Anex

XPG Pylon 650W (#2)

Lab ID#: AD65001779
Receipt Date: Jan 8, 2021
Test Date: Jan 19, 2021

Report: 21PS1779A
Report Date: Jan 27, 2021

DUT INFORMATION

Brand	XPG
Manufacturer (OEM)	Channel Well Technology
Series	Pylon
Model Number	PYLON650B-BKCGB
Serial Number	4K2980397811
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	50-60
Rated Power (W)	650
Type	ATX12V
Cooling	120mm Fluid Dynamic Bearing Fan (HA1225H12F-Z)
Semi-Passive Operation	✗
Cable Design	Fixed cables

TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Keysight AC6804B
Power Analyzers	N4L PPA1530 x2
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2
Tachometer	UNI-T UT372 x2
Digital Multimeter	Keysight U1273AX, Fluke 289, Keithley 2015 - THD
UPS	CyberPower OLS3000E 3kVA x2
Transformer	3kVA x2

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Anex

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RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
ALPM (Alternative Low Power Mode) compatible	✓

115V

Average Efficiency	85.443%
Efficiency With 10W (≤500W) or 2% (>500W)	65.084
Average Efficiency 5VSB	80.075%
Standby Power Consumption (W)	0.0429625
Average PF	0.985
Avg Noise Output	33.42 dB(A)
Efficiency Rating (ETA)	SILVER
Noise Rating (LAMBDA)	Standard++

230V

Average Efficiency	87.565%
Average Efficiency 5VSB	78.679%
Standby Power Consumption (W)	0.0885485
Average PF	0.960
Avg Noise Output	32.44 dB(A)
Efficiency Rating (ETA)	SILVER
Noise Rating (LAMBDA)	Standard++

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	54	2.5	0.3
	Watts	110		648	12.5	3.6
Total Max. Power (W)		650				

HOLD-UP TIME & POWER OK SIGNAL (230V)

Hold-Up Time (ms)	14.7
AC Loss to PWR_OK Hold Up Time (ms)	12.9
PWR_OK Inactive to DC Loss Delay (ms)	1.8

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CABLES AND CONNECTORS

Native Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Caps
ATX connector 20+4 pin (660mm)	1	1	18-22AWG	No
8 pin EPS12V (650mm) / 4+4 pinEPS12V (+150mm)	1	1 / 1	18AWG	No
6+2 pin PCIe (560mm+150mm)	2	4	18AWG	No
SATA (560mm+150mm+150mm) / 4-pin Molex (+150mm)	2	6 / 2	18AWG	No
SATA (560mm+150mm) / 4-pin Molex (+150mm) / FDD (+150mm)	1	2 / 1 / 1	18-20AWG	No

Modular Cables

AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

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General Data	-
Manufacturer (OEM)	CWT
PCB Type	Single Sided
Primary Side	**-**
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x CAP200DG (Discharge IC)
Inrush Protection	NTC Thermistor SCK - 2R58 (2.5 Ohm)
Bridge Rectifier(s)	1x GBU1506 (600V, 15A @ 100°C)
APFC MOSFETs	2x Great Power GP18S50G (500V, 18A, Rds(on): 0.19Ohm)
APFC Boost Diode	1x On Semiconductor FFSP0665A (650V, 6A @ 153°C)
Bulk Cap(s)	1x Nippon Chemi-Con (400V, 470uF, 2,000h @ 105°C, KMW)
Main Switchers	2x Silan Microelectronics SVF20N50F (500V, 12.6A @ 100°C, Rds(on): 0.27Ohm)
PFC/PWM Combo Controller	Champion CM6800TX & Champion CM03X
Topology	Primary side: APFC, Double Forward Secondary side: Passive Rectification (12V) & DC-DC converters (5V & 3.3V)
Secondary Side	**-**
+12V	4x PFC PFR30L60CT SBR (60V, 30A)
5V & 3.3V	4x Sync Power SPN3006 (30V, 57A @ 100°C, Rds(on): 5.5mOhm) PWM Controller: ANPEC APW7159C
Filtering Capacitors	Electrolytic: 5x Elite (2-5,000h @ 105°C, ED), 5x Elite (2-5,000h @ 105°C, EK), 4x Elite (4-10,000h @ 105°C, EY), 2x Elite (3-6,000h @ 105°C, EV), 1x Elite (3-6,000h @ 105°C, EG), 2x Elite (2,000h @ 105°C, PF) Polymer: 2x Elite
Supervisor IC	IN1S429I - DCG
Fan Model	Hong Hua HA1225H12F-Z (120mm, 12V, 0.58A, Fluid Dynamic Bearing Fan)
5VSB Circuit	**-**
Standby PWM Controller	Power Integrations TNY287PG

