GIGABYTE™

Gigabyte P550B

Serial Number SN20233G012792

Lab ID GB55001745

Certification ID 251745

Test Result Report ID: 20PS1745A

Certificate Issue Date: Nov 12, 2020

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	Gigabyte
Model	P550B
OEM/ODM	MEIC
Serial Number	SN20233G012792
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	8-4
Rated Frequency (Hz)	50-60

Rated Power (W)	550
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fixed cables
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	120mm Rifle Bearing Fan (BK BDH12025S)
Semi-Passive Operation	✗
Cybenetics Testing Information	
Lab ID	GB55001745
Date of receipt	Sep 7, 2020
Testing Date	Nov 5, 2020
Report Issued Date	Nov 12, 2020
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors(Non-accredited measurements)

Native Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Caps
ATX connector 20+4 pin (560mm)	1	1	18-22AWG	No
4+4 pin EPS12V (600mm)	1	1	18AWG	No
6+2 pin PCIe (540mm+150mm)	1	2	18AWG	No
SATA (510mm+120mm+120mm)	2	6	18AWG	No
4-pin Molex (510mm+120mm+120mm) / FDD (+120mm)	1	3 / 1	18-22AWG	No
Modular Cables				
AC Power Cord (1400mm) - C13 coupler	1	1	18AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	18	15	43.5	3	0.3
	Watts	108		522	15	3.6
Total Max. Power (W)		550				

Parts Description

General Data	-
Manufacturer (OEM)	MEIC
PCB Type	Single Sided
Primary Side	-
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor SCK-1R55 (1.5 Ohm)
Bridge Rectifier(s)	1x GBU1006 (600V, 10A @ 100°C)
APFC MOSFETs	2x Jilin Sino-Microelectronics JCS18N50F (500V, 11A @ 100°C, Rds(on): 0.27Ohm)
APFC Boost Diode	1x STMicroelectronics STTH8S06D (600V, 8A)
Bulk Cap(s)	1x Teapo (400V, 330uF, 2,000h @ 85°C, LH)
Main Switchers	2x Jilin Sino-Microelectronics JCS18N50F (500V, 11A @ 100°C, Rds(on): 0.27Ohm)
PFC/PWM Combo Controller	Champion CM6805BG
Topology	Primary side: APFC, Double Forward Secondary side: Passive Rectification & Group Regulation
Secondary Side	-
+12V & 5V SBRs	4x Dyelec SBP30V60CT (60V, 30A)
3.3V SBR	1x Jinan Jingheng Electronics SE3045LCT (45V, 30A @ 90°C)
Filtering Capacitors	Electrolytic: 4x Chn Cap (3-7,000h @ 105°C, TP), 1x Chn Cap (2-5,000h @ 105°C, TM), 5x YC (105°C, LE), 2x YC (105°C, TH)
Supervisor IC	Weltrend WT7525 (OVP, UVP, OCP, SCP, PG)
Fan Model	BK BDH12025S (120mm, 12V, 0.18A, Hydraulic Bearing Fan)
5VSB Circuit	-
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)	83.016%
Average Noise Output (>1450 Load Combinations)	42.44dBA
Average PF (>1450 Load Combinations)	0.984
Efficiency With 10W (≤500W) or 2% (>500W) Load	54.903%
Standby Power Consumption	0.0604W
Non-Accredited	
12V Ripple (Full Load)	79.15mV
5V Ripple (Full Load)	24.91mV
3.3V Ripple (Full Load)	22.58mV
5VSB Ripple (Full Load)	29.52mV
12V Load Regulation	1.88%
5V Load Regulation	2.92%
3.3V Load Regulation	2.56%
5VSB Load Regulation	3.67%
Inrush Current	43.730A

230V

Accredited	
Average Efficiency (>1450 load combinations)	84.903%

Average Noise Output (>1450 Load Combinations)		41.55dBA
Average PF (>1450 Load Combinations)		0.819
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
Standby Power Consumption		0.1907W
Non-Accredited		
12V Ripple (Full Load)		65.79mV
5V Ripple (Full Load)		21.19mV
3.3V Ripple (Full Load)		20.31mV
5VSB Ripple (Full Load)		30.42mV
12V Load Regulation		1.88%
5V Load Regulation		3.13%
3.3V Load Regulation		2.56%
5VSB Load Regulation		3.69%
Inrush Current		76.650A
Hold-Up Time & PWR_OK Signal		16.20ms
AC Loss to PWR_OK Hold Up Time		11.50ms
PWR_OK Inactive to DC Loss Delay		4.70ms
PSU Timings: T1 (20% / 100%)	45.0ms	78.0ms
PSU Timings: T3 (20% / 100%)	289.0ms	288.0ms
OPP (27.00°C / 35.00°C)	118.87%	116.68%

