Anex

Bitfenix BF450G

Lab ID#: 255
Receipt Date: -
Test Date: -

Report:
Report Date: Dec 21, 2018

DUT INFORMATION

Brand	Bitfenix
Manufacturer (OEM)	Channel Well Technology
Series	Formula Gold Series
Model Number	BF450G
Serial Number	735Q00355
DUT Notes	Edited on 05/18/2018

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	7
Rated Frequency (Hz)	47-63
Rated Power (W)	450
Type	ATX12V
Cooling	120mm Rifle Bearing Fan (DF1202512SELN)
Semi-Passive Operation	✗
Cable Design	Fixed cables

POWER SPECIFICATIONS

Rail		3.3V	5V	12V1	12V2	12V3	5VSB	-12V
Max. Power	Amps	20	20	25	25	25	2.5	0.3
	Watts	100		450			12.5	3.6
Total Max. Power (W)		450						

CABLES AND CONNECTORS

Captive Cables

Description	Cable Count	Connector Count (Total)	Gauge
ATX connector 20+4 pin (660mm)	1	1	18-22AWG
4+4 pin EPS12V (670mm)	1	1	18AWG
6+2 pin PCIe (560mm+150mm)	1	2	18AWG
SATA (460mm+150mm+150mm)+4 pin Molex (+150mm)	2	6 / 2	18AWG

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Bitfenix BF450G

General Data	
Manufacturer (OEM)	CWT
Platform Model	GPS (Modified)
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x CAP004DG
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	1x GBU606 (600V, 6A @ 100°C)
APFC MOSFETS	2x Champion GP18S50G (500V, 28A @ 150°C, 0.19O)
APFC Boost Diode	1x STMicroelectronics STTH8R06FP (600V, 8A @ 130°C)
Hold-up Cap(s)	1x Nipon Chemi-Con (400V, 390uF, 2000h @ 105°C, KMR series)
Main Switchers	2x F-Cell SVF13N50F (500V, 10A @ 100°C, 0.52O)
APFC Controller	Champion CM6502S & CM03X Green PFC controller
LLC Resonant Controller	Champion CM6901
Topology	Primary side: Half-Bridge & LLC Resonant Converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	4x Inte ational Rectifier IRFH7004TRPBF (40 V, 164 A @ 100°C, 1.4Ohm)
5V & 3.3V	DC-DC Converters: 2x UBIQ QM3006D FETs (30 V, 57 A @ 100°C, 5.5Ohm) 2x UBIQ QM3004D FETs (30 V, 40 A @ 100°C, 8.5Ohm) PWM Controller: ANPEC APW7159C
Filtering Capacitors	Electrolytics: Chemi-Con (105°C, KY series, KZE series) Polymers: FPCAP (Japan)
Supervisor IC	Sytronix ST9S429-PG14 (OCP [2x 12V channels, OVP, UVP, PG), Weltrend WD7518D (OCP [2x 12V channels], SCP) & UTC LM393G
Fan Model	Martech DF1202512SEMN (120mm, 12V, 0.16A, 1630 RPM, Rifle Bearing)
5VSB Circuit	
Standby PWM Controller	TinySwitch-LT TNY177PN (18W Peak)

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Bitfenix BF450G

RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	90.582
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	0.000
Average Efficiency 5VSB	77.509
Standby Power Consumption (W) -115V	0.0455600
Standby Power Consumption (W) -230V	0.0704738
Average PF	0.934
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	10.30
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A++

