GIGABYTE™

Gigabyte P750GM

Serial Number SN20273G002913

Lab ID GB75001743

Certification ID 251743

Test Result Report ID: 20PS1743A

Certificate Issue Date: Nov 2, 2020

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	Gigabyte
Model	P750GM
OEM/ODM	MEIC
Serial Number	SN20273G002913
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	12-6
Rated Frequency (Hz)	50-60

Rated Power (W)	750
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	120mm Rifle Bearing Fan (D12SH-12)
Semi-Passive Operation	✓
Cybenetics Testing Information	
Lab ID	GB75001743
Date of receipt	Sep 7, 2020
Testing Date	Oct 27, 2020
Report Issued Date	Nov 2, 2020
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 (610mm)	1	1	18AWG	No
4+4 pin EPS12V (610mm)	2	2	18AWG	No
6+2 pin PCIe (610mm+150mm)	2	4	18AWG	No
SATA (600mm+150mm+150mm+150mm)	2	8	18AWG	No
4-pin Molex (500mm+110mm+110mm) / FDD (+150mm)	1	3 / 1	18AWG	No
AC Power Cord (1400mm) - C13 coupler	1	1	16AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	61	3	0.3
	Watts	105		732	15	3.6
Total Max. Power (W)		750				

Parts Description

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 5D-15 (5 Ohm) & Relay
Bridge Rectifier(s)	2x GBU1006 (600V, 10A @ 100°C)
APFC MOSFETs	2x Jilin Sino-Microelectronics JCS18N50FH (500V, 11A @ 100°C, Rds(on): 0.27Ohm)
APFC Boost Diode	1x JFSC0665
Bulk Cap(s)	1x Nippon Chemi-Con (400V, 680uF, 2,000h @ 105°C, KMR)
Main Switchers	2x Jilin Sino-Microelectronics JCS18N50FH (500V, 11A @ 100°C, Rds(on): 0.27Ohm)
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	4x NCE Power NCEP40T15GU (40V, 106A @ 100°C, Rds(on): 1.35mOhm)
5V & 3.3V	DC-DC Converters: 4x Alpha & Omega AON6354 (30V, 52A @ 100°C, Rds(on): 3.3mOhm) PWM Controllers: 2x uPI-Semi uP9303B
Filtering Capacitors	Electrolytic: 1x Chn Cap (4-10,000h @ 105°C, TY), 1x Chn Cap (3-7,000h @ 105°C, TP), 4x Chn Cap (2-5,000h @ 105°C, TM), 5x YC (105°C, LE), 2x KYS (105°C, SG) Polymer: 12x no info
Supervisor IC	Grenergy GR8313 (OVP, UVP, SCP, PG)
Fan Model	Yate Loon D12SH-12 (120mm, 12V, 0.30A, Hydraulic Bearing Fan)
5VSB Circuit	-

Rectifier	1x SP10V45L SBR (45V, 10A)
Standby PWM Controller	PR6249H

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	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	89.122%
Average Noise Output (>1450 Load Combinations)	29.79dBA
Average PF (>1450 Load Combinations)	0.986
Efficiency With 10W (≤500W) or 2% (>500W) Load	54.932%
Standby Power Consumption	0.0559W
Non-Accredited	
12V Ripple (Full Load)	27.05mV
5V Ripple (Full Load)	33.14mV
3.3V Ripple (Full Load)	23.73mV
5VSB Ripple (Full Load)	32.31mV
12V Load Regulation	0.19%
5V Load Regulation	1.39%
3.3V Load Regulation	2.17%
5VSB Load Regulation	1.30%
Inrush Current	30.420A

230V		
Accredited		
Average Efficiency (>1450 load combinations)		91.151%
Average Noise Output (>1450 Load Combinations)		29.43dBA
Average PF (>1450 Load Combinations)		0.956
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
Standby Power Consumption		0.1588W
Non-Accredited		
12V Ripple (Full Load)		26.06mV
5V Ripple (Full Load)		33.18mV
3.3V Ripple (Full Load)		22.59mV
5VSB Ripple (Full Load)		30.68mV
12V Load Regulation		0.20%
5V Load Regulation		1.35%
3.3V Load Regulation		2.11%
5VSB Load Regulation		1.26%
Inrush Current		81.530A
Hold-Up Time & PWR_OK Signal		15.90ms
AC Loss to PWR_OK Hold Up Time		16.60ms
PWR_OK Inactive to DC Loss Delay		-0.70ms
PSU Timings: T1 (20% / 100%)	80.0ms	78.0ms
PSU Timings: T3 (20% / 100%)	260.0ms	272.0ms
OPP (28.00°C / 0.00°C)	130.86%	-

