Bitfenix Formula Gold 550W (#2)

735Q00356

Lab ID 203

Certification ID 25203

Test Result Report ID:

Certificate Issue Date: Oct 26, 2018

Scheme: ETA-EMI PSU

115V



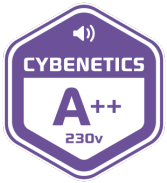
230V



115V



230V



Scheme: LAMBDA PSU



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	Bitfenix
Model	Formula Gold 550W (#2)
OEM/ODM	Channel Well Technology
Serial Number	735Q00356
Product Specifications	
Manufacturer-Provided Information	
□□□□ (Vrms)	100-240
□□□□ (Arms)	8
□□□□ (Hz)	47-63

□□□□ (W)	550
Operating Temperature (Continuous Full Load) (°C)	
□□	ATX12V
□□□□	Fixed cables
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
□□	120mm Rifle Bearing Fan (DF1202512SELN)
□□□□□	✗
Cybenetics Testing Information	
Lab ID	203
Date of receipt	Oct 12, 2018
Testing Date	Oct 24, 2018
Report Issued Date	Oct 26, 2018
□□□□□	Edited on 05/18/2018
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

□□□□□ (Non-accredited measurements)

□□□□			
□□	□□□□	□□□□□□	Gauge
ATX □□ 20+4 pin (660mm)	1	1	18-22AWG
4+4 pin EPS 12V □□ (660mm)	1	1	18AWG
6+2pin PCIe□□ (570mm+150mm)	1	2	18AWG
SATA□□ (460mm+150mm+150mm)+□ 4pin Molex□□ (+150mm)	2	6 / 2	18AWG

□□□□

□		3.3V	5V	12V1	12V2	12V3	5VSB	-12V
□□□□	□□	20	20	25	25	30	2.5	0.3
	□	100		550			12.5	3.6
□□□□□ (W)		550						

Test Results

Temperature & Compliance Info

□□□□ (°C /°F)	28-32 / 82.4-89.6
□□ ErP Lot3/6□□	✓
□□ (EU) No 617/2013□□	✓

Performance Summary

115V

Accredited	
□□□□ (>1450 load combinations)	89.576%
Average Noise Output (>1450 Load Combinations)	10.76dBA
PF□□□ (>1450 Load Combinations)	0.985
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
□□□□□□	0.0443W
Non-Accredited	
12V Ripple (Full Load)	31.35mV
5V Ripple (Full Load)	17.80mV
3.3V Ripple (Full Load)	17.17mV
5VSB Ripple (Full Load)	16.57mV
12V Load Regulation	0.46%
5V Load Regulation	0.39%
3.3V Load Regulation	0.45%

5VSB Load Regulation	2.49%
Inrush Current	27.744A

230V

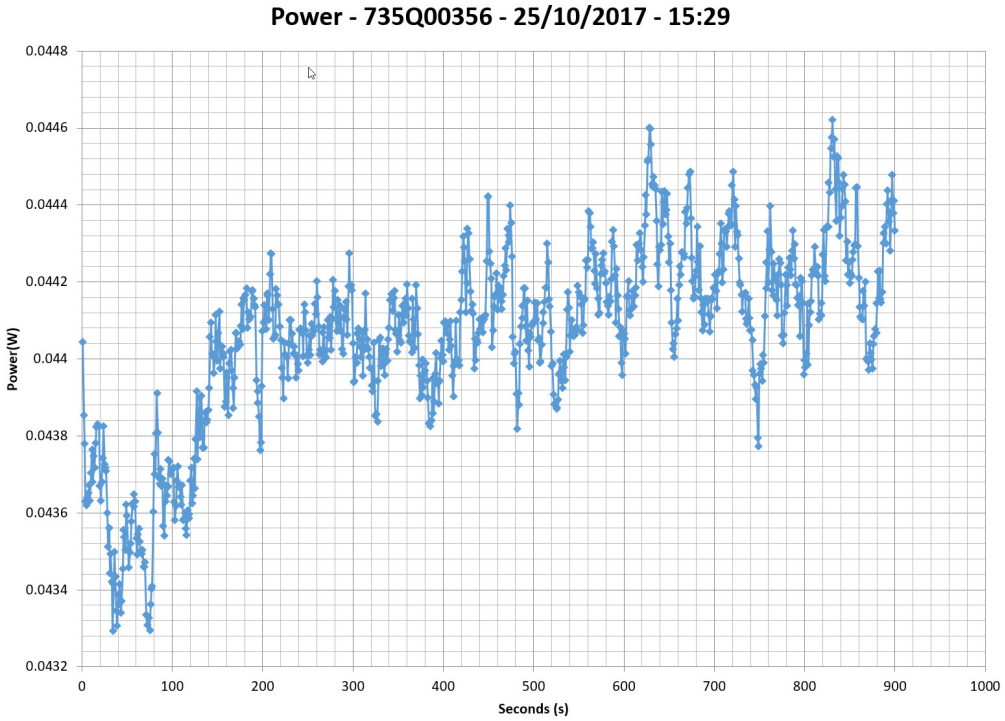
Accredited	
□□□□ (>1450 load combinations)	91.205%
Average Noise Output (>1450 Load Combinations)	10.97dBA
PF□□□ (>1450 Load Combinations)	0.936
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
□□□□□□	0.0627W
Non-Accredited	
12V Ripple (Full Load)	24.90mV
5V Ripple (Full Load)	17.67mV
3.3V Ripple (Full Load)	18.11mV
5VSB Ripple (Full Load)	14.38mV
12V Load Regulation	0.55%
5V Load Regulation	0.43%
3.3V Load Regulation	0.57%
5VSB Load Regulation	2.53%
Inrush Current	55.489A
□□□□ & PG□□	17.00ms
AC Loss to PWR_OK Hold Up Time	15.00ms
PWR_OK Inactive to DC Loss Delay	2.00ms
OPP (0.00°C / 0.00°C)	- -