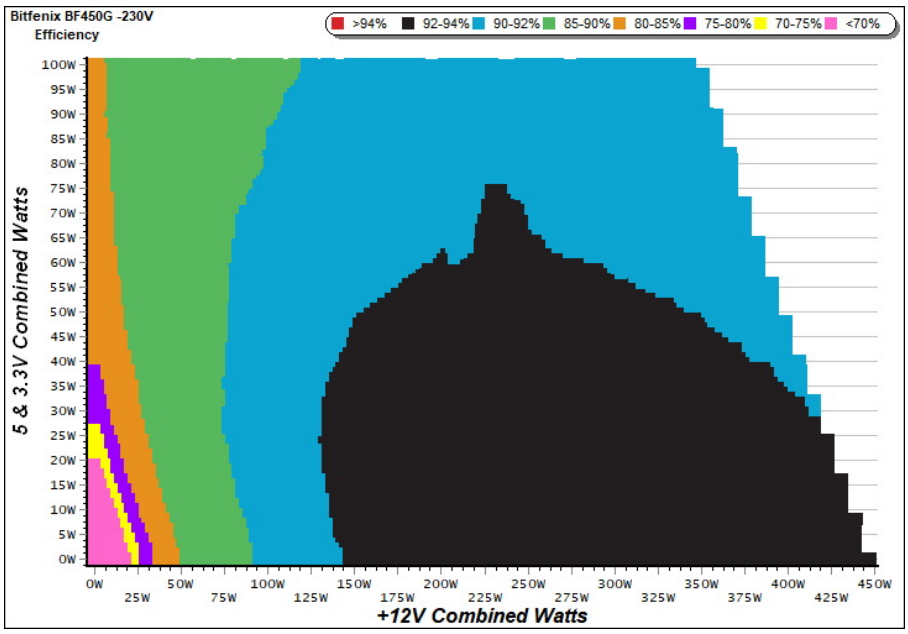
TEST EQUIPMENT		
Electronic Loads	Chroma 6314A x2 63123A x6 63102A 63101A	Chroma 63601-5 x2 Chroma 63600-2 63640-80-80 x10 63610-80-20
AC Sources	Chroma 6530, Chroma 61604	
Power Analyzers	N4L PPA1530, N4L PPA5530	
Oscilloscopes	Picoscope 4444 & 3424, Keysight DSOX3024A, Rigol DS2072A	
Voltmeter	Keithley 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	