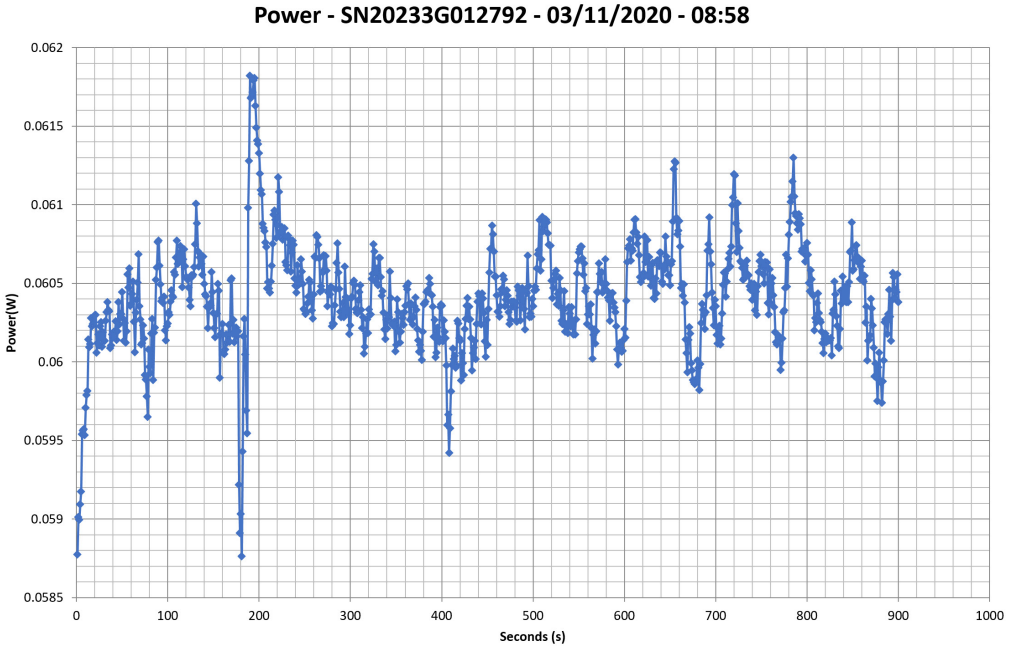
Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	16.2
AC Loss to PWR_OK Hold Up Time (ms)	11.5
PWR_OK Inactive to DC Loss Delay (ms)	4.7

