Anex

Gigabyte UD1000GM PG5

Lab ID#: GB10002008
Receipt Date: Apr 15, 2022
Test Date: Apr 28, 2022

Report: 22PS2008A
Report Date: Apr 28, 2022

DUT INFORMATION

Brand	Gigabyte
Manufacturer (OEM)	MEIC
Series	UD
Model Number	GP-UD1000GM-PG5
Serial Number	SN22093G000030
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	15-6.5
Rated Frequency (Hz)	60-50
Rated Power (W)	1000
Type	ATX12V
Cooling	120mm Rifle Bearing Fan (KF1225H1H-AA)
Semi-Passive Operation	✓
Cable Design	Fully Modular

TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Keysight AC6804B
Power Analyzers	N4L PPA1530 x2
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2
Tachometer	UNI-T UT372 x2
Digital Multimeter	Keysight U1273AX, Fluke 289, Keithley 2015 - THD
UPS	CyberPower OLS3000E 3kVA x2
Transformer	3kVA x2

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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	✓

115V

Average Efficiency	89.006%
Efficiency With 10W (≤500W) or 2% (>500W)	71.259
Average Efficiency 5VSB	80.280%
Standby Power Consumption (W)	0.1198000
Average PF	0.984
Avg Noise Output	37.61 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard+

230V

Average Efficiency	91.336%
Average Efficiency 5VSB	78.113%
Standby Power Consumption (W)	0.1712000
Average PF	0.954
Avg Noise Output	37.78 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard+

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	25	25	83.3	3	0.3
	Watts	125		1000	15	3.6
Total Max. Power (W)		1000				

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

Hold-Up Time (ms)	17
AC Loss to PWR_OK Hold Up Time (ms)	15.3
PWR_OK Inactive to DC Loss Delay (ms)	1.7

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CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (610mm)	1	1	18AWG	No
4+4 pin EPS12V (600mm+200mm)	1	2	18AWG	No
12+4 pin PCIe 5.0 (700mm)	1	1	16AWG	No
6+2 pin PCIe (600mm+150mm)	2	4	18AWG	No
SATA (600mm+150mm+150mm+150mm)	2	8	18AWG	No
4-pin Molex (500mm+115mm+115mm) / FDD (+150mm)	1	3 / 1	18AWG	No
AC Power Cord (1400mm) - C13 coupler	1	1	16AWG	-

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General Data	-
Manufacturer (OEM)	MEIC
PCB Type	Double Sided
Primary Side	**-**
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x Chipown PN8200 (Discharge IC)
Inrush Protection	NTC Thermistor NTC-5D15 (5 Ohm)
Bridge Rectifier(s)	2x GBU1506 (800V, 15A @ 100°C)
APFC MOSFETs	2x NCE Power NCE65TF099 (650V, 24A @ 100°C, Rds(on): 0.109Ohm)
APFC Boost Diode	1x STMicroelectronics STPSC10H065 (650V, 10A @ 135°C)
Bulk Cap(s)	1x Nippon Chemi-Con (400V, 1000uF, 2,000h @ 105°C, KMW)
Main Switchers	2x NCE Power NCE65TF099 (650V, 24A @ 100°C, Rds(on): 0.109Ohm)
APFC Controller	Champion CM6500UNX
Resonant Controller	Champion CM6901X
Topology	Primary side: APFC, Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	**-**
+12V MOSFETs	6x Nexperia PSMN1R4-40YLD (40V, 214A @ 100°C, Rds(on): 1.4mOhm)
5V & 3.3V	DC-DC Converters
Filtering Capacitors	Electrolytic: 7x Teapo (3-6,000h @ 105°C, SY), 4x Lelon (4-7,000h @ 105°C, RXW), 3x Teapo (2,000h @ 105°C, SH), 8x Lelon (4-10,000h @ 105°C, RZW), 1x Lelon (105°C, RG) Polymer: 14x Teapo
Supervisor IC	Weltrend WT7502R (OVP, UVP, SCP, PG)
Fan Model	Jamicon KF1225H1H-AA (120mm, 12V, 0.35A, Rifle Bearing Fan)
5VSB Circuit	**-**
Rectifier	1x JF Semiconductor SP10U45L SBR (45V, 10A)
Standby PWM Controller	PR8109T
-12V Circuit	**-**
Controller	Axelite Technology AX3111

