Gamemax GM800 rev.2

Lab ID 584

Certification ID 25584

Test Result Report ID:

Certificate Issue Date: May 1, 2019

115V 230V

Scheme: ETA-EMI PSU



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	Gamemax
Model	GM800 rev.2
OEM/ODM	Gamemax
Serial Number	
Product Specifications	
Manufacturer-Provided Information	
□□□□ (Vrms)	100-240
□□□□ (Arms)	12-6.3
□□□□ (Hz)	50-60

□□□□ (W)	800
Operating Temperature (Continuous Full Load) (°C)	
□□	ATX12V
□□□□	Semi Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
□□	140mm Sleeve Bearing Fan (DF1402512SEM)
□□□□□	✗
Cybenetics Testing Information	
Lab ID	584
Date of receipt	Apr 15, 2019
Testing Date	Apr 27, 2019
Report Issued Date	May 1, 2019
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

□□□□□ (Non-accredited measurements)

Native Cables				
□□	□□□□	□□□□□□	Gauge	In Cable Caps
ATX □□ 20+4 pin (500mm)	1	1	18-22AWG	□
4+4 pin EPS 12V □□ (510mm)	2	2	18AWG	□
SATA□□ (500mm+140mm+140mm)	1	3	18AWG	□
□□□□□				
□□	□□□□	□□□□□□	Gauge	Gauge
8 pin PCIe (500mm)	1	1	18AWG	□
6+2pin PCIe□□ (500mm)	1	1	18AWG	□
SATA□□ (500mm+150mm)	1	2	18AWG	□

SATA□□ (500mm+150mm+150mm)	1	3	18AWG	□
4-pin Molex (500mm+150mm+150mm)	1	3	18AWG	□
4-pin Molex (500mm) / FDD (+150mm)	1	1 / 1	18AWG	□

□□□□

□		3.3V	5V	12V	5VSB	-12V
□□□□	□□	20	20	60	2.5	0.5
	□	130		720	12.5	6
□□□□□ (W)		800				

Parts Description

General Data	
Manufacturer (OEM)	Gamemax
PCB Type	Single Layer
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor
Bridge Rectifier(s)	2x
APFC MOSFETS	2x Champion GP47S60X (600V, 47A @ 150°C, 0.081Ω)
APFC Boost Diode	1x CREE C3D06060A (600V, 6A @ 154°C)
Hold-up Cap(s)	1x CapXon (400V, 270uF, 2000h @ 105 °C, HP)
Main Switchers	2x Champion GP18S50G (500V, 28A @ 150°C, 0.19Ω)
Combo APFC/PWM Controller	Champion CM6800
Topology	Primary side: Double Forward Secondary side: Independent Regulation & Passive Rectification
Secondary Side	
+12V MOSFETS	4x MOSPEC S60M60C SBR (60V, 60A)
5V & 3.3V	2x MOSPEC S40M45C SBR (45V, 40A)
Filtering Capacitors	Electrolytics: CapXon (2-5,000 @ 105°C, KF), 3x Rubycon (1-2,000h @ 105°C, PX), ChengX (2-4,000h @ 105°C, GR)
Supervisor IC	Grenergy GR8313 (OVP, UVP, SCP, PG)
Fan Model	Xin Zheng Heng Electronic DF1402512SEM (140mm, 12V, 0.20A, 2.4W, Sleeve Bearing)
5VSB Circuit	

Standby PWM Controller	Excelliance EM8569A

Test Results

Temperature & Compliance Info

□□□□ (°C /°F)	28-32 / 82.4-89.6
□□ ErP Lot3/6□□	ErP Lot 6 2010: Partially ErP Lot 6 2013: Partially ErP Lot 3 2014 & CEC: Partially
□□ (EU) No 617/2013□□	✓

Performance Summary

115V

Accredited	
□□□□ (>1450 load combinations)	83.878%
Average Noise Output (>1450 Load Combinations)	39.22dBA
PF□□□ (>1450 Load Combinations)	0.982
Efficiency With 10W (≤500W) or 2% (>500W) Load	50.735%
□□□□□□	0.1460W
Non-Accredited	
12V Ripple (Full Load)	52.63mV
5V Ripple (Full Load)	29.92mV
3.3V Ripple (Full Load)	29.88mV
5VSB Ripple (Full Load)	20.22mV
12V Load Regulation	1.37%
5V Load Regulation	2.08%
3.3V Load Regulation	0.59%
5VSB Load Regulation	2.49%
Inrush Current	132.557A

