



XPG Core Reactor II VE 650

Serial Number

Lab ID AD65002403

Certification ID 252403

Test Result Report ID: 24PS2403A

Certificate Issue Date: Apr 4, 2024

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 VE 650
OEM/ODM	Channel Well Technology
Serial Number	
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	AD65002403
Date of receipt	Mar 8, 2024
Testing Date	Apr 4, 2024
Report Issued Date	Apr 4, 2024
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 (650mm)	1	1	18AWG	No
4+4 pin EPS12V (750mm)	2	2	18AWG	No
6+2 pin PCIe (550mm)	2	2	18AWG	No
12+4 pin PCIe (600mm) (600W)	1	1	16-24AWG	No
SATA (440mm+150mm+150mm) / 4-pin Molex (+150mm)	2	6 / 2	18AWG	No
AC Power Cord (1380mm) - 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 v3.1 PSU Power Excursion	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	88.586%
Average Noise Output (>1450 Load Combinations)	29.41dBA
Average PF (>1450 Load Combinations)	0.989
Efficiency With 10W (≤500W) or 2% (>500W) Load	73.822%
Standby Power Consumption	0.0389W
Non-Accredited	
12V Ripple (Full Load)	33.76mV
5V Ripple (Full Load)	14.92mV
3.3V Ripple (Full Load)	28.18mV
5VSB Ripple (Full Load)	10.89mV
12V Load Regulation	1.61%

5V Load Regulation	0.57%
3.3V Load Regulation	2.26%
5VSB Load Regulation	1.95%
Inrush Current	27.530A

230V

Accredited		
Average Efficiency (>1450 load combinations)	90.670%	
Average Noise Output (>1450 Load Combinations)	27.21dBA	
Average PF (>1450 Load Combinations)	0.957	
Efficiency With 10W (≤500W) or 2% (>500W) Load	72.608%	
Standby Power Consumption	0.0739W	
Non-Accredited		
12V Ripple (Full Load)	34.86mV	
5V Ripple (Full Load)	14.15mV	
3.3V Ripple (Full Load)	27.27mV	
5VSB Ripple (Full Load)	10.66mV	
12V Load Regulation	1.62%	
5V Load Regulation	0.57%	
3.3V Load Regulation	2.26%	
5VSB Load Regulation	1.95%	
Inrush Current	47.680A	
12V Transient Response (200%)	11.54V	
5V Transient Response (200%)	5.000V	
3.3V Transient Response (200%)	3.172V	
5VSB Transient Response (200%)	4.941V	
Hold-Up Time & PWR_OK Signal	23.10ms	
AC Loss to PWR_OK Hold Up Time	20.10ms	
PWR_OK Inactive to DC Loss Delay	3.00ms	
PSU Timings: T1 (20% / 100%)	62.0ms	63.0ms
PSU Timings: T3 (20% / 100%)	128.0ms	129.0ms
OPP (27.55°C / 43.28°C)	122.28%	122.28%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	23.1
AC Loss to PWR_OK Hold Up Time (ms)	20.1
PWR_OK Inactive to DC Loss Delay (ms)	3

Vampire Power

Tables

115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	115.19 V	115.16 V	113.85 V	115.20 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:	0.039 W	0.035 W	N/A	0.043 W	N/A	N/A
Apparent Power:	9.786 W	9.783 W	N/A	9.789 W	N/A	N/A
Power Factor:	0.004	N/A	N/A	N/A	N/A	N/A