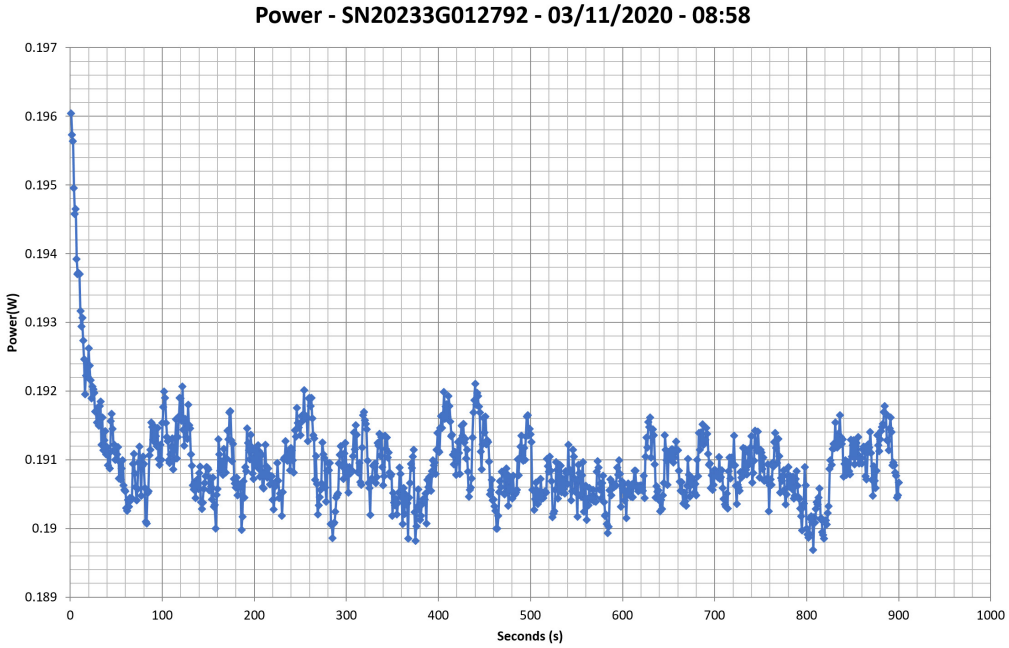
Vampire Power

Graphs

115V

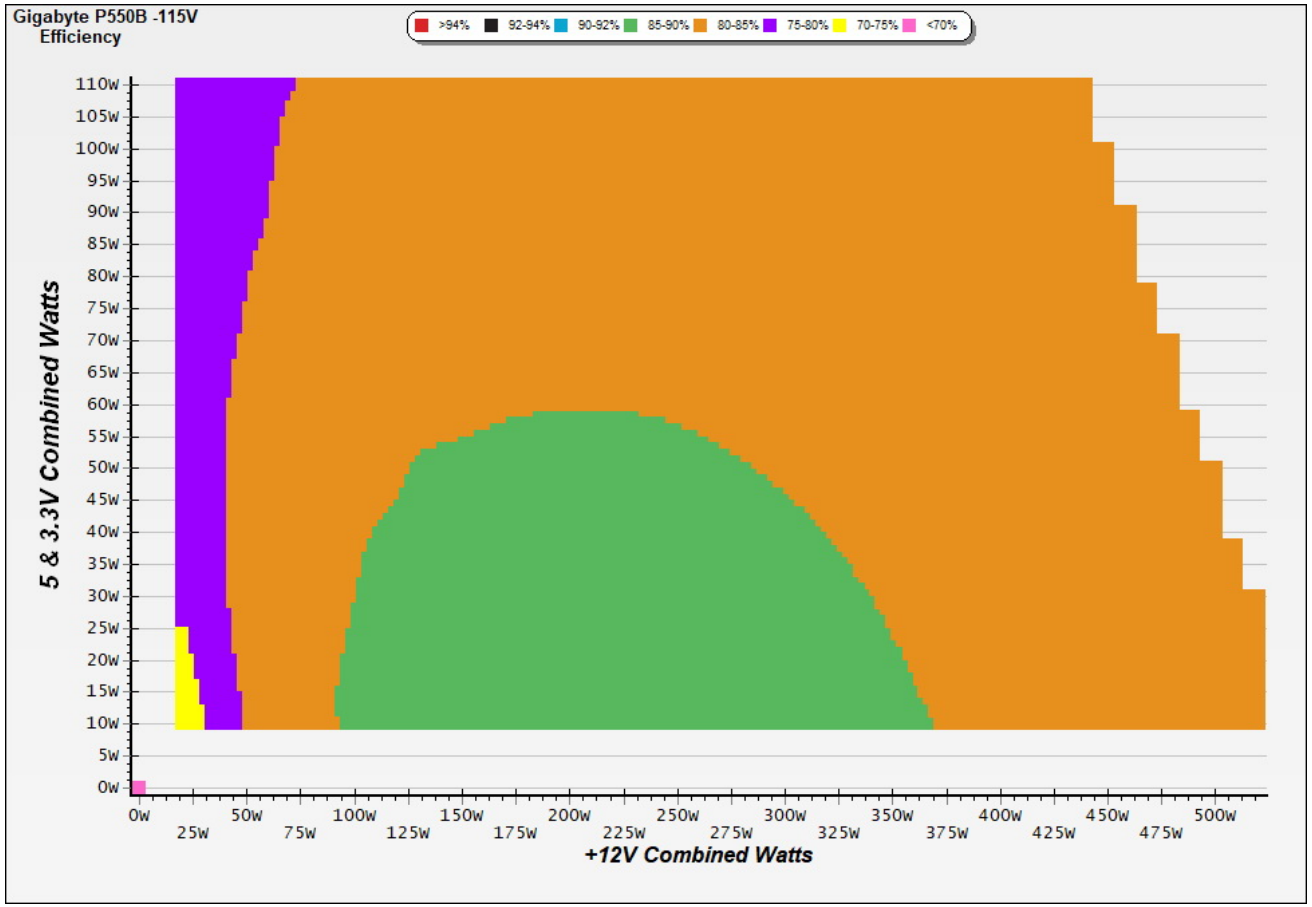


230V



Efficiency Graph

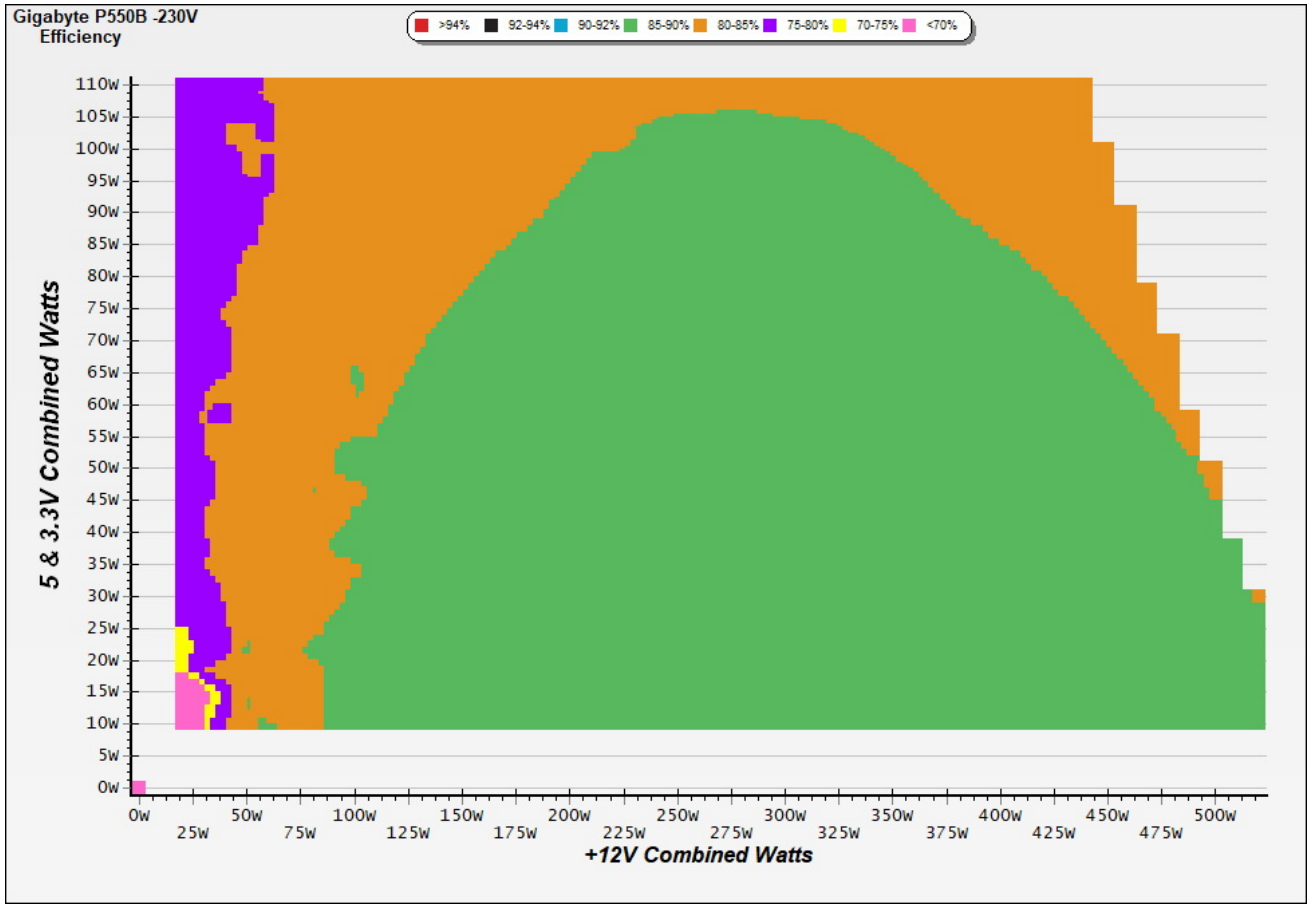
