

Anex

MSI MPG A1000G PCIE5

Lab ID#: MS10002337
 Receipt Date: Jan 8, 2024
 Test Date: Jan 25, 2024

Report: 24PS2337A
 Report Date: Jan 29, 2024

DUT INFORMATION	
Brand	MSI
Manufacturer (OEM)	CWT
Series	MPG
Model Number	MPG A1000G PCIE5
Serial Number	
DUT Notes	

DUT SPECIFICATIONS	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	13
Rated Frequency (Hz)	50-60
Rated Power (W)	1000
Type	ATX12V
Cooling	135mm Fluid Dynamic Bearing Fan (HA13525H12SF-Z)
Semi-Passive Operation	✓ (selectable)
Cable Design	Fully 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	✓

115V

Average Efficiency	88.627%
Efficiency With 10W (≤500W) or 2% (>500W)	78.753
Average Efficiency 5VSB	78.580%
Standby Power Consumption (W)	0.0135000
Average PF	0.989
Avg Noise Output	31.60 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	Standard++

230V

Average Efficiency	90.818%
Average Efficiency 5VSB	77.822%
Standby Power Consumption (W)	0.0717000
Average PF	0.964
Avg Noise Output	31.14 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	Standard++

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	22	22	83.5	3	0.3
	Watts	120		1000	3.6	15
Total Max. Power (W)		1000				

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

Hold-Up Time (ms)	17.5
AC Loss to PWR_OK Hold Up Time (ms)	14.9
PWR_OK Inactive to DC Loss Delay (ms)	2.6

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CABLES AND CONNECTORS

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 (600mm) (600W)	1	1	16-26AWG	No
SATA (500mm+150mm+150mm+150mm)	3	12	18AWG	No
4-pin Molex (500mm+150mm+150mm+150mm) / FDD (+150mm)	1	4 / 1	18-20AWG	No

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General Data	
Manufacturer (OEM)	CWT
Platform	CSZ
PCB Type	Double-Sided
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	1x NTC Thermistor SCK207R0 (7 Ohm) & Relay
Bridge Rectifier(s)	2x (2306)
APFC MOSFETs	2x Alpha Omega AOTF095A60L
APFC Boost Diode	1x CREE C3D10060A (600V, 12A @ 140°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 On Semiconductor NTMF55C430N (40V, 131A @ 100°C, Rds(on): 1.7mOhm)
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: 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), 2x Rubycon (4-10,000h @ 105°C, YX) Polymer: 14x United Chemi-Con, 14x FPCAP
Supervisor IC	IN1S3151 - SAG
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

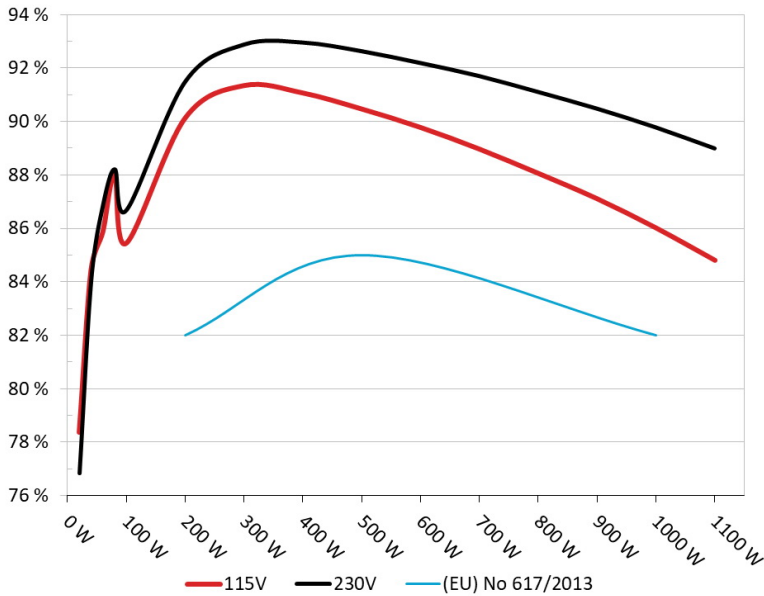
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: MSI MPG A1000G PCIE5
Ambient: 37°C - 47°C (98.6°F - 116.6°F)

