XPG Core Reactor II VE 850

Serial Number

Lab ID AD85002397

Certification ID 252397

Test Result Report ID: 24PS2397A

Certificate Issue Date: Mar 28, 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 850
OEM/ODM	Channel Well Technology
Serial Number	
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	12-6

Rated Frequency (Hz)	47-63
Rated Power (W)	850
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	✗
Cybenetics Testing Information	
Lab ID	AD85002397
Date of receipt	Mar 8, 2024
Testing Date	Mar 26, 2024
Report Issued Date	Mar 28, 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)	3	3	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 (2380mm) - C13 coupler	1	1	17AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	22	22	70.8	3	0.3
	Watts	120		850	15	3.6
Total Max. Power (W)		850				

Parts Description

General Data	
Manufacturer (OEM)	CWT
Platform	CSE
PCB Type	Double-Sided
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 1x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor SCK-056 (5 Ohm)
Bridge Rectifier(s)	2x GBUL1506 (600V, 15A @ 100°C)
APFC MOSFETs	2x STMicroelectronics STF33N60M2 (650V, 16A @ 100°C, Rds(on): 0.125Ohm) & 1x Sync Power SPN5003 (for reducing the no load consuption)
APFC Boost Diode	1x Vishay Schottky Diode VS-3C08ET07T-M3 (650V, 8A @ 135°C)
Bulk Cap(s)	1x Elite (400V, 680uF, 2000h @ 105°C, PL(M))
Main Switchers	2x Vishay SiHA25N60EFL (600V, 16A @ 100°C, Rds(on): 0.146Ohm)
APFC Controller	Champion CM6500UNX
Resonant Controller	Champion CU6901VAC
Topology	Primary side: APFC, Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETs	8x ON Semiconductor NTMFS5C430N (40V, 131A @ 100°C, Rds(on): 1.7mOhm)
5V & 3.3V	DC-DC Converters: 2x UBIQ QN3107M6N (30V, 70A @ 100°C, Rds(on): 2.6mOhm) 2x UBIQ QM3054M6 (30V, 61A @ 100°C, Rds(on): 4.8mOhm) PWM Controller(s): ANPEC APW7159C

Filtering Capacitors	Electrolytic: 3x Elite (2,000 @ 105°C, EL(M)) 2x Elite(4 - 10,000 @ 105°C, EY) 3x Capxon (2 - 5,000 @ 105°C, KF), 3x Teapo (3-00 @ 105°C, SY), Polymer: 17x Elite, 2x APAQ
Supervisor IC	Weltrend WT7502R (OVP, UVP, SCP, PG)
Fan Model	Hong Hua HA1225H12F-Z (120mm, 12V, 0.58A, Fluid Dynamic Bearing Fan))
5VSB Circuit	
Rectifier	1x Silan Microelectronics SVF4N65RD FET(650V, 2.5A @ 100°C, Rds(on): 2.7Ohm)
Standby PWM Controller	On-Bright OB5282

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)	88.640%
Average Noise Output (>1450 Load Combinations)	27.15dBA
Average PF (>1450 Load Combinations)	0.990
Efficiency With 10W (≤500W) or 2% (>500W) Load	72.580%
Standby Power Consumption	0.0163W
Non-Accredited	
12V Ripple (Full Load)	33.72mV

5V Ripple (Full Load)	20.44mV
3.3V Ripple (Full Load)	37.08mV
5VSB Ripple (Full Load)	17.48mV
12V Load Regulation	1.25%
5V Load Regulation	0.54%
3.3V Load Regulation	1.01%
5VSB Load Regulation	2.00%
Inrush Current	26.770A

230V

Accredited	
Average Efficiency (>1450 load combinations)	90.801%
Average Noise Output (>1450 Load Combinations)	26.08dBA
Average PF (>1450 Load Combinations)	0.965
Efficiency With 10W (≤500W) or 2% (>500W) Load	72.076%
Standby Power Consumption	0.0738W
Non-Accredited	
12V Ripple (Full Load)	34.72mV
5V Ripple (Full Load)	19.83mV
3.3V Ripple (Full Load)	36.73mV
5VSB Ripple (Full Load)	18.16mV
12V Load Regulation	1.27%
5V Load Regulation	0.58%
3.3V Load Regulation	1.04%
5VSB Load Regulation	2.00%
Inrush Current	48.910A
12V Transient Response (200%)	11.38V
5V Transient Response (200%)	4.972V
3.3V Transient Response (200%)	3.138V
5VSB Transient Response (200%)	4.863V
Hold-Up Time & PWR_OK Signal	23.00ms
AC Loss to PWR_OK Hold Up Time	20.90ms

PWR_OK Inactive to DC Loss Delay		2.10ms
PSU Timings: T1 (20% / 100%)	62.0ms	61.0ms
PSU Timings: T3 (20% / 100%)	126.0ms	128.0ms
OPP (27.70°C / 43.42°C)	128.58%	126.23%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	23
AC Loss to PWR_OK Hold Up Time (ms)	20.9
PWR_OK Inactive to DC Loss Delay (ms)	2.1



