EFFICIENCY AND NOISE LEVEL CERTIFICATIONS

Anex

XPG Pylon 650W

Lab ID#: AD65001700
Receipt Date: Jul 31, 2020
Test Date: Aug 25, 2020

Report: 20PS1700A
Report Date: Aug 25, 2020

DUT INFORMATION

Brand	XPG
Manufacturer (OEM)	Channel Well Technology
Series	Pylon
Model Number	
Serial Number	
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

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				

CABLES AND CONNECTORS

Native Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Caps
ATX connector 20+4 pin (660mm)	1	1	16-22AWG	No
8 pin EPS12V (660mm) / 4+4 pinEPS12V (+150mm)	1	1 / 1	18AWG	No
6+2 pin PCIe (580mm+150mm)	2	4	18AWG	No
SATA (550mm+150mm+150mm) / 4-pin Molex (+150mm)	2	6 / 2	18AWG	No
SATA (550mm+150mm) / 4-pin Molex (+150mm) / FDD (+150mm)	1	2 / 1 / 1	18-22AWG	No

www.cybenetics.com -info@cybenetics.com
4004 MESA GEITONIA, LIMASSOL, CYPRUS

Anex

XPG Pylon 650W

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
Bridge Rectifier(s)	1x GBU1506 (600V, 15A @ 100°C)
APFC MOSFETs	2x Champion GP18S50 (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, 12.6 @ 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 SBRs	4x PFC PFR30L60CT (60V, 30A)
5V & 3.3V MOSFETs	4x Sync Power SPN3006 (30V, 57A @ 100°C, Rds(on): 5.5mOhm) PWM Controller: ANPEC APW7159C
Filtering Capacitors	Electrolytic: 6x Jun Fu (2-5,000h @ 105°C, WL), 4x Jun Fu (2,000h @ 105°C, WG), 3x CapXon (2-5,000h @ 105°C, KF), 4x CapXon (2,000h @ 105°C, GF) Polymer: 2x APAQ
Supervisor IC	INI1S429I - DCG
Fan Model	Hong Hua HA1225H12F-Z (120mm, 12V, 0.58A, Rifle Bearing Fan)
5VSB Circuit	-
Standby PWM Controller	Power Integrations TNY287PG

Anex

XPG Pylon 650W

RESULTS

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

115V

Average Efficiency	85.041%
Efficiency With 10W (≤500W) or 2% (>500W)	65.827
Average Efficiency 5VSB	79.715%
Standby Power Consumption (W)	0.0376381
Average PF	0.983
Avg Noise Output	32.21 dB(A)
Efficiency Rating (ETA)	SILVER
Noise Rating (LAMBDA)	S++

230V

Average Efficiency	87.344%
Average Efficiency 5VSB	78.013%
Standby Power Consumption (W)	0.0813144
Average PF	0.958
Avg Noise Output	32.25 dB(A)
Efficiency Rating (ETA)	SILVER
Noise Rating (LAMBDA)	S++

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

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

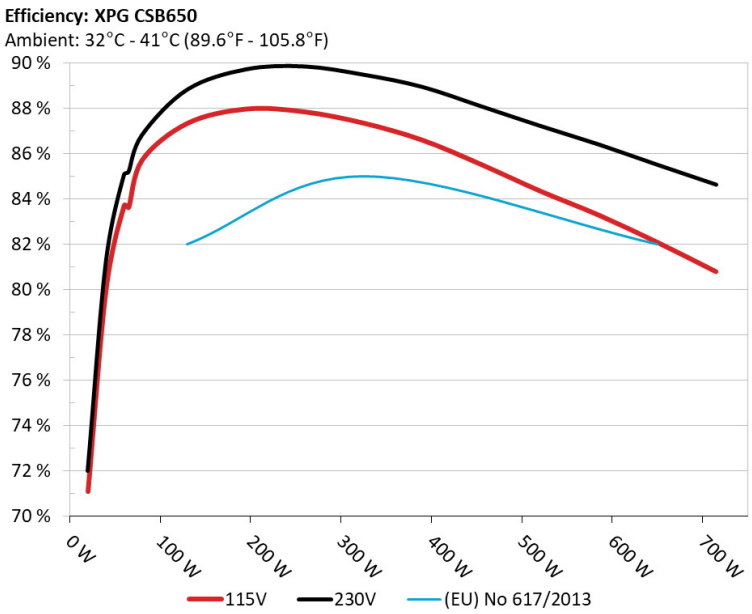
Hold-Up Time (ms)	14.2
AC Loss to PWR_OK Hold Up Time (ms)	12.6
PWR_OK Inactive to DC Loss Delay (ms)	1.6

