EFFICIENCY AND NOISE REPORT IN ACCORDANCE WITH
CYBENETICS ETA AND CYBENETICS LAMBDA PROCEDURE

EVGA SuperNOVA 1000 P6

Lab ID#: EV10001923
Receipt Date: Oct 20, 2021
Test Date: Oct 25, 2021

Report: 21PS1923A
Report Date: Oct 27, 2021

DUT INFORMATION

Brand	EVGA
Manufacturer (OEM)	Seasonic
Series	SuperNOVA P6
Model Number	
Serial Number	2104041009830061
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	13-6.5
Rated Frequency (Hz)	50-60
Rated Power (W)	1000
Type	ATX12V
Cooling	135mm Fluid Dynamic Bearing Fan (HA13525H12F-Z)
Semi-Passive Operation	✓ (selectable)
Cable Design	Fully Modular

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

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EVGA SuperNOVA 1000 P6

RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6 (+-2°C / +- 3.6°F)
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
ALPM (Alternative Low Power Mode) compatible	✓

115V

Average Efficiency	89.795%
Efficiency With 10W (≤500W) or 2% (>500W)	76.834
Average Efficiency 5VSB	76.741%
Standby Power Consumption (W)	0.0592921
Average PF	0.979
Avg Noise Output	31.61 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard++

230V

Average Efficiency	91.833%
Average Efficiency 5VSB	75.644%
Standby Power Consumption (W)	0.1168210
Average PF	0.939
Avg Noise Output	31.60 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard++

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	25	25	83.3	3	0.5
	Watts	125		1000	15	6
Total Max. Power (W)		1000				

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CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (610mm)	1	1	18-22AWG	No
4+4 pin EPS12V (700mm)	2	2	18AWG	No
6+2 pin PCIe (700mm+125mm)	3	6	16-18AWG	No
6+2 pin PCIe (700mm)	2	2	18AWG	No
SATA (550mm+100mm+100mm)	4	12	18AWG	No
4-pin Molex (550mm+100mm+100mm+100mm)	1	4	18AWG	No
FDD Adapter (105mm)	1	1	22AWG	No
AC Power Cord (1400mm) - C13 coupler	1	1	16AWG	-

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General Data	-
Manufacturer (OEM)	Seasonic
PCB Type	Double Sided
Primary Side	-
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x Champion CM02X (Discharge IC)
Inrush Protection	NTC Thermistor MF72-5D20L (5 Ohm) & Relay
Bridge Rectifier(s)	2x Vishay GBUE2560 (600V, 25A @ 140°C)
APFC MOSFETs	2x Infineon IPA60R099P6 (600V, 24A @ 100°C, Rds(on): 0.099Ohm)
APFC Boost Diode	1x Infineon IDH10G65C6 (650V, 10A @ 140°C)
Bulk Cap(s)	2x Nippon Chemi-Con (420V, 470uF each or 940uF combined, 2,000h @ 105°C, KMZ)
Main Switchers	4x Infineon IPA60R125P6 (600V, 19A @ 100°C, Rds(on): 0.125Ohm)
APFC Controller	Champion CM6500UNX
Resonant Controller	Champion CU6901V
Topology	Primary side: APFC, Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	-
+12V MOSFETs	6x Nexperia PSMN1R0-40YLD (40V, 198A @ 100°C, Rds(on): 1.93mOhm)
5V & 3.3V	DC-DC Converters: 6x PWM Controller(s): ANPEC APW7159C
Filtering Capacitors	Electrolytic: 6x Nippon Chemi-Con (2-5,000h @ 105°C, KZE), 1x Nippon Chemi-Con (5-6,000h @ 105°C, KZH), 3x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 2x Rubycon (3-6,000h @ 105°C, YXG) Polymer: 20x Nippon Chemi-Con, 14x NIC
Supervisor IC	Weltrend WT7527RA (OCP, OVP, UVP, SCP, PG) & Weltrend WT51F104 (Firmware OPP)
Fan Controller	Weltrend WT51F104
Fan Model	Hong Hua HA13525H12F-Z (135mm, 12V, 0.50A, Fluid Dynamic Bearing Fan)
5VSB Circuit	-
Rectifier	1x MCC MRB1045ULPS SBR (45V, 10A)
Standby PWM Controller	Excelliance MOS EM8569C