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Bitfenix BF450G

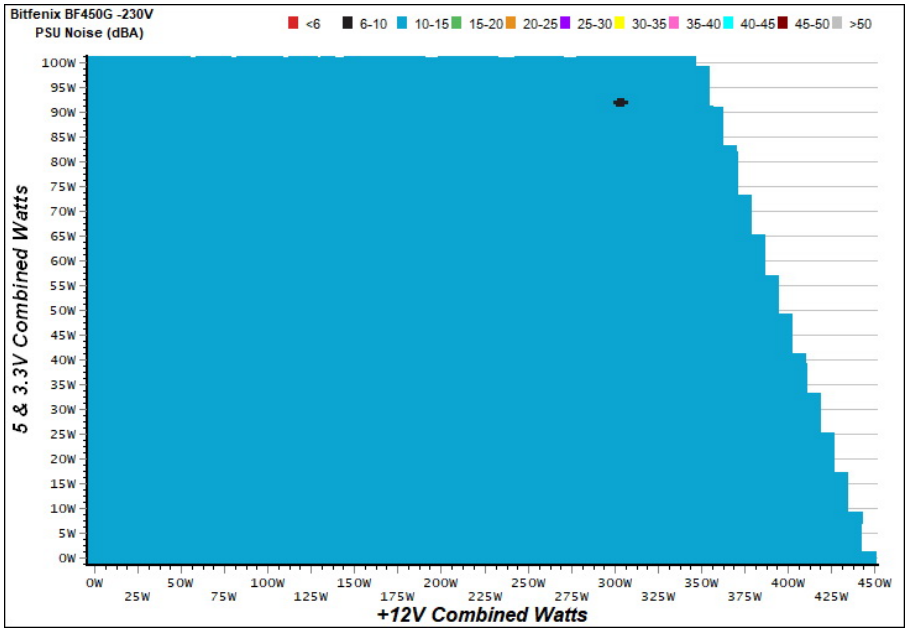
EFFICIENCY GRAPH



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

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Bitfenix BF450G

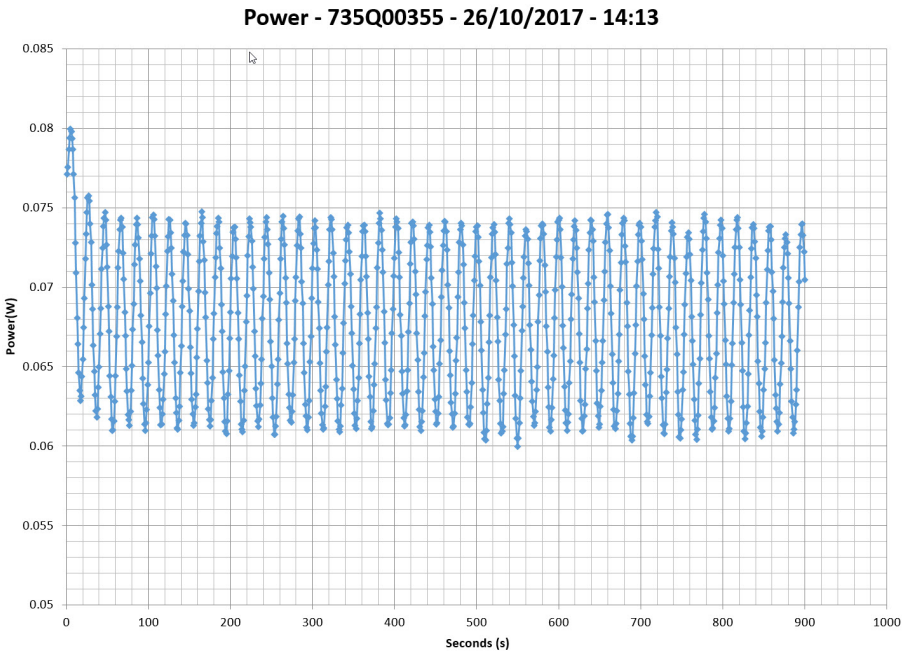
5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231	69.789%	0.025
	5.112V	0.331		115.39V
2	0.090A	0.461	75.081%	0.045
	5.112V	0.614		115.38V
3	0.550A	2.807	79.609%	0.224
	5.102V	3.526		115.37V
4	1.000A	5.091	77.571%	0.336
	5.090V	6.563		115.38V
5	1.500A	7.615	77.459%	0.404
	5.076V	9.831		115.37V
6	2.500A	12.625	75.140%	0.473
	5.050V	16.802		115.36V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231	62.772%	0.009
	5.112V	0.368		230.96V
2	0.090A	0.461	70.706%	0.017
	5.111V	0.652		230.96V
3	0.550A	2.806	77.450%	0.088
	5.100V	3.623		230.96V
4	1.000A	5.090	78.139%	0.151
	5.089V	6.514		230.95V
5	1.500A	7.614	78.189%	0.209
	5.076V	9.738		230.95V
6	2.500A	12.624	77.964%	0.293
	5.049V	16.192		230.94V

