EVGA SuperNOVA 1000 G5 (#2)

1903141001800563

Lab ID EV20100012

Certification ID 251598

Test Result Report ID: 20PS1598A

Certificate Issue Date: Feb 17, 2020

Scheme: ETA-EMI PSU

115V



230V



Scheme: LAMBDA PSU

115V



230V





Aristeidis Bitziopoulos, Certification Body General Manager

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	EVGA
Model	SuperNOVA 1000 G5 (#2)
OEM/ODM	FSP
Serial Number	1903141001800563
Product Specifications	
Manufacturer-Provided Information	
□□□□ (Vrms)	100-240
□□□□ (Arms)	15-8
□□□□ (Hz)	50-60

□□□□ (W)	1000
Operating Temperature (Continuous Full Load) (°C)	
□□	ATX12V
□□□□	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
□□	135mm Fluid Dynamic Bearing Fan (MGA13512XF-A25)
□□□□□	✓ (selectable)
Cybenetics Testing Information	
Lab ID	EV20100012
Date of receipt	Oct 4, 2019
Testing Date	Feb 14, 2020
Report Issued Date	Feb 17, 2020
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

□□□□ (Non-accredited measurements)

□□□□				
□□	□□□□	□□□□□□	Gauge	In Cable Capacitors
ATX □□ 20+4 pin (600mm)	1	1	18-22AWG	□
4+4 pin EPS 12V □□ (700mm)	2	2	18AWG	□
6+2pin PCIe□□ (700mm+150mm)	4	8	18AWG	□
SATA□□ (550mm+100mm+100mm+100mm)	3	12	18AWG	□
4-pin Molex (550mm+100mm+100mm+100mm)	1	4	18AWG	□
□ 4pin □□ (100mm)	1	1	22AWG	□
AC Power Cord (1420mm) - C13 coupler	1	1	16AWG	-

□□□□

□		3.3V	5V	12V	5VSB	-12V
□□□□	□□	24	24	83.3	3	0.5
	□	120		999.6	15	6
□□□□□ (W)		1000				

Parts Description

General Data	
Manufacturer (OEM)	FSP
PCB Type	Double Sided
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 3x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	1x HY GBJ2506P (600V, 25A @ 100°C)
APFC MOSFETS	2x ROHM R6030KNX (600V, 30A, 0.13Ohm)
APFC Boost Diode	1x ROHM SCS308AM (650V, 8A @ 105°C)
Hold-up Cap(s)	1x Rubycon (450V, 560uF, 3,000h @ 105°C, MXK)
Main Switchers	2x Infineon IPA80R310CE (800V, 10.6A @ 100°C, 0.31Ohm)
Reset Switch	1x Infineon IPD80R2K8CE (800V, 1.1A @ 100°C, 2.8Ohm)
APFC/Switching Controller	FSP 6600 IC
Topology	Primary side: Two Power Switch Active Clamp Reset Forward Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	4x Infineon IPP020N06N (60V, 120A @ 100°C, 2mOhm)
5V & 3.3V	DC-DC Converters:4x Infineon BSC042N03LS (30V, 59A @ 100°C, 4.2mOhm) PWM Controllers: ANPEC APW7159C
Filtering Capacitors	Electrolytics: 2x Nippon Chemi-Con (1-5,000 @ 105°C, KZE), 2x Rubycon (3-6,000 @ 105°C, YXG), 1x Rubycon (4-10,000 @ 105°C, YXF) Polymers: 15x United Chemi-Con
Supervisor IC	Weltrend WT7527 (OCP, OVP, UVP, SCP, PG)
Fan Model	Protechnic Electric MGA13512XF-A25 (135mm, 12V, 0.38A, Fluid Dynamic Bearing Fan)
5VSB Circuit	

Rectifier	1x CET CEF02N7G FET (700V, 1.3A @ 100°C, 6.75Ohm)
Standby PWM Controller	FSP 6601 IC

Test Results

Temperature & Compliance Info

□□□□ (°C /°F)	28-32 / 82.4-89.6
□□ ErP Lot3/6□□	ErP Lot 6 2010: ✓ ErP Lot 6 2013: Partially ErP Lot 3 2014 & CEC: ✓
□□ (EU) No 617/2013□□	✓

Performance Summary

115V

Accredited	
□□□□ (>1450 load combinations)	88.714%
Average Noise Output (>1450 Load Combinations)	43.53dBA
PF□□□ (>1450 Load Combinations)	0.989
Efficiency With 10W (≤500W) or 2% (>500W) Load	68.145%
□□□□□□	0.1735W
Non-Accredited	
12V Ripple (Full Load)	21.11mV
5V Ripple (Full Load)	17.49mV
3.3V Ripple (Full Load)	26.48mV
5VSB Ripple (Full Load)	16.26mV
12V Load Regulation	0.41%
5V Load Regulation	0.40%
3.3V Load Regulation	0.99%
5VSB Load Regulation	1.72%
Inrush Current	24.660A