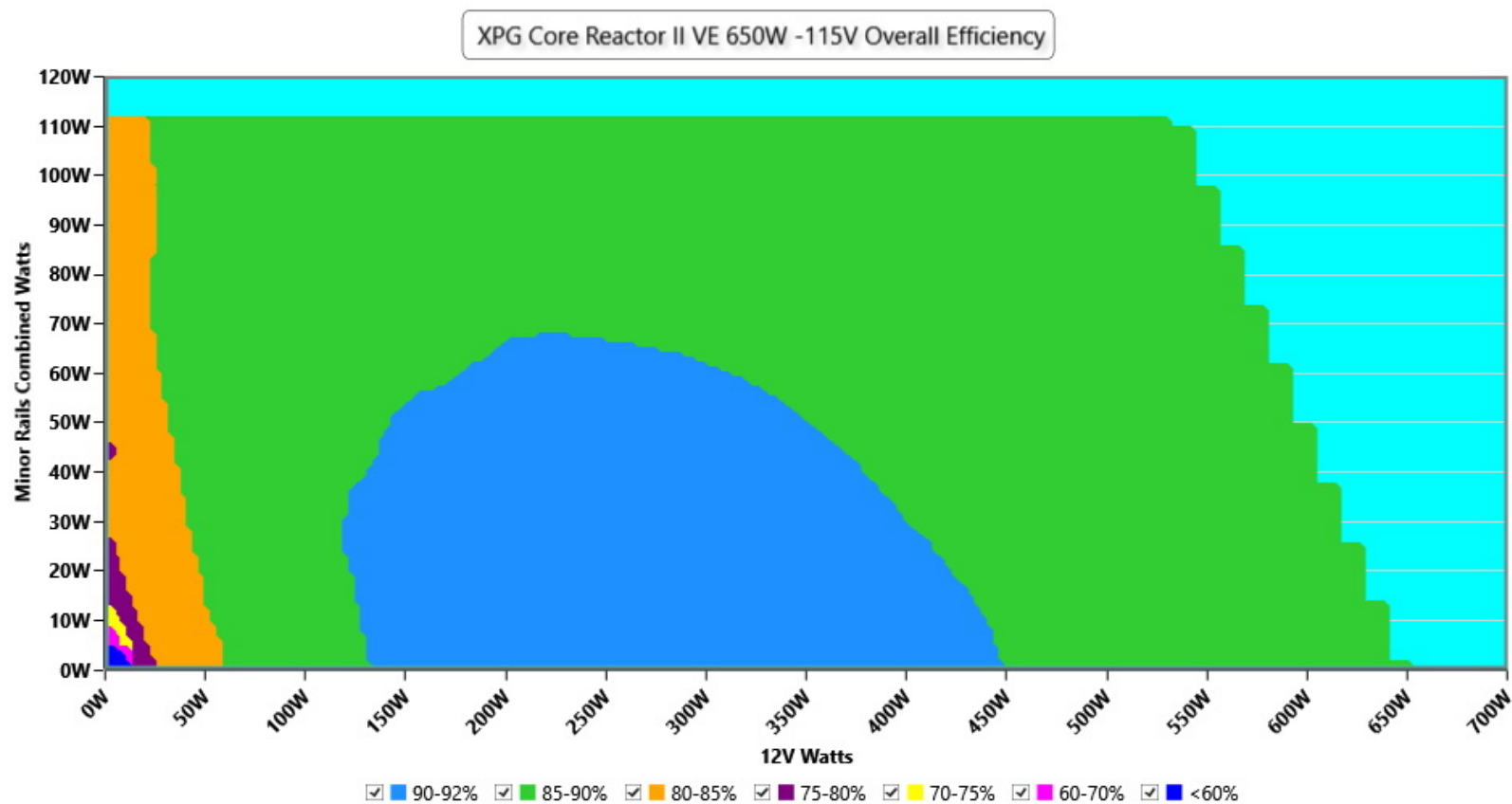
230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	230.40 V	230.41 V	227.70 V	230.44 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:	0.074 W	0.064 W	N/A	0.086 W	N/A	N/A
