Chieftronic PowerPlay 750W

Serial Number G190300027211

Lab ID CT75001671

Certification ID 251671

Test Result Report ID: 20PS1671A

Certificate Issue Date: Jul 2, 2020

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	Chieftronic
Model	PowerPlay 750W
OEM/ODM	Channel Well Technology
Serial Number	G190300027211
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10
Rated Frequency (Hz)	47-63

Rated Power (W)	750
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	140mm Double Ball-Bearing Fan [D14BM-12 (L-SSS)]
Semi-Passive Operation	✓ (selectable)
Cybenetics Testing Information	
Lab ID	CT75001671
Date of receipt	Jun 25, 2020
Testing Date	Jun 30, 2020
Report Issued Date	Jul 2, 2020
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors(Non-accredited measurements)

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	-

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				

Parts Description

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

Test Results

Temperature & Compliance Info

Temperature Range (°C /°F)	28-32 / 82.4-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	89.319%
Average Noise Output (>1450 Load Combinations)	29.16dBA
Average PF (>1450 Load Combinations)	0.978
Efficiency With 10W (≤500W) or 2% (>500W) Load	69.150%
Standby Power Consumption	0.0493W
Non-Accredited	
12V Ripple (Full Load)	17.98mV
5V Ripple (Full Load)	14.33mV
3.3V Ripple (Full Load)	17.70mV
5VSB Ripple (Full Load)	14.83mV
12V Load Regulation	0.88%
5V Load Regulation	1.01%
3.3V Load Regulation	1.51%
5VSB Load Regulation	1.93%
Inrush Current	24.840A

230V		
Accredited		
Average Efficiency (>1450 load combinations)		90.759%
Average Noise Output (>1450 Load Combinations)		28.84dBA
Average PF (>1450 Load Combinations)		0.933
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
Standby Power Consumption		0.0729W
Non-Accredited		
12V Ripple (Full Load)		17.71mV
5V Ripple (Full Load)		13.53mV
3.3V Ripple (Full Load)		18.93mV
5VSB Ripple (Full Load)		13.80mV
12V Load Regulation		0.81%
5V Load Regulation		1.11%
3.3V Load Regulation		1.66%
5VSB Load Regulation		1.93%
Inrush Current		89.830A
Hold-Up Time & PWR_OK Signal		17.50ms
AC Loss to PWR_OK Hold Up Time		16.00ms
PWR_OK Inactive to DC Loss Delay		1.50ms
PSU Timings: T1 (20% / 100%)	72.0ms	74.0ms
PSU Timings: T3 (20% / 100%)	352.0ms	356.0ms
OPP (0.00°C / 0.00°C)	133.05%	-

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	17.5
AC Loss to PWR_OK Hold Up Time (ms)	16
PWR_OK Inactive to DC Loss Delay (ms)	1.5

