CPS PCCooler YN850

Serial Number

Lab ID PL85002280

Certification ID 252280

Test Result Report ID: 23PS2280A

Certificate Issue Date: Nov 3, 2023

Scheme: ETA-EMI PSU

115V



230V



Scheme: LAMBDA PSU

115V



230V





Outside Validation Scope



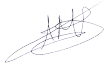
General Information

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	CPS PCCooler
Model	YN850
OEM/ODM	Andyson
Serial Number	
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240

Rated Current (Arms)	10-5
Rated Frequency (Hz)	50-60
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	135mm Fluid Dynamic Bearing Fan (HA13525M12F-Z)
Semi-Passive Operation	✓ (selectable)
Cybenetics Testing Information	
Lab ID	PL85002280
Date of receipt	Oct 23, 2023
Testing Date	Nov 3, 2023
Report Issued Date	Nov 3, 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 (550mm)	1	1	18AWG	No
4+4 pin EPS12V (650mm)	2	2	18AWG	No
6+2 pin PCIe (500mm)	3	3	18AWG	No
12+2 pin PCIe (650mm) (600W)	1	1	16-26AWG	No

SATA (450mm+120mm+120mm) / 4-pin Molex (+120mm)	3	9 / 3	20AWG	No
AC Power Cord (1370mm) - C13 coupler	1	1	18AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	70.8	3	0.3
	Watts	100		849.6	15	3.6
Total Max. Power (W)		850				

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)	88.844%
Average Noise Output (>1450 Load Combinations)	25.87dBA
Average PF (>1450 Load Combinations)	0.979
Efficiency With 10W (≤500W) or 2% (>500W) Load	72.838%
Standby Power Consumption	0.0499W
Non-Accredited	
12V Ripple (Full Load)	15.59mV
5V Ripple (Full Load)	13.17mV

3.3V Ripple (Full Load)	15.71mV
5VSB Ripple (Full Load)	33.77mV
12V Load Regulation	0.54%
5V Load Regulation	0.58%
3.3V Load Regulation	1.03%
5VSB Load Regulation	3.56%
Inrush Current	39.570A

230V

Accredited	
Average Efficiency (>1450 load combinations)	90.895%
Average Noise Output (>1450 Load Combinations)	25.45dBA
Average PF (>1450 Load Combinations)	0.936
Efficiency With 10W (≤500W) or 2% (>500W) Load	71.317%
Standby Power Consumption	0.1306W
Non-Accredited	
12V Ripple (Full Load)	16.63mV
5V Ripple (Full Load)	13.46mV
3.3V Ripple (Full Load)	14.62mV
5VSB Ripple (Full Load)	28.38mV
12V Load Regulation	0.52%
5V Load Regulation	0.62%
3.3V Load Regulation	1.03%
5VSB Load Regulation	3.56%
Inrush Current	69.270A
12V Transient Response (200%)	11.48V
5V Transient Response (200%)	4.954V
3.3V Transient Response (200%)	3.216V
5VSB Transient Response (200%)	4.915V
Hold-Up Time & PWR_OK Signal	20.90ms
AC Loss to PWR_OK Hold Up Time	16.20ms
PWR_OK Inactive to DC Loss Delay	4.70ms

PSU Timings: T1 (20% / 100%)	93.0ms	93.0ms
PSU Timings: T3 (20% / 100%)	124.0ms	124.0ms
OPP (20.76°C / 37.42°C)	130.31%	123.84%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	20.9
AC Loss to PWR_OK Hold Up Time (ms)	16.2
PWR_OK Inactive to DC Loss Delay (ms)	4.7



Tables

115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	114.89 V	114.85 V	113.85 V	114.93 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.95 Hz	59.40 Hz	60.05 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.416	1.415	1.340	1.418	1.490	PASS
Mains Voltage THD:	0.14 %	0.11 %	N/A	0.19 %	2.00 %	PASS
Real Power:	0.050 W	-0.003 W	N/A	0.094 W	N/A	N/A
Apparent Power:	10.702 W	10.672 W	N/A	10.738 W	N/A	N/A
Power Factor:	0.007	N/A	N/A	N/A	N/A	N/A

