Anex

EVGA SuperNOVA 850 G3 (Sample #2)

Lab ID#: 212
Receipt Date: -
Test Date: -

Report: 19PS212A
Report Date: Sep 11, 2018

DUT INFORMATION

Brand	EVGA
Manufacturer (OEM)	Super Flower
Series	SuperNOVA G3
Model Number	SuperNOVA 850 G3 (Sample #2)
Serial Number	1703440815899001
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10
Rated Frequency (Hz)	50-60
Rated Power (W)	850
Type	ATX12V
Cooling	130mm Hydraulic Dynamic Bearing Fan (H1282412H)
Semi-Passive Operation	✓ (selectable)
Cable Design	Fully Modular

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	24	24	70.8	3	0.5
	Watts	120		849.6	15	6
Total Max. Power (W)		850				

CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (600mm)	1	1	18-22AWG	Yes
4+4 pin EPS12V (700mm)	2	2	18-22AWG	Yes
6+2 pin PCIe (700mm)	2	2	18-20AWG	Yes
6+2 pin PCIe (700mm+150mm)	2	4	18-20AWG	Yes
SATA (550mm+100mm+100mm)	3	12	18-20AWG	No
4 pin Molex (550mm+100mm+100mm+100mm)	1	4	18AWG	No
FDD Adapter (+100mm)	1	1	20AWG	No
AC Power Cord (1400mm) - C13 coupler	1	1	18AWG	No

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General Data	
Manufacturer (OEM)	Super Flower
Platform Model	Leadex II
Primary Side	
Transient Filter	4x Y caps, 3x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor & Diode
Bridge Rectifier(s)	1x
APFC MOSFETS	2x Infineon IPA50R140CP (550V, 15A @ 100°C, 0.14Ohm)
APFC Boost Diode	1x CREE C3D08060A (600V, 8A @ 152°C)
Hold-up Cap(s)	1x Nippon Chemi-Con (400V, 680uF, 2000h @ 105°C, KMR)
Main Switchers	2x Infineon IPA50R140CP (550V, 15A @ 100°C, 0.14Ohm)
APFC Controller	SF29603
PWM Controller	SF201T
Topology	Primary side: Half-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	4x InfineonÂ IPP023N04N G (40V, 90A @ 100°C, 2.3mOhm)
5V & 3.3V	DC-DC Converters: 8x Infineon BSC0906NS (30V, 40A @ 100°C, 4.5mOhm) PWM Controller: no info
Filtering Capacitors	Electrolytics: Chemi-Con (1-5,000 @ 105°C, KZE), Chemi-Con (4-10,000 @ 105°C, KY), Chemi-Con (105°C, W), Chemi-Con (1,000 @ 105°C, KRG) Polymers: Chemi-Con
Supervisor IC	SF201T (probably) & LM324ADG & LM339A
Fan Model	EVGA H1282412HÂ (12V, 0.35A, 2170 RPM, Hydro Dynamic Bearing)
5VSB Circuit	
Rectifier	Mospec S10C60C
Standby PWM Controller	29604

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RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	89.569
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	0.000
Average Efficiency 5VSB	76.803
Standby Power Consumption (W) -115V	0.1368250
Standby Power Consumption (W) -230V	0.2319470
Average PF	0.987
ErP Lot 3/6 Ready	ErP Lot 3/6 2010: ✓ ErP Lot 3/6 2013: ✓ ErP Lot 3/6 2014, CEC: Partially
(EU) No 617/2013 Compliance	✓
Avg Noise Output	34.01
Efficiency Rating (ETA)	SILVER
Noise Rating (LAMBDA)	Standard++