VAMPIRE POWER -230V



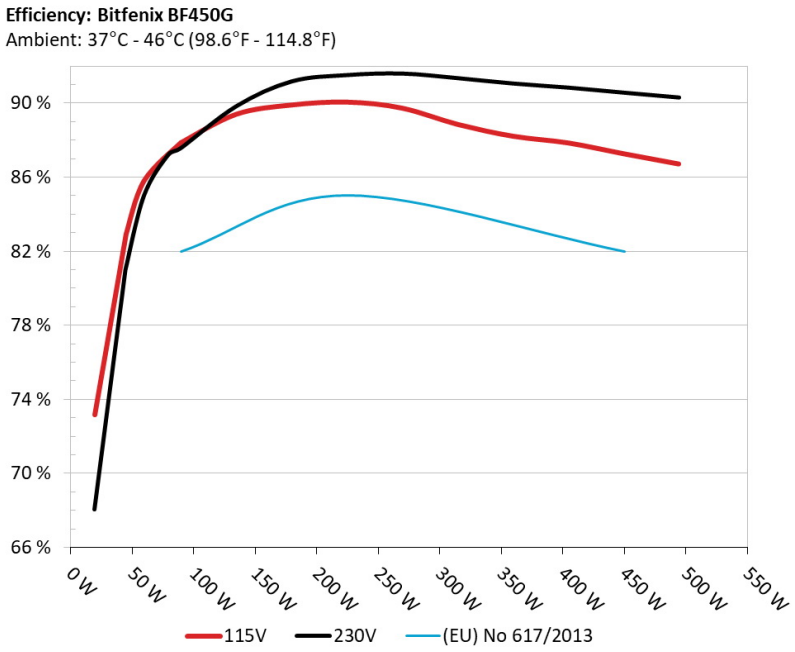
INFO

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

Anex

Bitfenix BF450G

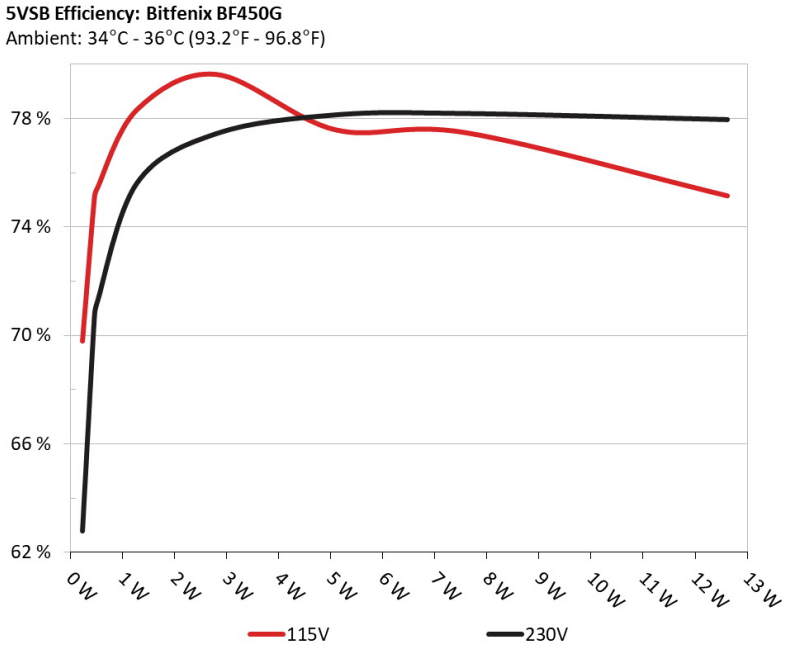
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Bitfenix BF450G