Apparent Power:	32.739 W	32.730 W	N/A	32.747 W	N/A	N/A

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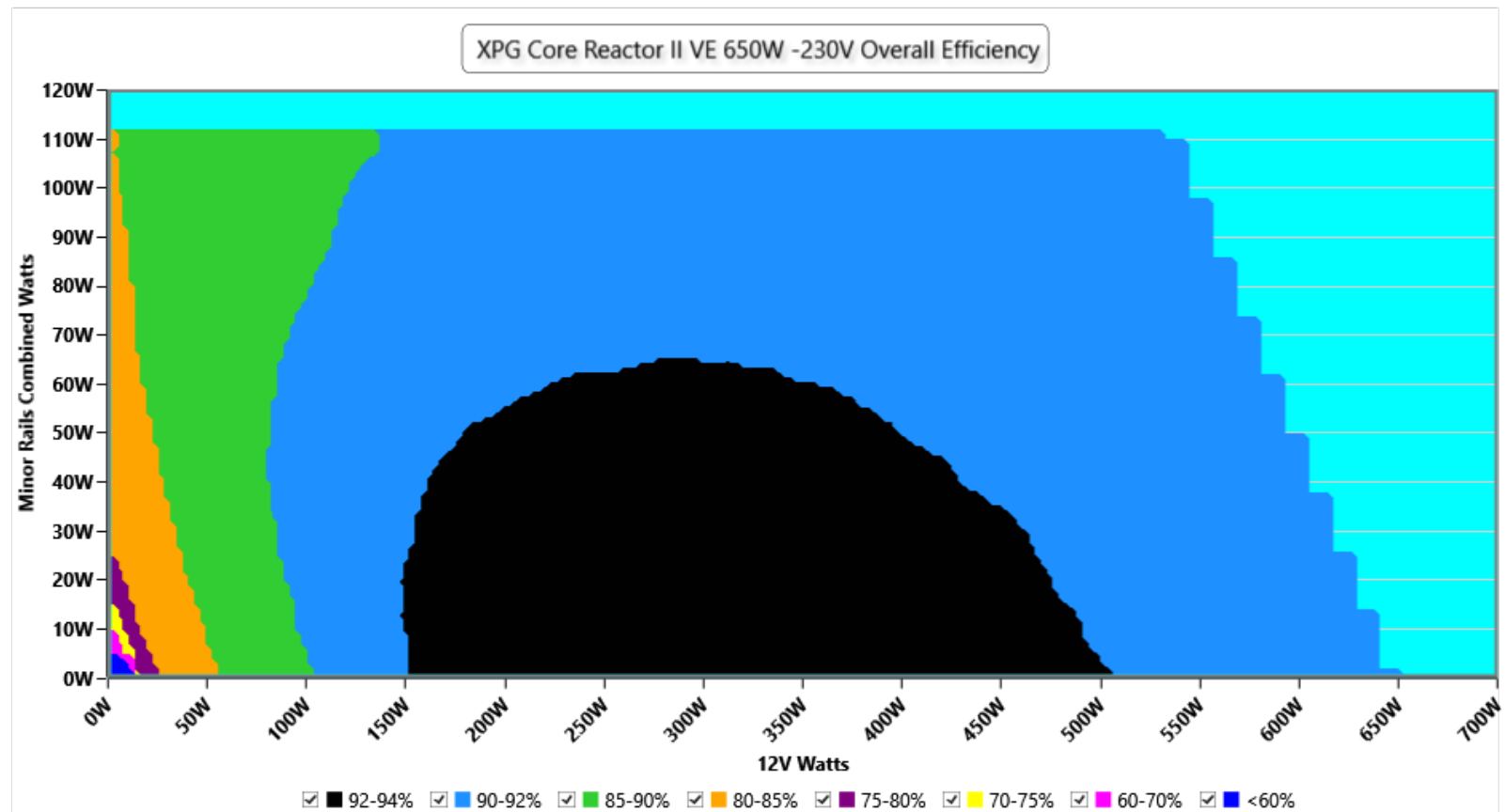
Efficiency Graph

