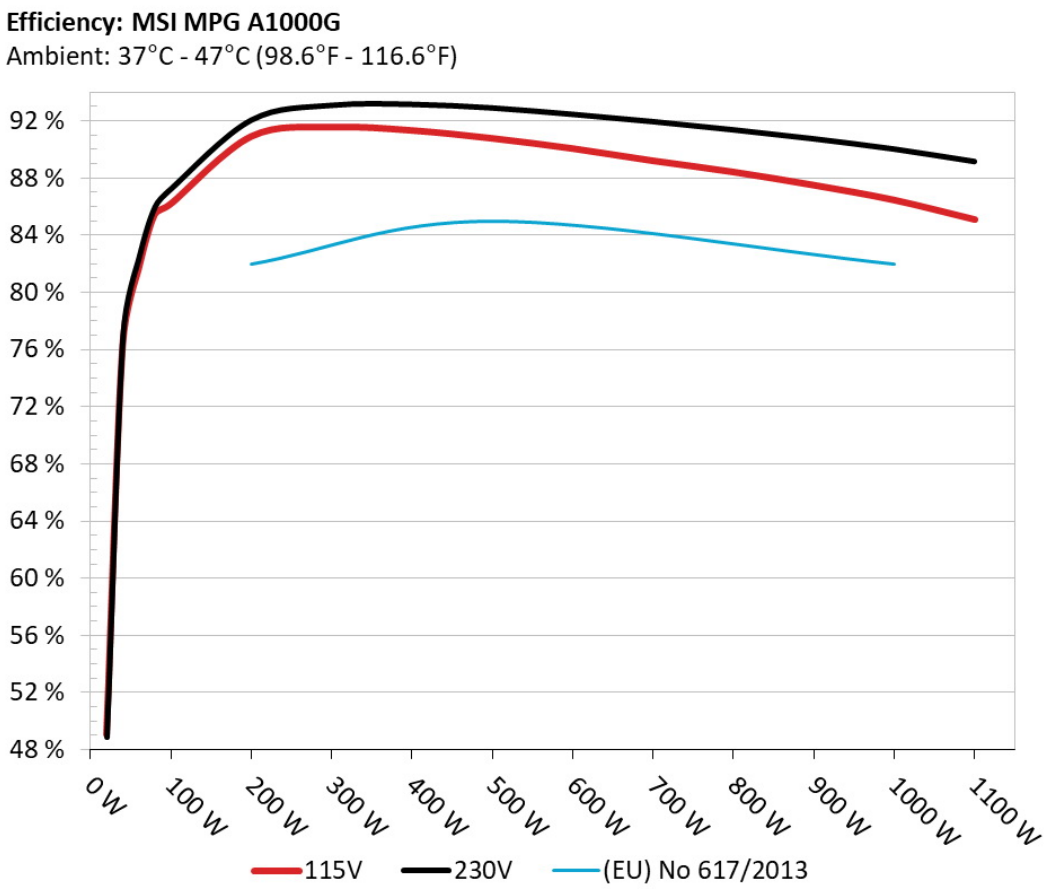
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

230V



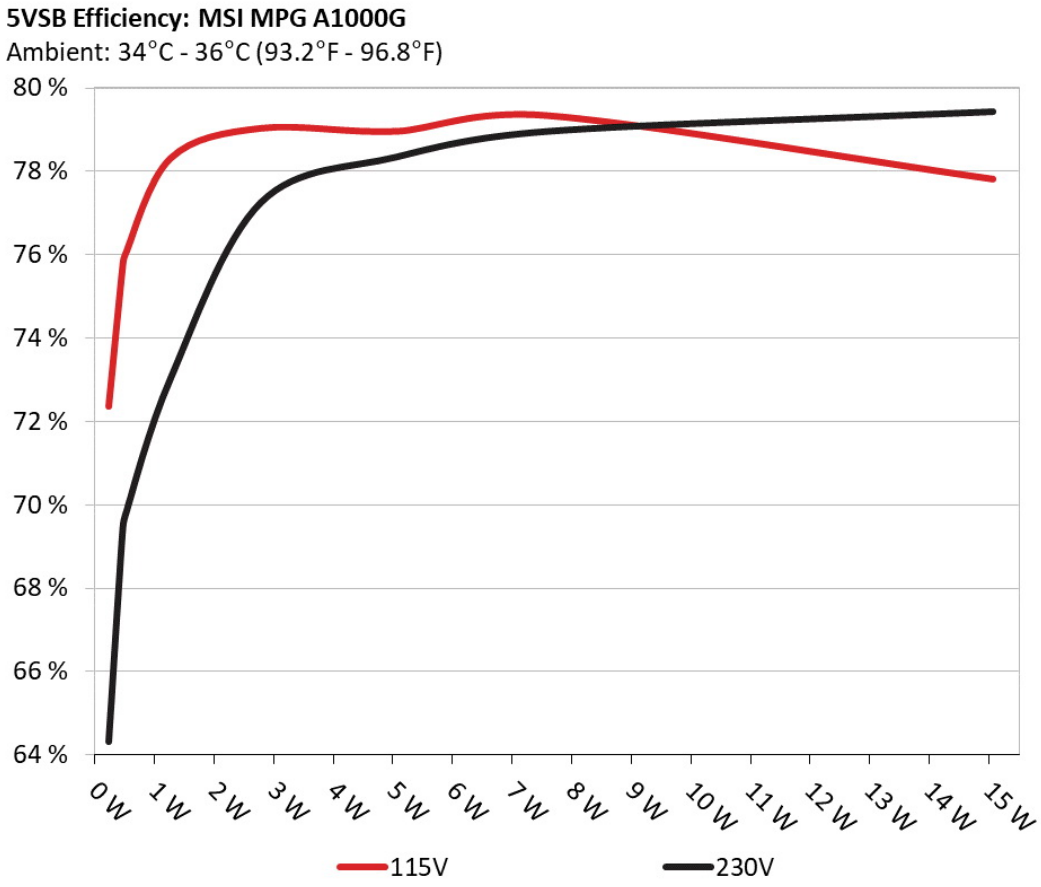
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Indicative Performance