Tables

115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	115.17 V	115.13 V	113.85 V	115.19 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	60.00 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:	0.016 W	0.014 W	N/A	0.019 W	N/A	N/A
Apparent Power:	9.669 W	9.664 W	N/A	9.676 W	N/A	N/A
Power Factor:	0.002	N/A	N/A	N/A	N/A	N/A

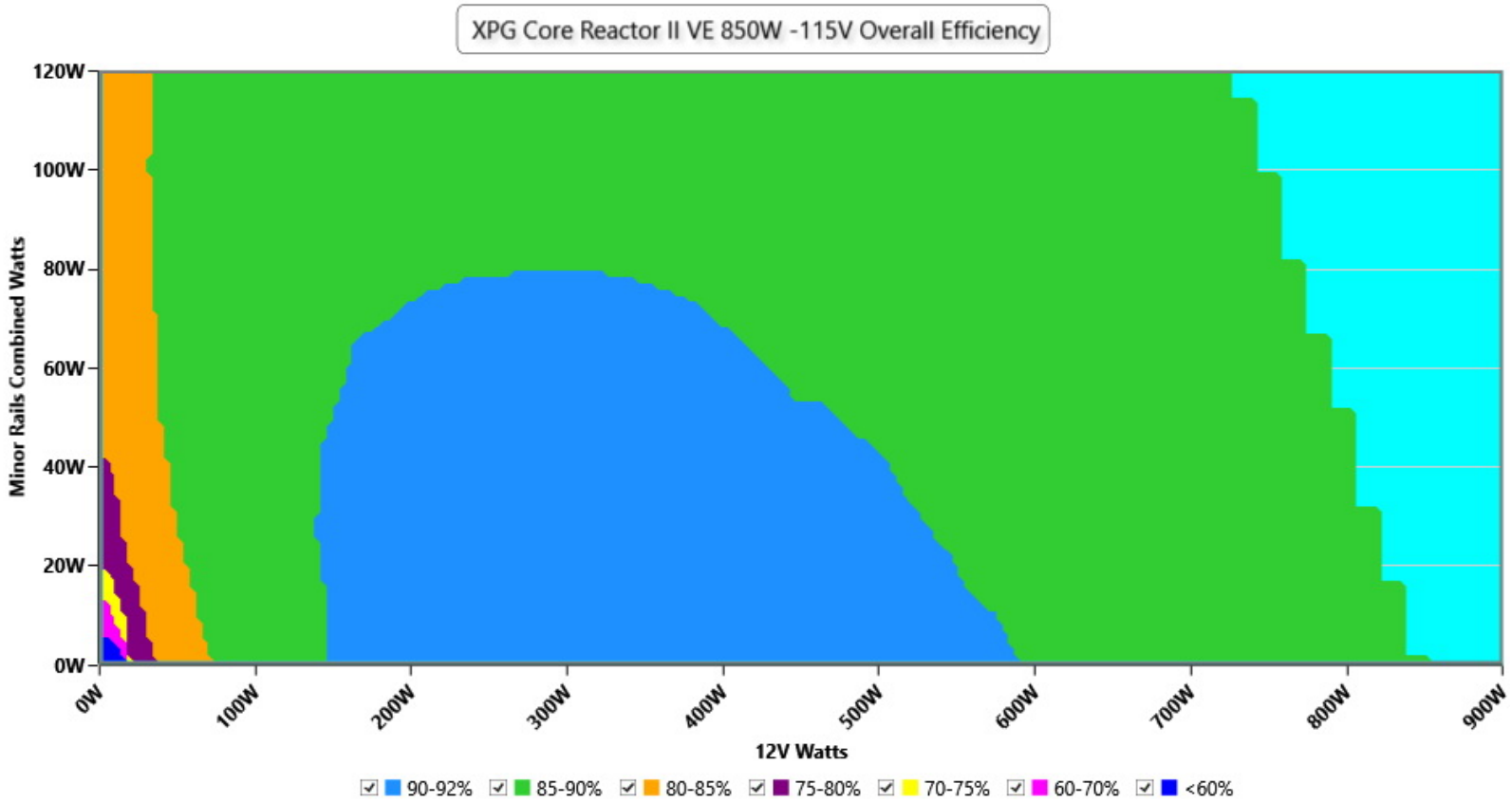
230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	230.40 V	230.39 V	227.70 V	230.43 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	0.095 W	N/A	N/A
Apparent Power:	32.327 W	32.318 W	N/A	32.337 W	N/A	N/A
Power Factor:	0.002	N/A	N/A	N/A	N/A	N/A