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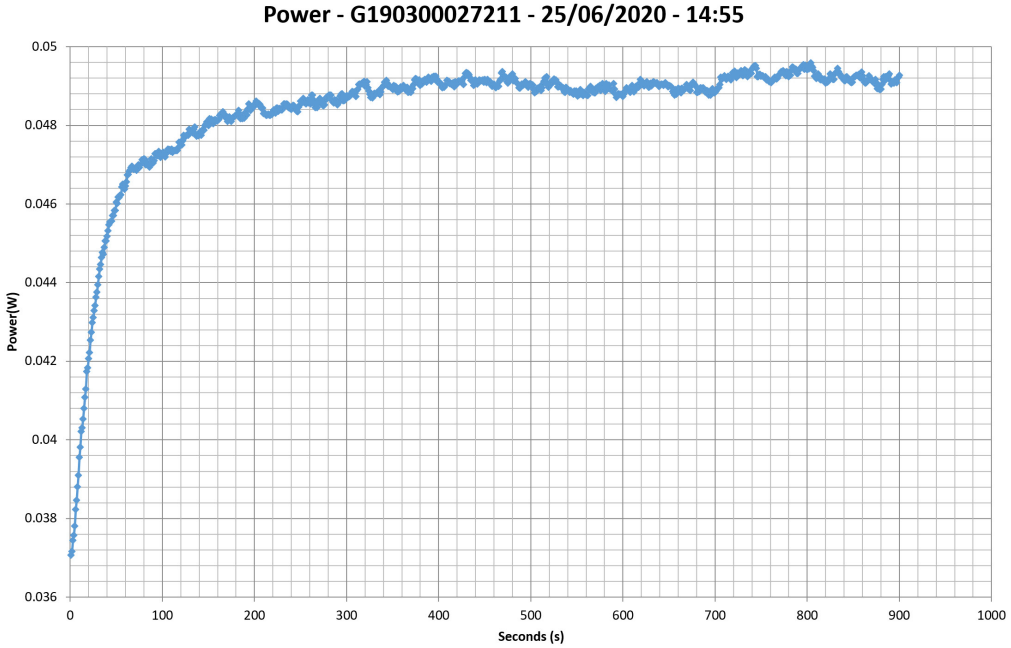
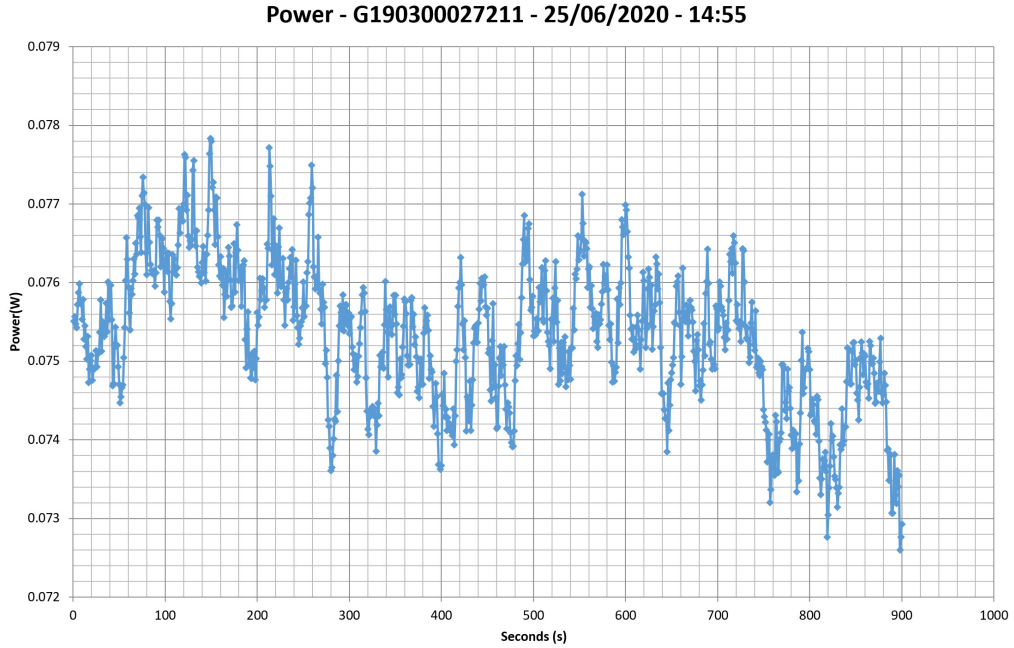
Graphs

