



XPG Core Reactor II 650W

Serial Number 4N1680813753

Lab ID AD65002218

Certification ID 252218

Test Result Report ID: 23PS2218A

Certificate Issue Date: Aug 25, 2023

Scheme: ETA-EMI PSU

115V

230V

115V

230V

Scheme: LAMBDA PSU

Outside Validation Scope

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	XPG
Model	Core Reactor II 650W
OEM/ODM	Channel Well Technology
Serial Number	4N1680813753
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5

Rated Frequency (Hz)	47-63
Rated Power (W)	650
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	120mm Fluid Dynamic Bearing Fan (HA1225H12F-Z)
Semi-Passive Operation	X
Cybenetics Testing Information	
Lab ID	AD65002218
Date of receipt	Jul 25, 2023
Testing Date	Aug 24, 2023
Report Issued Date	Aug 25, 2023
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors(Non-accredited measurements)

Modular Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (640mm)	1	1	16-20AWG	No
8 pin EPS12V (650mm) / 4+4 pin EPS12V (+150mm)	1	2	16-18AWG	No
6+2 pin PCIe (650mm+150mm)	2	4	16-18AWG	No
12+4 pin PCIe (650mm) (600W)	1	1	16-24AWG	No
SATA (500mm+150mm+150mm+150mm)	2	8	18AWG	No
4-pin Molex (500mm+150mm+150mm+150mm)	1	4	18AWG	No
AC Power Cord (1400mm) - C13 coupler	1	1	18AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	54.1	3	0.3
	Watts	110		650	15	3.6
Total Max. Power (W)		650				

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	✓
ATX v3.0 Compliance	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	89.118%
Average Noise Output (>1450 Load Combinations)	31.57dBA
Average PF (>1450 Load Combinations)	0.988
Efficiency With 10W (≤500W) or 2% (>500W) Load	73.200%
Standby Power Consumption	0.0398W
Non-Accredited	
12V Ripple (Full Load)	19.74mV
5V Ripple (Full Load)	10.57mV
3.3V Ripple (Full Load)	20.93mV
5VSB Ripple (Full Load)	10.31mV
12V Load Regulation	1.28%

5V Load Regulation	0.47%
3.3V Load Regulation	0.33%
5VSB Load Regulation	1.38%
Inrush Current	25.150A

230V

Accredited		
Average Efficiency (>1450 load combinations)	90.934%	
Average Noise Output (>1450 Load Combinations)	32.41dBA	
Average PF (>1450 Load Combinations)	0.951	
Efficiency With 10W (≤500W) or 2% (>500W) Load	72.017%	
Standby Power Consumption	0.0695W	
Non-Accredited		
12V Ripple (Full Load)	20.28mV	
5V Ripple (Full Load)	10.58mV	
3.3V Ripple (Full Load)	20.88mV	
5VSB Ripple (Full Load)	10.90mV	
12V Load Regulation	1.28%	
5V Load Regulation	0.53%	
3.3V Load Regulation	0.39%	
5VSB Load Regulation	1.46%	
Inrush Current	82.020A	
12V Transient Response (200%)	11.71V	
5V Transient Response (200%)	5.005V	
3.3V Transient Response (200%)	3.265V	
5VSB Transient Response (200%)	5.010V	
Hold-Up Time & PWR_OK Signal	22.20ms	
AC Loss to PWR_OK Hold Up Time	19.20ms	
PWR_OK Inactive to DC Loss Delay	3.00ms	
PSU Timings: T1 (20% / 100%)	64.0ms	63.0ms
PSU Timings: T3 (20% / 100%)	128.5ms	129.0ms
OPP (29.08°C / 40.30°C)	127.22%	124.74%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	22.2
AC Loss to PWR_OK Hold Up Time (ms)	19.2
PWR_OK Inactive to DC Loss Delay (ms)	3



Tables

115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	115.14 V	115.13 V	113.85 V	115.17 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.99 Hz	59.40 Hz	60.01 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.415	1.415	1.340	1.416	1.490	PASS
Mains Voltage THD:	0.13 %	0.11 %	N/A	0.15 %	2.00 %	PASS
Real Power:	0.040 W	0.035 W	N/A	0.044 W	N/A	N/A
Apparent Power:	9.859 W	9.855 W	N/A	9.862 W	N/A	N/A
Power Factor:	0.004	N/A	N/A	N/A	N/A	N/A

