

## Anex

Chieftec Smart 600W

Lab ID#: CF60001681  
 Receipt Date: Jul 3, 2020  
 Test Date: Jul 9, 2020

Report: 20PS1681A

Report Date: Jul 13, 2020

### DUT INFORMATION

Brand	Chieftec
Manufacturer (OEM)	Channel Well Technology
Series	Smart
Model Number	GPS-600A8
Serial Number	G191100000969
DUT Notes	

### DUT SPECIFICATIONS

Rated Voltage (Vrms)	200-240
Rated Current (Arms)	4.5
Rated Frequency (Hz)	47-63
Rated Power (W)	600
Type	ATX12V
Cooling	120mm Sleeve Bearing Fan (DS12SH-12)
Semi-Passive Operation	X
Cable Design	Fixed cables

### 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	✓

### 230V

Average Efficiency	84.260%
Average Efficiency 5VSB	76.277%
Standby Power Consumption (W)	0.0976087
Average PF	0.974
Avg Noise Output	33.60 dB(A)
Efficiency Rating (ETA)	BRONZE
Noise Rating (LAMBDA)	Standard++

### POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	46	2.5	0.3
	Watts	120		552	12.5	3.6
Total Max. Power (W)		600				

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

Hold-Up Time (ms)	6.9
AC Loss to PWR_OK Hold Up Time (ms)	6.3
PWR_OK Inactive to DC Loss Delay (ms)	0.6

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**CABLES AND CONNECTORS**

## Native Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Caps
ATX connector 20+4 pin (520mm)	1	1	18-22AWG	No
4+4 pin EPS12V (520mm)	1	1	18AWG	No
6+2 pin PCIe (520mm+150mm)	1	2	18AWG	No
SATA (530mm+150mm)	2	4	20AWG	No
4-pin Molex (530mm+150mm) / FDD (+150mm)	1	2 / 1	20-22AWG	No

## Modular Cables

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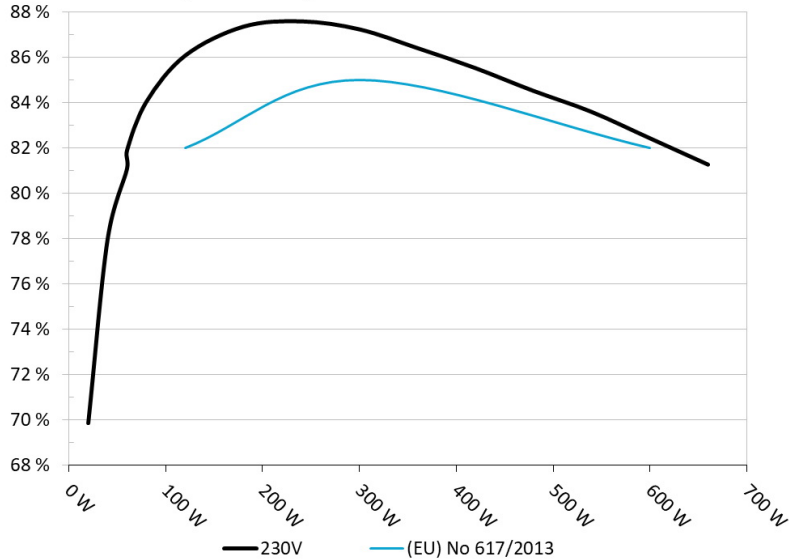
<b>General Data</b>	-
Manufacturer (OEM)	CWT
PCB Type	Single Sided
<b>Primary Side</b>	-
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x DM choke, 1x MOV, 1x Power Integrations CAP004DG (Discharge IC)
Inrush Protection	NTC Thermistor SCK-2R55A
Bridge Rectifier(s)	1x GBU606 (600V, 6A @ 100°C)
APFC MOSFETs	2x IPS ITA10N50R (500V, 6.3A @ 100°C, Rds(on): 0.75Ohm)
APFC Boost Diode	1x 8R06 (600V, 8A @ 100°C)
Bulk Cap(s)	1x CapXon (400V, 270uF, 2,000h @ 85°C, LP)
Main Switchers	2x IPS ITA20N50R (500V, 12.5A @ 100°C, Rds(on): 0.3Ohm)
PFC/PWM Combo Controller	Champion CM6805BG & Champion CM03X Phantom Power Remover
Topology	Primary side: APFC, Double Forward Secondary side: Passive Rectification & Group Regulation
<b>Secondary Side</b>	-
+12V SBRs	4x PFC PFR20L60CT (60V, 20A @ 100°C)
5V & 3.3V SBRs	2x Silan Microelectronics SBD30C45T (45V, 30A @ 125°C)
Filtering Capacitors	Electrolytic: 3x CapXon (2,000h @ 105°C, GF), 2x CapXon (2-5,000h @ 105°C, KF), 12x Chengx (2-4,000h @ 105°C, GR)
Supervisor IC	Sitronix ST9S313A-DAG
Fan Model	Yate Loon D12SH-12 (120mm, 12V, 0.30A, Sleeve Bearing Fan)
<b>5VSB Circuit</b>	-
Standby PWM Controller	Power Integrations TNY177PN

