Aerocool Xpredator 400W

Serial Number H1604000114

Lab ID AC40001974

Certification ID 251974

Test Result Report ID: 22PS1974A

Certificate Issue Date: Feb 9, 2022

Scheme: ETA-EMI PSU

115V

230V

Scheme: LAMBDA PSU

115V

230V

Aristeidis Bitziopoulos, Certification Body General Manager

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	Aerocool
Model	Xpredator 400W
OEM/ODM	HEC
Serial Number	H1604000114
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	6-3
Rated Frequency (Hz)	47-63

Rated Power (W)	400
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fixed cables
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	120mm Sleeve Bearing Fan (ZY-1202512SL)
Semi-Passive Operation	✗
Cybenetics Testing Information	
Lab ID	AC40001974
Date of receipt	Oct 13, 2021
Testing Date	Feb 9, 2022
Report Issued Date	Feb 9, 2022
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors(Non-accredited measurements)

Captive Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (550mm)	1	1	18-22AWG	No
4+4 pin EPS12V (560mm)	1	1	18AWG	No
6+2 pin PCIe (470mm)	1	1	18AWG	No
SATA (540mm+140mm+140mm+140mm)	1	4	18AWG	No
SATA (340mm) / 4-pin Molex (+140mm+140mm)	1	1 / 2	18AWG	No
SATA (340mm) / 4-pin Molex (+140mm) / FDD (+140mm)	1	1 / 1 / 1	18-22AWG	No
Modular Cables				
AC Power Cord (1100mm) - C13 coupler	1	1	18AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	33	2.5	0.3
	Watts	100		396	12.5	3.6
Total Max. Power (W)		400				

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	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	85.288%
Average Noise Output (>1450 Load Combinations)	35.06dBA
Average PF (>1450 Load Combinations)	0.984
Efficiency With 10W (≤500W) or 2% (>500W) Load	57.985%
Standby Power Consumption	0.0369W
Non-Accredited	
12V Ripple (Full Load)	50.30mV
5V Ripple (Full Load)	17.06mV
3.3V Ripple (Full Load)	36.33mV
5VSB Ripple (Full Load)	21.51mV
12V Load Regulation	1.06%
5V Load Regulation	2.57%
3.3V Load Regulation	4.00%

5VSB Load Regulation	3.38%
Inrush Current	35.510A

230V

Accredited		
Average Efficiency (>1450 load combinations)	87.601%	
Average Noise Output (>1450 Load Combinations)	34.27dBA	
Average PF (>1450 Load Combinations)	0.930	
Efficiency With 10W (≤500W) or 2% (>500W) Load	-	
Standby Power Consumption	0.0927W	
Non-Accredited		
12V Ripple (Full Load)	35.92mV	
5V Ripple (Full Load)	17.14mV	
3.3V Ripple (Full Load)	35.90mV	
5VSB Ripple (Full Load)	20.42mV	
12V Load Regulation	1.03%	
5V Load Regulation	2.51%	
3.3V Load Regulation	3.90%	
5VSB Load Regulation	3.34%	
Inrush Current	73.620A	
Hold-Up Time & PWR_OK Signal	11.50ms	
AC Loss to PWR_OK Hold Up Time	10.40ms	
PWR_OK Inactive to DC Loss Delay	1.10ms	
PSU Timings: T1 (20% / 100%)	68.0ms	82.0ms
PSU Timings: T3 (20% / 100%)	280.0ms	290.0ms
OPP (24.58°C / 0.00°C)	136.78%	-

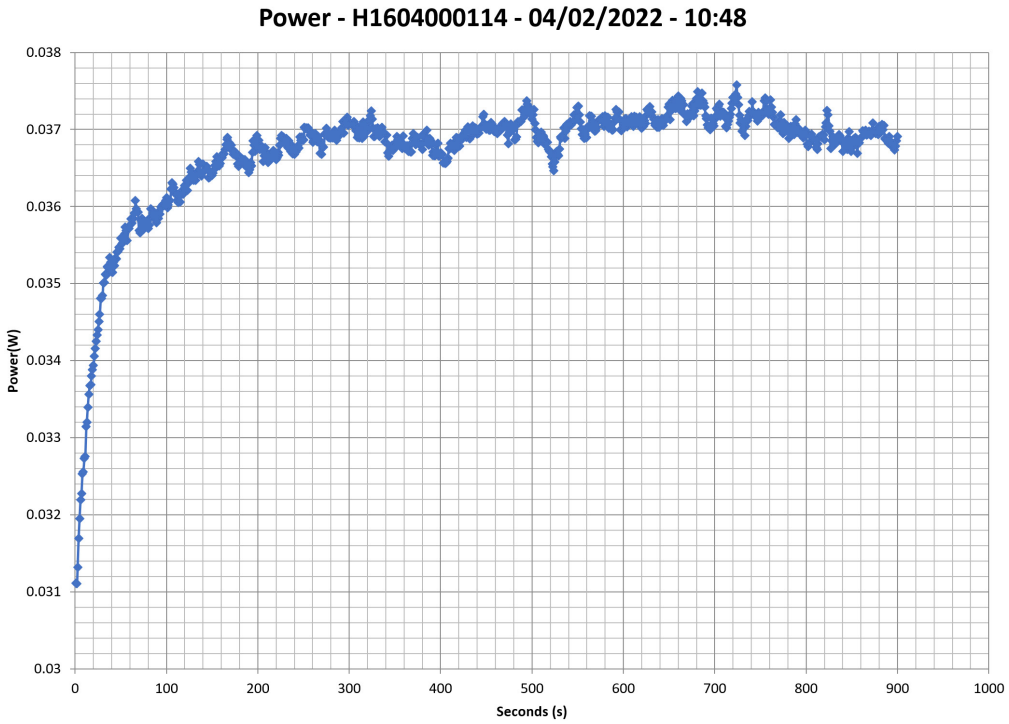
Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	11.5
AC Loss to PWR_OK Hold Up Time (ms)	10.4