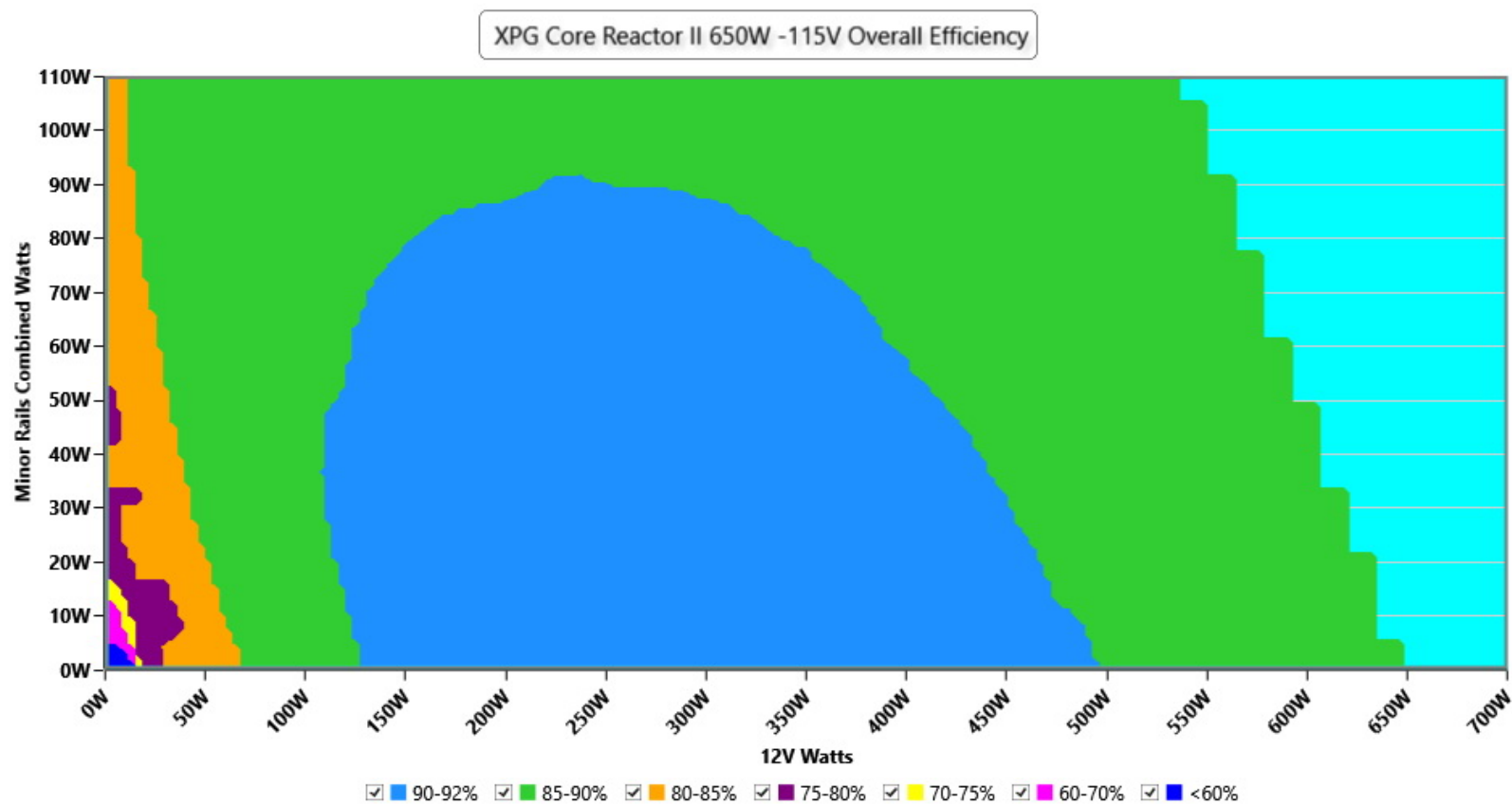
230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	230.38 V	230.35 V	227.70 V	230.39 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	50.00 Hz	49.50 Hz	50.00 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.415	1.415	1.340	1.416	1.490	PASS
Mains Voltage THD:	0.14 %	0.13 %	N/A	0.16 %	2.00 %	PASS
Real Power:	0.070 W	0.059 W	N/A	0.091 W	N/A	N/A
Apparent Power:	32.972 W	32.964 W	N/A	32.982 W	N/A	N/A

