Anex

EVGA 850 B3

Lab ID#: 160
Receipt Date: Aug 9, 2018
Test Date: Aug 13, 2018

Report:
Report Date: Aug 16, 2018

DUT INFORMATION

Brand	EVGA
Manufacturer (OEM)	Super Flower
Series	B3
Model Number	
Serial Number	1703460815800117
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 Sleeve Bearing Fan (S1282412H)
Semi-Passive Operation	✓ (selectable)
Cable Design	Fully Modular

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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RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
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	✓

115V

Average Efficiency	85.300%
Efficiency With 10W (≤500W) or 2% (>500W)	0.000
Average Efficiency 5VSB	76.977%
Standby Power Consumption (W)	0.1272420
Average PF	0.990
Avg Noise Output	32.81 dB(A)
Efficiency Rating (ETA)	SILVER
Noise Rating (LAMBDA)	Standard++

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				

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

Hold-Up Time (ms)	20.28
AC Loss to PWR_OK Hold Up Time (ms)	17.08
PWR_OK Inactive to DC Loss Delay (ms)	3.20

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CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge
ATX connector 20+4 pin (600mm)	1	1	18-22AWG
4+4 pin EPS12V (600mm)	1	1	18-22AWG
6+2 pin PCIe (550mm+150mm)	3	6	18-22AWG
SATA (500mm+100mm+100mm)	3	9	18-20AWG
4 pin Molex (500mm+100mm+100mm)	1	3	18AWG
FDD Adapter (+105mm)	1	1	20AWG

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General Data	
Manufacturer (OEM)	Super Flower
Platform Model	Leadex Bronze
Primary Side	
Transient Filter	5x Y caps, 3x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor
Bridge Rectifier(s)	1x GBU1506 (600V, 15A @ 100°C)
APFC MOSFETS	2x A&O AOTF29S50 (500V, 18A @ 100°C, 0.15Ohm)
APFC Boost Diode	1x CREE C3D06065A (650V, 6A @ 150°C)
Hold-up Cap(s)	2x Nippon Chemi-Con (400V, 270uF each or 540uF combined, 95°C, CE)
Main Switchers	2x Infineon IPA50R199CP (550V, 11A @ 100°C, 0.199Ohm)
APFC Controller	SF29603 & S9602 & ICE3PCS02G
Resonant Controller	SF29605
Topology	Primary side: Half-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	6x A&O AOT240L (40V, 82A @ 100°C, 4.7mOhm @ 125°C)
5V & 3.3V	DC-DC Converters: 8x A&O AON6516 (30V, 25A @ 100°C, 8mOhm) PWM Controller: 2x On Semiconductor NCP1587A
Filtering Capacitors	Electrolytics: Chemi-Con 7x W, 3x KZE, 3x KY, 2x KMG, 7x KRG (modular board) Polymers: 8x Chemi-Con
Supervisor IC	SF29605 & LM339A
Fan Model	S1282412H (120mm, 12V, 0.35A, Sleeve Bearing)
5VSB Circuit	
Rectifier	Mospec S10C60C
Standby PWM Controller	29604

