EFFICIENCY AND NOISE LEVEL CERTIFICATIONS

Anex

Chieftronic PowerPlay 1050W

Lab ID#: CT10501627
Receipt Date: Mar 9, 2020
Test Date: Mar 20, 2020

Report: 20PS1627A
Report Date: Mar 31, 2020

DUT INFORMATION

Brand	Chieftronic
Manufacturer (OEM)	Channel Well Technology
Series	PowerPlay
Model Number	GPU-1050FC
Serial Number	G190300026291
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	13
Rated Frequency (Hz)	47-63
Rated Power (W)	1050
Type	ATX12V
Cooling	140mm Sleeve Bearing Fan (HA1425L12F-Z)
Semi-Passive Operation	✓ (selectable)
Cable Design	Fully Modular

TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Keysight AC6804B
Power Analyzers	N4L PPA1530 x2
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2
Tachometer	UNI-T UT372 x2
Digital Multimeter	Keysight U1273AX, Fluke 289, Keithley 2015 - THD
UPS	CyberPower OLS3000E 3kVA x2
Transformer	3kVA x2

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RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

115V

Average Efficiency	89.659%
Efficiency With 10W (≤500W) or 2% (>500W)	60.492
Average Efficiency 5VSB	77.124%
Standby Power Consumption (W)	0.0431377
Average PF	0.993
Avg Noise Output	35.06 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard+

230V

Average Efficiency	91.473%
Average Efficiency 5VSB	77.010%
Standby Power Consumption (W)	0.0769939
Average PF	0.939
Avg Noise Output	35.19 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard+

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	22	22	83.33	3	0.3
	Watts	120		999.96	15	3.6
Total Max. Power (W)		1050				

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

Hold-Up Time (ms)	19.7
AC Loss to PWR_OK Hold Up Time (ms)	18.5
PWR_OK Inactive to DC Loss Delay (ms)	1.2

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CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (600mm)	1	1	16AWG	No
8 pin EPS12V (600mm) / 4+4 pin EPS12V (150mm)	1	1 / 1	16-18AWG	No
6+2 pin PCIe (600mm+150mm)	4	8	16-18AWG	No
SATA (800mm+150mm+150mm)	3	9	18AWG	No
4-pin Molex (700mm+150mm+150mm) / FDD (+150mm)	1	3 / 1	18-20AWG	No
AC Power Cord (1400mm) - C13 coupler	1	1	18AWG	-

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General Data	-
Manufacturer (OEM)	CWT
PCB Type	Double Sided
Primary Side	-
Transient Filter	6x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor (SCK-085) & Relay
Bridge Rectifier(s)	2x GBJ2506P (600V, 25A @ 100°C)
APFC MOSFETs	2x ISC TK25A60X5 (600V, 25A @ 25°C, 0.14Ohm), 1x Sync Power SPN5003 FET (for reduced no-load consumption)
APFC Boost Diode	2x ON Semiconductor FFSP0665A (650V, 6A @ 153°C)
Hold-up Cap(s)	2x Nichicon (400V, 680uF & 560uF each or 1,240uF combined, 2,000h @ 105°C, GG)
Main Switchers	4x (550V, 15A @ 100°C, 0.14Ohm)
IC Drivers	2x Silicon Labs Si8233BD
Digital Controllers	2x Texas Instruments UCD3138A
Topology	Primary side: Semi-Digital, Interleaved PFC, Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	-
+12V MOSFETs	8x Infineon BSC014N06NS (60V, 100A @ 100°C, 1.45mOhm)
5V & 3.3V	DC-DC Converters: 4x UBIQ QM3006D (30V, 57A @ 100°C, 5.5mOhm)
Filtering Capacitors	Electrolytic: 4x Nichicon (2-5,000h @ 105°C, HD), 1x Nichicon (4-10,000h @ 105°C, HE), 8x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 1x Nippon Chemi-Con(4-10,000h @ 105°C, KYA), 1x Rubycon (3-6,000 @ 105°C, YXG) Polymer: 5x Elite, 5x APAQ, 19x Su'scon, 8x NIC
Supervisor IC	Weltrend WT7502 (OVP, UVP, SCP, PG)
Fan Model	Hong Hua HA1425L12F-Z (140mm, 12V, 0.22A, Sleeve Bearing Fan)
5VSB Circuit	-
Rectifier	UTC 4N65L (650V, 4A, 2.5Ohm) & PS1045L SBR (45V, 10A)
Standby PWM Controller	On-Bright OB5282

