

Anex

Raijintek Ermis 450B

Lab ID#: RJ45001955
 Receipt Date: Dec 3, 2021
 Test Date: Dec 28, 2021

Report: 21PS1955A

Report Date: Dec 28, 2021

DUT INFORMATION

Brand	Raijintek
Manufacturer (OEM)	Casacom
Series	Ermis
Model Number	
Serial Number	RJK450B211000001
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	7-3
Rated Frequency (Hz)	47-63
Rated Power (W)	450
Type	SFX
Cooling	80mm Sleeve Bearing Fan (DF0801512SEHN)
Semi-Passive Operation	x
Cable Design	Fixed cables

TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Keysight AC6804B
Power Analyzers	N4L PPA1530 x2
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2
Tachometer	UNI-T UT372 x2
Digital Multimeter	Keysight U1273AX, Fluke 289, Keithley 2015 - THD
UPS	CyberPower OLS3000E 3kVA x2
Transformer	3kVA x2

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

PAGE 1/16

Anex

Raijintek Ermis 450B

RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

115V

Average Efficiency	83.773%
Efficiency With 10W (≤500W) or 2% (>500W)	49.523
Average Efficiency 5VSB	79.547%
Standby Power Consumption (W)	0.0820850
Average PF	0.987
Avg Noise Output	31.01 dB(A)
Efficiency Rating (ETA)	BRONZE
Noise Rating (LAMBDA)	Standard++

230V

Average Efficiency	86.818%
Average Efficiency 5VSB	77.239%
Standby Power Consumption (W)	0.1775360
Average PF	0.941
Avg Noise Output	29.94 dB(A)
Efficiency Rating (ETA)	BRONZE
Noise Rating (LAMBDA)	A-

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	18	18	37	2.5	NaN
	Watts	90		444	12.5	3.6
Total Max. Power (W)		450				

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

Hold-Up Time (ms)	21.8
AC Loss to PWR_OK Hold Up Time (ms)	17.9
PWR_OK Inactive to DC Loss Delay (ms)	3.9

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

PAGE 2/16

CABLES AND CONNECTORS

Captive Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (350mm)	1	1	18-22AWG	No
4+4 pin EPS12V (350mm)	1	1	18AWG	No
6+2 pin PCIe (410mm+150mm)	1	2	18AWG	No
SATA (370mm+200mm+100mm)	1	3	18AWG	No
4-pin Molex (370mm+200mm)	1	2	18AWG	No

Modular Cables

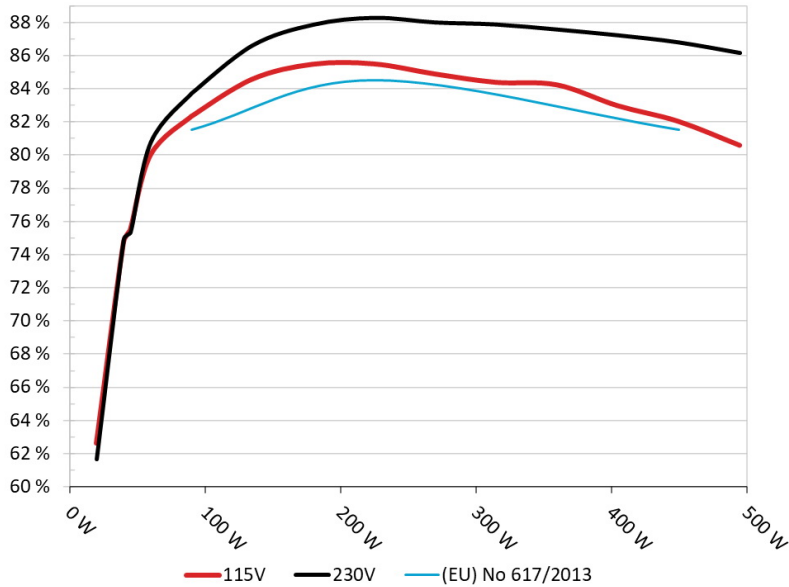
AC Power Cord (1100mm) - C13 coupler	1	1	18AWG	-
--------------------------------------	---	---	-------	---