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□□□□



□□

This graph depicts the efficiency levels of the 5VSB rail with 115V and 230V input

□□□□ □□ 5Vsb □□ (ErP Lot3/6 & CEC)

115V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.045A	0.228W	72.858%	0.031
	5.07V	0.313W		115.16V
2	0.09A	0.456W	76.132%	0.059
	5.069V	0.599W		115.16V
3	0.55A	2.785W	79.512%	0.259
	5.061V	3.503W		115.17V
4	1A	5.055W	79.438%	0.347
	5.054V	6.363W		115.17V
5	1.5A	7.57W	79.819%	0.396
	5.045V	9.484W		115.17V
6	3A	15.063W	78.297%	0.46
	5.021V	19.239W		115.16V

230V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.045A	0.228W	64.817%	0.011
	5.071V	0.352W		230.36V
2	0.09A	0.456W	69.789%	0.02
	5.07V	0.653W		230.36V
3	0.55A	2.785W	77.747%	0.103
	5.061V	3.582W		230.36V
4	1A	5.055W	78.831%	0.169
	5.054V	6.412W		230.36V
5	1.5A	7.571W	79.444%	0.224
	5.046V	9.53W		230.36V
6	3A	15.064W	79.918%	0.321
	5.021V	18.849W		230.36V

Supplementary Tests (For Reference)

10-110%□□□□

115V

□□	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
10%	6.483A	1.993A	2.011A	0.991A	100.005	86.193%	0	<6.0	44.97°C	0.977
	12.094V	5.018V	3.282V	5.045V	116.025				40.59°C	115.16V
20%	14.007A	2.993A	3.021A	1.192A	199.962	90.913%	0	<6.0	45.89°C	0.986
	12.069V	5.013V	3.277V	5.034V	219.949				41.03°C	115.16V
30%	21.881A	3.494A	3.528A	1.371A	300.013	91.562%	0	<6.0	46.83°C	0.987
	12.063V	5.009V	3.274V	5.105V	327.66				41.45°C	115.16V
40%	29.732A	3.997A	4.037A	1.569A	399.679	91.333%	0	<6.0	47.43°C	0.986
	12.057V	5.004V	3.27V	5.099V	437.604				41.62°C	115.15V
50%	37.253A	5A	5.051A	1.769A	499.432	90.775%	416	7.5	42.34°C	0.987
	12.051V	5.001V	3.267V	5.088V	550.188				48.41°C	115.15V
60%	44.842A	6.004A	6.067A	1.97A	599.952	90.06%	643	18.1	42.49°C	0.989
	12.045V	4.998V	3.264V	5.078V	666.168				49.2°C	115.14V
70%	52.377A	7.009A	7.085A	2.171A	699.692	89.206%	854	27.2	43.77°C	0.991
	12.039V	4.995V	3.261V	5.067V	784.353				50.97°C	115.14V
80%	60.001A	8.002A	8.103A	2.274A	799.652	88.422%	1041	33.1	43.96°C	0.992
	12.030V	4.992V	3.258V	5.057V	904.361				52.32°C	115.14V
90%	67.959A	8.522A	8.602A	2.377A	899.506	87.501%	1427	42.4	44.5°C	0.993
	12.023V	4.988V	3.255V	5.048V	1027.993				53.55°C	115.14V
100%	75.722A	9.031A	9.133A	2.982A	999.504	86.457%	1767	48.1	45.63°C	0.994
	12.016V	4.983V	3.251V	5.031V	1156.079				55.62°C	115.14V
110%	83.431A	10.043A	10.254A	2.987A	1100.15	85.091%	2149	52.8	46.69°C	0.995
	12.008V	4.978V	3.247V	5.022V	1292.906				57.56°C	115.14V
CL1	0.116A	14.407A	14.621A	0A	121.298	84.076%	560	13.2	43.23°C	0.986
	12.097V	5.011V	3.262V	5.042V	144.271				48.43°C	115.18V