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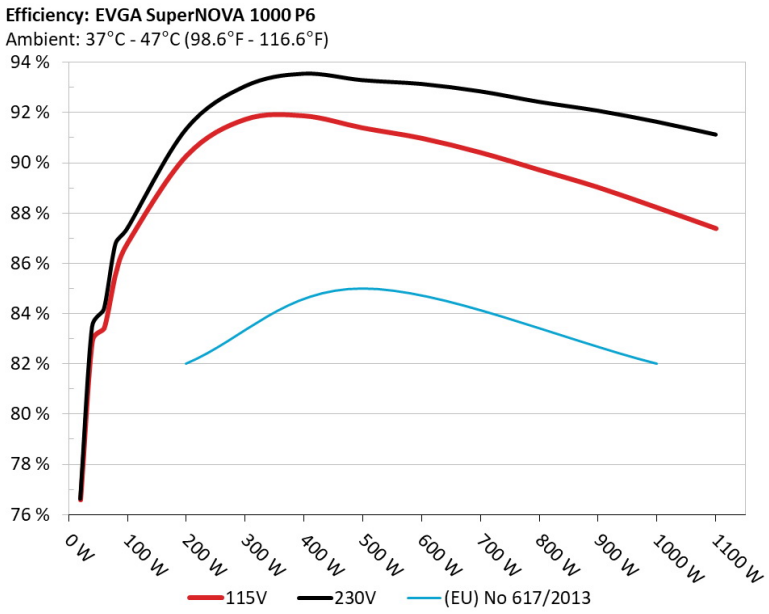
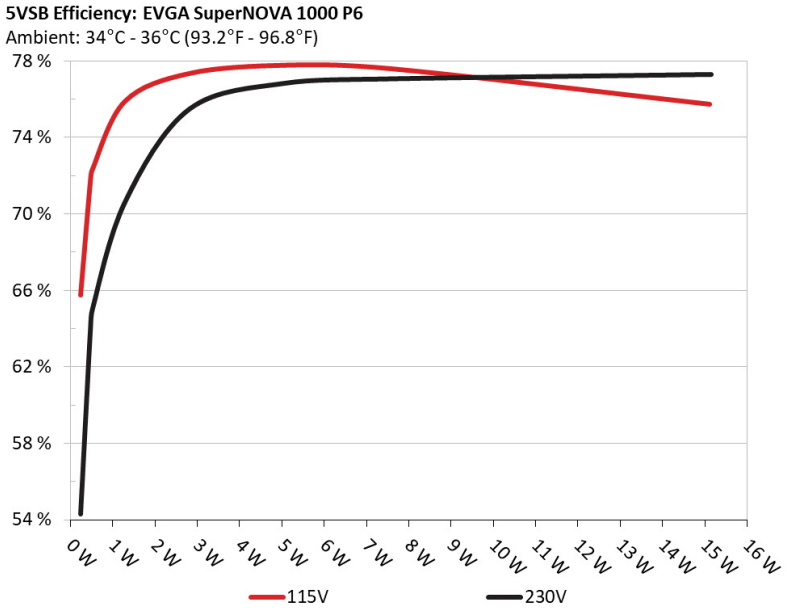
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.23W	65.736%	0.032
	5.12V	0.35W		115.13V
2	0.09A	0.461W	71.721%	0.058
	5.119V	0.643W		115.14V
3	0.55A	2.809W	77.344%	0.263
	5.108V	3.632W		115.14V
4	1A	5.098W	77.777%	0.365
	5.098V	6.554W		115.15V
5	1.5A	7.629W	77.581%	0.425
	5.086V	9.834W		115.15V
6	2.999A	15.114W	75.733%	0.502
	5.04V	19.958W		115.15V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.23W	54.301%	0.012
	5.121V	0.424W		230.3V
2	0.09A	0.461W	63.945%	0.02
	5.119V	0.721W		230.3V
3	0.55A	2.809W	75.488%	0.1
	5.107V	3.721W		230.32V
4	1A	5.097W	76.84%	0.167
	5.097V	6.633W		230.32V
5	1.5A	7.627W	77.062%	0.227
	5.085V	9.898W		230.32V
6	2.999A	15.143W	77.288%	0.336
	5.049V	19.593W		230.32V

