Anex

XPG KYBER 750

Lab ID#: AD75002221
Receipt Date: Aug 3, 2023
Test Date: Aug 17, 2023

Report: 23PS2221A
Report Date: Aug 18, 2023

DUT INFORMATION

Brand	XPG
Manufacturer (OEM)	CWT
Series	KYBER
Model Number	KYBER750GOLD
Serial Number	4N1581013144
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10
Rated Frequency (Hz)	47-63
Rated Power (W)	750
Type	ATX12V
Cooling	120mm Fluid Dynamic Bearing Fan (DF1202512FDHN)
Semi-Passive Operation	✗
Cable Design	Fixed cables

TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x2 Chroma 63600-2 63640-80-80 x10 63610-80-20
AC Sources	Chroma 6530, APM SP300VAC4000W-P
Power Analyzers	RS HMC8015, N4L PPA1530, N4L PPA5530
Oscilloscopes	Picoscope 4444, Rigol DS7014, 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, Keithley 2015 - THD
UPS	FSP Champ Tower 3kVA, CyberPower OLS3000E 3kVA
Isolation Transformer	4kVA

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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	✓
ATX v3.1 PSU Power Excursion	✓

115V

Average Efficiency	88.915%
Efficiency With 10W (≤500W) or 2% (>500W)	65.565
Average Efficiency 5VSB	79.117%
Standby Power Consumption (W)	0.0449000
Average PF	0.977
Avg Noise Output	29.50 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	A-

230V

Average Efficiency	91.051%
Average Efficiency 5VSB	78.933%
Standby Power Consumption (W)	0.0999000
Average PF	0.932
Avg Noise Output	29.00 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	A-

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	62.5	3	0.3
	Watts	110		750	15	3.6
Total Max. Power (W)		750				

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

Hold-Up Time (ms)	15.3
AC Loss to PWR_OK Hold Up Time (ms)	13.7
PWR_OK Inactive to DC Loss Delay (ms)	1.6

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CABLES AND CONNECTORS

Captive Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (650mm)	1	1	18-20AWG	No
8 pin EPS12V (670mm) / 4+4 EPS12V (150mm)	1	1 / 1	18AWG	No
6+2 pin PCIe (600mm+150mm)	1	2	18AWG	No
12+4 pin PCIe (600mm) (600W)	1	1	16-26AWG	No
SATA (450mm+150mm+150mm) / 4-pin Molex (150mm)	2	6 / 2	18AWG	No

Modular Cables

AC Power Cord (1400mm) - C13 coupler	1	1	18AWG	-

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General Data	-
Manufacturer (OEM)	CWT
PCB Type	Single-Side
Primary Side	**-**
Transient Filter	2x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor SCK-056 5Ohm & Relay
Bridge Rectifier(s)	1x GBU15005 (600V, 15A @ 100°C)
APFC MOSFETs	2x Wayon WML28N50C4 (500V, 16A , Rds(on): 0.125Ohm) & 1x Syncpower SPN5003 FET (for reduced the no-load consumption)
APFC Boost Diode	1x CRMICRO CRXI06D065G2(600V, 6A @ 167°C)
Bulk Cap(s)	1x Teapo (400V, 560uF, 2000h @ 85°C, LH)
Main Switchers	4x Silan Microelectroinics SVF20N50F (500V, 12.6A @ 100°C, Rds(on): 0.27Ohm)
APFC Controller	1x Champion CM6500UNX
Resonant Controller	Champion CM6901X
Topology	Primary side: APFC, Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	**-**
+12V MOSFETs	6x Infineon BSC014N04LS (40V, 100A @ 100°C, Rds(on): 1.4mOhm)
5V & 3.3V	DC-DC Converters: 4x InfineonSPN3006 (30V, 57A @ 100°C, Rds(on): 5.5mOhm) PWM Controller(s): APW7159C
Filtering Capacitors	Electrolytic: 11x Chengx (2-3,000h @ 105°C ,GR) Polymer: 14x CapXon
Supervisor IC	IN1S313I-DAG
Fan Model	Martech DF1202512FDHN (120mm, 12V, 0.42A, Fluid Dynamic Bearing Fan)
5VSB Circuit	**-**
Standby PWM Controller	Power Integrations TNY290

