Gamer Storm PF500X

Serial Number -

Lab ID GA50002734

Certification ID 252734

Test Result Report ID: 25PS2734A

Certificate Issue Date: Feb 5, 2025

230V

Scheme: ETA-EMI PSU



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	Gamer Storm
Model	PF500X
OEM/ODM	CE-Link
Serial Number	-
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	200-240
Rated Current (Arms)	5
Rated Frequency (Hz)	50-60

Rated Power (W)	500
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fixed cables
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	120mm Fluid Dynamic Bearing Fan (HA1225M12F-Z)
Semi-Passive Operation	✗
Cybenetics Testing Information	
Lab ID	GA50002734
Date of receipt	Jan 23, 2025
Testing Date	Feb 4, 2025
Report Issued Date	Feb 5, 2025
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors(Non-accredited measurements)

Captive Cables				
Description	**Cable Count**	**Connector Count (Total)**	**Gauge**	In Cable Capacitors
ATX connector 20+4 pin (550mm)	1	1	18-22AWG	No
4+4 pin EPS12V (610mm)	1	1	18AWG	No
6+2 pin PCIe (510mm)	1	1	18AWG	No
SATA (455mm+155mm+155mm) / 4-pin Molex (+150mm)	2	6 / 2	18AWG	No

Protection Features(Manufacturer)

Over Power Protection	✓
Over Current (+12V) Protection	?

Over Temperature Protection	✓
Short Circuit Protection	✓
Surge Protection	✓
Inrush Current Protection	✓
Fan Failure Protection	✗

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	16	16	41.6	3	0.3
	Watts	100		499.2	15	3.6
Total Max. Power (W)		500				

Parts Description

General Data	
Manufacturer (OEM)	CE LINK
PCB Type	Single-Sided
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	1x NTC Thermistor M72 1.3D15 (1.3 ohm)
Bridge Rectifier(s)	1x GBU406 (600V, 4A @ 100°C)
APFC MOSFETs	1x Lonten LND13N50 (500V, 8A @ 100°C, Rds(on): 0.46Ohm)
APFC Boost Diode	1x Good-Ark MUR860F (600V, 8A @ 105°C)
Bulk Cap(s)	1x Teapo (420V, 330uF, 6-10,000h @ 105°C, TC)
Main Switchers	2x Lonten LND13N50 (500V, 8A @ 100°C, Rds(on): 0.46Ohm)
PFC/PWM Controller	Champion CM6800UX

Topology	Primary side: APFC, Double Forward Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETs	2x HB043N06GC
5V & 3.3V	DC-DC Converters: 4x SLD3090T PWM Controller(s): 2x Anpec APW7164
Filtering Capacitors	Electrolytic: 12x Teapo (1-3,000h @ 105°C, SC) 1x Toshincon (@105°C, UCE) Polymer: 2x
Supervisor IC	IN1S3151-SAG
Fan Model	Hong Hua HA1225M12F-Z (120mm, 12V, 0.45A, Fluid Dynamic Bearing Fan)
5VSB	
Rectifier	1x Chongqing Pingwei PS1045L (45V, 10A) SBR
Standby PWM Controller	Esthome EST.2915HP

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	✓
ALPM (Alternative Low Power Mode) compatible	✓

Performance Summary 230V

Accredited	
Average Efficiency (>1450 load combinations)	86.743%
Average Noise Output (>1450 Load Combinations)	20.44dBA
Average PF (>1450 Load Combinations)	0.960
Efficiency With 10W (≤500W) or 2% (>500W) Load	57.649%
Standby Power Consumption	0.1559W
Non-Accredited	