Efficiency Graph

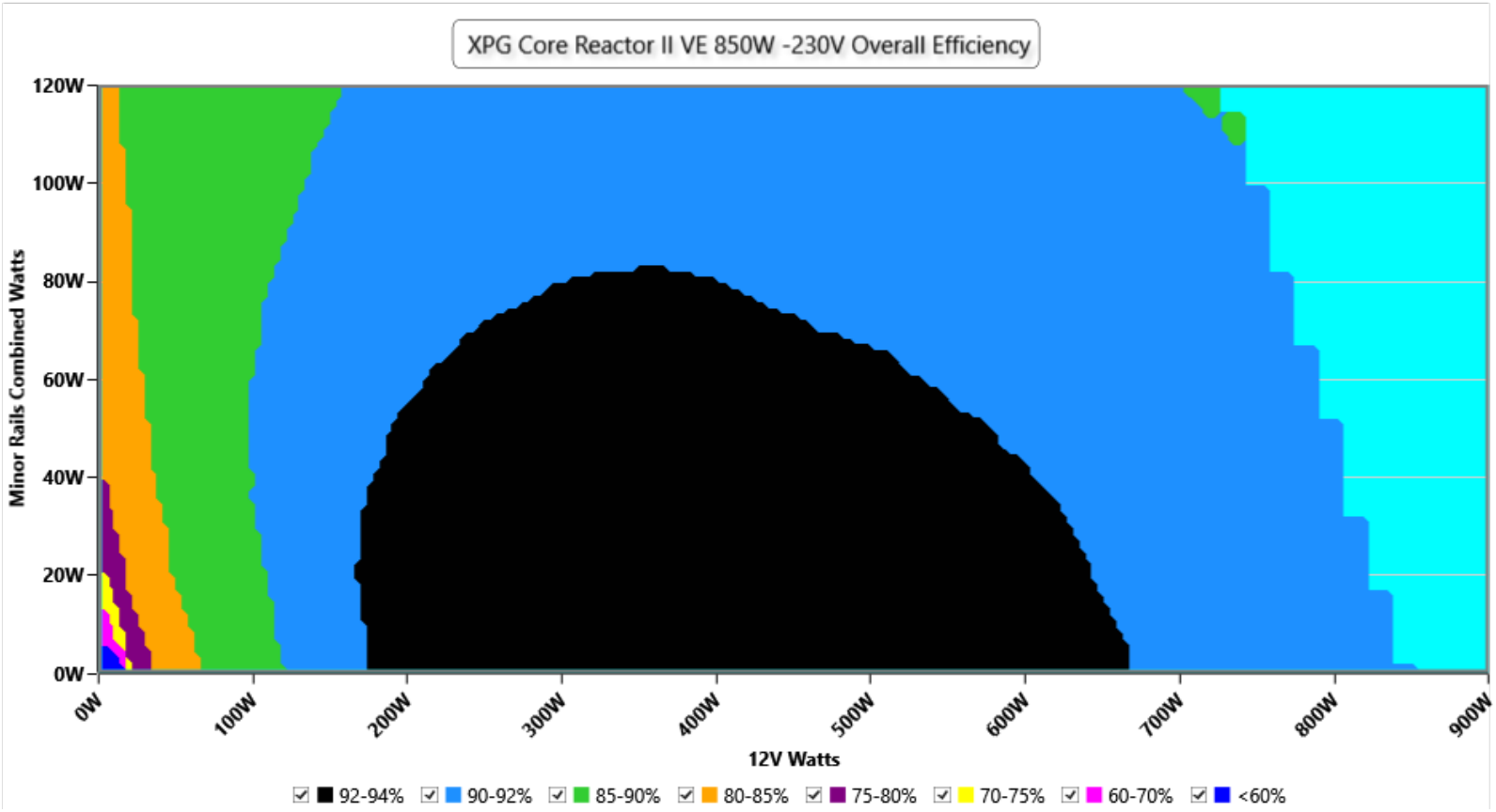
115V



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

230V

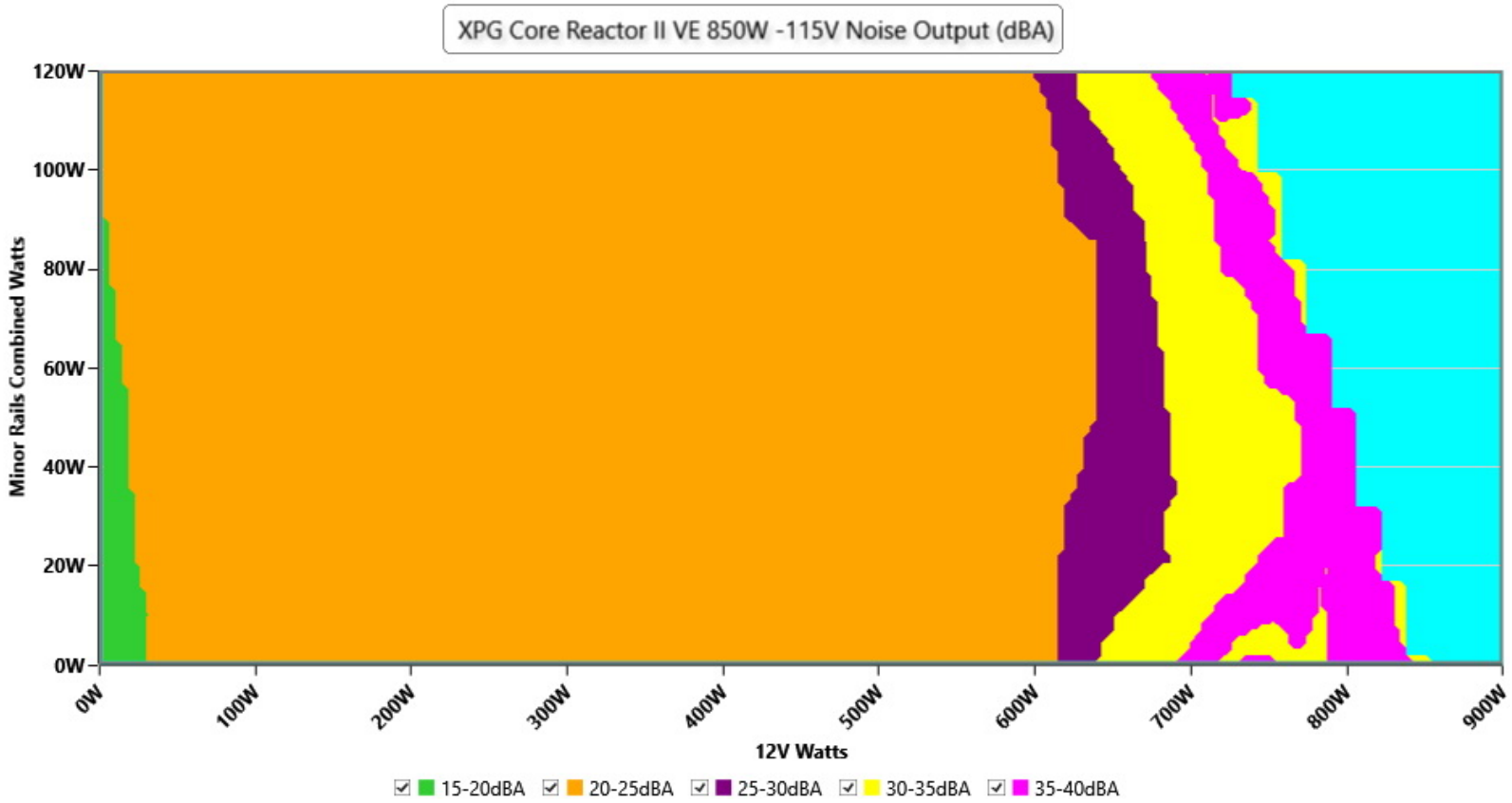


INFO

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

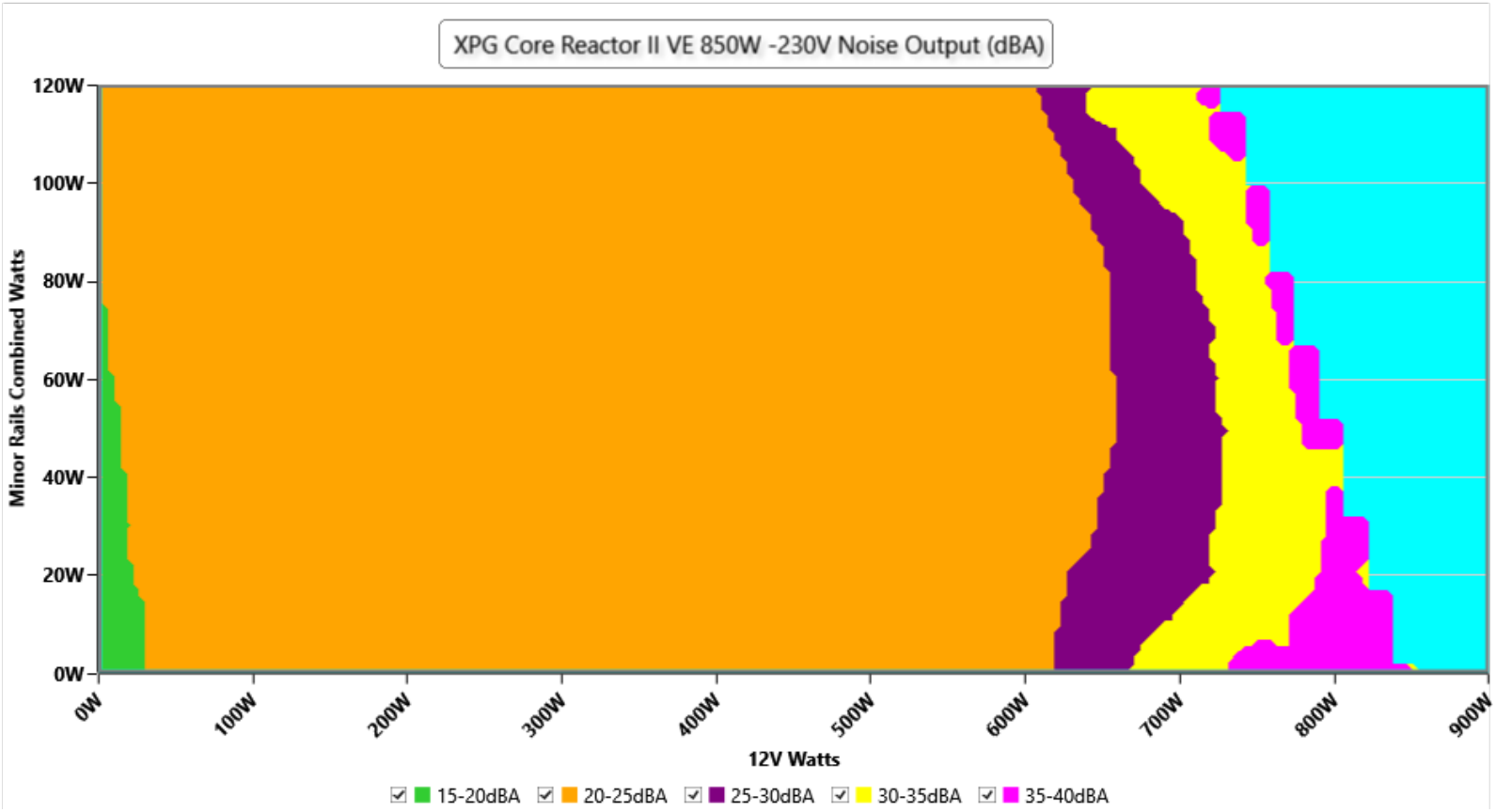
115V



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

230V