www.cybenetics.com -info@cybenetics.com
4004 MESA GEITONIA, LIMASSOL, CYPRUS

Anex

XPG Pylon 650W

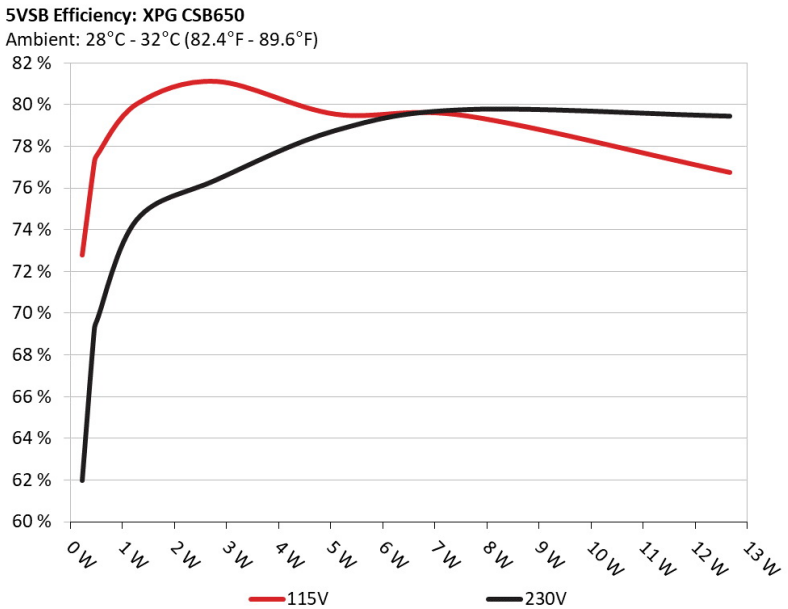
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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

Anex

XPG Pylon 650W

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	72.785%	0.037
	5.116V	0.316		115.18V
2	0.090A	0.461	77.219%	0.069
	5.115V	0.597		115.18V
3	0.550A	2.810	81.120%	0.277
	5.106V	3.464		115.18V
4	1.000A	5.099	79.548%	0.363
	5.098V	6.410		115.18V
5	1.500A	7.632	79.459%	0.410
	5.087V	9.605		115.17V
6	2.501A	12.671	76.752%	0.460
	5.067V	16.509		115.15V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	61.995%	0.013
	5.116V	0.371		230.38V
2	0.090A	0.461	69.219%	0.024
	5.115V	0.666		230.38V
3	0.550A	2.809	76.394%	0.120
	5.106V	3.677		230.38V
4	1.000A	5.099	78.761%	0.188
	5.098V	6.474		230.38V
5	1.500A	7.632	79.758%	0.242
	5.087V	9.569		230.38V
6	2.500A	12.672	79.443%	0.311
	5.068V	15.951		230.37V