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115V

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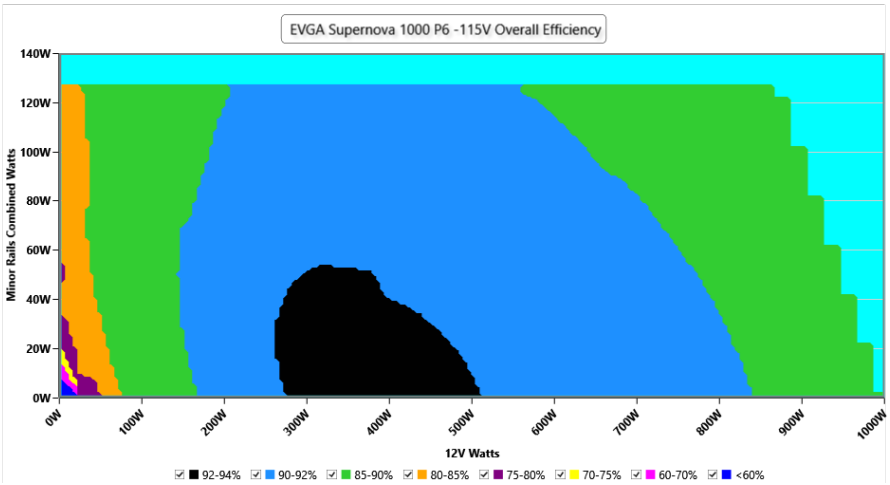
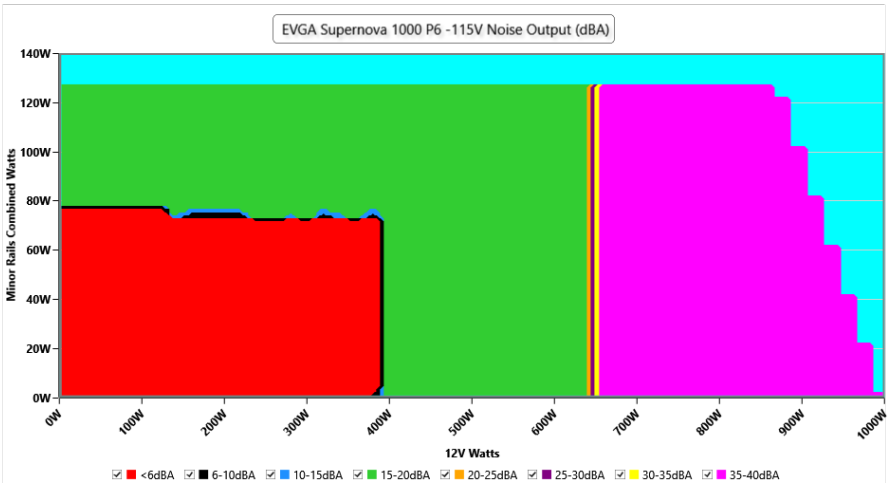
EFFICIENCY GRAPH 115V