230V

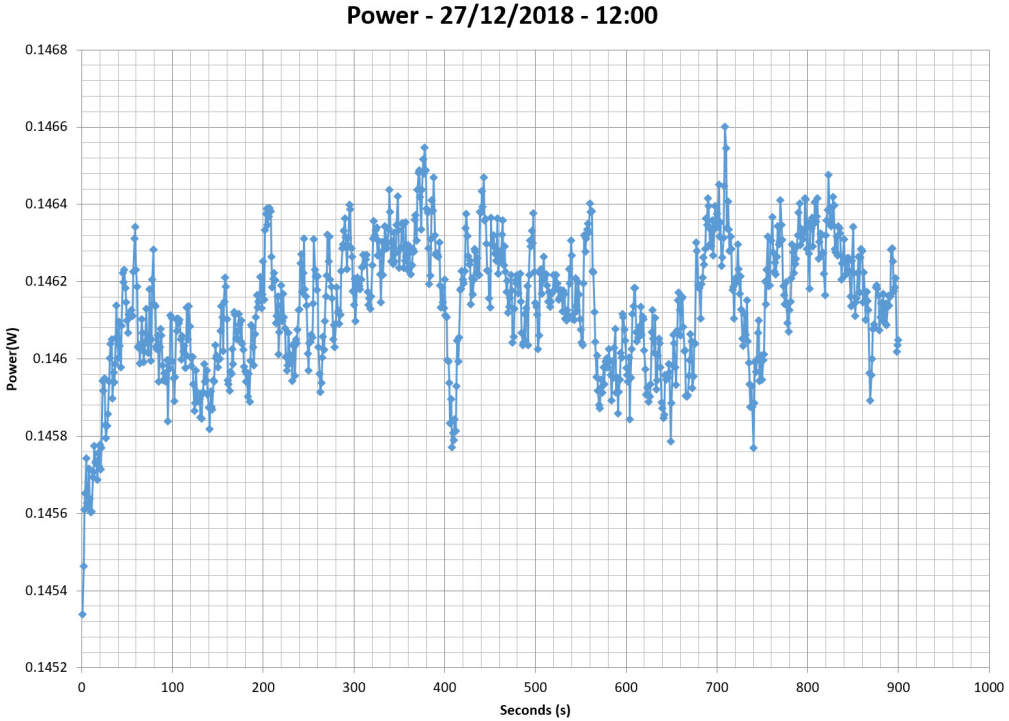
Accredited		
□□□□ (>1450 load combinations)		85.708%
Average Noise Output (>1450 Load Combinations)		39.40dBA
PF□□□ (>1450 Load Combinations)		0.937
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
□□□□□□		0.3798W
Non-Accredited		
12V Ripple (Full Load)		51.44mV
5V Ripple (Full Load)		27.38mV
3.3V Ripple (Full Load)		27.62mV
5VSB Ripple (Full Load)		20.89mV
12V Load Regulation		1.35%
5V Load Regulation		2.08%
3.3V Load Regulation		0.59%
5VSB Load Regulation		2.51%
Inrush Current		75.008A
□□□□ & PG□□		11.40ms
AC Loss to PWR_OK Hold Up Time		93.00ms
PWR_OK Inactive to DC Loss Delay		-81.60ms
OPP (0.00°C / 0.00°C)	-	-

□□□□ & PG□□

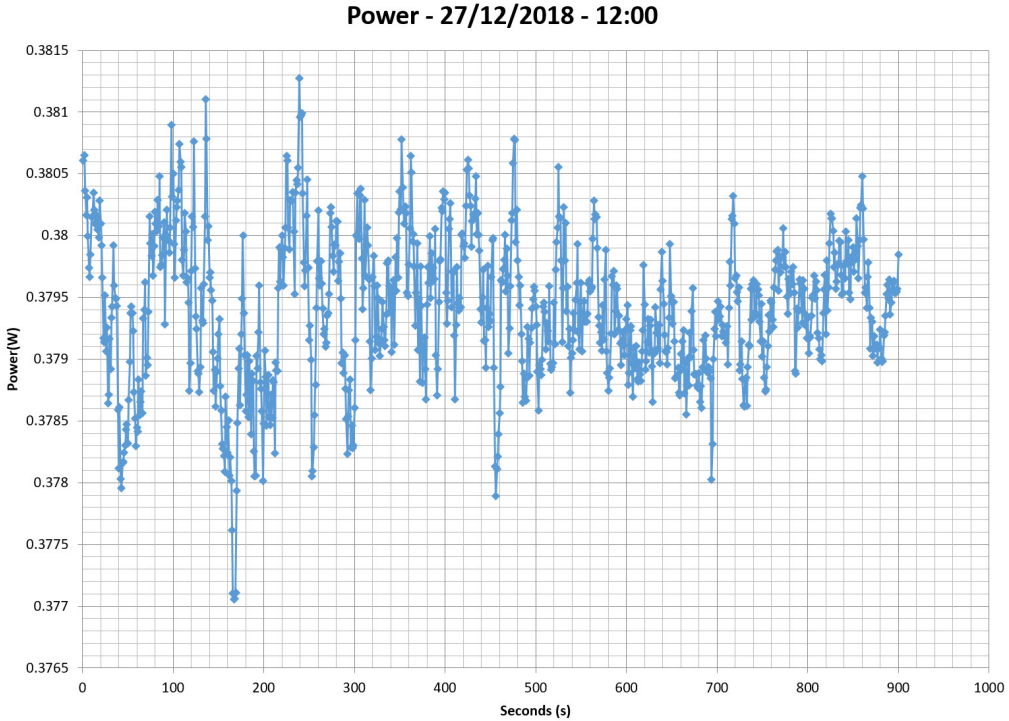
Hold-Up Time (ms)	11.4
AC Loss to PWR_OK Hold Up Time (ms)	93
PWR_OK Inactive to DC Loss Delay (ms)	-81.6