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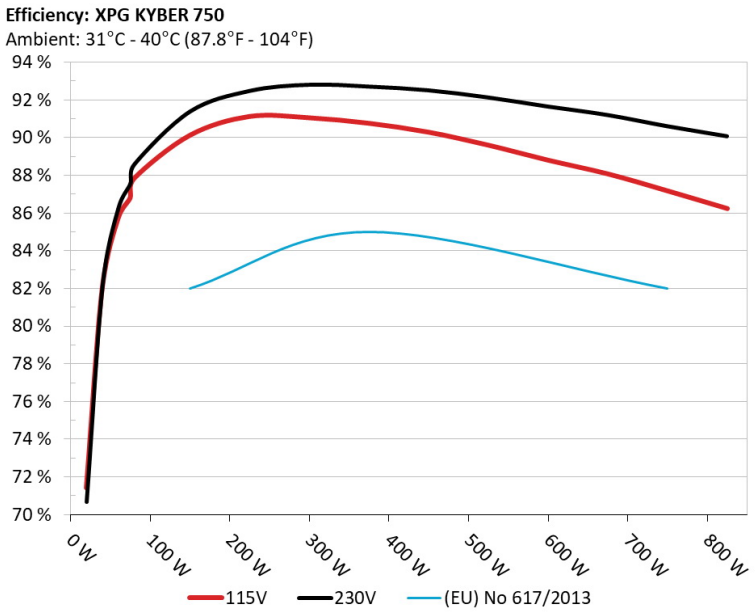
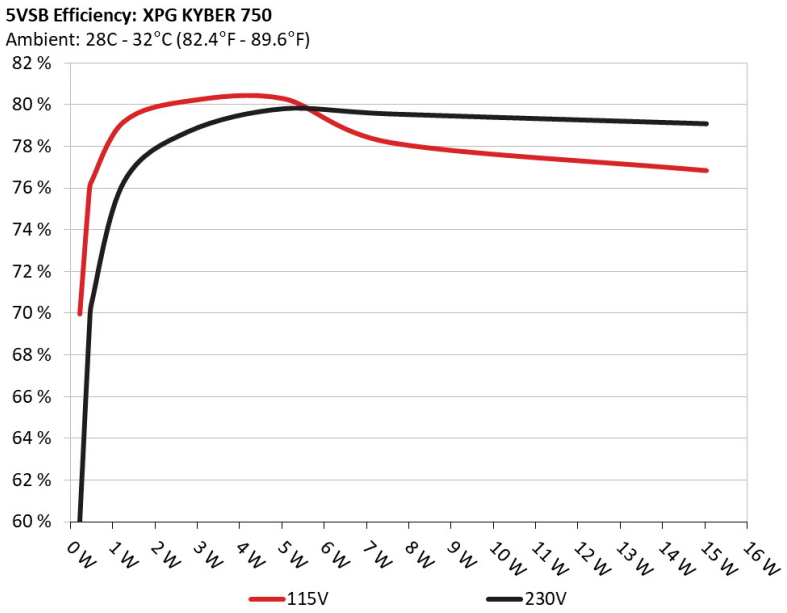
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.229W	69.968%	0.03
	5.087V	0.312W		114.93V
2	0.09A	0.458W	75.974%	0.058
	5.086V	0.603W		114.92V
3	0.55A	2.791W	80.184%	0.262
	5.075V	3.481W		114.91V
4	1A	5.064W	80.291%	0.347
	5.064V	6.307W		114.91V
5	1.5A	7.578W	78.189%	0.408
	5.052V	9.692W		114.91V
6	3A	15.042W	76.846%	0.479
	5.014V	19.574W		114.9V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.229W	60.053%	0.011
	5.087V	0.382W		229.88V
2	0.09A	0.458W	69.406%	0.019
	5.086V	0.66W		229.88V
3	0.55A	2.791W	78.687%	0.098
	5.074V	3.548W		229.88V
4	1A	5.063W	79.79%	0.164
	5.063V	6.346W		229.88V
5	1.5A	7.579W	79.535%	0.209
	5.052V	9.528W		229.88V
6	3A	15.039W	79.064%	0.32
	5.013V	19.021W		229.88V