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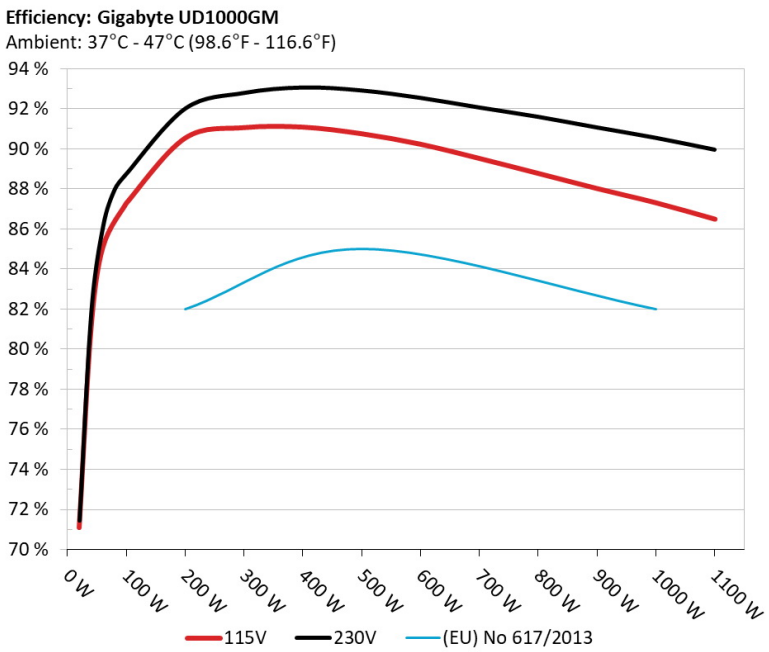
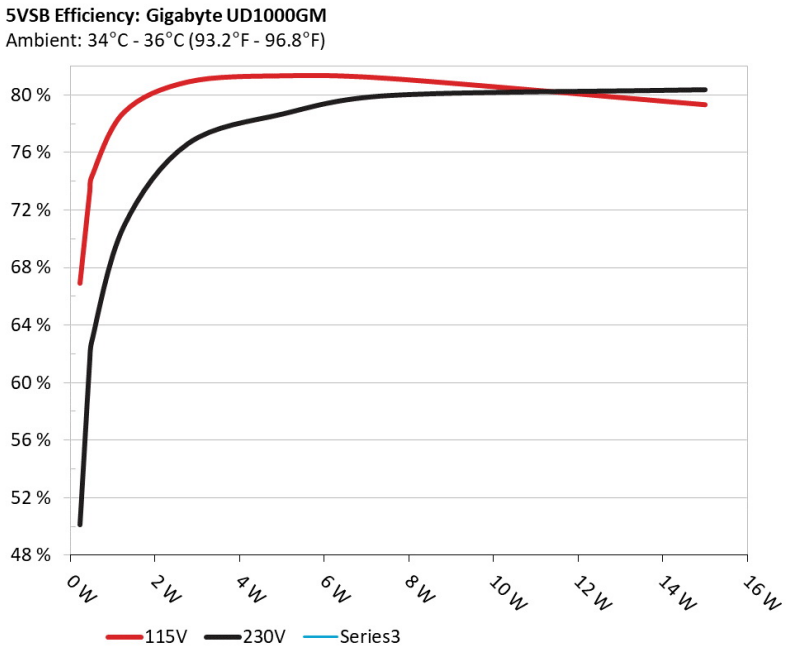
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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