230V

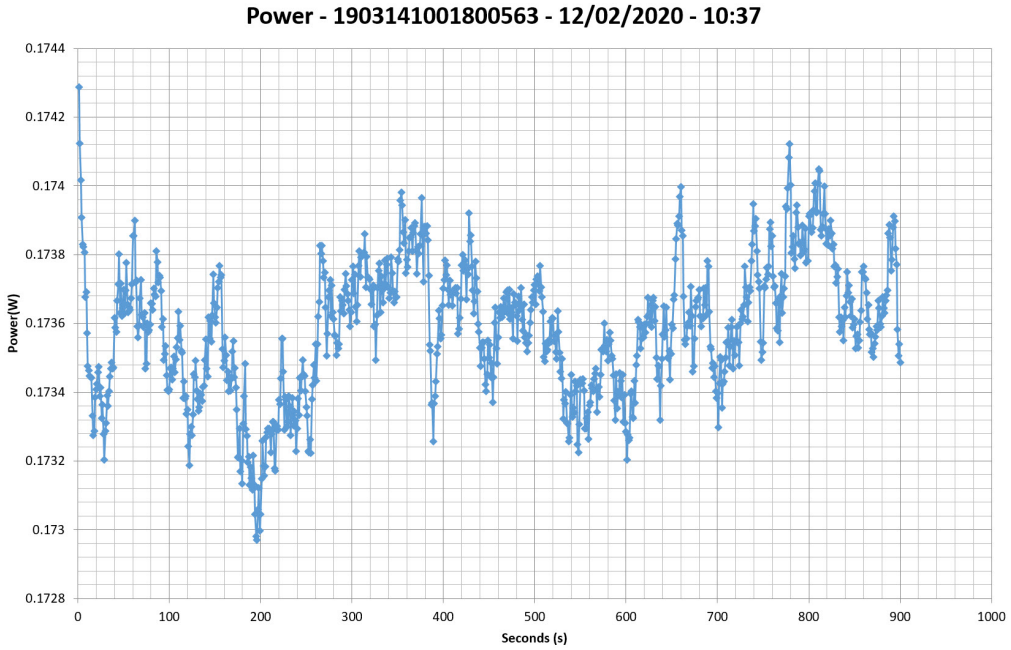
Accredited		
□□□□ (>1450 load combinations)		90.965%
Average Noise Output (>1450 Load Combinations)		43.13dBA
PF□□□ (>1450 Load Combinations)		0.969
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
□□□□□□		0.2691W
Non-Accredited		
12V Ripple (Full Load)		17.28mV
5V Ripple (Full Load)		16.82mV
3.3V Ripple (Full Load)		24.64mV
5VSB Ripple (Full Load)		16.19mV
12V Load Regulation		0.39%
5V Load Regulation		0.45%
3.3V Load Regulation		0.96%
5VSB Load Regulation		1.74%
Inrush Current		94.350A
□□□□ & PG□□		24.80ms
AC Loss to PWR_OK Hold Up Time		21.60ms
PWR_OK Inactive to DC Loss Delay		3.20ms
PSU Timings: T1 (20% / 100%)	66.0ms	68.0ms
PSU Timings: T3 (20% / 100%)	290.0ms	290.0ms
OPP (0.00°C / 0.00°C)	-	-

□□□□ & PG□□

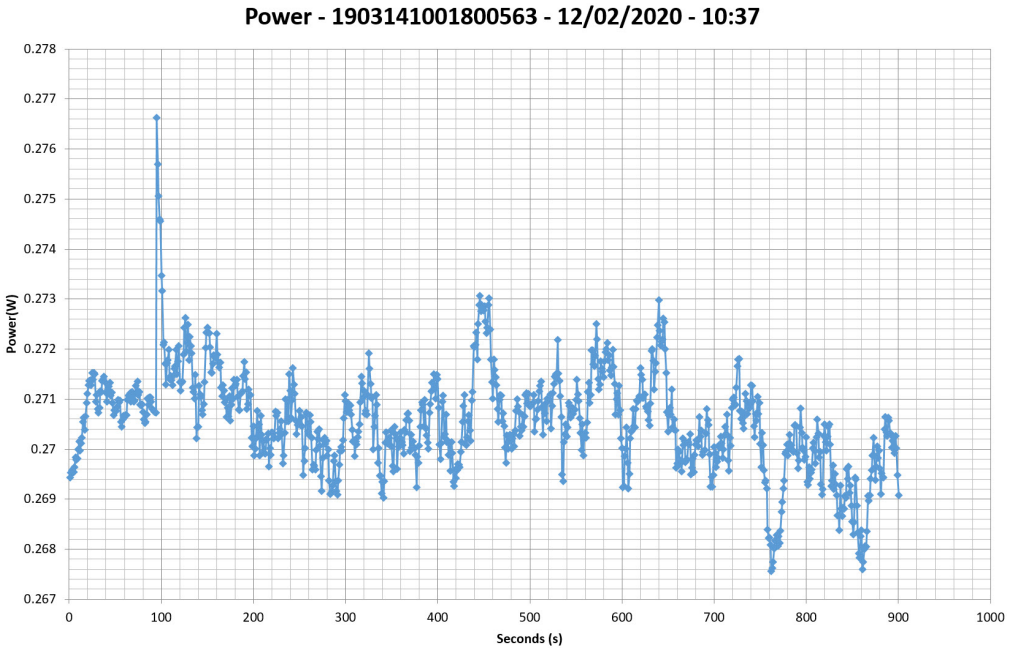
Hold-Up Time (ms)	24.80
AC Loss to PWR_OK Hold Up Time (ms)	21.60
PWR_OK Inactive to DC Loss Delay (ms)	3.20

