GIGABYTE™

Gigabyte P750GM (#2)

Serial Number 21033G004789

Lab ID GB75001914

Certification ID 251914

Test Result Report ID: 21PS1914A

Certificate Issue Date: Oct 5, 2021

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 (#2)
OEM/ODM	MEIC
Serial Number	21033G004789
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	GB75001914
Date of receipt	Sep 7, 2021
Testing Date	Oct 4, 2021
Report Issued Date	Oct 5, 2021
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 (600mm)	1	1	18AWG	No
4+4 pin EPS12V (600mm)	2	2	18AWG	No
6+2 pin PCIe (600mm+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 (1380mm) - C13 coupler	1	1	18AWG	-

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, KMW)
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, Rifle Bearing Fan)
5VSB Circuit	-

Rectifier	1x JF Semiconductor SP10U45L-T SBR (45V, 10A)
Standby PWM Controller	PR8109T

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)	89.163%
Average Noise Output (>1450 Load Combinations)	33.68dBA
Average PF (>1450 Load Combinations)	0.981
Efficiency With 10W (≤500W) or 2% (>500W) Load	55.729%
Standby Power Consumption	0.0514W
Non-Accredited	
12V Ripple (Full Load)	29.12mV
5V Ripple (Full Load)	22.78mV
3.3V Ripple (Full Load)	24.62mV
5VSB Ripple (Full Load)	25.02mV
12V Load Regulation	0.42%
5V Load Regulation	1.24%
3.3V Load Regulation	2.50%
5VSB Load Regulation	1.40%
Inrush Current	34.490A

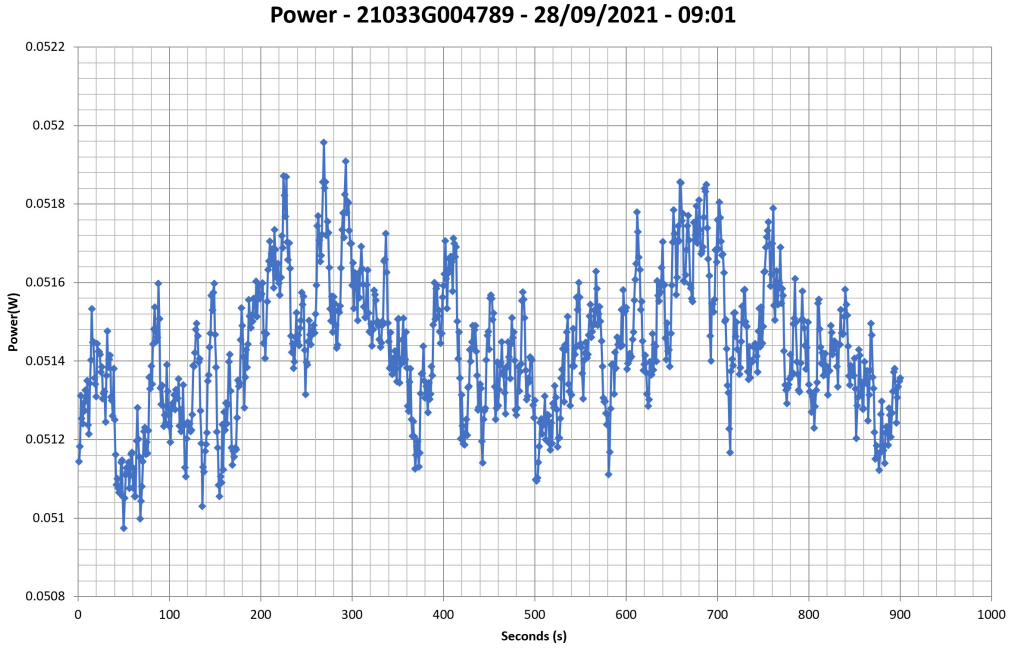
230V		
Accredited		
Average Efficiency (>1450 load combinations)		91.305%
Average Noise Output (>1450 Load Combinations)		33.54dBA
Average PF (>1450 Load Combinations)		0.950
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
Standby Power Consumption		0.1484W
Non-Accredited		
12V Ripple (Full Load)		28.50mV
5V Ripple (Full Load)		32.07mV
3.3V Ripple (Full Load)		24.31mV
5VSB Ripple (Full Load)		24.72mV
12V Load Regulation		0.51%
5V Load Regulation		1.42%
3.3V Load Regulation		2.53%
5VSB Load Regulation		1.40%
Inrush Current		81.260A
Hold-Up Time & PWR_OK Signal		16.20ms
AC Loss to PWR_OK Hold Up Time		14.60ms
PWR_OK Inactive to DC Loss Delay		1.60ms
PSU Timings: T1 (20% / 100%)	80.0ms	78.0ms
PSU Timings: T3 (20% / 100%)	264.0ms	266.0ms
OPP (25.00°C / 38.00°C)	112.01%	115.94%

