1st Player NGDP 850W

240126PSNGDP-E0691

Lab ID 1P85002355

Certification ID 252355

Test Result Report ID: 24PS2355A

Certificate Issue Date: Feb 20, 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	1st Player
Model	NGDP 850W
OEM/ODM	Helly Technology
Serial Number	240126PSNGDP-E0691
Product Specifications	
Manufacturer-Provided Information	
□□□□ (Vrms)	100-240
□□□□ (Arms)	10-5

□□□□ (Hz)	50-60
□□□□ (W)	850
Operating Temperature (Continuous Full Load) (°C)	
□□	ATX12V
□□□□	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
□□	120mm Fluid Dynamic Bearing Fan (HA1225M12F-Z)
□□□□□	✓ (selectable)
Cybenetics Testing Information	
Lab ID	1P85002355
Date of receipt	Jan 24, 2024
Testing Date	Feb 14, 2024
Report Issued Date	Feb 20, 2024
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

□□□□□ (Non-accredited measurements)

□□□□□				
□□	□□□□	□□□□□□	Gauge	In Cable Capacitors
ATX □□ 20+4 pin (610mm)	1	1	18-22AWG	□
4+4 pin EPS 12V □□ (650mm)	2	2	18AWG	□
6+2pin PCIe□□ (600mm)	3	3	18AWG	□
12+4 pin PCIe (710mm) (600W)	1	1	16-24AWG	□
SATA□□ (450mm+145mm+145mm+145mm)	2	8	18AWG	□
4-pin Molex (450mm+145mm+145mm+145mm)	1	4	18AWG	□
AC Power Cord (1360mm) - C13 coupler	1	1	18AWG	-

□□□□

□		3.3V	5V	12V	5VSB	-12V
□□□□	□□	20	20	70.8	3	0.3
	□	120		849.6	15	3.6
□□□□□ (W)		850				

Parts Description

General Data	
Manufacturer (OEM)	Helly Technology
PCB Type	Double-Sided
Primary Side	
Transient Filter	2x Y caps, 1x X caps, 2x CM chokes, 1x MOV
Inrush Protection	1x NTC Thermistor MF73T-1 & Relay
Bridge Rectifier(s)	2x
APFC MOSFETs	2x Oriental Semiconductor OSG55R140F (550 V, 14.5 A @ 100 °C, Rds (on): 0.14 ohm)
APFC Boost Diode	1x WeEN BYC15-600P (600V, 15A)
Bulk Cap(s)	1x Nippon Chemi-Con (400V, 820uF, 2000h @ 105°C, CE)
Main Switchers	2x FuXin Semiconductor FXN28N50T (500 V, 16.7 A @ 100 °C, Rds (on): 0.20 ohm)
APFC Controller	Champion CM6500UNX
Resonant Controller	Champion CM6901T6X
Topology	Primary side: APFC, Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETs	6x AllPower APG013N04G (40V, 100A @ 100°C, Rds(on): 1.3mOhm)
5V & 3.3V	DC-DC Converters: 2x XSEMI XP3NA3R4MT (30V, 46A @ 100°C, Rds(on): 3.4mOhm) & 2x RMN3N5R0DF (30V, 19.7A @ 70°C, Rds(on): 5mOhm) PWM Controller(s): 2x ANPEC APW7073
Filtering Capacitors	Electrolytic: 3x Rubycon (2-1,0000 @ 105°C, YXF), 2x Nippon Chemi-Con @ 105°C, (W), 2x Nippon Chemi-Con (2-5,000 @ 105°C, KZE), Polymer: 31x Beryl BC
Supervisor IC	Weltrend WT7527RA (OCP, OVP, UVP, SCP, PG)
Fan Model	Hong Hua HA1225M12F-Z (120mm, 12V, 0.45A, Fluid Dynamic Fan)
5VSB	
Standby PWM Controller	Excelliance MOS EM85690

Test Results

Temperature & Compliance Info

□□□□ (°C /°F)	28-32 / 82.4-89.6
□□ ErP Lot3/6□□	✓
□□ (EU) No 617/2013□□	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX v3.1 PSU Power Excursion	✓

Performance Summary

115V

Accredited	
□□□□ (>1450 load combinations)	89.029%
Average Noise Output (>1450 Load Combinations)	23.79dBA
PF□□□ (>1450 Load Combinations)	0.994
Efficiency With 10W (≤500W) or 2% (>500W) Load	68.952%
□□□□□□	0.0591W
Non-Accredited	
12V Ripple (Full Load)	26.20mV
5V Ripple (Full Load)	10.41mV
3.3V Ripple (Full Load)	13.81mV
5VSB Ripple (Full Load)	15.89mV
12V Load Regulation	0.28%
5V Load Regulation	0.71%
3.3V Load Regulation	1.12%
5VSB Load Regulation	4.83%
Inrush Current	17.640A