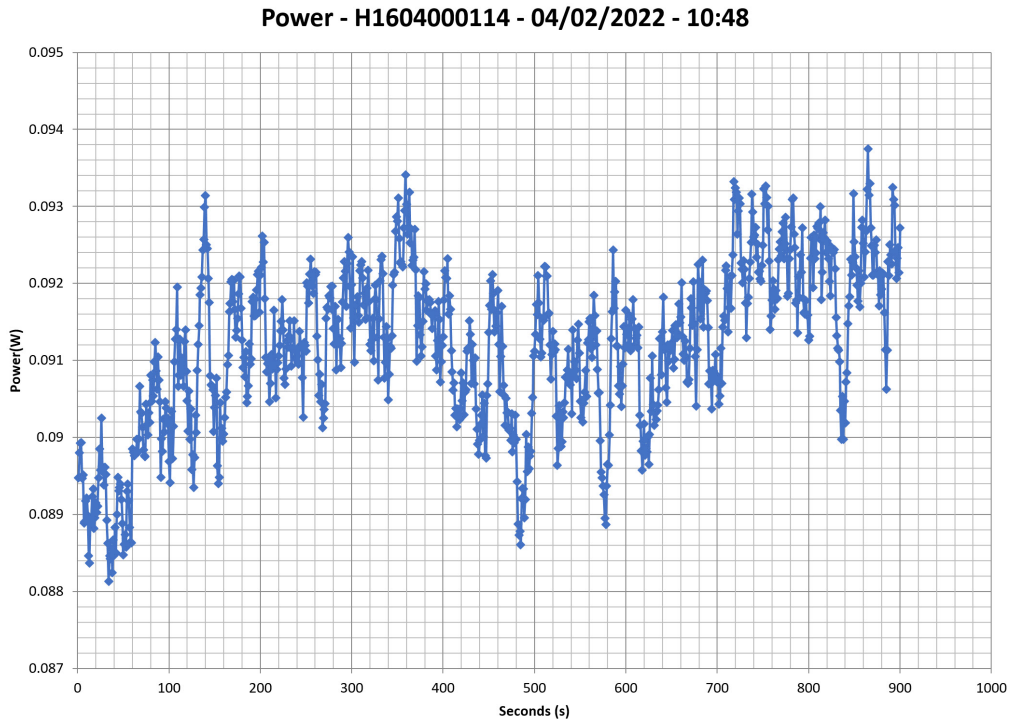
PWR_OK Inactive to DC Loss Delay (ms)	1.1