Graphs

115V



230V



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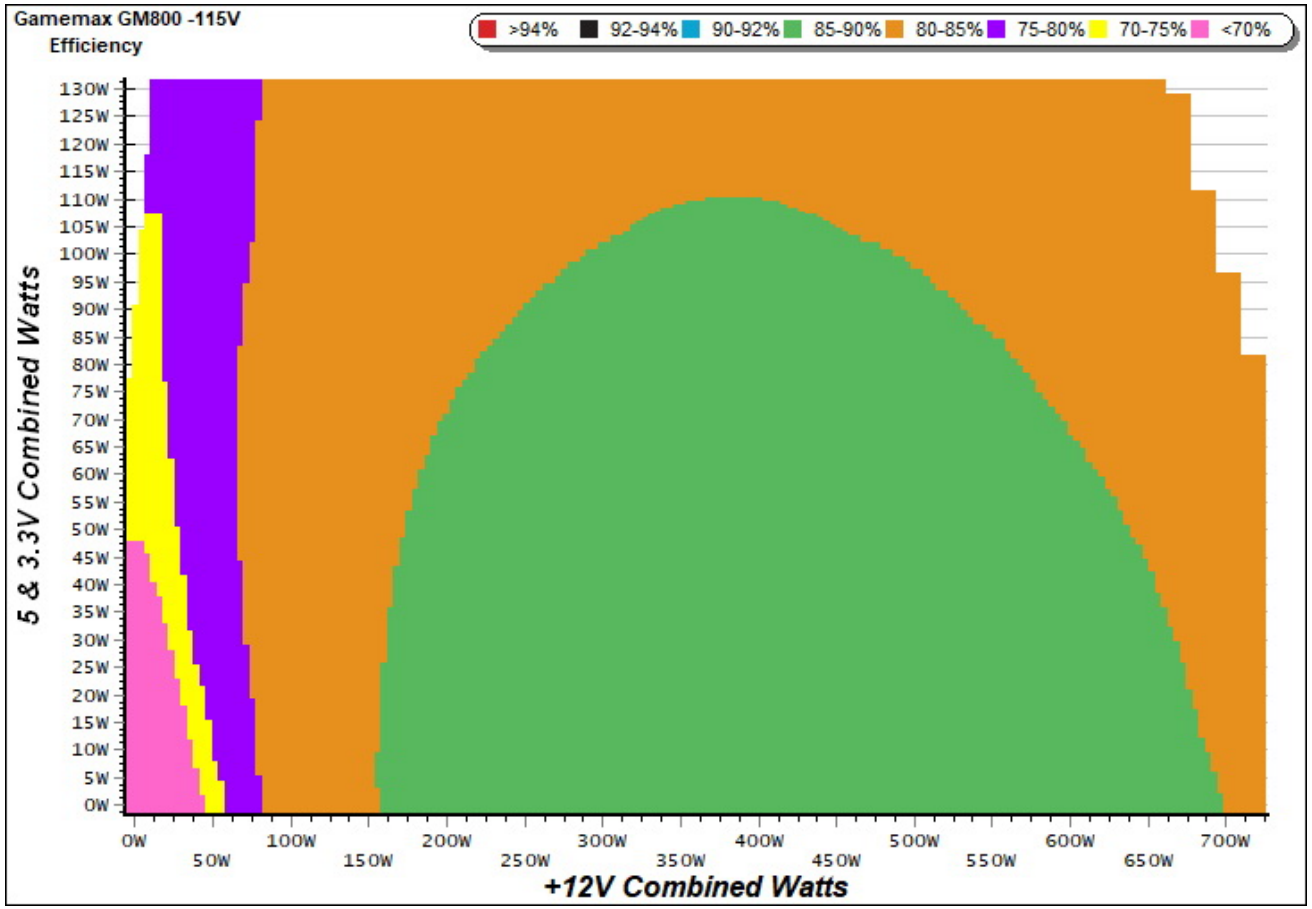
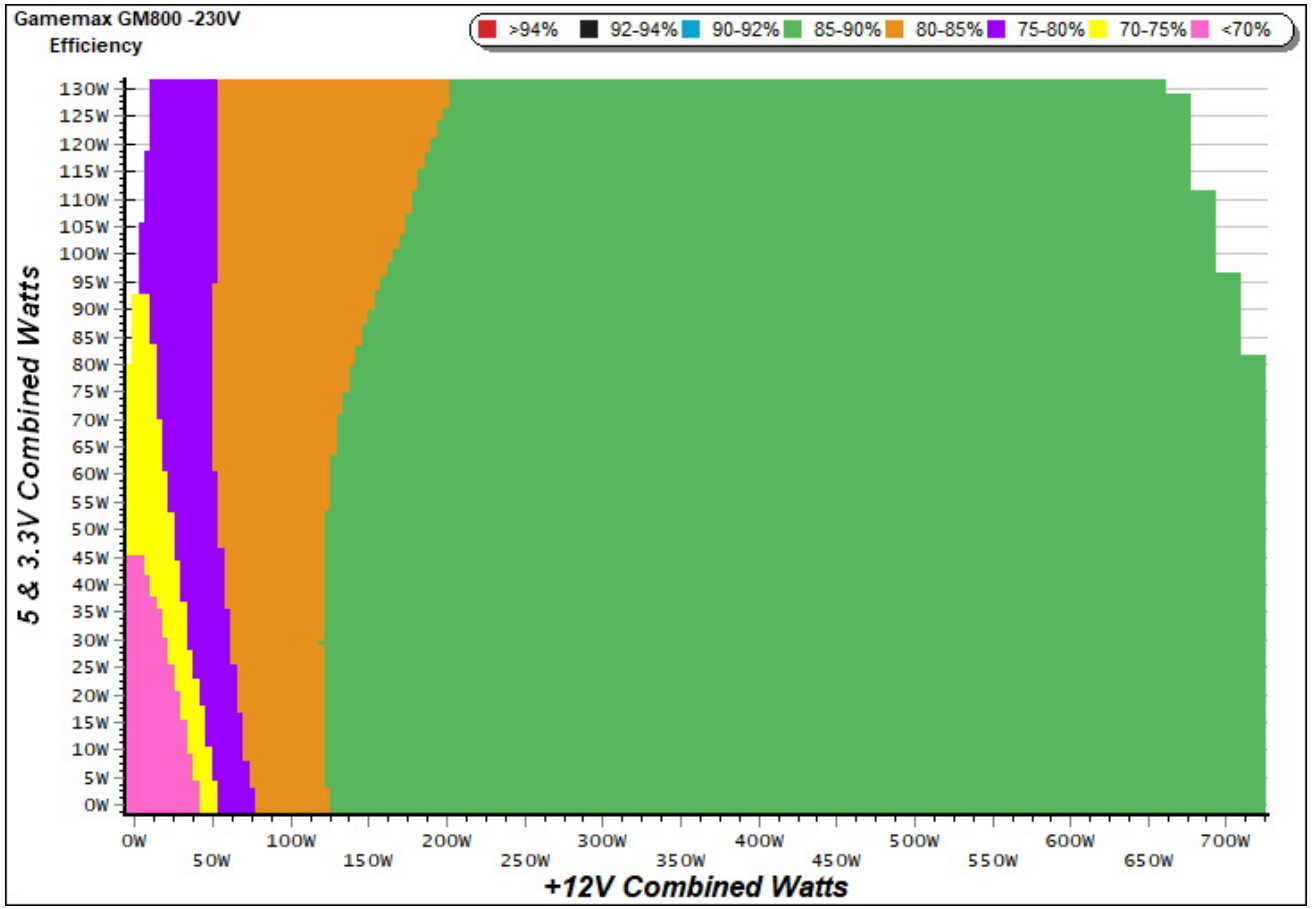
115V