Power Factor:	0.002	N/A	N/A	N/A	N/A	N/A
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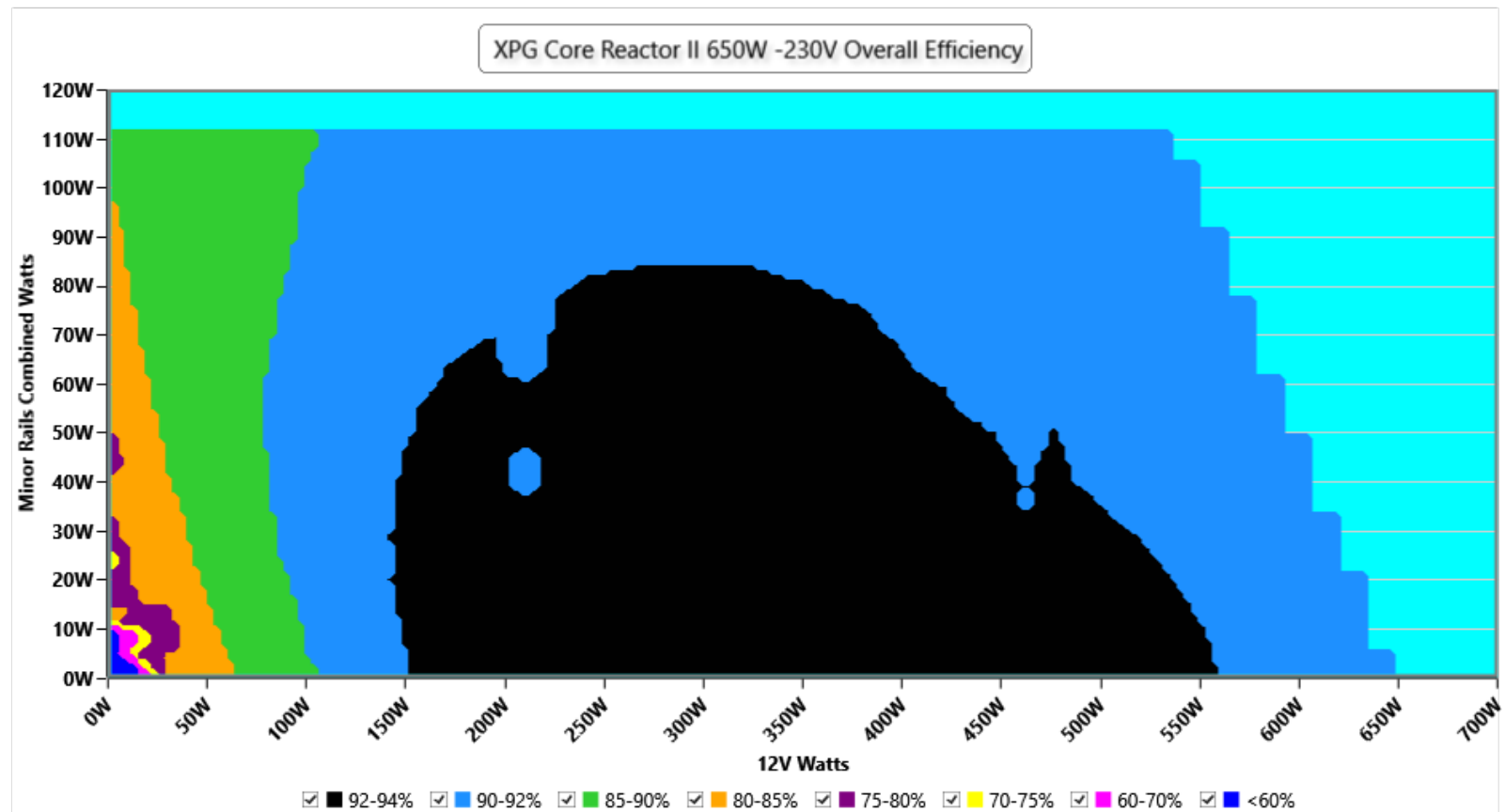
Efficiency Graph