□□□□ & PG□□

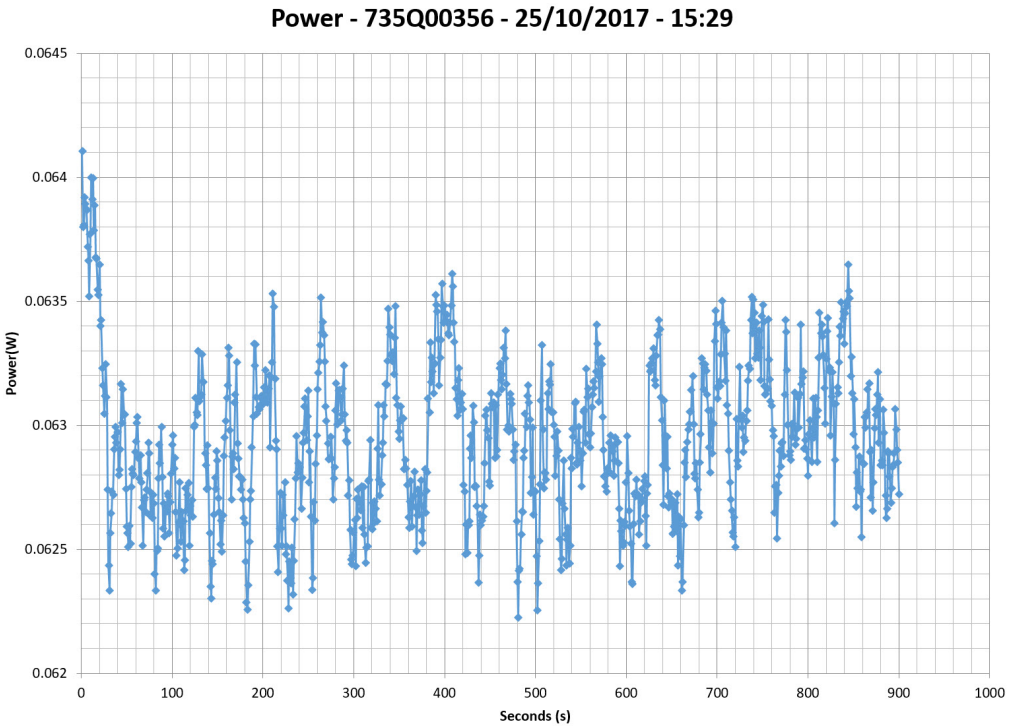
Hold-Up Time (ms)	17
AC Loss to PWR_OK Hold Up Time (ms)	15
PWR_OK Inactive to DC Loss Delay (ms)	2