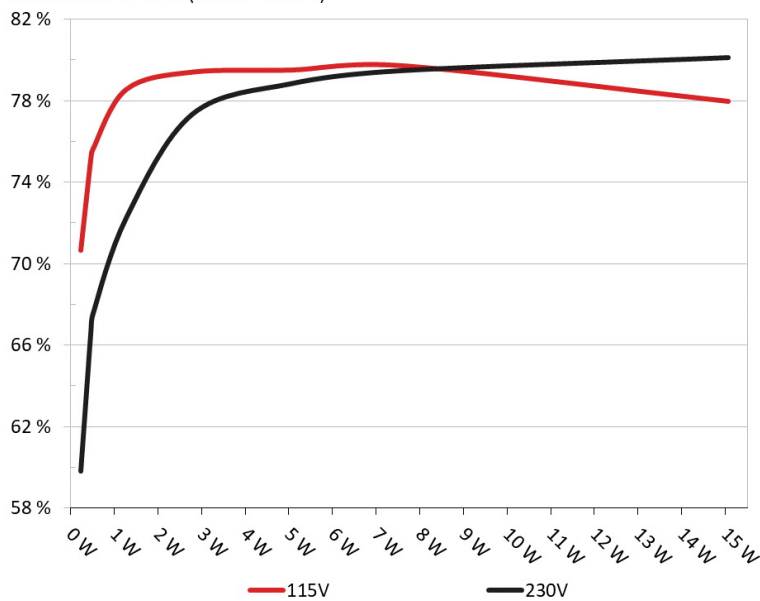


INFO

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: MSI MPG A1000G PCIE5
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	0.228W	70.163%	0.032
	5.077V	0.325W		114.85V
2	0.09A	0.457W	74.658%	0.06
	5.076V	0.612W		114.85V
3	0.55A	2.787W	78.92%	0.271
	5.067V	3.531W		114.85V
4	1A	5.059W	79.018%	0.359
	5.059V	6.402W		114.86V
5	1.5A	7.574W	79.234%	0.422
	5.049V	9.559W		114.85V
6	3A	15.064W	77.482%	0.501
	5.021V	19.441W		114.86V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.228W	59.332%	0.011
	5.076V	0.385W		229.85V
2	0.09A	0.457W	66.13%	0.02
	5.075V	0.692W		229.85V
3	0.55A	2.787W	76.864%	0.102
	5.067V	3.626W		229.85V
4	1A	5.059W	78.36%	0.169
	5.059V	6.456W		229.86V
5	1.5A	7.574W	78.996%	0.23
	5.049V	9.588W		229.85V
6	3A	15.063W	79.636%	0.326
	5.021V	18.915W		229.85V

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115V

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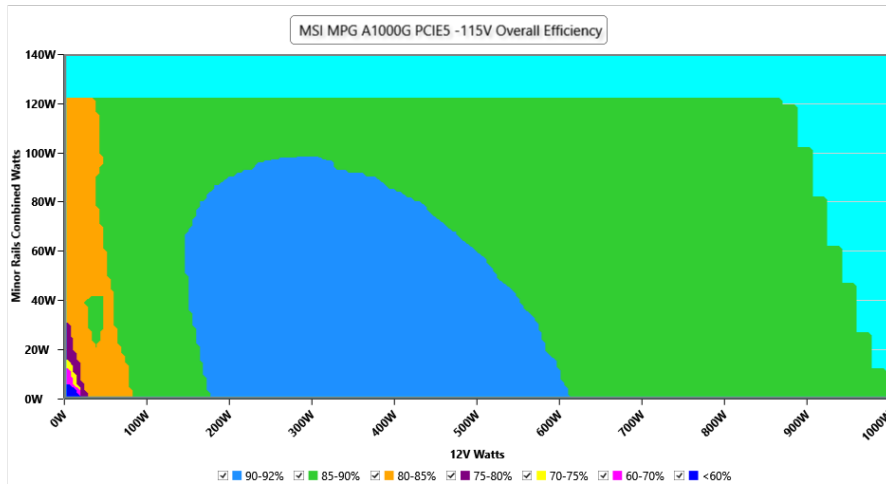
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MSI MPG A1000G PCIE5