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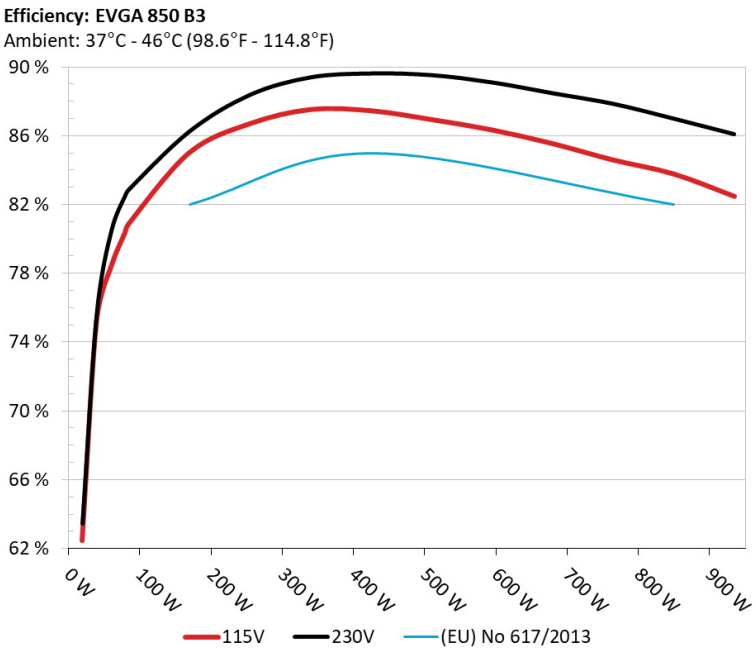
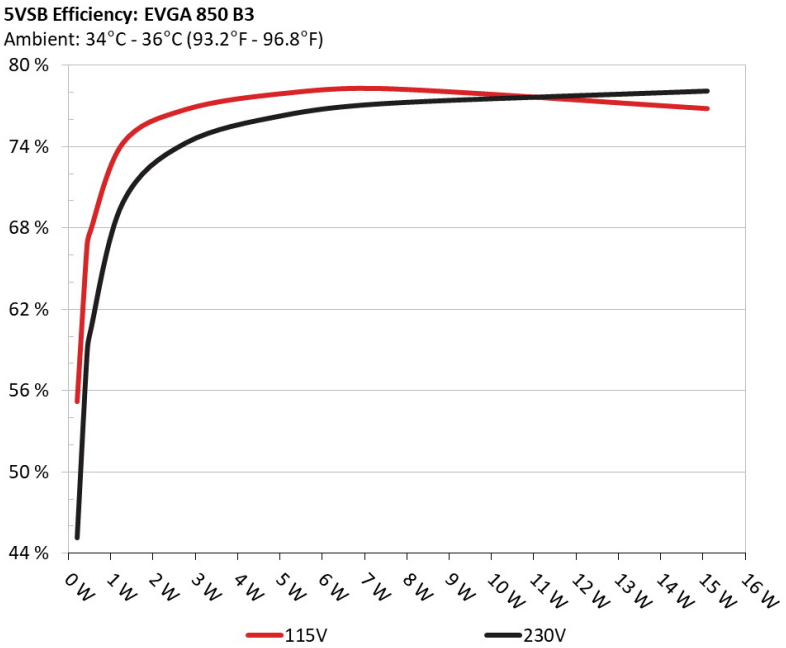
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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	0.041A	0.213	55.181%	0.030
	5.141V	0.386		115.16V
2	0.087A	0.447	66.716%	0.051
	5.139V	0.670		115.16V
3	0.542A	2.776	76.727%	0.227
	5.123V	3.618		115.16V
4	1.002A	5.116	77.917%	0.326
	5.107V	6.566		115.16V
5	1.502A	7.643	78.245%	0.385
	5.090V	9.768		115.16V
6	3.001A	15.097	76.790%	0.465
	5.031V	19.660		115.16V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.041A	0.213	45.127%	0.011
	5.141V	0.472		230.40V
2	0.087A	0.447	58.739%	0.018
	5.139V	0.761		230.40V
3	0.542A	2.777	74.271%	0.083
	5.123V	3.739		230.40V
4	1.002A	5.116	76.324%	0.141
	5.107V	6.703		230.40V
5	1.501A	7.641	77.213%	0.194
	5.089V	9.896		230.40V
6	3.001A	15.109	78.107%	0.297
	5.035V	19.344		230.40V