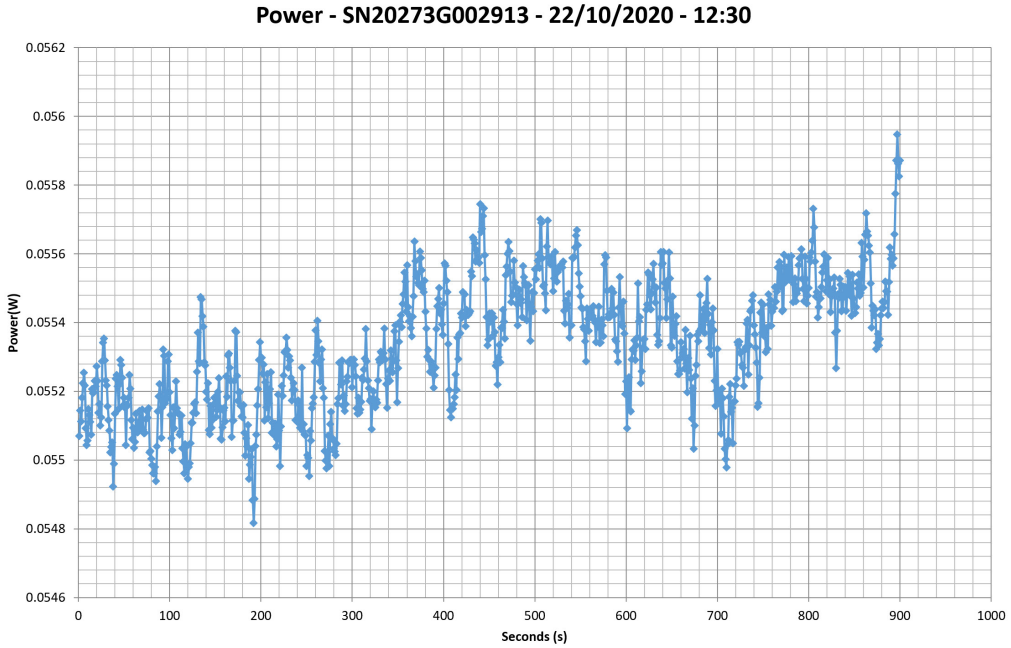
Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	15.9
AC Loss to PWR_OK Hold Up Time (ms)	16.6
PWR_OK Inactive to DC Loss Delay (ms)	-0.7

