

## Anex

Chieftec Polaris 1050W

Lab ID#: CF10501878  
 Receipt Date: Jun 16, 2021  
 Test Date: Jul 28, 2021

Report: 21PS1878A  
 Report Date: Jul 28, 2021

DUT INFORMATION	
Brand	Chieftec
Manufacturer (OEM)	High Power
Series	Polaris
Model Number	PPS-1050FC
Serial Number	211301000419A00HGD1F05000082
DUT Notes	

DUT SPECIFICATIONS	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	15-8
Rated Frequency (Hz)	50-60
Rated Power (W)	1050
Type	ATX12V
Cooling	135mm Fluid Dynamic Bearing Fan (S1352512HH)
Semi-Passive Operation	✓
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	✓
ALPM (Alternative Low Power Mode) compatible	✓

### 115V

Average Efficiency	89.573%
Efficiency With 10W (≤500W) or 2% (>500W)	71.310
Average Efficiency 5VSB	81.967%
Standby Power Consumption (W)	0.0698081
Average PF	0.993
Avg Noise Output	37.42 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard+

### 230V

Average Efficiency	91.495%
Average Efficiency 5VSB	81.213%
Standby Power Consumption (W)	0.1219360
Average PF	0.969
Avg Noise Output	37.27 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard+

### POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	22	22	87.5	3	0.3
	Watts	120		1050	15	3.6
Total Max. Power (W)		1050				

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

Hold-Up Time (ms)	16.5
AC Loss to PWR_OK Hold Up Time (ms)	12.4
PWR_OK Inactive to DC Loss Delay (ms)	4.1

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### CABLES AND CONNECTORS

#### Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (650mm)	1	1	18AWG	No
4+4 pin EPS12V (660mm)	2	2	16AWG	No
6+2 pin PCIe (600mm+105mm)	3	6	16-18AWG	No
SATA (560mm+105mm+105mm+105mm)	3	12	18AWG	No
4-pin Molex (550mm+100mm+100mm+100mm)	1	4	18AWG	No
AC Power Cord (1380mm) - C13 coupler	1	1	16AWG	-

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General Data	
Manufacturer (OEM)	High Power
PCB Type	Double Sided
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x MPS HF81 (Discharge IC)
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	2x HY GBU1506L (600V, 15A @ 100°C)
APFC MOSFETs	2x Infineon IPW60R120P7 (600V, 16A @ 100°C, Rds(on): 0.120Ohm)
APFC Boost Diode	1x CREE C3D10060A (600V, 10A @ 152°C)
Bulk Cap(s)	2x Nichicon (400V, 680uF each or 1,360uF combined, 2,000h @ 105°C, GG)
Main Switchers	2x Infineon IPA60R120P7 (600V, 16A @ 100°C, Rds(on): 0.120Ohm)
APFC Controller	Infineon ICE3PCS01G
Resonant Controller	Champion CM6901X
Topology	Primary side: APFC, Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETs	4x Toshiba TPHP8504PL (40V, 150A, Rds(on): 0.85mOhm)
5V & 3.3V	DC-DC Converters: 5x Vishay SiRA12BDP (30V, 59A @ 70°C, Rds(on): 4.3mOhm) PWM Controllers: ANPEC APW7159C
Filtering Capacitors	Electrolytic: 10x Teapo (2-3,000h @ 105°C, SC), 1x Teapo (2,000h @ 105°C, SH), 1x Nippon Chemi-Con (4-10,000h @ 105°C, KY) Polymer: 16x Teapo
Supervisor IC	Weltrend WT2527RA (OCP, OVP, UVP, SCP, PG)
Fan Controller	STC STC15W408AS
Fan Model	Globe Fan RL4Z S1352512HH (135mm, 12V, 0.45A, Fluid Dynamic Bearing Fan)
5VSB Circuit	
Rectifier	1x IPS ITA04N65R (650V, 4A, Rds(on): 2.80Ohm) FET & 1x 45R15C
Standby PWM Controller	Si-Trend Si8016HSP8
-12V	
Rectifier	KEC KIA7912PI (-12 V, 1 A)