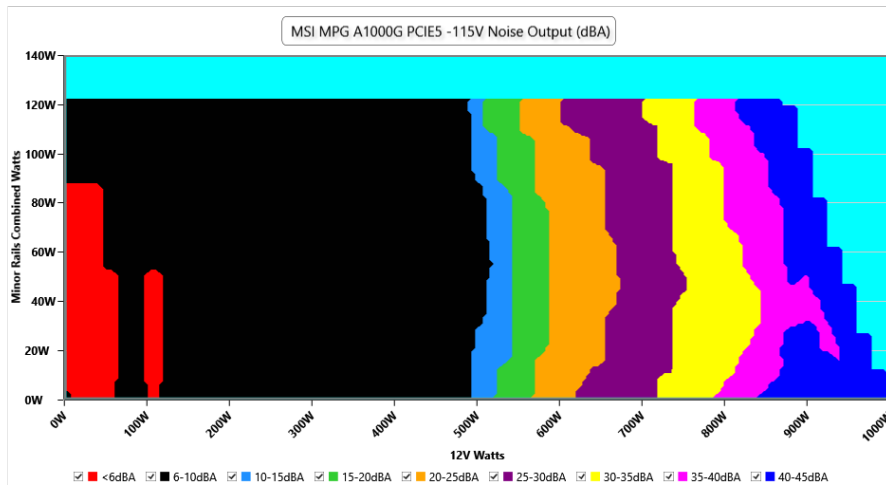
EFFICIENCY GRAPH 115V



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:	114.85 V	114.79 V	113.85 V	114.91 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:	1.420	1.418	1.340	1.422	1.490	PASS
Mains Voltage THD:	0.15 %	0.10 %	N/A	0.25 %	2.00 %	PASS
Real Power:	0.014 W	0.001 W	N/A	0.028 W	N/A	N/A
Apparent Power:	11.118 W	11.085 W	N/A	11.157 W	N/A	N/A
Power Factor:	0.002	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%	6.472A	1.981A	1.948A	0.991A	99.991	85.449%	0	<6.0	44.59°C	0.982
	12.112V	5.046V	3.388V	5.048V	117.022				40.37°C	114.82V
20%	13.965A	2.973A	2.924A	1.191A	199.938	90.135%	0	<6.0	45.24°C	0.99
	12.104V	5.044V	3.385V	5.037V	221.82				40.66°C	114.78V
30%	21.848A	3.47A	3.413A	1.37A	299.988	91.353%	0	<6.0	46.25°C	0.987
	12.081V	5.044V	3.384V	5.11V	328.385				41.2°C	114.76V
40%	29.684A	3.966A	3.903A	1.568A	399.532	91.077%	0	<6.0	47.29°C	0.987
	12.072V	5.043V	3.382V	5.103V	438.677				41.61°C	114.72V
50%	37.195A	4.958A	4.881A	1.767A	499.258	90.479%	448	8.4	42.1°C	0.99
	12.065V	5.042V	3.38V	5.093V	551.789				48.17°C	114.68V
60%	44.784A	5.953A	5.861A	1.968A	599.799	89.785%	691	20.5	42.63°C	0.991
	12.058V	5.04V	3.378V	5.082V	668.041				49.28°C	114.65V
70%	52.318A	6.948A	6.843A	2.169A	699.53	88.977%	926	29.8	43.27°C	0.993
	12.050V	5.038V	3.376V	5.071V	786.187				50.29°C	114.61V
80%	59.928A	7.941A	7.824A	2.272A	799.54	88.069%	1206	37.6	43.8°C	0.994
	12.042V	5.037V	3.374V	5.062V	907.852				51.85°C	114.57V
90%	67.878A	8.44A	8.303A	2.375A	899.345	87.12%	1502	43.6	44.69°C	0.994
	12.034V	5.035V	3.372V	5.053V	1032.313				53.78°C	114.53V
100%	75.637A	8.94A	8.812A	2.98A	999.376	86.028%	1770	48.1	45.23°C	0.995
	12.027V	5.033V	3.37V	5.034V	1161.68				55.28°C	114.48V
110%	83.338A	9.937A	9.887A	2.985A	1099.99	84.81%	1888	50.1	46.65°C	0.996
	12.019V	5.032V	3.368V	5.026V	1297.01				57.55°C	114.45V
CL1	0.116A	14.321A	14.129A	0A	121.304	83.388%	399	7.5	41.86°C	0.988
	12.105V	5.042V	3.376V	5.057V	145.47				47.28°C	114.8V
CL2	0.114A	21.746A	0A	0A	111.295	81.633%	401	7.5	41.43°C	0.986
	12.110V	5.054V	3.384V	5.061V	136.335				48.49°C	114.81V
CL3	0.114A	0A	21.502A	0A	73.985	75.433%	399	7.5	40.84°C	0.979
	12.110V	5.051V	3.376V	5.061V	98.082				49.91°C	114.82V
CL4	83.135A	0A	0A	0A	999.94	86.834%	1769	48.1	45.88°C	0.995
	12.028V	5.055V	3.386V	5.097V	1151.554				56.8°C	114.5V