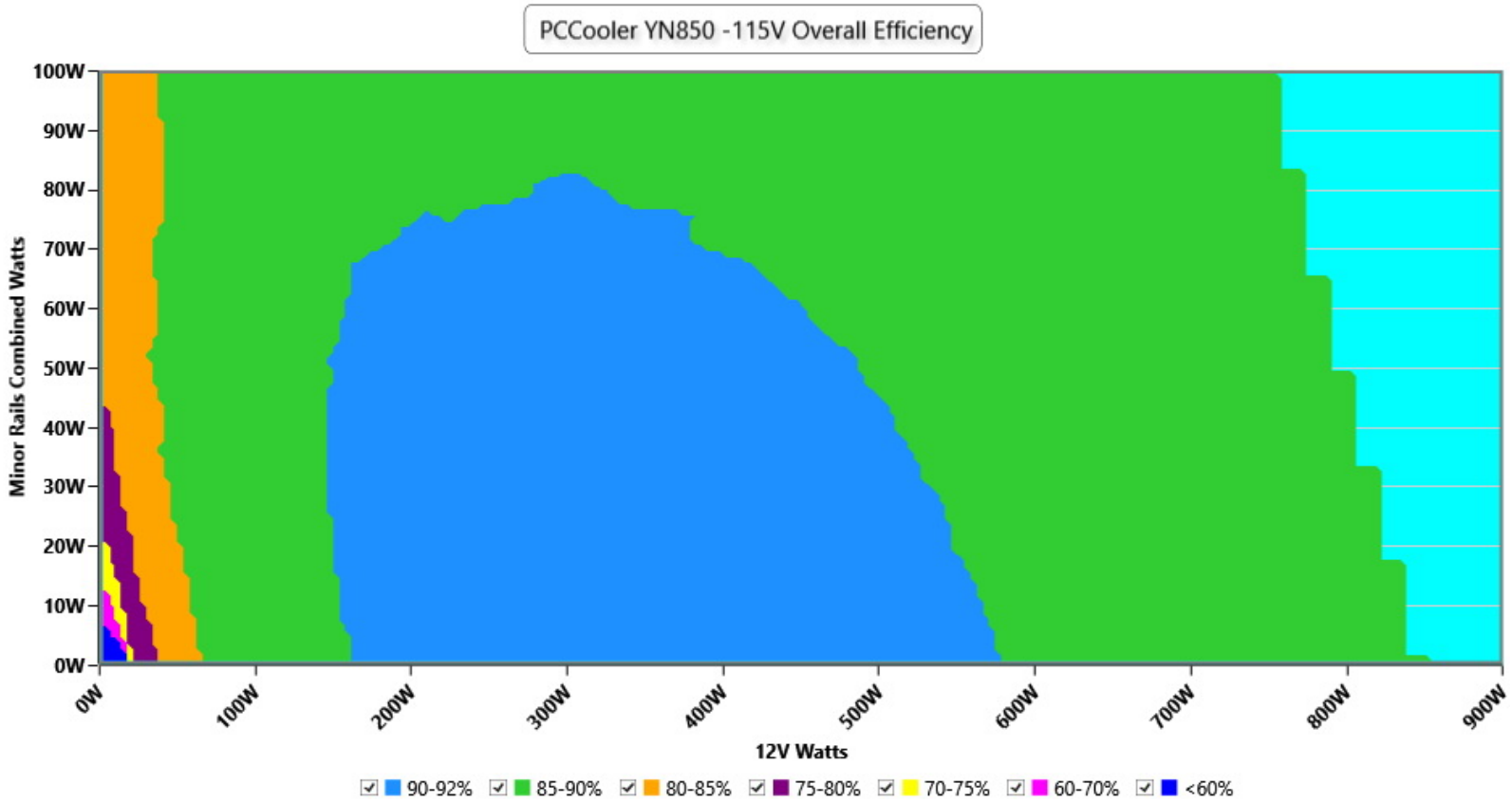
230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	229.96 V	229.91 V	227.70 V	229.99 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:	1.416	1.415	1.340	1.416	1.490	PASS
Mains Voltage THD:	0.12 %	0.11 %	N/A	0.15 %	2.00 %	PASS
Real Power:	0.131 W	0.085 W	N/A	0.183 W	N/A	N/A
Apparent Power:	36.240 W	36.197 W	N/A	36.290 W	N/A	N/A
Power Factor:	0.003	N/A	N/A	N/A	N/A	N/A