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

EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Raijintek Ermis 450B
Ambient: 34°C - 40°C (93.2°F - 104°F)

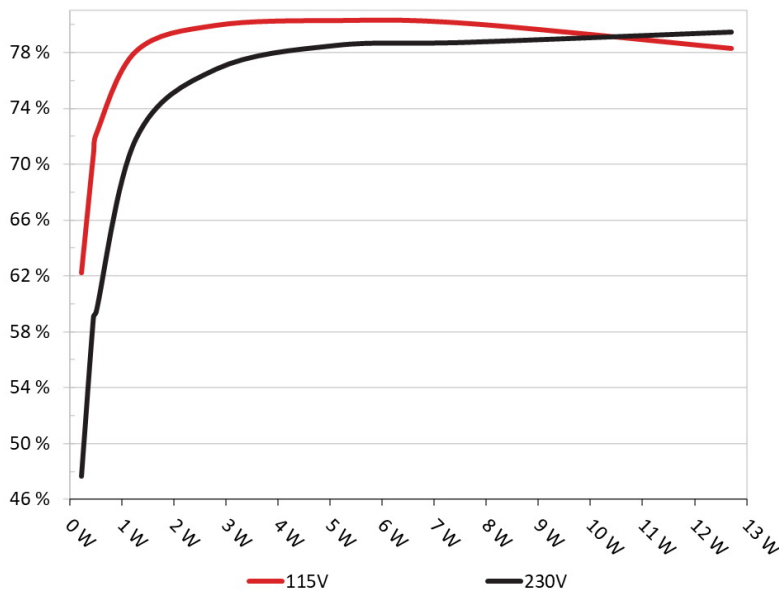


INFO

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: Raijintek Ermis 450B
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

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

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231W	62.695%	0.043
	5.127V	0.368W		115.11V
2	0.09A	0.461W	71.217%	0.074
	5.126V	0.647W		115.11V
3	0.55A	2.815W	80.419%	0.282
	5.117V	3.5W		115.11V
4	1A	5.11W	80.766%	0.363
	5.11V	6.327W		115.12V
5	1.5A	7.653W	80.552%	0.406
	5.101V	9.501W		115.12V
6	2.5A	12.712W	78.769%	0.449
	5.084V	16.138W		115.12V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231W	48.158%	0.017
	5.128V	0.48W		230.33V
2	0.09A	0.462W	59.549%	0.027
	5.127V	0.776W		230.33V
3	0.55A	2.815W	77.266%	0.119
	5.117V	3.643W		230.31V
4	1A	5.11W	78.963%	0.19
	5.109V	6.472W		230.31V
5	1.5A	7.654W	79.187%	0.248
	5.101V	9.666W		230.32V
6	2.501A	12.715W	79.918%	0.316
	5.085V	15.91W		230.32V