□□

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



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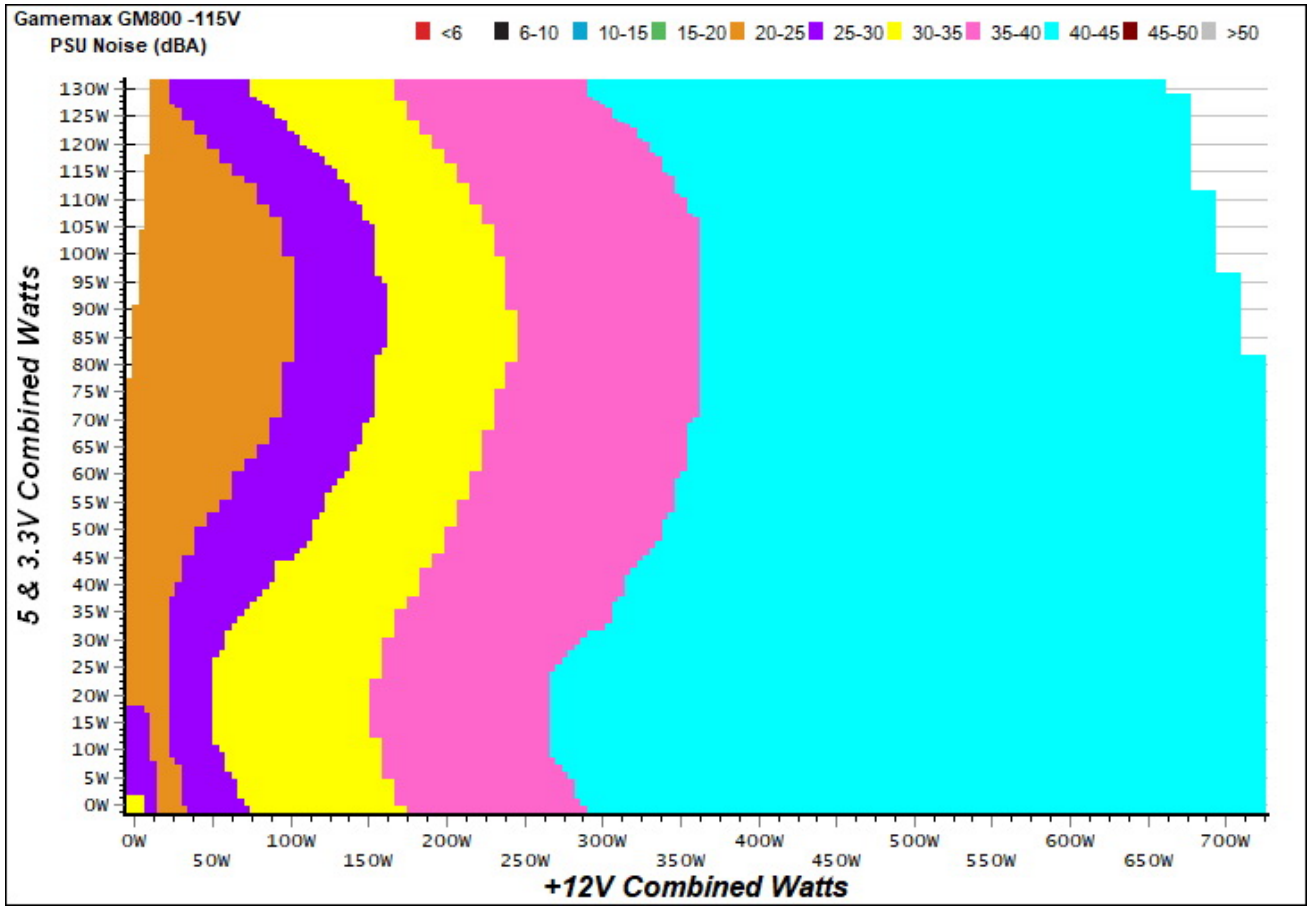
□□□□□