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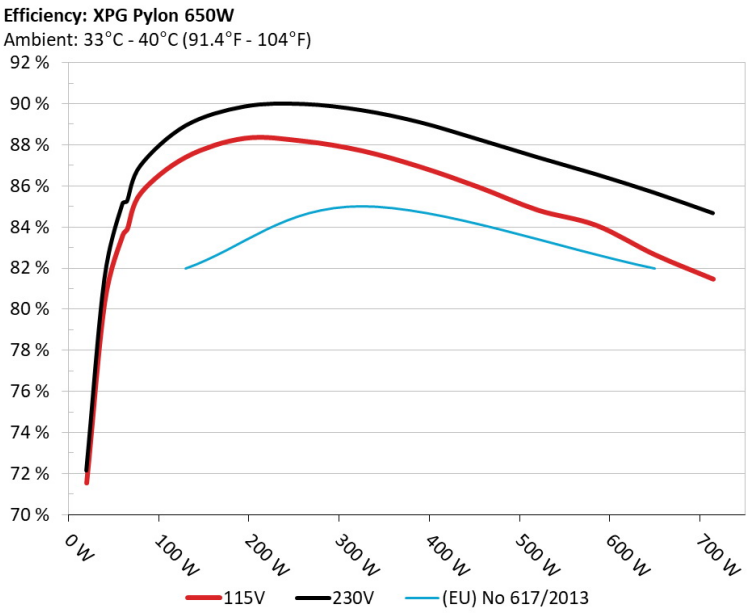
XPG Pylon 650W (#2)

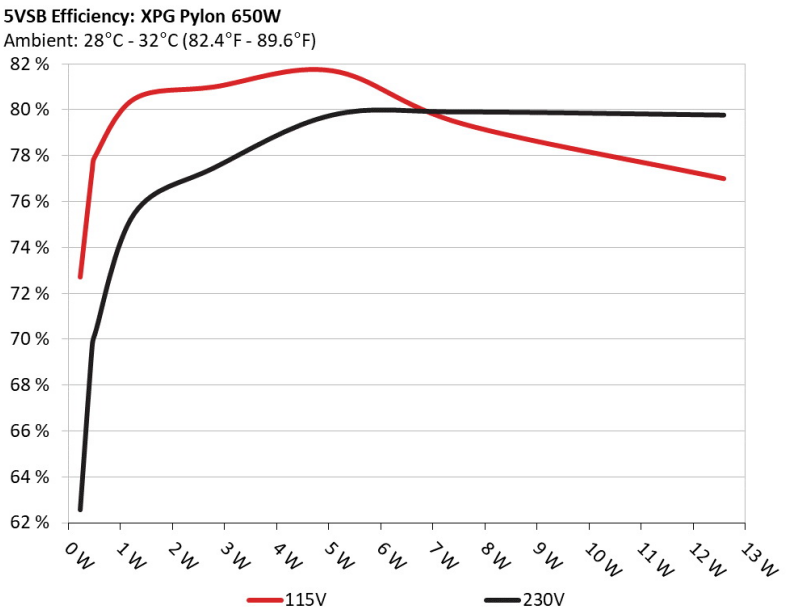
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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

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XPG Pylon 650W (#2)

5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.229	72.698%	0.034
	5.088V	0.315		115.17V
2	0.090A	0.458	77.365%	0.062
	5.087V	0.592		115.17V
3	0.550A	2.792	80.998%	0.260
	5.078V	3.447		115.17V
4	1.000A	5.069	81.705%	0.340
	5.069V	6.204		115.17V
5	1.500A	7.587	79.379%	0.387
	5.058V	9.558		115.17V
6	2.499A	12.591	76.995%	0.432
	5.038V	16.353		115.17V

5VSB EFFICIENCY -230V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.229	62.568%	0.013
	5.088V	0.366		230.32V
2	0.090A	0.458	69.711%	0.023
	5.087V	0.657		230.32V
3	0.550A	2.792	77.448%	0.114
	5.078V	3.605		230.32V
4	1.000A	5.069	79.751%	0.180
	5.069V	6.356		230.31V
5	1.500A	7.587	79.888%	0.234
	5.058V	9.497		230.32V
6	2.499A	12.593	79.753%	0.300
	5.039V	15.790		230.31V