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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	66.921%	0.04
	5.06V	0.341W		115.15V
2	0.09A	0.455W	73.227%	0.071
	5.059V	0.621W		115.16V
3	0.55A	2.778W	80.895%	0.284
	5.05V	3.434W		115.15V
4	1A	5.042W	81.319%	0.366
	5.04V	6.199W		115.15V
5	1.5A	7.547W	81.132%	0.412
	5.03V	9.302W		115.16V
6	3A	15W	79.311%	0.47
	5V	18.913W		115.15V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.228W	50.135%	0.016
	5.06V	0.455W		230.37V
2	0.09A	0.455W	61.418%	0.026
	5.059V	0.741W		230.37V
3	0.55A	2.778W	76.595%	0.119
	5.049V	3.627W		230.37V
4	1A	5.042W	78.676%	0.19
	5.04V	6.409W		230.37V
5	1.5A	7.547W	79.943%	0.248
	5.03V	9.438W		230.37V
6	3A	15W	80.343%	0.34
	5V	18.669W		230.36V

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115V

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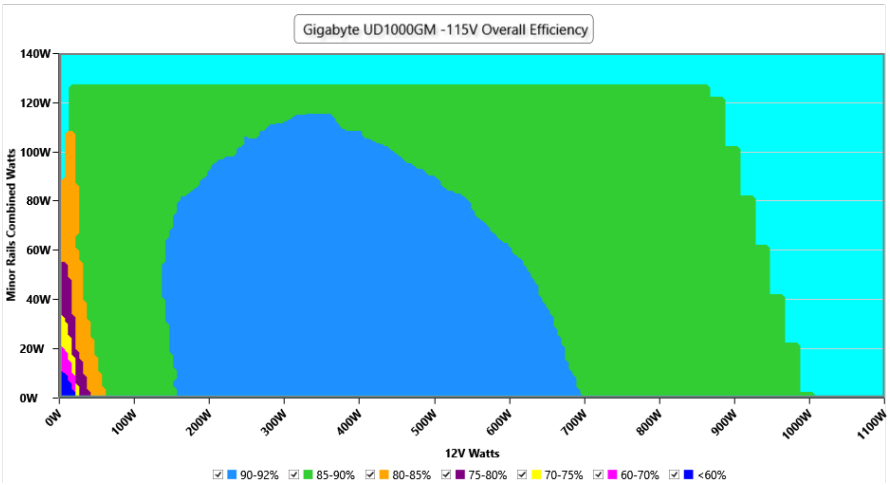
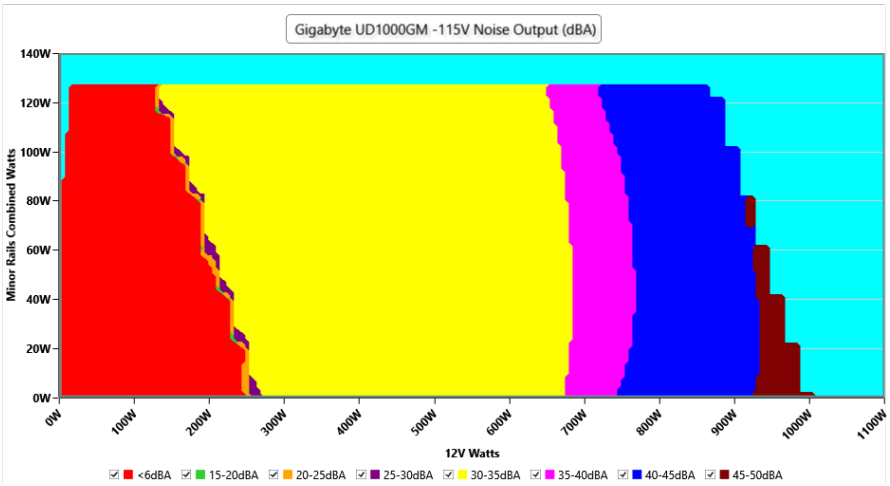
EFFICIENCY GRAPH 115V