Anex

XPG Pylon 650W

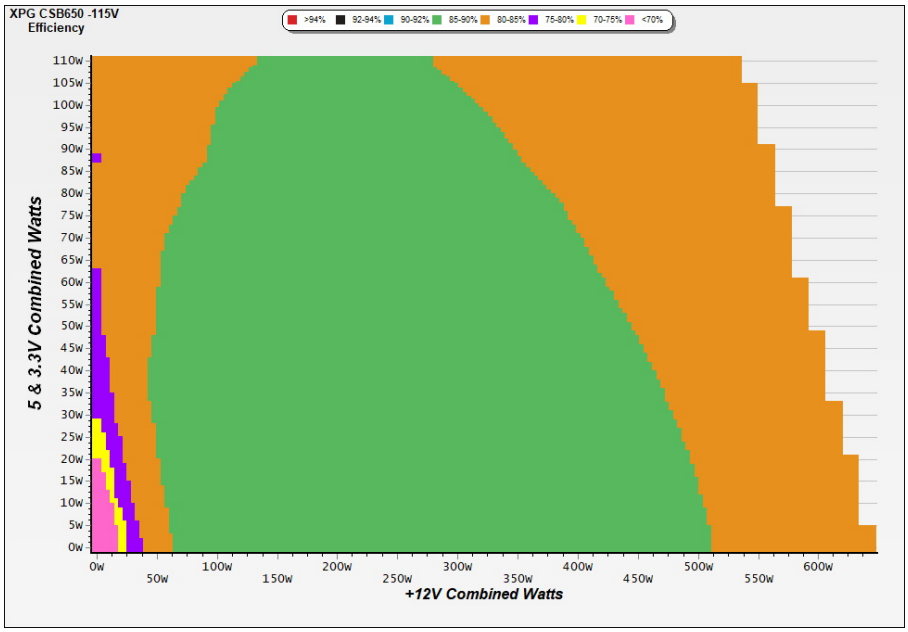
115V

www.cybenetics.com -info@cybenetics.com
4004 MESA GEITONIA, LIMASSOL, CYPRUS

Anex

XPG Pylon 650W

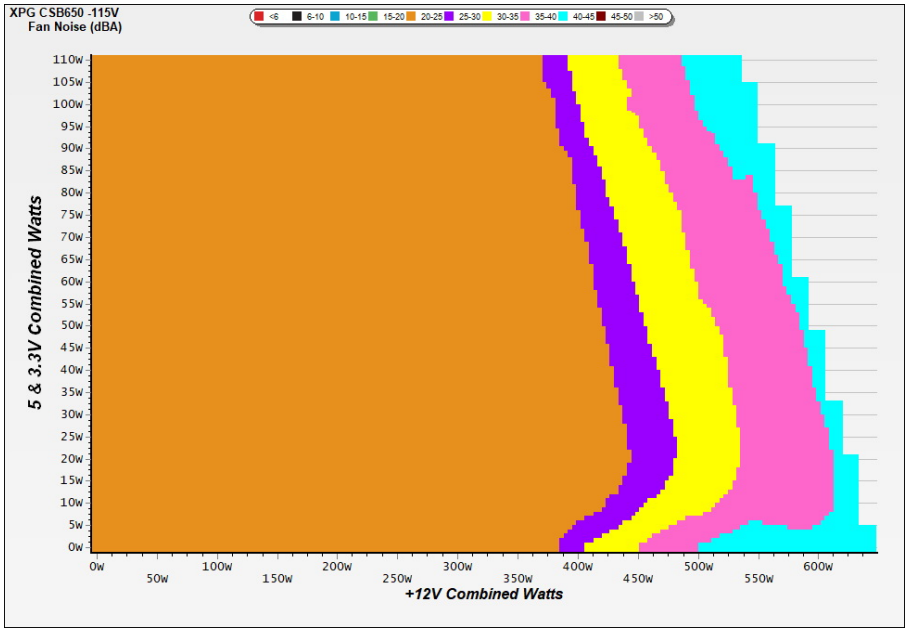
EFFICIENCY GRAPH 115V



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



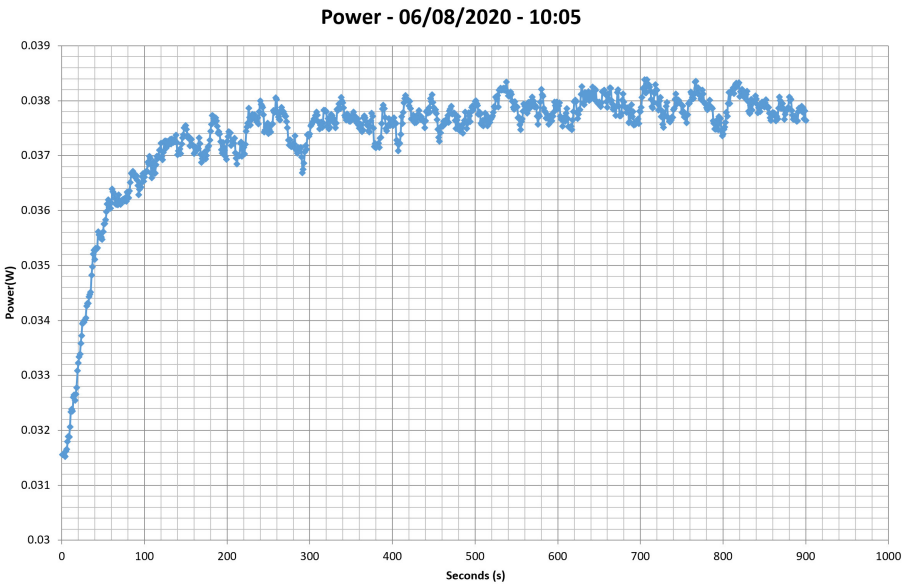
INFO

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

Anex

XPG Pylon 650W

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

www.cybenetics.com -info@cybenetics.com
4004 MESA GEITONIA, LIMASSOL, CYPRUS

Anex

XPG Pylon 650W

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	3.570A	1.988A	1.996A	0.984A	64.964	83.616%	883	22.1	34.26°C	0.950
	12.146V	5.031V	3.306V	5.084V	77.693				37.42°C	115.13V
2	8.170A	2.985A	2.998A	1.183A	130.031	87.329%	885	22.5	34.93°C	0.973
	12.132V	5.027V	3.304V	5.073V	148.897				38.67°C	115.11V
3	13.119A	3.484A	3.499A	1.383A	195.036	87.958%	888	23.1	35.01°C	0.982
	12.118V	5.025V	3.302V	5.061V	221.737				39.39°C	115.04V
4	18.077A	3.985A	3.999A	1.585A	260.036	87.830%	894	22.9	35.61°C	0.986
	12.105V	5.022V	3.300V	5.050V	296.066				40.39°C	115.01V