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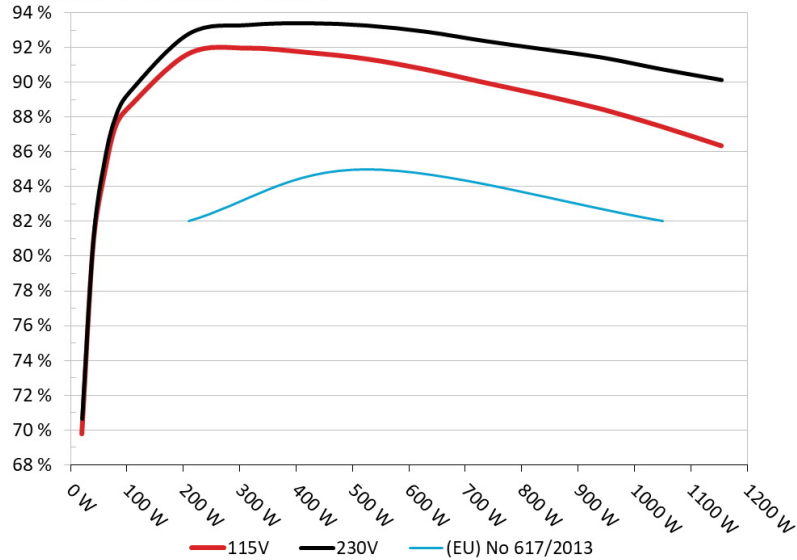
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### EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

#### Efficiency: Chieftec Polaris 1050W

Ambient: 37°C - 47°C (98.6°F - 116.6°F)



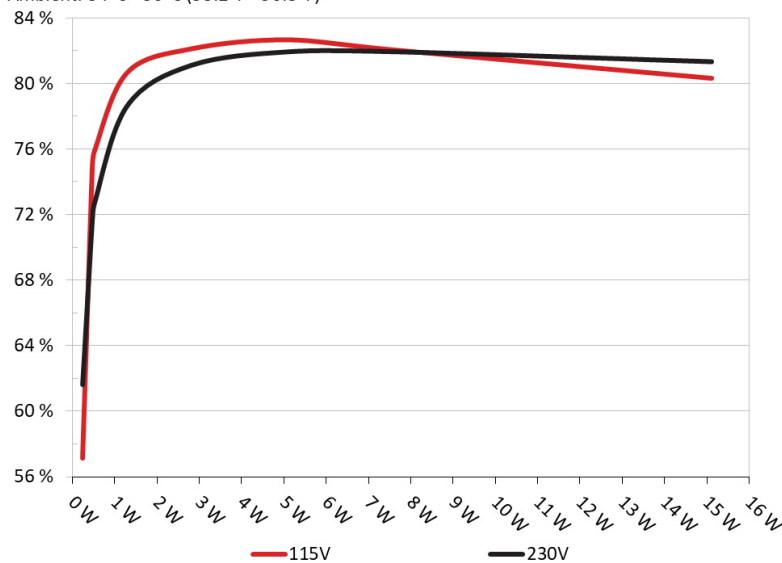
#### INFO

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 Polaris 1050W

Ambient: 34°C - 36°C (93.2°F - 96.8°F)



#### 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)

5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts	
1	0.045A	0.23W	57.125%	0.02
	5.124V	0.179W		115.15V
2	0.09A	0.461W	75.051%	0.067
	5.123V	0.614W		115.15V
3	0.55A	2.809W	82.141%	0.275
	5.109V	3.42W		115.15V
4	1A	5.095W	82.686%	0.364
	5.096V	6.162W		115.15V
5	1.5A	7.621W	82.058%	0.414
	5.081V	9.287W		115.15V
6	2.999A	15.104W	80.335%	0.476
	5.036V	18.801W		115.15V

### Test #

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

5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts	
1	0.045A	0.23W	61.606%	0.013
	5.124V	0.374W		230.29V
2	0.09A	0.461W	71.721%	0.022
	5.123V	0.643W		230.28V
3	0.55A	2.809W	81.132%	0.112
	5.109V	3.462W		230.28V
4	1A	5.095W	81.954%	0.182
	5.096V	6.217W		230.28V
5	1.5A	7.621W	81.953%	0.241
	5.081V	9.299W		230.28V
6	2.999A	15.105W	81.345%	0.338
	5.036V	18.569W		230.28V

### Test #

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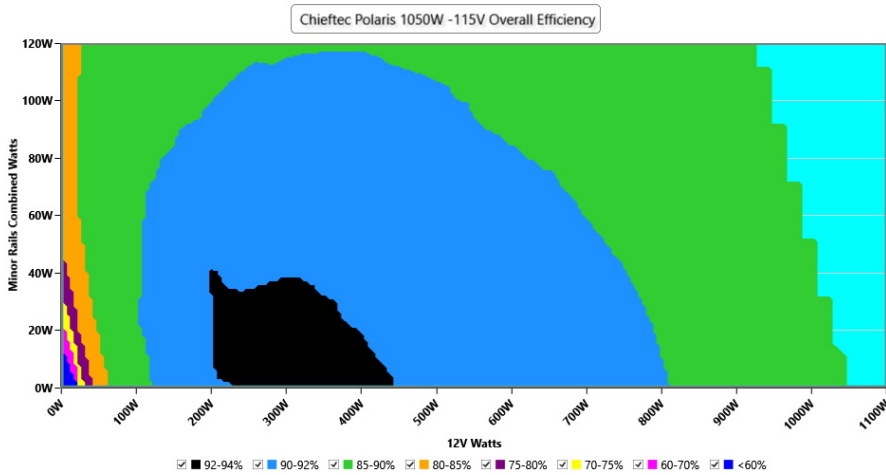
# 115V