Graphs

115V



230V



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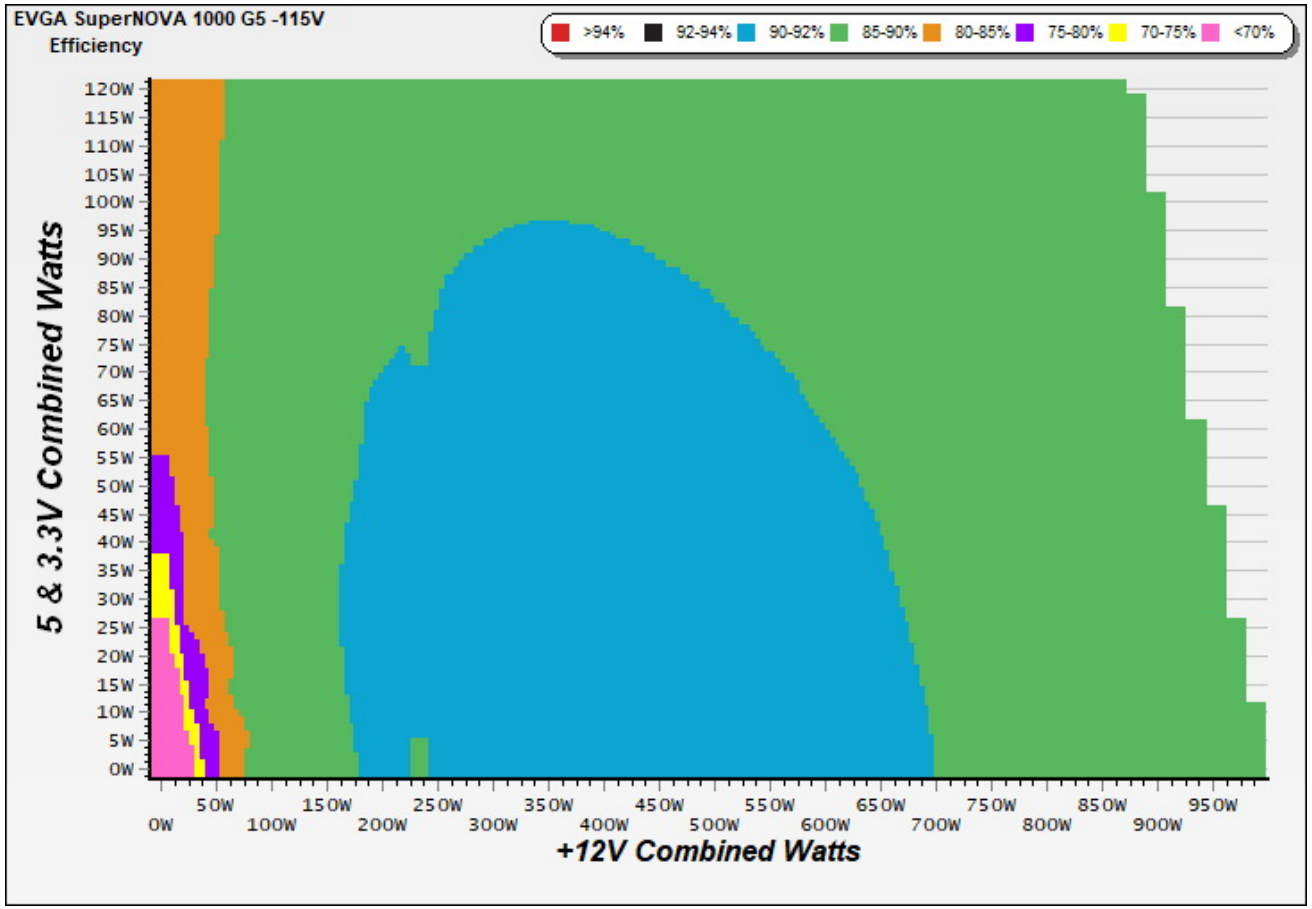
115V