Hold-Up Time & PWR_OK Signal

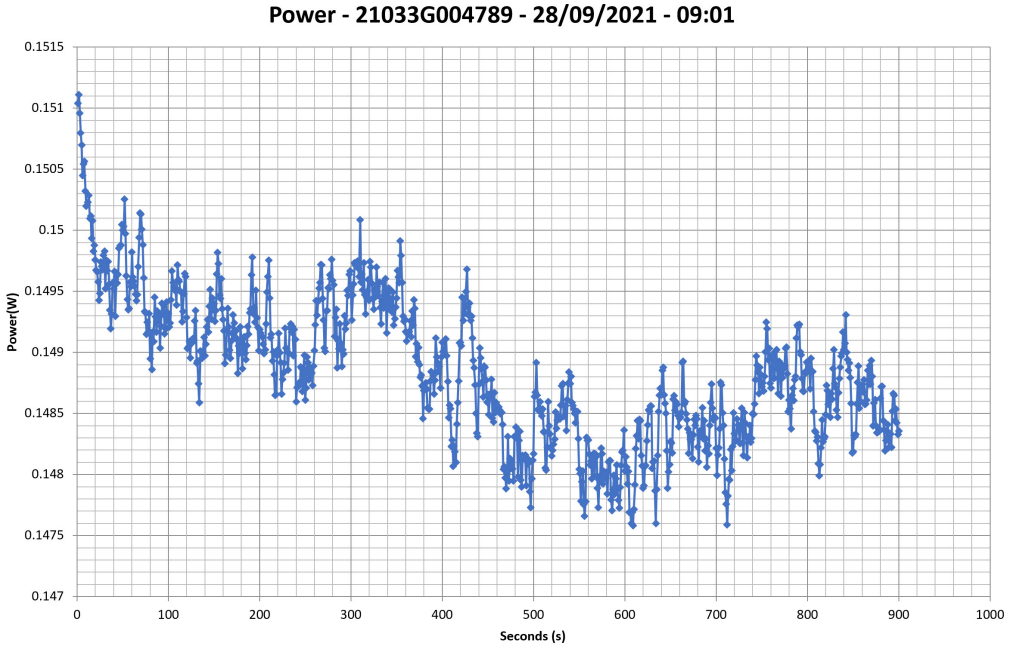
Hold-Up Time (ms)	16.2
AC Loss to PWR_OK Hold Up Time (ms)	14.6
PWR_OK Inactive to DC Loss Delay (ms)	1.6