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

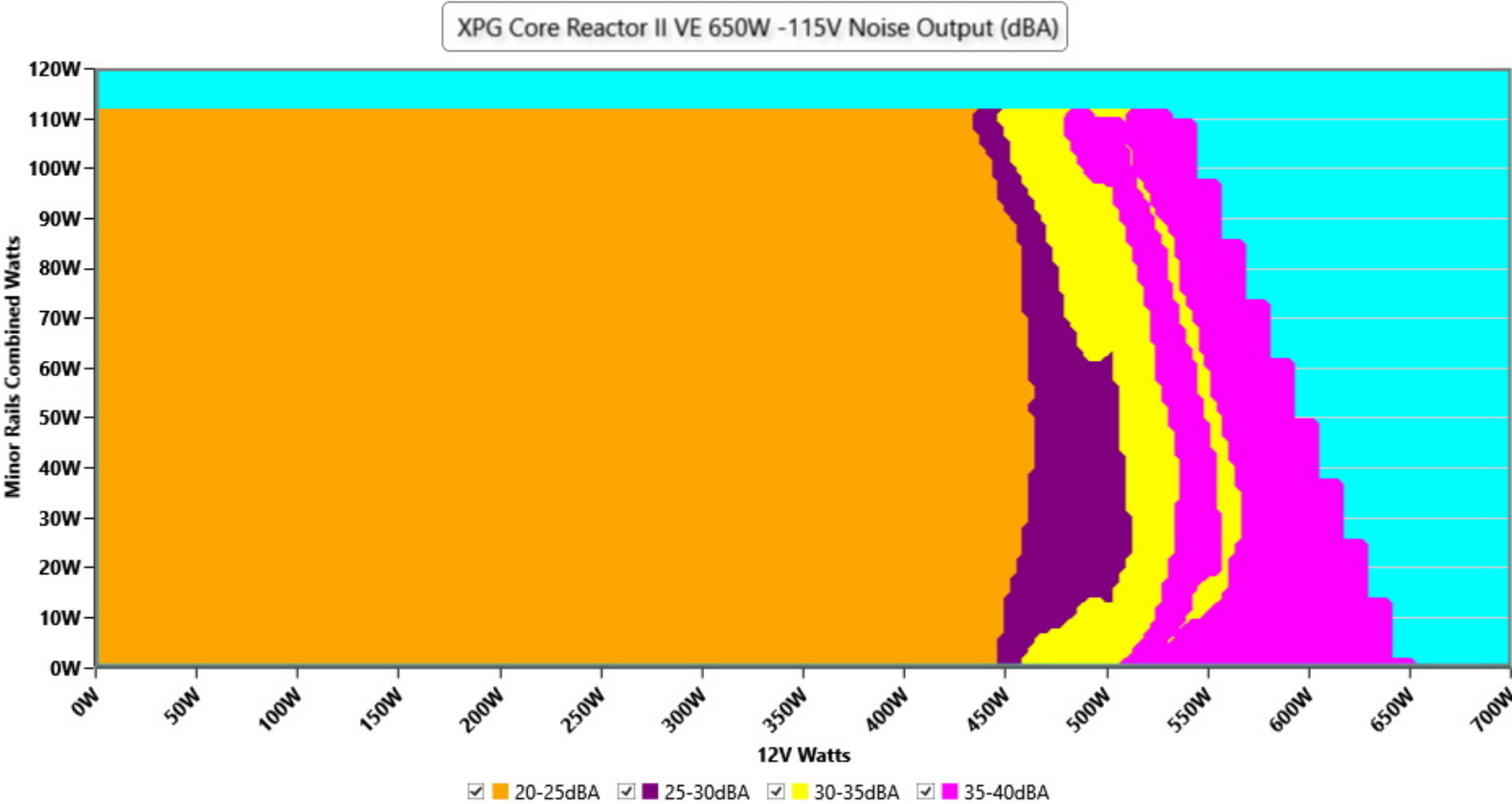


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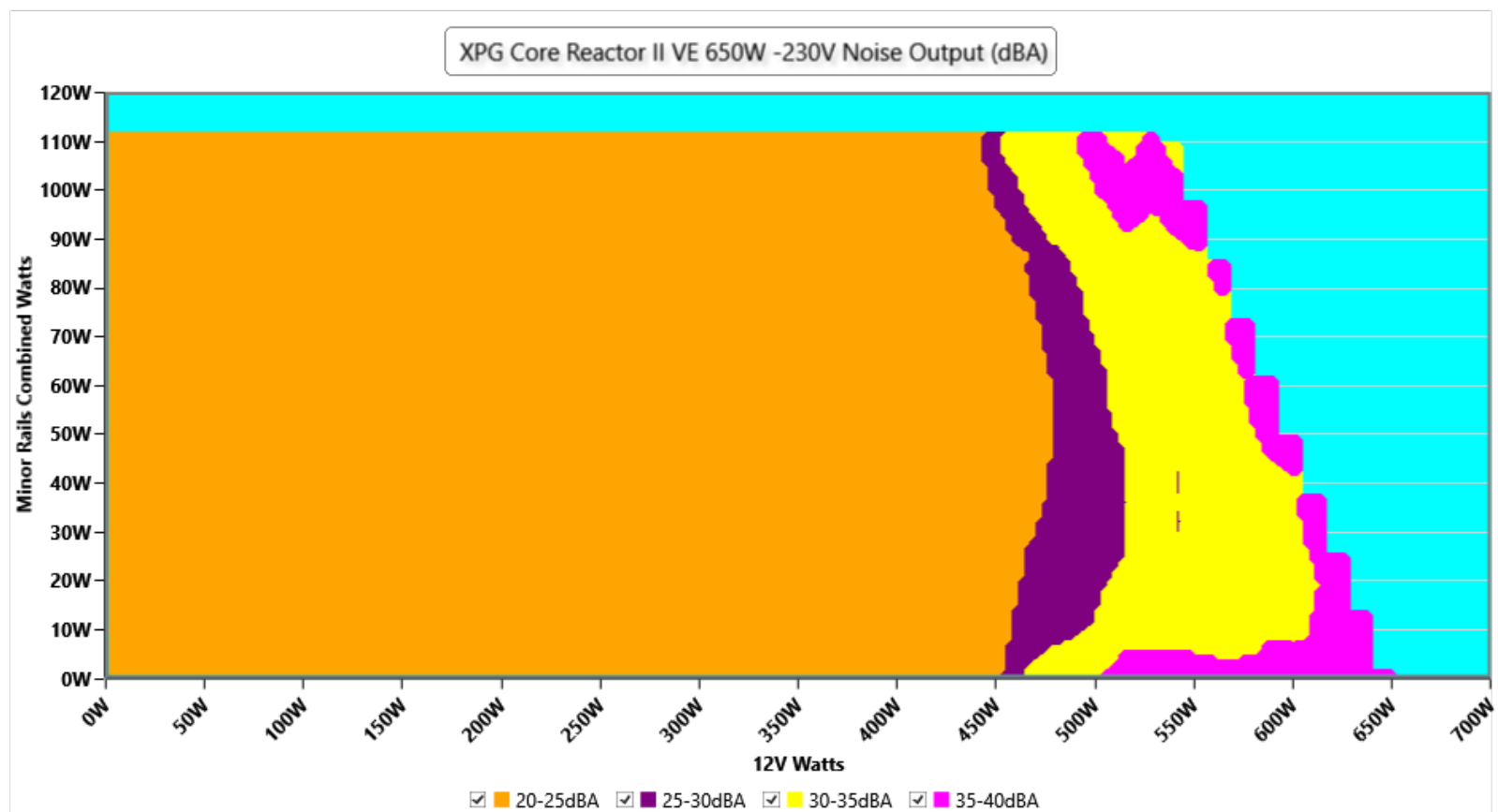
Noise Graph