115V

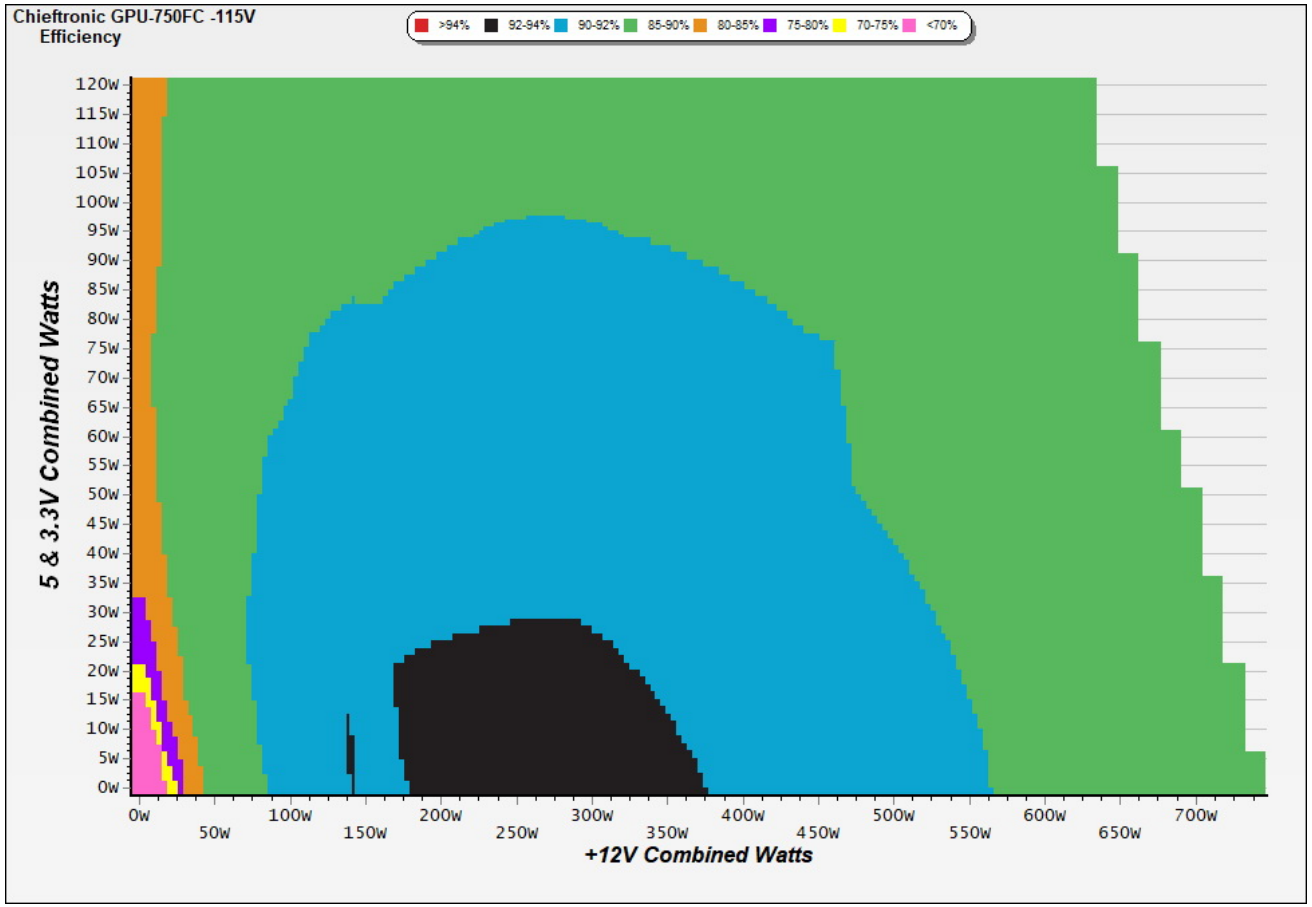


230V



Efficiency Graph

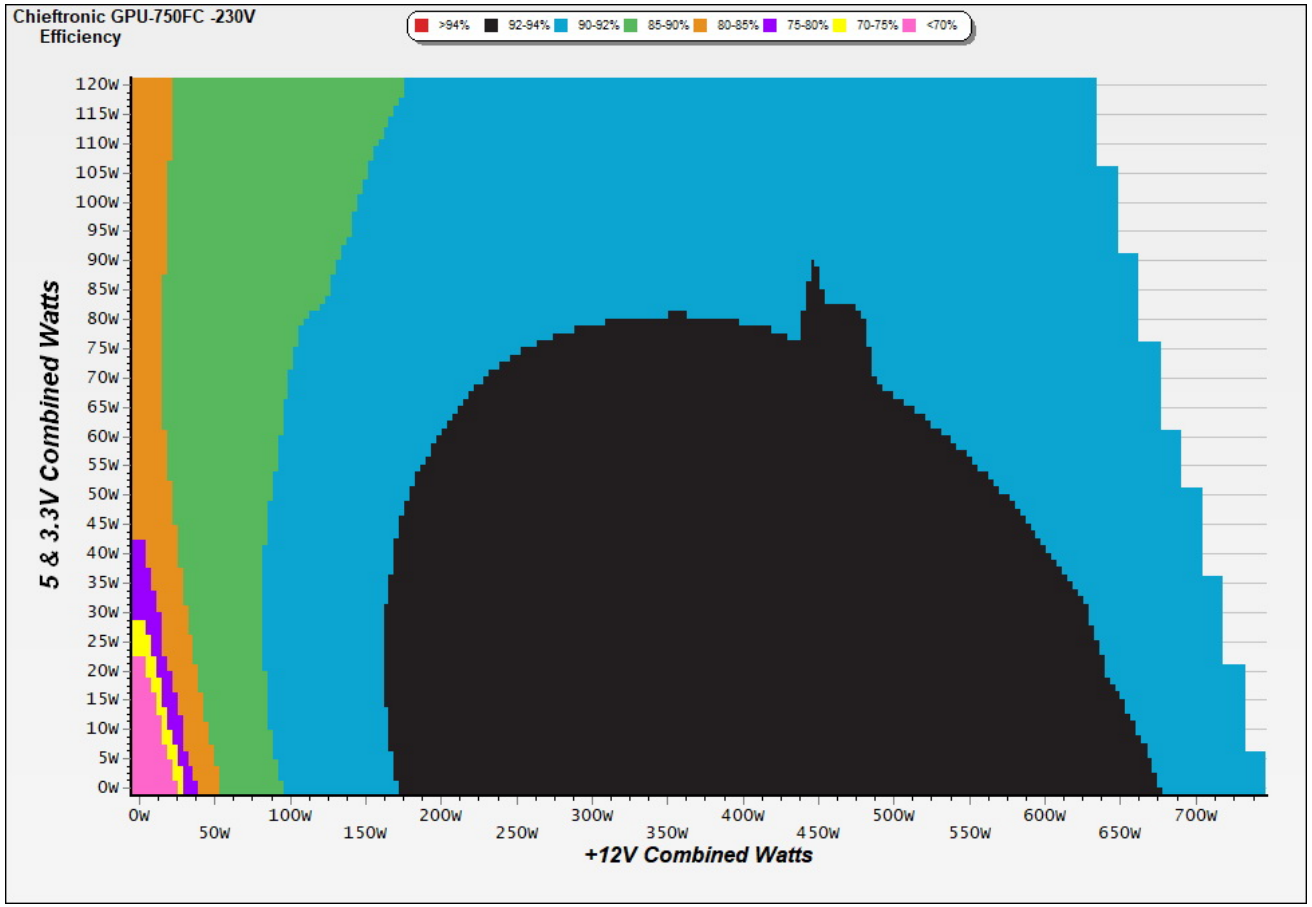
115V