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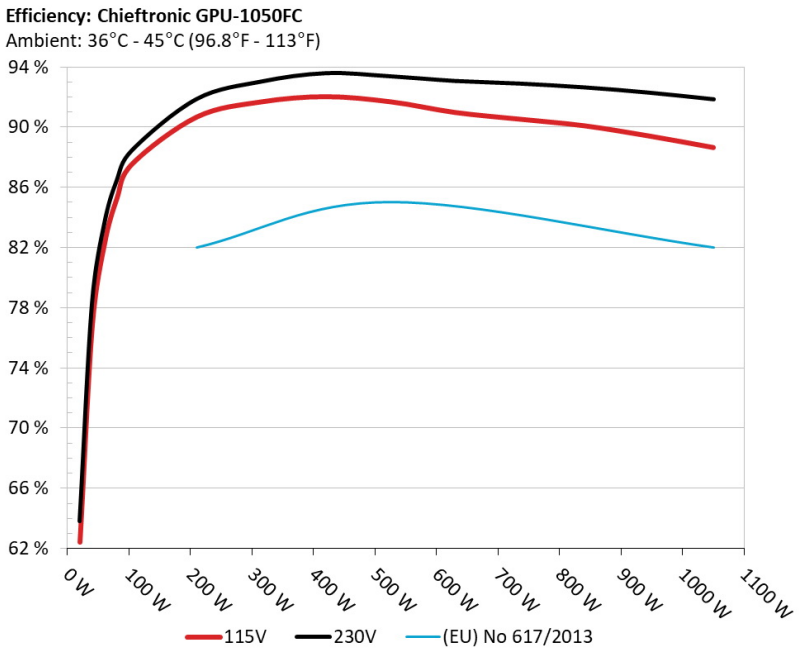
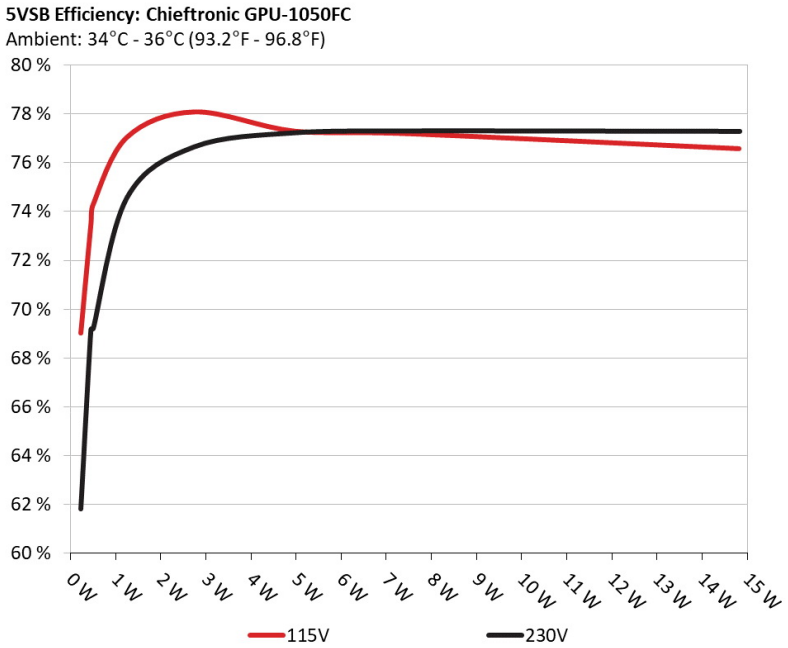
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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	0.045A	0.225	69.018%	0.027
	4.992V	0.326		115.16V
2	0.090A	0.449	73.486%	0.050
	4.991V	0.611		115.16V
3	0.550A	2.742	78.075%	0.236
	4.984V	3.512		115.16V
4	1.000A	4.977	77.283%	0.342
	4.976V	6.440		115.16V
5	1.500A	7.453	77.185%	0.405
	4.968V	9.656		115.15V
6	3.001A	14.824	76.570%	0.483
	4.940V	19.360		115.15V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.225	61.813%	0.009
	4.995V	0.364		230.19V
2	0.090A	0.449	69.183%	0.016
	4.993V	0.649		230.22V
3	0.550A	2.741	76.671%	0.085
	4.984V	3.575		230.20V
4	1.000A	4.977	77.247%	0.145
	4.976V	6.443		230.20V
5	1.500A	7.453	77.321%	0.202
	4.968V	9.639		230.20V
6	3.001A	14.826	77.303%	0.315
	4.941V	19.179		230.20V