Graphs

115V

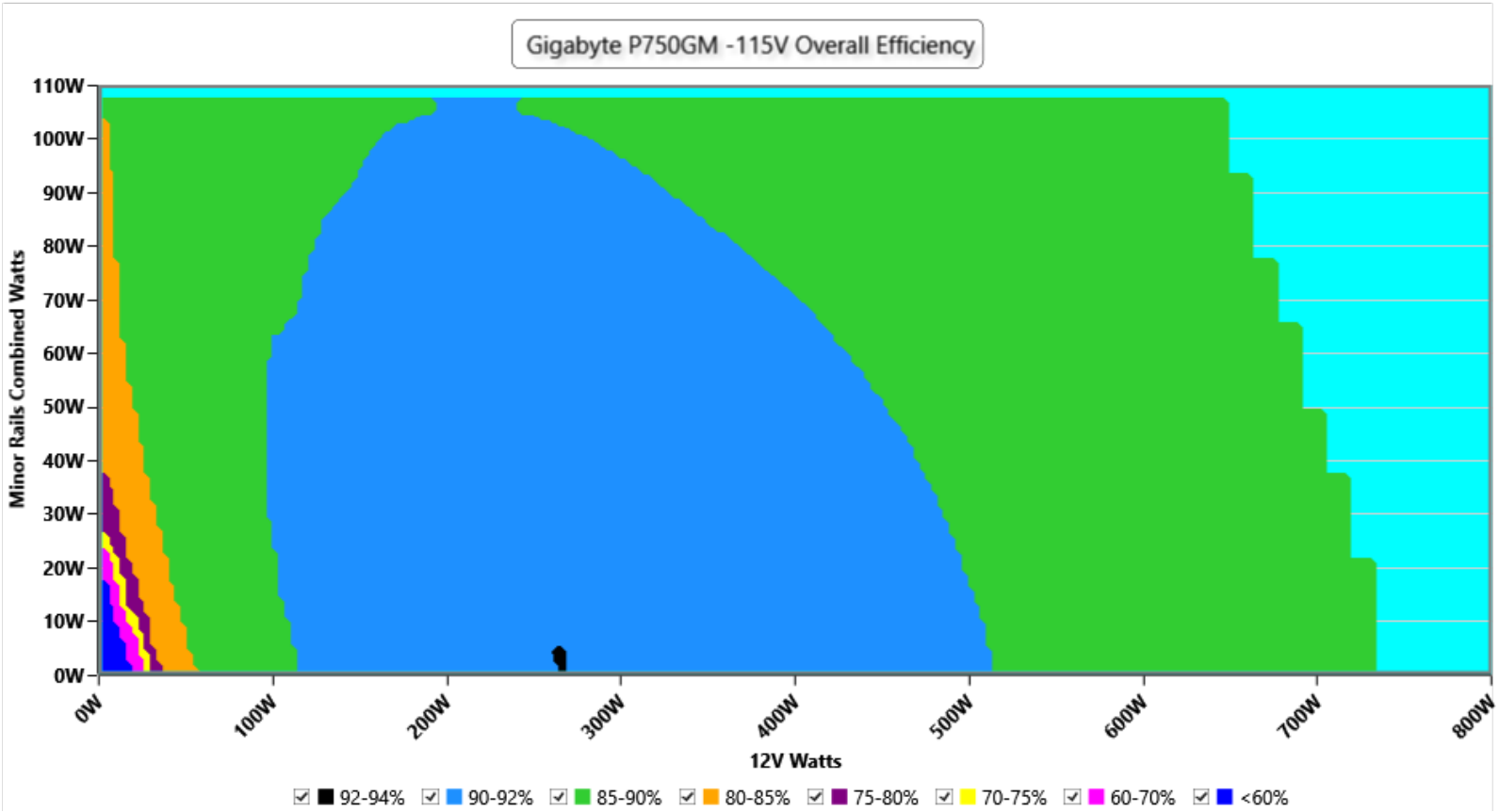


230V



Efficiency Graph

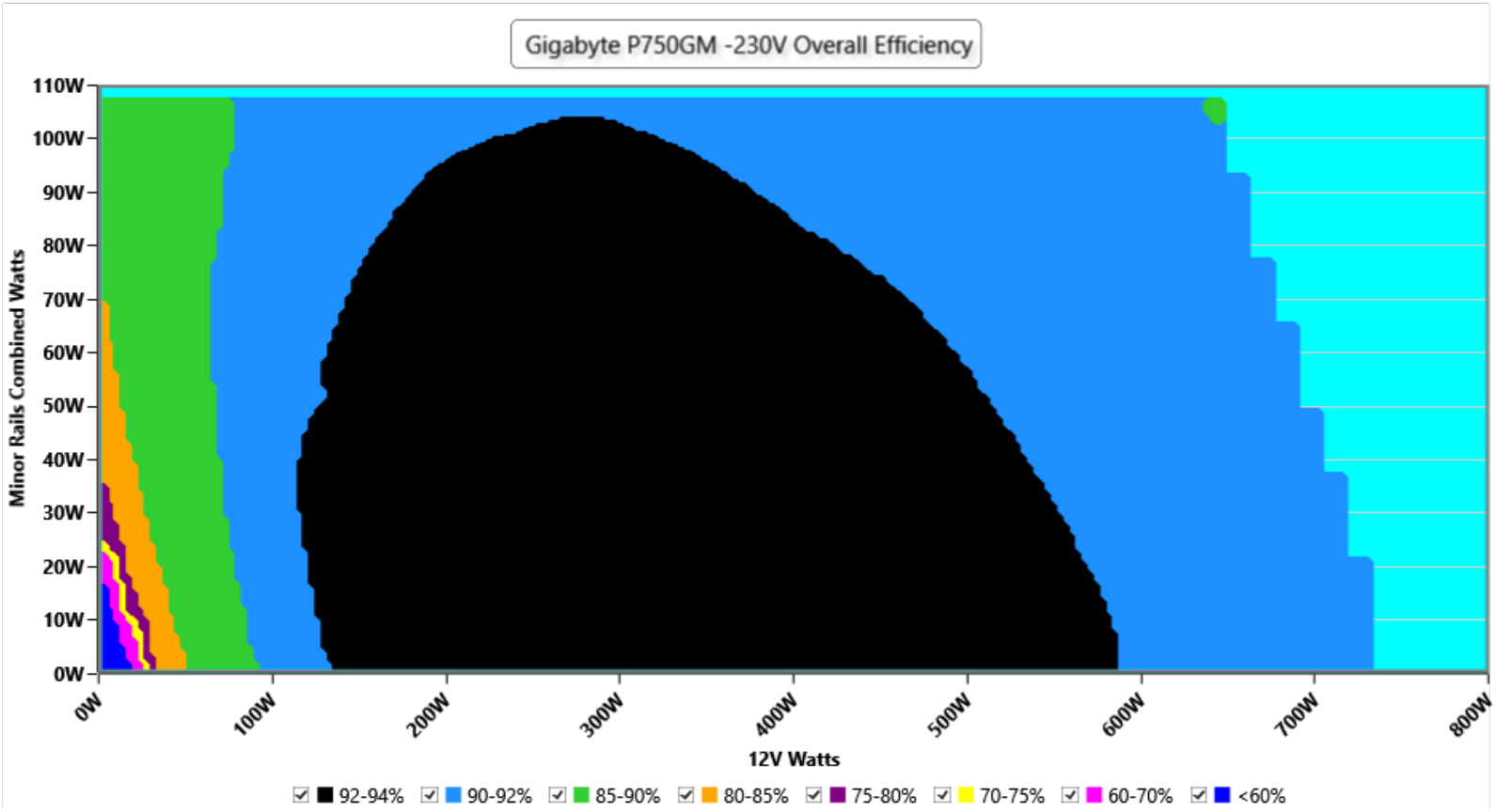
115V