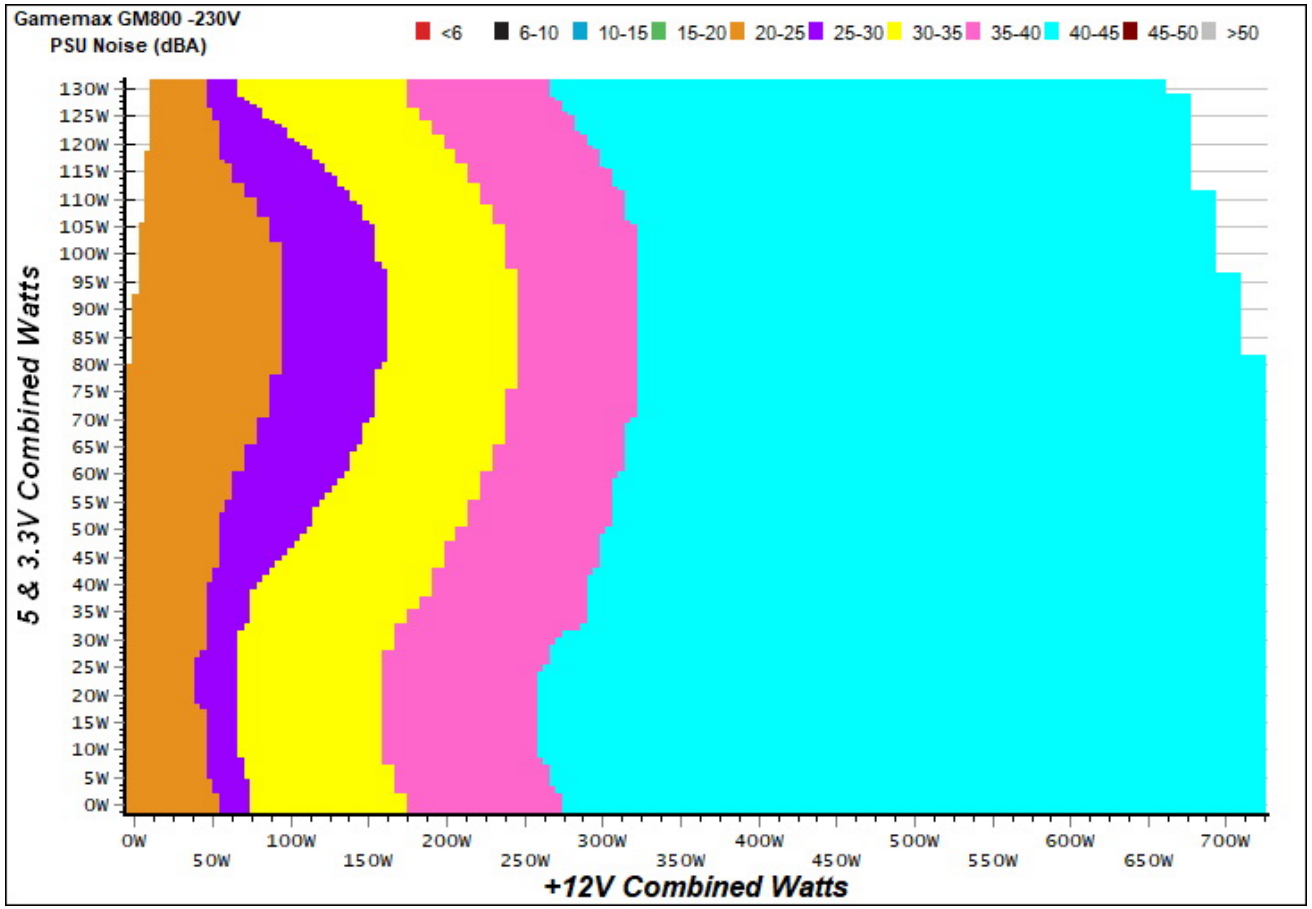
115V



□□

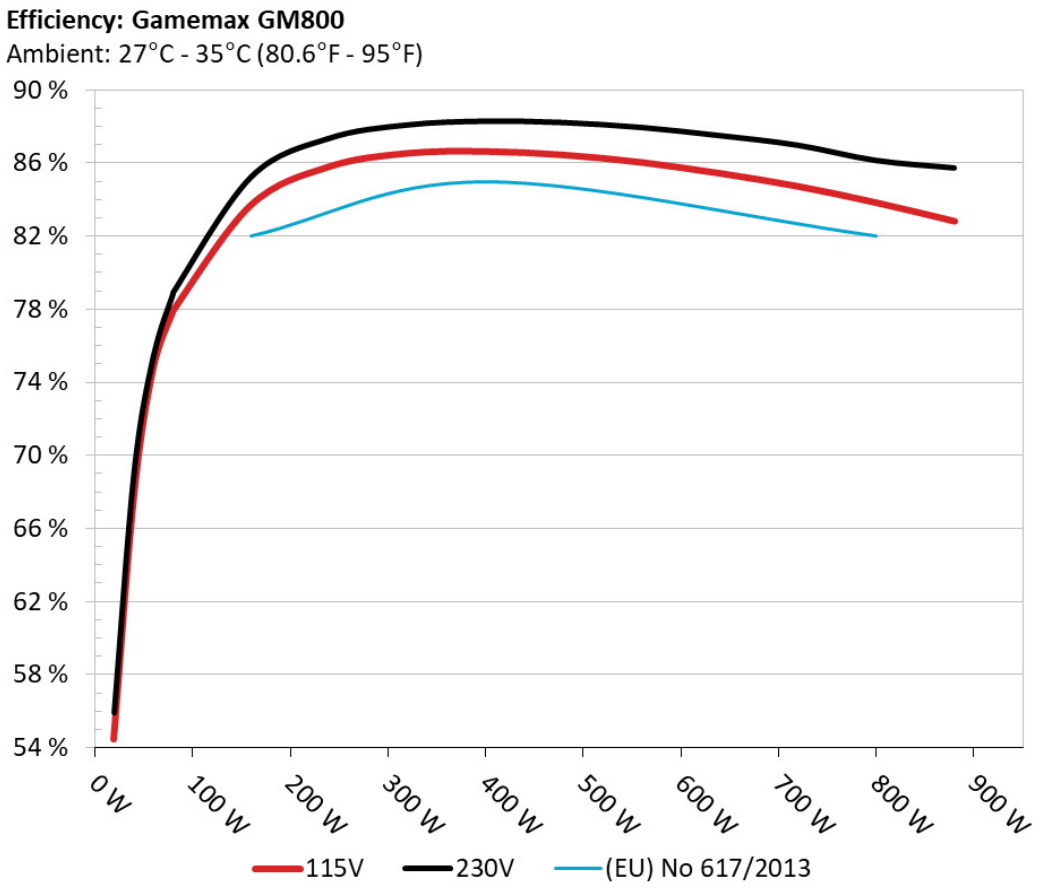
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