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115V

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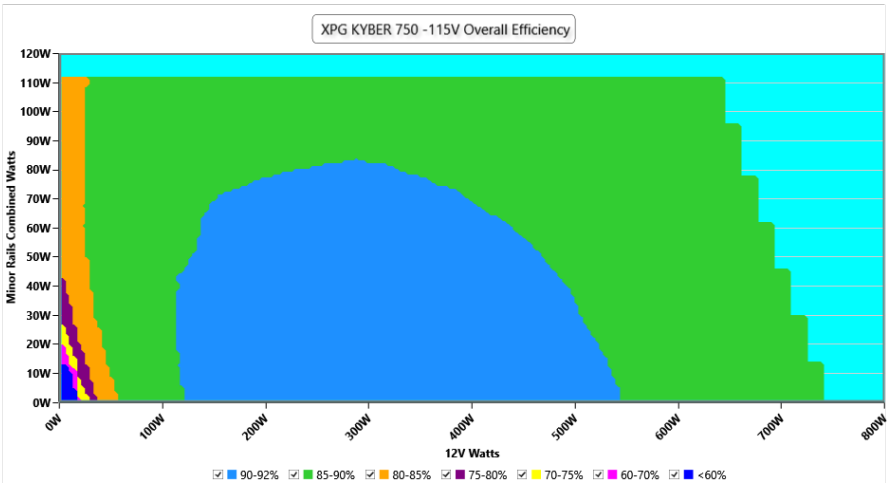
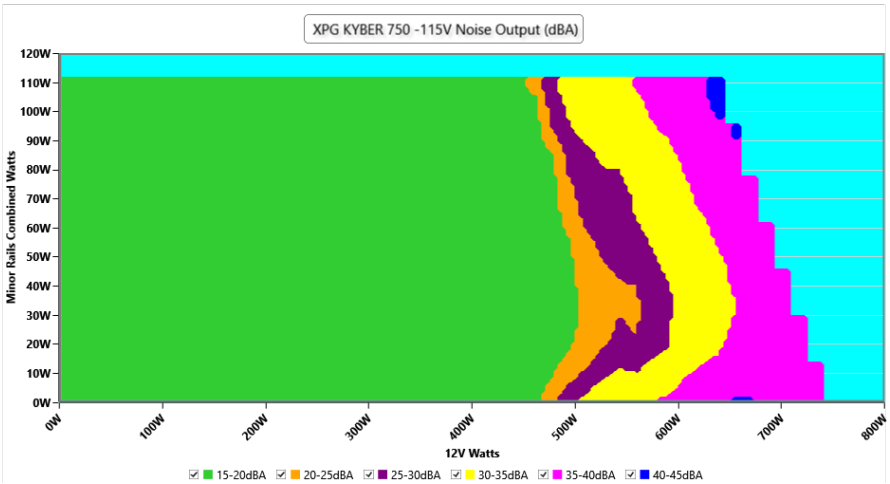
EFFICIENCY GRAPH 115V



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

Detailed Results

	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	114.88 V	114.82 V	113.85 V	114.94 V	116.15 V	PASS
Mains Frequency:	60.01 Hz	59.99 Hz	59.40 Hz	60.03 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.419	1.417	1.340	1.422	1.490	PASS
Mains Voltage THD:	0.15 %	0.09 %	N/A	0.28 %	2.00 %	PASS
Real Power:	0.045 W	0.025 W	N/A	0.067 W	N/A	N/A
Apparent Power:	11.583 W	11.559 W	N/A	11.614 W	N/A	N/A
Power Factor:	0.004	N/A	N/A	N/A	N/A	N/A