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

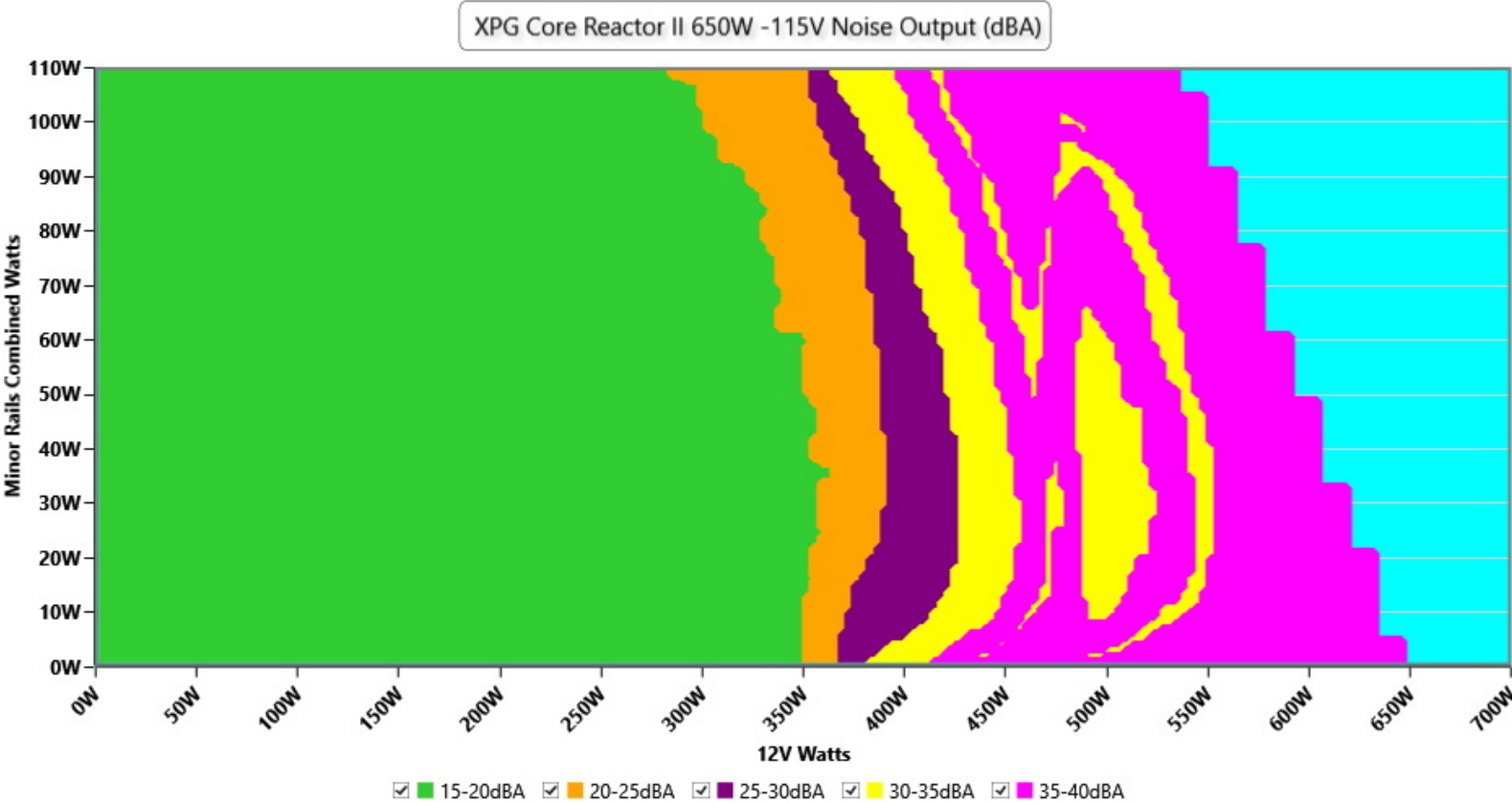


INFO

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

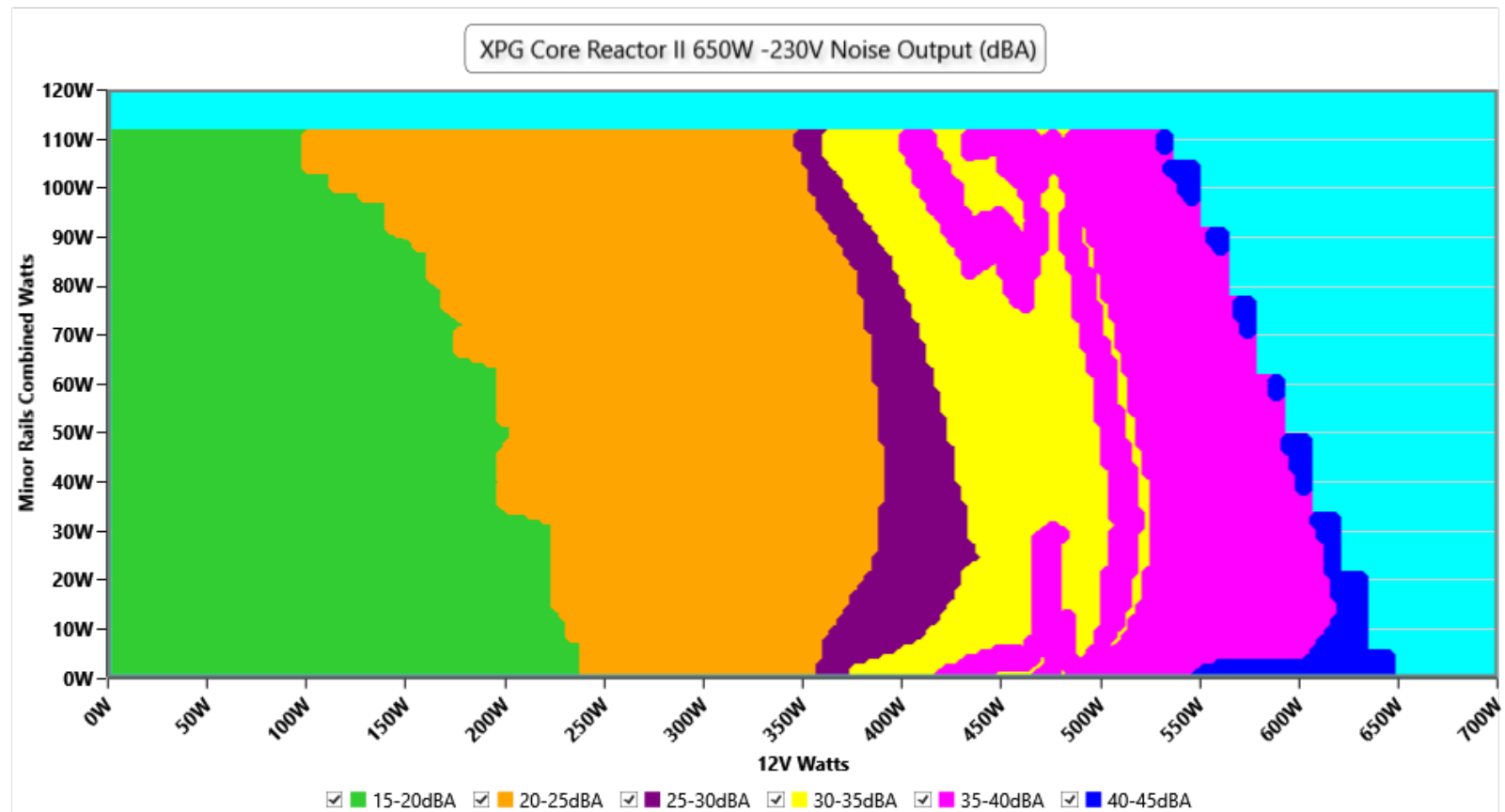
Noise Graph

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