Efficiency Graph

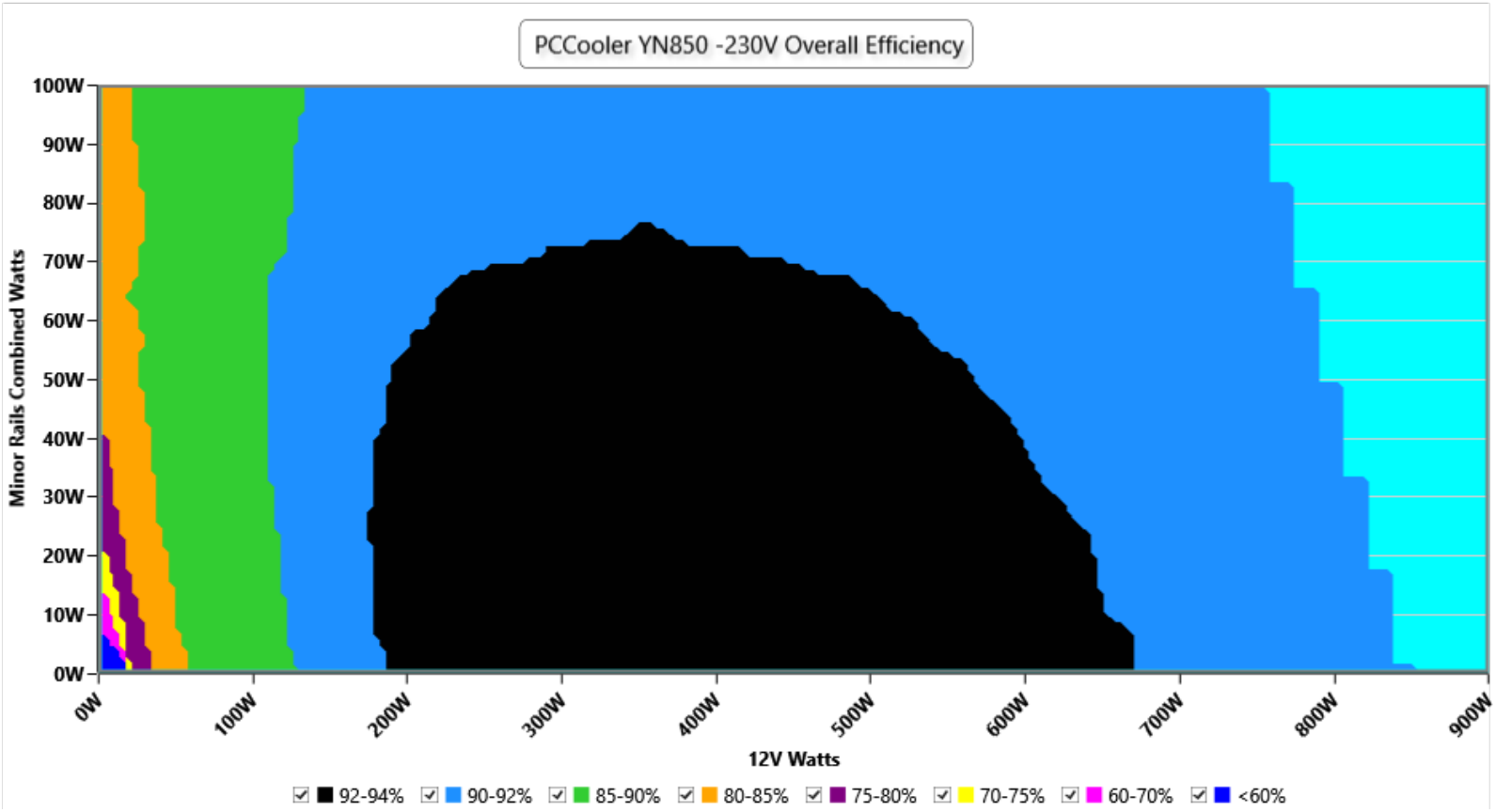
115V



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

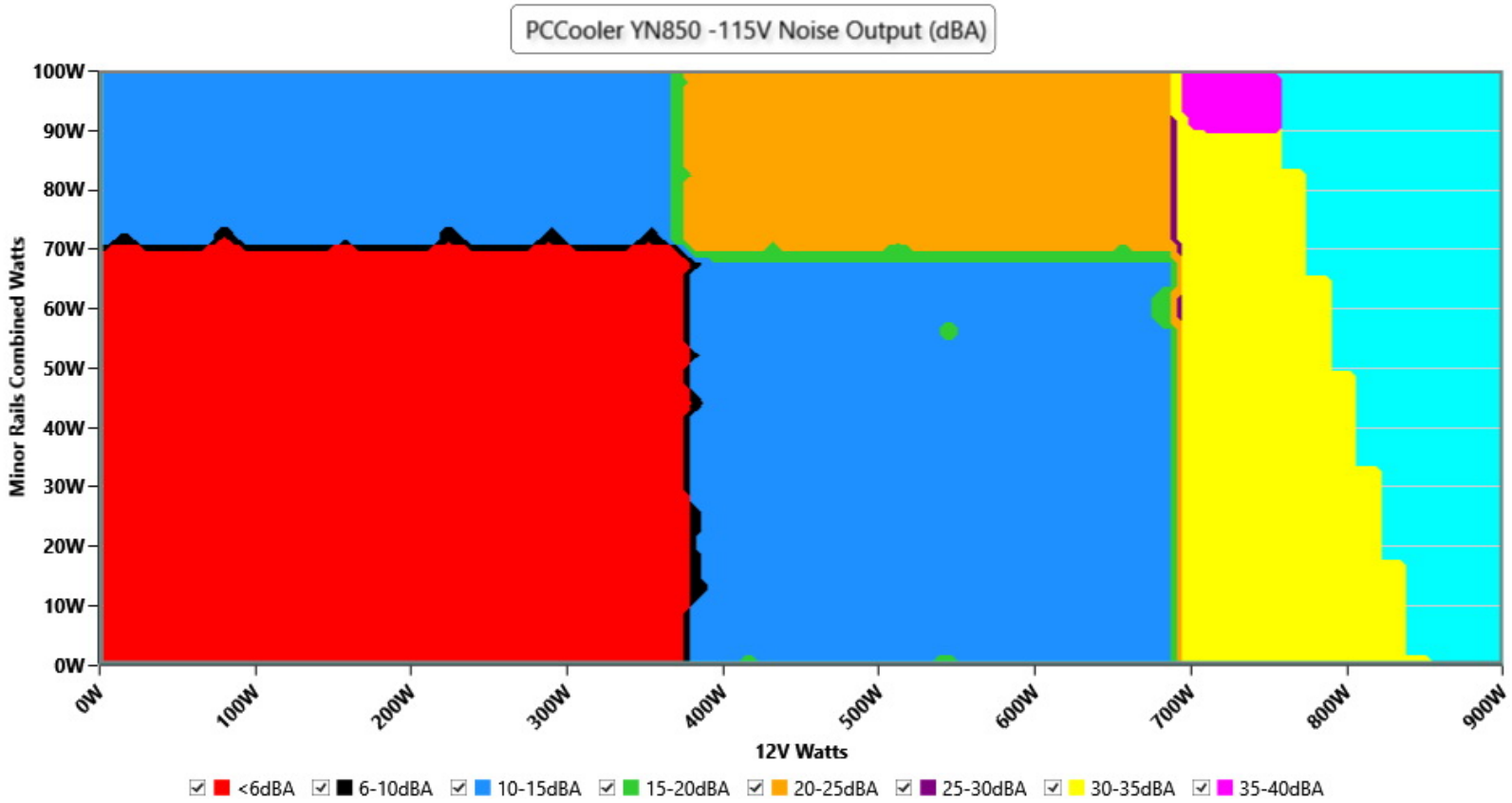


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Noise Graph