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:	115.13 V	115.11 V	113.85 V	115.15 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:	1.415	1.415	1.340	1.416	1.490	PASS
Mains Voltage THD:	0.13 %	0.11 %	N/A	0.15 %	2.00 %	PASS
Real Power:	0.120 W	0.029 W	N/A	4.356 W	N/A	N/A
Apparent Power:	8.589 W	8.526 W	N/A	11.352 W	N/A	N/A
Power Factor:	0.004	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%	6.516A	1.969A	1.98A	0.993A	100.01	87.382%	0	<6.0	44.87°C	0.963
	12.032V	5.08V	3.332V	5.038V	114.441				40.52°C	115.13V
20%	14.046A	2.958A	2.978A	1.193A	199.963	90.554%	0	<6.0	46.17°C	0.978
	12.037V	5.073V	3.325V	5.03V	220.814				41.08°C	115.1V
30%	21.954A	3.454A	3.479A	1.394A	300.017	91.076%	1085	33.3	41.79°C	0.984
	12.023V	5.068V	3.32V	5.023V	329.421				47.64°C	115.08V
40%	29.834A	3.953A	3.984A	1.595A	399.742	91.101%	1091	33.5	42.15°C	0.986
	12.018V	5.06V	3.313V	5.016V	438.787				48.38°C	115.05V
50%	37.368A	4.949A	4.992A	1.797A	499.476	90.772%	1110	33.8	43.21°C	0.988
	12.015V	5.053V	3.306V	5.009V	550.246				49.85°C	115.01V
60%	44.972A	5.949A	6.004A	2A	600.014	90.247%	1216	36.2	43.58°C	0.989
	12.012V	5.044V	3.298V	5.001V	664.857				50.59°C	114.99V
70%	52.516A	6.953A	7.022A	2.203A	699.768	89.538%	1561	42.0	43.73°C	0.99
	12.009V	5.036V	3.29V	4.993V	781.531				51.42°C	114.96V
80%	60.136A	7.96A	8.042A	2.306A	799.809	88.791%	1843	45.5	44.62°C	0.992
	12.004V	5.027V	3.282V	4.988V	900.772				52.67°C	114.93V
90%	68.091A	8.473A	8.55A	2.409A	899.634	88.036%	2044	48.2	44.98°C	0.993
	12.001V	5.017V	3.275V	4.983V	1021.912				53.99°C	114.9V
100%	75.856A	8.987A	9.087A	3.021A	999.558	87.325%	2120	48.7	45.06°C	0.994
	11.995V	5.008V	3.268V	4.966V	1144.619				55.15°C	114.87V
110%	83.543A	10.003A	10.212A	3.023A	1100.101	86.507%	2136	48.8	47.2°C	0.994
	11.992V	4.998V	3.261V	4.963V	1271.689				58.05°C	114.84V
CL1	0.116A	14.813A	14.96A	0A	126.296	84.333%	0	<6.0	49.53°C	0.969
	12.042V	5.083V	3.315V	5.05V	149.768				43.61°C	115.12V
CL2	0.116A	24.393A	0A	0A	126.392	83.338%	0	<6.0	50.84°C	0.969
	12.048V	5.124V	3.31V	5.062V	151.662				44.01°C	115.11V
CL3	0.116A	0A	24.823A	0A	83.889	78.641%	0	<6.0	52.78°C	0.962
	12.040V	5.04V	3.323V	5.043V	106.673				44.78°C	115.13V
CL4	83.347A	0.001A	0A	0.002A	1000.083	87.859%	2126	48.7	45.81°C	0.994
	11.998V	4.985V	3.275V	5.039V	1138.278				55.83°C	114.87V