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

Anex

Raijintek Ermis 450B

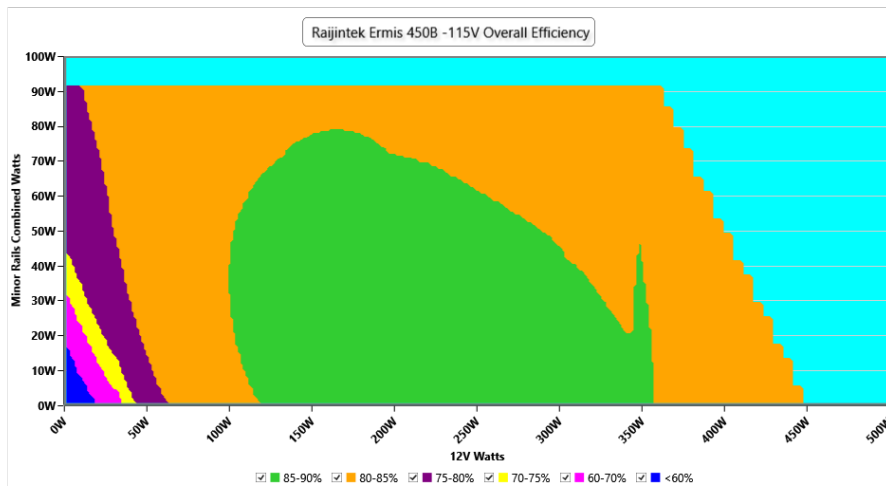
115V

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

PAGE 6/16

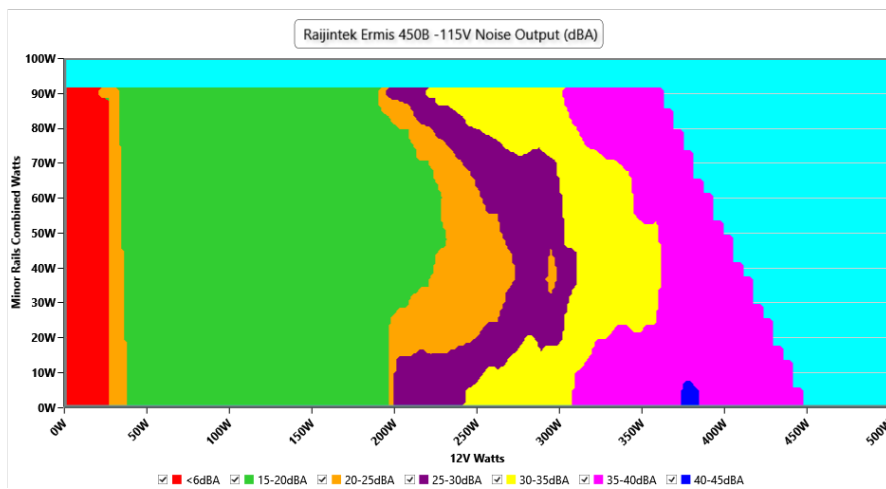
EFFICIENCY GRAPH 115V



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

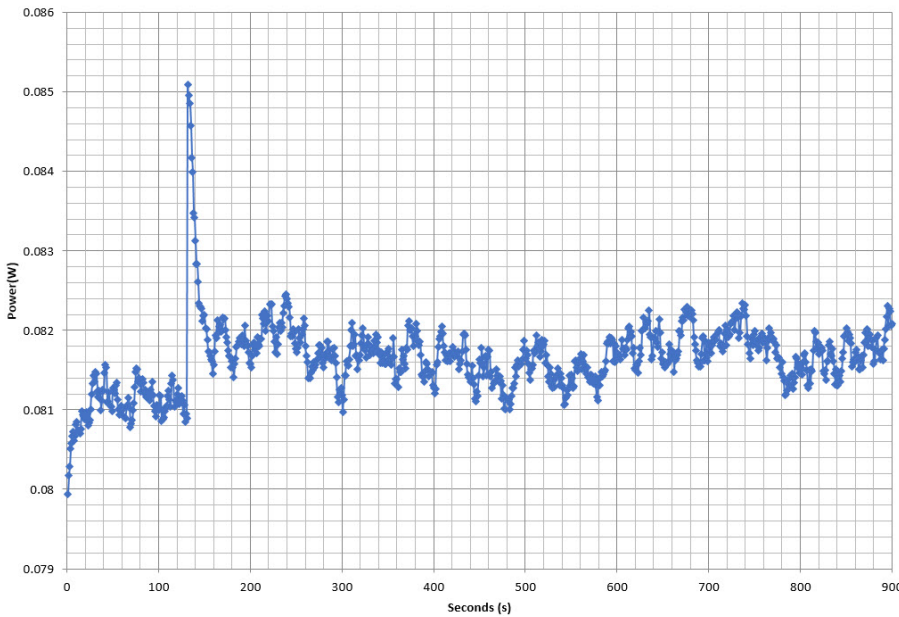
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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