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

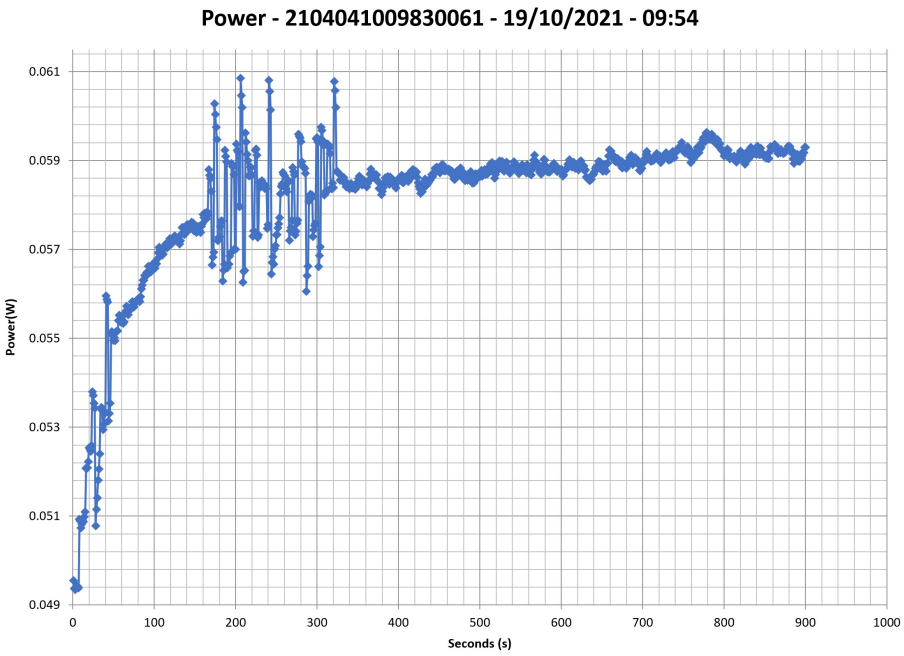
NOISE GRAPH 115V



INFO

The PSU's noise in its entire operational range and under 30-32 °C (+-2 °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

VAMPIRE POWER -115V



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

COMMISSION REGULATION (EU) NO 617/2013 TESTING 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%	6.444A	2A	1.999A	0.982A	99.993	86.811%	0	<6.0	44.43°C	0.972
	12.166V	4.999V	3.302V	5.091V	115.185				40.21°C	115.18V
20%	13.894A	3.002A	3A	1.181A	199.927	90.28%	0	<6.0	45.39°C	0.969
	12.166V	4.997V	3.299V	5.079V	221.452				40.74°C	115.17V
50%	36.938A	5.008A	5.012A	1.784A	499.088	91.39%	1505	41.6	42.38°C	0.982
	12.145V	4.992V	3.292V	5.044V	546.111				48.68°C	115.13V
100%	74.797A	9.037A	9.052A	3.01A	999.142	88.223%	1859	47.2	45.81°C	0.99
	12.160V	4.978V	3.28V	4.982V	1132.525				54.72°C	115.09V

230V

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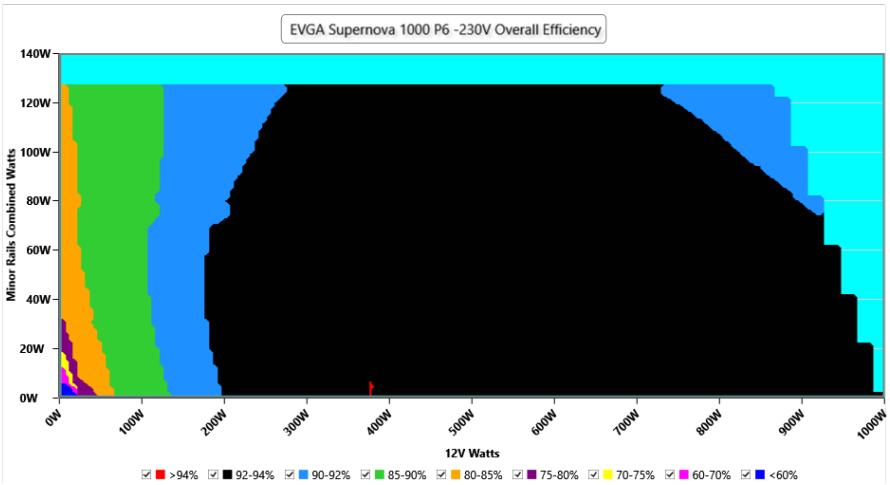
EFFICIENCY GRAPH 230V