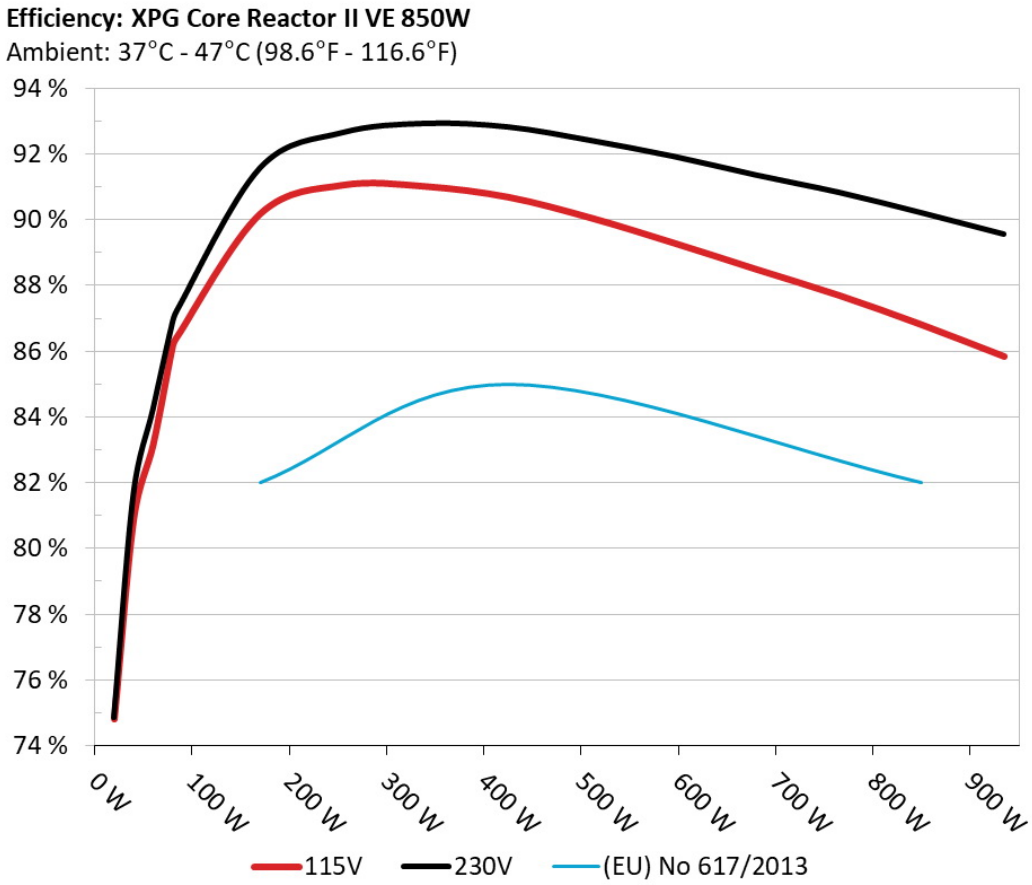


INFO

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

Indicative Performance

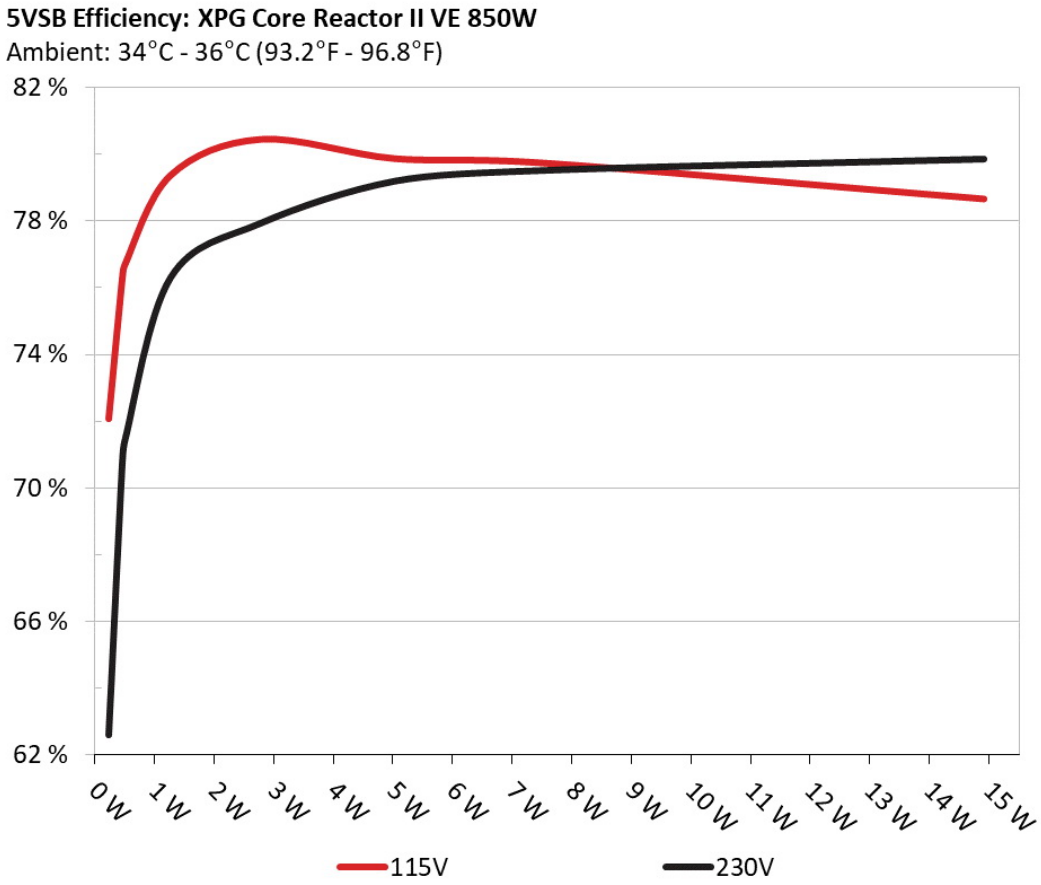
Efficiency under high ambient temperature



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

5VSB Efficiency (ERP LOT 3/6 & CEC)

115V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.228W	71.584%	0.033
	5.065V	0.319W		115.17V
2	0.09A	0.456W	75.791%	0.061
	5.063V	0.601W		115.18V
3	0.55A	2.777W	79.934%	0.268
	5.048V	3.474W		115.17V
4	1A	5.035W	79.355%	0.359
	5.034V	6.345W		115.17V
5	1.5A	7.529W	79.225%	0.411
	5.018V	9.502W		115.17V
6	3A	14.908W	78.151%	0.477
	4.969V	19.077W		115.16V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.228W	62.108%	0.011
	5.064V	0.368W		230.41V
2	0.09A	0.456W	70.289%	0.02
	5.063V	0.65W		230.4V
3	0.55A	2.777W	77.443%	0.105
	5.048V	3.586W		230.4V
4	1A	5.035W	78.705%	0.173
	5.033V	6.397W		230.41V
5	1.5A	7.528W	79.025%	0.232
	5.017V	9.527W		230.41V
6	3A	14.907W	79.364%	0.331
	4.968V	18.786W		230.41V