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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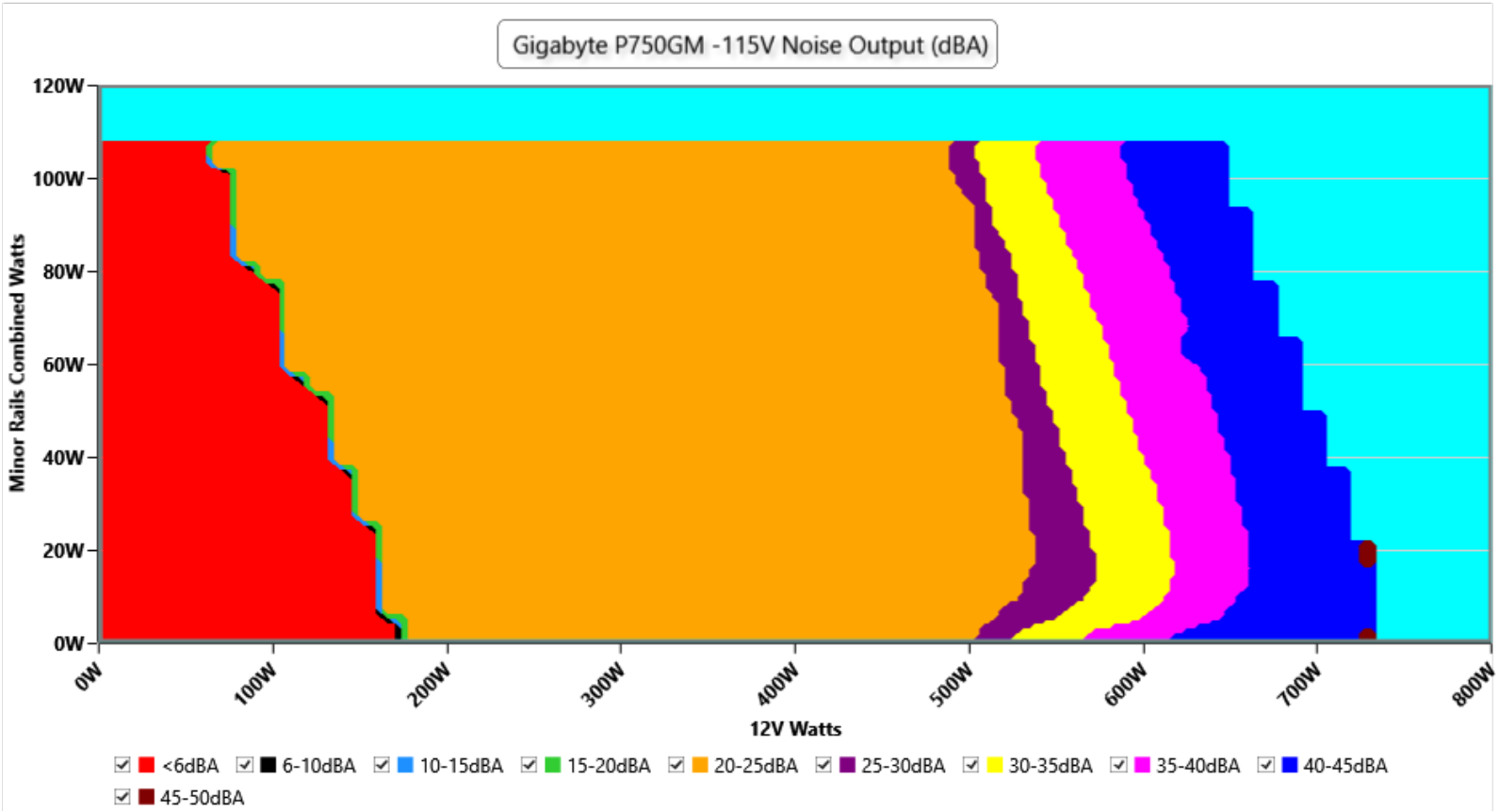
Noise Graph