□□

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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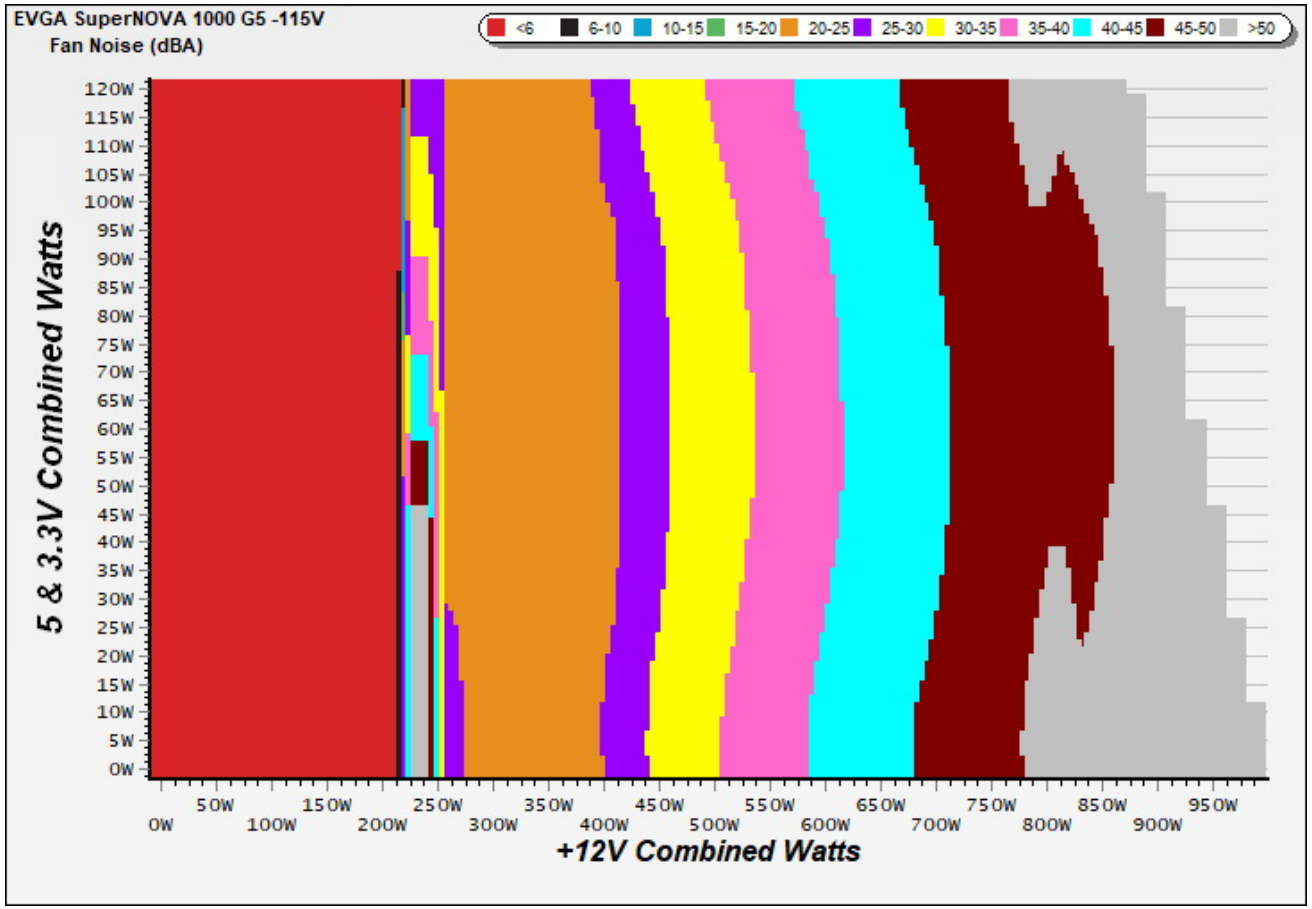
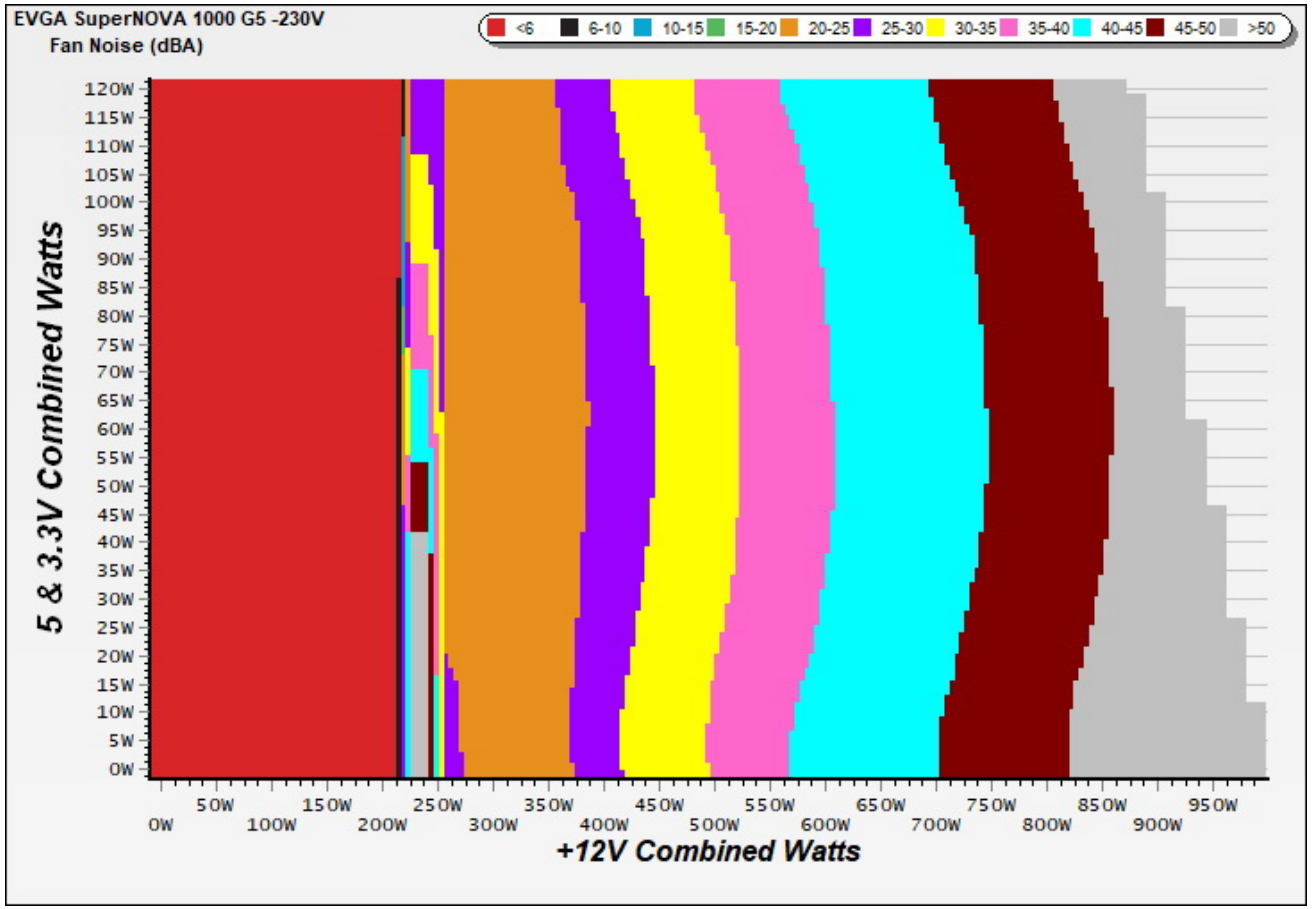
115V