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

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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
10%	4.412A	1.996A	2.007A	0.99A	75.002	86.79%	861	19.1	34.32°C	0.951
	12.105V	5.01V	3.289V	5.053V	86.419				38.54°C	114.89V
20%	9.838A	2.996A	3.012A	1.191A	149.943	90.108%	866	19.2	34.62°C	0.97
	12.099V	5.007V	3.287V	5.039V	166.404				39.23°C	114.86V
30%	15.620A	3.497A	3.516A	1.393A	224.948	91.109%	869	19.3	35.2°C	0.979
	12.093V	5.005V	3.285V	5.024V	246.899				40.13°C	114.84V
40%	21.412A	3.998A	4.02A	1.597A	300.034	91.036%	874	18.8	35.65°C	0.978
	12.088V	5.003V	3.284V	5.009V	329.574				41.14°C	114.81V
50%	26.813A	5.001A	5.029A	1.803A	374.454	90.747%	879	19.4	36.37°C	0.98
	12.082V	5V	3.281V	4.993V	412.635				42.2°C	114.79V
60%	32.259A	6.004A	6.037A	2A	449.332	90.277%	884	19.5	36.69°C	0.979
	12.077V	4.997V	3.28V	4.977V	497.726				43.15°C	114.76V
70%	37.712A	7.007A	7.046A	2.218A	524.308	89.59%	1110	26.6	37.3°C	0.98
	12.070V	4.996V	3.279V	4.959V	585.233				44.34°C	114.72V
80%	43.240A	8.002A	8.059A	2.325A	599.449	88.792%	1528	35.8	37.71°C	0.982
	12.063V	4.992V	3.276V	4.946V	675.118				45.57°C	114.7V
90%	49.111A	8.518A	8.555A	2.433A	674.536	88.064%	1919	42.1	38.35°C	0.983
	12.055V	4.989V	3.273V	4.932V	765.962				47.19°C	114.67V
100%	54.787A	9.024A	9.082A	3.058A	749.757	87.162%	2332	46.1	39.3°C	0.985
	12.048V	4.986V	3.271V	4.905V	860.189				48.96°C	114.64V
110%	60.332A	10.033A	10.189A	3.066A	824.778	86.224%	2333	46.1	40.49°C	0.986
	12.041V	4.983V	3.268V	4.893V	956.552				51.33°C	114.6V
CL1	0.116A	13.266A	13.335A	0A	111.293	84.133%	900	19.7	34.22°C	0.966
	12.100V	4.989V	3.277V	5.061V	132.283				41.57°C	114.87V
CL2	0.114A	20.017A	0A	0.001A	101.342	82.502%	897	19.6	34.95°C	0.963
	12.104V	4.993V	3.291V	5.067V	122.836				40.42°C	114.87V
CL3	0.115A	0A	20.099A	0A	67.415	77.268%	878	19.1	34.71°C	0.953
	12.104V	5.015V	3.284V	5.068V	87.248				39.49°C	114.89V
CL4	62.192A	0A	0A	0.001A	749.699	87.904%	2323	46.0	39.06°C	0.985
	12.055V	5.009V	3.287V	4.992V	852.859				47.49°C	114.64V

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XPG KYBER 750

20-80W 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	1.227A	0.499A	0.501A	0.197A	19.998	71.42%	849	18.4	30.51°C	0.848
	12.100V	5.014V	3.292V	5.08V	28.001				33.64°C	114.91V
40W	2.700A	0.698A	0.702A	0.296A	39.998	82.01%	848	18.4	31.33°C	0.917
	12.107V	5.013V	3.291V	5.075V	48.773				34.79°C	114.9V
60W	4.174A	0.898A	0.903A	0.394A	59.998	85.716%	850	18.4	32.11°C	0.947
	12.106V	5.013V	3.29V	5.07V	69.997				35.89°C	114.9V
80W	5.644A	1.097A	1.103A	0.494A	79.947	87.817%	856	18.8	33.65°C	0.956
	12.105V	5.012V	3.29V	5.065V	91.04				37.63°C	114.89V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	26.28mV	11.75mV	13.86mV	25.22mV	Pass
20% Load	26.89mV	12.31mV	15.96mV	26.04mV	Pass
30% Load	27.15mV	12.26mV	16.42mV	28.70mV	Pass
40% Load	26.09mV	13.08mV	15.81mV	29.72mV	Pass
50% Load	26.29mV	13.54mV	15.76mV	29.92mV	Pass
60% Load	25.28mV	14.56mV	16.06mV	31.05mV	Pass
70% Load	26.55mV	16.61mV	24.15mV	34.35mV	Pass
80% Load	28.75mV	19.06mV	19.34mV	36.68mV	Pass
90% Load	30.29mV	21.41mV	21.89mV	38.77mV	Pass
100% Load	40.73mV	22.01mV	21.39mV	39.18mV	Pass
110% Load	43.12mV	24.30mV	22.16mV	38.91mV	Pass
Crossload1	46.24mV	20.18mV	16.90mV	25.96mV	Pass
Crossload2	33.77mV	29.27mV	15.86mV	27.83mV	Pass
Crossload3	40.47mV	16.71mV	20.92mV	26.44mV	Pass
Crossload4	34.79mV	19.12mV	22.60mV	33.02mV	Pass