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

230V



INFO

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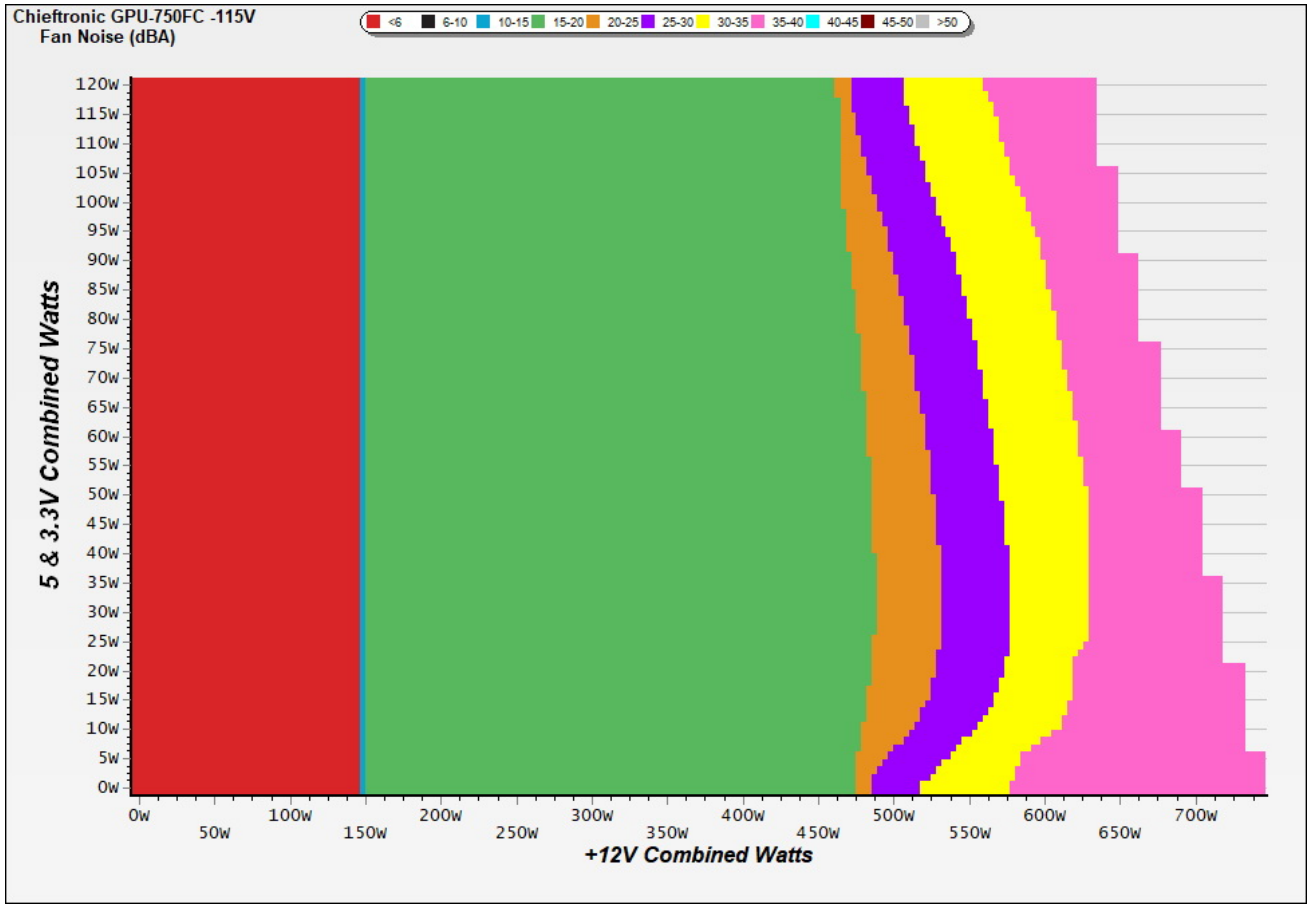
Noise Graph