TEST EQUIPMENT		
Electronic Loads	Chroma 6314A x2 63123A x6 63102A 63101A	Chroma 63601-5 x2 Chroma 63600-2 63640-80-80 x10 63610-80-20
AC Sources	Chroma 6530, Chroma 61604	
Power Analyzers	N4L PPA1530, N4L PPA5530	
Oscilloscopes	Picoscope 4444 & 3424, Keysight DSOX3024A, Rigol DS2072A	
Voltmeter	Keithley 2015 THD 6.5 Digit	
Sound Analyzer	Bruel & Kjaer 2250-L G4	
Microphone	Bruel & Kjaer Type 4955-A, Bruel & Kjaer Type 4189	
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2	

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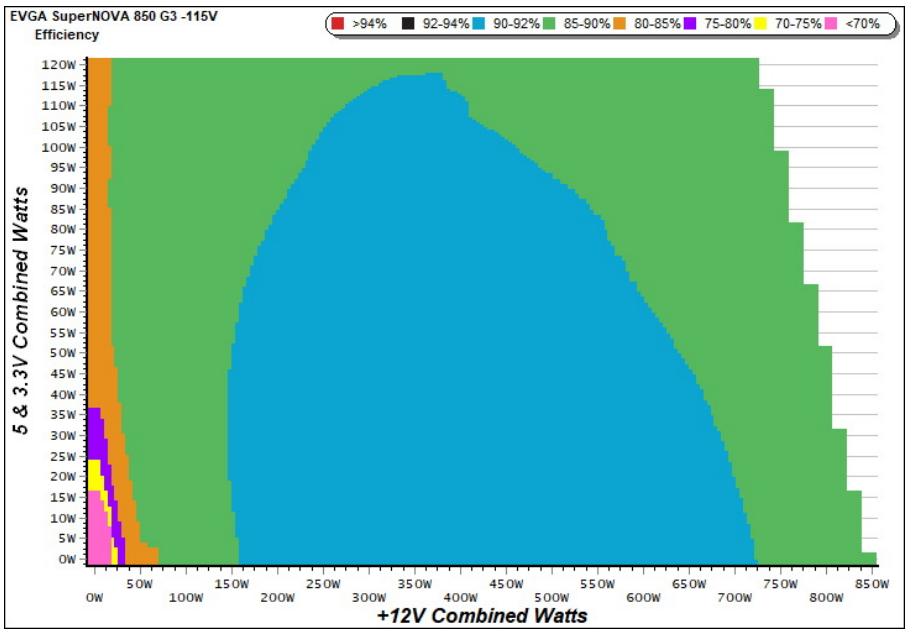
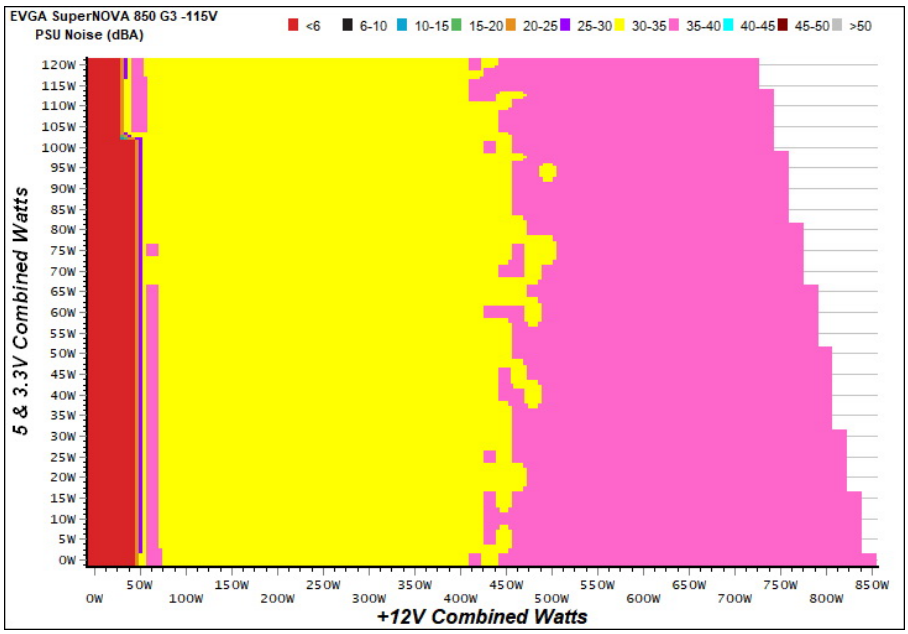
EFFICIENCY GRAPH