230V

Accredited		
□□□□ (>1450 load combinations)		91.413%
Average Noise Output (>1450 Load Combinations)		23.74dBA
PF□□□ (>1450 Load Combinations)		0.970
Efficiency With 10W (≤500W) or 2% (>500W) Load		76.235%
□□□□□□		0.0926W
Non-Accredited		
12V Ripple (Full Load)		26.04mV
5V Ripple (Full Load)		9.04mV
3.3V Ripple (Full Load)		13.67mV
5VSB Ripple (Full Load)		14.85mV
12V Load Regulation		0.29%
5V Load Regulation		0.67%
3.3V Load Regulation		1.09%
5VSB Load Regulation		4.81%
Inrush Current		33.940A
12V Transient Response (200%)		11.36V
5V Transient Response (200%)		5.016V
3.3V Transient Response (200%)		3.247V
5VSB Transient Response (200%)		4.964V
□□□□ & PG□□		23.80ms
AC Loss to PWR_OK Hold Up Time		20.70ms
PWR_OK Inactive to DC Loss Delay		3.10ms
PSU Timings: T1 (20% / 100%)	60.0ms	60.0ms
PSU Timings: T3 (20% / 100%)	123.0ms	123.0ms
OPP (29.67°C / 42.01°C)	137.30%	131.52%

□□□□ & PG□□

Hold-Up Time (ms)	23.8
AC Loss to PWR_OK Hold Up Time (ms)	20.7
PWR_OK Inactive to DC Loss Delay (ms)	3.1

□□□□

Tables

115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	115.05 V	115.00 V	113.85 V	115.09 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.95 Hz	59.40 Hz	60.02 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.416	1.415	1.340	1.418	1.490	PASS
Mains Voltage THD:	0.13 %	0.08 %	N/A	0.20 %	2.00 %	PASS
Real Power:	0.059 W	0.053 W	N/A	0.065 W	N/A	N/A
Apparent Power:	6.582 W	6.360 W	N/A	6.811 W	N/A	N/A
Power Factor:	0.009	N/A	N/A	N/A	N/A	N/A

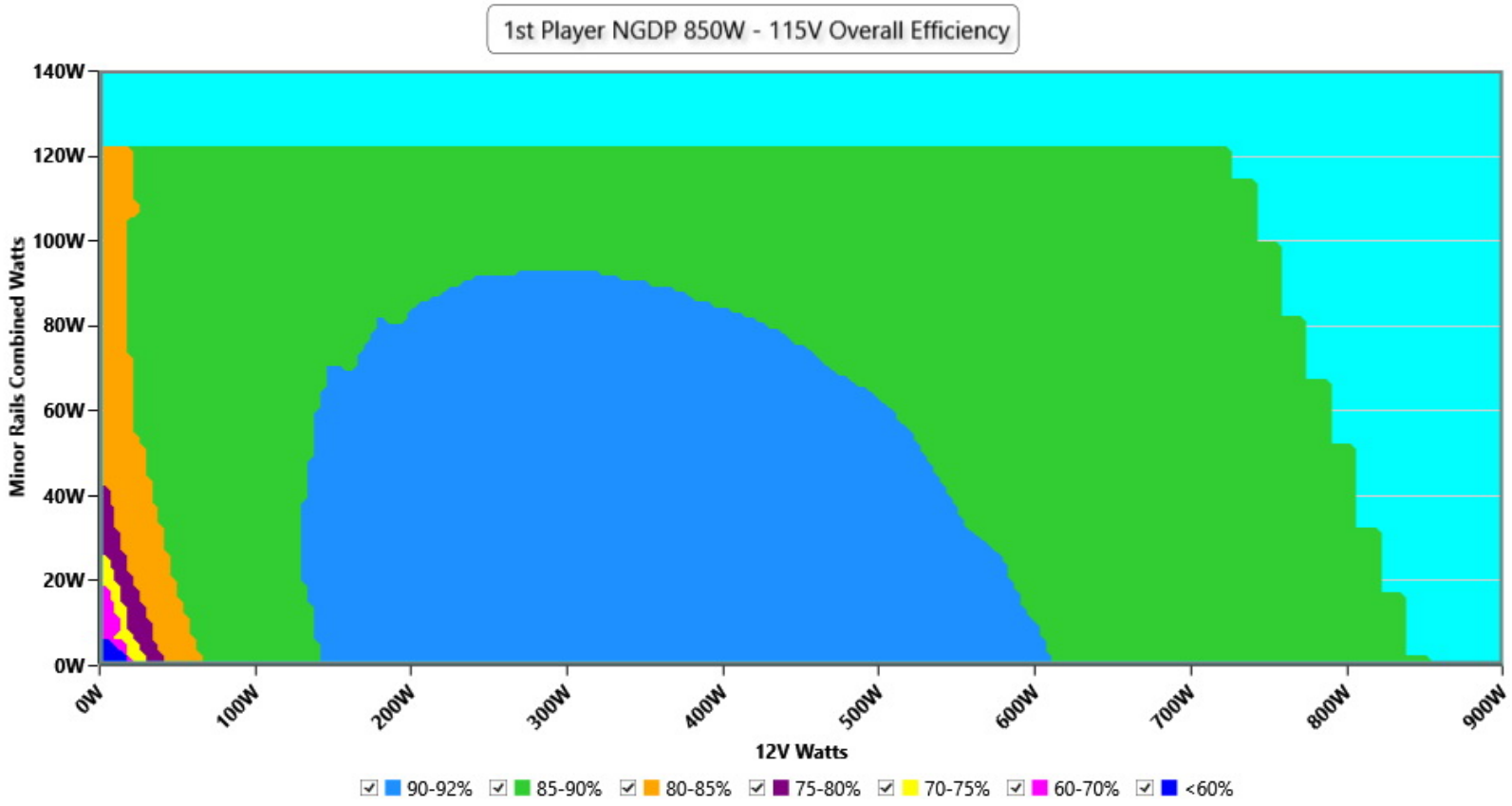
230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	230.98 V	230.88 V	227.70 V	231.03 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	49.99 Hz	49.50 Hz	50.01 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.417	1.416	1.340	1.419	1.490	PASS
Mains Voltage THD:	0.17 %	0.14 %	N/A	0.24 %	2.00 %	PASS
Real Power:	0.093 W	0.082 W	N/A	0.113 W	N/A	N/A
Apparent Power:	21.594 W	21.292 W	N/A	21.913 W	N/A	N/A