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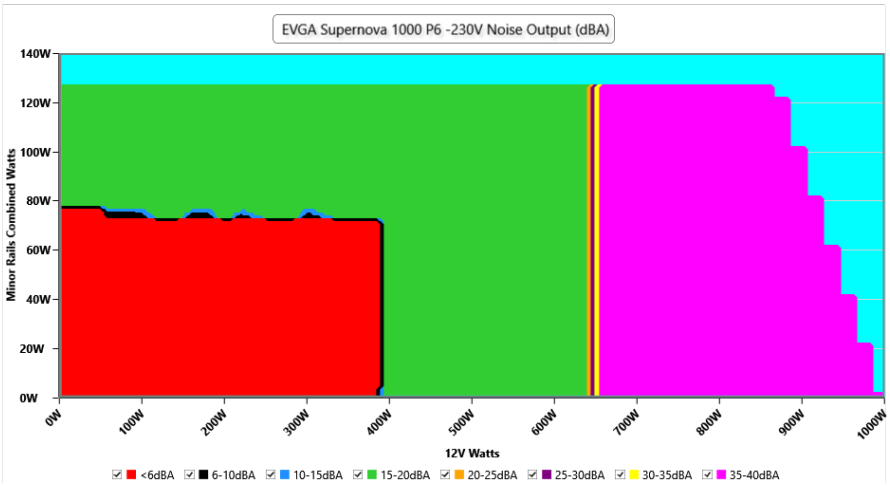
NOISE GRAPH 230V



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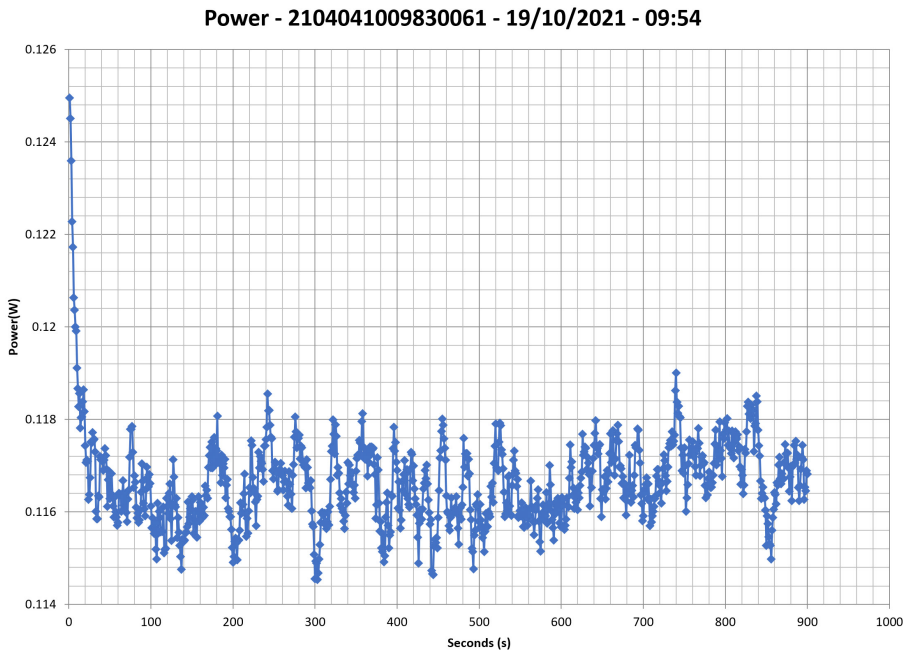
VAMPIRE POWER -230V



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COMMISSION REGULATION (EU) NO 617/2013 TESTING 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%	6.443A	2A	1.999A	0.982A	99.975	87.401%	684	17.9	40.28°C	0.821
	12.165V	5.001V	3.301V	5.091V	114.387				45.45°C	230.3V
20%	13.896A	3.001A	3.001A	1.181A	199.912	91.352%	682	17.8	40.79°C	0.912
	12.163V	4.999V	3.299V	5.079V	218.836				46.32°C	230.3V
50%	36.937A	5.009A	5.012A	1.784A	499.12	93.297%	1506	41.6	42.01°C	0.957
	12.146V	4.991V	3.292V	5.045V	534.98				49.17°C	230.3V
100%	74.806A	9.038A	9.053A	3.01A	999.192	91.643%	1862	47.3	45.89°C	0.975
	12.159V	4.978V	3.279V	4.982V	1090.306				55.45°C	230.31V

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EVGA SuperNOVA 1000 P6

Top side

Power specifications label

CERTIFICATIONS 115V

Aristeidis Bitziopoulos
Lab Director

CERTIFICATIONS 230V

Cybenetics offers the ETA and Lambda voluntary certification programs, through which the efficient and silent power supplies are promoted

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