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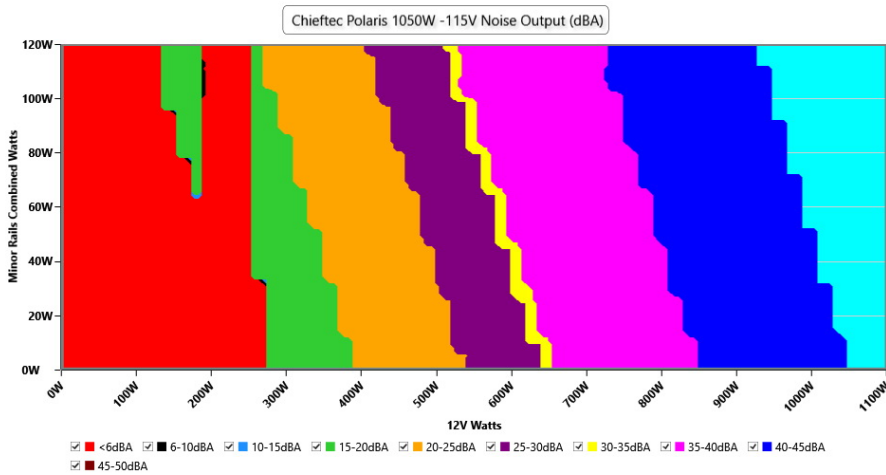
### EFFICIENCY GRAPH 115V



#### 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

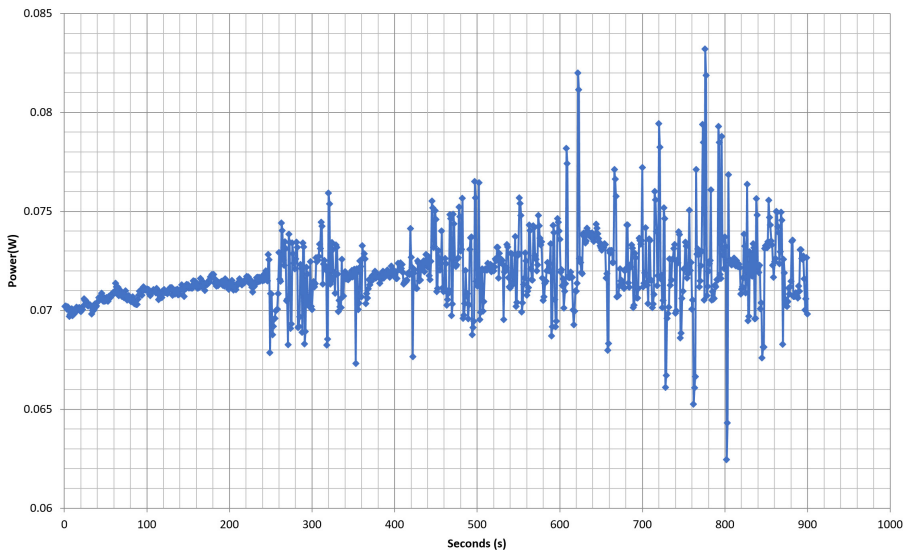
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### VAMPIRE POWER -115V