Power Factor:	0.004	N/A	N/A	N/A	N/A	N/A

□□□□□□

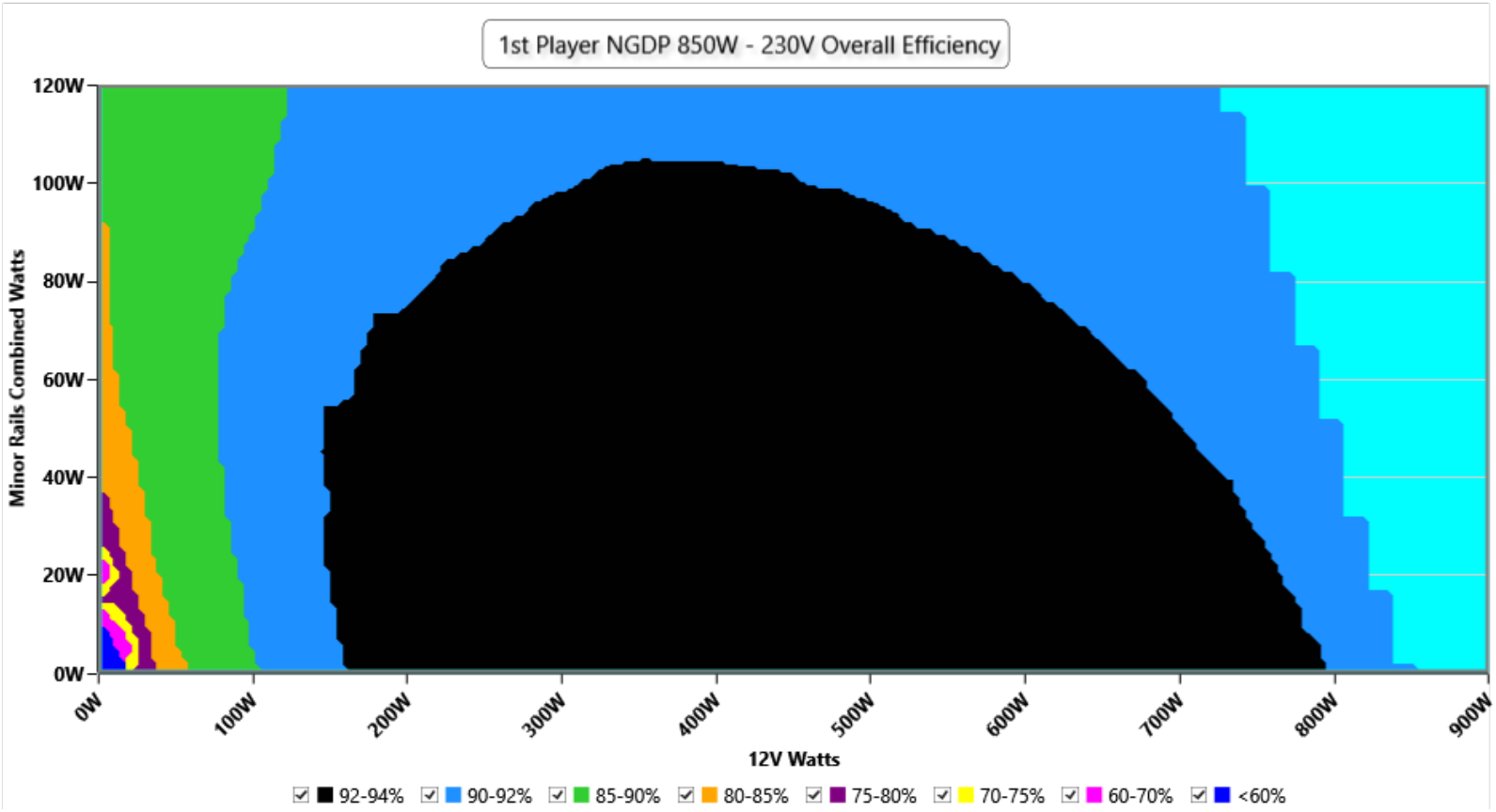
115V



□□