□□

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



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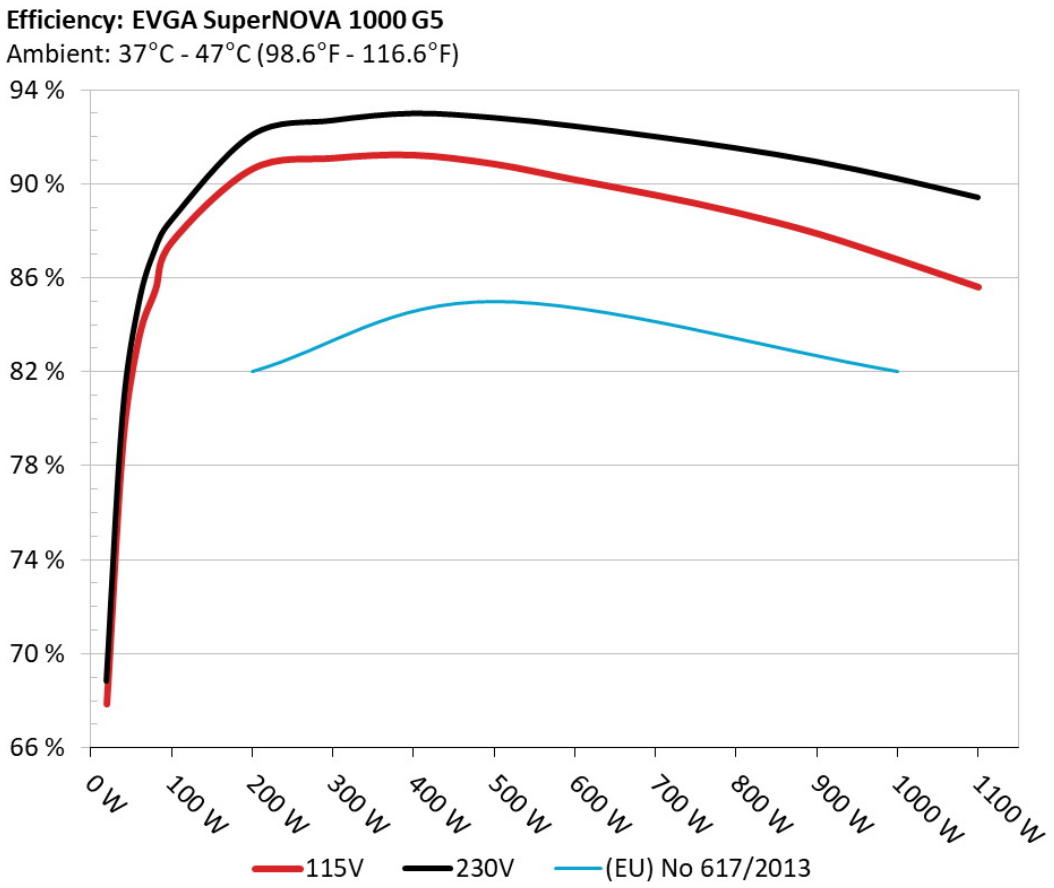
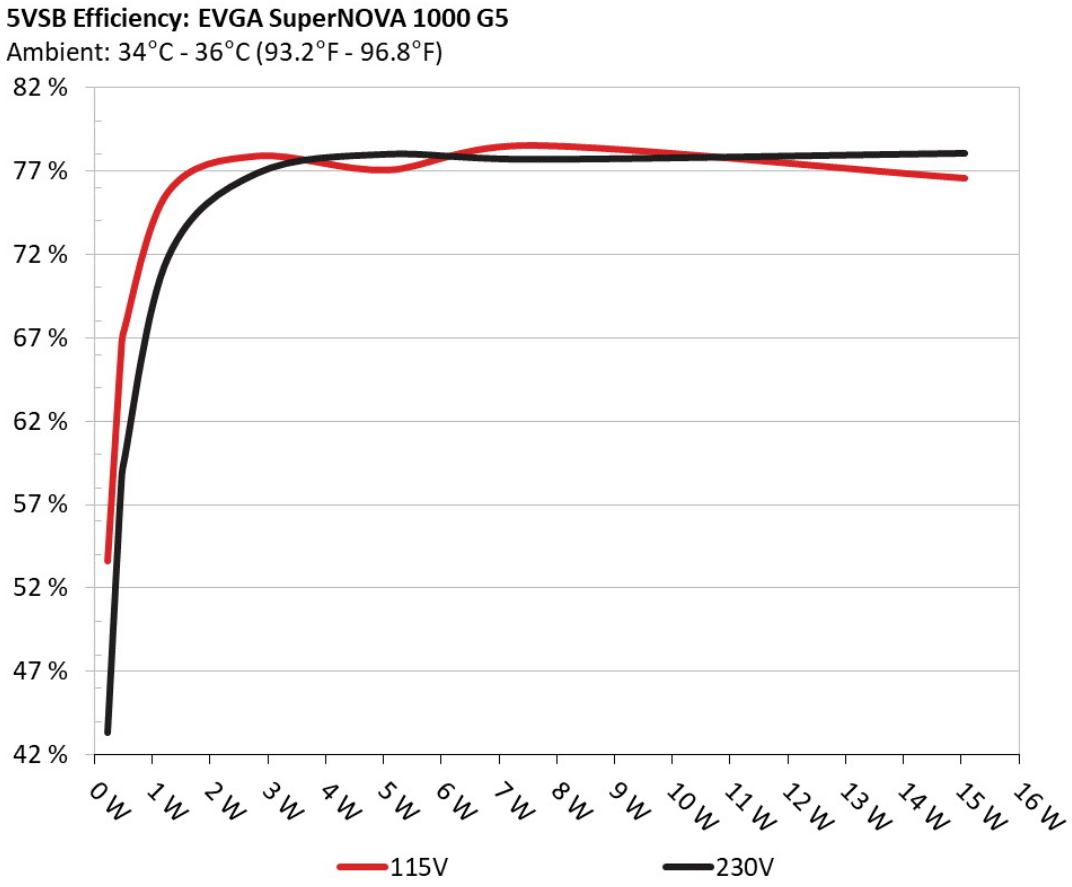
Indicative Performance



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	0.231	53.596%	0.043
	5.126V	0.431		115.09V
2	0.090A	0.461	65.951%	0.069
	5.125V	0.699		115.09V
3	0.550A	2.810	77.882%	0.280
	5.110V	3.608		115.09V
4	1.000A	5.093	77.050%	0.388
	5.094V	6.610		115.09V
5	1.500A	7.615	78.521%	0.442
	5.077V	9.698		115.09V
6	2.999A	15.069	76.558%	0.506
	5.024V	19.683		115.09V

230V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.045A	0.231	43.340%	0.016
	5.126V	0.533		230.23V
2	0.090A	0.461	57.915%	0.024
	5.124V	0.796		230.23V
3	0.550A	2.810	76.839%	0.103
	5.109V	3.657		230.23V
4	1.000A	5.093	77.994%	0.172
	5.093V	6.530		230.23V
5	1.500A	7.612	77.681%	0.235
	5.074V	9.799		230.23V
6	3.000A	15.068	78.044%	0.345
	5.022V	19.307		230.23V