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	1.937A	1.984A	1.978A	0.985A	44.789	80.974%	537	10.3	38.07°C	0.733
	11.973V	5.043V	3.333V	5.075V	55.313				45.43°C	230.19V
2	4.925A	2.967A	2.969A	1.181A	89.765	87.581%	537	10.3	38.20°C	0.867
	11.967V	5.040V	3.332V	5.065V	102.494				45.94°C	230.20V
3	8.266A	3.478A	3.479A	1.384A	134.972	89.851%	537	10.3	38.37°C	0.917
	11.961V	5.038V	3.330V	5.054V	150.218				46.35°C	230.20V
4	11.587A	3.971A	3.963A	1.586A	179.816	91.191%	537	10.3	39.03°C	0.940
	11.964V	5.036V	3.329V	5.043V	197.186				48.24°C	230.20V
5	14.575A	4.969A	4.955A	1.786A	224.785	91.534%	537	10.3	39.47°C	0.953
	11.958V	5.035V	3.328V	5.033V	245.576				49.24°C	230.22V
6	17.569A	5.956A	5.950A	1.991A	269.730	91.613%	537	10.3	39.97°C	0.961
	11.951V	5.033V	3.326V	5.021V	294.424				50.28°C	230.22V
7	20.566A	6.959A	6.943A	2.195A	314.745	91.368%	712	16.6	41.35°C	0.967
	11.945V	5.031V	3.324V	5.009V	344.480				52.05°C	230.22V
8	23.565A	7.953A	7.943A	2.401A	359.735	91.077%	885	22.4	42.27°C	0.971
	11.939V	5.030V	3.323V	4.996V	394.980				53.17°C	230.22V
9	27.004A	8.457A	8.457A	2.401A	404.807	90.854%	1182	31.1	43.28°C	0.974
	11.932V	5.028V	3.321V	4.993V	445.556				54.45°C	230.24V
10	30.390A	8.959A	8.942A	2.505A	449.633	90.585%	1380	34.9	44.93°C	0.976
	11.926V	5.026V	3.320V	4.985V	496.368				56.34°C	230.24V
11	34.174A	8.958A	8.945A	2.506A	494.608	90.322%	1630	39.4	46.02°C	0.978
	11.922V	5.025V	3.319V	4.981V	547.608				57.75°C	230.25V
CL1	0.102A	12.012A	12.004A	0.004A	101.705	84.342%	545	10.9	43.39°C	0.892
	11.955V	5.034V	3.332V	5.082V	120.587				54.02°C	230.24V
CL2	37.481A	1.003A	1.002A	1.002A	460.799	91.706%	1317	33.9	44.09°C	0.977
	11.936V	5.032V	3.325V	5.037V	502.473				54.71°C	230.25V

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Bitfenix BF450G

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	1.221A	0.490A	0.477A	0.196A	19.687	68.053%	537	10.3	0.528
	11.978V	5.045V	3.335V	5.099V	28.929				230.16V
2	2.467A	0.989A	0.988A	0.391A	39.816	80.984%	537	10.3	0.698
	11.975V	5.043V	3.334V	5.092V	49.165				230.16V
3	3.715A	1.474A	1.498A	0.587A	59.887	85.017%	537	10.3	0.793
	11.972V	5.043V	3.333V	5.085V	70.441				230.17V
4	4.949A	1.984A	1.981A	0.786A	79.829	87.244%	537	10.3	0.848
	11.969V	5.042V	3.332V	5.077V	91.501				230.18V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	7.1 mV	6.5 mV	7.1 mV	11.1 mV	Pass
20% Load	8.3 mV	7.3 mV	7.9 mV	10.6 mV	Pass
30% Load	13.4 mV	7.6 mV	9.2 mV	13.9 mV	Pass
40% Load	36.6 mV	8.3 mV	9.9 mV	12.0 mV	Pass
50% Load	32.2 mV	9.2 mV	12.6 mV	12.4 mV	Pass
60% Load	31.9 mV	12.1 mV	15.1 mV	12.7 mV	Pass
70% Load	31.3 mV	9.2 mV	9.9 mV	13.5 mV	Pass
80% Load	31.0 mV	12.2 mV	14.2 mV	21.9 mV	Pass
90% Load	32.0 mV	15.2 mV	17.4 mV	22.1 mV	Pass
100% Load	34.0 mV	13.8 mV	14.5 mV	21.1 mV	Pass
110% Load	32.9 mV	13.1 mV	14.2 mV	24.4 mV	Pass
Crossload 1	19.7 mV	11.1 mV	11.3 mV	8.1 mV	Pass
Crossload 2	25.3 mV	10.7 mV	13.2 mV	15.1 mV	Pass

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus

Anex

Bitfenix BF450G

HOLD-UP TIME & POWER OK SIGNAL (230V)	
Hold-Up Time (ms)	18.0
AC Loss to PWR_OK Hold Up Time (ms)	15.7
PWR_OK Inactive to DC Loss Delay (ms)	2.3

Top side

Power specifications label

CERTIFICATIONS

CYBENETICS PLATINUM 230v

CYBENETICS A++ 230v

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

www.cybenetics.com -info@cybenetics.com
CYBENETICS LTD
Syrou 6, Latsia, 2231, Nicosia Cyprus