VAMPIRE POWER -115V

Power - RJK450B211000001 - 20/12/2021 - 10:14



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

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

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%	1.914A	1.965A	1.933A	0.978A	45.008	75.951%	1469	19.6	35.73°C	0.976
	12.223V	5.091V	3.415V	5.112V	59.259				40.06°C	115.16V
20%	4.838A	2.948A	2.903A	1.176A	90.009	82.607%	1478	19.6	35.86°C	0.965
	12.218V	5.09V	3.41V	5.104V	108.96				40.39°C	115.16V
30%	8.096A	3.44A	3.391A	1.374A	134.946	85.028%	1487	20.0	36.38°C	0.978
	12.214V	5.088V	3.407V	5.096V	158.707				41.13°C	115.16V
40%	11.370A	3.933A	3.879A	1.572A	180.027	85.935%	1515	20.5	37.18°C	0.986
	12.210V	5.087V	3.403V	5.089V	209.493				42.23°C	115.17V
50%	14.298A	4.915A	4.854A	1.772A	225.022	85.954%	1789	26.0	37.25°C	0.991
	12.205V	5.088V	3.4V	5.081V	261.794				42.77°C	115.17V
60%	17.231A	5.902A	5.836A	1.972A	270.013	85.347%	2252	32.7	37.59°C	0.993
	12.199V	5.085V	3.393V	5.072V	316.371				43.89°C	115.17V
70%	20.167A	6.889A	6.82A	2.173A	315.007	84.845%	2625	37.1	38.15°C	0.995
	12.193V	5.082V	3.388V	5.063V	371.275				45.74°C	115.17V
80%	23.154A	7.878A	7.804A	2.276A	360.034	84.694%	2720	38.0	38.52°C	0.996
	12.185V	5.079V	3.382V	5.054V	425.109				46.6°C	115.17V
90%	26.486A	8.371A	8.289A	2.378A	405.069	83.435%	3235	42.9	38.78°C	0.997
	12.179V	5.078V	3.378V	5.047V	485.49				48.39°C	115.17V
100%	29.790A	8.867A	8.803A	2.482A	449.777	82.496%	3255	43.2	39.35°C	0.997
	12.170V	5.076V	3.374V	5.038V	545.215				50.19°C	115.18V
110%	32.846A	9.851A	9.884A	2.486A	495.207	81.049%	3281	43.3	40.33°C	0.998
	12.160V	5.076V	3.369V	5.028V	610.996				51.65°C	115.18V
CL1	0.114A	10.602A	10.501A	0.001A	91.307	77.483%	1688	23.7	38.67°C	0.968
	12.212V	5.113V	3.399V	5.114V	117.847				44.32°C	115.17V
CL2	0.114A	17.506A	0A	0.002A	91.41	77.624%	1594	22.2	37.8°C	0.968
	12.218V	5.141V	3.405V	5.124V	117.761				45.3°C	115.17V
CL3	0.114A	0A	17.433A	0.001A	60.797	71.433%	1487	20.0	36.94°C	0.966
	12.215V	5.084V	3.407V	5.114V	85.111				46.25°C	115.17V
CL4	36.905A	0.001A	0A	0.002A	449.762	83.685%	3089	41.2	39.16°C	0.997
	12.186V	5.064V	3.392V	5.099V	537.447				50.32°C	115.18V