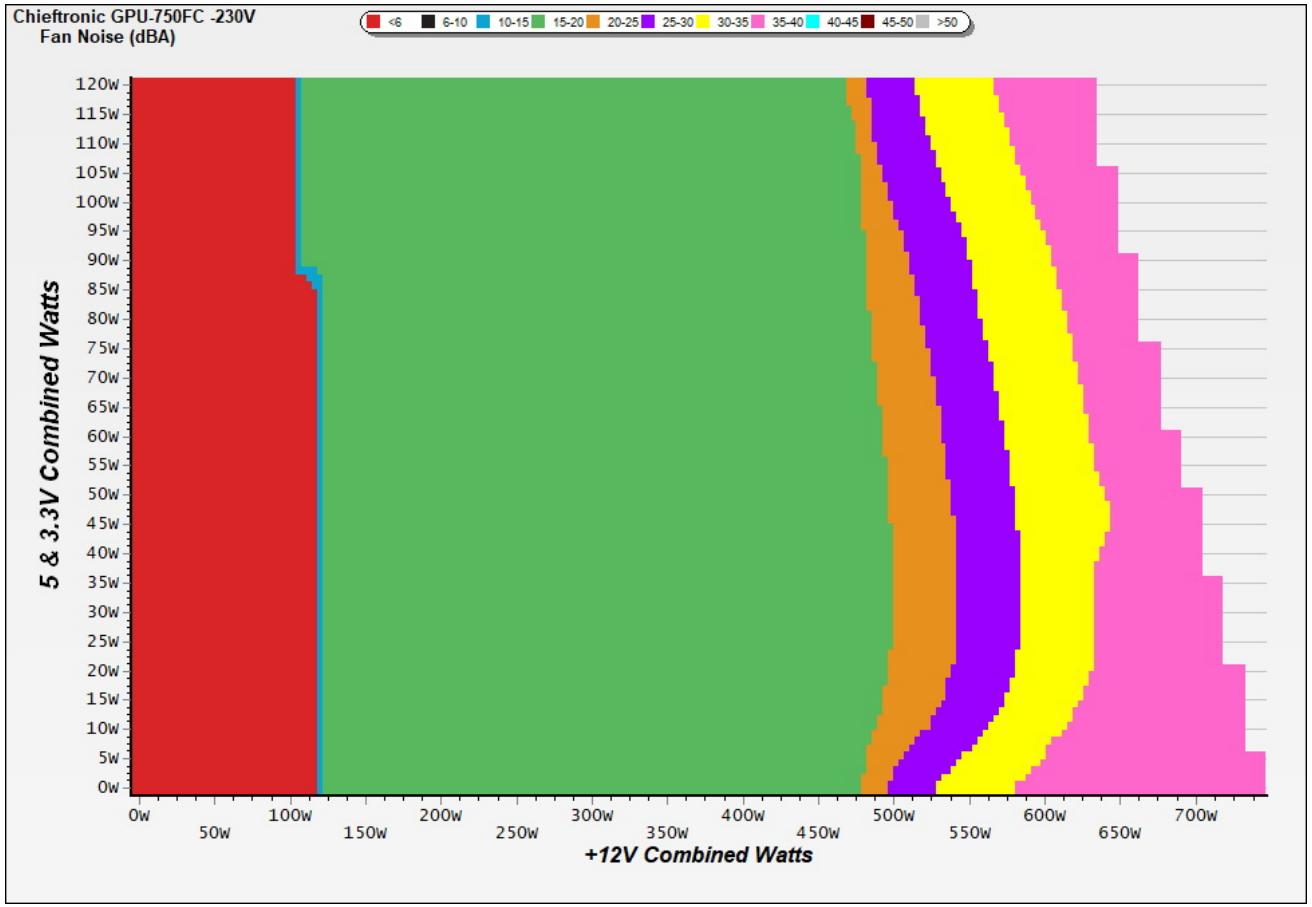
115V



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

230V

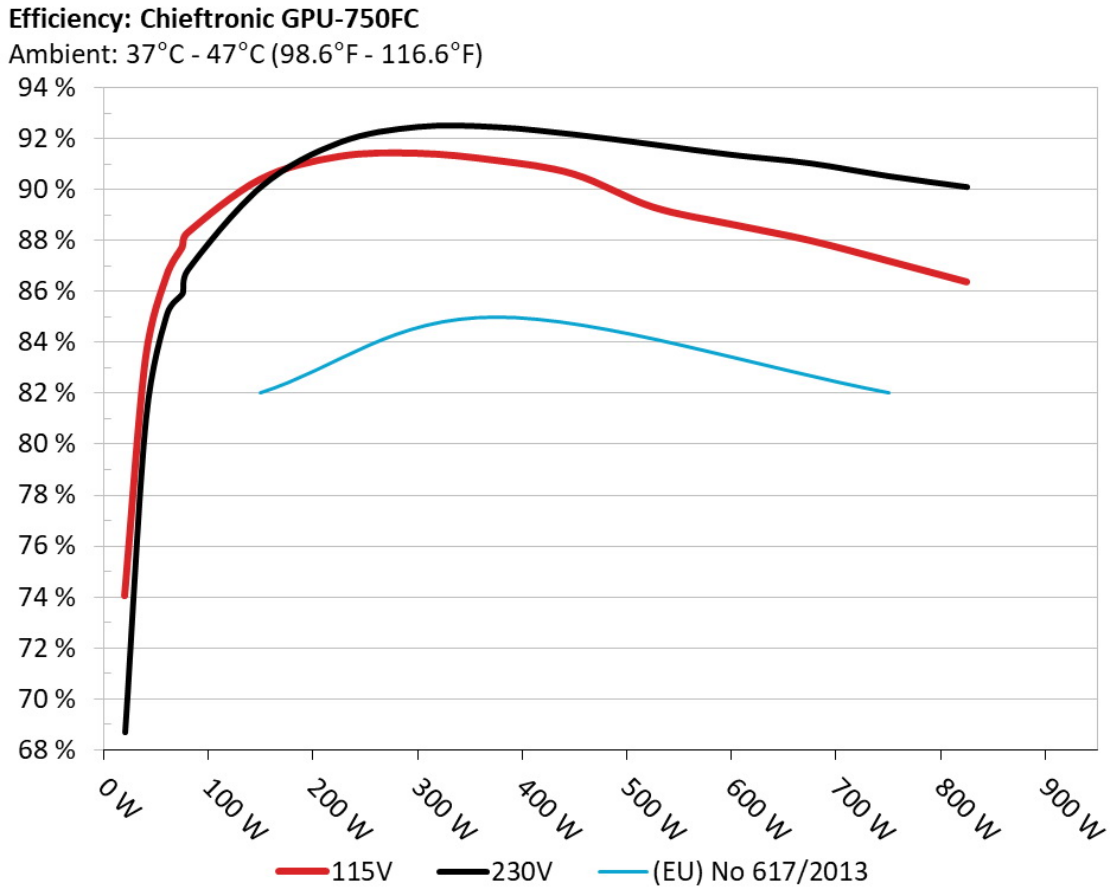


INFO