Anex

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115V

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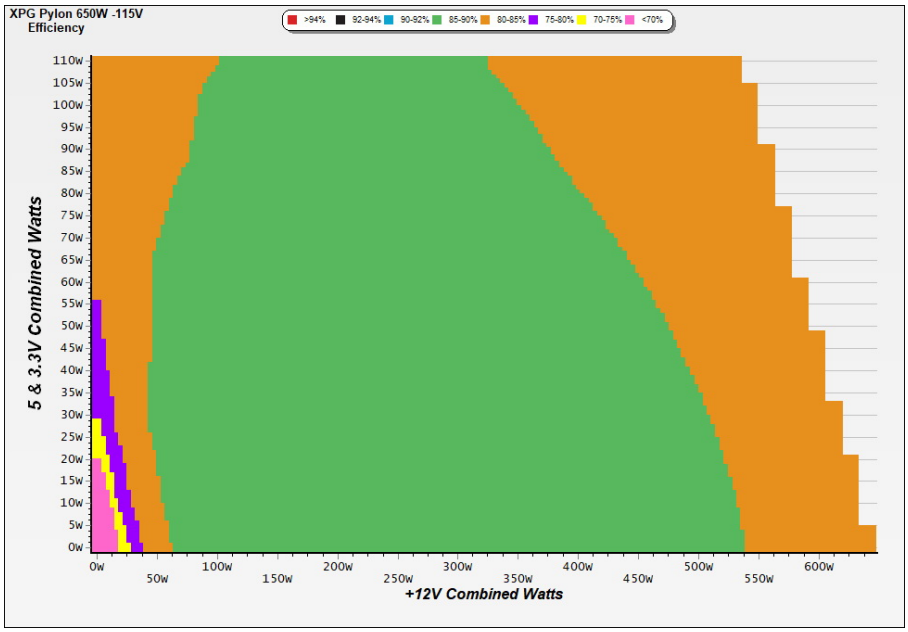
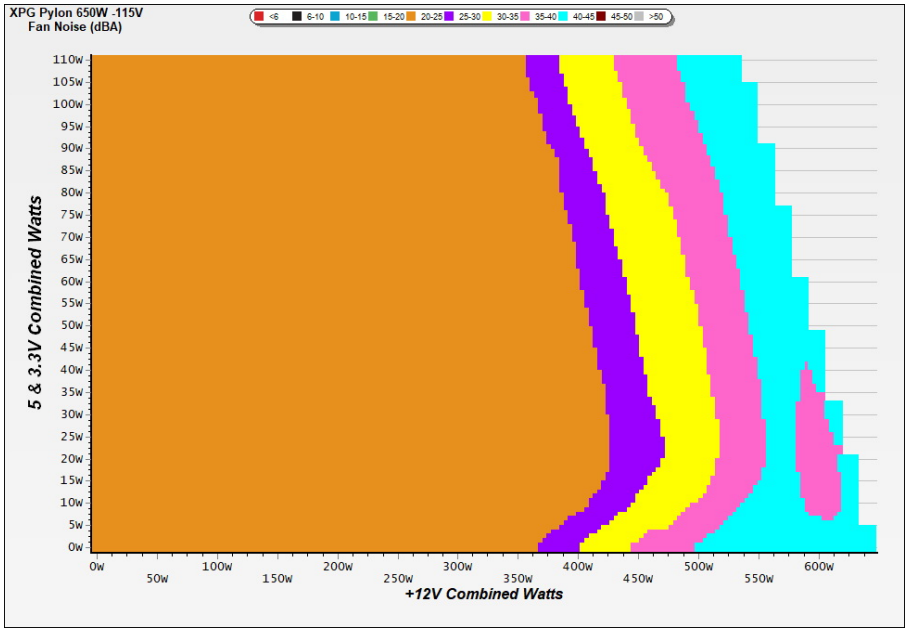
EFFICIENCY GRAPH 115V