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MSI MPG A1000G PCIE5

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	1.236A	0.494A	0.486A	0.197A	19.996	78.367%	0	<6.0	39.63°C	0.866
	12.015V	5.063V	3.398V	5.07V	25.514				36.57°C	114.85V
40W	2.720A	0.691A	0.68A	0.296A	39.997	84.442%	0	<6.0	40.95°C	0.939
	12.018V	5.062V	3.398V	5.067V	47.367				37.63°C	114.84V
60W	4.202A	0.89A	0.875A	0.395A	59.997	85.861%	0	<6.0	41.91°C	0.968
	12.023V	5.054V	3.393V	5.063V	69.874				38.04°C	114.83V
80W	5.682A	1.089A	1.071A	0.494A	79.938	88.031%	0	<6.0	43.19°C	0.977
	12.023V	5.049V	3.39V	5.06V	90.805				39.25°C	114.82V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	19.59mV	16.12mV	16.21mV	9.03mV	Pass
20% Load	21.12mV	18.68mV	18.27mV	9.70mV	Pass
30% Load	21.33mV	17.65mV	19.60mV	9.23mV	Pass
40% Load	22.35mV	17.65mV	19.86mV	10.11mV	Pass
50% Load	22.45mV	18.42mV	19.39mV	9.85mV	Pass
60% Load	22.35mV	18.53mV	19.70mV	10.11mV	Pass
70% Load	23.32mV	18.37mV	19.50mV	10.06mV	Pass
80% Load	23.88mV	20.63mV	20.22mV	10.78mV	Pass
90% Load	24.45mV	19.76mV	22.42mV	10.88mV	Pass
100% Load	36.41mV	20.95mV	22.18mV	11.70mV	Pass
110% Load	37.11mV	22.40mV	25.24mV	14.70mV	Pass
Crossload1	25.03mV	21.28mV	20.66mV	12.77mV	Pass
Crossload2	24.29mV	28.59mV	19.80mV	13.85mV	Pass
Crossload3	20.20mV	18.02mV	26.37mV	12.16mV	Pass
Crossload4	30.96mV	21.81mV	21.72mV	13.44mV	Pass

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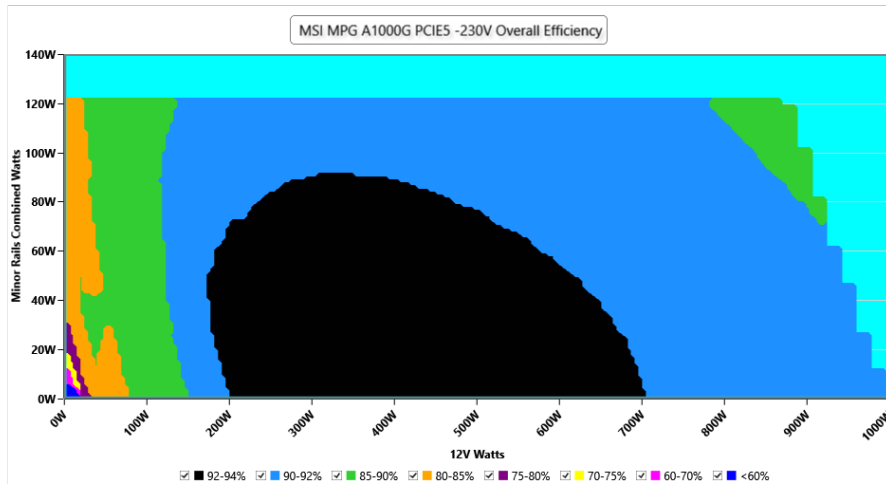
230V

