EFFICIENCY AND NOISE REPORT IN ACCORDANCE WITH
CYBENETICS ETA AND CYBENETICS LAMBDA PROCEDURE

Chieftronic PowerPlay 750W

Lab ID#: CT75001671
Receipt Date: Jun 25, 2020
Test Date: Jun 30, 2020

Report: 20PS1671A
Report Date: Jul 2, 2020

DUT INFORMATION

Brand	Chieftronic
Manufacturer (OEM)	Channel Well Technology
Series	PowerPlay
Model Number	GPU-750FC
Serial Number	G190300027211
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10
Rated Frequency (Hz)	47-63
Rated Power (W)	750
Type	ATX12V
Cooling	140mm Double Ball-Bearing Fan [D14BM-12 (L-SSS)]
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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Chieftronic PowerPlay 750W

RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6 (+-2°C / +- 3.6°F)
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

115V

Average Efficiency	89.319%
Efficiency With 10W (≤500W) or 2% (>500W)	69.150
Average Efficiency 5VSB	77.971%
Standby Power Consumption (W)	0.0492703
Average PF	0.978
Avg Noise Output	29.16 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A-

230V

Average Efficiency	90.759%
Average Efficiency 5VSB	77.138%
Standby Power Consumption (W)	0.0729258
Average PF	0.933
Avg Noise Output	28.84 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	A-

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	22	22	62.5	3	0.3
	Watts	120		750	15	3.6
Total Max. Power (W)		750				

CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (550mm)	1	1	18AWG	No
4+4 pin EPS12V (700mm)	1	1	16AWG	No
6+2 pin PCIe (600mm+150mm)	2	4	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 (1380mm) - C13 coupler	1	1	18AWG	-

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General Data	-
Manufacturer (OEM)	CWT
PCB Type	Double Sided
Primary Side	-
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x Discharge IC CAP004DG
Inrush Protection	NTC Thermistor (SCK-055) & Relay
Bridge Rectifier(s)	1x SECOS GBU1510 (1000V, 15A @ 100°C)
APFC MOSFETs	2x Great Power GP28S506 (500V, 28A @ 150°C, Rds(on): 0.125Ohm)
APFC Boost Diode	1x Infineon IDH06G65C6 (650V, 6A @ 145°C)
Bulk Cap(s)	1x Nichichon (400V, 470uF, 2,000h @ 105°C, GG) & 1x Nichichon (400V, 390uF, 2,000h @ 105°C, GG)
Main Switchers	2x Champion CMS6024 (550V, 11.4A @ 100°C, Rds(on): 0.28Ohm)
APFC Controller	Champion CM6502UHHX & Champion CM03X
Resonant Controller	Champion CM6901X
Topology	Primary side: APFC, Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	-
+12V MOSFETs	6x Infineon BSC014N04LS (40V, 125A @ 100°C, Rds(on): 1.4mOhm)
5V & 3.3V	DC-DC Converters: 4x UBIQ QM3016D (30V, 68A @ 100°C, Rds(on): 4mOhm) PWM Controllers: ANPEC APW7159
Filtering Capacitors	Electrolytic: 6x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 2x Nippon Chemi-Con (5-6,000h @ 105°C, KZH), 1x Nippon Chemi-Con (1-2,000h @ 105°C, KMG), 9x Nichicon (4-10,000h @ 105°C, HE) Polymer: 27x FPCAP
Supervisor IC	Sitronix ST9S429-PG14 (OCP, OVP, UVP, SCP, PG)
Fan Model	Yate Loon D14BM-12 (140mm, 12V, 0.70A, Double Ball Bearing Fan)
5VSB Circuit	-
Rectifier	1x UTC 4N65L (650V, 4A, Rds(on): 2.5Ohm) FET & 1x HY S10P45U (45V, 10A @ 110°C) SBR
Standby PWM Controller	On-Bright OB5269