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### EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

**Efficiency: Chieftec GPS-600A8**  
 Ambient: 33°C - 40°C (91.4°F - 104°F)

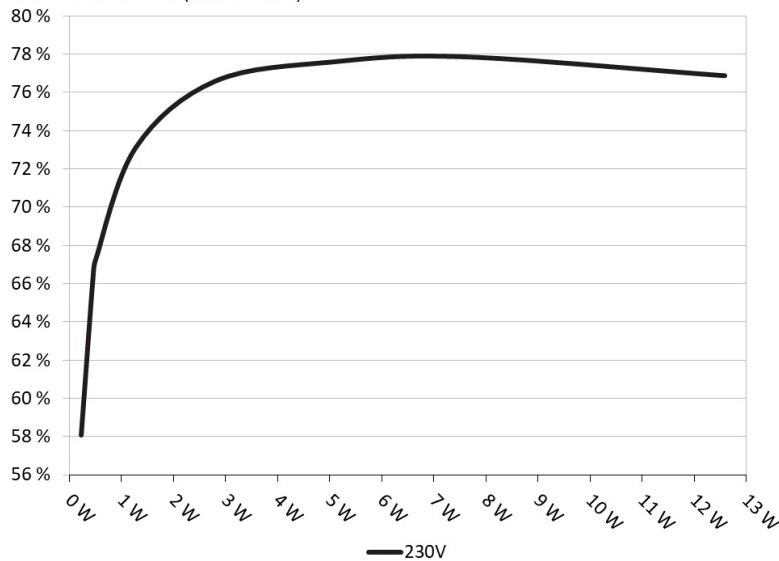


#### INFO

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

**5VSB Efficiency: Chieftec GPS-600A8**  
 Ambient: 28°C - 30°C (82.4°F - 86°F)



#### INFO

This graph depicts the efficiency levels of the 5VSB rail with 115V and 230V input

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	58.081%	0.024
	5.100V	0.396		230.25V
2	0.090A	0.459	66.425%	0.042
	5.098V	0.691		230.25V
3	0.550A	2.797	76.567%	0.182
	5.085V	3.653		230.26V
4	1.000A	5.073	77.581%	0.257
	5.072V	6.539		230.26V
5	1.500A	7.591	77.840%	0.304
	5.060V	9.752		230.26V
6	2.500A	12.582	76.855%	0.352
	5.032V	16.371		230.25V