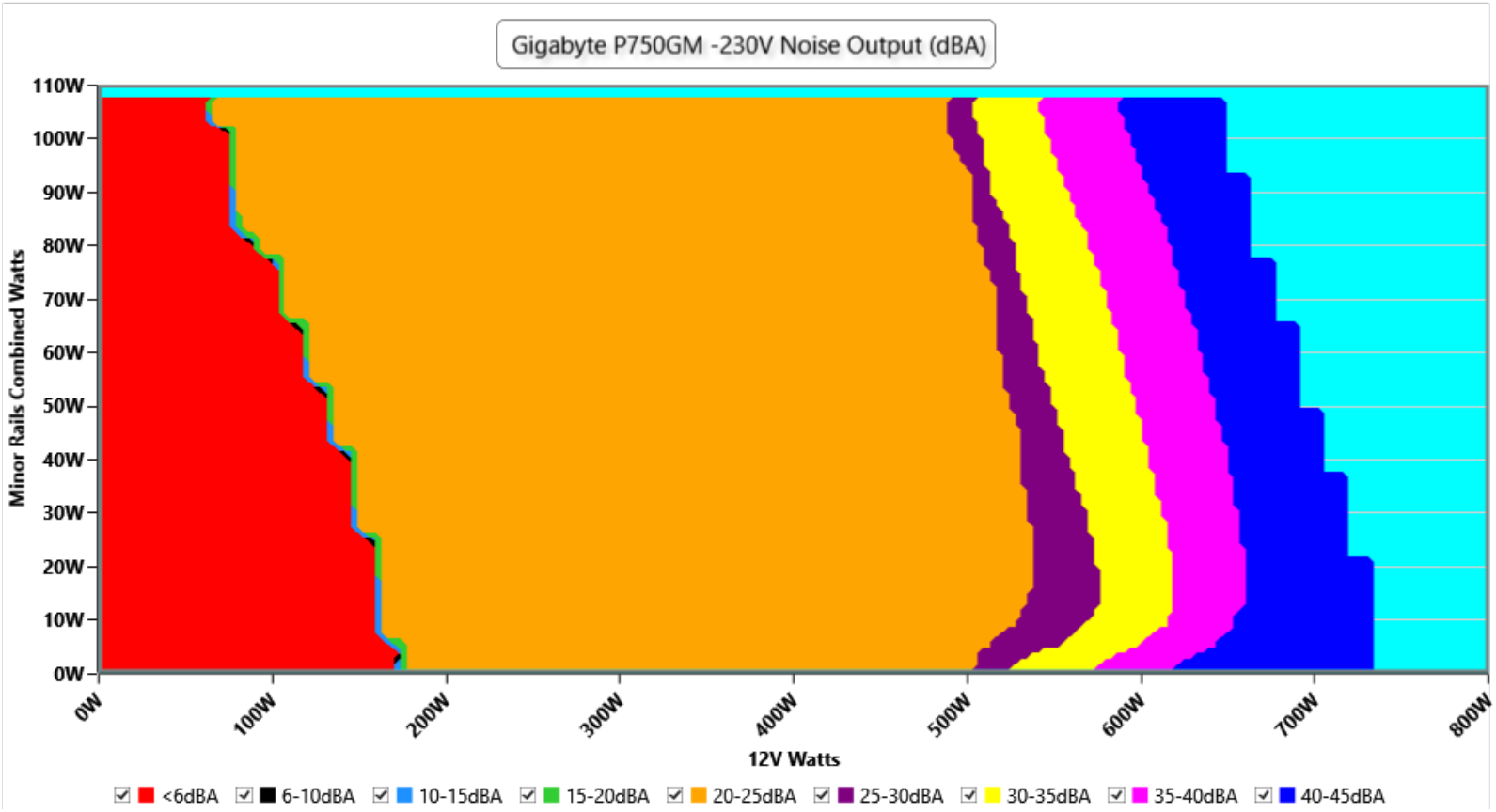
115V



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

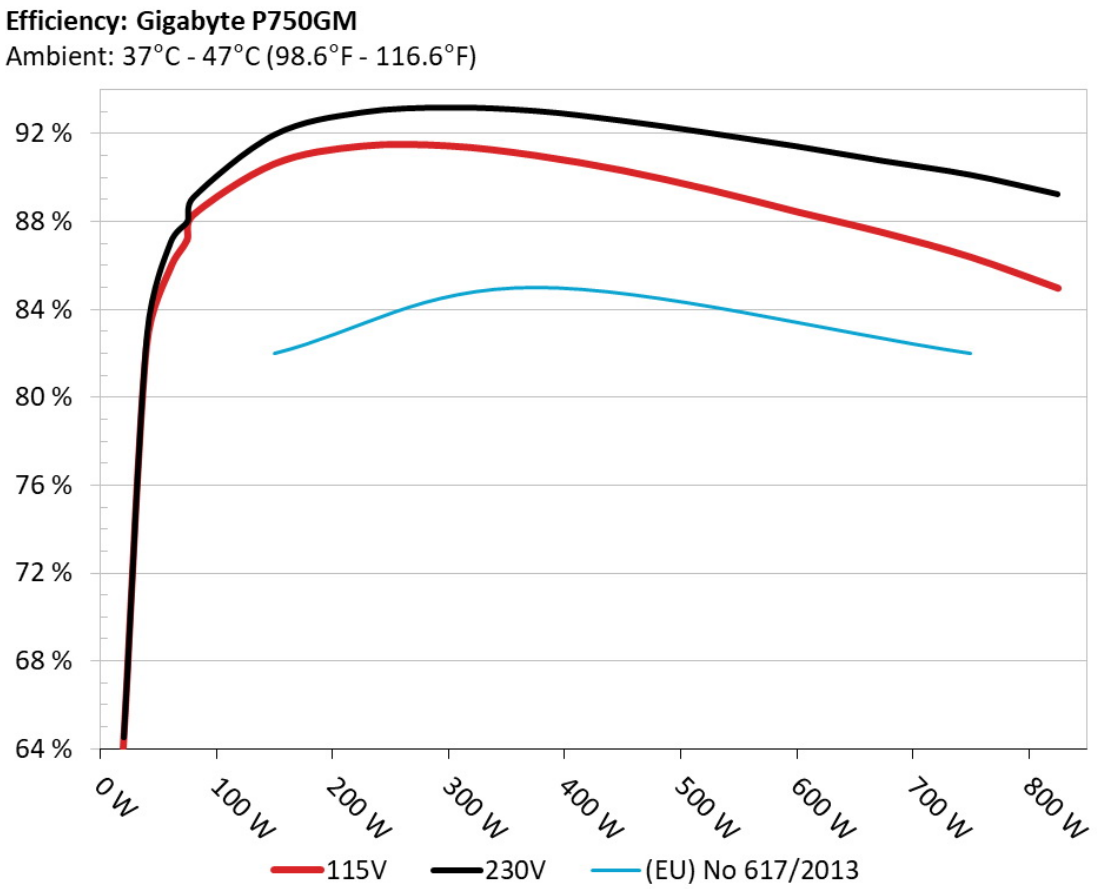


INFO

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

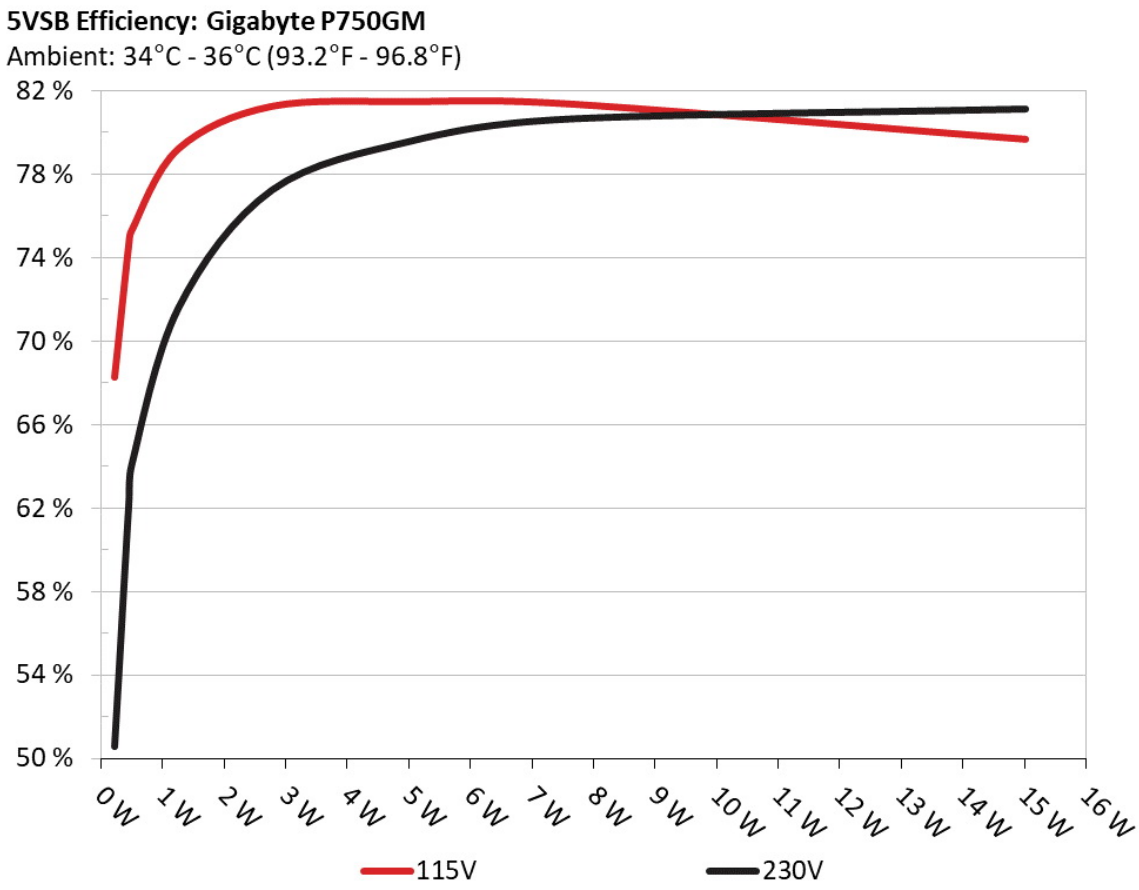
Efficiency under high ambient temperature



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	0.228W	68.249%	0.046
	5.066V	0.334W		115.13V
2	0.09A	0.456W	74.574%	0.083
	5.065V	0.611W		115.13V
3	0.55A	2.782W	81.228%	0.291
	5.056V	3.425W		115.13V
4	1A	5.048W	81.449%	0.377
	5.047V	6.198W		115.12V
5	1.5A	7.556W	81.351%	0.424
	5.037V	9.288W		115.12V
6	3.001A	15.016W	79.65%	0.479
	5.005V	18.853W		115.12V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.228W	50.55%	0.019
	5.066V	0.451W		230.25V
2	0.09A	0.456W	62.119%	0.03
	5.065V	0.734W		230.25V
3	0.55A	2.782W	77.238%	0.136
	5.057V	3.602W		230.25V
4	1A	5.048W	79.594%	0.205
	5.048V	6.342W		230.25V
5	1.5A	7.556W	80.64%	0.263
	5.037V	9.37W		230.25V
6	3.001A	15.018W	81.126%	0.355
	5.006V	18.513W		230.25V