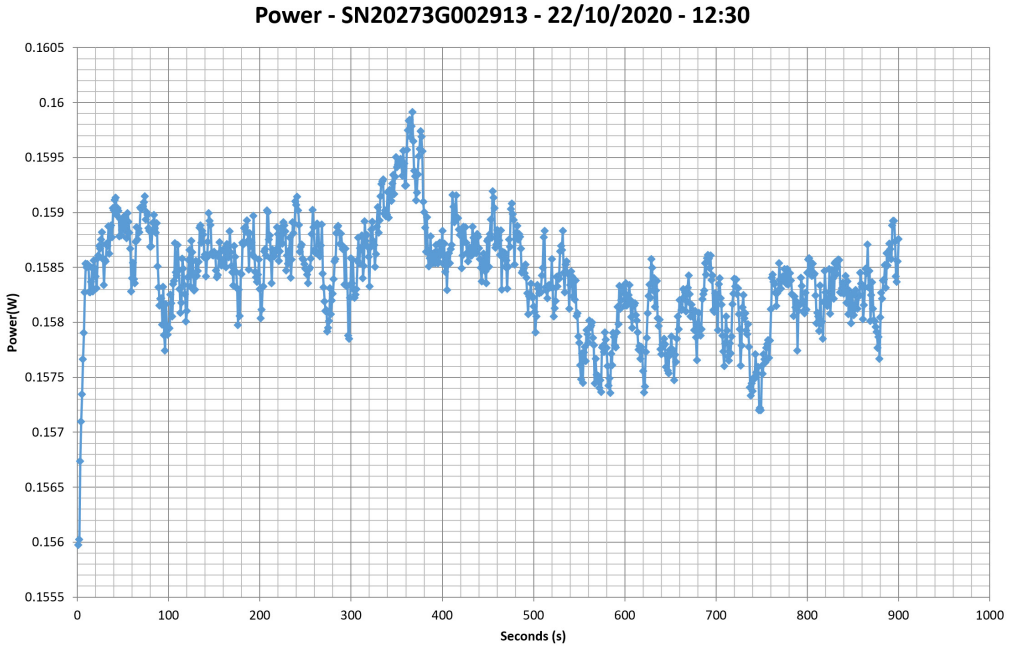
Vampire Power

Graphs

115V

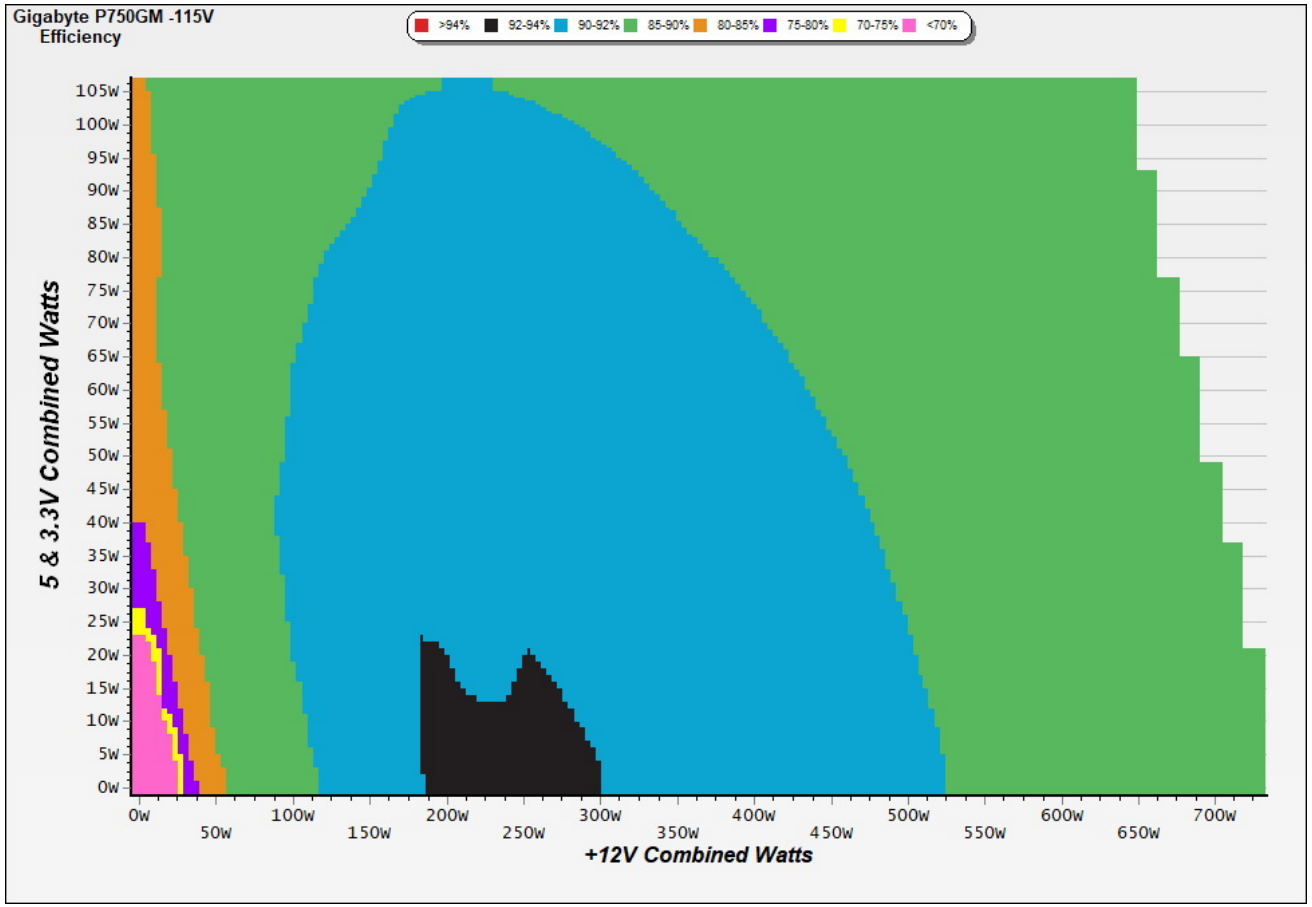


230V



Efficiency Graph

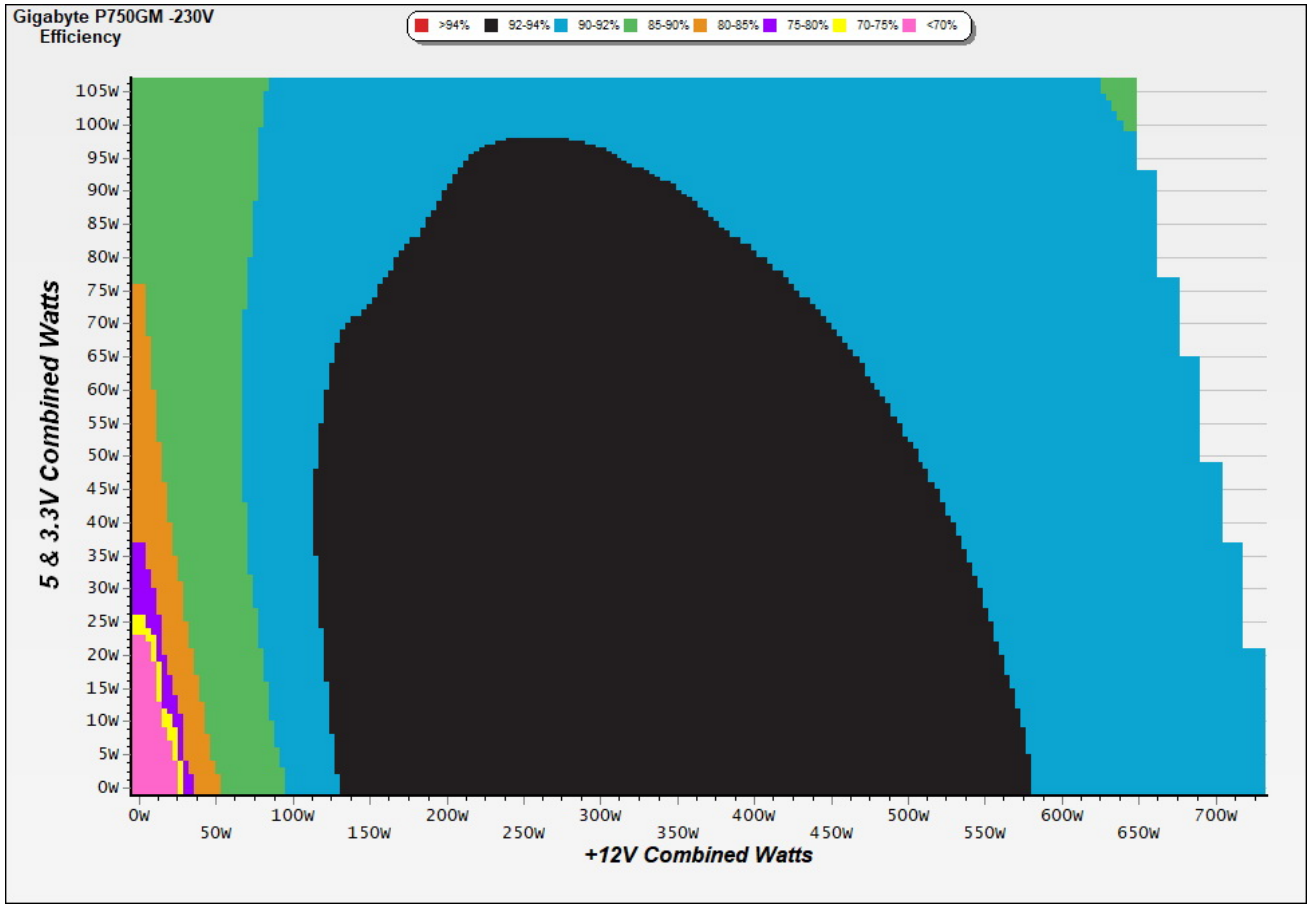