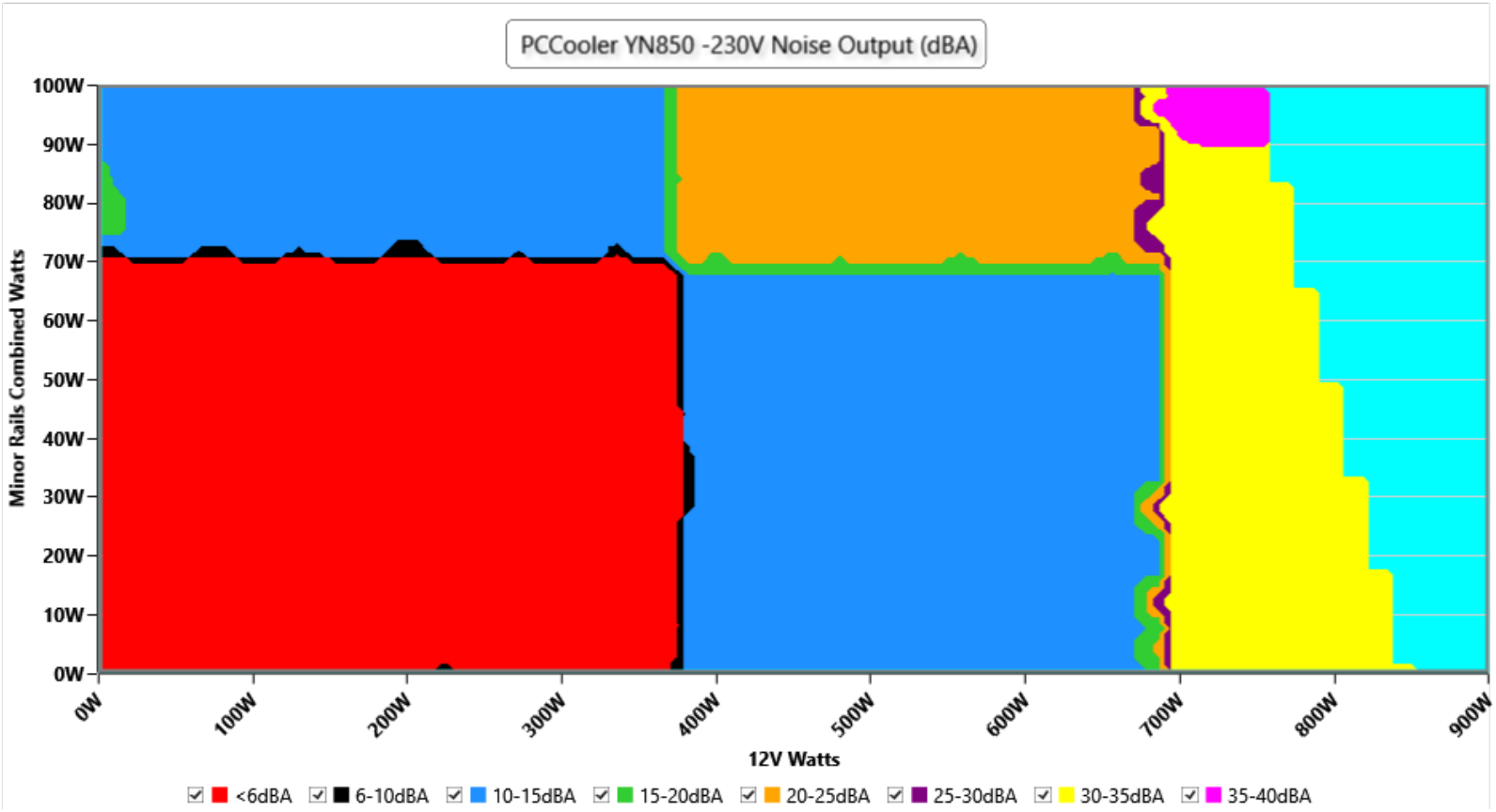
115V



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



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

Noise under high ambient temperature (indicative)