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

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	1.214A	0.491A	0.483A	0.195A	20.003	63.099%	1445	19.1	33.61°C	0.929
	12.228V	5.09V	3.419V	5.13V	31.7				36.73°C	115.16V
40W	2.674A	0.688A	0.676A	0.293A	40.001	75.178%	1454	19.3	34.17°C	0.96
	12.225V	5.089V	3.417V	5.126V	53.208				37.56°C	115.16V
60W	4.134A	0.885A	0.87A	0.391A	60	80.478%	1453	19.3	34.34°C	0.972
	12.223V	5.088V	3.415V	5.123V	74.555				37.98°C	115.16V
80W	5.591A	1.081A	1.063A	0.489A	79.96	82.788%	1458	19.4	34.98°C	0.964
	12.221V	5.087V	3.414V	5.119V	96.585				39.11°C	115.16V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	18.54mV	14.98mV	11.57mV	15.45mV	Pass
20% Load	18.08mV	16.31mV	12.28mV	15.45mV	Pass
30% Load	18.23mV	16.77mV	12.64mV	16.98mV	Pass
40% Load	19.51mV	16.98mV	13.31mV	17.74mV	Pass
50% Load	20.12mV	18.67mV	13.87mV	18.76mV	Pass
60% Load	21.50mV	19.17mV	14.64mV	21.05mV	Pass
70% Load	22.17mV	20.87mV	15.31mV	22.43mV	Pass
80% Load	25.08mV	22.24mV	22.52mV	27.12mV	Pass
90% Load	26.97mV	23.88mV	23.75mV	29.01mV	Pass
100% Load	27.70mV	29.08mV	27.77mV	36.26mV	Pass
110% Load	32.45mV	29.87mV	29.74mV	37.69mV	Pass
Crossload1	23.98mV	23.39mV	21.54mV	20.33mV	Pass
Crossload2	20.43mV	21.63mV	11.98mV	23.91mV	Pass
Crossload3	19.00mV	17.69mV	25.95mV	17.23mV	Pass
Crossload4	27.77mV	22.73mV	19.20mV	25.81mV	Pass