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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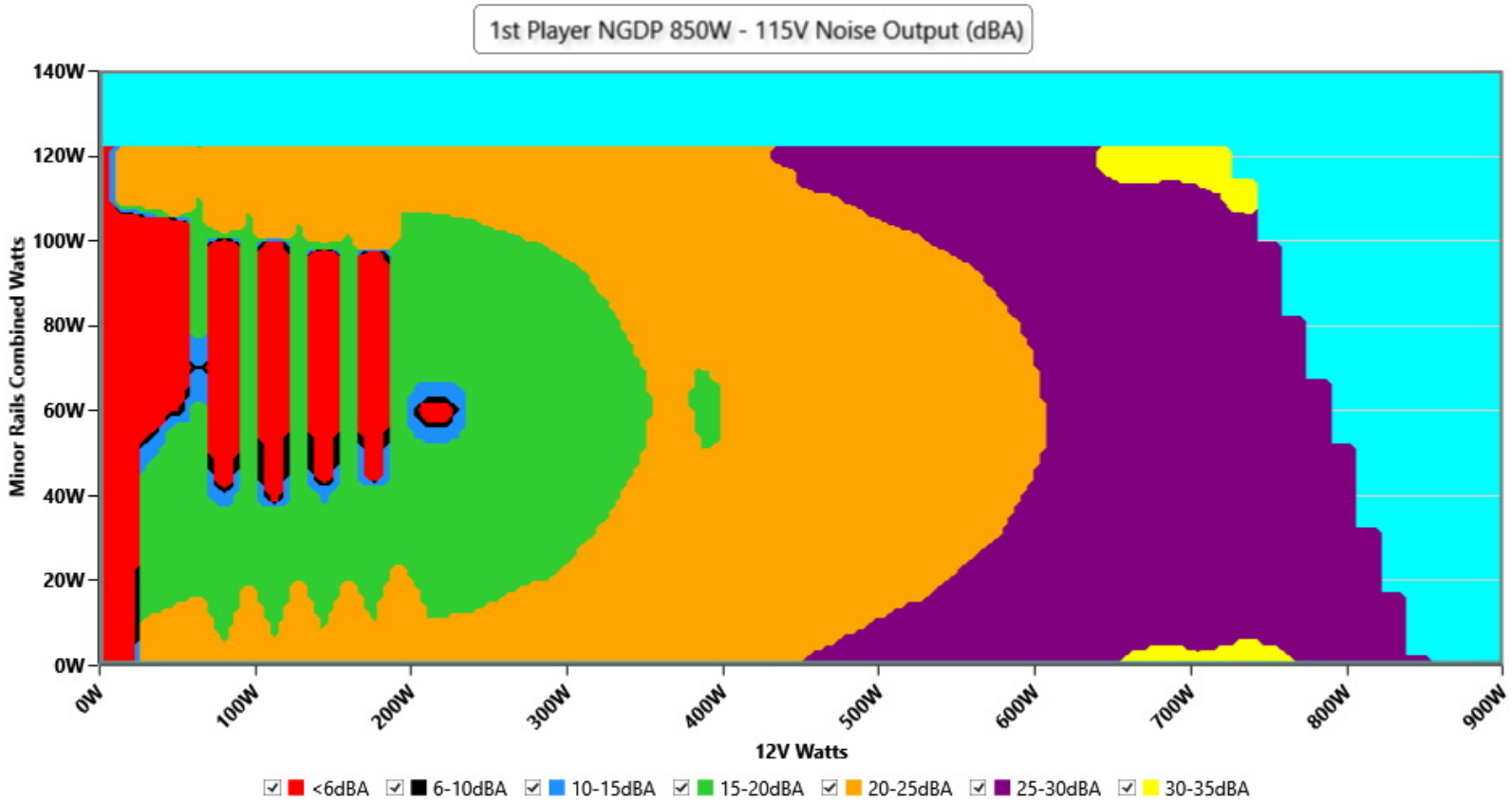
□□□□□