115V

Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	0 RPM · <6.0 dB(A) · 44.4 °C	0 RPM · <6.0 dB(A) · 44.4 °C	fan off in both
20%	0 RPM · <6.0 dB(A) · 45.5 °C	0 RPM · <6.0 dB(A) · 45.5 °C	fan off in both
50%	0 RPM · <6.0 dB(A) · 48.3 °C	0 RPM · <6.0 dB(A) · 48.3 °C	fan off in both
100%	1417 RPM · 39.1 dB(A) · 45.0 °C	1417 RPM · 39.1 dB(A) · 45.0 °C	**+0.0 dB(A)**

230V

Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	0 RPM · <6.0 dB(A) · 44.4 °C	0 RPM · <6.0 dB(A) · 44.4 °C	fan off in both
20%	0 RPM · <6.0 dB(A) · 45.1 °C	0 RPM · <6.0 dB(A) · 45.1 °C	fan off in both
50%	0 RPM · <6.0 dB(A) · 48.4 °C	0 RPM · <6.0 dB(A) · 48.4 °C	fan off in both
100%	1420 RPM · 39.2 dB(A) · 45.1 °C	1420 RPM · 39.2 dB(A) · 45.1 °C	**+0.0 dB(A)**

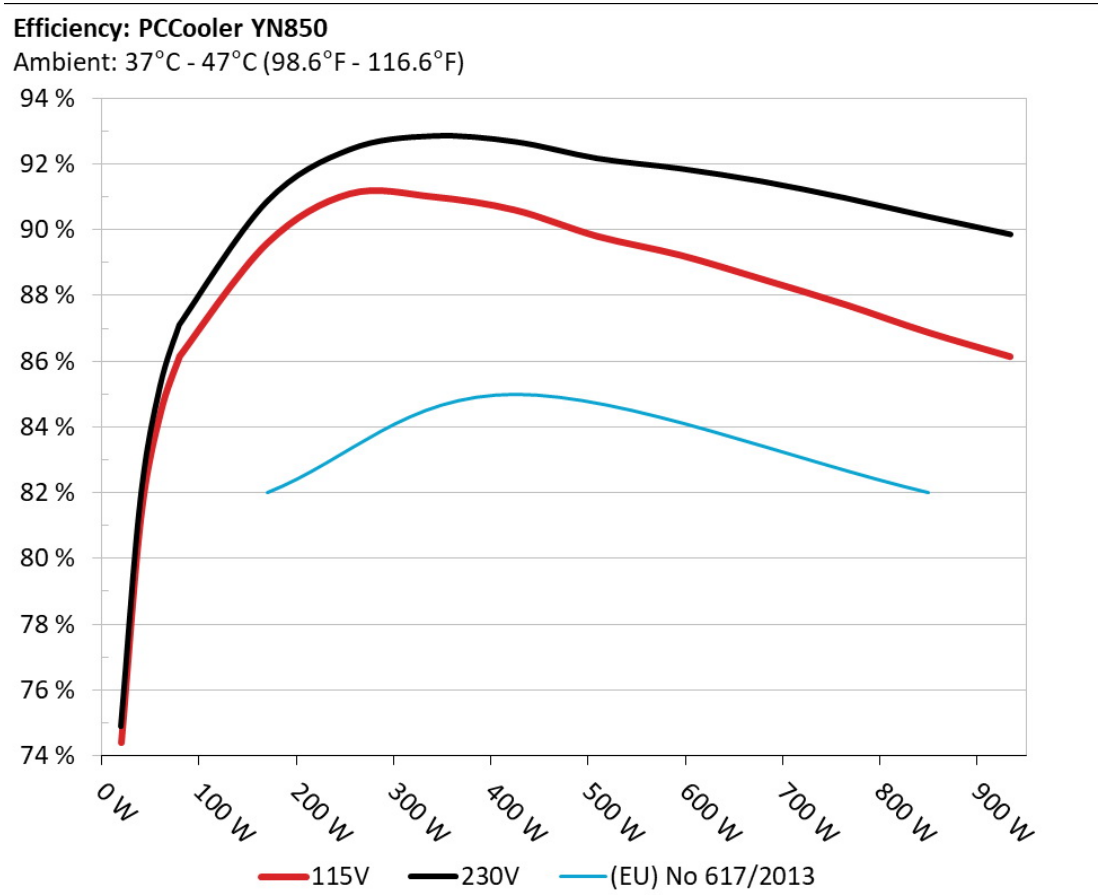
INFO

Fan speed, noise and the measured intake temperature at 10, 20, 50 and 100 % load, from the two load regulation tests: at normal ambient (about 30-32 °C) and at high ambient (about 40-47 °C). These are stabilized readings at fixed loads, not averages over the certification sweep, so they are indicative of how the fan behaves when it is hot. "<6.0" is the floor of our sound meter: the fan is stopped or too quiet to measure (the fan speed column says which); with the fan stopped, the intake sensor can read higher than the chamber air.