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

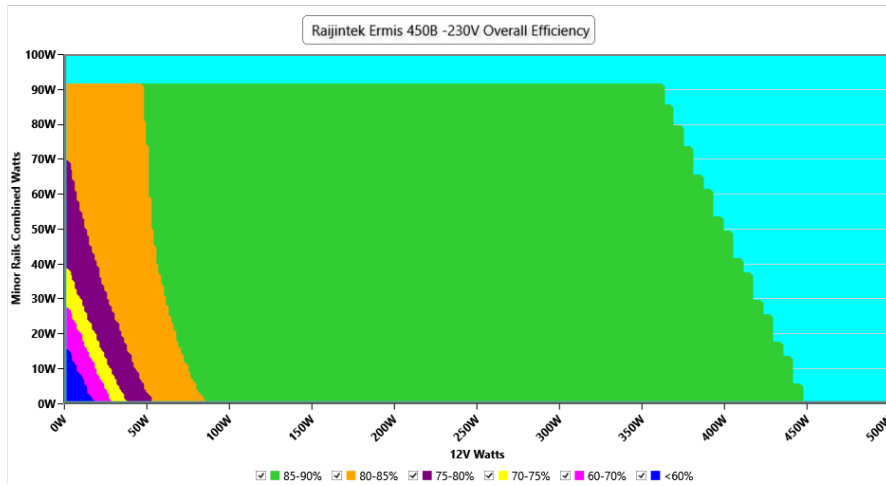
230V

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

PAGE 11/16

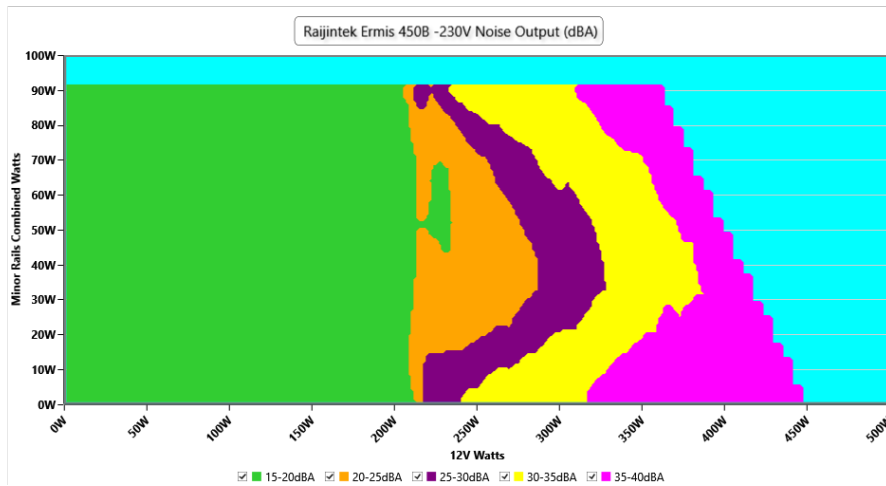
EFFICIENCY GRAPH 230V



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 230V



INFO

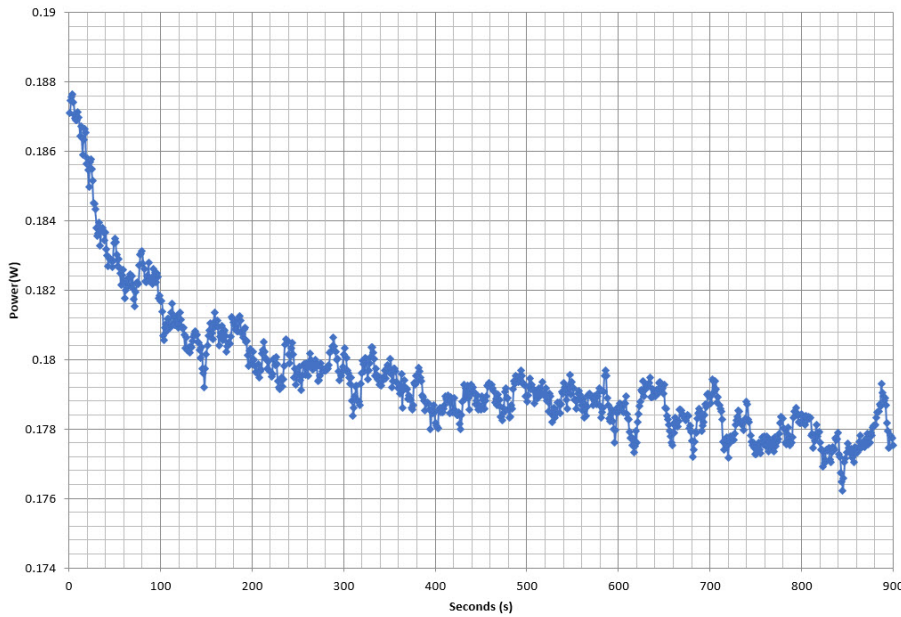
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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

VAMPIRE POWER -230V

Power - RJK450B211000001 - 20/12/2021 - 10:14



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

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

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%	1.919A	1.958A	1.937A	0.977A	45.005	75.804%	1464	19.5	35.71°C	0.795
	12.196V	5.108V	3.408V	5.116V	59.371				39.88°C	230.37V
20%	4.850A	2.94A	2.911A	1.175A	90.006	84.099%	1464	19.5	35.95°C	0.886
	12.187V	5.103V	3.401V	5.106V	107.024				40.34°C	230.37V
30%	8.117A	3.433A	3.401A	1.374A	134.94	87.076%	1479	19.6	36.23°C	0.927
	12.181V	5.099V	3.396V	5.097V	154.968				40.98°C	230.37V
40%	11.402A	3.925A	3.893A	1.572A	180.024	88.334%	1494	19.9	37.44°C	0.939
	12.175V	5.096V	3.391V	5.089V	203.798				42.49°C	230.38V
50%	14.345A	4.912A	4.878A	1.773A	225.012	88.748%	1494	19.9	37.55°C	0.952
	12.165V	5.091V	3.383V	5.078V	253.541				43.25°C	230.38V
60%	17.286A	5.896A	5.869A	1.974A	270.013	88.472%	2279	33.2	38.15°C	0.963
	12.160V	5.09V	3.374V	5.067V	305.196				44.47°C	230.4V
70%	20.236A	6.885A	6.863A	2.176A	315.007	88.345%	2634	37.2	38.94°C	0.965
	12.151V	5.085V	3.366V	5.056V	356.564				46.31°C	230.4V
80%	23.238A	7.877A	7.862A	2.279A	360.057	88.043%	2979	40.4	38.95°C	0.967
	12.142V	5.08V	3.358V	5.046V	408.955				47.29°C	230.41V
90%	26.586A	8.377A	8.356A	2.383A	405.063	87.695%	3226	42.9	39.22°C	0.97
	12.133V	5.074V	3.351V	5.037V	461.9				48.36°C	230.41V
100%	29.907A	8.879A	8.884A	2.487A	449.797	87.269%	3248	43.2	39.79°C	0.972
	12.124V	5.069V	3.343V	5.027V	515.412				50.13°C	230.41V
110%	32.972A	9.874A	9.989A	2.492A	495.214	86.629%	3255	43.2	40.19°C	0.975
	12.113V	5.064V	3.334V	5.017V	571.646				51.26°C	230.41V
CL1	0.115A	10.587A	10.555A	0.001A	91.307	78.909%	1610	22.5	37.01°C	0.896
	12.175V	5.12V	3.382V	5.107V	115.714				42.34°C	230.4V
CL2	0.115A	17.448A	0A	0.001A	91.408	78.384%	1797	26.1	36.23°C	0.897
	12.181V	5.158V	3.391V	5.119V	116.617				44.02°C	230.4V
CL3	0.115A	0A	17.514A	0.001A	60.799	70.065%	1668	23.6	35.78°C	0.858
	12.181V	5.094V	3.391V	5.109V	86.775				44.96°C	230.39V
CL4	37.024A	0A	0.001A	0.001A	449.725	88.838%	2585	36.8	36.16°C	0.972
	12.147V	5.065V	3.37V	5.089V	506.233				47.01°C	230.4V