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

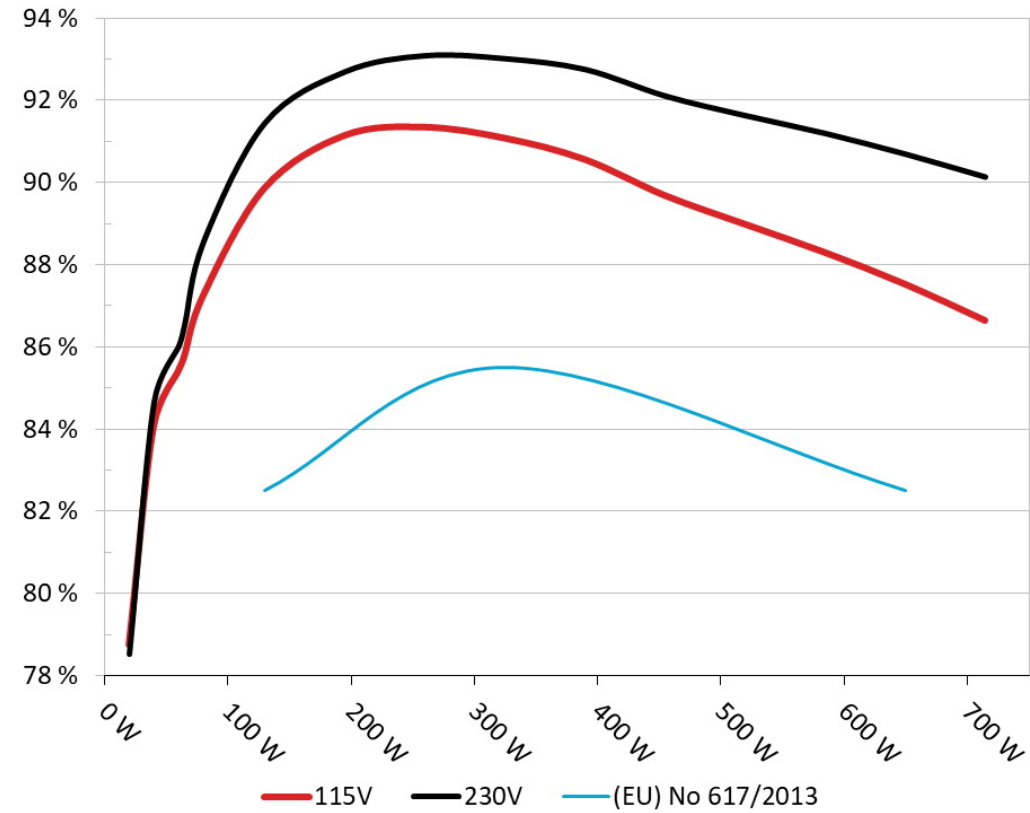
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Indicative Performance