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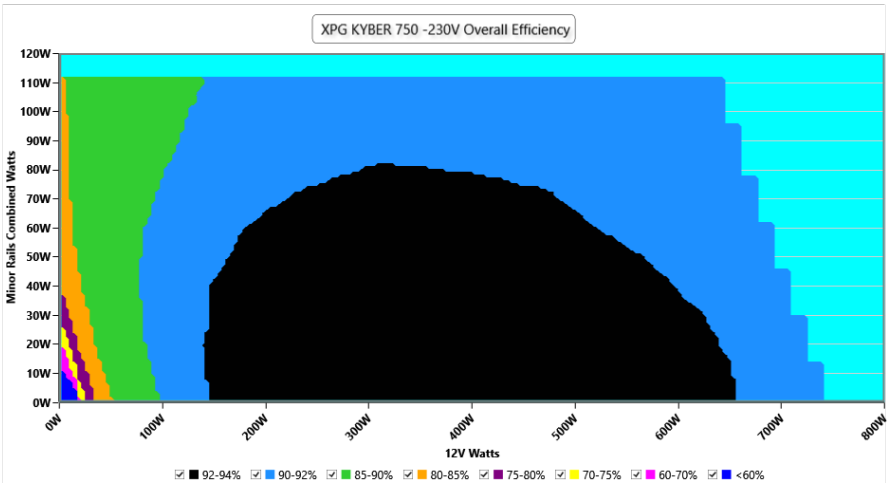
EFFICIENCY GRAPH 230V



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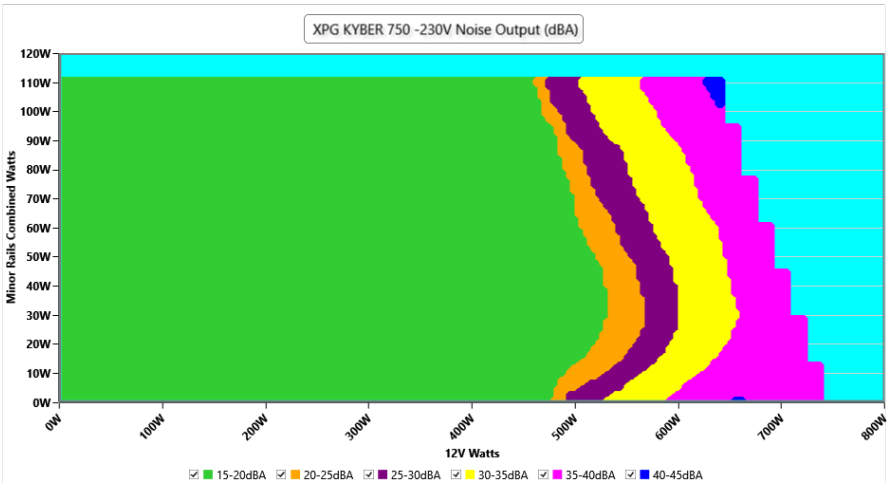
NOISE GRAPH 230V



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VAMPIRE POWER -230V

Detailed Results

	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	229.95 V	229.87 V	227.70 V	230.02 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	0.23 %	2.00 %	PASS
Real Power:	0.100 W	0.064 W	N/A	0.157 W	N/A	N/A
Apparent Power:	40.016 W	39.974 W	N/A	40.070 W	N/A	N/A
Power Factor:	0.003	N/A	N/A	N/A	N/A	N/A