INFO

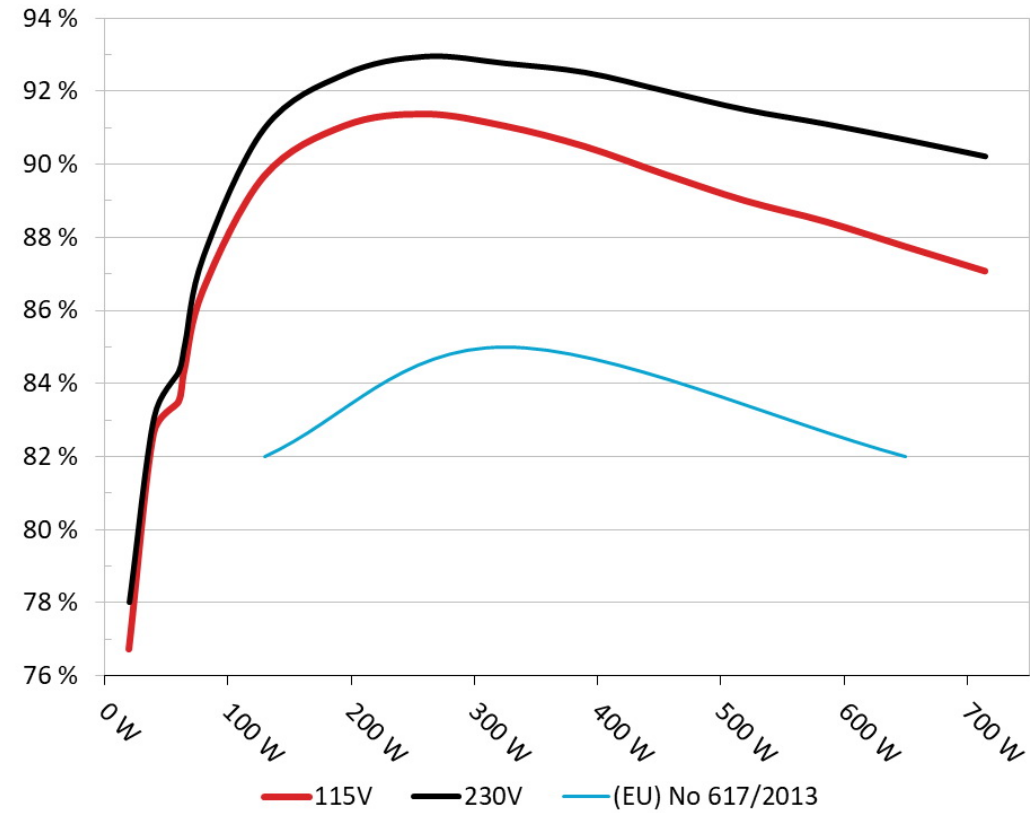
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Indicative Performance

Efficiency under high ambient temperature

Efficiency: XPG Core Reactor II 650W

Ambient: 37°C - 47°C (98.6°F - 116.6°F)