CL2	0.115A	21.846A	0A	0A	111.39	82.211%	868	27.8	41.61°C	0.981
	12.101V	5.035V	3.276V	5.055V	135.494				48.69°C	115.17V
CL3	0.115A	0A	22.242A	0A	73.988	75.94%	940	30.3	40.18°C	0.977
	12.095V	5.008V	3.264V	5.042V	97.43				49.29°C	115.17V
CL4	83.215A	0A	0A	0A	1000.08	87.244%	1504	43.9	42.62°C	0.994
	12.018V	5.005V	3.272V	5.094V	1146.31				54.03°C	115.13V

The results above are not used in the certification process

230V

□□	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
10%	6.482A	1.993A	2.011A	0.991A	100.001	87.257%	0	<6.0	44.62°C	0.898
	12.094V	5.018V	3.281V	5.044V	114.604				40.55°C	230.34V
20%	14.008A	2.993A	3.022A	1.192A	199.947	92.068%	0	<6.0	45.06°C	0.951
	12.068V	5.013V	3.276V	5.032V	217.173				40.72°C	230.34V
30%	21.885A	3.495A	3.529A	1.372A	299.995	93.091%	0	<6.0	46.07°C	0.966
	12.061V	5.008V	3.272V	5.103V	322.26				41.39°C	230.34V
40%	29.749A	3.998A	4.038A	1.57A	399.688	93.156%	0	<6.0	47.27°C	0.974
	12.051V	5.003V	3.269V	5.096V	429.053				42.07°C	230.34V
50%	37.266A	5.002A	5.054A	1.77A	499.411	92.908%	415	7.5	42.24°C	0.977
	12.046V	4.999V	3.265V	5.085V	537.534				47.81°C	230.34V
60%	44.864A	6.007A	6.072A	1.971A	599.944	92.461%	640	17.5	42.84°C	0.98
	12.039V	4.996V	3.261V	5.074V	648.861				48.99°C	230.34V
70%	52.407A	7.013A	7.092A	2.173A	699.674	91.954%	843	27.1	43.39°C	0.982
	12.032V	4.992V	3.258V	5.062V	760.897				50.5°C	230.34V
80%	60.028A	8.003A	8.113A	2.277A	799.63	91.382%	1034	32.9	43.75°C	0.983
	12.024V	4.988V	3.254V	5.051V	875.046				52.3°C	230.34V
90%	67.987A	8.529A	8.615A	2.38A	899.519	90.751%	1422	42.3	44.02°C	0.984
	12.018V	4.983V	3.25V	5.042V	991.192				53.46°C	230.34V
100%	75.775A	9.04A	9.148A	2.987A	999.519	90.037%	1763	48.1	44.93°C	0.986
	12.008V	4.979V	3.246V	5.023V	1110.117				55.24°C	230.34V

110%	83.497A	10.055A	10.274A	2.993A	1100.208	89.166%	2147	52.8	46.53°C	0.987
	11.999V	4.973V	3.241V	5.013V	1233.887				57.33°C	230.34V
CL1	0.116A	14.415A	14.639A	0A	121.298	84.71%	558	12.9	44.42°C	0.923
	12.095V	5.009V	3.258V	5.039V	143.193				50.09°C	230.35V
CL2	0.115A	21.86A	0A	0A	111.392	82.814%	866	27.8	42.13°C	0.917
	12.100V	5.032V	3.274V	5.054V	134.51				49.29°C	230.34V
CL3	0.115A	0A	22.265A	0A	73.989	76.518%	939	30.3	40.96°C	0.873
	12.094V	5.008V	3.26V	5.04V	96.695				50.21°C	230.34V
CL4	83.252A	0A	0A	0A	1000.047	90.811%	1502	43.6	45.54°C	0.985
	12.012V	5.001V	3.268V	5.088V	1101.237				56.22°C	230.33V