Graphs

115V



230V



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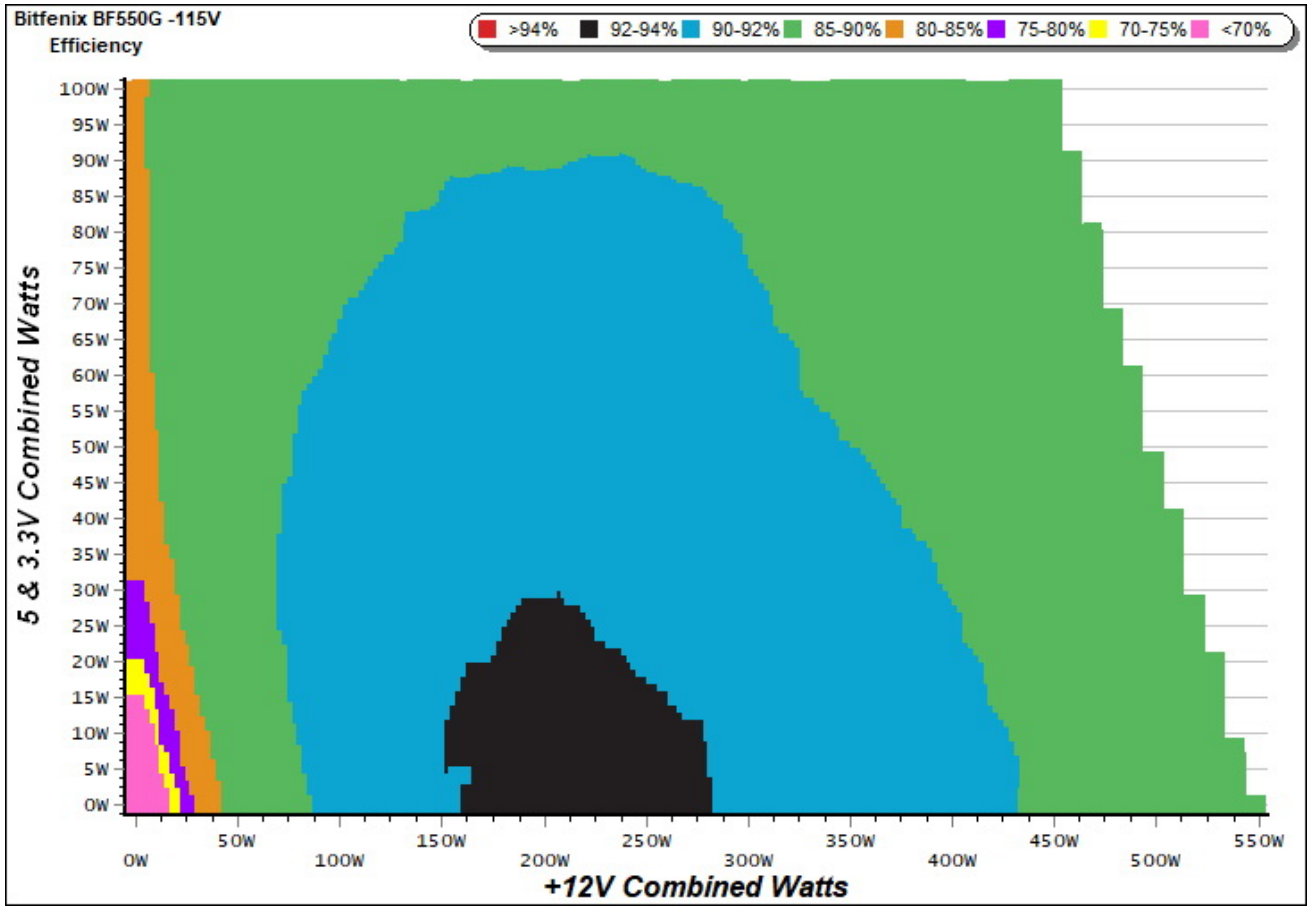
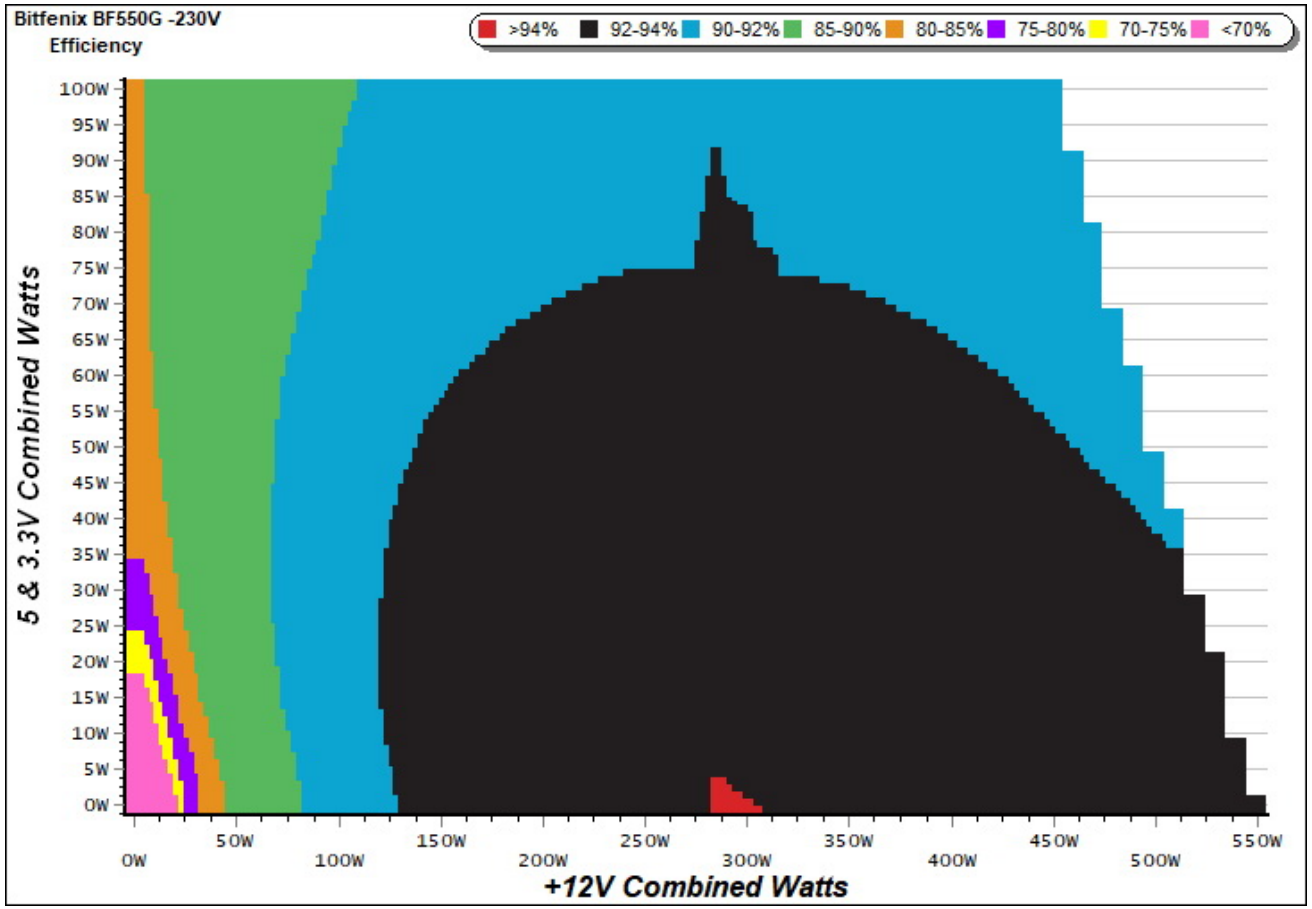
115V