12V Ripple (Full Load)		47.10mV
5V Ripple (Full Load)		27.94mV
3.3V Ripple (Full Load)		24.23mV
5VSB Ripple (Full Load)		22.06mV
12V Load Regulation		0.42%
5V Load Regulation		3.11%
3.3V Load Regulation		4.71%
5VSB Load Regulation		6.18%
Inrush Current		184.600A
12V Transient Response (150%)		11.66V
5V Transient Response (150%)		4.888V
3.3V Transient Response (150%)		3.166V
5VSB Transient Response (150%)		4.951V
Hold-Up Time & PWR_OK Signal		12.20ms
AC Loss to PWR_OK Hold Up Time		10.40ms
PWR_OK Inactive to DC Loss Delay		1.80ms
PSU Timings: T1 (20% / 100%)	45.0ms	44.0ms
PSU Timings: T3 (20% / 100%)	126.0ms	126.0ms
12V OCP (31.5°C / 43.2°C)	55.00A (132.21%), 11.793V *High Ripple (183.66mV), Stopped	54.40A (130.77%), 11.895V *High Ripple (182.95mV), Stopped
5V OCP (31.5°C / 43.2°C)	26.367A (164.79%), 4.98V	26A (162.50%), 4.978V
3.3V OCP (31.5°C / 43.2°C)	26.9A (168.13%), 3.278V	27A (168.75%), 3.276V
5VSB OCP (31.5°C / 43.2°C)	5.4A (180.00%), 4.868V	5.4A (180.00%), 4.868V
OPP (30.93°C / 40.01°C)	126.52%	126.52%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	12.2
AC Loss to PWR_OK Hold Up Time (ms)	10.4
PWR_OK Inactive to DC Loss Delay (ms)	1.8