Graphs

115V

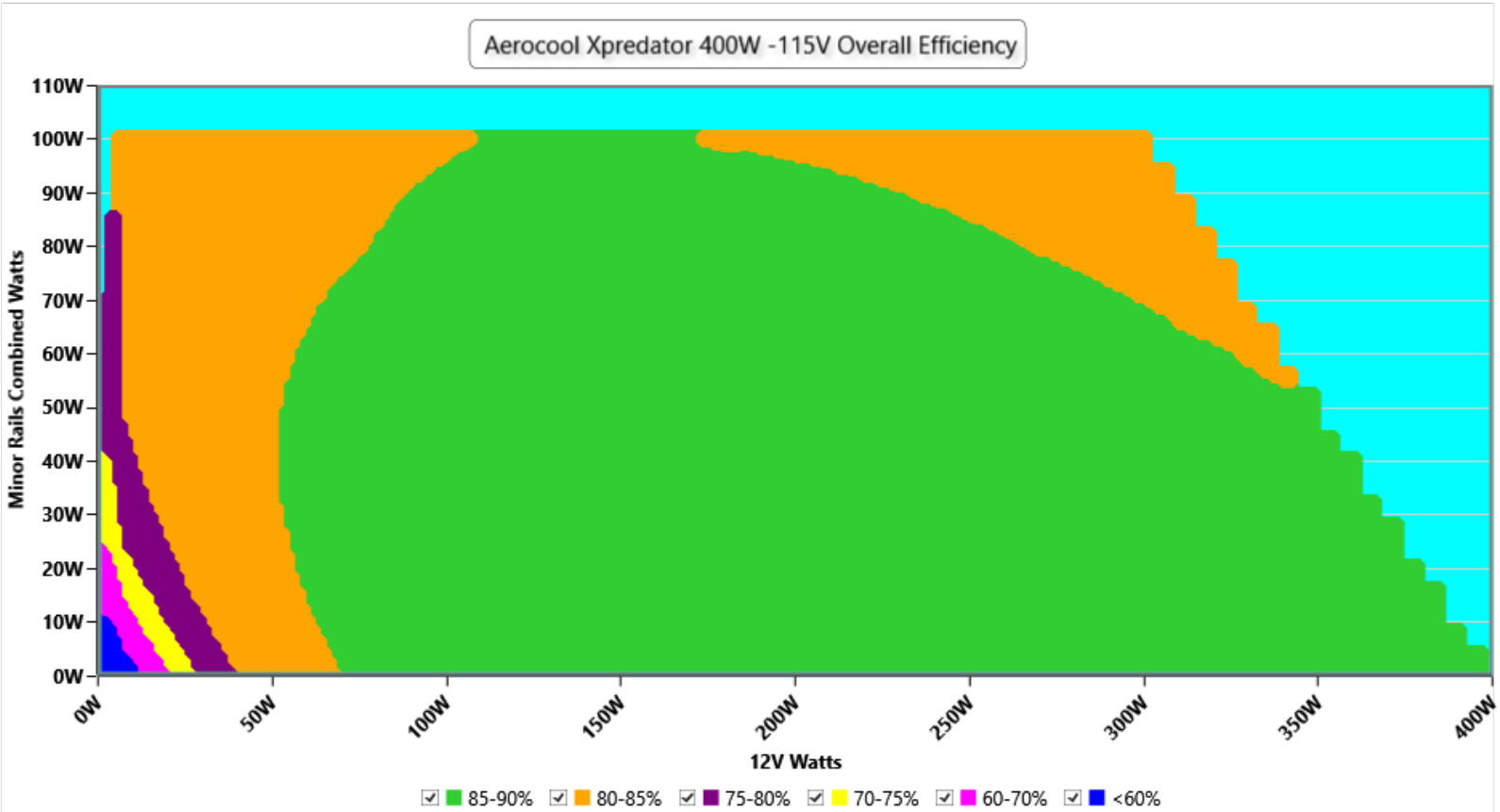


230V



Efficiency Graph

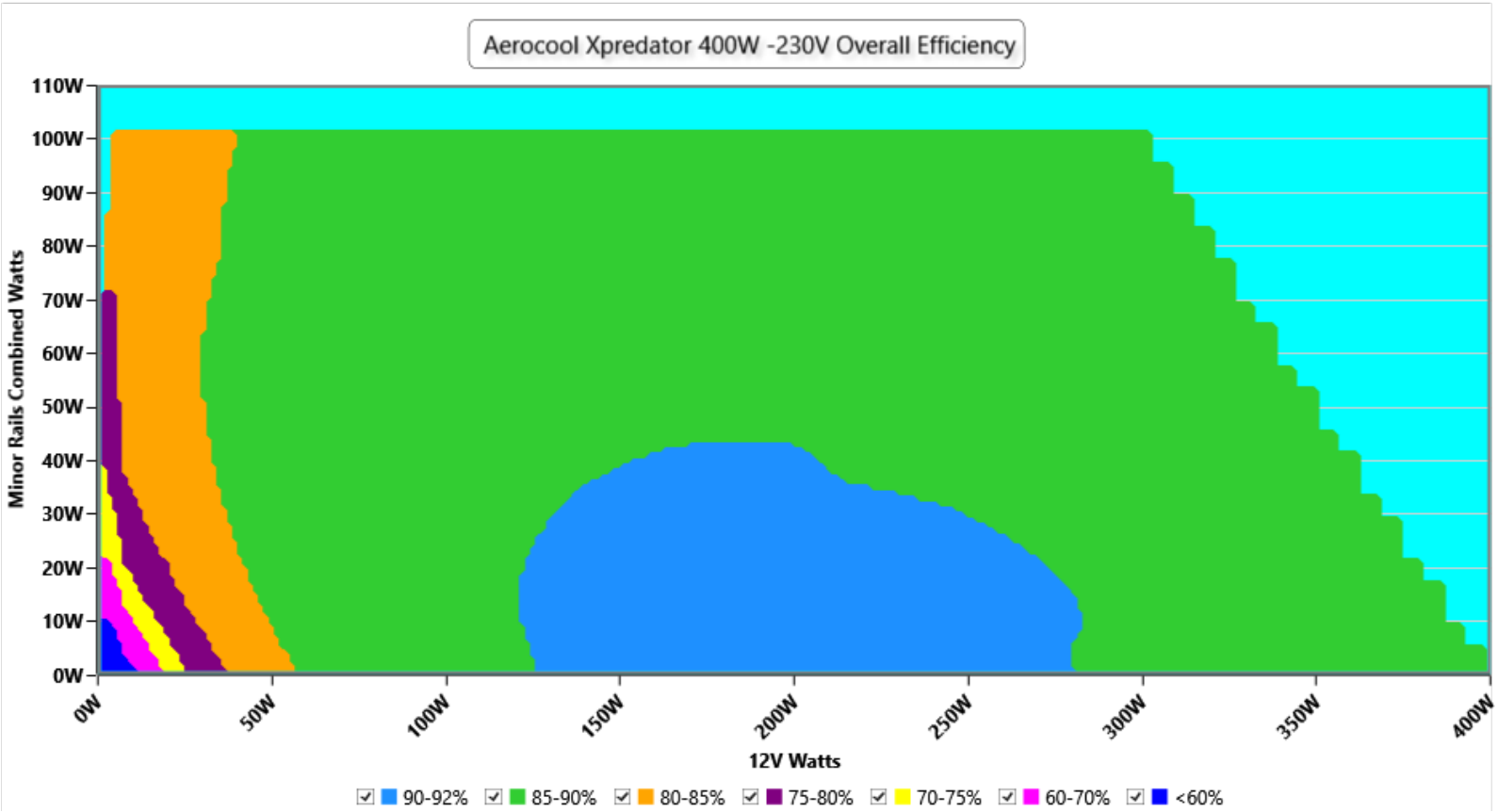
115V