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115V

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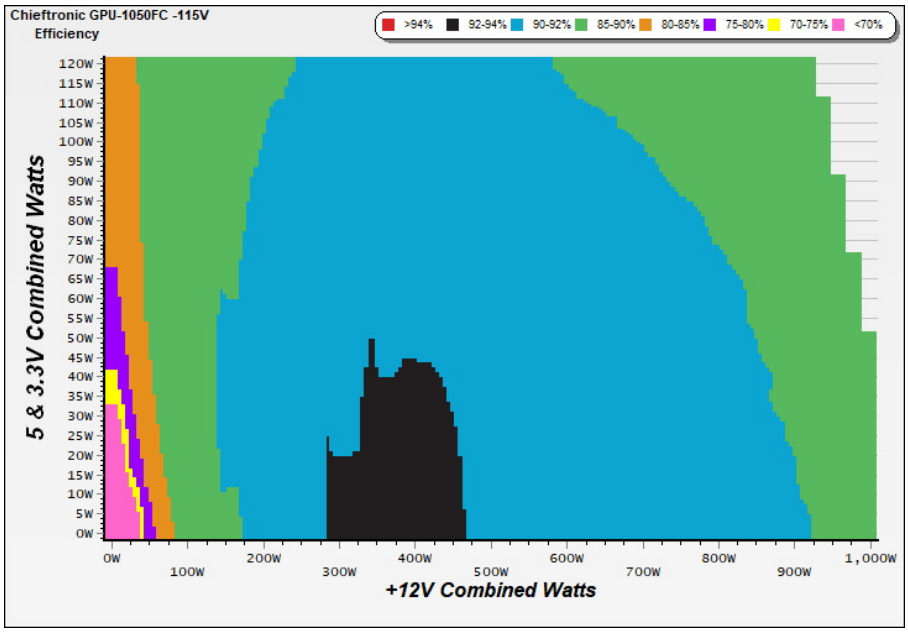
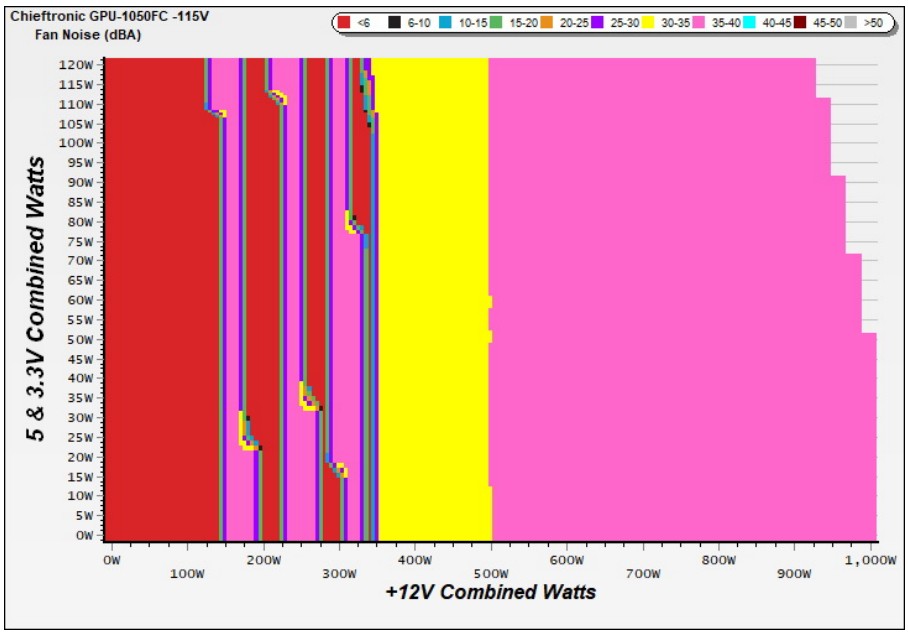
EFFICIENCY GRAPH 115V