INFO

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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
10%	4.412A	1.996A	2.006A	0.99A	75	87.551%	860	19.0	34.14°C	0.801
	12.105V	5.011V	3.289V	5.053V	85.664				38.43°C	229.87V
20%	9.838A	2.996A	3.012A	1.191A	149.936	91.372%	864	19.2	34.72°C	0.894
	12.099V	5.007V	3.287V	5.039V	164.094				39.31°C	229.86V
30%	15.620A	3.497A	3.516A	1.393A	224.939	92.464%	869	19.3	35.15°C	0.927
	12.093V	5.005V	3.285V	5.025V	243.272				40.02°C	229.84V
40%	21.412A	3.998A	4.02A	1.597A	300.023	92.79%	873	19.3	35.74°C	0.94
	12.088V	5.003V	3.284V	5.01V	323.336				41.18°C	229.83V
50%	26.812A	5.001A	5.029A	1.802A	374.435	92.694%	877	19.4	36.33°C	0.949
	12.082V	5V	3.281V	4.994V	403.949				42.21°C	229.82V
60%	32.257A	6.004A	6.037A	2A	449.314	92.495%	883	19.4	36.6°C	0.955
	12.077V	4.998V	3.28V	4.978V	485.772				43.28°C	229.81V
70%	37.709A	7.007A	7.045A	2.218A	524.287	92.118%	1090	25.5	37.4°C	0.959
	12.071V	4.996V	3.279V	4.96V	569.15				44.83°C	229.79V
80%	43.239A	8.001A	8.058A	2.325A	599.433	91.635%	1478	35.2	37.7°C	0.962
	12.063V	4.992V	3.276V	4.946V	654.154				45.81°C	229.78V
90%	49.110A	8.518A	8.554A	2.433A	674.527	91.187%	1858	40.7	38.13°C	0.964
	12.055V	4.989V	3.274V	4.933V	739.72				47.24°C	229.77V
100%	54.786A	9.024A	9.08A	3.058A	749.754	90.593%	2331	46.1	39.13°C	0.965
	12.048V	4.986V	3.271V	4.906V	827.601				48.83°C	229.75V
110%	60.330A	10.033A	10.188A	3.065A	824.775	90.063%	2332	46.1	40.16°C	0.967
	12.042V	4.983V	3.269V	4.894V	915.78				50.96°C	229.74V
CL1	0.115A	13.266A	13.335A	0A	111.291	85.146%	898	19.6	34.81°C	0.871
	12.101V	4.989V	3.278V	5.062V	130.709				40.23°C	229.87V
CL2	0.114A	20.018A	0A	0.001A	101.342	83.368%	895	19.6	35.15°C	0.862
	12.104V	4.993V	3.291V	5.067V	121.563				39.26°C	229.87V
CL3	0.115A	0A	20.1A	0A	67.414	77.929%	876	19.1	34.68°C	0.802
	12.105V	5.014V	3.284V	5.068V	86.507				38.41°C	229.87V
CL4	62.188A	0A	0A	0.001A	749.69	91.458%	2328	46.1	39.11°C	0.966
	12.055V	5.01V	3.287V	4.993V	819.714				45.33°C	229.75V

Anex

XPG KYBER 750

20-80W 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	1.228A	0.499A	0.501A	0.197A	19.997	70.685%	840	18.2	30.38°C	0.504
	12.098V	5.013V	3.291V	5.08V	28.292				33.52°C	229.88V
40W	2.700A	0.698A	0.702A	0.295A	39.996	82.143%	843	18.3	31.46°C	0.667
	12.106V	5.013V	3.29V	5.075V	48.691				34.87°C	229.88V
60W	4.174A	0.898A	0.903A	0.394A	59.996	86.267%	849	18.4	32.62°C	0.757
	12.105V	5.013V	3.29V	5.071V	69.545				36.28°C	229.88V
80W	5.644A	1.097A	1.103A	0.493A	79.943	88.572%	854	18.7	33.19°C	0.811
	12.104V	5.012V	3.29V	5.066V	90.258				37.02°C	229.87V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	26.90mV	11.85mV	13.86mV	26.24mV	Pass
20% Load	28.38mV	11.65mV	16.01mV	25.47mV	Pass
30% Load	28.38mV	12.05mV	18.06mV	29.56mV	Pass
40% Load	27.45mV	12.62mV	15.04mV	29.15mV	Pass
50% Load	24.15mV	13.44mV	15.76mV	28.54mV	Pass
60% Load	25.94mV	15.38mV	16.68mV	32.18mV	Pass
70% Load	26.91mV	16.81mV	16.88mV	35.60mV	Pass
80% Load	29.93mV	18.44mV	20.31mV	35.70mV	Pass
90% Load	32.80mV	21.86mV	21.08mV	35.81mV	Pass
100% Load	40.50mV	22.29mV	23.25mV	37.81mV	Pass
110% Load	44.23mV	23.66mV	22.30mV	40.65mV	Pass
Crossload1	46.39mV	18.86mV	16.28mV	24.00mV	Pass
Crossload2	31.57mV	29.02mV	15.30mV	27.47mV	Pass
Crossload3	39.29mV	16.40mV	20.51mV	25.22mV	Pass
Crossload4	34.71mV	19.05mV	22.89mV	31.96mV	Pass

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

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XPG KYBER 750

Top side

Power specifications label

CERTIFICATIONS 115V

CERTIFICATIONS 230V

Aristeidis Bitziopoulos
Lab Director