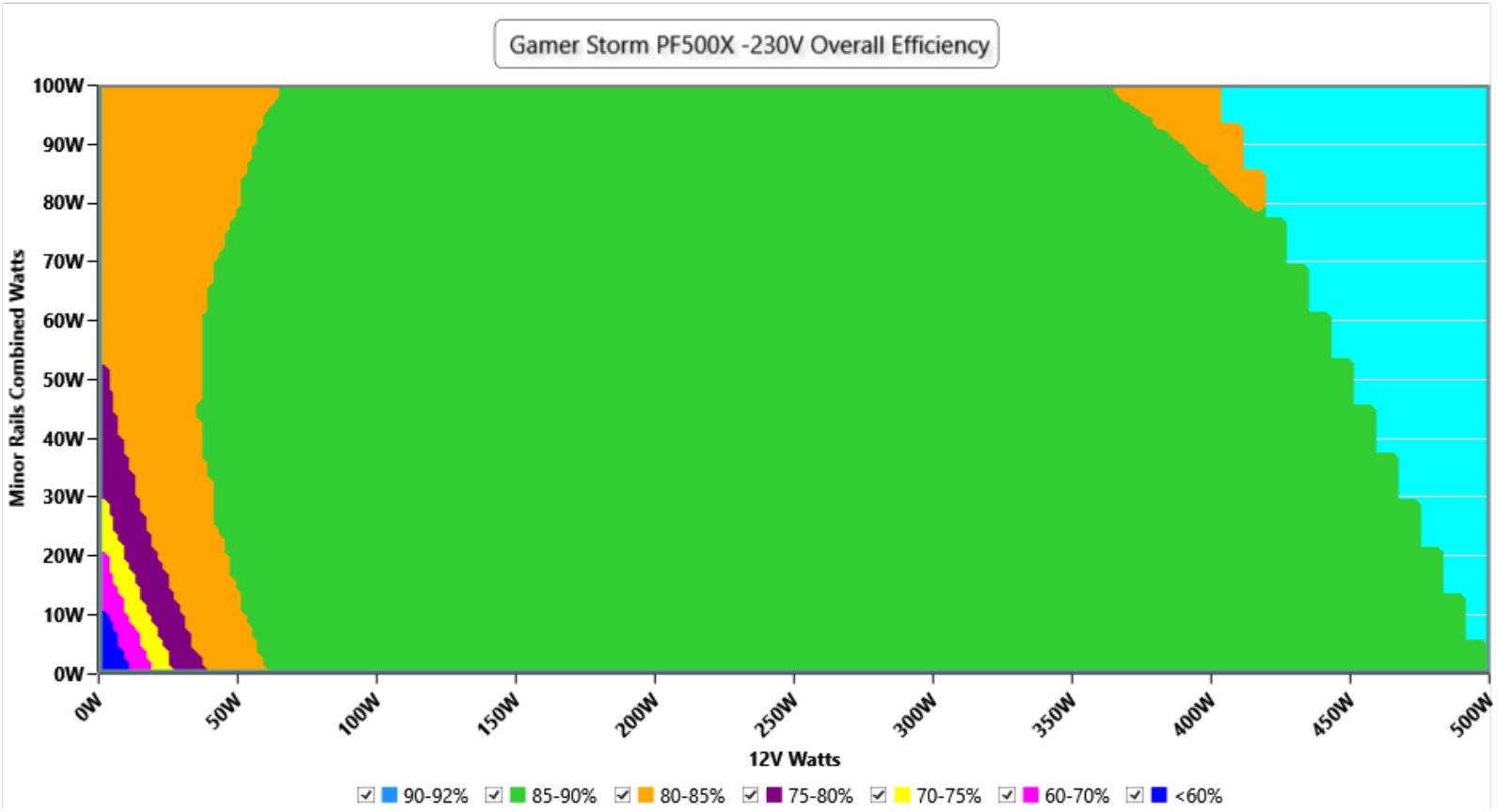
Stromverbrauch im Ruhezustand

Tables 230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	231.00 V	230.89 V	227.70 V	231.07 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	49.99 Hz	49.50 Hz	50.01 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.417	1.416	1.340	1.419	1.490	PASS
Mains Voltage THD:	0.17 %	0.14 %	N/A	0.27 %	2.00 %	PASS
Real Power:	0.156 W	0.113 W	N/A	0.219 W	N/A	N/A
Apparent Power:	16.194 W	15.972 W	N/A	16.421 W	N/A	N/A
Power Factor:	0.008	N/A	N/A	N/A	N/A	N/A