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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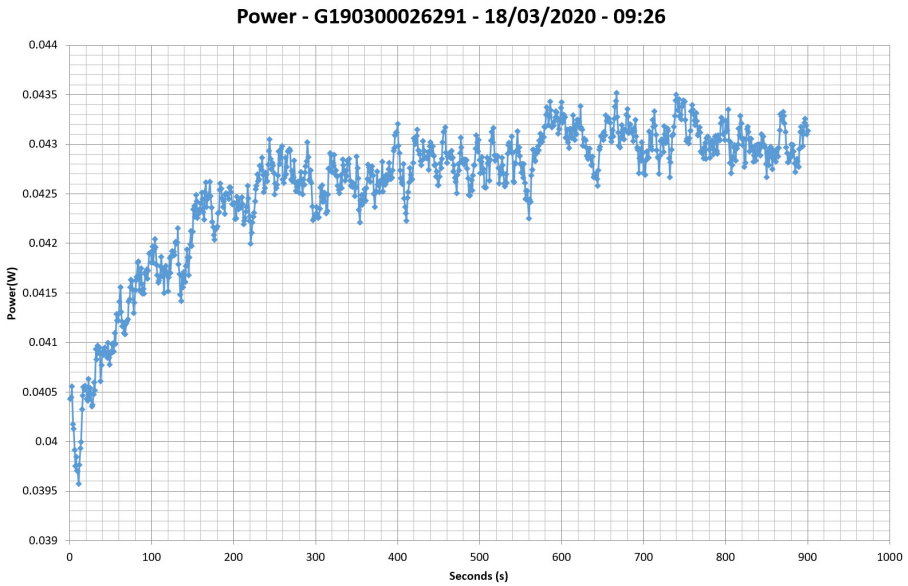
Chieftronic PowerPlay 1050W

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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Chieftronic PowerPlay 1050W

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	6.954A	1.968A	2.001A	0.988A	105.042	87.569%	0	<6.0	42.88°C	0.978
	11.999V	5.080V	3.299V	5.063V	119.953				39.03°C	115.12V
2	14.937A	2.956A	3.003A	1.187A	210.043	90.686%	1396	37.1	40.26°C	0.993
	11.993V	5.076V	3.296V	5.056V	231.615				44.59°C	115.11V
3	23.271A	3.452A	3.508A	1.387A	315.061	91.688%	1399	37.2	41.10°C	0.996
	11.989V	5.073V	3.293V	5.048V	343.622				45.84°C	115.09V
4	31.582A	3.946A	4.010A	1.587A	419.741	92.033%	1403	37.3	41.99°C	0.997
	11.986V	5.069V	3.291V	5.041V	456.078				47.39°C	115.15V
5	39.573A	4.936A	5.020A	1.788A	525.073	91.694%	1407	37.4	42.30°C	0.997
	11.992V	5.066V	3.288V	5.035V	572.637				48.76°C	115.15V
6	47.484A	5.928A	6.028A	1.990A	629.623	90.986%	1411	37.4	42.69°C	0.997
	12.000V	5.062V	3.285V	5.028V	691.999				49.90°C	115.13V
7	55.501A	6.922A	7.043A	2.191A	734.973	90.539%	1414	37.5	43.14°C	0.998
	11.997V	5.058V	3.282V	5.021V	811.772				51.34°C	115.17V
8	63.533A	7.916A	8.053A	2.394A	840.313	90.099%	1415	37.5	43.96°C	0.999
	11.992V	5.055V	3.279V	5.014V	932.654				52.76°C	115.17V
9	71.982A	8.415A	8.546A	2.395A	945.218	89.423%	1416	37.5	44.41°C	0.999
	11.985V	5.052V	3.276V	5.012V	1057.021				53.84°C	115.18V
10	80.174A	8.916A	9.073A	3.003A	1050.040	88.654%	1421	37.5	45.29°C	0.999
	11.978V	5.048V	3.274V	4.996V	1184.422				55.50°C	115.15V
CL1	0.118A	14.001A	14.000A	0.000A	118.363	81.299%	1397	37.1	42.57°C	0.983
	11.995V	5.073V	3.280V	5.091V	145.589				48.57°C	115.15V
CL2	83.370A	1.000A	1.001A	1.000A	1012.490	89.649%	1415	37.5	45.38°C	0.999
	11.984V	5.055V	3.287V	5.039V	1129.397				55.75°C	115.19V