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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	1.234A	0.493A	0.494A	0.198A	20.003	71.113%	0	<6.0	40.04°C	0.864
	12.038V	5.076V	3.339V	5.057V	28.131				36.81°C	115.15V
40W	2.717A	0.69A	0.692A	0.297A	40.001	81.021%	0	<6.0	40.83°C	0.921
	12.032V	5.075V	3.338V	5.055V	49.375				37.34°C	115.15V
60W	4.200A	0.887A	0.89A	0.396A	59.999	85.095%	0	<6.0	42.28°C	0.944
	12.031V	5.074V	3.337V	5.052V	70.504				38.4°C	115.13V
80W	5.680A	1.084A	1.088A	0.495A	79.958	87.303%	0	<6.0	43.59°C	0.951
	12.030V	5.074V	3.335V	5.049V	91.588				39.54°C	115.13V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	7.40mV	10.07mV	6.30mV	7.90mV	Pass
20% Load	12.41mV	11.76mV	7.01mV	8.97mV	Pass
30% Load	13.13mV	15.49mV	7.32mV	10.81mV	Pass
40% Load	14.56mV	15.39mV	7.06mV	11.98mV	Pass
50% Load	15.78mV	17.69mV	7.78mV	12.39mV	Pass
60% Load	17.62mV	20.40mV	8.44mV	14.12mV	Pass
70% Load	20.07mV	22.19mV	9.27mV	15.09mV	Pass
80% Load	22.68mV	24.29mV	15.76mV	20.29mV	Pass
90% Load	24.57mV	26.54mV	16.28mV	23.96mV	Pass
100% Load	32.28mV	31.13mV	18.66mV	27.24mV	Pass
110% Load	34.91mV	34.16mV	18.91mV	30.25mV	Pass
Crossload1	14.96mV	20.78mV	21.70mV	19.58mV	Pass
Crossload2	10.78mV	16.11mV	12.90mV	18.41mV	Pass
Crossload3	7.51mV	15.09mV	20.26mV	18.10mV	Pass
Crossload4	32.29mV	25.93mV	8.94mV	28.18mV	Pass

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230V

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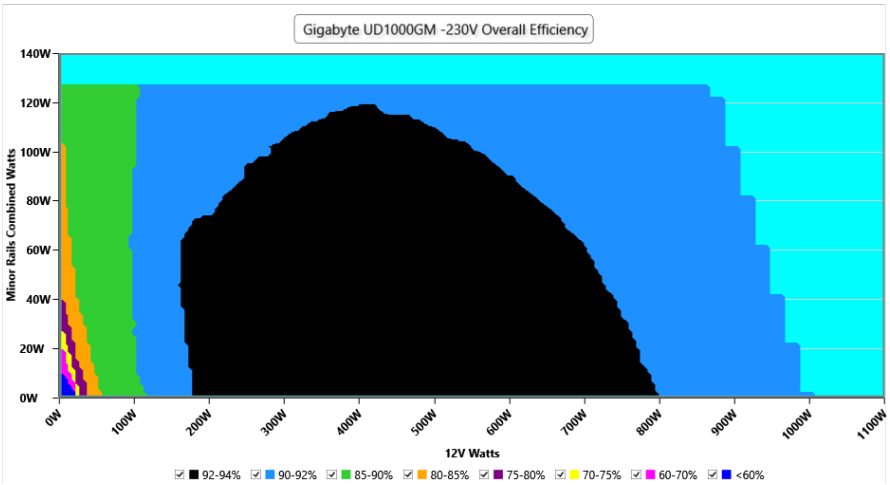
EFFICIENCY GRAPH 230V