230V



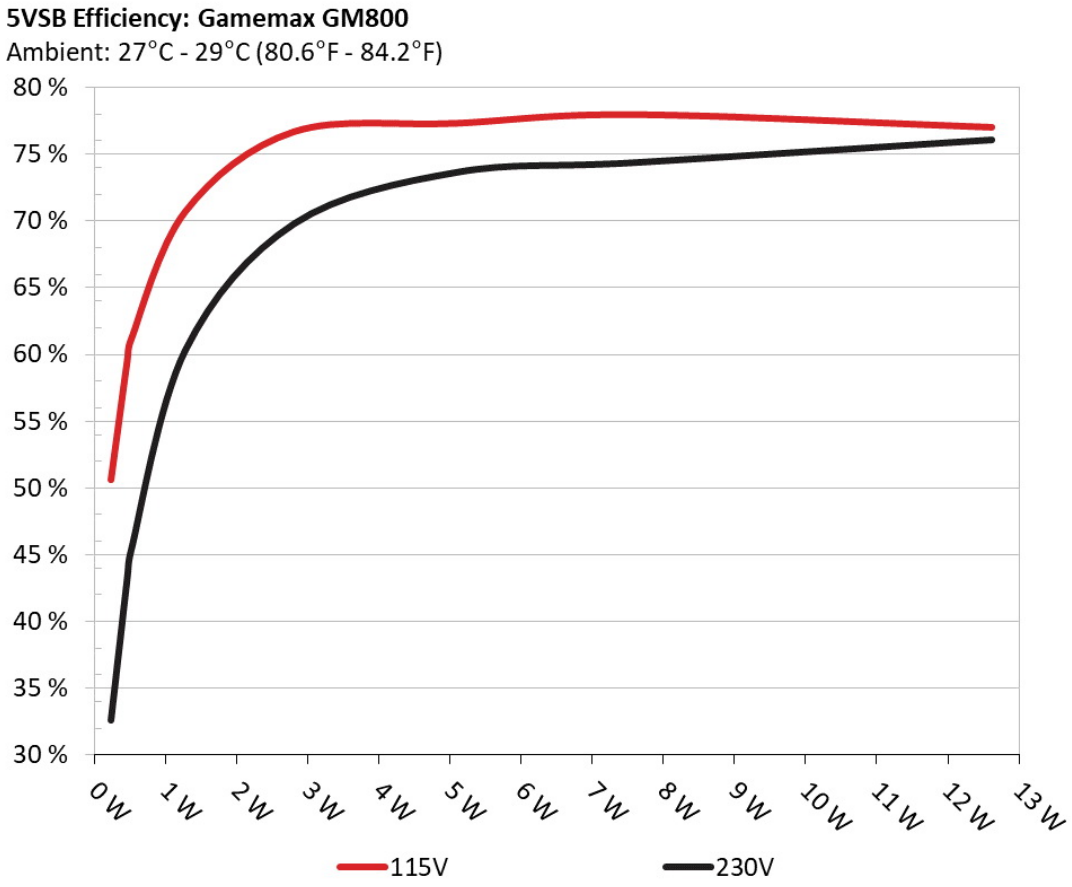
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