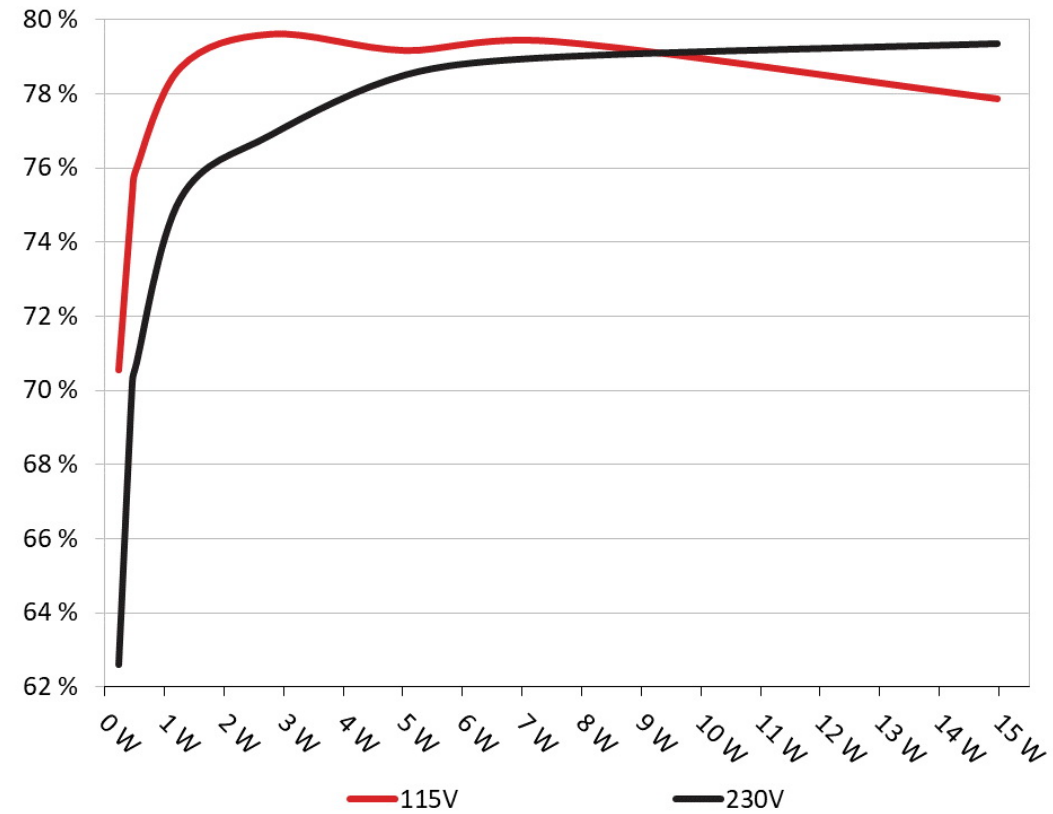
INFO

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

5VSB Efficiency: XPG Core Reactor II 650W

Ambient: 34°C - 36°C (93.2°F - 96.8°F)



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	0.228W	70.844%	0.032
	5.067V	0.322W		115.16V
2	0.09A	0.456W	75.592%	0.06
	5.066V	0.603W		115.16V
3	0.55A	2.781W	79.915%	0.268
	5.054V	3.48W		115.16V
4	1A	5.043W	79.47%	0.367
	5.042V	6.345W		115.16V
5	1.5A	7.545W	79.715%	0.416
	5.028V	9.465W		115.15V
6	3A	14.964W	78.169%	0.483
	4.987V	19.143W		115.15V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.228W	62.917%	0.011
	5.067V	0.364W		230.38V
2	0.09A	0.456W	70.545%	0.02
	5.066V	0.647W		230.38V
3	0.55A	2.78W	77.189%	0.104
	5.053V	3.599W		230.38V
4	1A	5.043W	78.81%	0.171
	5.042V	6.398W		230.38V
5	1.5A	7.544W	79.286%	0.231
	5.028V	9.515W		230.38V
6	3A	14.965W	79.648%	0.333
	4.988V	18.787W		230.38V

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
10%	3.552A	1.964A	1.979A	0.985A	65	84.38%	902	20.8	40.12°C	0.955
	12.219V	5.094V	3.335V	5.076V	77.032				44.39°C	115.15V
20%	8.167A	2.948A	2.971A	1.184A	129.947	89.686%	903	20.8	40.36°C	0.985
	12.127V	5.09V	3.333V	5.069V	144.893				44.89°C	115.14V
30%	13.112A	3.44A	3.467A	1.383A	194.948	91.054%	908	21.0	41.04°C	0.991
	12.118V	5.088V	3.332V	5.064V	214.102				46.18°C	115.12V
40%	18.060A	3.933A	3.962A	1.582A	260.037	91.374%	911	21.3	41.75°C	0.995
	12.117V	5.087V	3.332V	5.059V	284.586				47.28°C	115.09V
50%	22.568A	4.919A	4.954A	1.781A	325.032	91.045%	1221	30.2	42.07°C	0.993
	12.164V	5.084V	3.331V	5.053V	357.002				48.15°C	115.08V
60%	27.119A	5.907A	5.949A	1.982A	389.482	90.488%	1479	36.4	42.56°C	0.993
	12.156V	5.08V	3.329V	5.046V	430.422				49.14°C	115.06V
70%	31.743A	6.896A	6.944A	2.183A	454.812	89.722%	1838	42.2	43.54°C	0.994
	12.151V	5.077V	3.327V	5.04V	506.91				50.56°C	115.04V
80%	36.368A	7.883A	7.937A	2.283A	519.601	89.003%	2135	47.4	43.81°C	0.995
	12.145V	5.074V	3.326V	5.037V	583.801				52.01°C	115.02V
90%	41.410A	8.383A	8.423A	2.385A	585.012	88.43%	2376	50.6	44.82°C	0.995
	12.135V	5.07V	3.324V	5.032V	661.551				53.87°C	115.01V
100%	46.163A	8.875A	8.933A	2.99A	649.872	87.747%	2381	50.4	45.31°C	0.995
	12.135V	5.07V	3.324V	5.018V	740.625				55.37°C	114.98V
110%	50.840A	9.875A	10.026A	2.992A	714.344	87.076%	2383	50.4	46.69°C	0.995
	12.117V	5.063V	3.321V	5.014V	820.377				57.63°C	114.95V
CL1	0.115A	13.014A	13.126A	0A	111.289	83.858%	1364	34.0	44.24°C	0.985
	12.147V	5.086V	3.329V	5.113V	132.713				49.68°C	115.14V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL2	0.115A	19.614A	0A	0A	101.389	82.827%	1196	29.6	44.09°C	0.983
	12.155V	5.098V	3.332V	5.146V	122.412				51.16°C	115.15V
CL3	0.114A	0A	19.771A	0A	67.387	77.004%	1194	29.6	42.96°C	0.968
	12.196V	5.093V	3.338V	5.086V	87.513				52.01°C	115.15V
CL4	53.556A	0A	0A	0A	649.765	88.457%	2384	50.5	47.13°C	0.995
	12.132V	5.078V	3.331V	5.082V	734.558				58.06°C	114.98V