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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	1.236A	0.491A	0.499A	0.197A	19.989	62.425%	0	<6.0	0.803
	12.009V	5.084V	3.303V	5.082V	32.021				115.12V
2	2.473A	0.983A	1.000A	0.394A	39.979	76.813%	0	<6.0	0.918
	12.002V	5.083V	3.301V	5.077V	52.047				115.13V
3	3.713A	1.476A	1.499A	0.592A	60.009	82.277%	0	<6.0	0.952
	12.001V	5.082V	3.300V	5.072V	72.935				115.12V
4	4.947A	1.968A	2.000A	0.789A	79.959	85.262%	0	<6.0	0.968
	12.000V	5.081V	3.299V	5.068V	93.780				115.12V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	7.90mV	4.70mV	11.00mV	4.10mV	Pass
20% Load	14.10mV	5.00mV	11.30mV	4.80mV	Pass
30% Load	9.90mV	5.40mV	11.60mV	5.50mV	Pass
40% Load	12.00mV	6.30mV	11.70mV	6.20mV	Pass
50% Load	10.50mV	7.50mV	13.80mV	6.90mV	Pass
60% Load	10.60mV	9.10mV	12.70mV	7.40mV	Pass
70% Load	11.70mV	10.50mV	13.20mV	8.10mV	Pass
80% Load	14.70mV	10.50mV	19.20mV	10.20mV	Pass
90% Load	15.70mV	10.20mV	17.70mV	11.30mV	Pass
100% Load	21.70mV	13.30mV	18.30mV	11.70mV	Pass
110% Load	0.00mV	0.00mV	0.00mV	0.00mV	Pass
Crossload1	12.80mV	6.00mV	17.70mV	5.30mV	Pass
Crossload2	21.60mV	12.90mV	15.50mV	10.80mV	Pass

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230V

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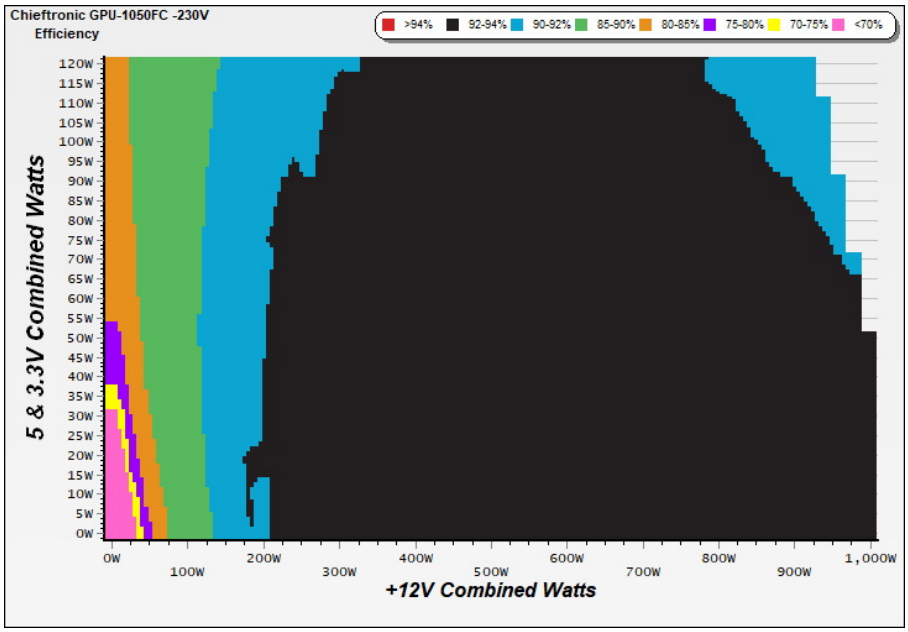
EFFICIENCY GRAPH 230V