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

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

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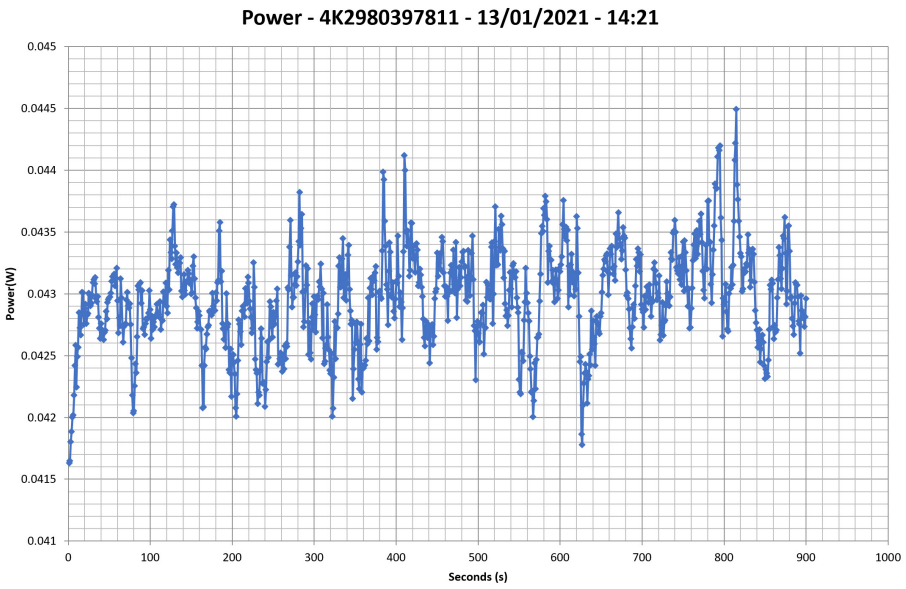
VAMPIRE POWER -115V



INFO

This graph is generated by the PPA Standby Power Analysis software which takes full control of the power analyzer during the whole procedure. This application features all of the EN50564 & IEC62301 test limits for standby power software testing

Anex

XPG Pylon 650W (#2)

10-110% 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	3.556A	1.983A	1.983A	0.988A	64.950	83.894%	872	21.8	34.69°C	0.956
	12.193V	5.044V	3.324V	5.058V	77.419				38.96°C	115.16V
2	8.137A	2.976A	2.981A	1.189A	130.006	87.405%	876	21.7	35.60°C	0.976
	12.179V	5.042V	3.321V	5.046V	148.739				40.54°C	115.15V
3	13.065A	3.473A	3.480A	1.390A	195.002	88.319%	881	22.0	36.42°C	0.984
	12.166V	5.040V	3.319V	5.035V	220.794				41.84°C	115.15V
4	18.004A	3.970A	3.980A	1.592A	260.003	88.182%	884	22.5	36.60°C	0.987
	12.153V	5.038V	3.317V	5.024V	294.848				43.29°C	115.15V
5	22.613A	4.966A	4.979A	1.796A	325.033	87.709%	888	23.1	37.30°C	0.990
	12.140V	5.036V	3.314V	5.013V	370.582				45.07°C	115.15V
6	27.173A	5.959A	5.978A	2.000A	389.279	86.930%	892	22.9	38.33°C	0.991
	12.125V	5.036V	3.312V	4.999V	447.807				46.96°C	115.15V
7	31.826A	6.955A	6.979A	2.205A	454.594	85.935%	1091	28.0	38.98°C	0.992
	12.112V	5.035V	3.310V	4.988V	529.000				47.97°C	115.14V
8	36.486A	7.953A	7.980A	2.411A	519.852	84.823%	1466	36.4	39.59°C	0.993
	12.099V	5.032V	3.307V	4.976V	612.870				49.50°C	115.14V
9	41.540A	8.452A	8.469A	2.412A	584.610	84.084%	1625	38.7	39.63°C	0.993
	12.088V	5.027V	3.305V	4.973V	695.270				50.15°C	115.12V
10	46.571A	8.951A	8.990A	2.519A	649.384	82.656%	2343	46.5	40.06°C	0.994
	12.072V	5.027V	3.302V	4.961V	785.647				51.82°C	115.11V
11	51.998A	8.955A	8.997A	2.522A	714.228	81.467%	2343	46.5	40.19°C	0.994
	12.059V	5.025V	3.300V	4.954V	876.703				52.89°C	115.10V
CL1	0.116A	12.996A	12.996A	0.000A	110.033	80.722%	903	22.8	37.77°C	0.974
	12.176V	5.043V	3.315V	5.056V	136.311				45.99°C	115.15V
CL2	53.980A	1.001A	1.000A	1.000A	665.156	83.185%	2223	46.1	40.88°C	0.994
	12.075V	5.032V	3.309V	5.001V	799.609				52.46°C	115.10V