Efficiency Graph

230V

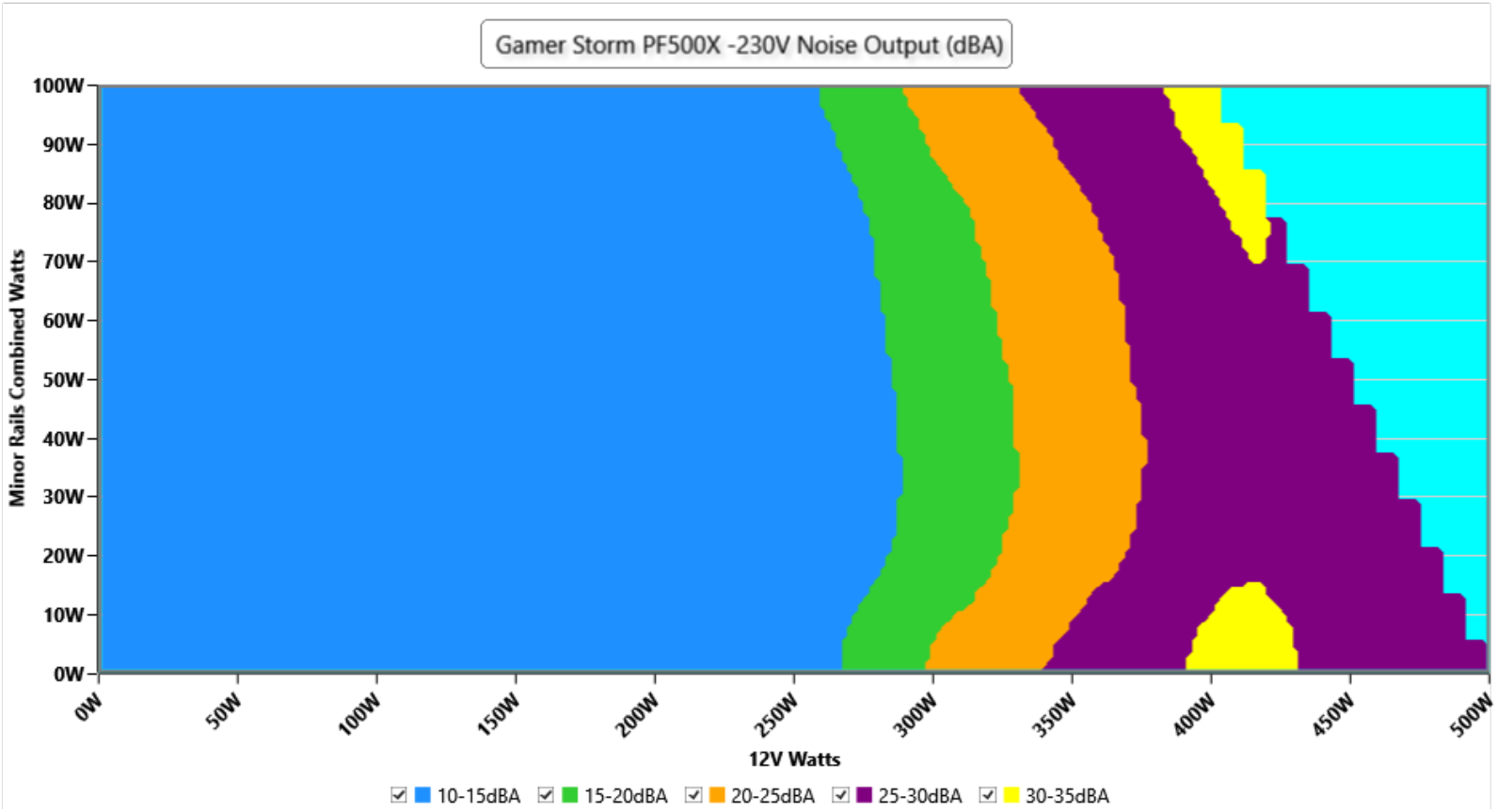


INFO

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

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

Noise under high ambient temperature (indicative)

230V

Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	667 RPM · 13.8 dB(A) · 30.0 °C	685 RPM · 14.4 dB(A) · 40.2 °C	**+0.6 dB(A)**
20%	671 RPM · 14.0 dB(A) · 30.2 °C	690 RPM · 14.5 dB(A) · 40.6 °C	**+0.5 dB(A)**
50%	682 RPM · 14.3 dB(A) · 30.9 °C	842 RPM · 19.8 dB(A) · 42.2 °C	**+5.5 dB(A)**
100%	1176 RPM · 29.4 dB(A) · 30.5 °C	1801 RPM · 41.0 dB(A) · 45.6 °C	**+11.6 dB(A)**