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
10%	4.450A	1.939A	1.94A	0.992A	75.014	87.158%	0	<6.0	45.57°C	0.953
	12.001V	5.158V	3.403V	5.041V	86.067				40.17°C	115.12V
20%	9.920A	2.912A	2.916A	1.192A	149.975	90.614%	0	<6.0	46.84°C	0.973
	12.003V	5.153V	3.395V	5.036V	165.51				41.03°C	115.12V
30%	15.754A	3.403A	3.411A	1.392A	224.991	91.419%	926	23.5	41.62°C	0.98
	11.993V	5.143V	3.387V	5.031V	246.11				47.87°C	115.12V
40%	21.600A	3.896A	3.907A	1.592A	300.09	91.434%	928	23.6	42.15°C	0.985
	11.986V	5.135V	3.378V	5.026V	328.205				48.84°C	115.11V
50%	27.054A	4.876A	4.897A	1.793A	374.726	90.997%	931	23.7	42.56°C	0.985
	11.985V	5.128V	3.37V	5.021V	411.8				49.59°C	115.11V
60%	32.530A	5.859A	5.893A	1.994A	449.632	90.317%	938	23.9	43.08°C	0.987
	11.984V	5.122V	3.361V	5.016V	497.839				50.84°C	115.11V
70%	38.007A	6.844A	6.893A	2.196A	524.565	89.445%	1239	32.1	43.28°C	0.987
	11.983V	5.115V	3.352V	5.011V	586.467				51.33°C	115.1V
80%	43.558A	7.833A	7.897A	2.297A	599.78	88.44%	1867	43.9	44.34°C	0.988
	11.981V	5.109V	3.343V	5.007V	678.177				52.86°C	115.1V
90%	49.438A	8.333A	8.397A	2.399A	674.83	87.482%	1990	45.7	44.42°C	0.989
	11.981V	5.102V	3.335V	5.004V	771.392				53.54°C	115.1V
100%	55.119A	8.835A	8.93A	3.007A	750.052	86.371%	1991	45.7	45.88°C	0.989
	11.980V	5.095V	3.326V	4.99V	868.414				55.78°C	115.1V
110%	60.659A	9.829A	10.039A	3.008A	825.078	84.962%	1992	45.8	46.9°C	0.991
	11.981V	5.089V	3.317V	4.988V	971.119				57.57°C	115.09V
CL1	0.117A	12.248A	12.319A	0A	106.331	85.043%	321	<6.0	42.07°C	0.966
	12.012V	5.162V	3.385V	5.059V	125.032				49.24°C	115.13V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL2	0.117A	19.367A	0A	0A	101.433	83.436%	277	<6.0	43.76°C	0.965
	12.018V	5.165V	3.394V	5.061V	121.57				51.78°C	115.13V
CL3	0.116A	0A	19.519A	0.001A	67.396	78.561%	0	<6.0	53.88°C	0.955
	12.016V	5.154V	3.381V	5.058V	85.789				44.8°C	115.13V
CL4	62.583A	0A	0A	0.001A	749.787	87.215%	1989	45.7	45.02°C	0.99
	11.981V	5.095V	3.34V	5.053V	859.708				55.12°C	115.1V

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
10%	4.450A	1.942A	1.94A	0.992A	75.012	88.018%	0	<6.0	45.42°C	0.847
	12.001V	5.15V	3.402V	5.04V	85.223				40.23°C	230.26V
20%	9.918A	2.916A	2.917A	1.192A	149.969	91.954%	0	<6.0	46.5°C	0.917
	12.004V	5.144V	3.394V	5.034V	163.091				41.08°C	230.26V
30%	15.749A	3.408A	3.412A	1.392A	224.984	92.963%	934	23.8	41.53°C	0.946
	11.996V	5.136V	3.386V	5.03V	242.014				47.23°C	230.25V
40%	21.594A	3.901A	3.909A	1.592A	300.08	93.188%	933	23.8	41.87°C	0.957
	11.988V	5.127V	3.377V	5.025V	322.016				48.27°C	230.25V
50%	27.048A	4.883A	4.899A	1.793A	374.703	93.032%	937	23.9	42.28°C	0.966
	11.986V	5.121V	3.368V	5.02V	402.767				49.14°C	230.25V
60%	32.527A	5.867A	5.894A	1.994A	449.612	92.588%	943	24.1	42.65°C	0.97
	11.984V	5.115V	3.36V	5.015V	485.607				50.12°C	230.25V
70%	38.009A	6.854A	6.895A	2.196A	524.549	92.032%	1217	31.8	43.18°C	0.974
	11.983V	5.108V	3.351V	5.01V	569.965				51.26°C	230.25V
80%	43.564A	7.845A	7.9A	2.298A	599.762	91.425%	1581	39.2	43.99°C	0.976
	11.979V	5.101V	3.342V	5.006V	656.015				52.53°C	230.25V
90%	49.452A	8.345A	8.399A	2.4A	674.828	90.754%	1997	45.8	44.49°C	0.978
	11.977V	5.094V	3.334V	5.002V	743.583				53.7°C	230.25V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
100%	55.132A	8.848A	8.933A	3.008A	750.023	90.121%	1999	45.8	45.43°C	0.98
	11.977V	5.088V	3.325V	4.988V	832.238				55.38°C	230.25V
110%	60.678A	9.843A	10.042A	3.009A	825.039	89.245%	1995	45.8	46.6°C	0.982
	11.976V	5.082V	3.316V	4.987V	924.471				57.29°C	230.25V
CL1	0.117A	12.267A	12.32A	0A	106.328	85.985%	270	<6.0	42.02°C	0.894
	12.008V	5.154V	3.385V	5.057V	123.66				49.98°C	230.25V
CL2	0.117A	19.371A	0A	0A	101.432	84.664%	289	<6.0	43.67°C	0.891
	12.015V	5.164V	3.393V	5.059V	119.805				52.66°C	230.25V
CL3	0.116A	0A	19.535A	0.001A	67.396	79.108%	0	<6.0	54.52°C	0.848
	12.016V	5.145V	3.378V	5.056V	85.196				44.91°C	230.25V
CL4	62.599A	0A	0A	0.001A	749.779	90.713%	1995	45.8	45.36°C	0.98
	11.977V	5.085V	3.34V	5.052V	826.539				55.67°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])	Temps (In/Out)	PF/AC Volts
20W	1.236A	0.485A	0.484A	0.198A	20.009	64.075%	0	<6.0	39.93°C	0.893
	12.030V	5.158V	3.409V	5.06V	31.227				36.77°C	115.13V
40W	2.725A	0.679A	0.678A	0.297A	40.01	82.319%	0	<6.0	41.28°C	0.921
	11.999V	5.158V	3.407V	5.056V	48.603				37.63°C	115.13V
60W	4.212A	0.873A	0.872A	0.396A	60.01	85.807%	0	<6.0	43.26°C	0.944
	11.997V	5.157V	3.405V	5.054V	69.936				38.94°C	115.12V
80W	5.696A	1.067A	1.066A	0.495A	79.974	88.282%	0	<6.0	44.59°C	0.957
	11.999V	5.157V	3.404V	5.051V	90.589				39.6°C	115.12V