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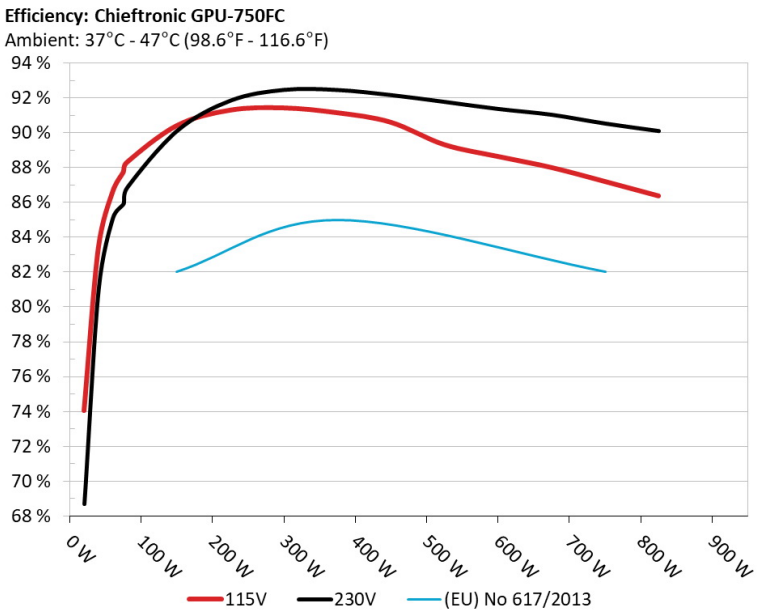
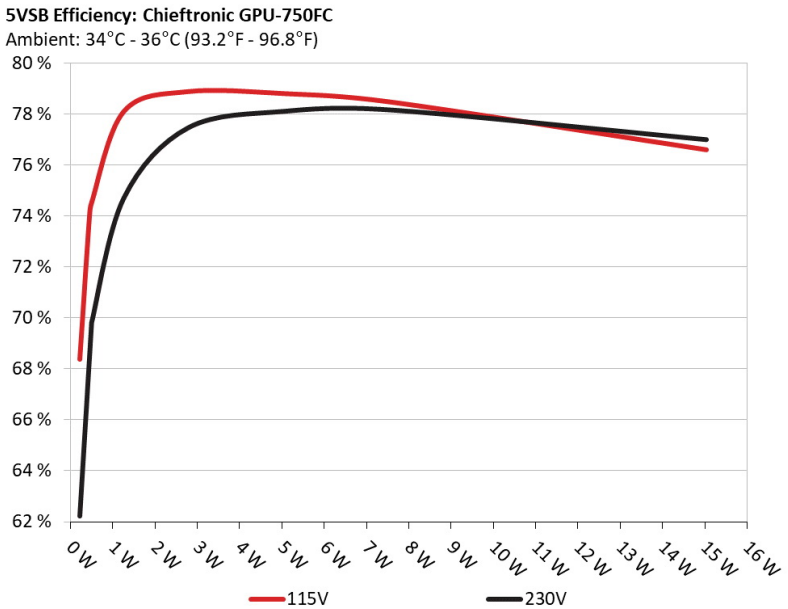
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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	0.229	68.358%	0.034
	5.084V	0.335		115.14V
2	0.090A	0.458	73.990%	0.062
	5.083V	0.619		115.14V
3	0.550A	2.791	78.886%	0.270
	5.073V	3.538		115.14V
4	1.000A	5.061	78.807%	0.367
	5.061V	6.422		115.14V
5	1.500A	7.576	78.475%	0.421
	5.050V	9.654		115.14V
6	3.000A	15.037	76.598%	0.489
	5.012V	19.631		115.14V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.229	62.228%	0.011
	5.083V	0.368		230.27V
2	0.090A	0.458	69.817%	0.020
	5.082V	0.656		230.26V
3	0.550A	2.790	77.457%	0.103
	5.071V	3.602		230.28V
4	1.000A	5.062	78.105%	0.171
	5.061V	6.481		230.27V
5	1.500A	7.572	78.159%	0.230
	5.047V	9.688		230.27V
6	3.000A	15.043	76.994%	0.338
	5.014V	19.538		230.28V