115V



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



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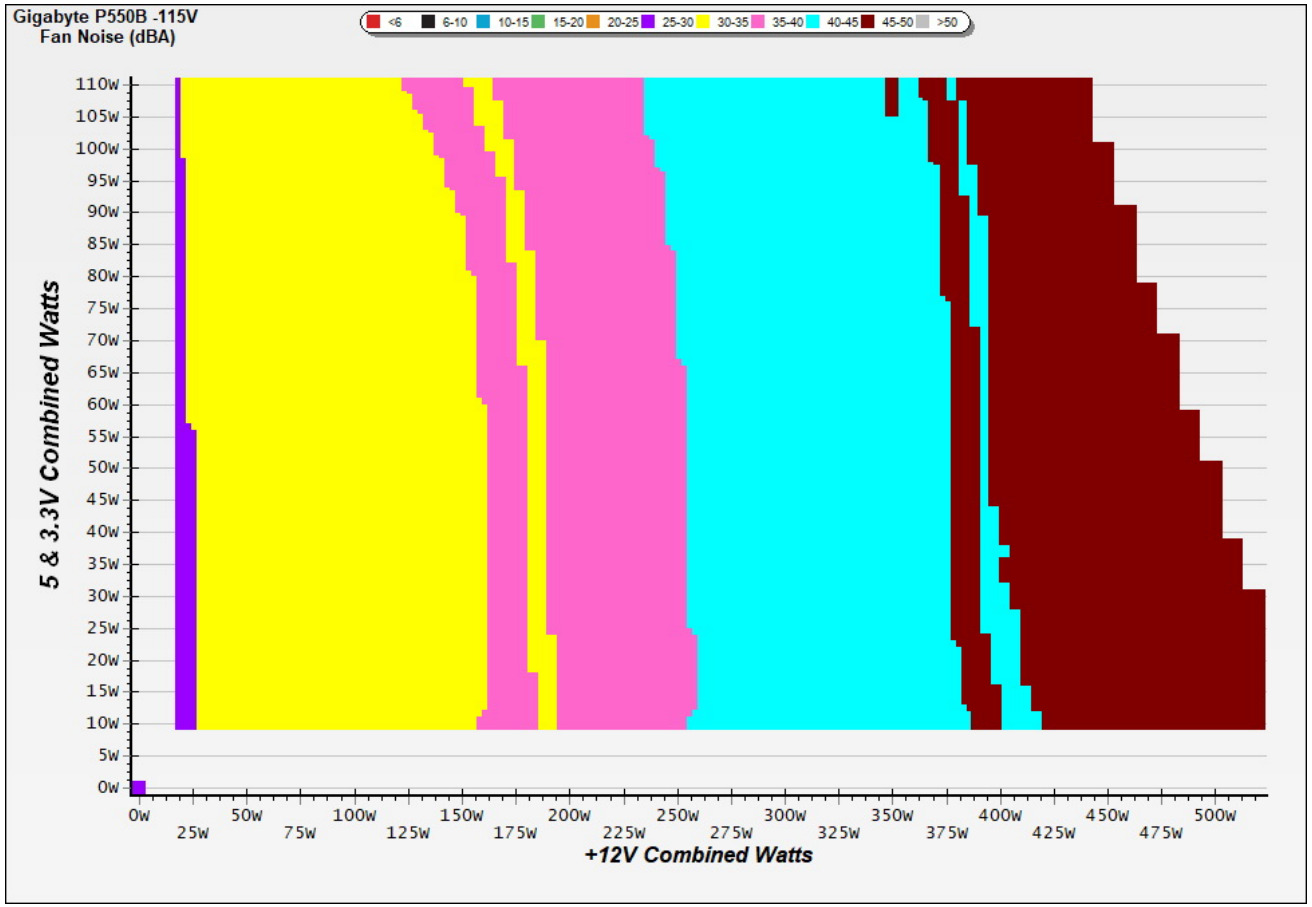
Noise Graph