115V



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



INFO

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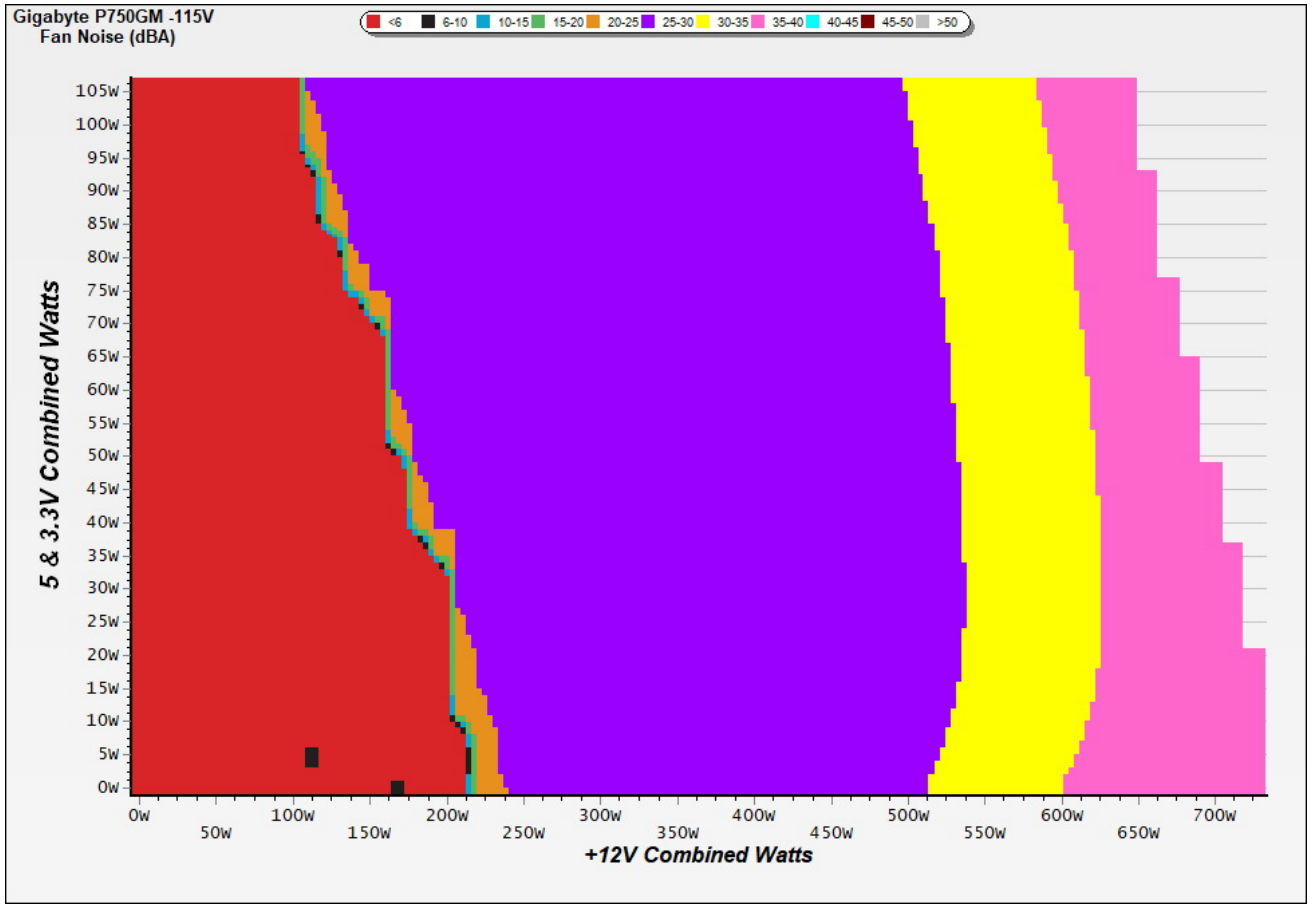
Noise Graph