□□

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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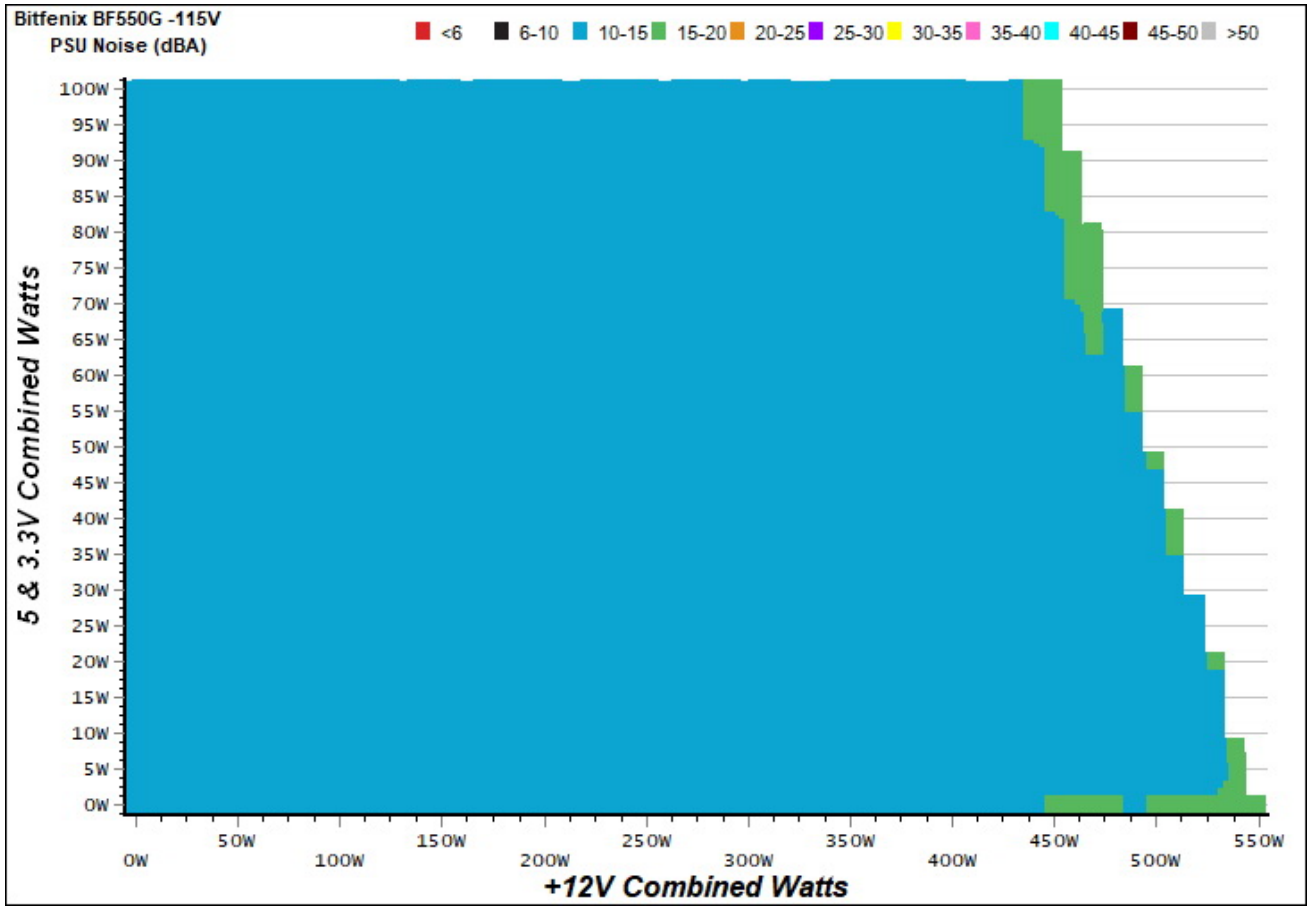
□□□□□