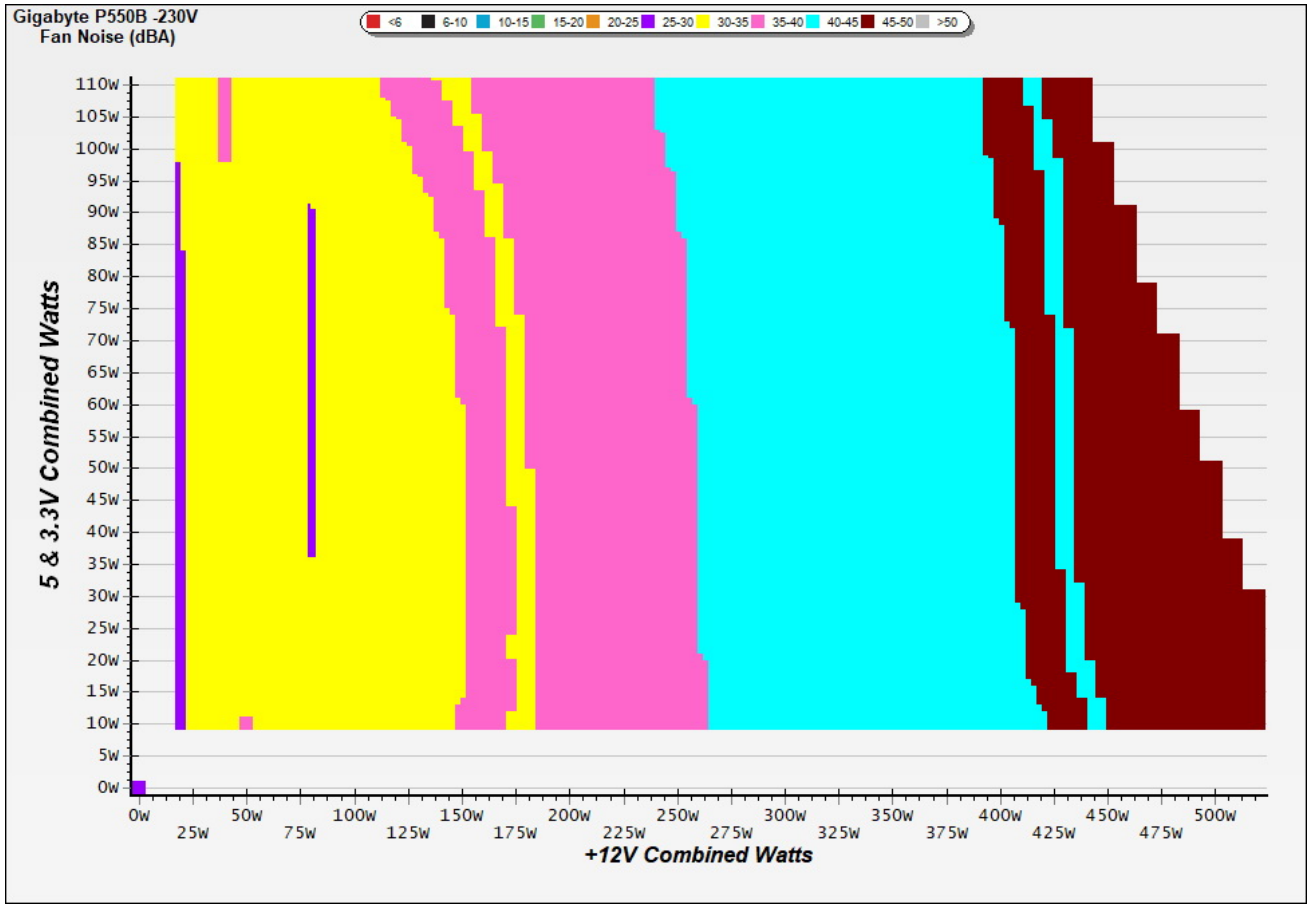
115V



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

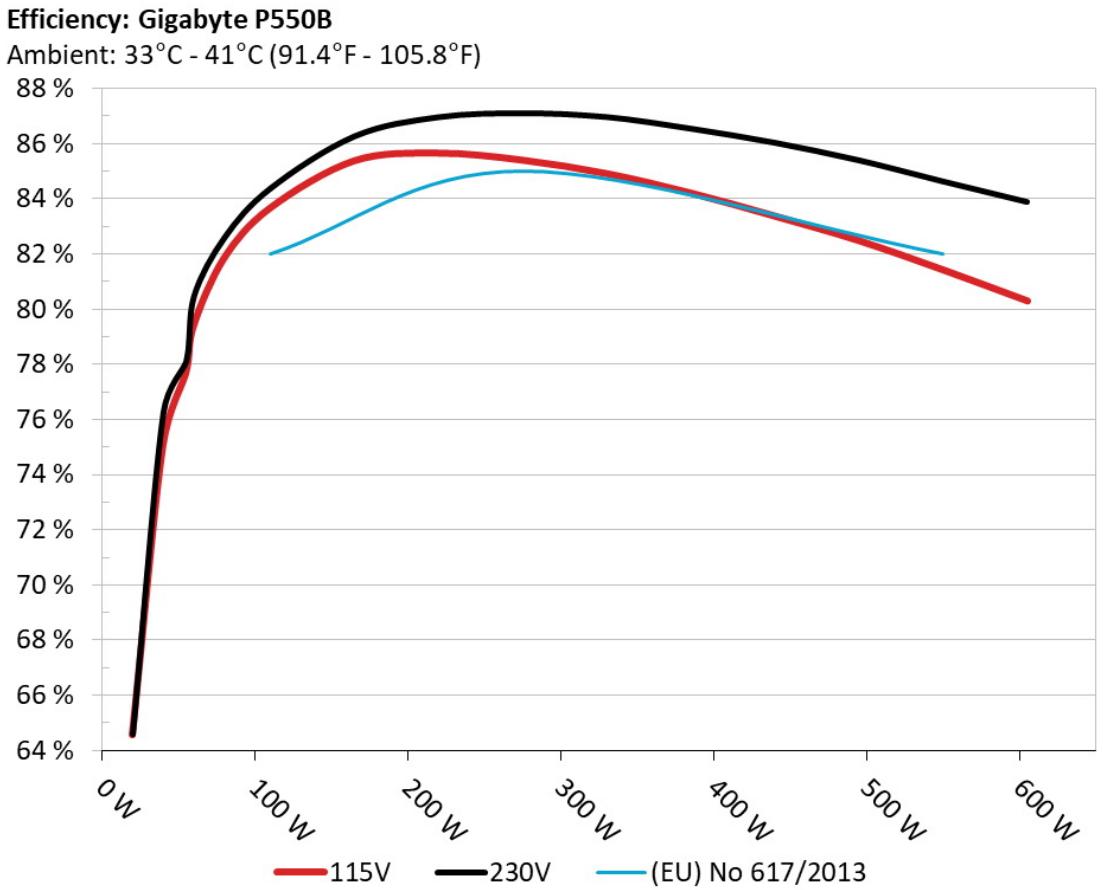