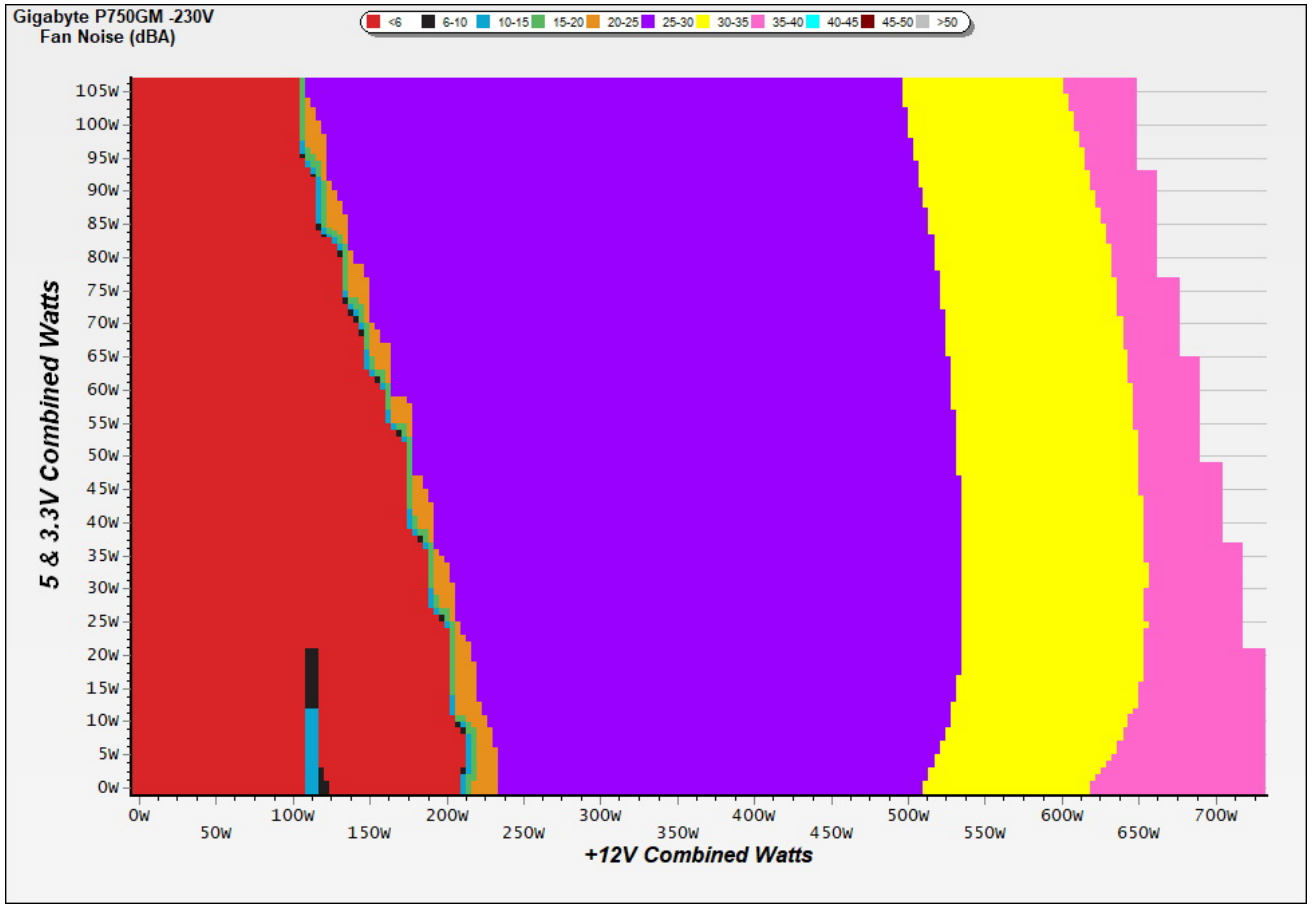
115V



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

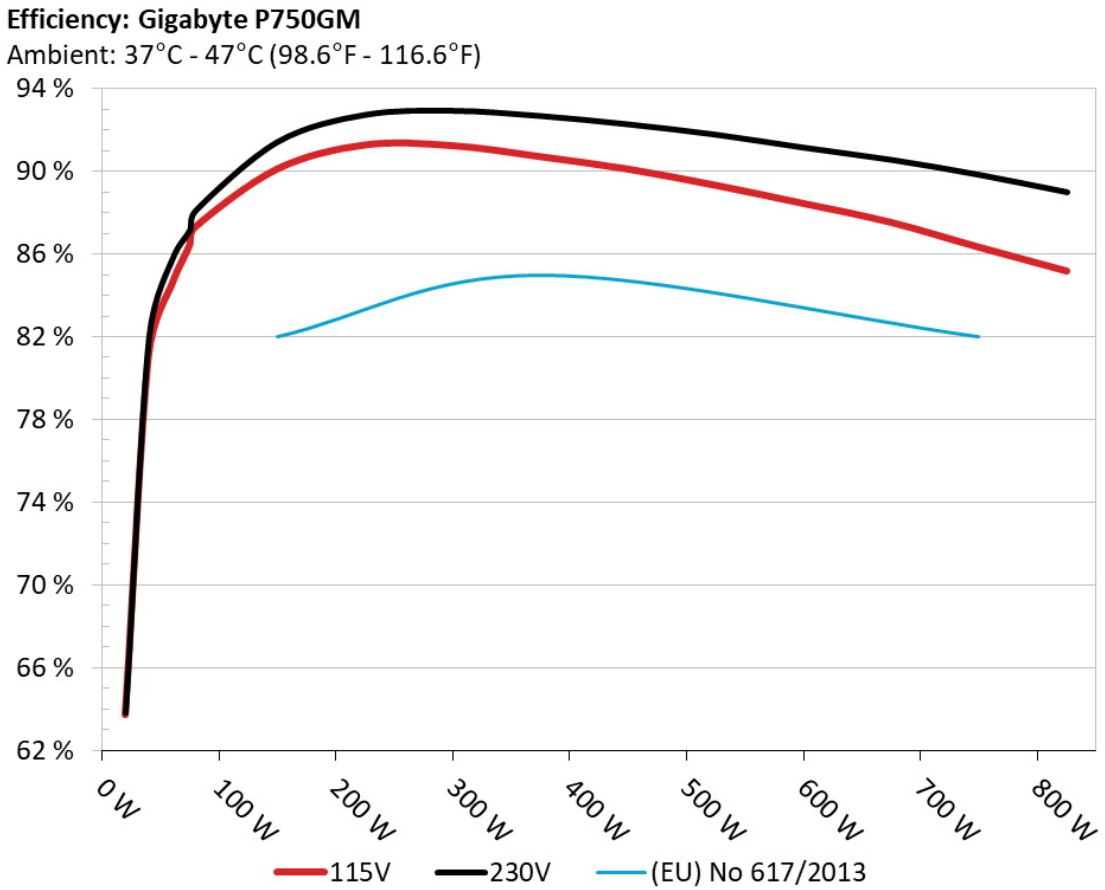


INFO