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

Indicative Performance

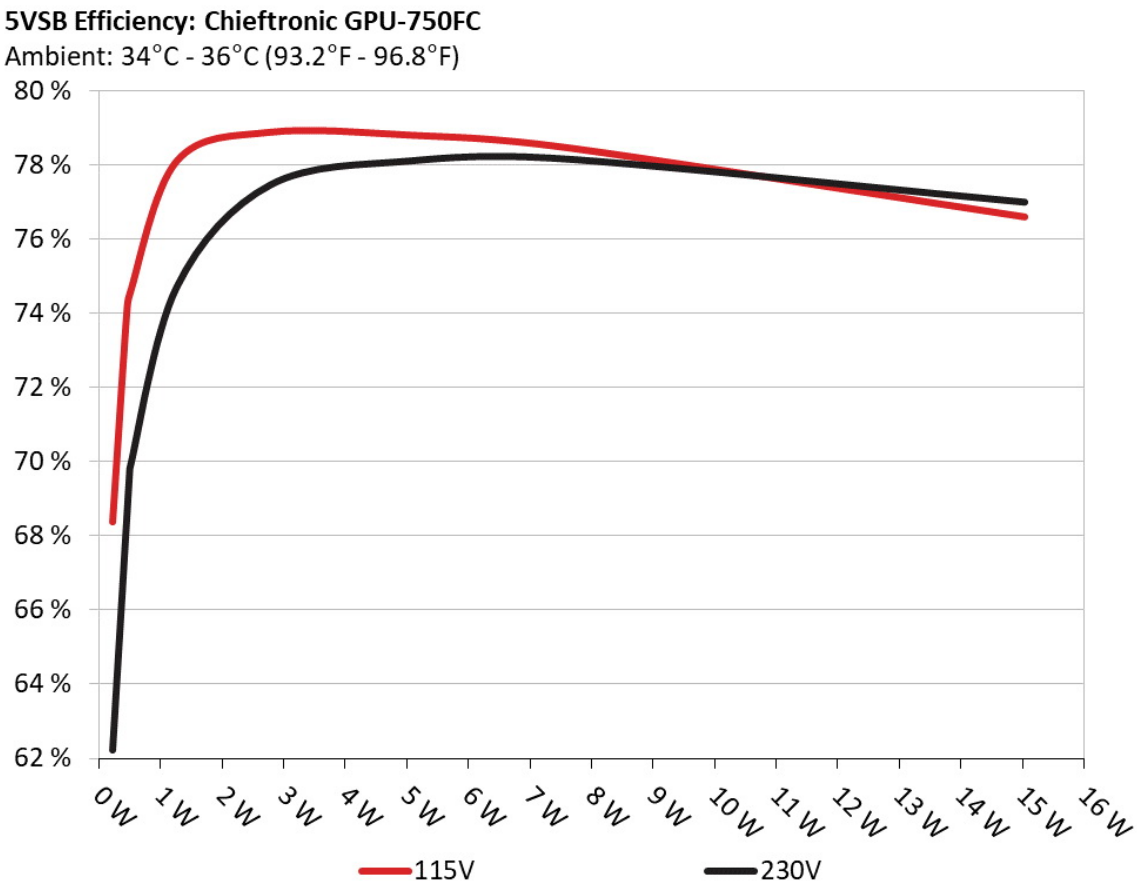
Efficiency under high ambient temperature