Supplementary Tests (For Reference)

10-110%□□□□

115V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	6.506A	1.978A	1.973A	0.994A	99.968	87.504%	0	<6.0	45.38°C	0.974
	12.045V	5.056V	3.347V	5.028V	114.244				40.03°C	115.07V
2	14.044A	2.967A	2.960A	1.194A	199.985	90.636%	0	<6.0	46.78°C	0.991
	12.040V	5.055V	3.344V	5.024V	220.646				40.85°C	115.07V
3	21.928A	3.463A	3.458A	1.396A	299.949	91.101%	1312	36.1	41.23°C	0.995
	12.035V	5.051V	3.341V	5.015V	329.248				47.53°C	115.07V
4	29.786A	3.962A	3.956A	1.598A	399.492	91.232%	1515	40.8	41.99°C	0.998
	12.029V	5.047V	3.337V	5.006V	437.886				49.22°C	115.07V
5	37.353A	4.956A	4.951A	1.800A	499.639	90.853%	1690	43.8	42.08°C	0.999
	12.024V	5.045V	3.333V	5.001V	549.943				50.13°C	115.07V
6	44.927A	5.948A	5.946A	2.000A	599.770	90.182%	2038	50.7	42.90°C	0.999
	12.019V	5.043V	3.330V	4.998V	665.069				51.47°C	115.06V
7	52.473A	6.946A	6.947A	2.203A	699.527	89.529%	2044	50.6	43.09°C	0.999
	12.014V	5.040V	3.326V	4.994V	781.339				52.11°C	115.06V
8	60.096A	7.942A	7.946A	2.406A	800.045	88.782%	2049	50.5	43.46°C	0.999
	12.008V	5.038V	3.322V	4.989V	901.133				53.28°C	115.05V
9	68.046A	8.439A	8.435A	2.407A	899.340	87.896%	2053	50.6	44.15°C	0.999
	12.004V	5.037V	3.320V	4.987V	1023.189				54.25°C	115.04V
10	75.839A	8.935A	8.955A	3.023A	999.763	86.780%	2059	50.9	45.28°C	0.999
	12.000V	5.036V	3.316V	4.963V	1152.066				55.80°C	115.04V
11	84.209A	8.936A	8.960A	3.024A	1099.796	85.608%	2057	50.8	46.63°C	0.999
	11.995V	5.037V	3.314V	4.962V	1284.692				57.57°C	115.04V
CL1	0.100A	14.003A	13.998A	0.000A	118.574	80.578%	0	<6.0	50.32°C	0.983
	12.043V	5.053V	3.330V	5.132V	147.154				42.86°C	115.10V

CL2	83.345A	1.000A	1.001A	1.000A	1013.543	87.015%	2057	50.8	45.79°C	0.999
	12.000V	5.052V	3.330V	5.018V	1164.794				56.27°C	115.05V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	6.508A	1.977A	1.971A	0.994A	99.997	88.428%	0	<6.0	45.55°C	0.886
	12.046V	5.059V	3.347V	5.033V	113.083				40.50°C	230.22V
2	14.047A	2.967A	2.959A	1.193A	200.024	92.065%	0	<6.0	46.43°C	0.957
	12.040V	5.057V	3.344V	5.029V	217.264				40.64°C	230.21V
3	21.932A	3.465A	3.456A	1.395A	300.001	92.690%	1398	37.6	41.17°C	0.977
	12.035V	5.052V	3.340V	5.019V	323.662				47.62°C	230.22V
4	29.791A	3.963A	3.957A	1.597A	399.592	92.990%	1489	40.3	41.59°C	0.986
	12.030V	5.047V	3.337V	5.009V	429.714				48.55°C	230.22V
5	37.360A	4.957A	4.952A	1.799A	499.731	92.808%	1693	43.9	42.14°C	0.990
	12.024V	5.045V	3.333V	5.003V	538.454				50.08°C	230.22V
6	44.933A	5.951A	5.949A	2.000A	599.856	92.447%	1898	46.1	42.23°C	0.993
	12.019V	5.042V	3.329V	4.998V	648.865				50.62°C	230.22V
7	52.478A	6.946A	6.947A	2.204A	699.592	92.007%	2042	50.7	43.48°C	0.994
	12.014V	5.040V	3.326V	4.994V	760.365				52.46°C	230.22V
8	60.096A	7.942A	7.945A	2.406A	800.101	91.515%	2046	50.6	43.73°C	0.995
	12.009V	5.038V	3.322V	4.989V	874.288				53.38°C	230.22V
9	68.051A	8.438A	8.433A	2.407A	899.379	90.945%	2049	50.5	44.37°C	0.996
	12.004V	5.037V	3.319V	4.987V	988.931				54.62°C	230.21V
10	75.840A	8.935A	8.957A	3.023A	999.781	90.224%	2054	50.6	45.57°C	0.997
	12.000V	5.036V	3.316V	4.963V	1108.111				56.03°C	230.21V
11	84.210A	8.937A	8.959A	3.024A	1099.801	89.419%	2061	51.0	46.66°C	0.998
	11.995V	5.036V	3.314V	4.962V	1229.943				57.59°C	230.21V
CL1	0.102A	14.002A	13.996A	0.000A	118.574	82.266%	0	<6.0	50.23°C	0.920
	12.043V	5.052V	3.330V	5.132V	144.135				42.17°C	230.23V