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	0.231	50.658%	0.060
	5.112V	0.456		115.11V
2	0.090A	0.460	59.585%	0.097
	5.110V	0.772		115.11V
3	0.550A	2.805	76.723%	0.258
	5.099V	3.656		115.12V
4	1.000A	5.088	77.349%	0.303
	5.087V	6.578		115.12V
5	1.500A	7.613	78.002%	0.326
	5.074V	9.760		115.12V
6	2.500A	12.621	77.056%	0.353
	5.048V	16.379		115.12V

230V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.045A	0.230	32.624%	0.029
	5.112V	0.705		230.24V
2	0.090A	0.460	43.315%	0.043
	5.111V	1.062		230.25V
3	0.550A	2.805	69.776%	0.140
	5.098V	4.020		230.23V
4	1.000A	5.088	73.622%	0.198
	5.087V	6.911		230.23V
5	1.500A	7.612	74.358%	0.236
	5.074V	10.237		230.24V
6	2.500A	12.620	76.052%	0.274
	5.048V	16.594		230.24V

Supplementary Tests (For Reference)

10-110%□□□□

115V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	4.742A	1.950A	1.958A	0.984A	79.976	77.893%	888	21.5	29.48°C	0.951
	12.313V	5.126V	3.367V	5.080V	102.674				31.10°C	115.11V
2	10.475A	2.932A	2.940A	1.184A	159.706	83.677%	892	21.9	29.85°C	0.959
	12.297V	5.115V	3.366V	5.068V	190.859				31.77°C	115.11V
3	16.578A	3.426A	3.417A	1.384A	239.581	85.786%	1027	25.9	30.36°C	0.976
	12.281V	5.106V	3.364V	5.057V	279.279				32.51°C	115.11V
4	22.699A	3.924A	3.925A	1.586A	319.570	86.523%	1363	34.3	30.86°C	0.984
	12.264V	5.096V	3.361V	5.045V	369.349				33.76°C	115.11V
5	28.514A	4.916A	4.907A	1.788A	399.690	86.627%	1636	39.2	31.16°C	0.988
	12.247V	5.084V	3.360V	5.033V	461.390				34.22°C	115.10V
6	34.345A	5.913A	5.896A	1.992A	479.796	86.434%	1719	40.8	31.43°C	0.990
	12.229V	5.073V	3.357V	5.021V	555.099				34.81°C	115.10V
7	40.168A	6.916A	6.884A	2.196A	559.506	86.027%	1722	41.0	32.20°C	0.992
	12.209V	5.061V	3.355V	5.008V	650.382				35.89°C	115.10V
8	46.065A	7.924A	7.874A	2.402A	640.025	85.423%	1724	41.0	33.38°C	0.993
	12.192V	5.048V	3.353V	4.995V	749.241				37.49°C	115.09V
9	52.317A	8.438A	8.354A	2.406A	719.361	84.717%	1719	40.8	33.88°C	0.993
	12.173V	5.038V	3.351V	4.988V	849.135				38.61°C	115.09V
10	58.666A	8.954A	8.868A	2.512A	800.057	83.819%	1718	40.8	34.79°C	0.994
	12.151V	5.027V	3.348V	4.978V	954.500				40.05°C	115.09V
11	65.363A	8.970A	8.876A	2.515A	880.056	82.806%	1723	41.0	35.08°C	0.992
	12.130V	5.017V	3.346V	4.971V	1062.794				41.05°C	115.08V
CL1	0.136A	16.002A	15.997A	0.000A	136.650	74.519%	1712	40.7	31.01°C	0.953
	12.303V	5.068V	3.368V	5.088V	183.377				34.72°C	115.11V

CL2	60.000A	1.000A	0.998A	1.000A	743.282	84.833%	1724	41.0	34.91°C	0.994
	12.164V	5.066V	3.350V	5.032V	876.166				40.53°C	115.08V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	4.746A	1.950A	1.959A	0.984A	80.019	78.930%	890	21.7	28.82°C	0.848
	12.311V	5.126V	3.367V	5.080V	101.380				30.55°C	230.25V
2	10.480A	2.932A	2.940A	1.184A	159.740	85.240%	894	22.0	29.37°C	0.903
	12.295V	5.114V	3.365V	5.068V	187.401				31.33°C	230.25V
3	16.581A	3.428A	3.418A	1.384A	239.608	87.355%	1085	27.9	30.52°C	0.923
	12.280V	5.105V	3.363V	5.057V	274.293				32.79°C	230.25V
4	22.704A	3.925A	3.926A	1.586A	319.615	88.090%	1369	34.4	30.94°C	0.937
	12.263V	5.095V	3.361V	5.045V	362.829				33.57°C	230.25V
5	28.520A	4.918A	4.910A	1.788A	399.716	88.293%	1646	39.3	31.44°C	0.949
	12.245V	5.083V	3.359V	5.033V	452.715				34.56°C	230.25V
6	34.346A	5.915A	5.898A	1.992A	479.779	88.218%	1724	41.0	32.54°C	0.953
	12.228V	5.071V	3.357V	5.021V	543.856				35.96°C	230.25V
7	40.159A	6.917A	6.883A	2.196A	559.458	87.953%	1723	41.0	32.74°C	0.958
	12.211V	5.059V	3.354V	5.008V	636.091				36.47°C	230.24V
8	46.062A	7.926A	7.873A	2.402A	639.979	87.504%	1719	40.8	33.21°C	0.962
	12.192V	5.047V	3.352V	4.995V	731.368				37.64°C	230.24V
9	52.313A	8.438A	8.356A	2.406A	719.293	86.983%	1722	41.0	34.22°C	0.967
	12.173V	5.036V	3.350V	4.988V	826.936				38.78°C	230.23V
10	58.667A	8.955A	8.870A	2.512A	800.003	86.144%	1724	41.0	35.07°C	0.972
	12.150V	5.025V	3.348V	4.977V	928.678				39.88°C	230.22V
11	65.353A	8.970A	8.878A	2.515A	879.998	85.734%	1725	41.0	35.25°C	0.976
	12.131V	5.017V	3.345V	4.971V	1026.425				40.21°C	230.23V
CL1	0.130A	16.001A	16.000A	0.000A	136.564	75.963%	1716	40.8	31.31°C	0.899
	12.303V	5.067V	3.368V	5.087V	179.776				34.74°C	230.22V