5	22.707A	4.982A	5.005A	1.787A	325.073	87.332%	896	22.8	36.02°C	0.988
	12.091V	5.020V	3.299V	5.037V	372.226				41.91°C	115.04V
6	27.307A	5.977A	6.003A	1.991A	389.590	86.589%	899	22.7	36.67°C	0.990
	12.077V	5.020V	3.298V	5.023V	449.928				43.53°C	115.05V
7	31.982A	6.978A	7.007A	2.197A	454.924	85.513%	1082	27.7	37.36°C	0.991
	12.063V	5.018V	3.297V	5.010V	531.994				45.26°C	115.05V
8	36.671A	7.978A	8.016A	2.402A	520.234	84.338%	1458	36.0	37.87°C	0.992
	12.048V	5.016V	3.294V	4.996V	616.844				46.20°C	115.07V
9	41.769A	8.481A	8.505A	2.406A	585.158	83.277%	1809	41.0	38.38°C	0.993
	12.034V	5.012V	3.292V	4.989V	702.668				47.43°C	115.13V
10	46.820A	8.984A	9.026A	2.511A	649.891	82.076%	2206	45.9	39.07°C	0.993
	12.018V	5.010V	3.290V	4.979V	791.820				48.68°C	115.09V
11	52.273A	8.989A	9.033A	2.515A	714.716	80.784%	2374	46.0	40.94°C	0.994
	12.004V	5.008V	3.289V	4.972V	884.728				51.73°C	115.08V
CL1	0.119A	13.001A	13.003A	0.000A	109.696	80.307%	912	22.9	36.02°C	0.973
	12.131V	5.027V	3.299V	5.071V	136.596				41.52°C	115.10V
CL2	54.016A	1.000A	1.001A	1.000A	662.612	82.649%	2213	46.0	39.17°C	0.994
	12.020V	5.016V	3.298V	5.023V	801.718				48.76°C	115.06V