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



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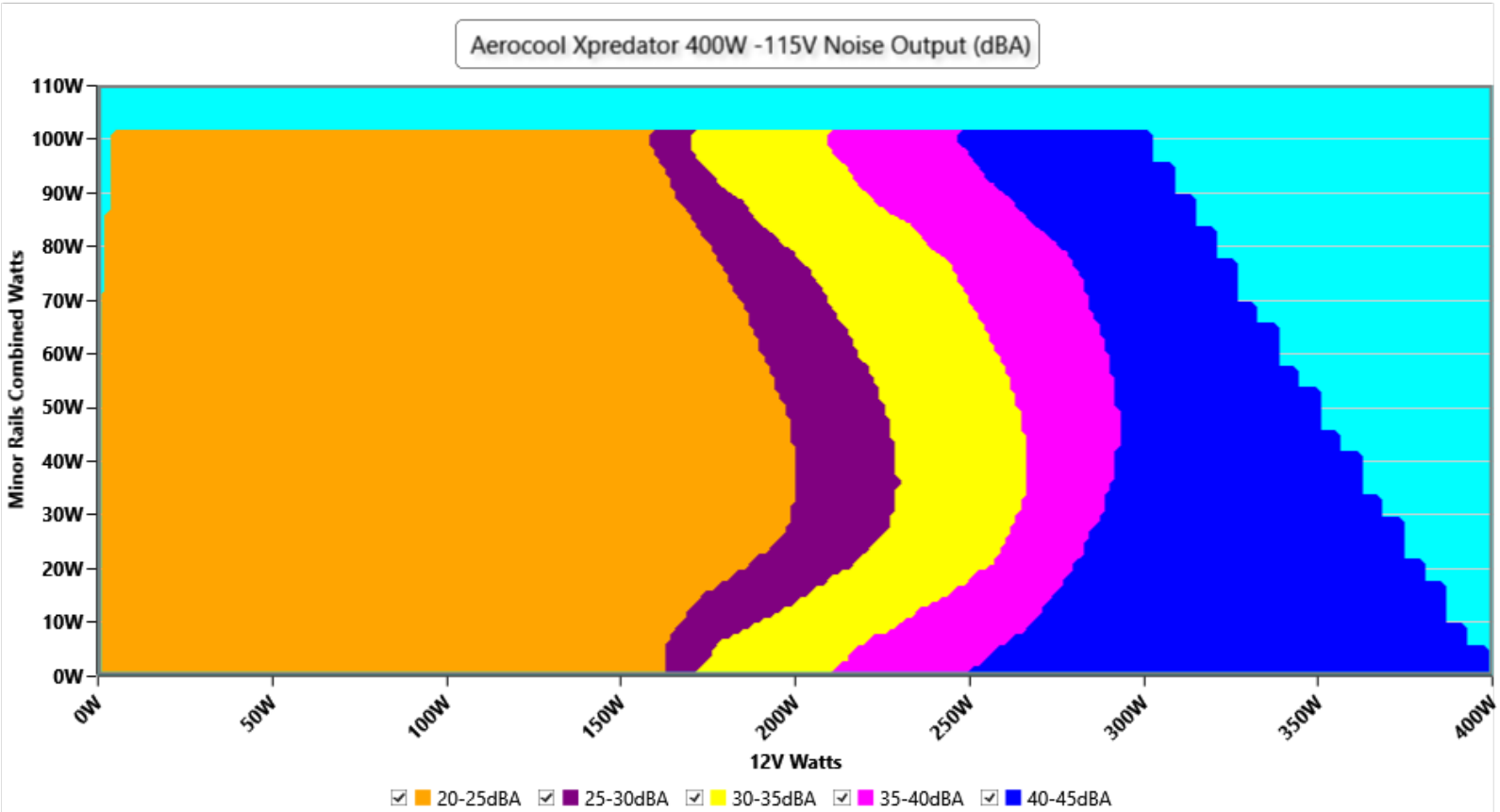
Noise Graph