INFO

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

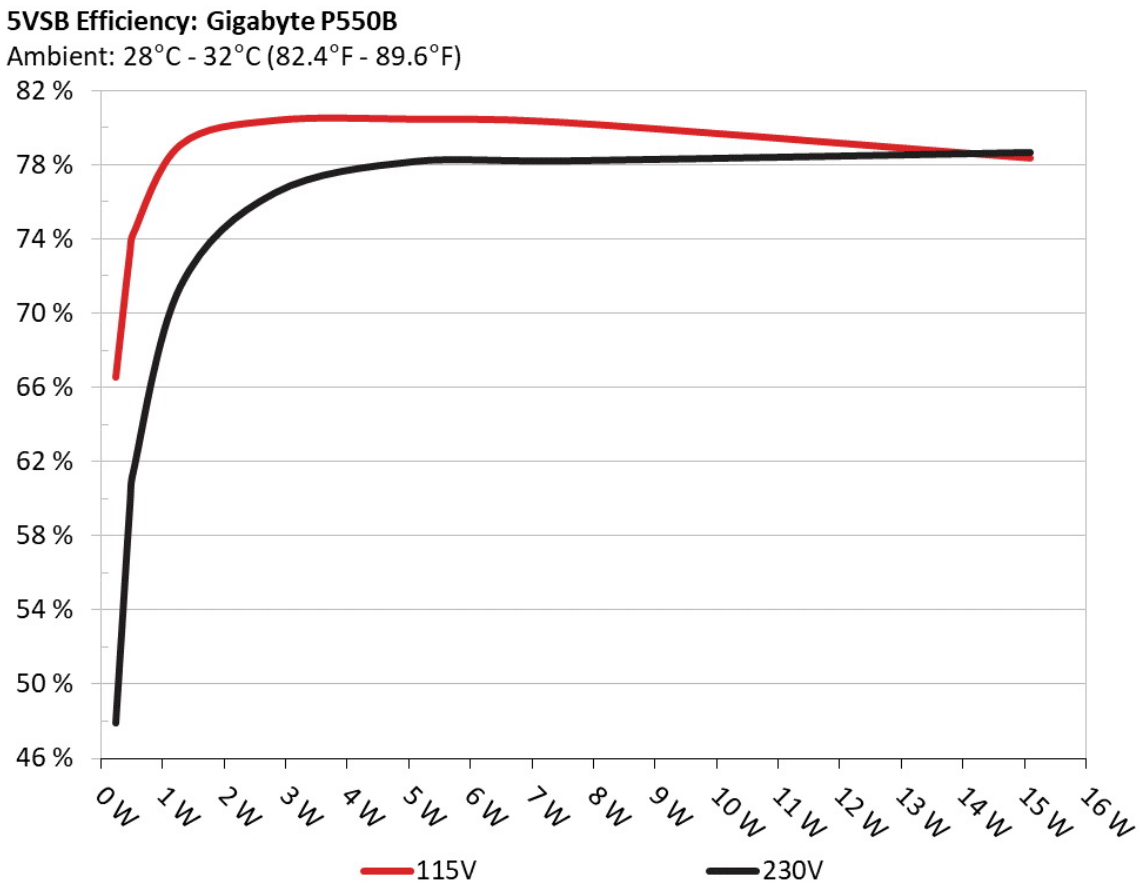
Efficiency under high ambient temperature