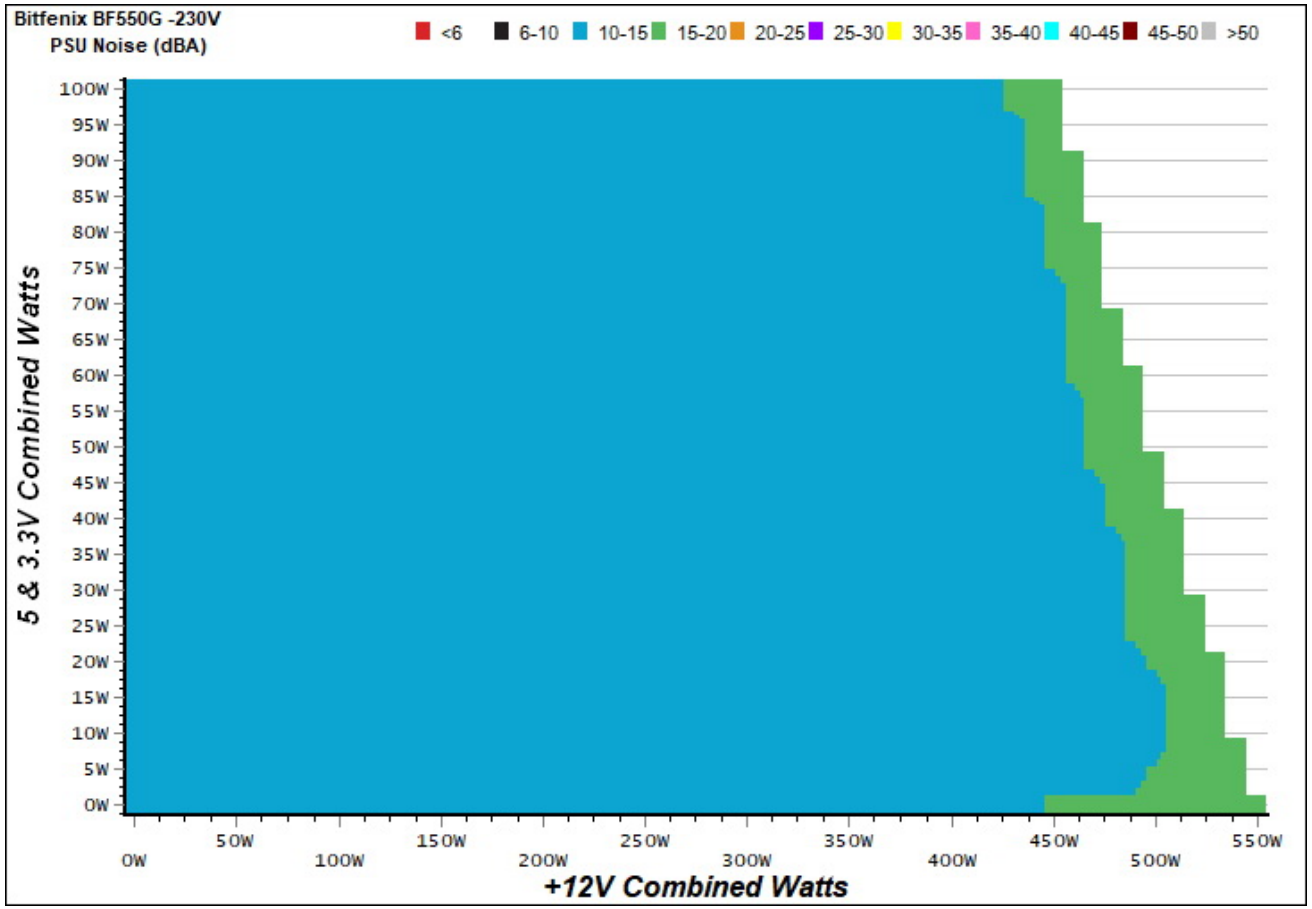
115V



□□

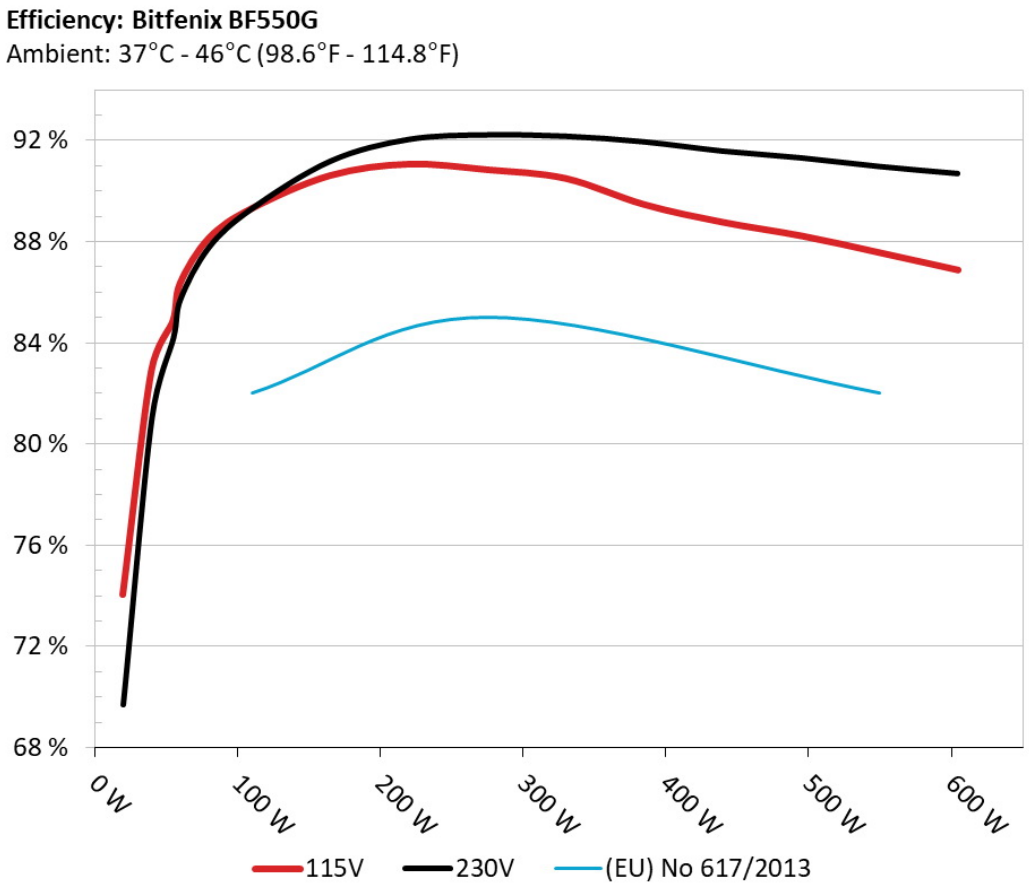
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