Anex

XPG Pylon 650W (#2)

20-80W LOAD TESTS 115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.215A	0.495A	0.497A	0.197A	19.979	71.543%	866	22.0	0.882
	12.202V	5.048V	3.328V	5.080V	27.926				115.15V
2	2.432A	0.991A	0.993A	0.394A	39.968	80.347%	864	22.1	0.936
	12.198V	5.046V	3.326V	5.074V	49.744				115.15V
3	3.654A	1.486A	1.488A	0.592A	60.000	83.610%	867	21.9	0.953
	12.194V	5.044V	3.325V	5.068V	71.762				115.15V
4	4.869A	1.983A	1.985A	0.790A	79.951	85.653%	872	21.8	0.966
	12.190V	5.044V	3.324V	5.061V	93.343				115.15V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	9.00mV	39.50mV	11.60mV	12.10mV	Pass
20% Load	11.50mV	15.00mV	10.50mV	8.00mV	Pass
30% Load	14.90mV	45.10mV	14.60mV	15.30mV	Pass
40% Load	11.20mV	13.90mV	10.90mV	8.20mV	Pass
50% Load	14.70mV	19.90mV	14.00mV	9.30mV	Pass
60% Load	20.60mV	23.30mV	17.00mV	11.30mV	Pass
70% Load	21.70mV	11.50mV	11.10mV	12.70mV	Pass
80% Load	27.20mV	14.40mV	14.60mV	13.40mV	Pass
90% Load	34.20mV	14.10mV	17.00mV	15.10mV	Pass
100% Load	56.70mV	18.40mV	19.50mV	14.90mV	Pass
110% Load	74.90mV	20.80mV	21.80mV	16.80mV	Pass
Crossload1	14.50mV	15.00mV	18.80mV	8.00mV	Pass
Crossload2	61.00mV	36.80mV	26.20mV	12.90mV	Pass

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XPG Pylon 650W (#2)

230V

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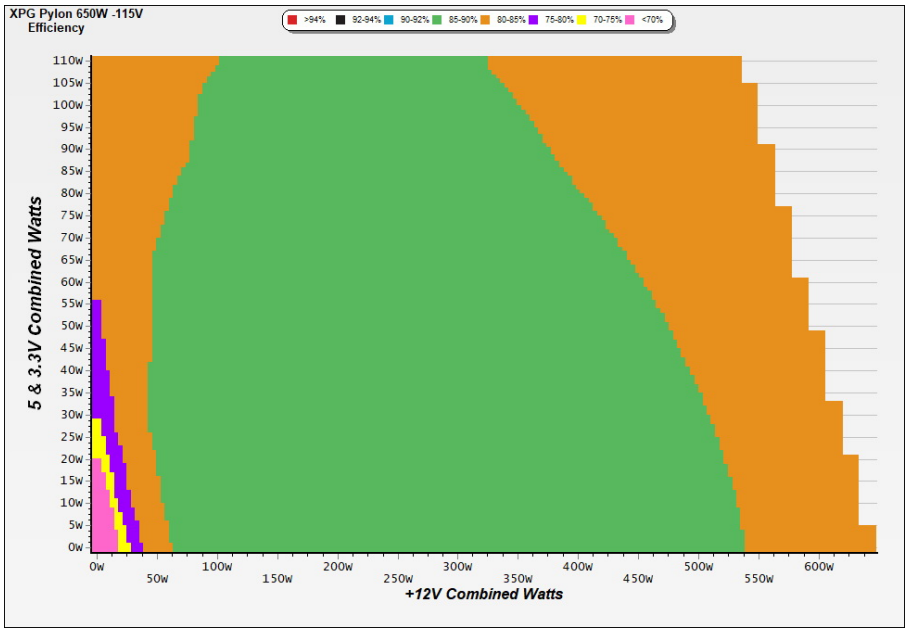
EFFICIENCY GRAPH 230V