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	0.231	66.571%	0.072
	5.137V	0.347		115.16V
2	0.090A	0.462	73.333%	0.123
	5.134V	0.630		115.16V
3	0.550A	2.816	80.365%	0.327
	5.118V	3.504		115.16V
4	1.000A	5.104	80.429%	0.375
	5.102V	6.346		115.16V
5	1.500A	7.629	80.229%	0.402
	5.085V	9.509		115.16V
6	3.000A	15.100	78.344%	0.463
	5.033V	19.274		115.14V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231	47.925%	0.031
	5.138V	0.482		229.94V
2	0.090A	0.462	59.767%	0.049
	5.135V	0.773		229.86V
3	0.550A	2.815	76.495%	0.227
	5.117V	3.680		229.86V
4	1.000A	5.103	78.195%	0.312
	5.102V	6.526		229.86V
5	1.500A	7.630	78.232%	0.390
	5.085V	9.753		229.89V
6	3.000A	15.099	78.673%	0.384
	5.033V	19.192		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
1	2.748A	1.960A	1.988A	0.982A	54.966	77.695%	1303	34.1	36.17°C	0.830
	12.140V	5.102V	3.321V	5.094V	70.746				38.39°C	115.31V
2	6.528A	2.951A	2.988A	1.182A	110.034	83.675%	1340	32.8	36.58°C	0.950
	12.122V	5.084V	3.312V	5.078V	131.502				39.24°C	115.27V
3	10.674A	3.444A	3.496A	1.383A	165.033	85.389%	1553	38.0	36.73°C	0.984
	12.083V	5.082V	3.305V	5.063V	193.272				40.35°C	115.19V
4	14.844A	3.939A	4.005A	1.585A	220.043	85.669%	1711	39.4	37.15°C	0.996
	12.048V	5.078V	3.296V	5.048V	256.853				41.27°C	115.10V
5	18.659A	4.941A	5.021A	1.789A	275.044	85.413%	1833	42.3	37.88°C	0.993
	12.034V	5.059V	3.287V	5.031V	322.018				42.68°C	115.06V
6	22.494A	5.957A	6.044A	1.995A	330.041	84.927%	2008	44.8	37.92°C	0.991
	12.013V	5.038V	3.277V	5.014V	388.616				43.58°C	115.06V
7	26.346A	6.979A	7.071A	2.202A	385.119	84.221%	2129	45.2	38.41°C	0.990
	11.994V	5.017V	3.268V	4.997V	457.273				44.78°C	114.93V
8	30.208A	8.003A	8.105A	2.410A	440.192	83.382%	2239	46.6	38.73°C	0.991
	11.977V	4.996V	3.258V	4.980V	527.919				45.73°C	115.09V
9	34.515A	8.519A	8.617A	2.414A	494.756	82.495%	2350	48.5	39.51°C	0.992
	11.944V	4.990V	3.249V	4.972V	599.737				47.36°C	115.07V
10	38.637A	9.032A	9.168A	3.038A	549.972	81.434%	2428	48.8	40.29°C	0.992
	11.912V	4.984V	3.240V	4.940V	675.359				48.65°C	115.10V
11	43.489A	9.013A	9.191A	3.042A	605.194	80.304%	2434	48.9	40.91°C	0.992
	11.853V	4.994V	3.232V	4.932V	753.625				49.79°C	115.09V
CL1	4.000A	13.003A	13.001A	0.001A	155.059	78.886%	1885	42.2	37.30°C	0.986
	12.434V	4.816V	3.284V	5.094V	196.562				42.34°C	115.20V

CL2	43.524A	1.000A	1.002A	0.001A	512.010	82.401%	2388	48.2	40.24°C	0.993
	11.568V	5.247V	3.266V	5.076V	621.364				48.78°C	115.10V