Informational. Not part of the ETA or LAMBDA rating.

Indicative Performance

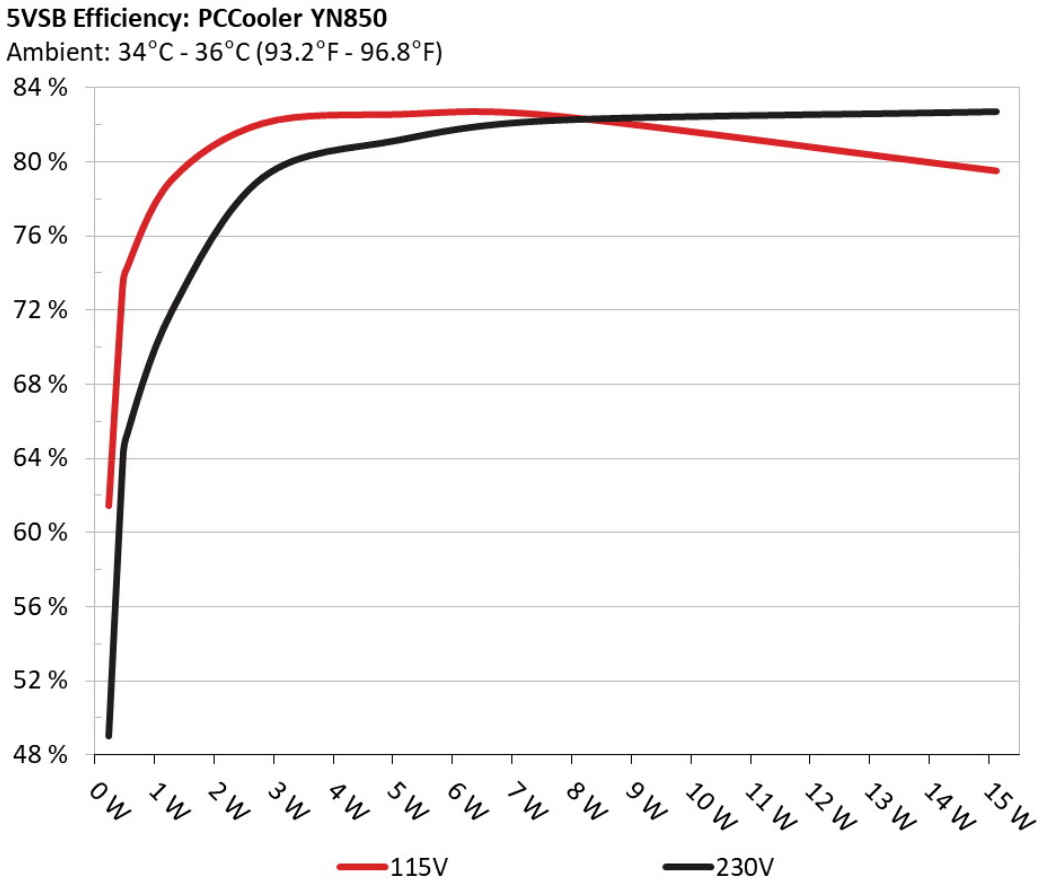
Efficiency under high ambient temperature



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	61.428%	0.036
	5.132V	0.376W		114.88V
2	0.09A	0.462W	73.205%	0.059
	5.13V	0.631W		114.88V
3	0.55A	2.814W	82.078%	0.257
	5.117V	3.429W		114.87V
4	1A	5.103W	82.565%	0.357
	5.103V	6.18W		114.87V
5	1.5A	7.632W	82.508%	0.409
	5.088V	9.25W		114.87V
6	3A	15.123W	79.512%	0.484
	5.041V	19.019W		114.87V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231W	49.017%	0.013
	5.131V	0.472W		229.95V
2	0.09A	0.462W	63.605%	0.021
	5.13V	0.727W		229.94V
3	0.55A	2.814W	79.151%	0.097
	5.116V	3.554W		229.94V
4	1A	5.103W	81.18%	0.161
	5.102V	6.287W		229.94V
5	1.5A	7.631W	82.226%	0.213
	5.087V	9.281W		229.94V
6	3A	15.124W	82.707%	0.321
	5.041V	18.287W		229.94V