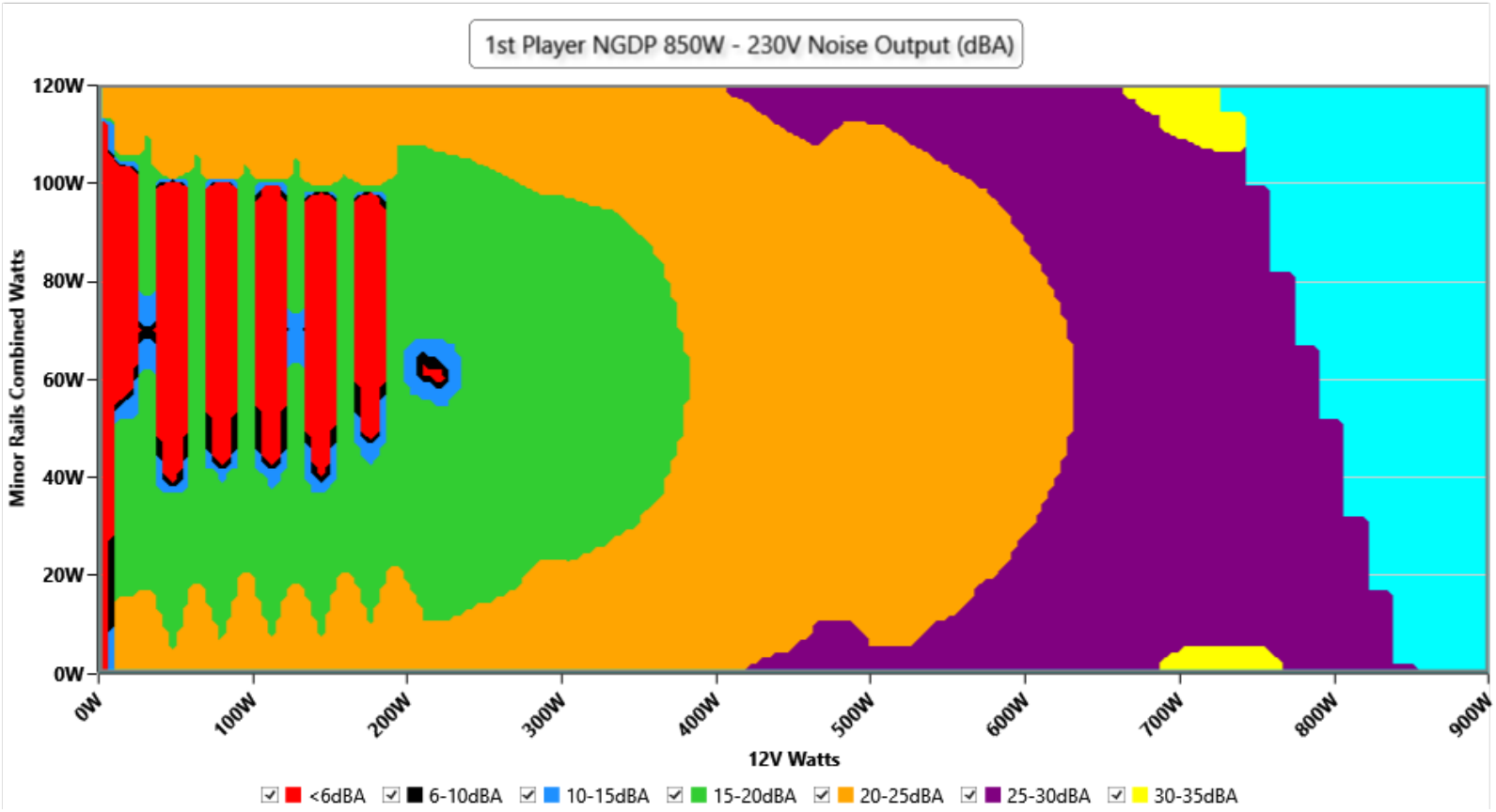
115V



□□

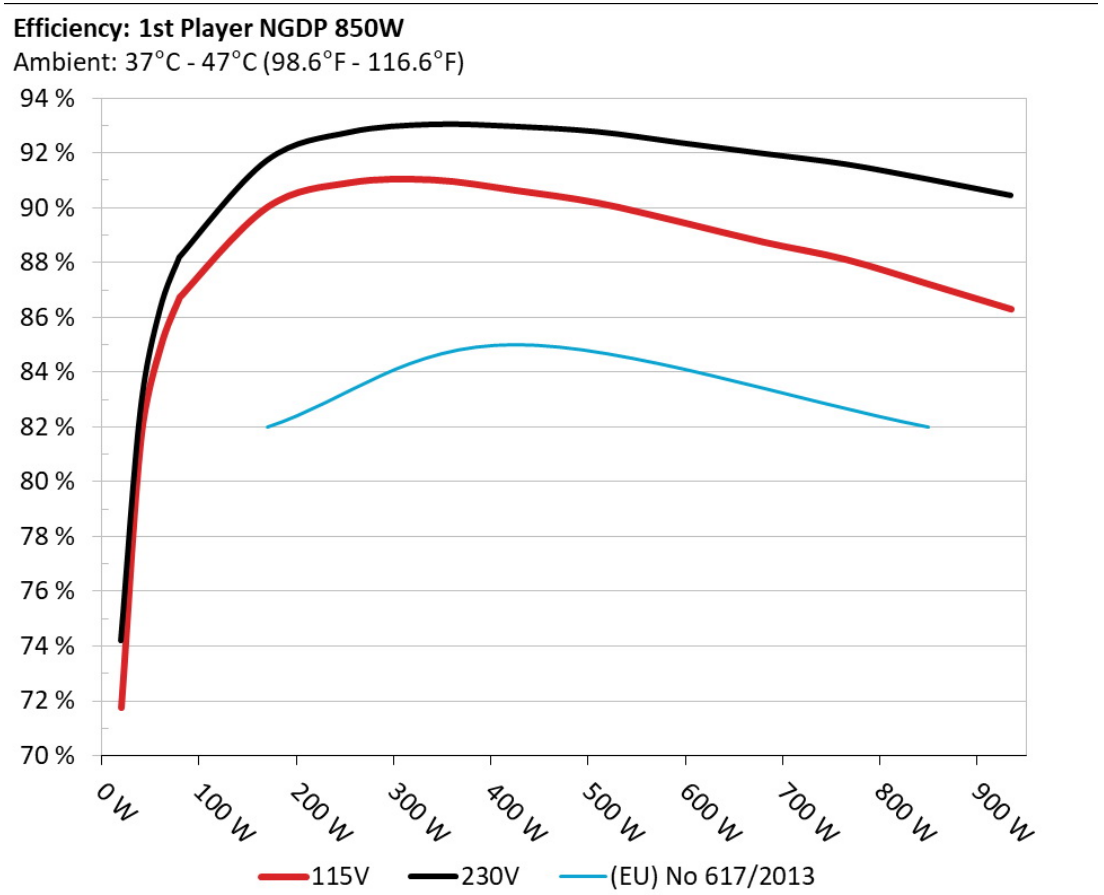
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