115V

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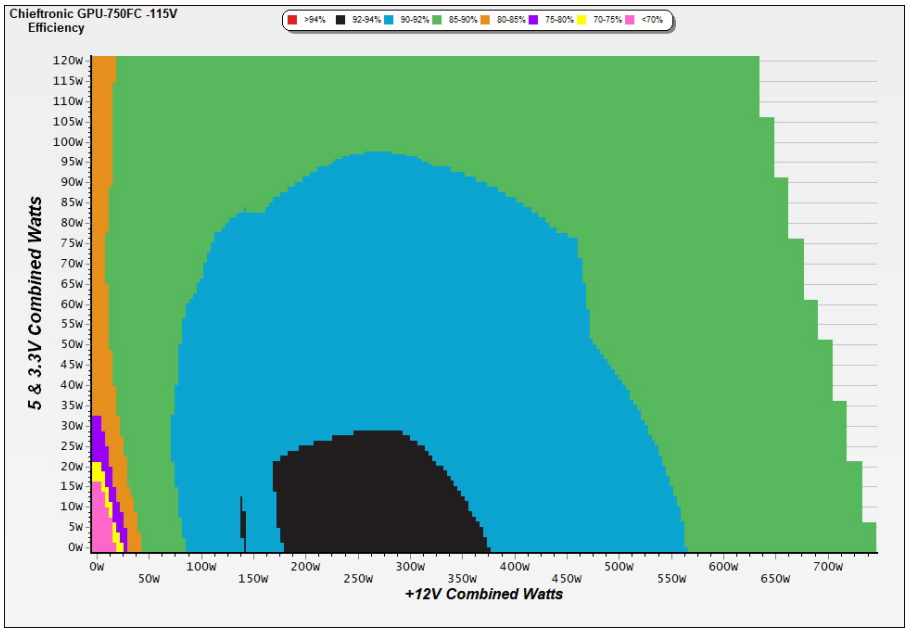
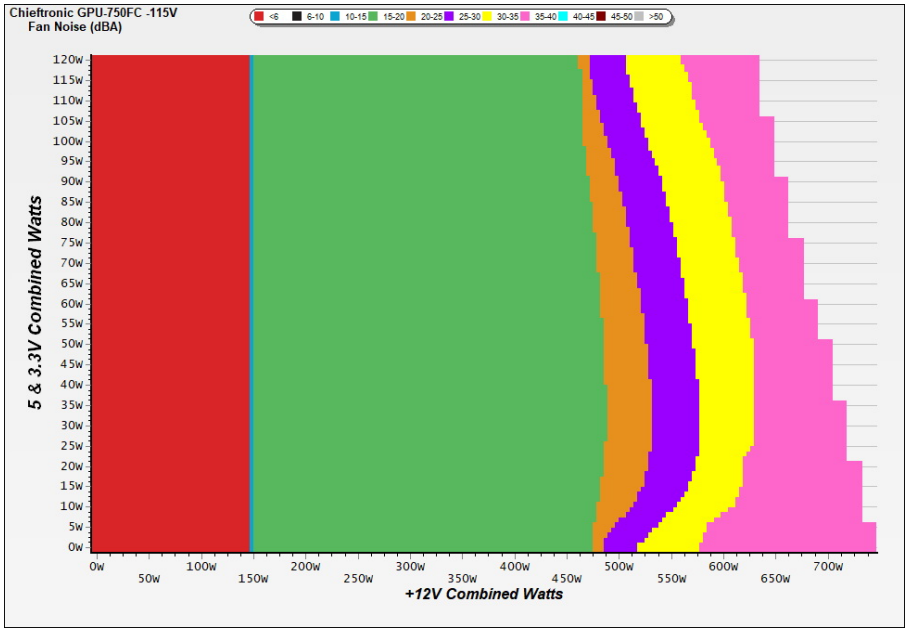
EFFICIENCY GRAPH 115V



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 (+-2 °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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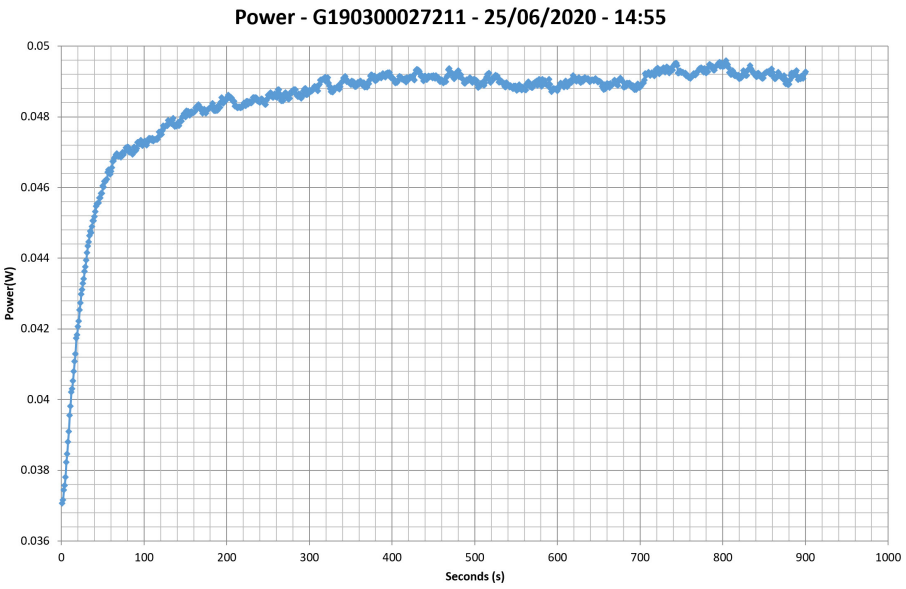
VAMPIRE POWER -115V