Efficiency under high ambient temperature

Efficiency: XPG Core Reactor II VE 650W

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



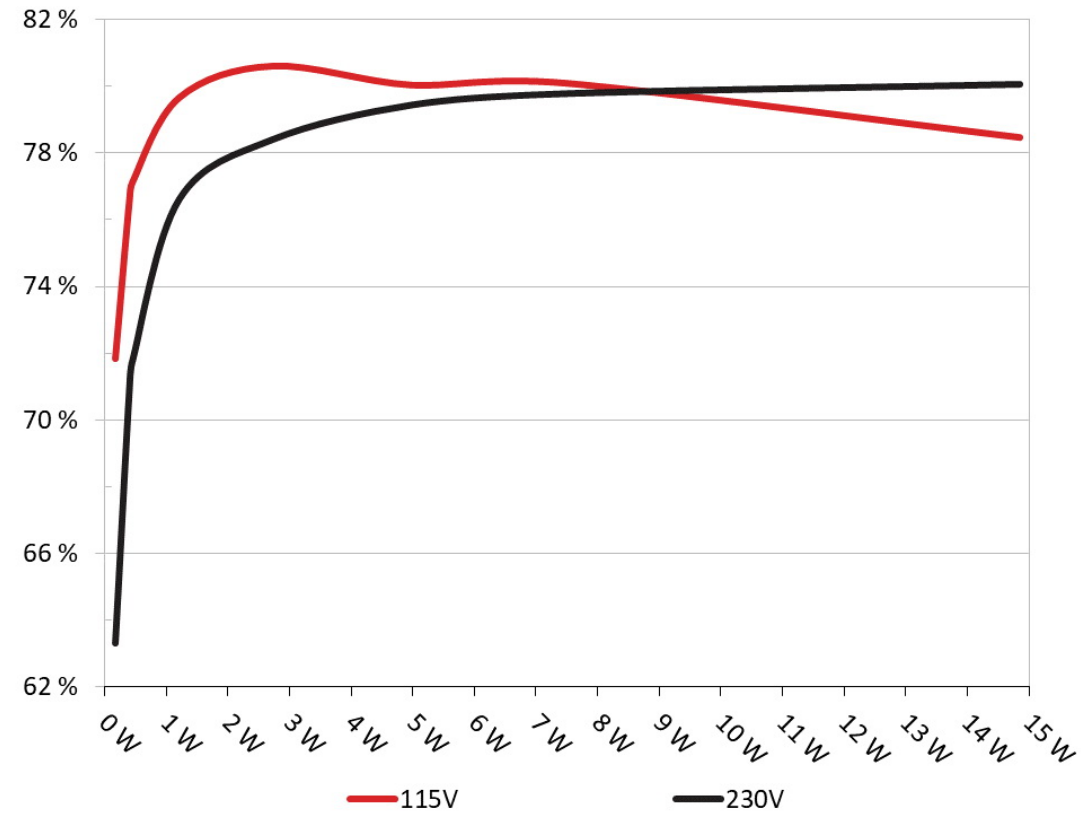
INFO

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 VE 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	71.337%	0.032
	5.066V	0.32W		115.18V
2	0.09A	0.456W	76.079%	0.06
	5.065V	0.6W		115.18V
3	0.55A	2.778W	80.097%	0.267
	5.049V	3.468W		115.18V
4	1A	5.036W	79.528%	0.365
	5.034V	6.333W		115.18V
5	1.5A	7.528W	79.585%	0.414
	5.017V	9.459W		115.18V
6	3A	14.898W	77.962%	0.482
	4.965V	19.111W		115.17V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.228W	62.799%	0.011
	5.066V	0.364W		230.43V
2	0.09A	0.456W	70.438%	0.02
	5.065V	0.648W		230.43V
3	0.55A	2.778W	77.912%	0.104
	5.049V	3.566W		230.43V
4	1A	5.036W	78.95%	0.171
	5.034V	6.378W		230.43V
5	1.5A	7.527W	79.29%	0.23
	5.017V	9.494W		230.43V
6	3A	14.898W	79.57%	0.332
	4.965V	18.727W		230.42V

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%	3.560A	1.97A	1.999A	0.99A	64.999	85.29%	948	22.4	40.27°C	0.972
	12.190V	5.076V	3.3V	5.052V	76.21				44.51°C	115.12V
20%	8.184A	2.956A	3.006A	1.189A	129.935	89.363%	952	22.6	40.68°C	0.987
	12.100V	5.074V	3.293V	5.047V	145.399				45.27°C	115.11V
30%	13.144A	3.451A	3.512A	1.389A	194.937	90.644%	954	22.6	41.09°C	0.99
	12.088V	5.072V	3.288V	5.039V	215.057				46.09°C	115.09V
40%	18.115A	3.945A	4.02A	1.59A	260.021	90.845%	957	22.8	41.71°C	0.993
	12.079V	5.07V	3.283V	5.032V	286.223				47.3°C	115.07V
50%	22.688A	4.935A	5.038A	1.791A	325.012	90.578%	960	22.9	42.13°C	0.992
	12.099V	5.067V	3.275V	5.025V	358.816				48.19°C	115.05V
60%	27.188A	5.926A	6.061A	1.993A	389.426	90.065%	965	23.0	42.9°C	0.992
	12.124V	5.064V	3.267V	5.018V	432.38				49.46°C	115.03V
70%	31.830A	6.919A	7.091A	2.196A	454.754	89.185%	1444	34.9	43.39°C	0.993
	12.116V	5.06V	3.258V	5.01V	509.902				50.43°C	115.01V
80%	36.487A	7.912A	8.126A	2.298A	519.572	88.488%	1753	40.9	43.61°C	0.994
	12.105V	5.055V	3.248V	5.005V	587.166				51.63°C	114.99V
90%	41.535A	8.411A	8.633A	2.4A	584.986	87.796%	2020	44.5	44.15°C	0.994
	12.098V	5.053V	3.243V	5V	666.297				53.24°C	114.97V
100%	46.331A	8.911A	9.174A	3.013A	649.832	87.028%	2280	48.5	45.66°C	0.995
	12.090V	5.05V	3.237V	4.978V	746.691				55.73°C	114.95V
110%	50.979A	9.906A	10.313A	3.014A	714.464	86.148%	2438	49.7	46.65°C	0.995
	12.087V	5.048V	3.228V	4.978V	829.346				57.58°C	114.92V
CL1	0.115A	13.088A	13.525A	0A	111.286	83.686%	973	23.3	40.3°C	0.987
	12.121V	5.058V	3.23V	5.104V	132.979				45.77°C	115.11V