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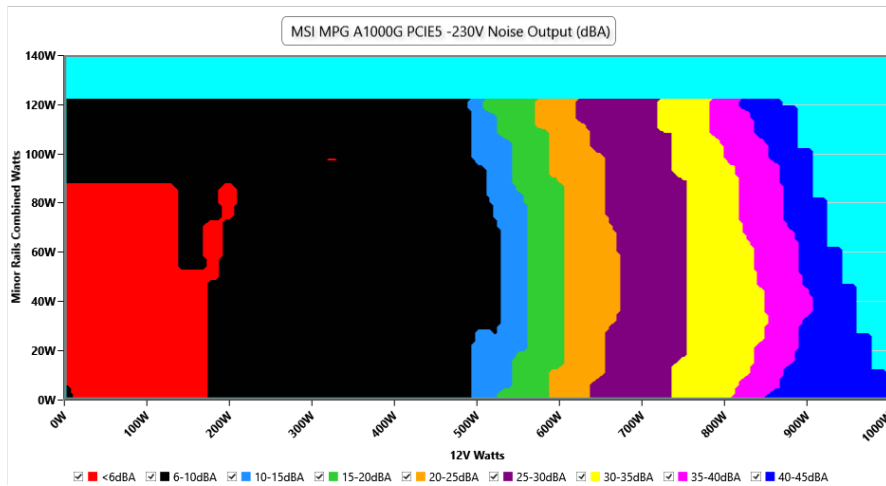
EFFICIENCY GRAPH 230V



INFO

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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:	229.88 V	229.82 V	227.70 V	229.95 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:	1.418	1.417	1.340	1.420	1.490	PASS
Mains Voltage THD:	0.14 %	0.10 %	N/A	0.21 %	2.00 %	PASS
Real Power:	0.072 W	0.045 W	N/A	0.108 W	N/A	N/A
Apparent Power:	38.433 W	38.361 W	N/A	38.492 W	N/A	N/A
Power Factor:	0.002	N/A	N/A	N/A	N/A	N/A

INFO

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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%	6.474A	1.982A	1.948A	0.99A	99.992	86.678%	0	<6.0	44.64°C	0.886
	12.110V	5.044V	3.389V	5.048V	115.359				40.38°C	229.85V
20%	13.967A	2.974A	2.923A	1.191A	199.939	91.488%	0	<6.0	45.46°C	0.95
	12.103V	5.043V	3.386V	5.037V	218.544				40.88°C	229.83V
30%	21.851A	3.47A	3.412A	1.37A	299.989	92.87%	0	<6.0	46.38°C	0.968
	12.079V	5.042V	3.385V	5.109V	323.019				41.36°C	229.81V
40%	29.687A	3.967A	3.901A	1.568A	399.532	92.944%	0	<6.0	47.3°C	0.976
	12.070V	5.042V	3.384V	5.103V	429.863				41.85°C	229.79V
50%	37.202A	4.959A	4.879A	1.768A	499.253	92.62%	448	8.4	42.41°C	0.979
	12.063V	5.042V	3.382V	5.092V	539.036				48.42°C	229.78V
60%	44.793A	5.953A	5.859A	1.968A	599.795	92.177%	691	20.5	42.9°C	0.982
	12.055V	5.04V	3.38V	5.081V	650.696				49.43°C	229.76V
70%	52.330A	6.948A	6.84A	2.17A	699.525	91.689%	878	28.2	43.31°C	0.984
	12.047V	5.038V	3.378V	5.07V	762.93				50.32°C	229.75V
80%	59.941A	7.941A	7.82A	2.272A	799.531	91.094%	1187	37.1	43.82°C	0.985
	12.039V	5.037V	3.376V	5.061V	877.703				51.87°C	229.73V
90%	67.893A	8.441A	8.299A	2.375A	899.336	90.473%	1500	43.6	44.01°C	0.986
	12.032V	5.035V	3.374V	5.052V	994.036				53.1°C	229.71V
100%	75.659A	8.94A	8.808A	2.981A	999.359	89.771%	1886	50.0	45.64°C	0.987
	12.024V	5.033V	3.372V	5.033V	1113.233				55.67°C	229.69V
110%	83.360A	9.937A	9.882A	2.985A	1099.981	88.981%	2166	53.1	46.89°C	0.989
	12.016V	5.031V	3.369V	5.025V	1236.199				57.83°C	229.67V
CL1	0.116A	14.32A	14.12A	0A	121.301	84.031%	399	7.5	40.08°C	0.916
	12.105V	5.042V	3.378V	5.057V	144.352				45.59°C	229.84V
CL2	0.114A	21.744A	0A	0A	111.3	82.266%	399	7.5	41.91°C	0.909
	12.110V	5.055V	3.386V	5.061V	135.293				49.04°C	229.84V
CL3	0.114A	0A	21.485A	0A	73.983	76.629%	399	7.5	41.11°C	0.857
	12.109V	5.051V	3.379V	5.061V	96.548				50.21°C	229.85V
CL4	83.135A	0A	0A	0A	999.928	90.482%	1769	48.1	45.2°C	0.987
	12.027V	5.055V	3.388V	5.096V	1105.115				56.17°C	229.7V