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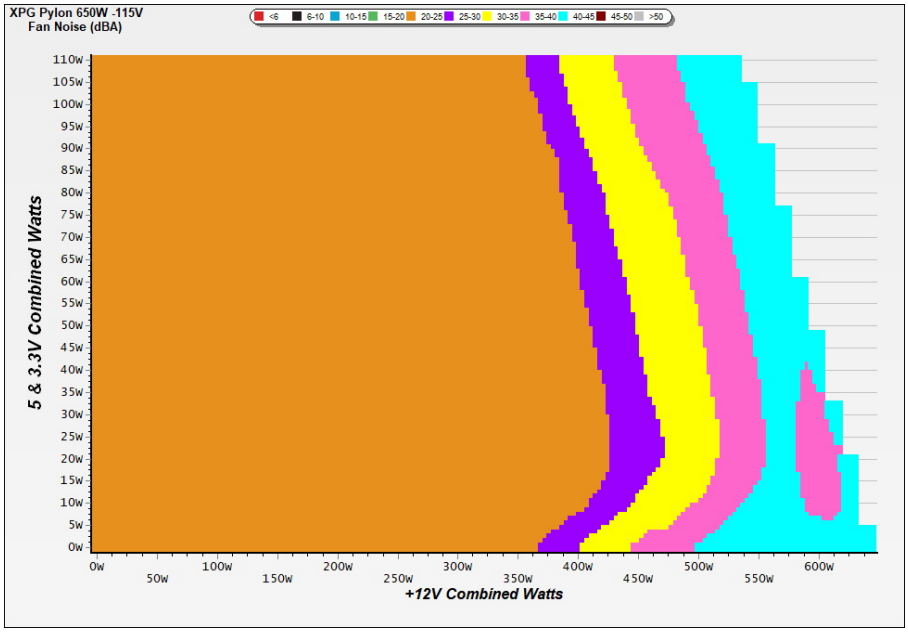
NOISE GRAPH 230V



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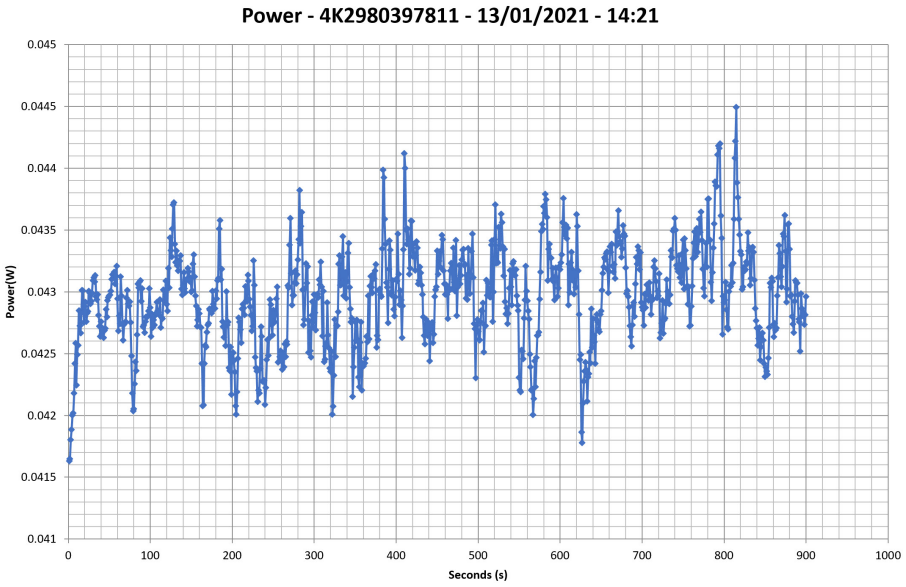
VAMPIRE POWER -230V