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
10%	3.551A	1.963A	1.979A	0.985A	65.006	85.076%	920	21.6	40.54°C	0.757
	12.223V	5.094V	3.335V	5.077V	76.41				44.81°C	230.41V
20%	8.166A	2.948A	2.971A	1.184A	129.965	90.996%	921	21.6	40.96°C	0.903
	12.130V	5.09V	3.332V	5.069V	142.825				45.58°C	230.4V
30%	13.114A	3.441A	3.468A	1.383A	194.975	92.458%	919	21.6	41.75°C	0.948
	12.118V	5.087V	3.331V	5.063V	210.879				46.85°C	230.4V
40%	18.061A	3.934A	3.964A	1.582A	260.067	92.94%	923	21.8	41.96°C	0.965
	12.117V	5.085V	3.331V	5.058V	279.822				47.49°C	230.39V
50%	22.571A	4.921A	4.957A	1.782A	325.07	92.751%	1343	33.9	42.04°C	0.976
	12.164V	5.082V	3.329V	5.052V	350.479				48.16°C	230.39V
60%	27.132A	5.91A	5.952A	1.983A	389.621	92.504%	1555	38.8	42.7°C	0.98
	12.156V	5.078V	3.327V	5.045V	421.193				49.41°C	230.39V
70%	31.765A	6.901A	6.948A	2.184A	454.952	91.994%	1776	42.6	43.05°C	0.985
	12.146V	5.074V	3.325V	5.038V	494.548				50.09°C	230.38V
80%	36.404A	7.891A	7.944A	2.285A	519.751	91.485%	2124	46.9	44.1°C	0.987
	12.137V	5.07V	3.323V	5.034V	568.13				52.14°C	230.37V
90%	41.431A	8.386A	8.425A	2.385A	585.17	91.095%	2381	50.4	45.24°C	0.988
	12.133V	5.069V	3.323V	5.032V	642.373				54.31°C	230.36V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
100%	46.205A	8.883A	8.939A	2.991A	650.025	90.663%	2385	50.5	45.55°C	0.99
	12.127V	5.067V	3.322V	5.016V	716.967				55.59°C	230.35V
110%	50.861A	9.877A	10.028A	2.992A	714.659	90.209%	2384	50.5	46.61°C	0.991
	12.118V	5.063V	3.321V	5.014V	792.228				57.55°C	230.34V
CL1	0.115A	13.02A	13.132A	0A	111.306	85.043%	1183	29.1	41.12°C	0.891
	12.140V	5.085V	3.328V	5.112V	130.883				46.57°C	230.42V
CL2	0.115A	19.616A	0A	0A	101.4	83.653%	1188	29.4	44.65°C	0.878
	12.152V	5.098V	3.331V	5.146V	121.218				51.71°C	230.42V
CL3	0.115A	0A	19.776A	0A	67.395	77.554%	1355	34.0	45.12°C	0.793
	12.194V	5.093V	3.337V	5.086V	86.903				54.15°C	230.43V
CL4	53.559A	0A	0A	0A	649.965	91.359%	2387	50.5	44.6°C	0.989
	12.135V	5.079V	3.332V	5.084V	711.438				55.56°C	230.36V

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])	Temps (In/Out)	PF/AC Volts
20W	1.231A	0.491A	0.495A	0.197A	20.003	76.731%	875	19.6	36.68°C	0.741
	12.065V	5.089V	3.331V	5.087V	26.069				39.79°C	115.16V
40W	2.706A	0.687A	0.693A	0.295A	39.999	82.635%	883	20.1	37.46°C	0.898
	12.077V	5.091V	3.333V	5.087V	48.4				40.78°C	115.16V
60W	4.138A	0.884A	0.891A	0.393A	59.997	83.49%	889	20.4	38.41°C	0.947
	12.211V	5.091V	3.333V	5.085V	71.861				42.17°C	115.16V
80W	5.618A	1.08A	1.088A	0.492A	79.954	86.541%	900	20.9	39.98°C	0.969
	12.163V	5.093V	3.335V	5.085V	92.388				43.96°C	115.15V