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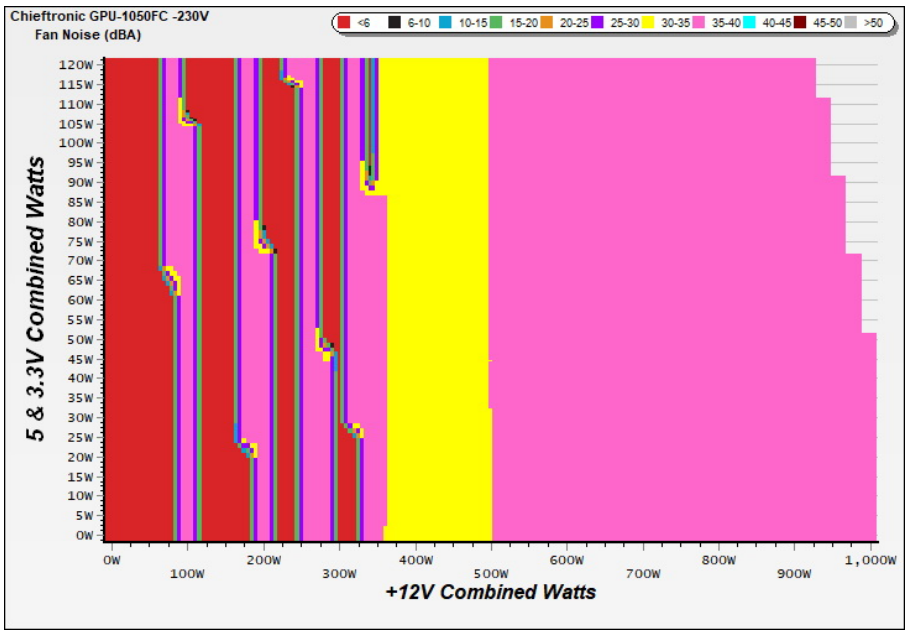
NOISE GRAPH 230V



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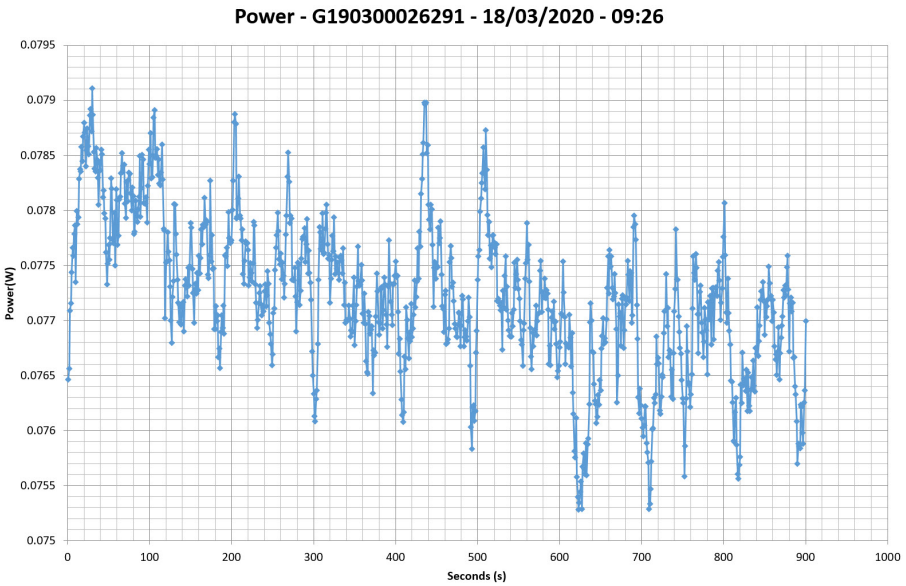
VAMPIRE POWER -230V



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Chieftronic PowerPlay 1050W

10-110% LOAD TESTS 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	6.952A	1.970A	2.001A	0.988A	105.027	88.451%	0	<6.0	44.10°C	0.798
	11.999V	5.080V	3.299V	5.062V	118.740				40.03°C	230.26V
2	14.935A	2.955A	3.006A	1.187A	210.023	91.858%	1394	37.1	40.35°C	0.891
	11.993V	5.076V	3.296V	5.055V	228.640				45.06°C	230.27V
3	23.262A	3.450A	3.508A	1.387A	315.036	93.016%	1399	37.2	41.10°C	0.938
	11.993V	5.073V	3.293V	5.048V	338.690				46.38°C	230.28V
4	31.570A	3.946A	4.011A	1.587A	419.663	93.575%	1402	37.3	41.84°C	0.953
	11.988V	5.069V	3.291V	5.041V	448.476				47.72°C	230.25V
5	39.555A	4.936A	5.018A	1.788A	525.008	93.369%	1403	37.3	42.69°C	0.969
	11.996V	5.066V	3.288V	5.035V	562.295				49.22°C	230.32V
6	47.479A	5.927A	6.031A	1.989A	629.563	93.059%	1411	37.4	43.26°C	0.976
	12.000V	5.062V	3.285V	5.028V	676.519				50.83°C	230.25V
7	55.494A	6.921A	7.038A	2.191A	734.930	92.883%	1412	37.4	43.49°C	0.985
	11.998V	5.059V	3.282V	5.021V	791.245				51.48°C	230.27V
8	63.531A	7.916A	8.051A	2.394A	840.284	92.630%	1419	37.5	43.61°C	0.986
	11.992V	5.055V	3.279V	5.015V	907.141				52.69°C	230.28V
9	71.966A	8.416A	8.548A	2.395A	945.173	92.280%	1418	37.5	44.87°C	0.987
	11.987V	5.051V	3.276V	5.012V	1024.247				55.22°C	230.29V
10	80.158A	8.916A	9.076A	3.003A	1050.009	91.840%	1418	37.5	45.43°C	0.989
	11.980V	5.048V	3.273V	4.996V	1143.306				56.96°C	230.31V
CL1	0.116A	14.002A	14.002A	0.000A	118.351	82.289%	1400	37.3	42.15°C	0.819
	11.995V	5.073V	3.280V	5.091V	143.823				49.45°C	230.31V
CL2	83.349A	1.001A	0.999A	1.000A	1012.401	92.538%	1413	37.5	45.63°C	0.988
	11.986V	5.054V	3.286V	5.038V	1094.038				56.35°C	230.30V