Anex

XPG Pylon 650W

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	1.221A	0.496A	0.500A	0.196A	19.995	71.083%	889	23.1	0.880
	12.156V	5.035V	3.310V	5.106V	28.129				115.15V
2	2.442A	0.994A	0.999A	0.392A	39.984	80.022%	892	22.9	0.930
	12.152V	5.034V	3.309V	5.099V	49.966				115.14V
3	3.668A	1.491A	1.497A	0.589A	60.013	83.704%	891	23.0	0.946
	12.148V	5.032V	3.308V	5.093V	71.697				115.13V
4	4.888A	1.988A	1.998A	0.787A	79.962	85.711%	884	22.5	0.959
	12.143V	5.030V	3.306V	5.086V	93.293				115.13V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.30mV	6.50mV	6.60mV	7.50mV	Pass
20% Load	7.70mV	7.30mV	7.10mV	8.00mV	Pass
30% Load	9.00mV	7.60mV	7.60mV	9.60mV	Pass
40% Load	10.40mV	8.30mV	8.10mV	8.70mV	Pass
50% Load	12.00mV	8.80mV	8.40mV	8.70mV	Pass
60% Load	14.30mV	11.70mV	9.70mV	11.50mV	Pass
70% Load	16.50mV	13.30mV	12.00mV	12.90mV	Pass
80% Load	19.00mV	14.40mV	19.60mV	14.20mV	Pass
90% Load	26.70mV	16.00mV	19.00mV	13.50mV	Pass
100% Load	40.30mV	18.60mV	20.30mV	15.10mV	Pass
110% Load	51.00mV	19.90mV	21.80mV	14.90mV	Pass
Crossload1	11.00mV	13.90mV	19.60mV	8.10mV	Pass
Crossload2	44.80mV	12.30mV	10.40mV	8.20mV	Pass