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%	5.238A	1.985A	1.989A	0.983A	85.004	86.14%	0	<6.0	44.35°C	0.954
	12.102V	5.037V	3.319V	5.088V	98.679				40.13°C	114.86V
20%	11.448A	2.98A	2.986A	1.183A	169.946	89.573%	0	<6.0	45.46°C	0.973
	12.145V	5.034V	3.315V	5.073V	189.729				40.93°C	114.82V
30%	18.046A	3.477A	3.487A	1.385A	254.961	91.075%	0	<6.0	46.29°C	0.981
	12.130V	5.034V	3.312V	5.056V	279.945				41.1°C	114.79V
40%	24.639A	3.975A	3.989A	1.587A	340.05	90.985%	0	<6.0	47.45°C	0.983
	12.129V	5.032V	3.31V	5.041V	373.744				41.94°C	114.76V
50%	30.863A	4.972A	4.991A	1.791A	424.913	90.581%	0	<6.0	48.3°C	0.984
	12.131V	5.03V	3.306V	5.025V	469.097				42.3°C	114.73V
60%	37.075A	5.973A	5.997A	1.997A	509.44	89.785%	872	25.2	42.87°C	0.985
	12.127V	5.024V	3.302V	5.009V	567.401				49.43°C	114.7V
70%	43.359A	6.976A	7.003A	2.202A	594.726	89.212%	869	25.1	43.04°C	0.986
	12.122V	5.018V	3.299V	4.997V	666.64				50.14°C	114.67V
80%	49.622A	7.977A	8.01A	2.306A	679.495	88.477%	864	24.9	43.98°C	0.987
	12.123V	5.015V	3.296V	4.986V	767.99				51.99°C	114.63V
90%	56.273A	8.476A	8.502A	2.412A	764.863	87.708%	860	24.7	44.49°C	0.988
	12.126V	5.014V	3.293V	4.974V	872.052				53.53°C	114.59V
100%	62.685A	8.979A	9.026A	3.032A	849.68	86.865%	1417	39.1	44.97°C	0.99
	12.124V	5.011V	3.29V	4.947V	978.169				55.01°C	114.56V
110%	68.984A	9.982A	10.13A	3.037A	934.214	86.131%	1415	39.1	46.74°C	0.99
	12.118V	5.008V	3.287V	4.939V	1084.651				57.66°C	114.53V
CL1	0.114A	11.995A	12.007A	0A	101.272	82.675%	884	25.7	40.52°C	0.962
	12.133V	5.018V	3.306V	5.102V	122.497				45.99°C	114.84V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL2	0.114A	19.983A	0A	0A	101.345	80.633%	1431	39.4	40.71°C	0.963
	12.122V	5.003V	3.32V	5.109V	125.684				47.72°C	114.84V
CL3	0.114A	0A	20.009A	0A	67.377	75.579%	884	25.7	39.82°C	0.949
	12.113V	5.043V	3.298V	5.105V	89.152				48.86°C	114.85V
CL4	70.192A	0A	0A	0.001A	849.5	87.728%	1419	39.2	45.61°C	0.989
	12.103V	5.032V	3.303V	5.054V	968.345				56.59°C	114.57V

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%	5.237A	1.984A	1.989A	0.982A	84.992	87.104%	0	<6.0	44.35°C	0.788
	12.105V	5.038V	3.319V	5.088V	97.577				40.15°C	229.93V
20%	11.443A	2.979A	2.986A	1.182A	169.911	90.85%	0	<6.0	45.09°C	0.898
	12.149V	5.035V	3.315V	5.073V	187.027				40.5°C	229.92V
30%	18.046A	3.476A	3.487A	1.384A	254.911	92.434%	0	<6.0	46.19°C	0.934
	12.128V	5.034V	3.313V	5.058V	275.777				41.09°C	229.91V
40%	24.642A	3.974A	3.988A	1.586A	339.989	92.848%	0	<6.0	47.48°C	0.951
	12.125V	5.032V	3.31V	5.044V	366.175				41.93°C	229.89V
50%	30.865A	4.971A	4.99A	1.79A	424.746	92.674%	0	<6.0	48.36°C	0.961
	12.125V	5.029V	3.307V	5.028V	458.323				42.32°C	229.88V
60%	37.087A	5.973A	5.996A	1.995A	509.341	92.168%	873	25.2	42.88°C	0.966
	12.121V	5.023V	3.303V	5.012V	552.622				49.41°C	229.86V
70%	43.375A	6.977A	7.004A	2.201A	594.705	91.857%	870	25.1	43.28°C	0.97
	12.118V	5.018V	3.299V	4.997V	647.427				50.38°C	229.85V
80%	49.643A	7.979A	8.011A	2.307A	679.534	91.463%	865	24.9	43.52°C	0.973
	12.119V	5.014V	3.295V	4.985V	742.959				51.59°C	229.83V
90%	56.292A	8.478A	8.504A	2.413A	764.915	90.959%	861	24.7	44.2°C	0.975
	12.122V	5.013V	3.293V	4.973V	840.945				53.27°C	229.82V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
100%	62.703A	8.981A	9.028A	3.032A	849.728	90.394%	1420	39.2	45.08°C	0.977
	12.121V	5.01V	3.29V	4.946V	940.03				55.17°C	229.8V
110%	68.982A	9.986A	10.133A	3.038A	934.309	89.857%	1417	39.1	46.72°C	0.978
	12.120V	5.007V	3.286V	4.937V	1039.78				57.62°C	229.79V
CL1	0.115A	11.998A	12.008A	0A	101.285	83.485%	883	25.6	41.27°C	0.831
	12.136V	5.017V	3.306V	5.101V	121.324				46.77°C	229.93V
CL2	0.114A	19.986A	0A	0A	101.351	81.476%	1434	39.5	40.13°C	0.836
	12.122V	5.002V	3.32V	5.108V	124.391				47.14°C	229.93V
CL3	0.114A	0A	20.009A	0A	67.376	76.069%	884	25.7	40.35°C	0.765
	12.112V	5.043V	3.298V	5.105V	88.564				49.37°C	229.94V
CL4	70.193A	0A	0A	0.001A	849.484	91.147%	1421	39.2	45.37°C	0.976
	12.102V	5.031V	3.304V	5.054V	931.996				56.32°C	229.8V