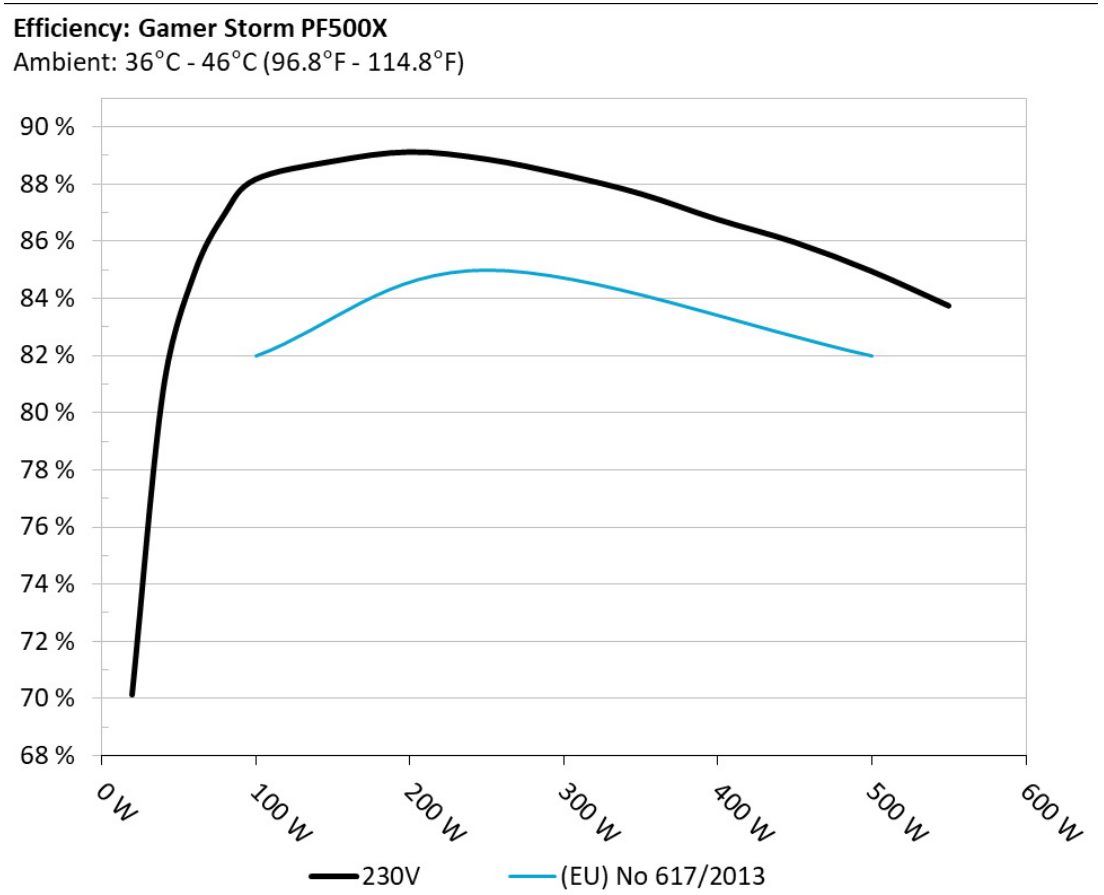
INFO

Fan speed, noise and the measured intake temperature at 10, 20, 50 and 100 % load, from the two load regulation tests: at normal ambient (about 30-32 °C) and at high ambient (about 40-47 °C). These are stabilized readings at fixed loads, not averages over the certification sweep, so they are indicative of how the fan behaves when it is hot. "<6.0" is the floor of our sound meter: the fan is stopped or too quiet to measure (the fan speed column says which); with the fan stopped, the intake sensor can read higher than the chamber air.

Informational. Not part of the ETA or LAMBDA rating.

Indicative Performance

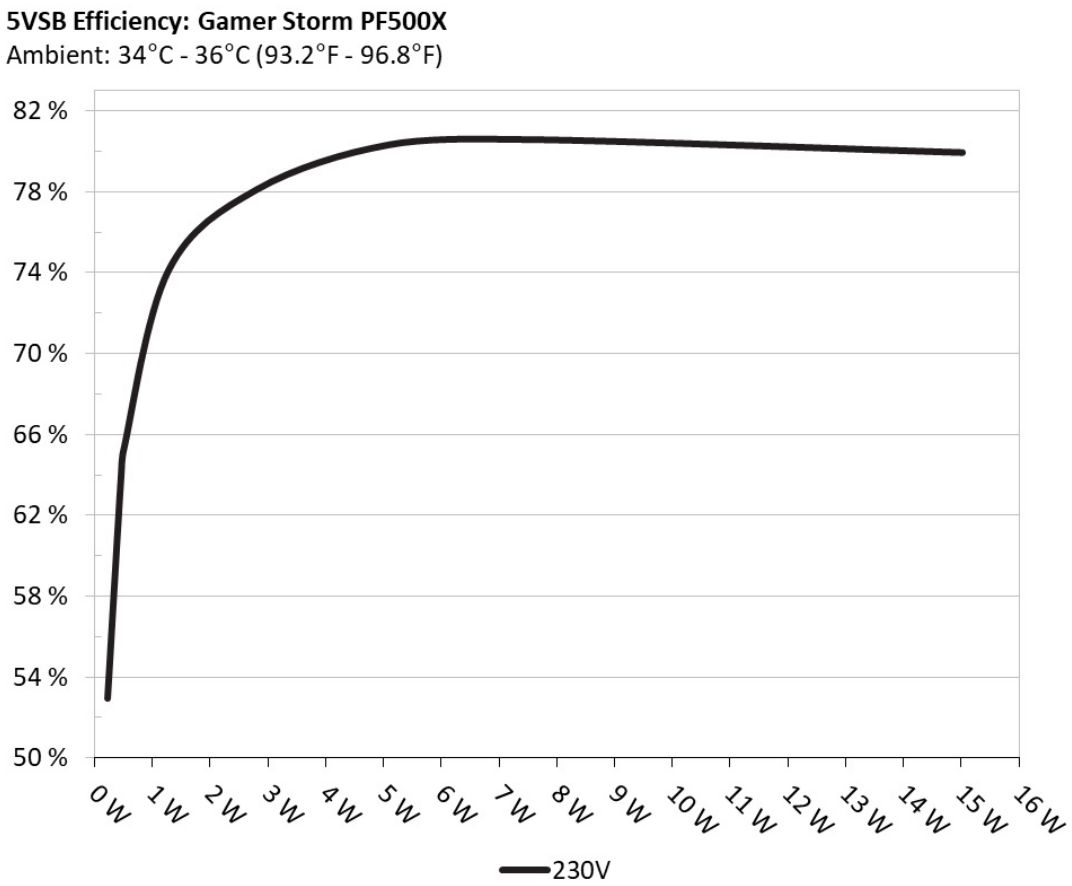
Efficiency under high ambient temperature