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

5VSB Efficiency (ERP LOT 3/6 & CEC)

115V

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

230V

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

Supplementary Tests (For Reference)

Typical 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	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
3	15.723A	3.481A	3.501A	1.390A	225.074	91.310%	696	16.7	41.18°C	0.980
	12.022V	5.026V	3.300V	5.038V	246.495				46.51°C	115.14V
4	21.552A	3.984A	4.005A	1.591A	300.088	91.434%	697	16.8	41.72°C	0.981
	12.012V	5.021V	3.295V	5.031V	328.200				48.08°C	115.13V
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
6	32.514A	5.988A	6.027A	1.994A	449.617	90.616%	847	22.6	42.60°C	0.980
	11.989V	5.011V	3.285V	5.016V	496.179				51.31°C	115.13V
7	38.055A	6.997A	7.048A	2.197A	524.941	89.325%	1403	37.5	43.51°C	0.981
	11.978V	5.004V	3.278V	5.008V	587.675				52.70°C	115.13V
8	43.606A	8.004A	8.068A	2.401A	600.240	88.648%	1388	37.3	43.73°C	0.983
	11.967V	4.998V	3.272V	5.000V	677.107				53.44°C	115.13V
9	49.537A	8.513A	8.569A	2.403A	674.790	88.017%	1385	37.2	44.43°C	0.985
	11.956V	4.994V	3.268V	4.997V	766.663				55.14°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
11	61.636A	9.025A	9.116A	3.016A	825.232	86.387%	1378	37.1	46.57°C	0.988
	11.933V	4.988V	3.259V	4.975V	955.278				59.47°C	115.12V
CL1	0.102A	14.004A	14.000A	0.000A	117.614	83.548%	682	16.1	42.47°C	0.977
	12.022V	5.018V	3.294V	5.070V	140.775				49.55°C	115.14V

CL2	62.521A	1.000A	1.001A	1.000A	760.762	87.977%	1385	37.2	45.35°C	0.987
	11.955V	5.012V	3.276V	5.031V	864.729				57.69°C	115.12V

The results above are not used in the certification process

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
3	15.724A	3.485A	3.503A	1.390A	225.098	91.868%	700	16.8	41.13°C	0.931
	12.022V	5.024V	3.298V	5.037V	245.022				47.66°C	230.29V
4	21.556A	3.986A	4.010A	1.591A	300.125	92.481%	700	16.8	41.54°C	0.946
	12.011V	5.020V	3.293V	5.030V	324.527				49.27°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
6	32.524A	5.993A	6.035A	1.995A	449.689	92.182%	1060	29.6	42.72°C	0.958
	11.987V	5.008V	3.282V	5.014V	487.829				52.56°C	230.29V
7	38.067A	7.002A	7.054A	2.198A	525.012	91.790%	1346	36.4	43.48°C	0.960
	11.976V	5.001V	3.275V	5.006V	571.972				53.75°C	230.29V
8	43.621A	8.005A	8.079A	2.402A	600.266	91.384%	1394	37.4	43.89°C	0.962
	11.964V	4.994V	3.268V	4.998V	656.864				54.69°C	230.29V
9	49.553A	8.521A	8.583A	2.404A	674.849	91.052%	1387	37.3	44.92°C	0.965
	11.953V	4.990V	3.264V	4.995V	741.169				56.38°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
11	61.654A	9.037A	9.130A	3.018A	825.273	90.120%	1387	37.3	46.61°C	0.968
	11.930V	4.982V	3.254V	4.973V	915.744				59.12°C	230.28V
CL1	0.105A	14.007A	14.000A	0.000A	117.594	83.269%	769	19.4	42.88°C	0.884
	12.013V	5.015V	3.292V	5.069V	141.222				51.04°C	230.28V

CL2	62.524A	1.000A	1.000A	1.000A	760.594	91.335%	1390	37.3	45.78°C	0.966
	11.952V	5.006V	3.272V	5.029V	832.755				57.68°C	230.29V