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

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	1.218A	0.49A	0.483A	0.195A	20	62.119%	1424	18.7	33.97°C	0.622
	12.200V	5.107V	3.412V	5.132V	32.196				37.13°C	230.37V
40W	2.680A	0.685A	0.677A	0.293A	39.999	75.367%	1452	19.2	34.17°C	0.765
	12.198V	5.107V	3.411V	5.129V	53.072				37.65°C	230.37V
60W	4.142A	0.882A	0.871A	0.39A	59.999	81.252%	1459	19.4	34.57°C	0.839
	12.196V	5.105V	3.409V	5.125V	73.843				38.21°C	230.37V
80W	5.604A	1.078A	1.066A	0.488A	79.956	84.19%	1464	19.5	34.74°C	0.87
	12.193V	5.104V	3.407V	5.121V	94.971				38.6°C	230.37V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	20.99mV	17.18mV	13.25mV	16.16mV	Pass
20% Load	21.86mV	17.49mV	13.97mV	17.38mV	Pass
30% Load	22.57mV	17.33mV	14.13mV	17.38mV	Pass
40% Load	22.88mV	17.59mV	14.84mV	18.61mV	Pass
50% Load	24.77mV	18.56mV	15.20mV	18.96mV	Pass
60% Load	28.04mV	20.15mV	16.32mV	20.95mV	Pass
70% Load	28.96mV	21.12mV	16.58mV	21.41mV	Pass
80% Load	31.62mV	23.11mV	23.59mV	23.61mV	Pass
90% Load	39.12mV	23.68mV	25.13mV	27.94mV	Pass
100% Load	41.50mV	27.80mV	28.44mV	31.89mV	Pass
110% Load	50.38mV	28.67mV	30.06mV	32.37mV	Pass
Crossload1	30.34mV	21.95mV	21.98mV	20.84mV	Pass
Crossload2	24.92mV	22.70mV	11.15mV	24.16mV	Pass
Crossload3	20.99mV	15.96mV	26.46mV	22.43mV	Pass
Crossload4	23.66mV	23.03mV	21.72mV	23.38mV	Pass

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

Anex

Raijintek Ermis 450B

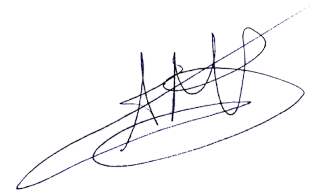


Top side



Power specifications label

CERTIFICATIONS 115V

Aristeidis Bitziopoulos
Lab Director

CERTIFICATIONS 230V



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