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) 230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	**0.045A**	0.232W	52.96%	0.025
	5.152V	0.441W		229.88V

2	**0.09A**	0.464W	63.922%	0.042
	5.15V	0.728W		229.89V
3	**0.55A**	2.82W	78.123%	0.175
	5.128V	3.609W		229.88V
4	**1A**	5.107W	80.327%	0.245
	5.106V	6.359W		229.88V
5	**1.5A**	7.624W	80.577%	0.293
	5.082V	9.46W		229.88V
6	**3A**	15.025W	79.939%	0.357
	5.009V	18.794W		229.88V

Protection Features

OCP (Normal @ 31.5°C)	12V: 55.00A (132.21%), 11.793V *High Ripple (183.66mV), Stopped 5V: 26.367A (164.79%), 4.98V 3.3V: 26.9A (168.13%), 3.278V 5VSB: 5.4A (180.00%), 4.868V
OCP (Hot @ 43.2°C)	12V: 54.40A (130.77%), 11.895V *High Ripple (182.95mV), Stopped 5V: 26A (162.50%), 4.978V 3.3V: 27A (168.75%), 3.276V 5VSB: 5.4A (180.00%), 4.868V
OPP (Normal @ 30.9°C)	632.60W (126.52%)
OPP (Hot @ 40.0°C)	632.59W (126.52%)
OTP	✓ (120°C @ Secondary Side)
SCP	12V to Earth: ✓ 5V to Earth: ✓ 3.3V to Earth: ✓ 5VSB to Earth: ✓ -12V to Earth: ✓
PWR_OK	Accurate but lower than 11.0ms
NLO	✓
Fan Failure Protection	✗
SIP	Surge: MOV Inrush: NTC

Supplementary Tests (For Reference)

Typical 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%	**2.346A**	**1.974A**	**1.975A**	**0.982A**	49.994	82.047%	685	14.4	40.17°C	0.857
	12.102V	5.066V	3.342V	5.091V	60.933				40.29°C	229.88V
20%	**5.706A**	**2.97A**	**2.976A**	**1.184A**	99.923	87.337%	690	14.5	40.63°C	0.924
	12.098V	5.05V	3.326V	5.065V	114.411				41.52°C	229.88V
30%	**9.419A**	**3.474A**	**3.486A**	**1.389A**	149.957	88.793%	695	14.7	41.02°C	0.949
	12.094V	5.037V	3.313V	5.042V	168.883				42.57°C	229.87V
40%	**13.135A**	**3.981A**	**4A**	**1.595A**	199.994	89.119%	699	14.9	41.6°C	0.961
	12.089V	5.024V	3.3V	5.017V	224.41				43.75°C	229.86V
50%	**16.503A**	**4.993A**	**5.024A**	**1.804A**	249.942	88.866%	842	19.8	42.19°C	0.969
	12.085V	5.007V	3.284V	4.991V	281.258				45.33°C	229.85V
60%	**19.881A**	**6.011A**	**6.06A**	**2A**	299.903	88.331%	1088	27.2	42.54°C	0.971
	12.080V	4.991V	3.268V	4.964V	339.521				46.37°C	229.84V
70%	**23.263A**	**7.038A**	**7.106A**	**2.229A**	350.006	87.652%	1264	31.7	43.15°C	0.977
	12.075V	4.974V	3.251V	4.935V	399.314				47.33°C	229.83V
80%	**26.638A**	**8.068A**	**8.161A**	**2.341A**	399.4	86.764%	1457	35.4	43.51°C	0.98
	12.070V	4.957V	3.234V	4.912V	460.331				47.85°C	229.82V
90%	**30.432A**	**8.597A**	**8.694A**	**2.454A**	449.608	85.963%	1616	38	44.29°C	0.981
	12.064V	4.942V	3.22V	4.891V	523.028				49.09°C	229.81V
100%	**33.977A**	**9.132A**	**9.268A**	**3.098A**	499.252	84.955%	1801	41	45.58°C	0.982
	12.054V	4.927V	3.205V	4.841V	587.667				50.65°C	229.8V
110%	**37.469A**	**10.182A**	**10.449A**	**3.112A**	549.46	83.744%	1836	41.6	46.03°C	0.982
	12.042V	4.909V	3.187V	4.821V	656.124				53.17°C	229.79V
CL1	**0.114A**	**12.03A**	**12.097A**	**0A**	101.283	80.767%	762	16.9	40.16°C	0.931
	12.101V	5.003V	3.282V	5.087V	125.401				44.92°C	229.87V
CL2	**0.114A**	**15.912A**	**0A**	**0A**	81.374	80.162%	687	14.5	40.82°C	0.914
	12.103V	5.027V	3.313V	5.112V	101.512				44.49°C	229.87V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL3	**0.114A**	**0A**	**15.956A**	**0A**	54.19	74.475%	687	14.5	40.2°C	0.88
	12.103V	5.044V	3.31V	5.11V	72.762				42.78°C	229.88V
CL4	**41.529A**	**0A**	**0A**	**0.002A**	499.915	86.345%	1751	39.6	45.42°C	0.982
	12.038V	4.985V	3.259V	5.029V	578.982				49.52°C	229.8V