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%	5.191A	1.979A	2.009A	0.994A	85.007	86.468%	914	21.5	40.1°C	0.982
	12.215V	5.055V	3.285V	5.031V	98.309				44.31°C	115.15V
20%	11.472A	2.969A	3.016A	1.194A	169.974	90.191%	918	21.6	40.64°C	0.989
	12.122V	5.053V	3.282V	5.025V	188.457				45.19°C	115.13V
30%	18.075A	3.465A	3.522A	1.396A	254.99	91.065%	921	21.6	41.06°C	0.992
	12.112V	5.051V	3.28V	5.017V	280.009				46.14°C	115.11V
40%	24.680A	3.962A	4.029A	1.597A	340.084	91.024%	924	21.8	41.81°C	0.99
	12.110V	5.049V	3.277V	5.009V	373.619				47.36°C	115.08V
50%	30.810A	4.956A	5.042A	1.8A	425.11	90.697%	929	21.8	42.09°C	0.991
	12.158V	5.046V	3.273V	5.002V	468.716				48.11°C	115.05V
60%	37.014A	5.951A	6.057A	2.001A	509.63	90.068%	932	21.9	42.8°C	0.992
	12.153V	5.043V	3.27V	4.995V	565.825				49.37°C	115.03V
70%	43.292A	6.946A	7.074A	2.206A	594.976	89.303%	1323	33.6	43.39°C	0.993
	12.147V	5.04V	3.266V	4.988V	666.245				50.45°C	115V
80%	49.592A	7.944A	8.094A	2.309A	679.804	88.5%	1635	39.2	43.69°C	0.994
	12.137V	5.036V	3.262V	4.982V	768.142				51.79°C	114.98V
90%	56.289A	8.445A	8.593A	2.412A	765.234	87.703%	1960	45.1	44.84°C	0.995
	12.129V	5.033V	3.258V	4.976V	872.538				53.89°C	114.95V
100%	62.723A	8.947A	9.124A	3.028A	850.066	86.809%	2215	47.7	45.81°C	0.995
	12.122V	5.03V	3.255V	4.954V	979.233				55.88°C	114.91V
110%	69.034A	9.948A	10.243A	3.029A	934.63	85.845%	2399	49.3	46.85°C	0.996
	12.115V	5.026V	3.251V	4.952V	1088.732				57.75°C	114.88V
CL1	0.115A	14.339A	14.581A	0A	121.308	83.357%	944	22.3	40.84°C	0.988
	12.159V	5.035V	3.271V	5.085V	145.529				46.36°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	21.821A	0A	0A	111.394	81.315%	943	22.3	41.13°C	0.985
	12.167V	5.041V	3.29V	5.12V	136.99				48.2°C	115.14V
CL3	0.114A	0A	22.207A	0A	73.995	75.937%	922	21.7	40.12°C	0.982
	12.219V	5.057V	3.269V	5.053V	97.443				49.17°C	115.16V
CL4	70.098A	0.001A	0.005A	0.001A	849.807	87.536%	2087	45.7	45.56°C	0.995
	12.123V	5.05V	3.268V	5.038V	970.819				56.53°C	114.91V

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%	5.189A	1.978A	2.009A	0.994A	85.007	87.256%	918	21.6	40.4°C	0.862
	12.218V	5.056V	3.286V	5.031V	97.422				44.62°C	230.4V
20%	11.470A	2.969A	3.016A	1.194A	169.975	91.566%	922	21.7	40.76°C	0.945
	12.125V	5.054V	3.283V	5.025V	185.633				45.32°C	230.39V
30%	18.073A	3.465A	3.522A	1.395A	254.989	92.65%	924	21.8	41.11°C	0.967
	12.113V	5.052V	3.28V	5.018V	275.216				46.19°C	230.38V
40%	24.678A	3.962A	4.029A	1.597A	340.083	92.929%	928	21.8	41.79°C	0.975
	12.111V	5.05V	3.277V	5.01V	365.963				47.31°C	230.38V
50%	30.808A	4.955A	5.041A	1.8A	425.101	92.821%	931	21.9	42.37°C	0.981
	12.159V	5.047V	3.273V	5.003V	457.979				48.41°C	230.36V
60%	37.015A	5.95A	6.056A	2.001A	509.623	92.413%	934	22.0	42.86°C	0.984
	12.152V	5.044V	3.27V	4.996V	551.465				49.42°C	230.35V
70%	43.296A	6.946A	7.074A	2.206A	594.969	91.929%	1296	33.0	43.44°C	0.986
	12.145V	5.04V	3.266V	4.988V	647.203				50.49°C	230.34V
80%	49.598A	7.944A	8.094A	2.309A	679.802	91.361%	1618	38.5	43.7°C	0.987
	12.135V	5.036V	3.262V	4.982V	744.082				51.72°C	230.33V
90%	56.296A	8.445A	8.593A	2.412A	765.231	90.834%	1945	45.0	44.61°C	0.988
	12.128V	5.033V	3.258V	4.977V	842.446				53.64°C	230.31V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
100%	62.731A	8.947A	9.124A	3.028A	850.064	90.213%	2223	47.7	45.81°C	0.989
	12.121V	5.03V	3.255V	4.955V	942.287				55.88°C	230.3V
110%	69.042A	9.948A	10.242A	3.029A	934.631	89.566%	2405	49.4	46.85°C	0.99
	12.113V	5.027V	3.251V	4.953V	1043.515				57.76°C	230.29V
CL1	0.115A	14.338A	14.58A	0A	121.307	84.205%	947	22.4	40.93°C	0.924
	12.158V	5.036V	3.271V	5.085V	144.06				46.38°C	230.4V
CL2	0.115A	21.821A	0A	0A	111.395	82.102%	945	22.3	41.21°C	0.916
	12.166V	5.041V	3.29V	5.12V	135.677				48.28°C	230.4V
CL3	0.114A	0A	22.196A	0A	73.996	76.451%	928	21.8	40.37°C	0.862
	12.224V	5.062V	3.271V	5.057V	96.791				49.38°C	230.4V
CL4	70.143A	0.001A	0.005A	0.001A	849.799	90.943%	2171	46.3	45.66°C	0.989
	12.115V	5.051V	3.268V	5.039V	934.438				56.63°C	230.3V