www.cybenetics.com -info@cybenetics.com
4004 MESA GEITONIA, LIMASSOL, CYPRUS

Anex

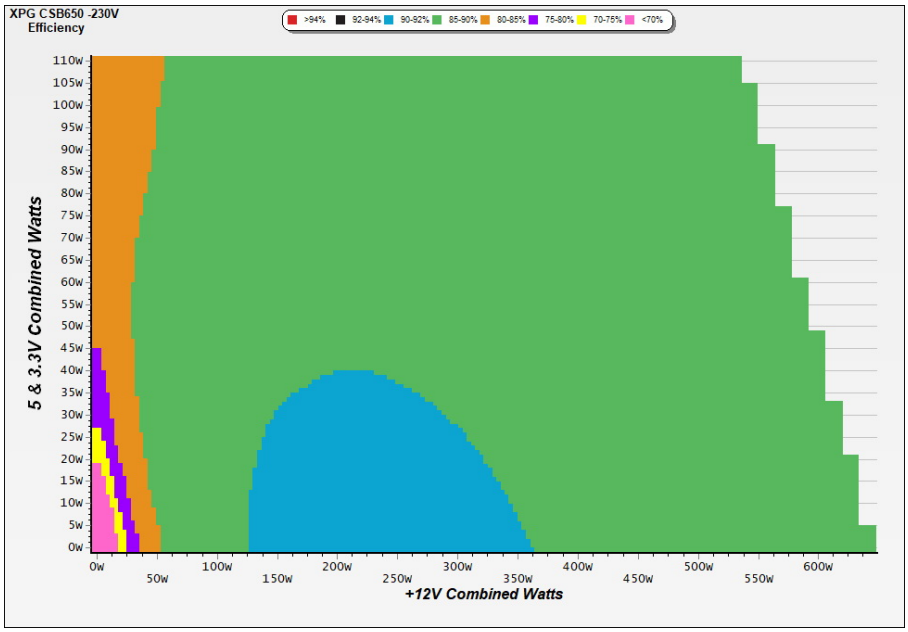
XPG Pylon 650W

230V

Anex

XPG Pylon 650W

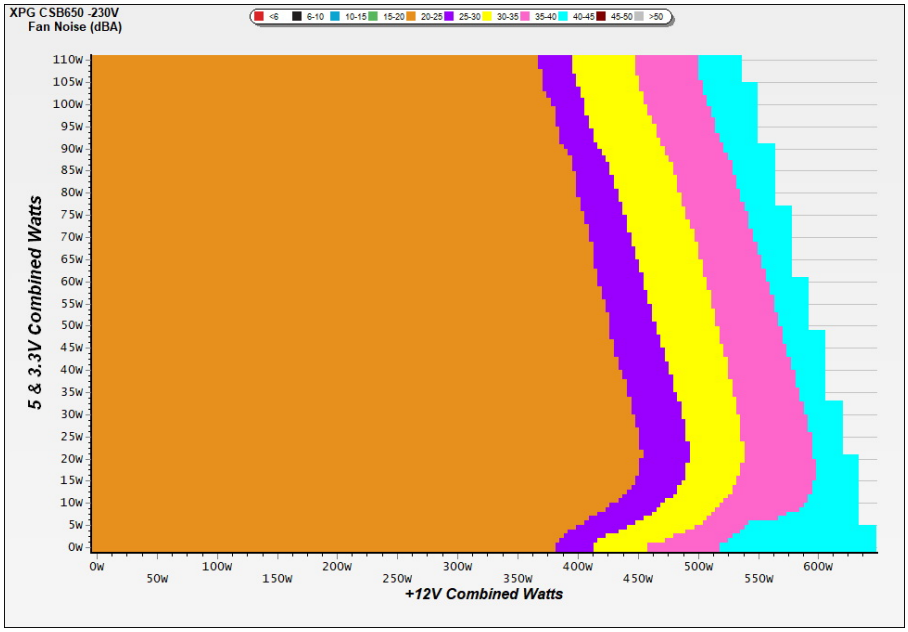
EFFICIENCY GRAPH 230V



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



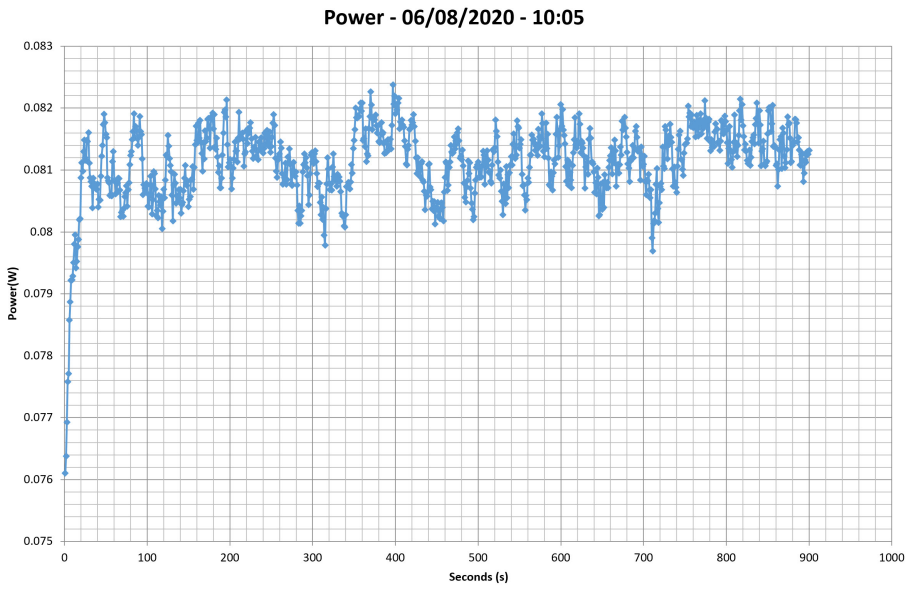
INFO

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

Anex

XPG Pylon 650W

VAMPIRE POWER -230V



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

www.cybenetics.com -info@cybenetics.com
4004 MESA GEITONIA, LIMASSOL, CYPRUS

Anex

XPG Pylon 650W

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	3.570A	1.988A	1.996A	0.984A	64.964	85.173%	882	22.1	34.12°C	0.852
	12.146V	5.031V	3.306V	5.084V	76.273				37.07°C	230.33V
2	8.171A	2.985A	2.997A	1.183A	130.033	88.817%	886	22.7	34.67°C	0.927
	12.131V	5.028V	3.304V	5.073V	146.405				38.43°C	230.32V
3	13.119A	3.483A	3.499A	1.384A	195.036	89.711%	889	23.1	35.17°C	0.953
	12.118V	5.025V	3.302V	5.061V	217.404				39.92°C	230.30V
4	18.079A	3.985A	4.001A	1.585A	260.048	89.836%	891	23.0	35.58°C	0.966
	12.104V	5.022V	3.300V	5.050V	289.469				41.19°C	230.25V
5	22.710A	4.981A	5.005A	1.788A	325.084	89.471%	897	22.8	36.53°C	0.974
	12.090V	5.020V	3.299V	5.036V	363.339				42.42°C	230.26V
6	27.311A	5.978A	6.005A	1.992A	389.626	88.937%	901	22.7	36.78°C	0.978
	12.076V	5.020V	3.298V	5.022V	438.093				43.24°C	230.26V
7	31.989A	6.977A	7.009A	2.197A	454.972	88.077%	1074	27.4	37.04°C	0.981
	12.062V	5.018V	3.297V	5.008V	516.563				44.11°C	230.27V
8	36.681A	7.979A	8.013A	2.403A	520.271	87.212%	1471	36.9	37.95°C	0.984
	12.046V	5.015V	3.294V	4.995V	596.556				46.23°C	230.29V
9	41.782A	8.483A	8.505A	2.407A	585.198	86.391%	1832	41.4	38.59°C	0.986
	12.031V	5.012V	3.292V	4.987V	677.381				47.90°C	230.29V