230V



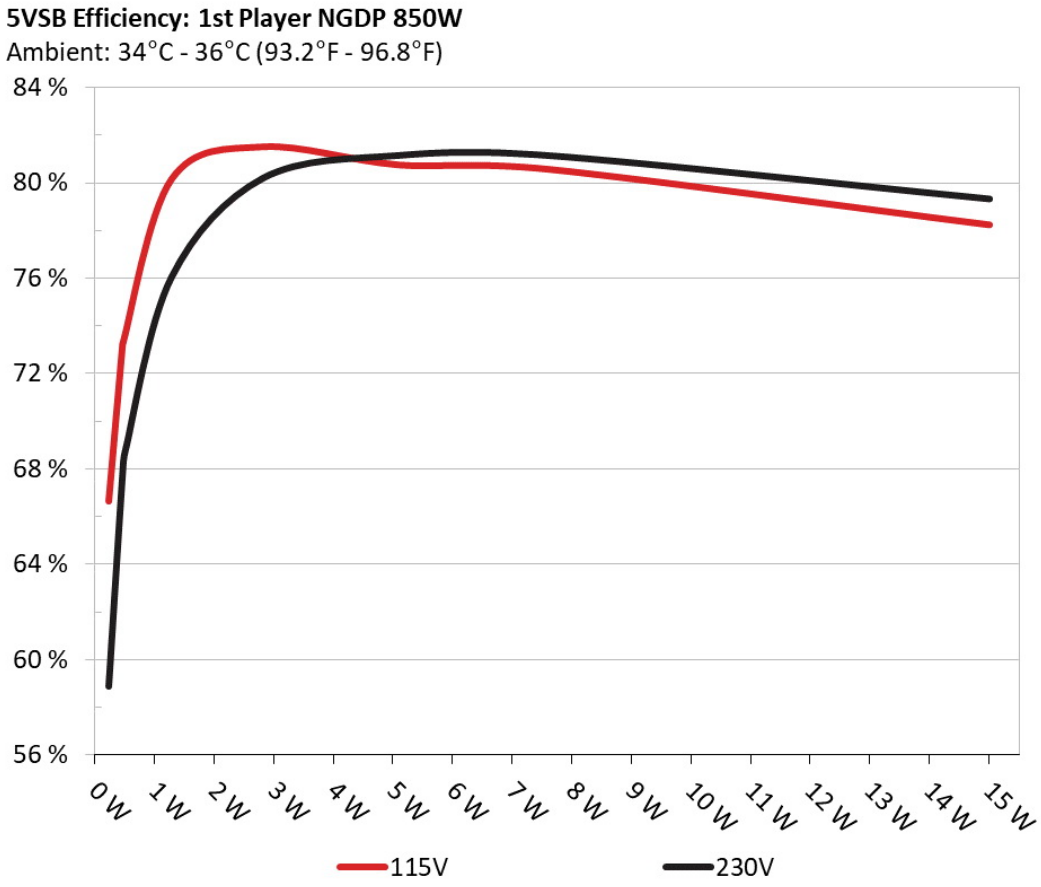
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Indicative Performance



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□□□□



□□

This graph depicts the efficiency levels of the 5VSB rail with 115V and 230V input

□□□□ □□ 5Vsb □□ (ErP Lot3/6 & CEC)

115V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.045A	0.232W	67.129%	0.054
	5.149V	0.346W		115.15V
2	0.09A	0.463W	74.437%	0.096
	5.146V	0.622W		115.14V
3	0.55A	2.819W	82.005%	0.375
	5.124V	3.437W		115.15V
4	1A	5.104W	81.245%	0.485
	5.102V	6.282W		115.15V
5	1.5A	7.619W	81.061%	0.536
	5.078V	9.4W		115.16V
6	3A	15.016W	78.729%	0.582
	5.005V	19.073W		115.15V

230V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.045A	0.232W	59.356%	0.019
	5.151V	0.392W		230.4V
2	0.09A	0.463W	68.259%	0.032
	5.148V	0.678W		230.4V
3	0.55A	2.82W	80.699%	0.153
	5.125V	3.495W		230.4V
4	1A	5.104W	81.657%	0.246
	5.103V	6.251W		230.4V
5	1.5A	7.62W	81.648%	0.321
	5.078V	9.332W		230.4V
6	3A	15.014W	79.828%	0.434
	5.004V	18.808W		230.39V

Supplementary Tests (For Reference)