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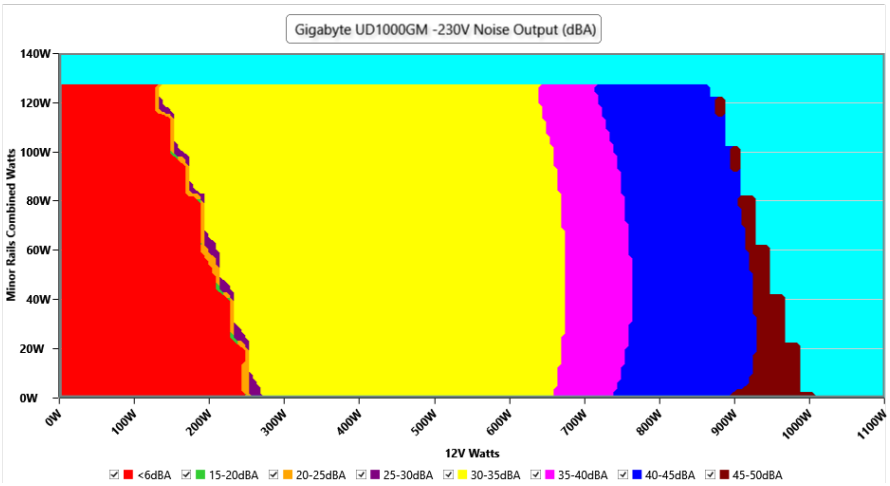
NOISE GRAPH 230V



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VAMPIRE POWER -230V

Detailed Results

	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	230.36 V	230.32 V	227.70 V	230.37 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	50.00 Hz	49.50 Hz	50.00 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.415	1.415	1.340	1.415	1.490	PASS
Mains Voltage THD:	0.14 %	0.13 %	N/A	0.16 %	2.00 %	PASS
Real Power:	0.171 W	0.158 W	N/A	0.190 W	N/A	N/A
Apparent Power:	28.556 W	28.542 W	N/A	28.567 W	N/A	N/A
Power Factor:	0.006	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%	6.518A	1.968A	1.98A	0.993A	100.01	88.765%	0	<6.0	45.18°C	0.861
	12.030V	5.081V	3.333V	5.037V	112.665				40.67°C	230.35V
20%	14.048A	2.957A	2.977A	1.193A	199.963	92.013%	0	<6.0	46.09°C	0.925
	12.034V	5.074V	3.326V	5.03V	217.323				41.12°C	230.35V
30%	21.952A	3.454A	3.479A	1.394A	300.017	92.79%	1090	33.5	41.22°C	0.949
	12.024V	5.068V	3.32V	5.022V	323.329				46.86°C	230.34V
40%	29.833A	3.953A	3.984A	1.596A	399.711	93.062%	1094	33.5	41.33°C	0.961
	12.017V	5.06V	3.314V	5.015V	429.501				47.43°C	230.33V
50%	37.371A	4.949A	4.991A	1.798A	499.455	92.915%	1112	33.8	42.29°C	0.969
	12.013V	5.053V	3.306V	5.008V	537.535				48.84°C	230.32V
60%	44.975A	5.949A	6.004A	2A	600.029	92.544%	1178	35.8	42.41°C	0.975
	12.012V	5.045V	3.298V	5V	648.368				49.47°C	230.3V
70%	52.523A	6.952A	7.021A	2.204A	699.787	92.064%	1543	41.8	43.42°C	0.978
	12.008V	5.036V	3.291V	4.992V	760.091				51.11°C	230.29V
80%	60.141A	7.96A	8.041A	2.306A	799.822	91.601%	1864	45.7	44.19°C	0.981
	12.003V	5.027V	3.283V	4.987V	873.156				52.41°C	230.28V
90%	68.098A	8.472A	8.548A	2.409A	899.635	91.071%	2033	48.0	44.51°C	0.983
	12.000V	5.017V	3.276V	4.982V	987.85				53.65°C	230.27V
100%	75.857A	8.988A	9.088A	3.022A	999.635	90.553%	2134	48.8	45.97°C	0.985
	11.996V	5.007V	3.268V	4.965V	1103.927				55.98°C	230.25V
110%	83.546A	10.008A	10.216A	3.024A	1100.265	89.96%	2139	48.8	46.69°C	0.986
	11.993V	4.997V	3.259V	4.961V	1223.06				57.51°C	230.24V
CL1	0.116A	14.812A	14.955A	0A	126.311	84.604%	960	29.6	42.54°C	0.894
	12.044V	5.084V	3.317V	5.05V	149.299				48.98°C	230.37V
CL2	0.116A	24.402A	0A	0A	126.398	84.403%	0	<6.0	50.84°C	0.894
	12.048V	5.123V	3.309V	5.061V	149.766				43.63°C	230.37V
CL3	0.116A	0A	24.824A	0A	83.892	79.63%	0	<6.0	52.81°C	0.852
	12.039V	5.041V	3.323V	5.043V	105.353				44.37°C	230.37V
CL4	83.361A	0.001A	0A	0.002A	1000.136	91.075%	2129	48.8	45.47°C	0.985
	11.997V	4.985V	3.275V	5.039V	1098.152				55.58°C	230.25V