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

Indicative Performance

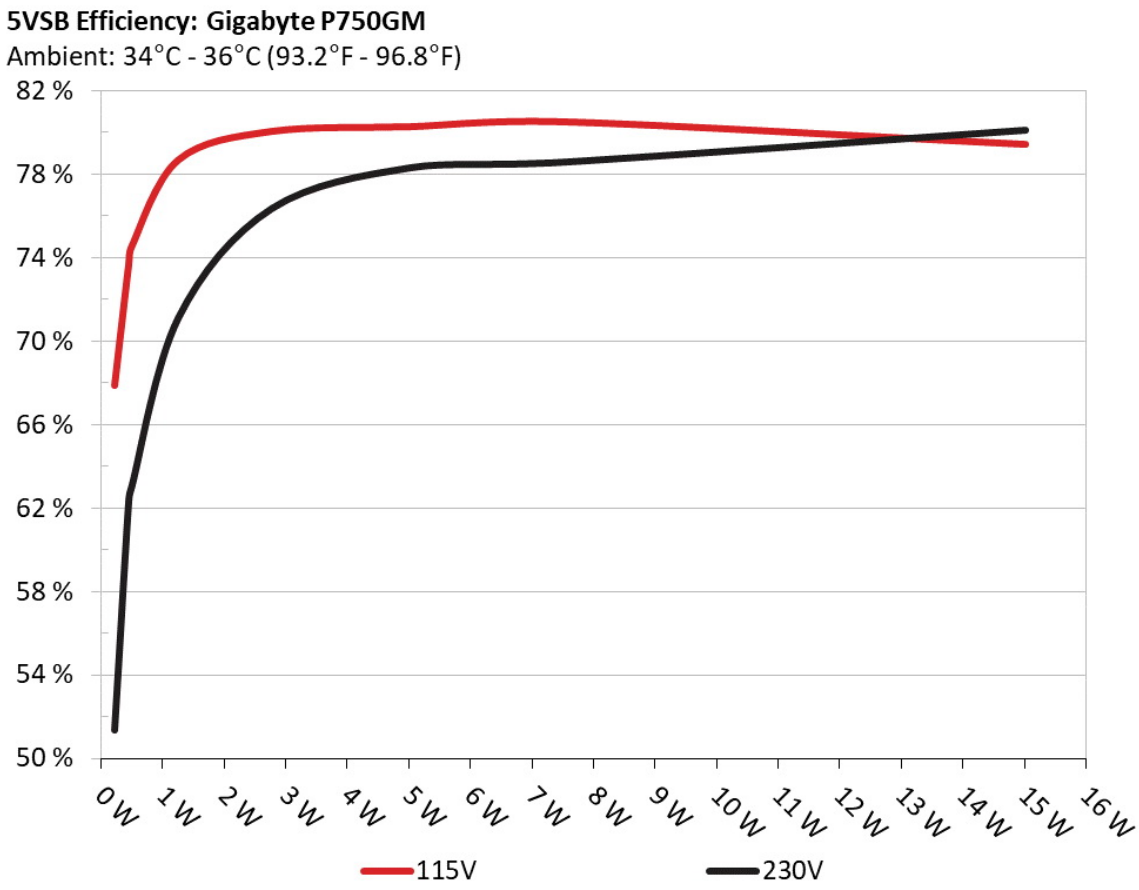
Efficiency under high ambient temperature