The results above are not used in the certification process

20-80□□□□□

115V

□□	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
20W	1.228A	0.496A	0.5A	0.197A	19.999	49.037%	0	<6.0	40.07°C	0.932
	12.099V	5.044V	3.297V	5.065V	40.783				36.85°C	115.17V
40W	2.702A	0.694A	0.701A	0.296A	39.997	76.284%	0	<6.0	41.29°C	0.959
	12.097V	5.043V	3.297V	5.062V	52.432				37.81°C	115.16V
60W	4.176A	0.895A	0.903A	0.395A	59.996	81.677%	0	<6.0	41.78°C	0.968
	12.097V	5.029V	3.288V	5.059V	73.455				38.02°C	115.16V
80W	5.648A	1.095A	1.105A	0.495A	79.952	85.456%	0	<6.0	43.55°C	0.977
	12.095V	5.022V	3.285V	5.055V	93.559				39.49°C	115.16V

The results above are not used in the certification process

230V

□□	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
20W	1.228A	0.496A	0.5A	0.197A	20.001	48.899%	0	<6.0	40.67°C	0.681
	12.096V	5.044V	3.297V	5.064V	40.902				37.49°C	230.36V
40W	2.702A	0.694A	0.701A	0.296A	39.998	76.955%	0	<6.0	40.96°C	0.751
	12.094V	5.043V	3.297V	5.061V	51.976				37.63°C	230.36V
60W	4.178A	0.895A	0.903A	0.395A	59.996	82.436%	0	<6.0	42.24°C	0.824
	12.095V	5.028V	3.288V	5.058V	72.779				38.72°C	230.35V
80W	5.650A	1.095A	1.105A	0.495A	79.949	85.997%	0	<6.0	43.26°C	0.866
	12.093V	5.022V	3.284V	5.055V	92.968				39.45°C	230.35V

The results above are not used in the certification process

□□□□

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	4.90mV	6.24mV	4.71mV	6.17mV	Pass
20% Load	11.43mV	5.88mV	4.76mV	5.96mV	Pass
30% Load	9.13mV	6.19mV	6.70mV	6.78mV	Pass
40% Load	9.23mV	6.49mV	5.37mV	7.39mV	Pass
50% Load	9.53mV	6.80mV	5.68mV	7.29mV	Pass
60% Load	10.25mV	7.57mV	5.78mV	7.34mV	Pass
70% Load	10.52mV	8.13mV	6.19mV	8.36mV	Pass
80% Load	11.80mV	8.59mV	10.29mV	8.67mV	Pass
90% Load	12.21mV	9.26mV	10.75mV	8.87mV	Pass
100% Load	21.00mV	10.07mV	11.54mV	10.52mV	Pass
110% Load	21.22mV	10.58mV	11.97mV	11.13mV	Pass
Crossload1	10.06mV	8.65mV	11.80mV	10.55mV	Pass
Crossload2	7.71mV	11.15mV	5.68mV	10.14mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	6.59mV	5.83mV	14.99mV	9.58mV	Pass
Crossload4	19.43mV	8.81mV	6.67mV	13.38mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	4.85mV	5.68mV	5.02mV	5.91mV	Pass
20% Load	13.21mV	5.52mV	4.86mV	6.47mV	Pass
30% Load	10.86mV	6.96mV	6.96mV	7.24mV	Pass
40% Load	9.74mV	6.19mV	5.58mV	7.60mV	Pass
50% Load	10.61mV	6.60mV	5.68mV	6.99mV	Pass
60% Load	10.40mV	7.36mV	6.14mV	7.44mV	Pass
70% Load	11.07mV	9.05mV	6.45mV	8.26mV	Pass
80% Load	12.04mV	8.18mV	10.23mV	8.46mV	Pass
90% Load	13.26mV	8.95mV	11.00mV	8.72mV	Pass
100% Load	21.08mV	10.24mV	11.57mV	20.41mV	Pass
110% Load	22.65mV	10.10mV	12.25mV	10.17mV	Pass
Crossload1	17.24mV	8.42mV	12.61mV	9.56mV	Pass
Crossload2	7.66mV	11.20mV	6.30mV	9.94mV	Pass
Crossload3	6.54mV	5.52mV	15.00mV	9.89mV	Pass
Crossload4	20.45mV	8.36mV	6.92mV	12.53mV	Pass

The results above are not used in the certification process

MSI MPG A1000G



Top side



Power specifications label

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DELTA PHI

CYBENETICS LTD Syrou 6, Latsia, 2231, Nicosia Cyprus

www.cybenetics.com - info@cybenetics.com