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



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

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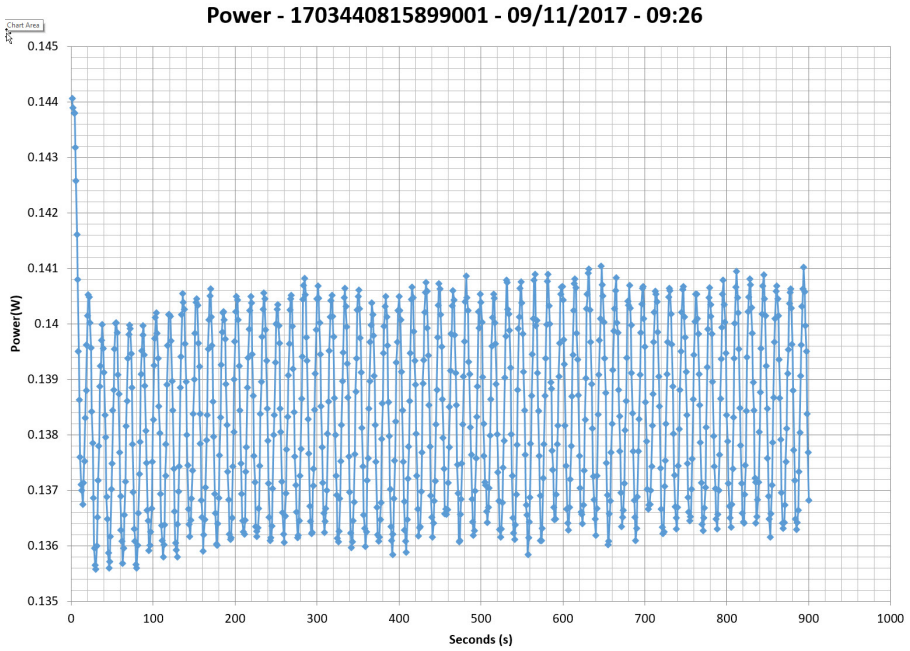
5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.232	55.238%	0.028
	5.149V	0.420		115.28V
2	0.090A	0.464	65.722%	0.048
	5.147V	0.706		115.28V
3	0.550A	2.825	76.413%	0.215
	5.137V	3.697		115.27V
4	1.000A	5.127	77.635%	0.316
	5.127V	6.604		115.27V
5	1.500A	7.674	77.853%	0.382
	5.115V	9.857		115.26V
6	3.000A	15.210	76.586%	0.470
	5.070V	19.860		115.25V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.232	45.490%	0.011
	5.149V	0.510		230.85V
2	0.090A	0.464	57.928%	0.017
	5.147V	0.801		230.85V
3	0.550A	2.826	73.882%	0.080
	5.137V	3.825		230.84V
4	1.000A	5.127	76.057%	0.135
	5.127V	6.741		230.84V
5	1.500A	7.674	77.398%	0.186
	5.115V	9.915		230.84V
6	3.000A	15.245	78.208%	0.295
	5.082V	19.493		230.84V