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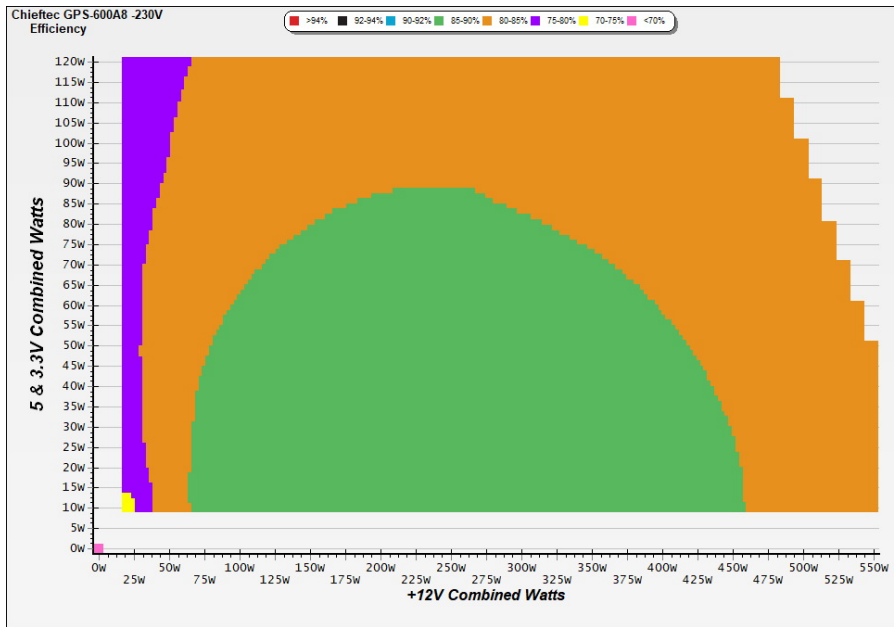
# 230V

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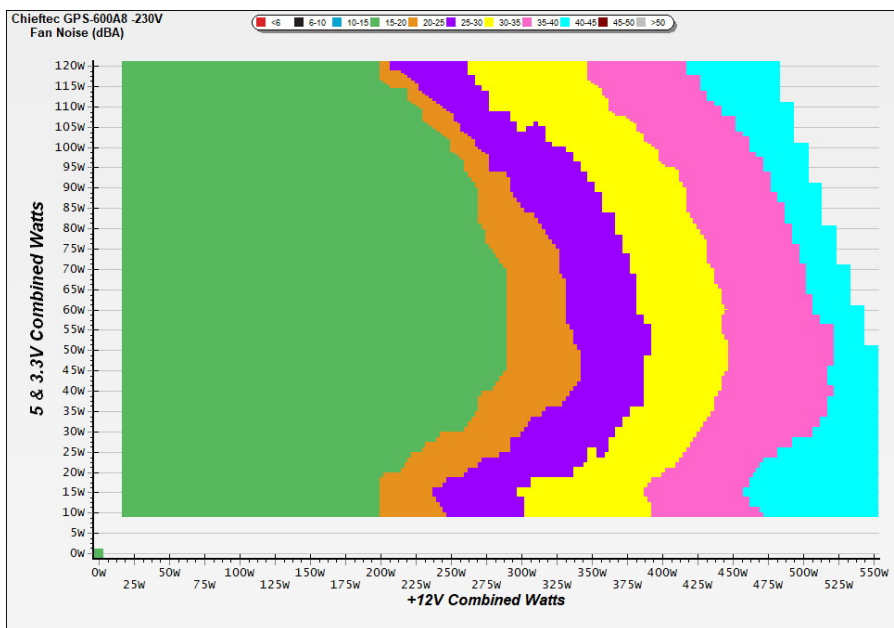
#### EFFICIENCY GRAPH 230V



#### 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 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

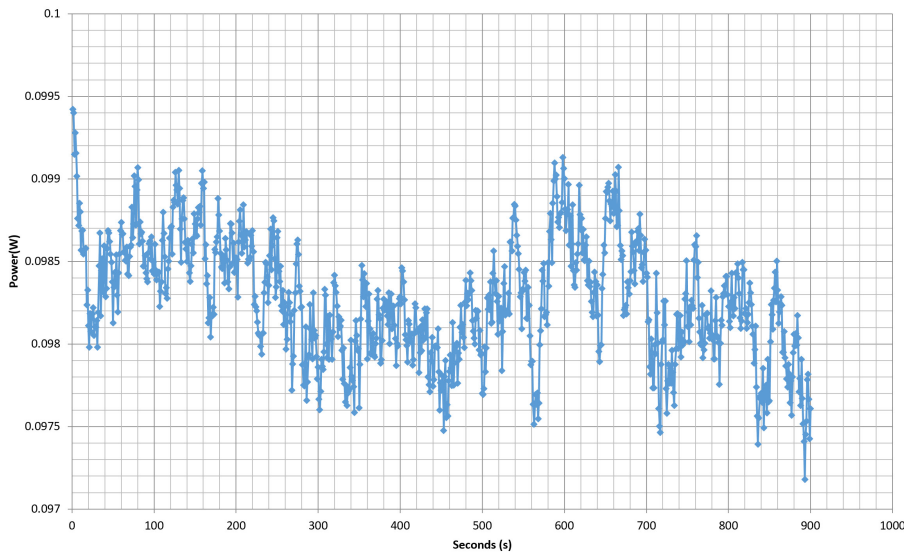
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**VAMPIRE POWER -230V**