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	1.230A	0.496A	0.496A	0.195A	19.997	74.401%	0	<6.0	39.79°C	0.789
	12.079V	5.04V	3.324V	5.123V	26.878				36.7°C	114.88V
40W	2.704A	0.695A	0.695A	0.293A	39.998	81.231%	0	<6.0	40.64°C	0.899
	12.085V	5.04V	3.323V	5.117V	49.24				37.35°C	114.88V
60W	4.178A	0.893A	0.894A	0.391A	59.998	84.39%	0	<6.0	41.86°C	0.935
	12.091V	5.04V	3.322V	5.112V	71.096				38.05°C	114.86V
80W	5.648A	1.092A	1.093A	0.49A	79.945	86.325%	0	<6.0	43.73°C	0.951
	12.096V	5.039V	3.321V	5.106V	92.612				39.75°C	114.85V

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	1.228A	0.496A	0.496A	0.195A	19.992	74.896%	0	<6.0	39.81°C	0.428
	12.086V	5.041V	3.324V	5.122V	26.692				36.76°C	229.94V
40W	2.703A	0.694A	0.695A	0.293A	39.991	81.78%	0	<6.0	40.65°C	0.598
	12.092V	5.041V	3.323V	5.117V	48.902				37.37°C	229.94V
60W	4.176A	0.893A	0.894A	0.391A	59.991	85.207%	0	<6.0	41.54°C	0.703
	12.097V	5.041V	3.322V	5.112V	70.41				38.07°C	229.94V
80W	5.643A	1.091A	1.093A	0.489A	79.926	87.19%	0	<6.0	42.87°C	0.774
	12.104V	5.041V	3.321V	5.106V	91.667				39.03°C	229.93V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	22.64mV	7.32mV	7.75mV	16.00mV	Pass
20% Load	9.18mV	7.57mV	9.05mV	15.18mV	Pass
30% Load	10.88mV	8.14mV	8.94mV	15.95mV	Pass
40% Load	9.64mV	9.17mV	9.93mV	16.98mV	Pass
50% Load	9.38mV	8.40mV	9.16mV	18.63mV	Pass
60% Load	10.16mV	9.58mV	9.82mV	19.87mV	Pass
70% Load	10.72mV	11.49mV	11.53mV	22.97mV	Pass
80% Load	11.19mV	10.82mV	13.03mV	26.38mV	Pass
90% Load	10.67mV	11.59mV	14.69mV	27.05mV	Pass
100% Load	15.59mV	13.17mV	15.71mV	33.77mV	Pass
110% Load	14.98mV	14.59mV	16.18mV	37.58mV	Pass
Crossload1	26.73mV	11.26mV	10.98mV	16.75mV	Pass
Crossload2	30.32mV	15.61mV	9.31mV	13.06mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	23.25mV	8.66mV	10.08mV	13.83mV	Pass
Crossload4	15.50mV	12.32mV	14.11mV	23.70mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	23.61mV	8.86mV	8.43mV	18.07mV	Pass
20% Load	9.90mV	8.09mV	8.43mV	16.72mV	Pass
30% Load	10.76mV	8.71mV	8.90mV	18.06mV	Pass
40% Load	8.76mV	10.61mV	10.65mV	19.61mV	Pass
50% Load	9.44mV	9.43mV	9.62mV	19.87mV	Pass
60% Load	9.95mV	9.94mV	11.22mV	20.80mV	Pass
70% Load	10.46mV	10.56mV	11.01mV	22.61mV	Pass
80% Load	10.52mV	10.87mV	13.24mV	23.74mV	Pass
90% Load	10.77mV	11.49mV	11.74mV	25.09mV	Pass
100% Load	16.63mV	13.46mV	14.62mV	28.38mV	Pass
110% Load	15.91mV	14.16mV	14.73mV	28.67mV	Pass
Crossload1	22.51mV	10.69mV	10.93mV	15.53mV	Pass
Crossload2	28.51mV	15.35mV	8.79mV	12.96mV	Pass
Crossload3	23.46mV	8.86mV	11.27mV	13.16mV	Pass
Crossload4	15.15mV	11.77mV	13.72mV	23.68mV	Pass

The results above are not used in the certification process

CPS PCCooler YN850



Top side



Power specifications label

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