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

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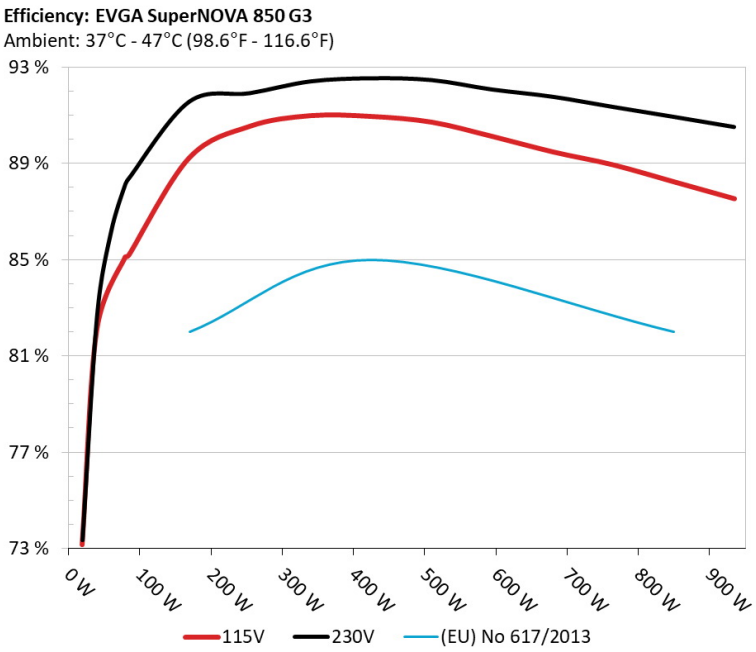
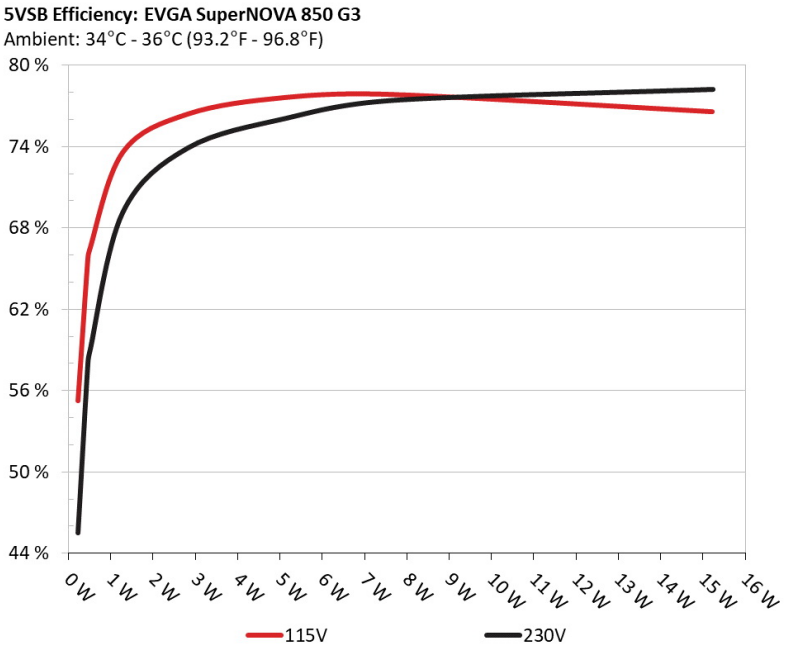
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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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EVGA SuperNOVA 850 G3 (Sample #2)