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	0.228	67.857%	0.049
	5.057V	0.336		115.13V
2	0.090A	0.455	73.625%	0.088
	5.056V	0.618		115.13V
3	0.550A	2.778	80.035%	0.312
	5.050V	3.471		115.13V
4	1.000A	5.042	80.261%	0.391
	5.041V	6.282		115.13V
5	1.500A	7.550	80.490%	0.431
	5.032V	9.380		115.13V
6	3.000A	15.025	79.413%	0.476
	5.008V	18.920		115.13V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.228	51.351%	0.020
	5.061V	0.444		230.27V
2	0.090A	0.456	62.295%	0.032
	5.059V	0.732		230.27V
3	0.550A	2.777	76.312%	0.143
	5.048V	3.639		230.27V
4	1.000A	5.041	78.276%	0.220
	5.040V	6.440		230.27V
5	1.500A	7.549	78.545%	0.277
	5.032V	9.611		230.27V
6	3.001A	15.020	80.068%	0.362
	5.005V	18.759		230.27V

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
1	4.436A	1.960A	1.961A	0.988A	74.972	86.398%	0	<6.0	44.35°C	0.969
	12.031V	5.101V	3.366V	5.064V	86.775				40.05°C	115.12V
2	9.902A	2.944A	2.948A	1.186A	150.051	90.087%	0	<6.0	45.72°C	0.982
	12.033V	5.095V	3.359V	5.058V	166.563				40.88°C	115.12V
3	15.722A	3.438A	3.443A	1.387A	225.063	91.248%	972	25.2	40.94°C	0.988
	12.022V	5.092V	3.353V	5.048V	246.650				46.16°C	115.12V
4	21.538A	3.934A	3.946A	1.587A	300.078	91.212%	1017	26.2	41.53°C	0.990
	12.019V	5.085V	3.346V	5.044V	328.990				47.18°C	115.14V
5	26.972A	4.924A	4.943A	1.787A	374.630	90.684%	1035	26.8	42.85°C	0.990
	12.017V	5.078V	3.338V	5.038V	413.118				49.25°C	115.11V
6	32.436A	5.918A	5.948A	1.987A	449.565	90.083%	1155	30.7	42.94°C	0.991
	12.016V	5.070V	3.330V	5.034V	499.054				50.36°C	115.11V
7	37.937A	6.917A	6.956A	2.188A	524.901	89.299%	1345	34.7	43.88°C	0.991
	12.014V	5.062V	3.322V	5.029V	587.799				51.91°C	115.13V
8	43.437A	7.917A	7.966A	2.389A	600.223	88.419%	1501	37.7	44.40°C	0.991
	12.013V	5.054V	3.314V	5.024V	678.843				52.87°C	115.09V
9	49.303A	8.424A	8.468A	2.390A	674.743	87.512%	1637	40.2	45.12°C	0.992
	12.012V	5.046V	3.307V	5.023V	771.028				54.47°C	115.12V
10	54.975A	8.936A	9.006A	2.994A	749.966	86.314%	1759	42.4	46.14°C	0.992
	12.010V	5.037V	3.298V	5.011V	868.878				56.46°C	115.10V
11	61.241A	8.952A	9.026A	2.995A	825.181	85.159%	1859	43.7	46.58°C	0.993
	12.009V	5.030V	3.291V	5.010V	968.984				57.40°C	115.10V
CL1	0.102A	13.004A	12.999A	0.000A	111.185	84.315%	860	21.1	42.34°C	0.981
	12.034V	5.095V	3.362V	5.084V	131.868				49.22°C	115.12V

CL2	61.016A	1.000A	0.999A	1.000A	746.007	87.197%	1742	42.3	46.14°C	0.992
	12.007V	5.041V	3.302V	5.049V	855.545				56.45°C	115.09V

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
1	4.437A	1.959A	1.961A	0.988A	74.969	87.148%	0	<6.0	44.19°C	0.852
	12.028V	5.103V	3.366V	5.064V	86.025				40.00°C	230.25V
2	9.904A	2.943A	2.946A	1.186A	150.049	91.422%	0	<6.0	45.20°C	0.930
	12.031V	5.096V	3.359V	5.059V	164.127				40.52°C	230.25V
3	15.722A	3.437A	3.444A	1.387A	225.061	92.730%	989	25.4	41.14°C	0.955
	12.022V	5.092V	3.353V	5.049V	242.705				46.38°C	230.24V
4	21.541A	3.934A	3.947A	1.587A	300.075	92.923%	1019	26.3	41.99°C	0.968
	12.017V	5.085V	3.346V	5.044V	322.930				47.89°C	230.24V
5	26.978A	4.925A	4.943A	1.787A	374.653	92.674%	1039	26.9	42.22°C	0.974
	12.015V	5.078V	3.338V	5.038V	404.271				48.68°C	230.24V
6	32.445A	5.917A	5.947A	1.988A	449.570	92.269%	1133	29.9	42.52°C	0.979
	12.013V	5.070V	3.330V	5.033V	487.236				49.61°C	230.24V
7	37.946A	6.915A	6.956A	2.189A	524.895	91.770%	1303	33.9	43.03°C	0.981
	12.011V	5.063V	3.322V	5.028V	571.968				50.51°C	230.24V
8	43.447A	7.917A	7.964A	2.390A	600.216	91.140%	1485	37.4	43.79°C	0.983
	12.010V	5.055V	3.314V	5.023V	658.563				52.13°C	230.24V
9	49.318A	8.426A	8.469A	2.390A	674.738	90.553%	1636	40.4	44.34°C	0.985
	12.008V	5.046V	3.307V	5.022V	745.129				53.42°C	230.24V
10	54.987A	8.935A	9.008A	2.995A	749.957	89.828%	1768	42.4	46.46°C	0.986
	12.007V	5.038V	3.298V	5.010V	834.883				56.36°C	230.24V
11	61.253A	8.949A	9.025A	2.995A	825.176	88.987%	1871	43.9	47.25°C	0.987
	12.007V	5.030V	3.290V	5.010V	927.304				57.85°C	230.24V
CL1	0.098A	13.004A	13.001A	0.000A	111.209	85.300%	873	21.6	42.02°C	0.907
	12.035V	5.098V	3.364V	5.085V	130.374				48.37°C	230.25V