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115V

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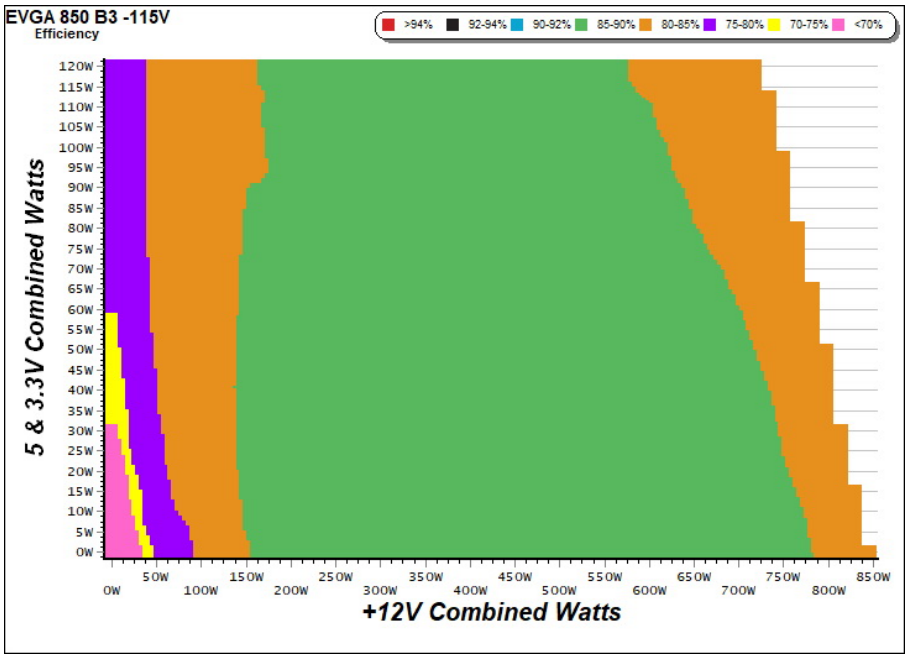
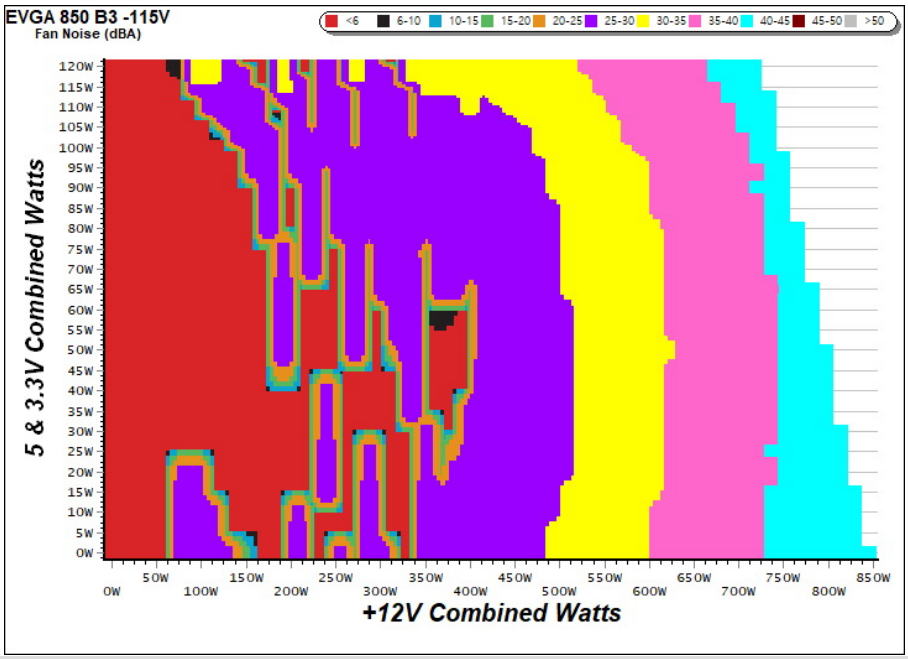
EFFICIENCY GRAPH 115V



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 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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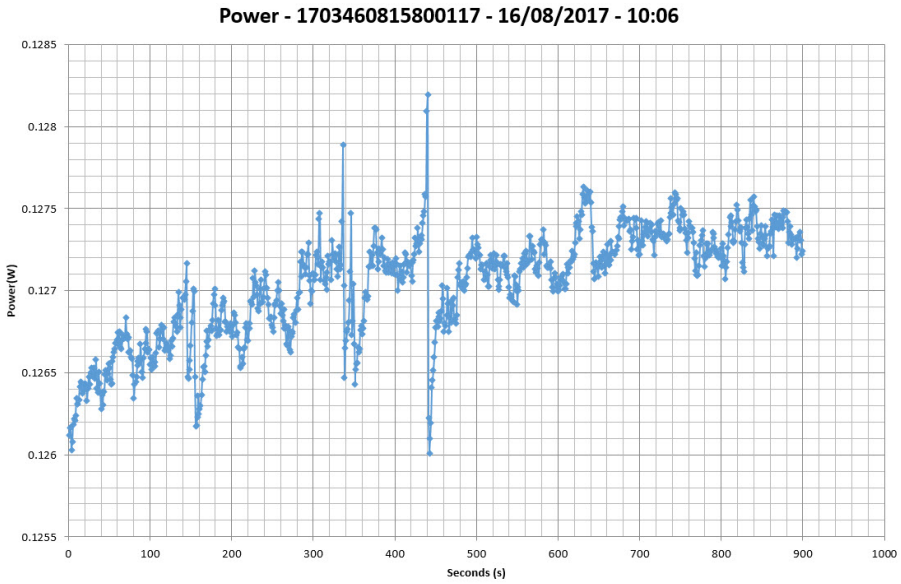
VAMPIRE POWER -115V