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10-110% 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
1	3.556A	1.983A	1.983A	0.988A	64.949	85.249%	871	21.8	34.94°C	0.855
	12.193V	5.044V	3.324V	5.058V	76.187				39.41°C	230.32V
2	8.137A	2.976A	2.981A	1.189A	130.006	88.942%	877	21.8	35.60°C	0.932
	12.179V	5.041V	3.322V	5.046V	146.170				40.83°C	230.32V
3	13.065A	3.473A	3.480A	1.390A	195.000	89.869%	883	22.1	36.80°C	0.957
	12.166V	5.040V	3.319V	5.035V	216.983				42.51°C	230.32V
4	18.002A	3.970A	3.980A	1.592A	259.999	89.992%	886	22.7	37.37°C	0.969
	12.154V	5.038V	3.317V	5.025V	288.914				43.67°C	230.32V
5	22.613A	4.965A	4.981A	1.795A	325.031	89.690%	887	22.9	37.59°C	0.976
	12.140V	5.036V	3.314V	5.013V	362.392				44.86°C	230.32V
6	27.166A	5.958A	5.978A	2.000A	389.227	89.107%	892	22.9	38.09°C	0.980
	12.126V	5.036V	3.313V	5.001V	436.807				46.21°C	230.32V
7	31.822A	6.954A	6.981A	2.204A	454.545	88.271%	1104	28.4	38.83°C	0.983
	12.112V	5.035V	3.310V	4.989V	514.943				47.52°C	230.32V
8	36.488A	7.952A	7.981A	2.411A	519.837	87.401%	1494	37.1	38.98°C	0.985
	12.098V	5.032V	3.307V	4.976V	594.774				48.79°C	230.32V
9	41.565A	8.450A	8.470A	2.414A	584.746	86.574%	1846	41.6	39.05°C	0.987
	12.084V	5.029V	3.304V	4.969V	675.433				49.63°C	230.31V
10	46.580A	8.953A	8.993A	2.520A	649.459	85.675%	2196	45.9	39.79°C	0.988
	12.071V	5.026V	3.302V	4.960V	758.051				51.27°C	230.31V
11	52.012A	8.956A	8.997A	2.524A	714.294	84.682%	2343	46.5	40.40°C	0.989
	12.057V	5.024V	3.300V	4.953V	843.497				52.99°C	230.31V
CL1	0.116A	12.998A	12.998A	0.000A	110.036	81.612%	905	22.8	37.03°C	0.925
	12.174V	5.043V	3.314V	5.054V	134.829				44.00°C	230.32V
CL2	53.986A	1.001A	0.999A	1.000A	665.060	86.260%	2342	46.5	39.83°C	0.988
	12.072V	5.032V	3.308V	4.999V	770.995				51.80°C	230.31V

Anex

XPG Pylon 650W (#2)

20-80W LOAD TESTS 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.215A	0.495A	0.496A	0.197A	19.977	72.158%	873	21.8	0.603
	12.202V	5.048V	3.328V	5.080V	27.685				230.32V
2	2.432A	0.991A	0.992A	0.394A	39.966	81.470%	872	21.8	0.764
	12.198V	5.047V	3.326V	5.074V	49.056				230.32V
3	3.653A	1.487A	1.489A	0.592A	59.998	85.141%	871	21.8	0.841
	12.194V	5.045V	3.325V	5.067V	70.469				230.32V
4	4.869A	1.982A	1.986A	0.790A	79.949	86.998%	872	21.8	0.881
	12.190V	5.044V	3.324V	5.060V	91.898				230.32V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	8.30mV	9.60mV	10.20mV	7.80mV	Pass
20% Load	11.70mV	14.40mV	11.30mV	8.30mV	Pass
30% Load	12.20mV	16.20mV	11.90mV	10.40mV	Pass
40% Load	11.30mV	15.50mV	13.60mV	9.10mV	Pass
50% Load	13.70mV	49.00mV	14.40mV	13.60mV	Pass
60% Load	16.90mV	22.60mV	17.70mV	11.30mV	Pass
70% Load	20.10mV	47.60mV	21.10mV	15.20mV	Pass
80% Load	25.40mV	13.00mV	15.60mV	13.70mV	Pass
90% Load	34.40mV	14.90mV	15.30mV	14.30mV	Pass
100% Load	52.50mV	18.80mV	18.80mV	15.60mV	Pass
110% Load	68.30mV	20.00mV	20.60mV	16.70mV	Pass
Crossload1	14.20mV	15.00mV	17.70mV	7.60mV	Pass
Crossload2	59.30mV	14.20mV	15.00mV	13.50mV	Pass

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

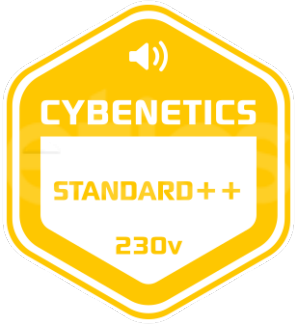
XPG Pylon 650W (#2)

Top side

Power specifications label

CERTIFICATIONS 115V

CERTIFICATIONS 230V



Aristeidis Bitziopoulos
Lab Director