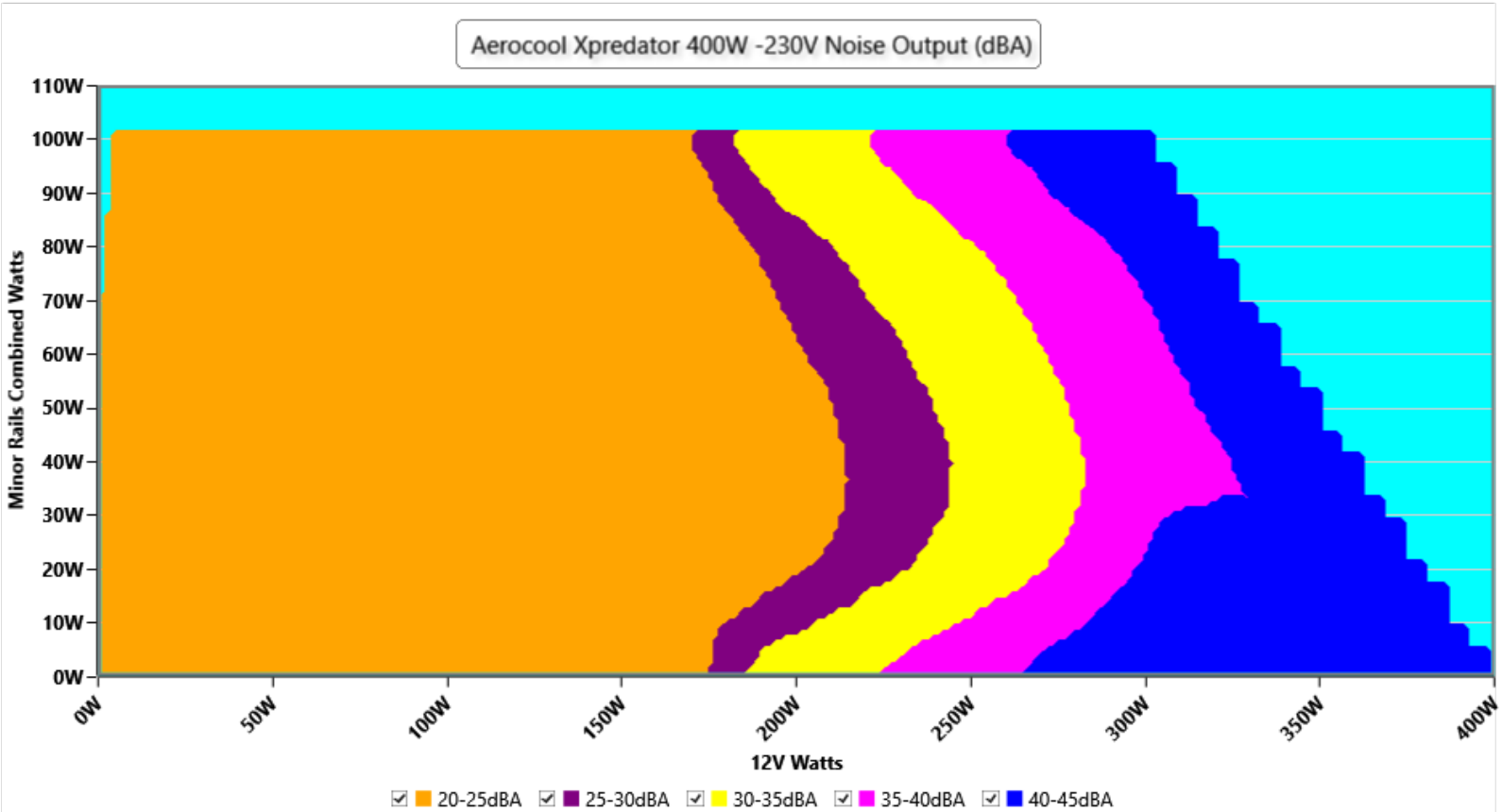
115V



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

230V



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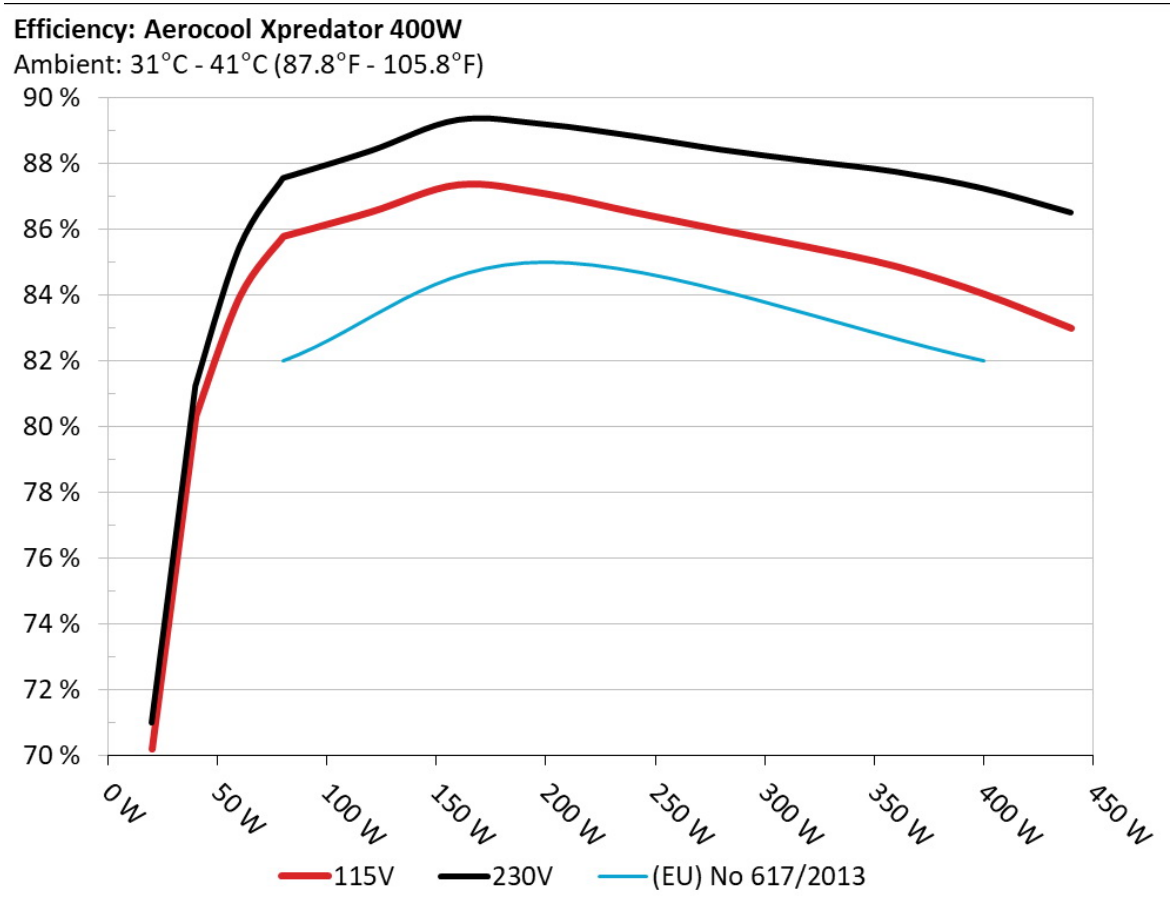
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Indicative Performance