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
20W	1.231A	0.491A	0.495A	0.197A	20.008	78.027%	896	20.6	36.97°C	0.383
	12.069V	5.091V	3.332V	5.089V	25.66				40.02°C	230.41V
40W	2.706A	0.687A	0.693A	0.295A	40.005	83.073%	904	20.8	37.04°C	0.594
	12.080V	5.092V	3.333V	5.088V	48.157				40.41°C	230.41V
60W	4.136A	0.884A	0.891A	0.393A	60.004	84.327%	912	21.3	38.69°C	0.736
	12.218V	5.093V	3.334V	5.087V	71.154				42.23°C	230.41V
80W	5.618A	1.08A	1.089A	0.492A	79.969	87.47%	916	21.5	39.42°C	0.806
	12.164V	5.093V	3.334V	5.086V	91.424				43.21°C	230.41V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.23mV	4.19mV	5.48mV	5.61mV	Pass
20% Load	14.95mV	4.09mV	5.94mV	6.07mV	Pass
30% Load	11.94mV	4.60mV	6.96mV	5.66mV	Pass
40% Load	10.91mV	5.11mV	8.14mV	5.97mV	Pass
50% Load	10.57mV	5.47mV	8.50mV	6.68mV	Pass
60% Load	11.75mV	6.09mV	9.72mV	6.88mV	Pass
70% Load	12.82mV	7.11mV	10.49mV	7.80mV	Pass
80% Load	14.05mV	7.98mV	14.89mV	8.46mV	Pass
90% Load	14.15mV	8.39mV	16.02mV	8.87mV	Pass
100% Load	19.74mV	10.57mV	20.93mV	10.31mV	Pass
110% Load	20.64mV	11.09mV	22.56mV	11.23mV	Pass
Crossload1	21.20mV	7.64mV	15.76mV	7.21mV	Pass
Crossload2	20.00mV	5.88mV	5.42mV	5.45mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	7.00mV	4.29mV	17.35mV	5.45mV	Pass
Crossload4	20.02mV	7.90mV	14.29mV	8.91mV	Pass

The results above are not used in the certification process

230V

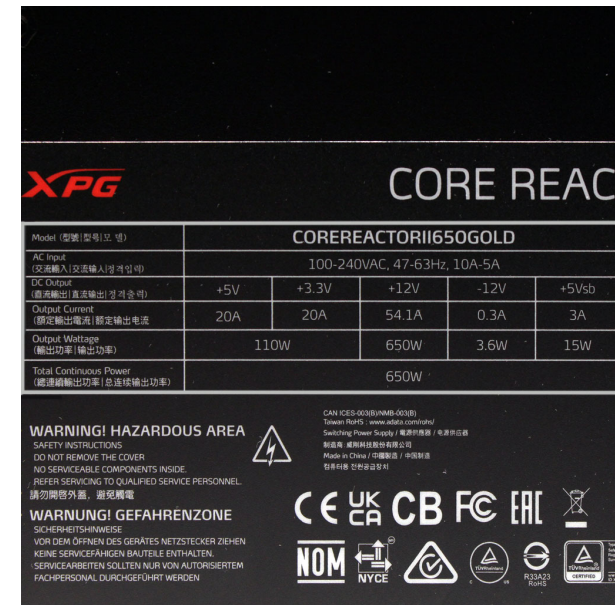
Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.38mV	4.04mV	5.48mV	5.35mV	Pass
20% Load	16.12mV	4.25mV	6.19mV	5.56mV	Pass
30% Load	12.19mV	5.22mV	7.01mV	5.81mV	Pass
40% Load	11.42mV	5.88mV	8.65mV	6.48mV	Pass
50% Load	10.88mV	5.57mV	9.06mV	6.52mV	Pass
60% Load	11.55mV	6.60mV	9.98mV	7.29mV	Pass
70% Load	12.67mV	7.57mV	11.26mV	7.90mV	Pass
80% Load	13.33mV	9.00mV	17.50mV	9.02mV	Pass
90% Load	14.15mV	8.85mV	18.99mV	9.18mV	Pass
100% Load	20.28mV	10.58mV	20.88mV	10.90mV	Pass
110% Load	22.21mV	11.44mV	23.21mV	11.88mV	Pass
Crossload1	23.19mV	7.54mV	15.74mV	7.39mV	Pass
Crossload2	22.51mV	5.68mV	5.84mV	5.46mV	Pass
Crossload3	7.86mV	4.75mV	17.04mV	6.37mV	Pass
Crossload4	21.17mV	7.99mV	14.30mV	9.09mV	Pass

The results above are not used in the certification process

XPG Core Reactor II 650W



Top side



Power specifications label

[illegible]ETA LAMBDA SAFE

DELTA[][][][][][]

PHI

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