10-110%□□□□

115V

□□	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
10%	5.304A	1.962A	1.979A	0.982A	85.005	86.724%	905	20.5	40.39°C	0.981
	11.953V	5.097V	3.336V	5.094V	98.003				44.63°C	115.15V
20%	11.638A	2.946A	2.971A	1.183A	169.971	90.004%	949	22.2	40.95°C	0.989
	11.949V	5.093V	3.332V	5.075V	188.846				45.49°C	115.13V
30%	18.327A	3.438A	3.47A	1.385A	254.981	90.898%	993	23.4	41.14°C	0.993
	11.945V	5.091V	3.329V	5.056V	280.512				46.16°C	115.11V
40%	25.028A	3.932A	3.969A	1.589A	340.082	91%	1045	25.1	41.86°C	0.996
	11.941V	5.087V	3.326V	5.037V	373.732				47.45°C	115.09V
50%	31.375A	4.919A	4.967A	1.794A	425.059	90.619%	1123	27.5	42.23°C	0.996
	11.938V	5.084V	3.322V	5.017V	469.065				48.26°C	115.06V
60%	37.689A	5.906A	5.967A	2.001A	509.579	90.16%	1216	29.9	42.78°C	0.997
	11.934V	5.081V	3.319V	4.997V	565.192				49.38°C	115.05V
70%	44.073A	6.896A	6.97A	2.211A	594.909	89.465%	1454	35.1	43.13°C	0.998
	11.930V	5.077V	3.315V	4.976V	664.968				50.22°C	115.02V
80%	50.460A	7.884A	7.973A	2.318A	679.724	88.735%	1541	36.5	43.96°C	0.998
	11.926V	5.073V	3.311V	4.961V	766.069				52.01°C	115V
90%	57.254A	8.382A	8.465A	2.426A	765.146	88.096%	1625	38.0	44.38°C	0.998
	11.923V	5.07V	3.307V	4.946V	868.542				53.39°C	114.97V
100%	63.780A	8.88A	8.988A	3.059A	849.957	87.199%	1735	39.5	45.62°C	0.998
	11.920V	5.067V	3.304V	4.904V	974.742				55.69°C	114.95V
110%	70.177A	9.876A	10.089A	3.066A	934.557	86.292%	1840	40.9	46.65°C	0.998
	11.916V	5.063V	3.3V	4.893V	1083.003				57.59°C	114.93V
CL1	0.117A	14.234A	14.357A	0A	121.297	83.409%	1558	36.7	41.04°C	0.989
	11.953V	5.072V	3.322V	5.122V	145.424				46.56°C	115.13V

CL2	0.117A	19.741A	0A	0A	101.393	82.573%	1342	32.7	40.62°C	0.988
	11.954V	5.065V	3.339V	5.135V	122.796				47.69°C	115.14V
CL3	0.117A	0A	19.886A	0A	67.386	77.405%	1445	34.7	40.48°C	0.978
	11.950V	5.098V	3.319V	5.129V	87.06				49.53°C	115.15V
CL4	71.278A	0A	0A	0A	849.576	88.169%	1532	36.4	45.36°C	0.998
	11.920V	5.086V	3.317V	5.078V	963.588				56.32°C	114.95V

The results above are not used in the certification process

230V

□□	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
10%	5.304A	1.962A	1.978A	0.982A	84.996	88.192%	912	20.7	40.13°C	0.876
	11.953V	5.097V	3.337V	5.094V	96.374				44.35°C	230.37V
20%	11.636A	2.945A	2.97A	1.182A	169.941	91.72%	954	22.3	40.68°C	0.951
	11.949V	5.093V	3.333V	5.075V	185.283				45.21°C	230.36V
30%	18.325A	3.438A	3.469A	1.385A	254.947	92.749%	991	23.4	41.07°C	0.971
	11.945V	5.091V	3.329V	5.056V	274.878				46.09°C	230.35V
40%	25.025A	3.932A	3.968A	1.588A	340.038	93.035%	1054	25.4	41.67°C	0.98
	11.941V	5.088V	3.326V	5.037V	365.495				47.18°C	230.35V
50%	31.364A	4.918A	4.966A	1.794A	424.93	92.96%	1125	27.5	42.11°C	0.984
	11.938V	5.084V	3.322V	5.018V	457.106				48.19°C	230.34V
60%	37.679A	5.906A	5.966A	2A	509.459	92.768%	1210	29.7	42.82°C	0.987
	11.934V	5.081V	3.319V	4.998V	549.177				49.33°C	230.33V
70%	44.064A	6.896A	6.969A	2.21A	594.81	92.368%	1445	34.7	43.34°C	0.989
	11.930V	5.077V	3.315V	4.977V	643.961				50.38°C	230.32V
80%	50.454A	7.884A	7.973A	2.318A	679.627	91.976%	1543	36.5	43.64°C	0.99
	11.926V	5.073V	3.311V	4.962V	738.918				51.83°C	230.31V
90%	57.248A	8.382A	8.465A	2.426A	765.066	91.584%	1632	38.2	44.7°C	0.991
	11.923V	5.07V	3.307V	4.947V	835.367				53.84°C	230.3V
100%	63.778A	8.88A	8.988A	3.059A	849.877	91.034%	1746	39.6	45.8°C	0.992
	11.920V	5.068V	3.304V	4.905V	933.585				55.85°C	230.29V