10-110% LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	5.228A	1.998A	1.990A	0.976A	84.798	85.196%	1586	37.1	38.01°C	0.960
	12.088V	5.006V	3.315V	5.126V	99.533				42.71°C	115.27V
2	11.455A	2.995A	2.986A	1.172A	169.347	89.230%	1653	38.1	38.63°C	0.979
	12.086V	5.008V	3.316V	5.120V	189.788				43.43°C	115.16V
3	18.079A	3.494A	3.465A	1.369A	254.442	90.548%	1667	38.4	38.80°C	0.985
	12.083V	5.009V	3.316V	5.115V	281.002				43.67°C	115.15V
4	24.705A	3.994A	3.980A	1.566A	339.665	90.991%	1688	38.7	39.53°C	0.990
	12.081V	5.009V	3.316V	5.109V	373.296				44.71°C	115.02V
5	30.995A	4.990A	4.973A	1.764A	424.959	90.959%	1715	39.0	39.89°C	0.992
	12.081V	5.011V	3.318V	5.103V	467.200				45.63°C	114.90V
6	37.217A	5.987A	5.965A	1.962A	509.506	90.723%	1760	39.6	40.44°C	0.994
	12.083V	5.013V	3.319V	5.098V	561.609				46.38°C	114.87V
7	43.500A	6.982A	6.955A	2.161A	594.800	90.131%	1835	41.7	41.49°C	0.995
	12.085V	5.014V	3.320V	5.092V	659.927				47.75°C	114.75V
8	49.789A	7.976A	7.946A	2.360A	680.155	89.486%	1902	42.4	42.77°C	0.996
	12.086V	5.016V	3.322V	5.085V	760.065				49.31°C	114.71V
9	56.467A	8.474A	8.431A	2.361A	765.098	88.944%	1981	44.0	43.81°C	0.996
	12.088V	5.017V	3.322V	5.084V	860.198				50.61°C	114.59V
10	62.889A	8.972A	8.941A	2.961A	849.923	88.242%	2075	45.2	45.33°C	0.996
	12.088V	5.017V	3.322V	5.068V	963.176				53.02°C	114.45V
11	69.891A	8.974A	8.943A	2.962A	934.693	87.541%	2124	45.5	46.51°C	0.997
	12.090V	5.016V	3.320V	5.066V	1067.725				55.13°C	114.40V
CL1	0.740A	14.004A	14.001A	0.000A	126.407	83.326%	1910	42.8	43.12°C	0.979
	12.078V	5.040V	3.349V	5.147V	151.701				47.03°C	115.19V
CL2	70.847A	1.003A	1.000A	1.000A	870.033	88.690%	2019	44.6	44.45°C	0.996
	12.091V	4.995V	3.298V	5.114V	980.978				51.70°C	114.42V

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20-80W LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.185A	0.497A	0.482A	0.194A	19.400	73.169%	0	<6.0	0.757
	12.083V	5.004V	3.312V	5.146V	26.514				115.36V
2	2.446A	0.998A	0.995A	0.389A	39.841	82.085%	0	<6.0	0.882
	12.081V	5.005V	3.313V	5.141V	48.536				115.33V
3	3.639A	1.497A	1.478A	0.584A	59.346	85.125%	0	<6.0	0.927
	12.079V	5.005V	3.314V	5.136V	69.716				115.30V
4	4.899A	1.997A	1.990A	0.780A	79.813	84.917%	1653	38.1	0.956
	12.087V	5.007V	3.315V	5.131V	93.989				115.28V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	5.2 mV	3.9 mV	3.6 mV	3.0 mV	Pass
20% Load	7.4 mV	4.3 mV	4.5 mV	3.3 mV	Pass
30% Load	8.4 mV	4.6 mV	4.8 mV	3.3 mV	Pass
40% Load	8.7 mV	4.8 mV	5.4 mV	4.0 mV	Pass
50% Load	9.3 mV	6.3 mV	6.4 mV	4.4 mV	Pass
60% Load	10.1 mV	6.5 mV	7.5 mV	4.3 mV	Pass
70% Load	10.9 mV	6.8 mV	7.9 mV	7.2 mV	Pass
80% Load	11.2 mV	7.9 mV	9.5 mV	7.2 mV	Pass
90% Load	11.8 mV	8.1 mV	10.3 mV	8.1 mV	Pass
100% Load	12.6 mV	9.3 mV	10.4 mV	10.8 mV	Pass
110% Load	13.1 mV	8.1 mV	10.8 mV	10.8 mV	Pass
Crossload 1	5.7 mV	7.7 mV	9.1 mV	13.5 mV	Pass
Crossload 2	11.9 mV	6.3 mV	7.4 mV	6.8 mV	Pass

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EVGA SuperNOVA 850 G3 (Sample #2)

HOLD-UP TIME & POWER OK SIGNAL (230V)	
Hold-Up Time (ms)	19.70
AC Loss to PWR_OK Hold Up Time (ms)	17.20
PWR_OK Inactive to DC Loss Delay (ms)	2.50

Top side

Power specifications label

CERTIFICATIONS