230V



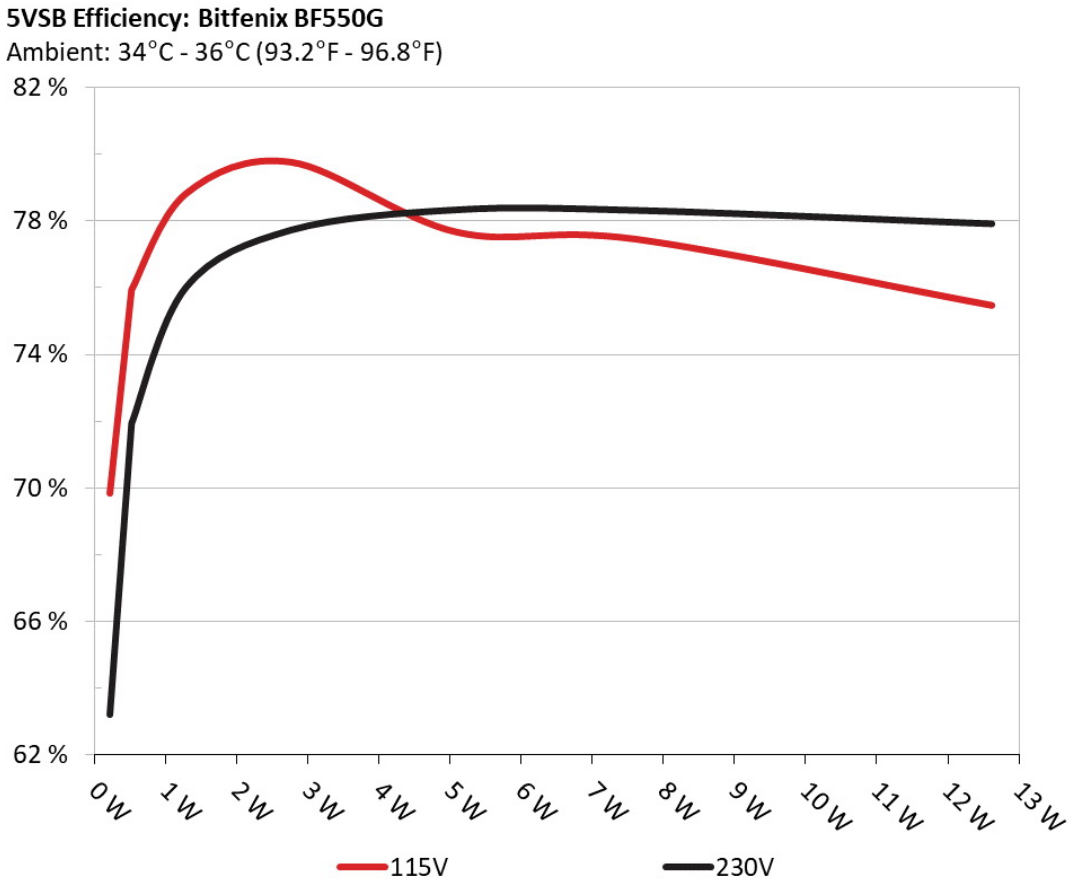
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails.

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	0.042A	0.213	69.836%	0.031
	5.107V	0.305		115.11V
2	0.087A	0.445	75.939%	0.058
	5.107V	0.586		115.13V
3	0.542A	2.763	79.763%	0.271
	5.096V	3.464		115.11V
4	1.002A	5.094	77.664%	0.380
	5.085V	6.559		115.12V
5	1.501A	7.613	77.454%	0.437
	5.071V	9.829		115.12V
6	2.501A	12.614	75.470%	0.491
	5.044V	16.714		115.12V

230V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.042A	0.213	63.205%	0.010
	5.107V	0.337		230.31V
2	0.087A	0.446	71.935%	0.019
	5.106V	0.620		230.31V
3	0.542A	2.762	77.737%	0.102
	5.096V	3.553		230.31V
4	1.002A	5.094	78.345%	0.173
	5.084V	6.502		230.31V
5	1.501A	7.612	78.329%	0.234
	5.070V	9.718		230.31V
6	2.501A	12.614	77.927%	0.317
	5.044V	16.187		230.31V

Supplementary Tests (For Reference)

10-110%□□□□

115V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	2.745A	1.975A	1.968A	0.986A	54.791	84.881%	537	10.3	38.14°C	0.958
	12.095V	5.065V	3.348V	5.070V	64.550				45.38°C	115.11V
2	6.529A	2.959A	2.955A	1.185A	109.790	89.329%	537	10.3	38.47°C	0.981
	12.089V	5.063V	3.345V	5.059V	122.905				46.74°C	115.11V
3	10.660A	3.456A	3.465A	1.386A	164.878	90.638%	537	10.3	39.14°C	0.986
	12.083V	5.061V	3.344V	5.048V	181.908				48.51°C	115.11V
4	14.788A	3.953A	3.945A	1.586A	219.784	91.088%	537	10.3	39.40°C	0.989
	12.078V	5.059V	3.343V	5.036V	241.288				50.71°C	115.10V
5	18.578A	4.947A	4.936A	1.791A	274.785	90.869%	537	10.3	39.79°C	0.989
	12.072V	5.058V	3.341V	5.025V	302.398				53.38°C	115.10V
6	22.374A	5.933A	5.923A	1.995A	329.739	90.523%	537	10.3	40.41°C	0.991
	12.066V	5.056V	3.340V	5.010V	364.259				56.47°C	115.09V
7	26.167A	6.928A	6.915A	2.200A	384.721	89.490%	612	12.7	41.95°C	0.991
	12.062V	5.054V	3.339V	4.996V	429.904				59.15°C	115.08V
8	29.966A	7.916A	7.906A	2.406A	439.613	88.789%	854	21.2	43.49°C	0.991
	12.055V	5.052V	3.338V	4.984V	495.123				60.86°C	115.08V
9	34.208A	8.422A	8.421A	2.410A	494.774	88.251%	1182	31.1	43.99°C	0.991
	12.049V	5.049V	3.335V	4.977V	560.641				61.73°C	115.08V
10	38.399A	8.918A	8.907A	2.514A	549.568	87.586%	1317	33.9	45.25°C	0.991
	12.041V	5.048V	3.334V	4.969V	627.462				63.38°C	115.07V
11	42.978A	8.920A	8.911A	2.515A	604.523	86.898%	1630	39.4	46.30°C	0.992
	12.037V	5.047V	3.332V	4.965V	695.667				64.58°C	115.07V
CL1	0.102A	12.012A	12.004A	0.004A	102.126	84.663%	537	10.3	44.07°C	0.981
	12.084V	5.054V	3.346V	5.074V	120.627				60.40°C	115.10V