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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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
1	5.210A	1.985A	1.991A	0.980A	84.785	80.878%	0	<6.0	45.75°C	0.954
	12.128V	5.047V	3.310V	5.092V	104.831				38.55°C	115.18V
2	11.444A	2.971A	2.992A	1.181A	169.620	85.014%	0	<6.0	43.19°C	0.982
	12.125V	5.041V	3.305V	5.076V	199.521				40.50°C	115.18V
3	18.052A	3.478A	3.510A	1.380A	254.853	86.712%	1218	27.3	41.24°C	0.989
	12.119V	5.036V	3.300V	5.060V	293.906				47.13°C	115.19V
4	24.648A	3.977A	4.001A	1.584A	339.727	87.533%	1276	29.0	41.29°C	0.992
	12.112V	5.032V	3.296V	5.045V	388.113				47.08°C	115.20V
5	30.912A	4.974A	5.009A	1.785A	424.624	87.466%	1338	30.7	41.63°C	0.994
	12.104V	5.026V	3.292V	5.029V	485.473				48.15°C	115.22V
6	37.193A	5.977A	6.022A	1.994A	509.607	86.950%	1462	34.3	42.72°C	0.995
	12.094V	5.021V	3.287V	5.010V	586.089				49.76°C	115.19V
7	43.502A	6.981A	7.038A	2.199A	594.560	86.345%	1600	36.1	43.47°C	0.996
	12.079V	5.017V	3.282V	4.992V	688.583				51.70°C	115.20V
8	49.797A	7.987A	8.058A	2.410A	679.494	85.549%	1743	40.0	44.14°C	0.996
	12.071V	5.010V	3.275V	4.975V	794.273				53.88°C	115.18V
9	56.545A	8.488A	8.583A	2.414A	764.493	84.596%	1885	42.2	44.62°C	0.996
	12.060V	5.007V	3.271V	4.965V	903.702				54.68°C	115.18V
10	63.031A	9.005A	9.088A	3.036A	849.365	83.782%	1885	42.2	45.71°C	0.997
	12.052V	5.002V	3.267V	4.935V	1013.785				56.43°C	115.18V
11	70.143A	9.016A	9.099A	3.042A	934.308	82.482%	2014	43.1	46.20°C	0.997
	12.041V	4.997V	3.262V	4.925V	1132.742				56.85°C	115.18V
CL1	0.098A	14.023A	14.004A	0.004A	117.803	77.549%	1432	32.6	44.59°C	0.974
	12.123V	5.027V	3.292V	5.107V	151.908				51.67°C	115.20V
CL2	70.778A	1.004A	1.003A	1.002A	865.942	83.783%	2003	43.0	47.16°C	0.996
	12.046V	5.011V	3.278V	5.022V	1033.550				56.62°C	115.18V

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20-80W LOAD TESTS 115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.200A	0.493A	0.478A	0.192A	19.629	62.453%	0	<6.0	0.834
	12.141V	5.052V	3.315V	5.130V	31.430				115.18V
2	2.428A	0.987A	0.994A	0.391A	39.749	75.220%	0	<6.0	0.933
	12.137V	5.050V	3.313V	5.121V	52.844				115.18V
3	3.662A	1.477A	1.508A	0.585A	59.870	78.364%	0	<6.0	0.937
	12.133V	5.048V	3.312V	5.110V	76.400				115.18V
4	4.881A	1.985A	1.990A	0.781A	79.789	80.384%	0	<6.0	0.951
	12.129V	5.047V	3.310V	5.099V	99.260				115.18V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	5.9 mV	9.0 mV	9.0 mV	12.5 mV	Pass
20% Load	7.6 mV	9.4 mV	9.7 mV	13.4 mV	Pass
30% Load	8.9 mV	11.2 mV	11.2 mV	13.7 mV	Pass
40% Load	8.8 mV	11.3 mV	13.1 mV	13.6 mV	Pass
50% Load	10.0 mV	11.1 mV	13.7 mV	14.3 mV	Pass
60% Load	10.9 mV	11.7 mV	15.0 mV	15.7 mV	Pass
70% Load	10.7 mV	13.5 mV	14.7 mV	16.9 mV	Pass
80% Load	11.9 mV	14.7 mV	17.2 mV	20.0 mV	Pass
90% Load	11.8 mV	17.8 mV	19.5 mV	18.7 mV	Pass
100% Load	14.0 mV	18.9 mV	19.9 mV	24.2 mV	Pass
110% Load	14.2 mV	20.2 mV	20.6 mV	25.8 mV	Pass
Crossload 1	7.8 mV	10.7 mV	11.1 mV	14.6 mV	Pass
Crossload 2	12.9 mV	17.1 mV	19.6 mV	21.3 mV	Pass

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Top side

Power specifications label

CERTIFICATIONS 115V

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