Anex

Gigabyte UD1000GM PG5

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	1.234A	0.492A	0.494A	0.198A	20	71.45%	0	<6.0	39.87°C	0.56
	12.034V	5.077V	3.341V	5.057V	27.991				36.79°C	230.36V
40W	2.718A	0.69A	0.692A	0.297A	39.999	81.845%	0	<6.0	40.46°C	0.706
	12.029V	5.076V	3.339V	5.054V	48.864				37.12°C	230.36V
60W	4.201A	0.887A	0.89A	0.396A	59.998	86.124%	0	<6.0	42.15°C	0.782
	12.028V	5.075V	3.338V	5.051V	69.676				38.62°C	230.36V
80W	5.682A	1.084A	1.088A	0.495A	79.955	87.982%	0	<6.0	43.73°C	0.829
	12.026V	5.076V	3.337V	5.049V	90.871				39.95°C	230.36V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	7.35mV	9.97mV	6.09mV	7.75mV	Pass
20% Load	11.90mV	11.86mV	6.45mV	9.38mV	Pass
30% Load	12.36mV	14.57mV	6.75mV	9.84mV	Pass
40% Load	13.18mV	15.09mV	6.91mV	10.66mV	Pass
50% Load	15.88mV	17.44mV	7.83mV	13.56mV	Pass
60% Load	17.11mV	19.48mV	8.34mV	13.46mV	Pass
70% Load	19.97mV	21.99mV	9.01mV	14.94mV	Pass
80% Load	22.12mV	24.03mV	15.76mV	21.00mV	Pass
90% Load	24.11mV	25.67mV	15.51mV	23.25mV	Pass
100% Load	31.97mV	30.47mV	18.02mV	27.32mV	Pass
110% Load	37.79mV	32.09mV	19.19mV	29.77mV	Pass
Crossload1	14.89mV	21.26mV	21.42mV	19.99mV	Pass
Crossload2	12.82mV	17.49mV	12.23mV	18.25mV	Pass
Crossload3	7.51mV	15.19mV	19.86mV	18.20mV	Pass
Crossload4	31.86mV	26.05mV	8.60mV	27.81mV	Pass

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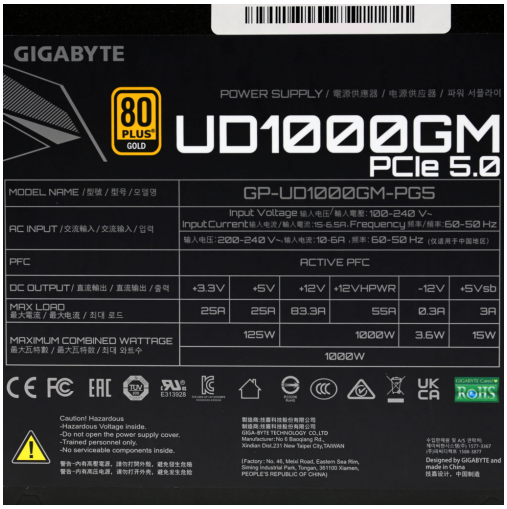
Anex

Gigabyte UD1000GM PG5

Top side



Power specifications label

CERTIFICATIONS 115V

CERTIFICATIONS 230V