The results above are not used in the certification process

Light Load Tests

115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.233A	0.496A	0.497A	0.197A	19.999	74.062%	0	<6.0	0.836
	12.045V	5.042V	3.315V	5.076V	27.003				115.14V
2	2.464A	0.992A	0.995A	0.395A	39.990	83.372%	0	<6.0	0.923
	12.050V	5.040V	3.313V	5.070V	47.966				115.14V
3	3.700A	1.489A	1.493A	0.593A	60.021	86.615%	0	<6.0	0.950
	12.046V	5.039V	3.312V	5.065V	69.296				115.14V
4	4.930A	1.985A	1.993A	0.791A	79.972	88.307%	0	<6.0	0.965
	12.043V	5.038V	3.311V	5.059V	90.561				115.14V

The results above are not used in the certification process

230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.233A	0.495A	0.499A	0.197A	20.003	68.708%	0	<6.0	0.494
	12.045V	5.045V	3.317V	5.075V	29.113				230.29V
2	2.466A	0.992A	0.995A	0.395A	39.995	81.045%	0	<6.0	0.650
	12.040V	5.045V	3.315V	5.069V	49.349				230.29V
3	3.704A	1.486A	1.494A	0.593A	60.027	85.127%	0	<6.0	0.752
	12.036V	5.043V	3.313V	5.063V	70.515				230.29V
4	4.934A	1.984A	1.995A	0.791A	79.979	86.866%	700	16.8	0.812
	12.033V	5.042V	3.311V	5.057V	92.072				230.29V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	8.20mV	11.40mV	8.10mV	6.60mV	Pass
20% Load	12.10mV	12.00mV	8.80mV	8.90mV	Pass
30% Load	12.70mV	11.70mV	9.00mV	6.90mV	Pass
40% Load	11.60mV	12.40mV	9.50mV	6.00mV	Pass
50% Load	11.40mV	12.30mV	9.80mV	8.90mV	Pass
60% Load	12.30mV	12.50mV	9.70mV	10.50mV	Pass
70% Load	11.30mV	12.70mV	10.00mV	12.60mV	Pass
80% Load	12.20mV	13.00mV	11.10mV	12.70mV	Pass
90% Load	11.20mV	12.70mV	11.30mV	13.20mV	Pass
100% Load	18.00mV	14.30mV	17.70mV	14.80mV	Pass
110% Load	17.70mV	14.50mV	17.70mV	14.60mV	Pass
Crossload1	16.20mV	12.90mV	11.10mV	7.10mV	Pass
Crossload2	17.20mV	14.00mV	11.00mV	4.40mV	Pass

The results above are not used in the certification process

230V

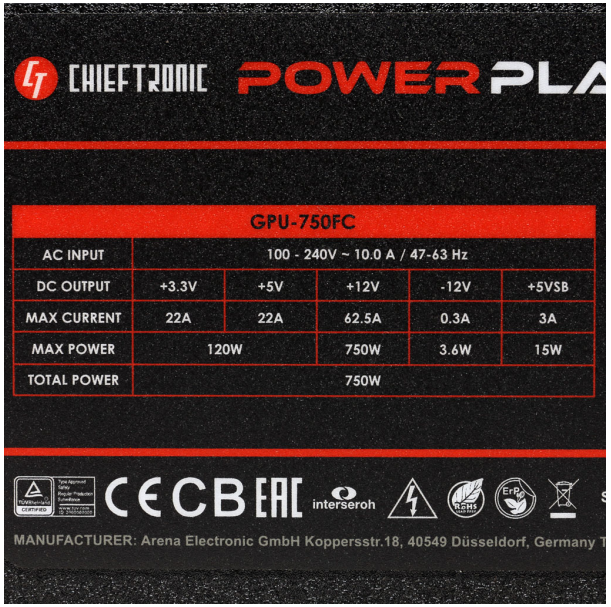
Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.30mV	11.90mV	9.50mV	6.70mV	Pass
20% Load	10.70mV	11.50mV	10.30mV	8.70mV	Pass
30% Load	21.10mV	11.50mV	9.80mV	7.00mV	Pass
40% Load	14.70mV	11.60mV	10.30mV	6.70mV	Pass
50% Load	12.60mV	12.80mV	11.80mV	7.40mV	Pass
60% Load	11.90mV	12.20mV	10.30mV	10.00mV	Pass
70% Load	11.70mV	12.10mV	10.80mV	11.90mV	Pass
80% Load	11.20mV	12.10mV	11.70mV	13.20mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	11.10mV	12.80mV	12.20mV	12.70mV	Pass
100% Load	17.70mV	13.50mV	18.90mV	13.80mV	Pass
110% Load	18.20mV	13.90mV	20.40mV	14.90mV	Pass
Crossload1	7.60mV	13.20mV	13.10mV	7.80mV	Pass
Crossload2	17.40mV	13.50mV	12.70mV	13.50mV	Pass

The results above are not used in the certification process

Chieftronic PowerPlay 750W

Top side



Power specifications label