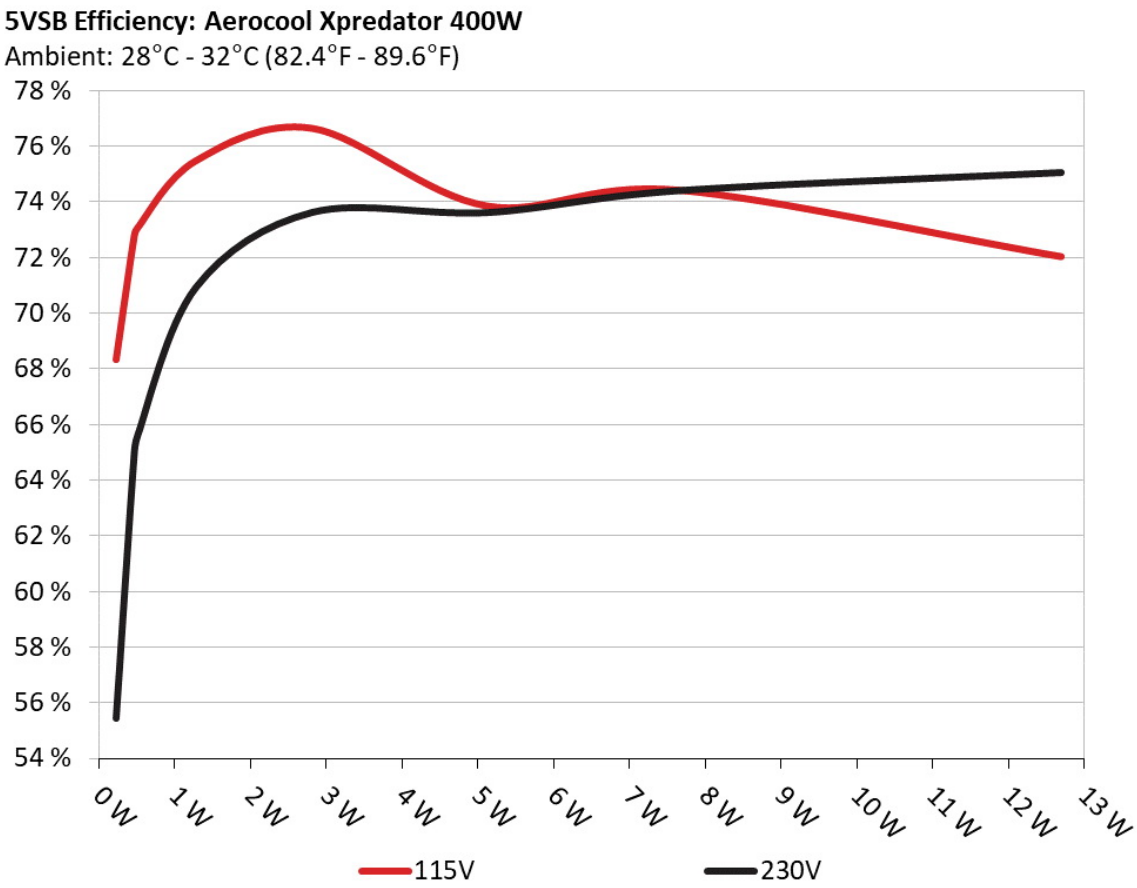
Efficiency under high ambient temperature



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	0.231W	68.335%	0.03
	5.14V	0.338W		115.07V
2	0.09A	0.463W	72.662%	0.056
	5.139V	0.637W		115.08V
3	0.55A	2.82W	76.637%	0.245
	5.127V	3.68W		115.09V
4	1A	5.112W	73.854%	0.333
	5.112V	6.922W		115.09V
5	1.5A	7.655W	74.416%	0.377
	5.103V	10.287W		115.1V
6	2.5A	12.696W	72.031%	0.424
	5.078V	17.625W		115.1V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231W	55.434%	0.011
	5.141V	0.417W		230.22V
2	0.09A	0.463W	64.715%	0.019
	5.14V	0.715W		230.22V
3	0.55A	2.821W	73.629%	0.097
	5.128V	3.831W		230.23V
4	1A	5.116W	73.619%	0.16
	5.116V	6.949W		230.23V
5	1.5A	7.654W	74.41%	0.212
	5.102V	10.286W		230.23V
6	2.5A	12.691W	75.059%	0.279
	5.076V	16.908W		230.23V