10	46.831A	8.988A	9.029A	2.512A	649.952	85.499%	2185	45.8	39.00°C	0.987
	12.016V	5.009V	3.290V	4.978V	760.183				49.31°C	230.27V
11	52.290A	8.992A	9.034A	2.516A	714.775	84.624%	2371	46.0	40.53°C	0.988
	12.001V	5.007V	3.289V	4.971V	844.650				52.00°C	230.30V
CL1	0.118A	13.000A	13.001A	0.000A	109.699	81.669%	915	23.1	36.56°C	0.923
	12.130V	5.028V	3.300V	5.070V	134.322				42.18°C	230.26V
CL2	54.024A	1.000A	0.998A	1.000A	662.532	86.190%	2214	46.0	39.62°C	0.987
	12.017V	5.014V	3.297V	5.021V	768.690				49.58°C	230.28V

Anex

XPG Pylon 650W

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	1.221A	0.497A	0.499A	0.196A	19.994	72.006%	879	21.9	0.613
	12.155V	5.034V	3.309V	5.106V	27.767				230.33V
2	2.443A	0.994A	0.997A	0.392A	39.984	81.184%	877	21.8	0.769
	12.151V	5.032V	3.308V	5.100V	49.251				230.33V
3	3.669A	1.491A	1.496A	0.589A	60.013	85.055%	878	21.8	0.839
	12.146V	5.031V	3.307V	5.094V	70.558				230.33V
4	4.889A	1.987A	1.997A	0.787A	79.962	86.813%	881	22.0	0.880
	12.142V	5.030V	3.306V	5.087V	92.108				230.33V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.50mV	6.80mV	6.80mV	7.50mV	Pass
20% Load	7.70mV	7.10mV	7.30mV	7.80mV	Pass
30% Load	9.10mV	7.50mV	7.90mV	9.60mV	Pass
40% Load	9.40mV	8.40mV	7.70mV	8.40mV	Pass
50% Load	10.70mV	9.40mV	8.70mV	9.10mV	Pass
60% Load	13.70mV	12.30mV	9.90mV	12.90mV	Pass
70% Load	16.10mV	13.70mV	12.00mV	12.50mV	Pass
80% Load	17.90mV	14.80mV	18.50mV	13.20mV	Pass
90% Load	25.30mV	14.60mV	18.50mV	13.00mV	Pass
100% Load	38.50mV	17.90mV	19.60mV	15.10mV	Pass
110% Load	46.30mV	19.80mV	20.80mV	15.10mV	Pass
Crossload1	11.20mV	14.20mV	19.20mV	7.90mV	Pass
Crossload2	41.50mV	12.10mV	10.20mV	7.50mV	Pass

Anex

XPG Pylon 650W

Top side

Power specifications label

CERTIFICATIONS 115V

CERTIFICATIONS 230V