CL2	59.997A	0.999A	0.998A	1.000A	743.239	87.231%	1725	41.0	35.28°C	0.968
	12.164V	5.065V	3.350V	5.032V	852.034				39.74°C	230.23V

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 □□
1	1.169A	0.487A	0.474A	0.196A	19.507	54.457%	876	21.2	0.877
	12.324V	5.139V	3.369V	5.105V	35.821				115.12V
2	2.405A	0.973A	0.980A	0.392A	39.925	67.681%	880	21.3	0.928
	12.320V	5.134V	3.368V	5.099V	58.990				115.12V
3	3.576A	1.461A	1.451A	0.589A	59.406	74.660%	882	21.3	0.950
	12.311V	5.130V	3.368V	5.092V	79.569				115.12V
4	4.807A	1.950A	1.956A	0.787A	79.773	77.835%	886	21.4	0.952
	12.313V	5.126V	3.367V	5.085V	102.490				115.11V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	PF/AC □□
1	1.172A	0.486A	0.476A	0.196A	19.546	55.919%	886	21.4	0.598
	12.324V	5.139V	3.369V	5.106V	34.954				230.26V
2	2.409A	0.973A	0.980A	0.392A	39.969	69.088%	886	21.4	0.740
	12.318V	5.134V	3.368V	5.099V	57.852				230.26V
3	3.578A	1.460A	1.454A	0.589A	59.449	75.355%	888	21.5	0.811
	12.315V	5.130V	3.368V	5.092V	78.892				230.26V
4	4.811A	1.951A	1.958A	0.787A	79.821	78.855%	888	21.5	0.849
	12.311V	5.125V	3.367V	5.085V	101.225				230.26V

The results above are not used in the certification process

□□□□

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	15.4 mV	42.7 mV	24.6 mV	8.6 mV	Pass
20% Load	14.8 mV	37.2 mV	24.1 mV	10.3 mV	Pass
30% Load	17.0 mV	37.7 mV	23.7 mV	11.1 mV	Pass
40% Load	20.7 mV	35.1 mV	23.6 mV	12.1 mV	Pass
50% Load	23.8 mV	33.9 mV	23.4 mV	12.0 mV	Pass
60% Load	28.6 mV	35.5 mV	25.2 mV	12.8 mV	Pass
70% Load	31.9 mV	36.8 mV	27.0 mV	13.8 mV	Pass
80% Load	36.5 mV	34.9 mV	29.6 mV	15.0 mV	Pass
90% Load	43.2 mV	30.7 mV	27.3 mV	17.9 mV	Pass
100% Load	52.6 mV	29.9 mV	29.9 mV	20.2 mV	Pass
110% Load	65.5 mV	30.0 mV	31.6 mV	24.6 mV	Pass
Crossload 1	14.9 mV	79.1 mV	51.7 mV	6.6 mV	Fail
Crossload 2	52.3 mV	25.6 mV	28.5 mV	15.0 mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	14.6 mV	44.2 mV	25.6 mV	8.2 mV	Pass
20% Load	16.2 mV	37.8 mV	23.7 mV	9.3 mV	Pass
30% Load	16.9 mV	37.2 mV	23.8 mV	10.1 mV	Pass
40% Load	20.3 mV	34.8 mV	22.8 mV	11.1 mV	Pass
50% Load	25.3 mV	34.5 mV	23.9 mV	10.8 mV	Pass
60% Load	28.4 mV	37.3 mV	26.9 mV	12.6 mV	Pass
70% Load	33.2 mV	36.5 mV	27.2 mV	13.9 mV	Pass
80% Load	36.3 mV	34.2 mV	27.6 mV	15.7 mV	Pass





Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	42.9 mV	29.0 mV	26.5 mV	17.5 mV	Pass
100% Load	51.4 mV	27.4 mV	27.6 mV	20.9 mV	Pass
110% Load	68.1 mV	36.4 mV	35.6 mV	23.7 mV	Pass
Crossload 1	15.5 mV	81.5 mV	50.9 mV	6.7 mV	Fail
Crossload 2	50.5 mV	24.4 mV	26.7 mV	14.2 mV	Pass

The results above are not used in the certification process

Gamemax GM800 rev.2

Top side

Power specifications label

本测试报告中包含的所有数据和图表均可在以下条件下由任何人使用：使用过程需提及测试结果由Cybenetics提供。
在任何情况下都应提供原始测试结果文档的网站链接

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