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	19.754A	0A	0A	101.389	82.591%	975	23.4	40.94°C	0.986
	12.132V	5.062V	3.318V	5.136V	122.759				47.96°C	115.11V
CL3	0.115A	0A	20.671A	0A	67.383	76.877%	953	22.6	40.19°C	0.976
	12.124V	5.076V	3.193V	5.072V	87.651				49.22°C	115.12V
CL4	53.739A	0A	0.003A	0.001A	649.614	87.966%	2195	47.6	45.97°C	0.995
	12.088V	5.071V	3.299V	5.062V	738.485				56.93°C	114.95V

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%	3.561A	1.97A	2A	0.99A	65.005	86.058%	955	22.6	40.4°C	0.816
	12.189V	5.076V	3.3V	5.052V	75.536				44.62°C	230.38V
20%	8.187A	2.957A	3.007A	1.189A	129.951	90.953%	958	22.8	40.79°C	0.922
	12.098V	5.074V	3.293V	5.046V	142.881				45.37°C	230.37V
30%	13.148A	3.451A	3.513A	1.39A	194.957	92.199%	961	22.9	41.34°C	0.954
	12.086V	5.072V	3.288V	5.039V	211.454				46.38°C	230.37V
40%	18.121A	3.946A	4.021A	1.59A	260.045	92.59%	964	23.0	41.67°C	0.967
	12.077V	5.07V	3.283V	5.031V	280.856				47.19°C	230.36V
50%	22.693A	4.936A	5.04A	1.792A	325.043	92.516%	968	23.1	42.01°C	0.975
	12.097V	5.067V	3.274V	5.024V	351.336				48.1°C	230.36V
60%	27.201A	5.926A	6.063A	1.994A	389.564	92.258%	972	23.3	42.66°C	0.98
	12.123V	5.063V	3.266V	5.017V	422.252				49.23°C	230.35V
70%	31.846A	6.92A	7.093A	2.196A	454.887	91.608%	1447	34.9	43.34°C	0.983
	12.113V	5.06V	3.257V	5.009V	496.557				50.43°C	230.34V
80%	36.504A	7.913A	8.129A	2.298A	519.701	91.133%	1769	41.2	43.96°C	0.985
	12.103V	5.055V	3.247V	5.005V	570.268				52.08°C	230.33V
90%	41.552A	8.412A	8.637A	2.401A	585.112	90.695%	2033	44.7	44.61°C	0.986
	12.096V	5.052V	3.242V	4.999V	645.141				53.65°C	230.33V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
100%	46.349A	8.912A	9.178A	3.014A	649.953	90.193%	2283	48.6	45.75°C	0.988
	12.087V	5.05V	3.236V	4.978V	720.627				55.79°C	230.32V
110%	51.016A	9.908A	10.319A	3.014A	714.591	89.638%	2444	49.7	46.56°C	0.989
	12.081V	5.047V	3.227V	4.977V	797.195				57.48°C	230.31V
CL1	0.116A	13.091A	13.534A	0A	111.302	85.167%	978	23.5	40.41°C	0.913
	12.116V	5.057V	3.229V	5.104V	130.688				45.86°C	230.39V
CL2	0.115A	19.757A	0A	0A	101.399	83.68%	981	23.6	41.78°C	0.903
	12.129V	5.061V	3.317V	5.136V	121.178				49.01°C	230.39V
CL3	0.115A	0A	20.68A	0A	67.394	77.915%	962	22.9	40.73°C	0.843
	12.124V	5.076V	3.191V	5.072V	86.497				49.81°C	230.4V
CL4	53.771A	0A	0.003A	0.001A	649.818	91.077%	2204	47.7	45.31°C	0.987
	12.085V	5.069V	3.297V	5.06V	713.486				56.26°C	230.33V

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	1.238A	0.492A	0.498A	0.197A	19.998	78.267%	934	22	36.56°C	0.855
	11.996V	5.079V	3.31V	5.075V	25.553				39.61°C	115.14V
40W	2.723A	0.689A	0.698A	0.296A	39.997	83.574%	938	22.1	37.21°C	0.943
	12.004V	5.078V	3.308V	5.071V	47.858				40.53°C	115.13V
60W	4.146A	0.887A	0.898A	0.395A	59.995	84.917%	941	22.2	38.96°C	0.966
	12.185V	5.076V	3.306V	5.067V	70.65				42.71°C	115.13V
80W	5.635A	1.084A	1.098A	0.494A	79.946	86.737%	945	22.3	39.6°C	0.977
	12.123V	5.076V	3.305V	5.064V	92.169				43.58°C	115.12V