110%	70.175A	9.873A	10.089A	3.065A	934.48	90.449%	1841	40.9	46.56°C	0.992
	11.916V	5.064V	3.3V	4.894V	1033.151				57.49°C	230.27V
CL1	0.117A	14.233A	14.357A	0A	121.29	84.895%	1564	36.8	40.63°C	0.93
	11.953V	5.072V	3.322V	5.122V	142.869				46.08°C	230.37V
CL2	0.117A	19.741A	0A	0A	101.39	83.884%	1401	33.7	40.46°C	0.911
	11.954V	5.065V	3.338V	5.135V	120.869				47.52°C	230.37V
CL3	0.117A	0A	19.887A	0A	67.386	78.411%	1480	35.4	40.19°C	0.856
	11.951V	5.098V	3.319V	5.129V	85.942				49.27°C	230.38V
CL4	71.272A	0A	0A	0A	849.644	91.674%	1567	36.8	45.13°C	0.991
	11.922V	5.086V	3.316V	5.078V	926.808				56.11°C	230.28V

The results above are not used in the certification process

20-80□□□□□

115V

□□	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
20W	1.242A	0.49A	0.494A	0.195A	20.005	71.774%	0	<6.0	39.67°C	0.861
	11.953V	5.103V	3.341V	5.141V	27.871				36.59°C	115.17V
40W	2.735A	0.686A	0.691A	0.292A	40.003	81.513%	0	<6.0	41.01°C	0.942
	11.954V	5.102V	3.341V	5.134V	49.121				37.69°C	115.17V
60W	4.228A	0.883A	0.889A	0.39A	60.002	84.869%	853	19	38.12°C	0.968
	11.953V	5.1V	3.339V	5.127V	70.701				41.92°C	115.15V
80W	5.718A	1.079A	1.088A	0.488A	79.968	86.979%	859	19	39.14°C	0.979
	11.952V	5.098V	3.337V	5.12V	91.937				43.09°C	115.15V

The results above are not used in the certification process

230V

□□	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
20W	1.242A	0.49A	0.494A	0.195A	19.996	74.226%	0	<6.0	39.82°C	0.552
	11.952V	5.102V	3.34V	5.141V	27.543				36.76°C	230.37V
40W	2.734A	0.686A	0.691A	0.292A	39.995	82.599%	0	<6.0	41.05°C	0.705
	11.954V	5.102V	3.34V	5.134V	48.422				37.77°C	230.38V
60W	4.226A	0.882A	0.889A	0.39A	59.993	86.269%	872	19.3	38.74°C	0.808
	11.954V	5.1V	3.339V	5.128V	69.543				42.22°C	230.37V
80W	5.716A	1.079A	1.087A	0.488A	79.944	88.254%	871	19.3	39.39°C	0.865
	11.953V	5.099V	3.338V	5.121V	90.583				43.25°C	230.37V

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□□□□

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	11.79mV	5.81mV	5.80mV	8.10mV	Pass
20% Load	12.07mV	7.14mV	6.87mV	8.97mV	Pass
30% Load	12.18mV	7.14mV	7.73mV	8.66mV	Pass
40% Load	11.38mV	6.38mV	7.22mV	8.36mV	Pass
50% Load	11.84mV	7.24mV	7.27mV	8.91mV	Pass
60% Load	13.79mV	7.60mV	8.59mV	9.73mV	Pass
70% Load	14.33mV	8.11mV	8.75mV	10.50mV	Pass
80% Load	12.82mV	6.63mV	11.29mV	10.04mV	Pass
90% Load	17.20mV	8.01mV	11.85mV	11.51mV	Pass
100% Load	26.20mV	10.41mV	13.81mV	15.89mV	Pass
110% Load	27.30mV	9.66mV	13.86mV	16.65mV	Pass
Crossload1	18.65mV	9.77mV	14.74mV	23.05mV	Pass
Crossload2	11.96mV	8.32mV	7.17mV	19.00mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	11.79mV	6.99mV	12.77mV	19.21mV	Pass
Crossload4	25.79mV	7.85mV	7.90mV	26.50mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	11.54mV	7.25mV	6.66mV	8.26mV	Pass
20% Load	11.77mV	7.35mV	7.48mV	8.51mV	Pass
30% Load	12.13mV	7.04mV	7.12mV	8.97mV	Pass
40% Load	12.65mV	7.09mV	7.53mV	9.02mV	Pass
50% Load	13.27mV	6.88mV	7.88mV	9.42mV	Pass
60% Load	12.96mV	7.45mV	8.09mV	10.19mV	Pass
70% Load	14.13mV	7.14mV	8.90mV	10.54mV	Pass
80% Load	15.16mV	8.01mV	11.14mV	10.60mV	Pass
90% Load	15.67mV	8.52mV	11.60mV	11.21mV	Pass
100% Load	26.04mV	9.04mV	13.67mV	14.85mV	Pass
110% Load	26.97mV	9.38mV	14.01mV	15.14mV	Pass
Crossload1	17.63mV	9.84mV	13.85mV	22.51mV	Pass
Crossload2	10.92mV	7.65mV	6.87mV	18.75mV	Pass
Crossload3	11.57mV	6.84mV	12.56mV	17.93mV	Pass
Crossload4	26.17mV	7.24mV	7.72mV	24.73mV	Pass

The results above are not used in the certification process





1st Player NGDP 850W

Top side

Power specifications label

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