CL2	45.788A	1.001A	1.003A	1.002A	565.273	88.313%	1360	34.7	46.01°C	0.991
	12.052V	5.053V	3.338V	5.020V	640.078				62.59°C	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	2.722A	1.974A	1.972A	0.987A	54.500	84.012%	537	10.3	40.16°C	0.739
	12.086V	5.065V	3.348V	5.067V	64.872				48.74°C	230.91V
2	6.502A	2.962A	2.960A	1.187A	109.438	89.296%	537	10.3	40.81°C	0.879
	12.079V	5.063V	3.346V	5.054V	122.557				49.95°C	230.70V
3	10.670A	3.459A	3.440A	1.389A	164.929	91.281%	537	10.3	41.23°C	0.926
	12.082V	5.061V	3.344V	5.043V	180.682				50.75°C	230.67V
4	14.789A	3.956A	3.949A	1.591A	219.758	92.006%	537	10.3	41.95°C	0.947
	12.073V	5.058V	3.342V	5.030V	238.853				52.39°C	230.64V
5	18.578A	4.947A	4.940A	1.794A	274.658	92.172%	537	10.3	42.13°C	0.959
	12.065V	5.056V	3.340V	5.018V	297.985				54.02°C	230.77V
6	22.376A	5.937A	5.934A	1.998A	329.562	92.111%	537	10.3	42.72°C	0.966
	12.055V	5.054V	3.338V	5.008V	357.786				55.25°C	230.73V
7	26.209A	6.931A	6.926A	2.204A	384.884	91.789%	710	16.6	43.06°C	0.971
	12.048V	5.051V	3.336V	4.993V	419.315				56.91°C	230.78V
8	30.055A	7.926A	7.921A	2.412A	440.217	91.463%	923	24.0	43.86°C	0.974
	12.038V	5.048V	3.333V	4.977V	481.304				58.24°C	230.73V
9	34.265A	8.426A	8.408A	2.416A	494.742	91.196%	1100	30.1	44.98°C	0.976
	12.030V	5.046V	3.331V	4.971V	542.504				59.74°C	230.70V
10	38.482A	8.925A	8.923A	2.520A	549.822	90.890%	1395	35.1	45.73°C	0.978
	12.021V	5.044V	3.329V	4.963V	604.929				61.26°C	230.54V
11	43.096A	8.928A	8.927A	2.523A	604.974	90.606%	1493	37.0	46.22°C	0.980
	12.014V	5.042V	3.327V	4.956V	667.697				62.63°C	230.63V
CL1	0.141A	12.002A	11.999A	0.000A	102.473	84.573%	545	10.9	42.69°C	0.877
	12.071V	5.052V	3.345V	5.068V	121.165				56.71°C	230.98V

CL2	45.838A	1.002A	1.002A	1.000A	564.891	91.870%	1182	31.1	44.21°C	0.979
	12.031V	5.051V	3.333V	5.013V	614.880				58.95°C	230.67V

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	1.207A	0.491A	0.476A	0.196A	19.688	74.051%	537	10.3	0.848
	12.101V	5.069V	3.350V	5.096V	26.587				115.12V
2	2.440A	0.980A	0.984A	0.391A	39.768	82.933%	537	10.3	0.934
	12.097V	5.068V	3.349V	5.090V	47.952				115.12V
3	3.672A	1.475A	1.489A	0.591A	59.870	86.381%	537	10.3	0.961
	12.094V	5.066V	3.348V	5.081V	69.309				115.12V
4	4.895A	1.975A	1.969A	0.785A	79.767	88.150%	537	10.3	0.973
	12.092V	5.065V	3.347V	5.074V	90.490				115.11V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	PF/AC □□
1	1.197A	0.493A	0.477A	0.196A	19.569	69.426%	537	10.3	0.463
	12.091V	5.069V	3.350V	5.096V	28.187				230.93V
2	2.458A	0.987A	0.984A	0.393A	40.011	81.112%	537	10.3	0.653
	12.089V	5.067V	3.349V	5.088V	49.328				230.92V
3	3.650A	1.480A	1.463A	0.591A	59.512	85.629%	537	10.3	0.757
	12.086V	5.066V	3.348V	5.079V	69.500				230.91V
4	4.910A	1.974A	1.971A	0.789A	79.924	87.734%	537	10.3	0.824
	12.083V	5.065V	3.347V	5.071V	91.098				230.89V