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%	1.516A	1.976A	1.96A	0.98A	40.003	78.396%	938	22.4	34.36°C	0.96
	12.139V	5.06V	3.366V	5.104V	51.027				38.82°C	115.09V
20%	4.050A	2.972A	2.952A	1.18A	80.009	84.406%	939	22.4	34.65°C	0.964
	12.126V	5.047V	3.353V	5.085V	94.79				39.62°C	115.1V
30%	6.928A	3.475A	3.455A	1.38A	119.975	86.529%	940	22.4	35.36°C	0.975
	12.114V	5.036V	3.342V	5.072V	138.652				40.65°C	115.1V
40%	9.819A	3.98A	3.962A	1.582A	160.016	87.359%	941	22.4	35.59°C	0.982
	12.101V	5.026V	3.332V	5.059V	183.17				41.46°C	115.1V
50%	12.365A	4.989A	4.974A	1.785A	199.966	87.081%	1274	30.9	36.4°C	0.987
	12.087V	5.012V	3.318V	5.043V	229.634				42.52°C	115.1V
60%	14.925A	6.004A	5.995A	1.99A	240.005	86.521%	1691	37.9	36.83°C	0.99
	12.074V	4.998V	3.303V	5.025V	277.393				43.58°C	115.1V
70%	17.492A	7.025A	7.025A	2.197A	280.046	85.977%	1906	40.9	37.15°C	0.992
	12.058V	4.984V	3.289V	5.007V	325.72				44.47°C	115.1V
80%	20.105A	8.003A	8.063A	2.304A	319.815	85.46%	1907	40.9	37.75°C	0.993
	12.044V	4.97V	3.274V	4.992V	374.228				45.74°C	115.1V
90%	23.069A	8.574A	8.582A	2.411A	360.029	84.871%	1899	38.0	38.85°C	0.994
	12.030V	4.958V	3.262V	4.978V	424.206				47.22°C	115.09V
100%	26.042A	9.101A	9.137A	2.518A	400.1	84.035%	1895	37.9	39.56°C	0.995
	12.015V	4.946V	3.25V	4.965V	476.111				48.54°C	115.09V
110%	28.678A	10.143A	10.294A	2.526A	439.975	82.992%	1898	38.0	40.67°C	0.995
	12.001V	4.931V	3.234V	4.95V	530.143				50.54°C	115.09V
CL1	0.115A	12.069A	12.052A	0.001A	101.313	79.234%	1897	37.9	36.29°C	0.972
	12.116V	4.989V	3.294V	5.081V	127.866				42.43°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	19.989A	0A	0A	101.422	78.642%	1399	33.3	37.77°C	0.972
	12.122V	5.004V	3.325V	5.095V	128.967				45.28°C	115.11V
CL3	0.115A	0A	20.008A	0.001A	67.388	72.614%	963	24.1	38.92°C	0.963
	12.122V	5.011V	3.298V	5.09V	92.803				47.28°C	115.11V
CL4	33.275A	0A	0A	0A	400.117	86.026%	1907	40.9	39.7°C	0.995
	12.025V	5.008V	3.313V	5.069V	465.114				49.24°C	115.1V

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%	1.516A	1.976A	1.96A	0.98A	40	79.338%	953	23.0	34.35°C	0.719
	12.140V	5.061V	3.367V	5.104V	50.417				39.48°C	230.22V
20%	4.050A	2.971A	2.952A	1.18A	80.003	86.109%	953	23.0	34.51°C	0.852
	12.127V	5.048V	3.354V	5.086V	92.91				40.3°C	230.22V
30%	6.927A	3.474A	3.454A	1.38A	119.965	88.404%	953	23.0	35.08°C	0.907
	12.115V	5.038V	3.343V	5.074V	135.702				41.22°C	230.22V
40%	9.816A	3.978A	3.96A	1.581A	160.004	89.351%	954	23.2	35.71°C	0.932
	12.103V	5.027V	3.333V	5.061V	179.073				42.22°C	230.22V
50%	12.361A	4.986A	4.971A	1.784A	199.953	89.211%	1337	32.3	36.17°C	0.944
	12.090V	5.014V	3.319V	5.044V	224.137				43.23°C	230.22V
60%	14.920A	6A	5.99A	1.989A	239.986	88.858%	1689	37.8	36.9°C	0.956
	12.076V	5V	3.306V	5.027V	270.08				44.53°C	230.22V
70%	17.484A	7.02A	7.019A	2.196A	280.025	88.44%	1909	40.9	37.54°C	0.965
	12.064V	4.987V	3.291V	5.009V	316.628				45.62°C	230.22V
80%	20.095A	8.003A	8.057A	2.304A	319.816	88.098%	1911	40.9	37.62°C	0.969
	12.050V	4.972V	3.276V	4.993V	363.022				46.23°C	230.23V
90%	23.058A	8.569A	8.574A	2.41A	360.007	87.768%	1915	41.0	38.07°C	0.972
	12.035V	4.961V	3.265V	4.98V	410.182				47.05°C	230.23V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
100%	26.027A	9.095A	9.128A	2.517A	400.092	87.26%	1916	41.0	39.99°C	0.976
	12.021V	4.949V	3.253V	4.967V	458.507				49.26°C	230.23V
110%	28.659A	10.136A	10.283A	2.524A	439.936	86.529%	1912	40.9	40.69°C	0.978
	12.007V	4.934V	3.238V	4.953V	508.427				50.51°C	230.23V
CL1	0.115A	12.067A	12.046A	0.001A	101.307	80.972%	1910	40.9	36.01°C	0.895
	12.118V	4.99V	3.295V	5.082V	125.114				43.3°C	230.23V
CL2	0.115A	19.985A	0A	0A	101.416	80.112%	1579	36.2	37.67°C	0.897
	12.124V	5.005V	3.326V	5.096V	126.593				45.68°C	230.23V
CL3	0.115A	0A	19.994A	0.001A	67.386	73.871%	1089	26.9	38.89°C	0.851
	12.124V	5.011V	3.3V	5.091V	91.221				47.61°C	230.24V
CL4	33.259A	0A	0A	0A	400.093	89.152%	1920	41.2	40.9°C	0.976
	12.030V	5.01V	3.314V	5.071V	448.776				50.01°C	230.23V

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	1.223A	0.493A	0.488A	0.195A	20.001	70.186%	934	22.5	31.2°C	0.893
	12.143V	5.073V	3.38V	5.133V	28.497				34.29°C	115.09V
40W	2.693A	0.691A	0.684A	0.293A	40.001	80.328%	932	22.5	32.16°C	0.955
	12.139V	5.068V	3.375V	5.126V	49.798				35.53°C	115.09V
60W	4.164A	0.889A	0.881A	0.391A	60.001	83.946%	932	22.5	32.79°C	0.966
	12.132V	5.064V	3.37V	5.12V	71.475				36.65°C	115.09V
80W	5.635A	1.087A	1.079A	0.489A	79.954	85.788%	935	22.5	33.62°C	0.963
	12.124V	5.059V	3.365V	5.113V	93.199				37.76°C	115.09V