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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COMMISSION REGULATION (EU) NO 617/2013 TESTING 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	4.432A	1.983A	1.992A	0.990A	74.973	87.745%	0	<6.0	44.37°C	0.965
	12.043V	5.042V	3.312V	5.053V	85.444				40.03°C	115.14V
2	9.903A	2.980A	2.994A	1.190A	150.059	90.421%	694	16.7	40.92°C	0.980
	12.032V	5.035V	3.306V	5.045V	165.955				45.86°C	115.14V
5	27.015A	4.987A	5.016A	1.792A	374.700	91.158%	697	16.8	42.17°C	0.979
	12.000V	5.016V	3.290V	5.024V	411.046				49.36°C	115.13V
10	55.280A	9.023A	9.104A	3.014A	750.008	87.214%	1382	37.1	45.94°C	0.987
	11.944V	4.991V	3.263V	4.978V	859.963				57.71°C	115.12V

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230V

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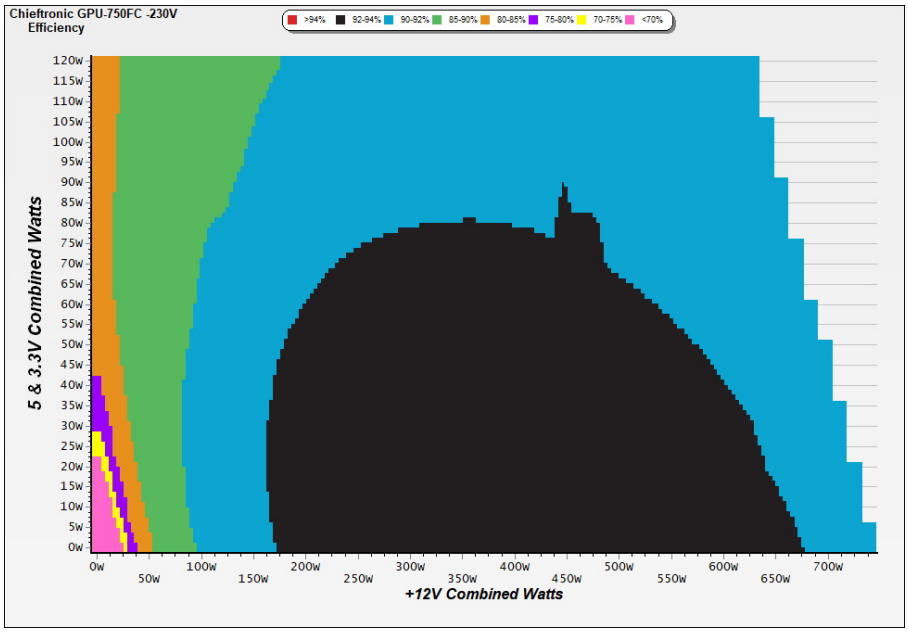
EFFICIENCY GRAPH 230V



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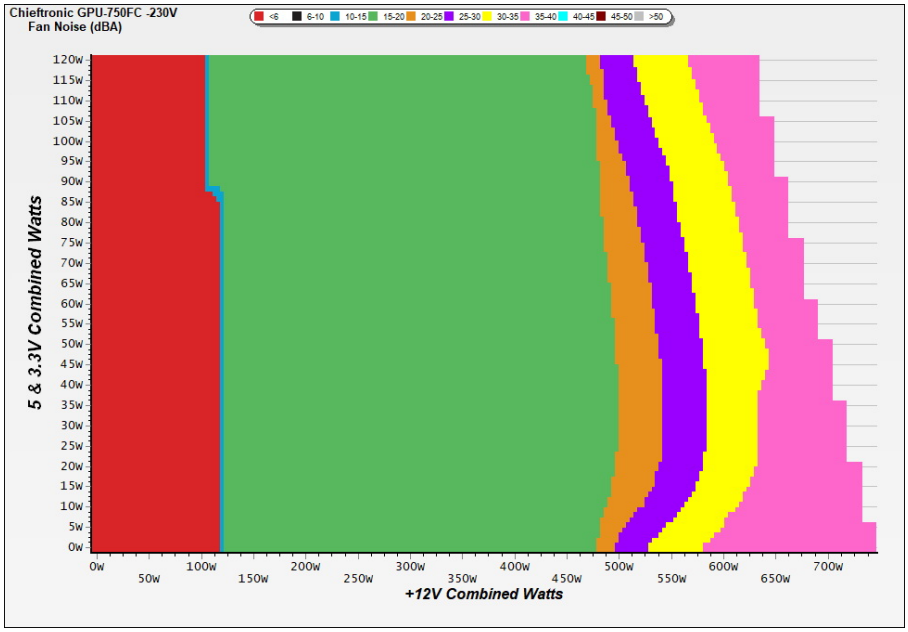
NOISE GRAPH 230V