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	1.232A	0.494A	0.502A	0.198A	20.008	74.796%	896	20.6	36.85°C	0.855
	12.064V	5.057V	3.288V	5.053V	26.753				39.93°C	115.17V
40W	2.708A	0.692A	0.703A	0.297A	40.005	80.911%	903	20.8	37.64°C	0.943
	12.074V	5.057V	3.287V	5.05V	49.443				41.01°C	115.17V
60W	4.138A	0.89A	0.904A	0.396A	60.004	83.168%	907	20.9	38.14°C	0.97
	12.213V	5.056V	3.286V	5.046V	72.145				41.97°C	115.16V
80W	5.594A	1.088A	1.105A	0.496A	79.969	86.167%	910	21.2	39.23°C	0.978
	12.214V	5.055V	3.286V	5.043V	92.805				43.2°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	1.232A	0.494A	0.502A	0.198A	20.007	74.877%	899	20.9	36.77°C	0.471
	12.064V	5.059V	3.289V	5.054V	26.719				39.84°C	230.41V
40W	2.708A	0.692A	0.703A	0.297A	40.005	81.643%	905	20.9	37.72°C	0.681
	12.075V	5.058V	3.288V	5.051V	48.998				41.03°C	230.41V
60W	4.137A	0.89A	0.904A	0.396A	60.004	84.225%	908	21	38.64°C	0.798
	12.215V	5.056V	3.287V	5.047V	71.242				42.15°C	230.4V
80W	5.594A	1.088A	1.105A	0.496A	79.969	86.849%	913	21.4	39.12°C	0.852
	12.216V	5.056V	3.286V	5.044V	92.076				42.97°C	230.4V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	7.02mV	5.82mV	5.44mV	5.60mV	Pass
20% Load	13.60mV	6.23mV	7.88mV	5.91mV	Pass
30% Load	12.72mV	7.39mV	11.09mV	7.34mV	Pass
40% Load	14.09mV	9.54mV	15.82mV	8.05mV	Pass
50% Load	16.79mV	10.56mV	16.79mV	8.61mV	Pass
60% Load	18.77mV	11.17mV	19.53mV	9.42mV	Pass
70% Load	21.52mV	12.96mV	22.68mV	10.70mV	Pass
80% Load	23.81mV	15.10mV	28.99mV	12.48mV	Pass
90% Load	26.61mV	16.43mV	31.99mV	13.45mV	Pass
100% Load	33.72mV	20.44mV	37.08mV	17.48mV	Pass
110% Load	37.00mV	21.91mV	40.24mV	17.57mV	Pass
Crossload1	27.19mV	9.16mV	13.44mV	7.54mV	Pass
Crossload2	14.72mV	8.93mV	5.95mV	6.11mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	6.26mV	4.95mV	12.67mV	5.30mV	Pass
Crossload4	33.62mV	16.12mV	31.85mV	14.02mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.82mV	5.46mV	5.39mV	5.50mV	Pass
20% Load	13.70mV	6.22mV	7.58mV	5.81mV	Pass
30% Load	12.41mV	7.39mV	11.39mV	6.37mV	Pass
40% Load	14.15mV	9.49mV	16.02mV	7.79mV	Pass
50% Load	16.54mV	9.95mV	16.79mV	8.92mV	Pass
60% Load	18.22mV	11.48mV	19.33mV	9.27mV	Pass
70% Load	21.22mV	13.06mV	22.63mV	10.55mV	Pass
80% Load	23.91mV	15.25mV	28.84mV	12.38mV	Pass
90% Load	26.05mV	15.91mV	31.99mV	13.71mV	Pass
100% Load	34.72mV	19.83mV	36.73mV	18.16mV	Pass
110% Load	37.39mV	21.17mV	40.93mV	17.41mV	Pass
Crossload1	27.75mV	9.44mV	12.74mV	7.82mV	Pass
Crossload2	16.55mV	9.23mV	5.80mV	6.27mV	Pass
Crossload3	6.16mV	5.20mV	12.21mV	4.89mV	Pass
Crossload4	34.78mV	16.20mV	31.70mV	14.50mV	Pass

The results above are not used in the certification process

XPG Core Reactor II VE 850



Top side



Power specifications label