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	1.222A	0.493A	0.488A	0.195A	19.996	71.007%	948	22.6	30.86°C	0.53
	12.145V	5.073V	3.38V	5.133V	28.16				33.96°C	230.21V
40W	2.692A	0.691A	0.684A	0.293A	39.997	81.255%	947	22.6	31.01°C	0.711
	12.138V	5.068V	3.375V	5.126V	49.223				34.88°C	230.21V
60W	4.164A	0.888A	0.881A	0.391A	59.996	85.462%	949	22.7	32.89°C	0.807
	12.132V	5.064V	3.37V	5.12V	70.202				36.96°C	230.21V
80W	5.634A	1.087A	1.078A	0.489A	79.945	87.578%	952	23.0	33.23°C	0.85
	12.127V	5.059V	3.365V	5.113V	91.284				37.69°C	230.21V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	10.28mV	14.25mV	23.37mV	14.38mV	Pass
20% Load	19.45mV	15.88mV	21.07mV	14.58mV	Pass
30% Load	25.23mV	18.54mV	22.91mV	12.43mV	Pass
40% Load	29.53mV	16.90mV	23.11mV	14.02mV	Pass
50% Load	32.65mV	15.27mV	23.52mV	14.69mV	Pass
60% Load	33.01mV	13.74mV	24.24mV	17.15mV	Pass
70% Load	40.94mV	14.76mV	24.75mV	18.78mV	Pass
80% Load	41.70mV	15.63mV	27.71mV	19.45mV	Pass
90% Load	44.16mV	16.24mV	29.35mV	23.08mV	Pass
100% Load	50.30mV	17.06mV	36.33mV	21.51mV	Pass
110% Load	55.67mV	18.78mV	36.76mV	23.15mV	Pass
Crossload1	28.00mV	18.85mV	31.07mV	12.55mV	Pass
Crossload2	29.63mV	18.69mV	23.73mV	11.21mV	Pass

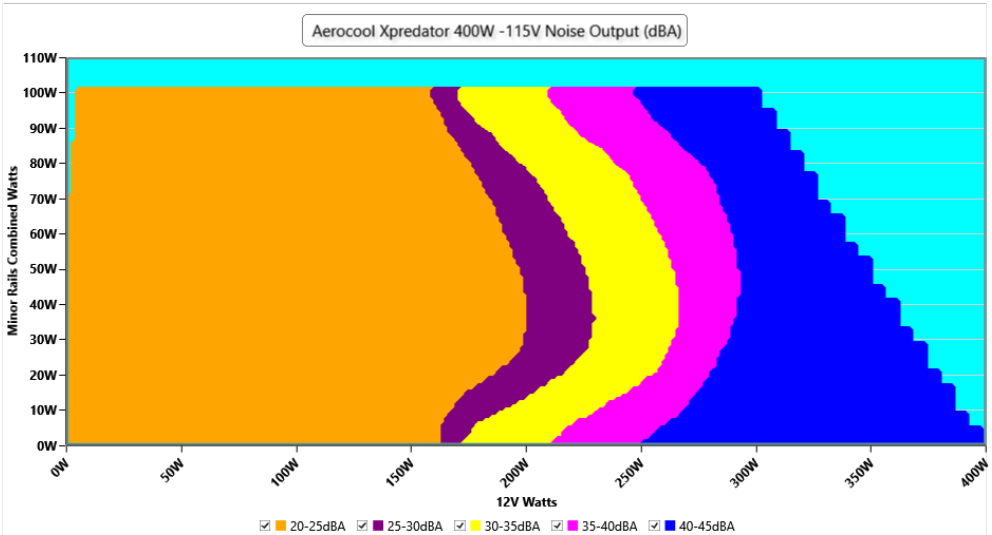
Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	26.87mV	17.57mV	30.63mV	13.20mV	Pass
Crossload4	33.19mV	16.47mV	31.04mV	12.04mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	10.03mV	16.24mV	15.65mV	13.92mV	Pass
20% Load	10.03mV	16.55mV	16.67mV	14.12mV	Pass
30% Load	12.28mV	17.52mV	16.67mV	12.28mV	Pass
40% Load	11.77mV	17.06mV	17.13mV	17.50mV	Pass
50% Load	11.51mV	14.35mV	19.64mV	14.53mV	Pass
60% Load	13.66mV	13.43mV	20.40mV	17.09mV	Pass
70% Load	18.27mV	15.22mV	21.32mV	17.19mV	Pass
80% Load	16.94mV	14.71mV	22.19mV	20.78mV	Pass
90% Load	28.09mV	14.97mV	27.10mV	20.42mV	Pass
100% Load	35.92mV	17.14mV	35.90mV	20.42mV	Pass
110% Load	40.29mV	16.95mV	37.52mV	22.84mV	Pass
Crossload1	20.56mV	18.35mV	32.46mV	13.08mV	Pass
Crossload2	18.37mV	17.73mV	24.90mV	10.75mV	Pass
Crossload3	18.78mV	17.47mV	37.38mV	13.46mV	Pass
Crossload4	35.78mV	17.10mV	30.49mV	11.85mV	Pass

The results above are not used in the certification process



Aerocool Xpredator 400W

Top side

Power specifications label

Cybenetics 提供自願性認證方案: 電源供應器方面有 ETA (效率)、 LAMBDA (噪音) 與 SAFE (安全與正確運作)；散熱產品方面有 DELTA (機殼隔音) 與 PHI (風扇風量與靜壓)

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