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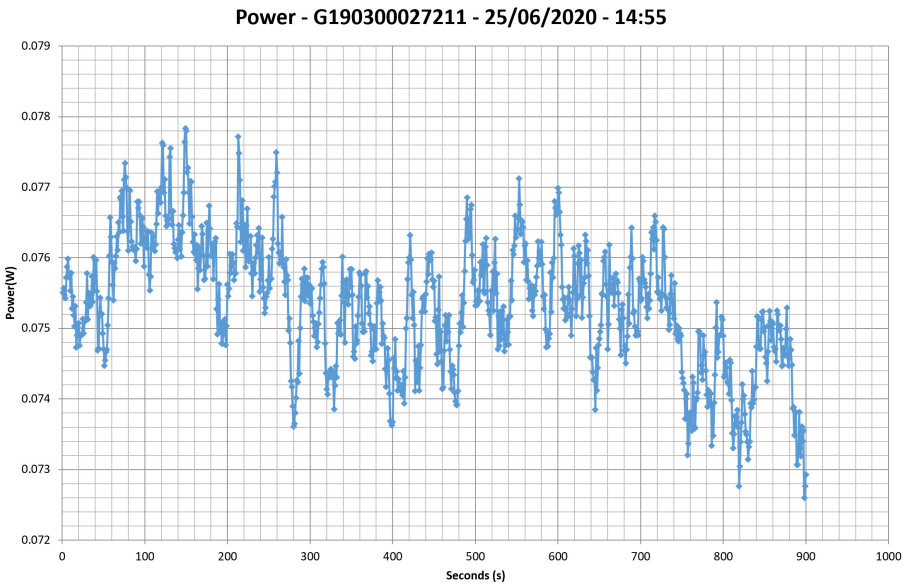
VAMPIRE POWER -230V



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COMMISSION REGULATION (EU) NO 617/2013 TESTING 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	4.435A	1.986A	1.995A	0.990A	74.979	85.943%	698	16.8	40.30°C	0.803
	12.034V	5.037V	3.310V	5.053V	87.243				44.80°C	230.29V
2	9.912A	2.983A	2.997A	1.190A	150.076	90.132%	699	16.8	40.75°C	0.901
	12.023V	5.029V	3.303V	5.045V	166.507				46.37°C	230.29V
5	27.024A	4.988A	5.019A	1.793A	374.777	92.473%	707	17.1	42.52°C	0.954
	11.999V	5.014V	3.288V	5.022V	405.282				51.32°C	230.29V
10	55.298A	9.033A	9.118A	3.016A	750.057	90.547%	1386	37.2	45.48°C	0.966
	11.941V	4.985V	3.258V	4.976V	828.362				57.52°C	230.29V

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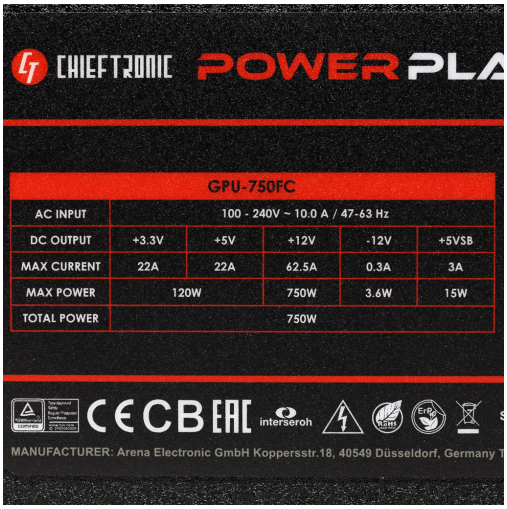
Chieftronic PowerPlay 750W

Top side



Power specifications label

CERTIFICATIONS 115V

CERTIFICATIONS 230V

Aristeidis Bitziopoulos
Lab Director