The results above are not used in the certification process

□□□□

115V

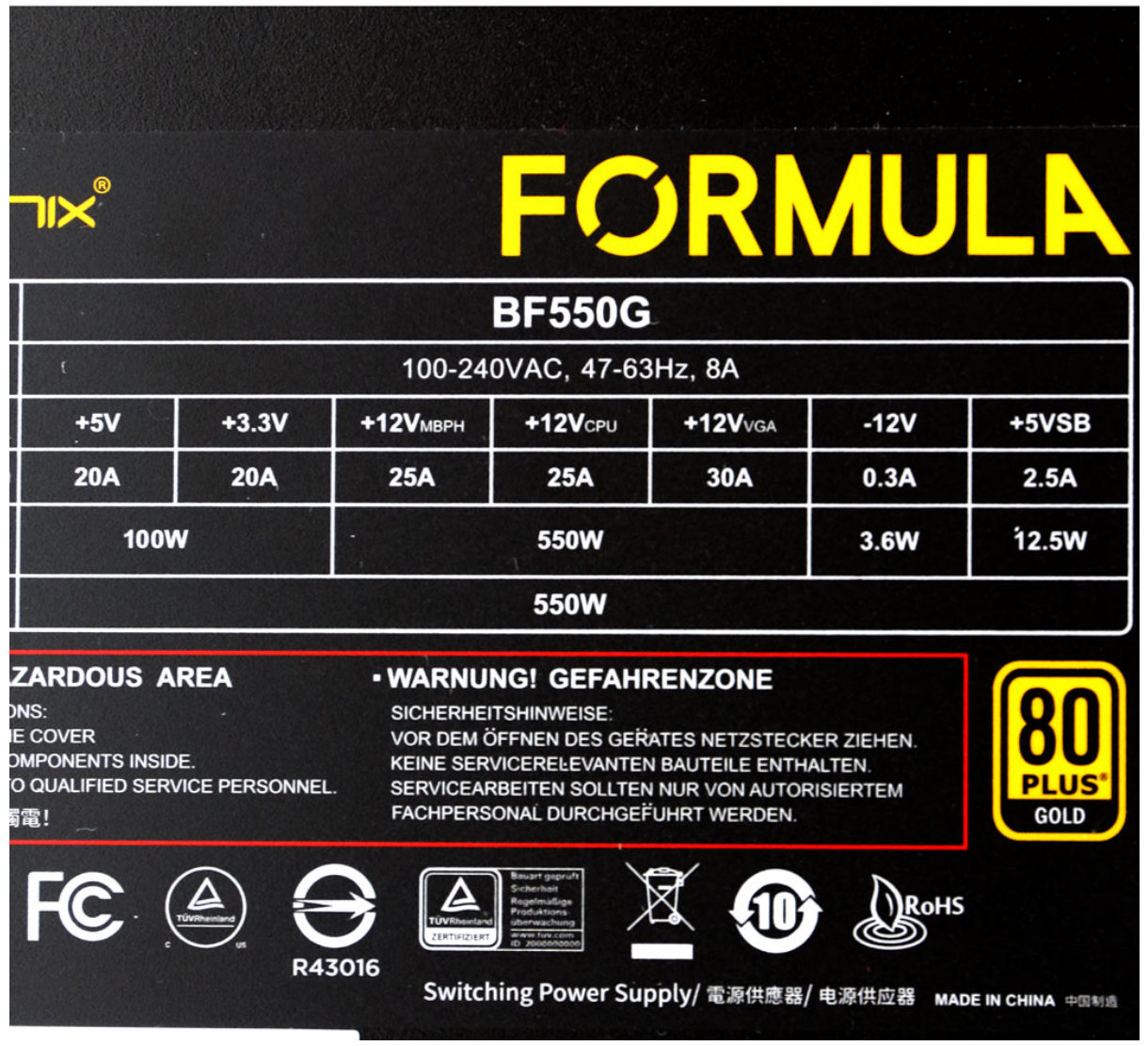
Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	13.3 mV	5.4 mV	4.4 mV	11.5 mV	Pass
20% Load	20.2 mV	6.3 mV	5.0 mV	11.9 mV	Pass
30% Load	22.2 mV	7.0 mV	5.8 mV	13.6 mV	Pass
40% Load	22.6 mV	7.8 mV	7.9 mV	12.5 mV	Pass
50% Load	23.7 mV	9.0 mV	10.4 mV	13.0 mV	Pass
60% Load	24.9 mV	9.9 mV	8.4 mV	14.0 mV	Pass
70% Load	26.9 mV	11.4 mV	10.5 mV	25.0 mV	Pass
80% Load	28.8 mV	12.6 mV	10.7 mV	18.5 mV	Pass
90% Load	30.5 mV	13.9 mV	11.0 mV	19.4 mV	Pass
100% Load	31.4 mV	17.8 mV	17.2 mV	16.6 mV	Pass
110% Load	32.2 mV	16.8 mV	18.7 mV	17.6 mV	Pass
Crossload 1	29.1 mV	12.1 mV	8.9 mV	8.2 mV	Pass
Crossload 2	23.3 mV	12.1 mV	17.7 mV	22.1 mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	4.5 mV	5.4 mV	4.6 mV	10.3 mV	Pass
20% Load	6.1 mV	6.4 mV	6.1 mV	12.6 mV	Pass
30% Load	29.6 mV	7.6 mV	7.4 mV	11.3 mV	Pass
40% Load	24.1 mV	11.0 mV	11.1 mV	11.7 mV	Pass
50% Load	22.9 mV	9.8 mV	9.4 mV	12.8 mV	Pass
60% Load	23.2 mV	11.1 mV	11.2 mV	13.4 mV	Pass
70% Load	22.5 mV	12.4 mV	12.0 mV	23.8 mV	Pass
80% Load	22.9 mV	14.0 mV	12.3 mV	17.2 mV	Pass





Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	23.9 mV	15.7 mV	13.1 mV	18.5 mV	Pass
100% Load	24.9 mV	17.7 mV	18.1 mV	14.4 mV	Pass
110% Load	25.6 mV	17.8 mV	18.7 mV	14.8 mV	Pass
Crossload 1	8.3 mV	14.1 mV	12.5 mV	6.6 mV	Pass
Crossload 2	24.0 mV	12.0 mV	17.2 mV	14.8 mV	Pass

The results above are not used in the certification process

Bitfenix Formula Gold 550W (#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。
在任何情况下都应提供原始测试结果文档的网站链接

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