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20-80W LOAD TESTS 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.235A	0.491A	0.499A	0.197A	19.983	63.807%	0	<6.0	0.448
	12.014V	5.084V	3.302V	5.081V	31.318				230.23V
2	2.472A	0.983A	0.998A	0.394A	39.972	78.232%	0	<6.0	0.554
	12.007V	5.083V	3.301V	5.077V	51.094				230.23V
3	3.712A	1.475A	1.498A	0.592A	60.004	83.565%	0	<6.0	0.622
	12.005V	5.082V	3.300V	5.072V	71.805				230.25V
4	4.945A	1.968A	2.001A	0.790A	79.955	86.414%	0	<6.0	0.670
	12.002V	5.081V	3.299V	5.067V	92.525				230.27V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	9.70mV	4.60mV	11.40mV	4.90mV	Pass
20% Load	22.90mV	5.60mV	11.20mV	5.50mV	Pass
30% Load	9.70mV	5.60mV	11.60mV	6.00mV	Pass
40% Load	11.70mV	6.10mV	11.70mV	7.10mV	Pass
50% Load	10.20mV	6.70mV	11.80mV	7.30mV	Pass
60% Load	10.80mV	7.40mV	12.20mV	7.80mV	Pass
70% Load	12.20mV	8.80mV	14.80mV	9.10mV	Pass
80% Load	13.90mV	9.50mV	19.20mV	10.50mV	Pass
90% Load	15.90mV	10.00mV	16.80mV	10.70mV	Pass
100% Load	23.30mV	10.80mV	17.70mV	12.20mV	Pass
110% Load	0.00mV	0.00mV	0.00mV	0.00mV	Pass
Crossload1	16.10mV	6.50mV	17.10mV	5.70mV	Pass
Crossload2	20.20mV	9.50mV	14.30mV	11.10mV	Pass

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CYBENETICS LTD
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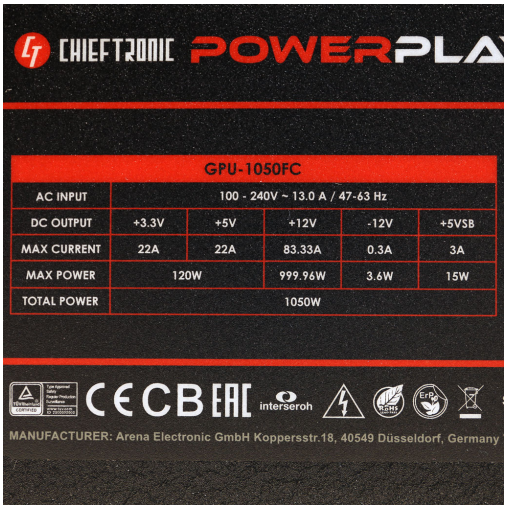
Anex

Chieftronic PowerPlay 1050W

Top side



Power specifications label

CERTIFICATIONS 115V

CYBENETICS PLATINUM

CYBENETICS STANDARD+

CERTIFICATIONS 230V

CYBENETICS PLATINUM 230v

CYBENETICS STANDARD+ 230v

Aristeidis Bitziopoulos
Lab Director