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	2.748A	1.961A	1.987A	0.982A	54.967	78.115%	1299	34.6	34.92°C	0.374
	12.140V	5.102V	3.321V	5.094V	70.367				37.01°C	230.55V
2	6.528A	2.951A	2.992A	1.182A	110.039	84.382%	1325	34.5	35.27°C	0.526
	12.121V	5.084V	3.312V	5.077V	130.406				37.77°C	230.68V
3	10.676A	3.445A	3.497A	1.383A	165.050	86.271%	1406	36.0	35.44°C	0.642
	12.083V	5.080V	3.303V	5.062V	191.316				38.36°C	230.90V
4	14.846A	3.940A	4.005A	1.586A	220.055	86.965%	1708	39.3	36.71°C	0.749
	12.047V	5.076V	3.296V	5.047V	253.038				40.12°C	230.89V
5	18.665A	4.946A	5.022A	1.790A	275.052	87.108%	1834	42.3	37.16°C	0.827
	12.030V	5.056V	3.286V	5.030V	315.761				41.06°C	230.86V
6	22.496A	5.957A	6.045A	1.995A	330.048	86.970%	2008	44.8	38.25°C	0.890
	12.013V	5.036V	3.276V	5.013V	379.497				42.65°C	230.77V
7	26.344A	6.980A	7.072A	2.202A	385.132	86.551%	2130	45.2	38.38°C	0.939
	11.996V	5.016V	3.266V	4.996V	444.979				43.57°C	230.73V
8	30.192A	8.003A	8.109A	2.412A	440.190	86.038%	2173	45.9	39.14°C	0.965
	11.984V	4.993V	3.256V	4.978V	511.625				44.85°C	230.62V
9	34.518A	8.520A	8.622A	2.415A	494.762	85.409%	2385	48.1	40.44°C	0.976
	11.943V	4.989V	3.248V	4.970V	579.283				47.08°C	230.54V
10	38.641A	9.035A	9.171A	3.038A	549.991	84.640%	2427	48.8	40.77°C	0.981
	11.912V	4.981V	3.238V	4.938V	649.802				48.68°C	230.55V
11	43.483A	9.016A	9.196A	3.043A	605.216	83.894%	2430	48.9	40.93°C	0.983
	11.855V	4.993V	3.230V	4.931V	721.406				49.79°C	230.51V
CL1	4.000A	13.002A	13.002A	0.001A	154.992	79.428%	1865	42.1	37.03°C	0.644
	12.434V	4.812V	3.283V	5.094V	195.134				41.17°C	230.70V

CL2	43.527A	1.001A	1.001A	1.000A	516.897	85.417%	2377	48.2	41.14°C	0.978
	11.564V	5.244V	3.262V	5.037V	605.148				48.75°C	230.49V

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	1.227A	0.484A	0.496A	0.195A	19.992	64.561%	1105	29.0	0.571
	12.103V	5.144V	3.328V	5.128V	30.966				115.32V
2	2.452A	0.974A	0.993A	0.391A	39.983	75.064%	1169	29.8	0.748
	12.104V	5.134V	3.325V	5.119V	53.265				115.32V
3	3.681A	1.464A	1.491A	0.587A	60.013	79.413%	1401	36.1	0.846
	12.106V	5.122V	3.322V	5.109V	75.571				115.31V
4	4.902A	1.958A	1.987A	0.785A	79.962	81.855%	1399	36.1	0.902
	12.110V	5.109V	3.318V	5.098V	97.687				115.29V

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	1.227A	0.485A	0.496A	0.195A	19.993	64.596%	1150	31.1	0.216
	12.098V	5.149V	3.329V	5.129V	30.951				230.41V
2	2.452A	0.974A	0.993A	0.391A	39.983	76.248%	1183	29.6	0.339
	12.104V	5.134V	3.325V	5.119V	52.438				230.47V
3	3.681A	1.465A	1.489A	0.587A	60.014	80.466%	1382	34.9	0.401
	12.107V	5.122V	3.322V	5.109V	74.583				230.53V
4	4.902A	1.957A	1.989A	0.785A	79.963	82.598%	1396	36.0	0.459
	12.110V	5.109V	3.318V	5.098V	96.810				230.57V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	11.80mV	10.00mV	11.10mV	13.10mV	Pass
20% Load	12.80mV	10.30mV	10.40mV	13.00mV	Pass
30% Load	13.30mV	8.70mV	10.10mV	13.30mV	Pass
40% Load	14.00mV	7.90mV	11.40mV	13.60mV	Pass
50% Load	20.40mV	9.90mV	13.40mV	17.70mV	Pass
60% Load	26.70mV	12.30mV	16.30mV	17.40mV	Pass
70% Load	33.30mV	14.10mV	16.50mV	20.30mV	Pass
80% Load	40.00mV	15.00mV	22.50mV	22.10mV	Pass
90% Load	54.20mV	17.60mV	21.10mV	25.00mV	Pass
100% Load	79.20mV	24.90mV	22.60mV	29.50mV	Pass
110% Load	108.50mV	33.50mV	23.60mV	33.30mV	Pass
Crossload1	19.20mV	17.10mV	27.10mV	23.30mV	Pass
Crossload2	87.20mV	22.90mV	16.90mV	24.60mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	13.00mV	9.60mV	12.80mV	12.90mV	Pass
20% Load	13.00mV	9.50mV	11.40mV	13.10mV	Pass
30% Load	13.60mV	9.80mV	10.70mV	14.00mV	Pass
40% Load	14.20mV	8.70mV	9.80mV	14.00mV	Pass
50% Load	16.00mV	8.60mV	10.50mV	15.20mV	Pass
60% Load	17.80mV	9.10mV	10.00mV	14.80mV	Pass
70% Load	21.40mV	9.90mV	10.50mV	17.50mV	Pass
80% Load	33.00mV	12.40mV	16.90mV	23.00mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	48.60mV	16.00mV	16.70mV	23.20mV	Pass
100% Load	65.80mV	21.20mV	20.30mV	30.40mV	Pass
110% Load	82.50mV	25.50mV	22.40mV	29.30mV	Pass
Crossload1	23.80mV	17.00mV	26.20mV	23.80mV	Pass
Crossload2	70.10mV	18.50mV	14.90mV	24.00mV	Pass

The results above are not used in the certification process

Gigabyte P550B

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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