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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	1.236A	0.494A	0.485A	0.197A	19.997	76.823%	0	<6.0	39.72°C	0.464
	12.015V	5.062V	3.399V	5.07V	26.031				36.67°C	229.85V
40W	2.720A	0.691A	0.68A	0.296A	39.997	84.086%	0	<6.0	41.01°C	0.672
	12.018V	5.062V	3.399V	5.067V	47.569				37.6°C	229.85V
60W	4.202A	0.89A	0.875A	0.395A	59.997	86.863%	0	<6.0	42.11°C	0.777
	12.024V	5.053V	3.394V	5.063V	69.072				38.57°C	229.85V
80W	5.682A	1.089A	1.07A	0.494A	79.939	88.196%	0	<6.0	43.13°C	0.841
	12.024V	5.048V	3.391V	5.06V	90.634				39.27°C	229.85V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	19.84mV	17.35mV	17.65mV	9.44mV	Pass
20% Load	20.20mV	18.06mV	18.93mV	9.60mV	Pass
30% Load	20.56mV	17.09mV	17.08mV	8.72mV	Pass
40% Load	21.43mV	19.30mV	20.32mV	10.52mV	Pass
50% Load	21.53mV	18.94mV	19.75mV	10.42mV	Pass
60% Load	22.56mV	19.81mV	19.65mV	10.93mV	Pass
70% Load	22.91mV	18.78mV	19.24mV	11.24mV	Pass
80% Load	23.73mV	21.40mV	22.21mV	10.82mV	Pass
90% Load	23.32mV	21.20mV	21.44mV	10.98mV	Pass
100% Load	36.89mV	21.38mV	23.18mV	12.83mV	Pass
110% Load	36.61mV	20.85mV	24.43mV	12.13mV	Pass
Crossload1	23.02mV	20.33mV	21.42mV	12.50mV	Pass
Crossload2	22.35mV	27.25mV	19.08mV	13.03mV	Pass
Crossload3	19.53mV	17.81mV	24.06mV	12.31mV	Pass
Crossload4	32.93mV	21.78mV	22.29mV	13.68mV	Pass

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Anex

MSI MPG A1000G PCIE5

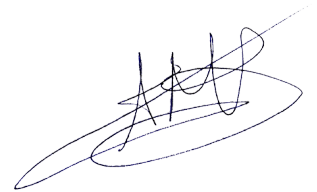


Top side

msi MPG A1000G PCIE5					
AC INPUT / 입력입력 交流输入 / 交流输入	100-240V, 13A, 50-60Hz 不适用中国 200-240V-, 6.5A, 50-60Hz 仅适用中国 Only for China/Korea				
DC OUTPUT / 출력출력 直流输出 / 直流输出	+5V	+3.3V	+12V	-12V	+5Vsb
	22.0A	22.0A	83.5A	0.3A	3.0A
TOTAL POWER 最大功率 / 最大功率	120W	1000W	3.6W	15W	1000W
CAUTION 警告 ■ Do not open the power supply / 請勿打開電源供應器 / 请勿打开电源供应器 / Ne ouvrez pas l'alimentation électrique ■ Potential lethal voltages inside / 内部隱藏致命電壓 / 内含电压可能致命 / Des tensions potentiellement mortelles sont présentes à l'intérieur ■ Select the right input voltage / 選擇正確的輸入電壓 / 选择正确的输入电压 / Sélectionnez la bonne tension d'entrée ■ Warranty void if security seal is damaged, removed or lost / 如果封條貼紙被移動、遺失或損毀，本開關電源保固將失效 / 如果封条贴纸被移动、遗失或损毁，本开关电源保固将失效 / Annulation de la garantie si le sceau est endommagé, retiré ou perdu					

Power specifications label

CERTIFICATIONS 115V

Aristeidis Bitziopoulos
Lab Director

CERTIFICATIONS 230V



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