CL2	61.012A	1.000A	1.000A	1.000A	745.898	90.575%	1725	42.1	46.54°C	0.986
	12.006V	5.037V	3.300V	5.050V	823.517				57.04°C	230.24V

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])	PF/AC Volts
1	1.233A	0.490A	0.488A	0.197A	19.999	63.742%	0	<6.0	0.906
	12.043V	5.110V	3.372V	5.077V	31.375				115.16V
2	2.468A	0.978A	0.980A	0.395A	39.990	81.111%	0	<6.0	0.940
	12.029V	5.108V	3.371V	5.071V	49.303				115.16V
3	3.706A	1.468A	1.469A	0.592A	60.021	84.535%	0	<6.0	0.962
	12.028V	5.106V	3.369V	5.069V	71.001				115.14V
4	4.936A	1.959A	1.961A	0.790A	79.972	87.292%	0	<6.0	0.973
	12.029V	5.102V	3.366V	5.066V	91.614				115.13V

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])	PF/AC Volts
1	1.234A	0.489A	0.489A	0.197A	19.998	63.806%	0	<6.0	0.617
	12.033V	5.113V	3.373V	5.072V	31.342				230.26V
2	2.469A	0.979A	0.978A	0.395A	39.989	81.973%	0	<6.0	0.731
	12.024V	5.109V	3.371V	5.070V	48.783				230.26V
3	3.706A	1.469A	1.470A	0.592A	60.019	85.761%	0	<6.0	0.812
	12.025V	5.107V	3.369V	5.068V	69.984				230.25V
4	4.936A	1.960A	1.962A	0.790A	79.970	88.102%	0	<6.0	0.861
	12.026V	5.103V	3.367V	5.066V	90.770				230.25V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	36.30mV	11.70mV	12.00mV	21.00mV	Pass
20% Load	18.80mV	11.90mV	12.10mV	20.80mV	Pass
30% Load	12.00mV	13.30mV	13.00mV	22.60mV	Pass
40% Load	12.40mV	12.30mV	13.30mV	22.50mV	Pass
50% Load	13.70mV	15.10mV	15.40mV	25.10mV	Pass
60% Load	15.60mV	17.60mV	15.60mV	26.30mV	Pass
70% Load	16.70mV	16.10mV	17.70mV	32.10mV	Pass
80% Load	17.50mV	16.60mV	19.30mV	34.90mV	Pass
90% Load	20.40mV	17.90mV	18.50mV	33.20mV	Pass
100% Load	27.10mV	33.10mV	23.70mV	32.30mV	Pass
110% Load	29.70mV	29.60mV	23.00mV	34.30mV	Pass
Crossload1	9.30mV	19.10mV	24.30mV	17.80mV	Pass
Crossload2	26.00mV	16.00mV	14.70mV	22.30mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	36.00mV	11.60mV	13.00mV	21.50mV	Pass
20% Load	18.90mV	11.80mV	14.30mV	21.30mV	Pass
30% Load	11.70mV	13.40mV	14.00mV	22.20mV	Pass
40% Load	12.00mV	12.60mV	15.00mV	22.50mV	Pass
50% Load	13.50mV	15.10mV	16.20mV	25.90mV	Pass
60% Load	15.60mV	18.10mV	16.60mV	26.20mV	Pass
70% Load	17.60mV	16.40mV	18.50mV	32.30mV	Pass
80% Load	17.40mV	16.80mV	19.30mV	35.00mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	20.20mV	17.70mV	20.70mV	33.90mV	Pass
100% Load	26.10mV	33.20mV	22.60mV	30.70mV	Pass
110% Load	28.20mV	30.60mV	23.70mV	29.50mV	Pass
Crossload1	14.70mV	20.00mV	24.10mV	17.80mV	Pass
Crossload2	25.30mV	27.30mV	16.20mV	23.10mV	Pass

The results above are not used in the certification process

Gigabyte P750GM

Top side

Power specifications label

All data and graphs included in this test report can be used by any individual on the following conditions:
› It should be mentioned that the test results are provided by Cybenetics
› The link to the original test results document should be provided in any case

Cybenetics runs voluntary certification programs for power supplies - ETA for efficiency, LAMBDA for noise and SAFE for safety and correct operation - and for cooling products, with DELTA for chassis soundproofing and PHI for fan airflow and static pressure. THETA rates cooler performance on AMD AM5 and Intel LGA1851 outside ISO 17065 and accreditation scope

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