CL2	83.339A	1.000A	0.999A	1.000A	1013.461	90.518%	2058	50.9	45.92°C	0.997
	12.000V	5.051V	3.329V	5.016V	1119.624				56.26°C	230.21V

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 □□
1	1.231A	0.494A	0.491A	0.198A	19.977	67.847%	0	<6.0	0.640
	12.051V	5.056V	3.349V	5.050V	29.444				115.06V
2	2.462A	0.989A	0.985A	0.396A	39.963	78.949%	0	<6.0	0.710
	12.050V	5.055V	3.349V	5.045V	50.619				115.06V
3	3.698A	1.483A	1.477A	0.595A	59.994	83.491%	0	<6.0	0.787
	12.048V	5.055V	3.348V	5.040V	71.857				115.06V
4	4.927A	1.978A	1.970A	0.794A	79.946	85.468%	0	<6.0	0.969
	12.047V	5.055V	3.347V	5.035V	93.539				115.07V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	PF/AC □□
1	1.231A	0.495A	0.492A	0.198A	19.989	68.859%	0	<6.0	0.423
	12.051V	5.061V	3.350V	5.055V	29.029				230.22V
2	2.464A	0.987A	0.984A	0.396A	39.977	80.190%	0	<6.0	0.570
	12.049V	5.059V	3.349V	5.049V	49.853				230.22V
3	3.698A	1.482A	1.480A	0.595A	60.007	84.895%	0	<6.0	0.663
	12.048V	5.059V	3.348V	5.043V	70.684				230.22V
4	4.928A	1.975A	1.972A	0.794A	79.958	87.192%	0	<6.0	0.786
	12.047V	5.058V	3.347V	5.038V	91.703				230.21V

The results above are not used in the certification process

□□□□

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.30mV	6.70mV	10.30mV	5.40mV	Pass
20% Load	9.00mV	7.10mV	11.10mV	5.90mV	Pass
30% Load	12.40mV	7.40mV	11.90mV	6.70mV	Pass
40% Load	13.70mV	7.60mV	12.20mV	7.10mV	Pass
50% Load	14.10mV	8.20mV	14.90mV	9.20mV	Pass
60% Load	16.00mV	9.00mV	17.00mV	11.60mV	Pass
70% Load	16.90mV	9.30mV	19.40mV	9.50mV	Pass
80% Load	17.80mV	10.00mV	21.70mV	10.60mV	Pass
90% Load	17.60mV	10.30mV	22.00mV	11.30mV	Pass
100% Load	21.10mV	17.50mV	26.50mV	16.30mV	Pass
110% Load	21.30mV	21.70mV	27.50mV	19.60mV	Pass
Crossload1	6.70mV	8.90mV	12.80mV	6.40mV	Pass
Crossload2	21.10mV	11.00mV	23.90mV	11.50mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	10.70mV	7.10mV	10.40mV	8.20mV	Pass
20% Load	6.50mV	7.00mV	11.50mV	6.20mV	Pass
30% Load	9.00mV	7.10mV	12.30mV	6.70mV	Pass
40% Load	9.70mV	7.40mV	14.70mV	6.90mV	Pass
50% Load	10.00mV	7.90mV	14.80mV	9.00mV	Pass
60% Load	11.70mV	8.80mV	16.90mV	8.90mV	Pass
70% Load	12.90mV	9.40mV	17.80mV	9.40mV	Pass
80% Load	14.20mV	9.50mV	20.20mV	10.20mV	Pass





Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	16.10mV	10.40mV	20.20mV	11.00mV	Pass
100% Load	17.30mV	16.80mV	24.60mV	16.20mV	Pass
110% Load	20.70mV	21.30mV	24.90mV	19.70mV	Pass
Crossload1	7.10mV	9.80mV	12.70mV	6.70mV	Pass
Crossload2	17.50mV	10.40mV	21.80mV	11.80mV	Pass

The results above are not used in the certification process

EVGA SuperNOVA 1000 G5 (#2)

Top side

Power specifications label

本测试报告中包含的所有数据和图表均可在以下条件下由任何人使用：使用过程需提及测试结果由Cybenetics提供。Cybenetics 提供自愿性认证计划：电源方面有 ETA（效率）、LAMBDA（噪声）与 SAFE（安全与正确运行）；散热产品方面有 DELTA（机箱隔音）与 PHI（风扇风量与静压）

在任何情况下都应提供原始测试结果文档的网站链接

CYBENETICS LTD Syrou 6, Latsia, 2231, Nicosia Cyprus

www.cybenetics.com - info@cybenetics.com