Power - 08/07/2020 - 18:06



**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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### 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	3.186A	1.968A	1.951A	0.990A	60.013	81.089%	918	19.8	35.48°C	0.698
	12.058V	5.080V	3.382V	5.051V	74.009				37.81°C	230.26V
2	7.404A	2.966A	2.940A	1.193A	120.047	86.090%	918	19.8	35.72°C	0.918
	12.040V	5.059V	3.367V	5.029V	139.443				38.71°C	230.26V
3	12.003A	3.468A	3.446A	1.398A	180.052	87.370%	920	20.0	36.26°C	0.979
	11.996V	5.049V	3.353V	5.007V	206.080				39.67°C	230.26V
4	16.636A	3.970A	3.952A	1.605A	240.065	87.606%	921	20.0	36.95°C	0.987
	11.954V	5.038V	3.339V	4.985V	274.029				41.16°C	230.26V
5	20.914A	4.986A	4.967A	1.815A	300.104	87.253%	921	20.0	37.31°C	0.989
	11.934V	5.016V	3.323V	4.959V	343.946				42.29°C	230.26V
6	25.198A	6.010A	5.990A	2.000A	359.939	86.427%	1135	26.8	37.96°C	0.989
	11.916V	4.993V	3.306V	4.935V	416.466				43.47°C	230.26V
7	29.474A	7.046A	7.026A	2.243A	419.757	85.542%	1407	32.6	38.10°C	0.990
	11.896V	4.970V	3.289V	4.907V	490.703				44.16°C	230.26V
8	33.830A	8.002A	8.068A	2.460A	479.840	84.534%	1747	38.8	38.83°C	0.991
	11.878V	4.948V	3.273V	4.881V	567.630				45.65°C	230.26V
9	38.621A	8.617A	8.599A	2.470A	539.571	83.612%	2083	43.6	39.39°C	0.991
	11.834V	4.934V	3.257V	4.861V	645.328				46.72°C	230.26V
10	43.539A	9.149A	9.168A	2.585A	600.293	82.438%	2223	44.8	39.81°C	0.991
	11.784V	4.921V	3.240V	4.837V	728.177				47.50°C	230.25V
11	48.960A	9.150A	9.209A	2.595A	660.308	81.275%	2211	44.7	40.20°C	0.991
	11.705V	4.920V	3.226V	4.819V	812.436				48.89°C	230.26V
CL1	0.097A	14.003A	14.000A	0.000A	113.154	74.844%	961	21.9	37.63°C	0.938
	13.205V	4.663V	3.327V	5.011V	151.187				42.05°C	230.27V
CL2	46.008A	1.000A	1.001A	0.000A	531.296	84.739%	936	20.5	40.06°C	0.992
	11.365V	5.124V	3.287V	4.961V	626.982				48.31°C	230.26V

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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	1.237A	0.488A	0.485A	0.197A	20.001	69.848%	915	19.8	0.426
	12.008V	5.117V	3.396V	5.089V	28.635				230.27V
2	2.471A	0.979A	0.973A	0.394A	39.991	77.983%	915	19.8	0.574
	12.017V	5.105V	3.390V	5.077V	51.282				230.26V
3	3.706A	1.473A	1.463A	0.593A	60.023	81.900%	917	19.8	0.694
	12.025V	5.093V	3.385V	5.065V	73.288				230.26V
4	4.935A	1.968A	1.954A	0.792A	79.974	84.048%	916	19.8	0.791
	12.030V	5.082V	3.379V	5.053V	95.153				230.26V

### RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	5.80mV	5.60mV	9.20mV	6.30mV	Pass
20% Load	6.00mV	5.40mV	9.30mV	6.30mV	Pass
30% Load	6.80mV	5.80mV	10.00mV	9.00mV	Pass
40% Load	8.70mV	5.70mV	11.10mV	9.60mV	Pass
50% Load	9.20mV	5.80mV	11.20mV	11.10mV	Pass
60% Load	10.20mV	6.40mV	13.20mV	11.60mV	Pass
70% Load	14.00mV	7.20mV	14.10mV	12.20mV	Pass
80% Load	13.50mV	8.10mV	17.20mV	13.70mV	Pass
90% Load	15.60mV	10.70mV	18.00mV	13.80mV	Pass
100% Load	17.90mV	12.20mV	21.80mV	15.50mV	Pass
110% Load	20.60mV	14.60mV	21.60mV	16.90mV	Pass
Crossload1	8.10mV	11.40mV	15.10mV	7.00mV	Pass
Crossload2	17.80mV	8.90mV	19.40mV	12.50mV	Pass

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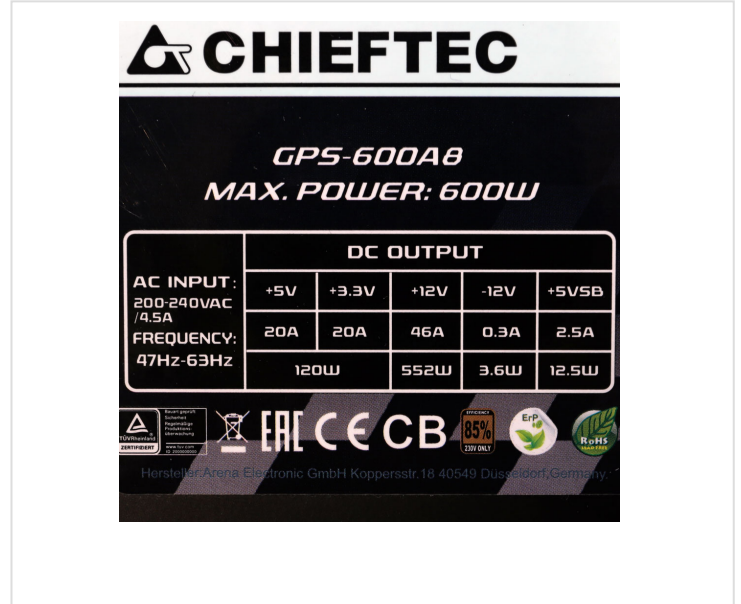
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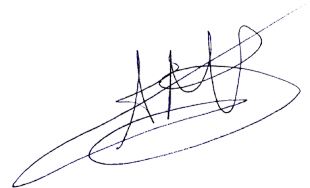
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Top side

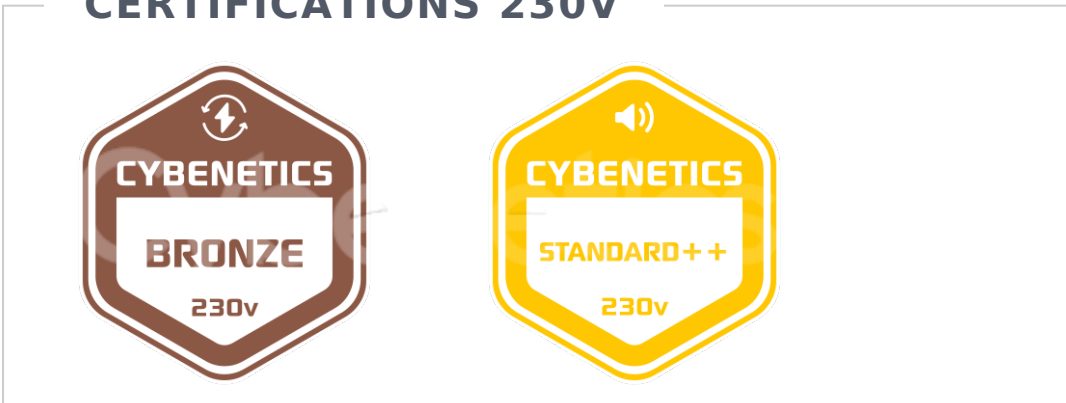


Power specifications label



**Aristeidis Bitziopoulos**  
Lab Director

**CERTIFICATIONS 230V**



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