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	1.238A	0.492A	0.499A	0.197A	20.004	78.026%	941	22.2	36.57°C	0.484
	11.994V	5.079V	3.309V	5.075V	25.638				39.64°C	230.39V
40W	2.724A	0.689A	0.698A	0.296A	40.002	84.151%	944	22.3	37.57°C	0.688
	12.002V	5.078V	3.308V	5.071V	47.537				40.82°C	230.38V
60W	4.147A	0.887A	0.898A	0.395A	60	85.517%	947	22.4	38.54°C	0.8
	12.184V	5.077V	3.306V	5.067V	70.162				42.03°C	230.38V
80W	5.638A	1.084A	1.098A	0.494A	79.958	88.043%	950	22.5	39.27°C	0.852
	12.120V	5.076V	3.305V	5.064V	90.817				43.1°C	230.38V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.51mV	6.43mV	4.93mV	5.86mV	Pass
20% Load	15.84mV	6.48mV	6.36mV	6.37mV	Pass
30% Load	13.89mV	7.60mV	9.00mV	6.47mV	Pass
40% Load	14.65mV	8.06mV	15.92mV	6.47mV	Pass
50% Load	16.59mV	9.23mV	13.07mV	7.13mV	Pass
60% Load	18.98mV	9.49mV	15.36mV	7.54mV	Pass
70% Load	21.42mV	10.56mV	17.44mV	8.15mV	Pass
80% Load	23.30mV	12.09mV	21.97mV	9.12mV	Pass
90% Load	26.10mV	12.75mV	25.23mV	9.02mV	Pass
100% Load	33.76mV	14.92mV	28.18mV	10.89mV	Pass
110% Load	43.33mV	19.45mV	30.93mV	19.99mV	Pass
Crossload1	27.25mV	7.62mV	10.99mV	6.10mV	Pass
Crossload2	15.11mV	7.86mV	6.66mV	5.35mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	8.50mV	6.53mV	12.20mV	5.30mV	Pass
Crossload4	33.19mV	14.25mV	24.14mV	10.07mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.62mV	6.07mV	5.04mV	5.61mV	Pass
20% Load	18.59mV	6.78mV	7.12mV	5.96mV	Pass
30% Load	13.08mV	7.80mV	8.80mV	6.01mV	Pass
40% Load	14.50mV	8.52mV	16.38mV	7.08mV	Pass
50% Load	16.43mV	9.03mV	12.87mV	7.34mV	Pass
60% Load	18.77mV	9.39mV	15.16mV	6.98mV	Pass
70% Load	21.01mV	10.20mV	17.40mV	7.90mV	Pass
80% Load	23.61mV	11.43mV	22.03mV	9.22mV	Pass
90% Load	25.64mV	12.40mV	25.43mV	9.12mV	Pass
100% Load	34.86mV	14.15mV	27.27mV	10.66mV	Pass
110% Load	36.66mV	15.80mV	30.58mV	11.20mV	Pass
Crossload1	31.91mV	7.47mV	11.60mV	5.92mV	Pass
Crossload2	16.06mV	7.55mV	6.36mV	5.40mV	Pass
Crossload3	8.70mV	6.12mV	12.26mV	5.09mV	Pass
Crossload4	34.28mV	13.92mV	24.08mV	10.88mV	Pass

The results above are not used in the certification process

XPG Core Reactor II VE 650

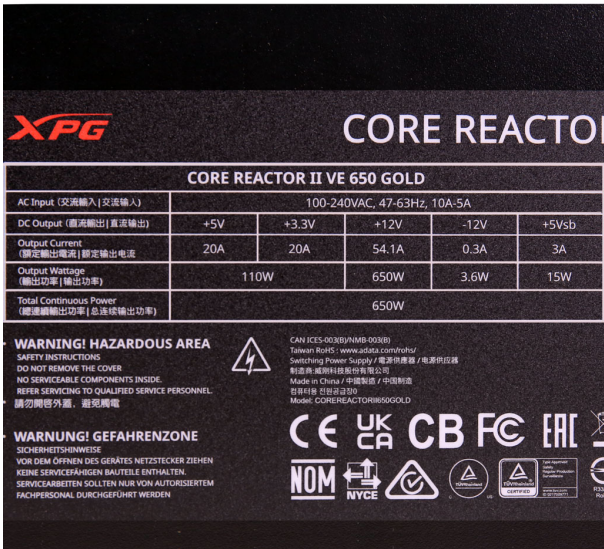


Top side

All data and graphs included in this test report can be used by any individual on the following conditions:

- › It should be mentioned that the test results are provided by Cybenetics
- › The link to the original test results document should be provided in any case

CYBENETICS LTD Syrou 6, Latsia, 2231, Nicosia Cyprus



Power specifications label

Cybenetics runs voluntary certification programs for power supplies - ETA for efficiency, LAMBDA for noise and SAFE for safety and correct operation - and for cooling products, with DELTA for chassis soundproofing and PHI for fan airflow and static pressure. THETA rates cooler performance on AMD AM5 and Intel LGA1851 outside ISO 17065 and accreditation scope

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