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
20W	1.234A	0.485A	0.484A	0.198A	20.01	64.522%	0	<6.0	40.23°C	0.639
	12.037V	5.16V	3.409V	5.058V	31.013				36.96°C	230.26V
40W	2.724A	0.678A	0.678A	0.297A	40.01	82.874%	0	<6.0	41.63°C	0.745
	12.005V	5.159V	3.406V	5.055V	48.279				37.67°C	230.26V
60W	4.212A	0.872A	0.872A	0.396A	60.011	87.01%	0	<6.0	42.6°C	0.813
	12.001V	5.158V	3.404V	5.052V	68.97				38.39°C	230.26V
80W	5.694A	1.068A	1.066A	0.495A	79.975	89.101%	0	<6.0	44.64°C	0.854
	12.002V	5.149V	3.404V	5.05V	89.758				39.87°C	230.26V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	49.18mV	14.35mV	16.11mV	18.12mV	Pass
20% Load	27.41mV	17.88mV	16.47mV	17.76mV	Pass
30% Load	16.84mV	13.84mV	17.23mV	19.04mV	Pass
40% Load	17.50mV	14.61mV	16.36mV	21.65mV	Pass
50% Load	16.02mV	16.86mV	17.18mV	20.11mV	Pass
60% Load	19.24mV	17.52mV	18.31mV	20.47mV	Pass
70% Load	19.29mV	18.80mV	19.38mV	22.57mV	Pass
80% Load	20.42mV	21.50mV	21.12mV	25.95mV	Pass
90% Load	21.03mV	18.39mV	20.87mV	23.85mV	Pass
100% Load	29.12mV	22.78mV	24.62mV	25.02mV	Pass
110% Load	31.92mV	32.39mV	26.87mV	25.50mV	Pass
Crossload1	41.90mV	19.43mV	25.04mV	22.56mV	Pass
Crossload2	39.86mV	16.70mV	33.80mV	21.19mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	45.75mV	15.47mV	22.45mV	22.93mV	Pass
Crossload4	28.51mV	18.95mV	17.49mV	25.65mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	49.74mV	27.42mV	44.74mV	18.12mV	Pass
20% Load	29.81mV	17.62mV	15.75mV	17.45mV	Pass
30% Load	16.22mV	13.89mV	16.82mV	19.81mV	Pass
40% Load	15.50mV	13.69mV	16.93mV	21.44mV	Pass
50% Load	15.86mV	15.22mV	18.31mV	20.26mV	Pass
60% Load	18.06mV	17.47mV	19.48mV	20.22mV	Pass
70% Load	18.27mV	17.06mV	19.69mV	22.62mV	Pass
80% Load	19.60mV	19.41mV	20.86mV	25.13mV	Pass
90% Load	21.54mV	18.18mV	21.53mV	25.13mV	Pass
100% Load	28.50mV	32.07mV	24.31mV	24.72mV	Pass
110% Load	30.11mV	29.53mV	26.69mV	25.28mV	Pass
Crossload1	42.73mV	19.74mV	26.18mV	23.13mV	Pass
Crossload2	39.86mV	17.11mV	27.51mV	21.75mV	Pass
Crossload3	43.44mV	15.37mV	20.66mV	22.67mV	Pass
Crossload4	27.63mV	23.37mV	18.27mV	26.35mV	Pass

The results above are not used in the certification process

Gigabyte P750GM (#2)

Top side

Power specifications label