The results above are not used in the certification process

Light 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	**1.226A**	**0.492A**	**0.492A**	**0.195A**	19.992	70.154%	669	13.8	36.2°C	0.721
	12.105V	5.08V	3.356V	5.14V	28.498				36°C	229.91V
40W	**2.700A**	**0.69A**	**0.689A**	**0.292A**	39.991	80.746%	681	14.3	37.01°C	0.828
	12.102V	5.075V	3.351V	5.13V	49.529				36.38°C	229.9V
60W	**4.176A**	**0.887A**	**0.887A**	**0.391A**	59.991	84.826%	685	14.4	38.16°C	0.877
	12.101V	5.069V	3.346V	5.12V	70.724				37.82°C	229.89V
80W	**5.646A**	**1.086A**	**1.086A**	**0.489A**	79.931	86.952%	687	14.5	39.48°C	0.906
	12.099V	5.065V	3.341V	5.11V	91.922				40.51°C	229.88V

The results above are not used in the certification process

Ripple Measurements 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	14.89mV	14.87mV	14.58mV	12.38mV	Pass
20% Load	16.68mV	15.22mV	13.76mV	12.53mV	Pass
30% Load	18.42mV	16.45mV	15.19mV	14.32mV	Pass
40% Load	20.11mV	16.81mV	15.65mV	14.68mV	Pass
50% Load	22.05mV	17.52mV	15.70mV	15.91mV	Pass
60% Load	26.09mV	18.96mV	17.29mV	16.32mV	Pass
70% Load	27.88mV	19.46mV	18.93mV	18.26mV	Pass
80% Load	32.39mV	21.71mV	21.43mV	19.39mV	Pass
90% Load	36.73mV	22.84mV	23.63mV	20.61mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
100% Load	47.10mV	27.94mV	24.23mV	22.06mV	Pass
110% Load	51.44mV	27.85mV	28.29mV	23.70mV	Pass
Crossload1	19.70mV	23.38mV	24.05mV	16.18mV	Pass
Crossload2	16.68mV	22.48mV	18.52mV	15.86mV	Pass
Crossload3	17.65mV	18.34mV	21.33mV	15.29mV	Pass
Crossload4	48.95mV	21.77mV	16.98mV	23.21mV	Pass

The results above are not used in the certification process

Gamer Storm PF500X



Top side



Power specifications label

Cybenetics bietet freiwillige Zertifizierungsprogramme für Netzteile – ETA für Effizienz, LAMBDA für Lautstärke und SAFE für Sicherheit und korrekten Betrieb – sowie für Kühlprodukte mit DELTA für die Schalldämmung von Gehäusen und PHI für Luftstrom und statischen Druck von Lüftern

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