Power - 211301000419A00HGD1F05000082 - 21/07/2021 - 09:07



#### 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 115V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
10%	6.882A	1.973A	1.989A	0.984A	104.943	88.6%	0	<6.0	45.06°C	0.972
	12.110V	5.067V	3.318V	5.082V	118.445				40.67°C	115.17V
20%	14.798A	2.964A	2.986A	1.184A	209.927	91.639%	0	<6.0	45.85°C	0.99
	12.099V	5.061V	3.316V	5.066V	229.079				40.72°C	115.16V
30%	23.105A	3.463A	3.49A	1.386A	314.935	91.948%	655	15	41.53°C	0.996
	12.071V	5.054V	3.31V	5.05V	342.513				47.23°C	115.16V
40%	31.363A	3.961A	3.99A	1.589A	419.537	91.703%	849	23.8	41.86°C	0.996
	12.063V	5.05V	3.308V	5.033V	457.499				47.88°C	115.15V
50%	39.348A	4.957A	4.991A	1.794A	524.862	91.329%	851	23.8	42.1°C	0.996
	12.055V	5.044V	3.306V	5.016V	574.688				48.92°C	115.15V
60%	47.285A	5.956A	5.995A	2A	629.373	90.723%	1021	29.6	42.69°C	0.997
	12.046V	5.037V	3.303V	4.999V	693.731				49.83°C	115.14V
70%	55.301A	6.959A	7A	2.208A	734.719	89.964%	1308	36.8	43.4°C	0.997
	12.036V	5.031V	3.3V	4.981V	816.681				51.46°C	115.13V
80%	63.329A	7.964A	8.003A	2.315A	839.546	89.232%	1427	39.5	44.1°C	0.997
	12.027V	5.024V	3.298V	4.966V	940.857				52.85°C	115.12V
90%	71.768A	8.467A	8.495A	2.423A	944.904	88.418%	1529	41.4	44.93°C	0.998
	12.017V	5.019V	3.295V	4.952V	1068.677				54.46°C	115.12V
100%	79.953A	8.975A	9.018A	3.047A	1049.722	87.423%	1769	45.7	45.71°C	0.998
	12.008V	5.014V	3.293V	4.921V	1200.745				55.85°C	115.11V
110%	88.008A	9.985A	10.118A	3.055A	1154.372	86.333%	1771	45.8	46.88°C	0.998
	12.000V	5.007V	3.291V	4.908V	1337.126				57.68°C	115.11V
CL1	0.115A	14.373A	14.347A	0A	121.292	83.387%	0	<6.0	49.11°C	0.98
	12.111V	5.023V	3.324V	5.089V	145.457				41.88°C	115.19V
CL2	0.114A	21.993A	0A	0A	111.387	80.932%	0	<6.0	51.05°C	0.981
	12.115V	5.002V	3.328V	5.1V	137.631				42.55°C	115.19V
CL3	0.113A	0A	21.711A	0A	73.973	76.246%	0	<6.0	52.37°C	0.966
	12.121V	5.074V	3.344V	5.097V	97.018				43.28°C	115.19V
CL4	87.339A	0A	0.001A	0.002A	1049.527	88.056%	1654	43.6	44.89°C	0.998
	12.016V	5.054V	3.306V	5.028V	1191.887				55.1°C	115.11V

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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])	Temps (In/Out)	PF/AC Volts
20W	1.226A	0.493A	0.497A	0.196A	19.992	69.767%	0	<6.0	38.95°C	0.84
	12.102V	5.075V	3.32V	5.115V	28.655				36.86°C	115.17V
40W	2.700A	0.69A	0.696A	0.293A	39.993	80.63%	0	<6.0	40.13°C	0.927
	12.106V	5.074V	3.32V	5.11V	49.601				37.74°C	115.17V
60W	4.171A	0.887A	0.894A	0.392A	59.993	84.718%	0	<6.0	43.11°C	0.951
	12.114V	5.073V	3.32V	5.105V	70.815				39.99°C	115.17V
80W	5.640A	1.084A	1.093A	0.49A	79.938	87.469%	0	<6.0	44.28°C	0.965
	12.112V	5.071V	3.319V	5.1V	91.39				40.23°C	115.17V

### RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.38mV	6.00mV	10.36mV	5.06mV	Pass
20% Load	8.73mV	8.23mV	12.23mV	7.18mV	Pass
30% Load	9.01mV	9.91mV	16.23mV	7.54mV	Pass
40% Load	9.77mV	7.68mV	14.16mV	9.26mV	Pass
50% Load	10.48mV	8.33mV	13.90mV	10.43mV	Pass
60% Load	11.80mV	9.15mV	15.72mV	12.60mV	Pass
70% Load	14.03mV	10.21mV	17.54mV	15.49mV	Pass
80% Load	15.70mV	11.33mV	23.10mV	17.10mV	Pass
90% Load	17.62mV	17.89mV	26.80mV	19.07mV	Pass
100% Load	24.37mV	22.40mV	35.49mV	25.15mV	Pass
110% Load	26.83mV	27.29mV	42.26mV	27.15mV	Pass
Crossload1	12.56mV	9.05mV	20.75mV	7.81mV	Pass
Crossload2	7.19mV	9.10mV	10.67mV	6.02mV	Pass
Crossload3	6.13mV	6.61mV	19.57mV	5.67mV	Pass
Crossload4	23.62mV	19.72mV	26.84mV	22.48mV	Pass

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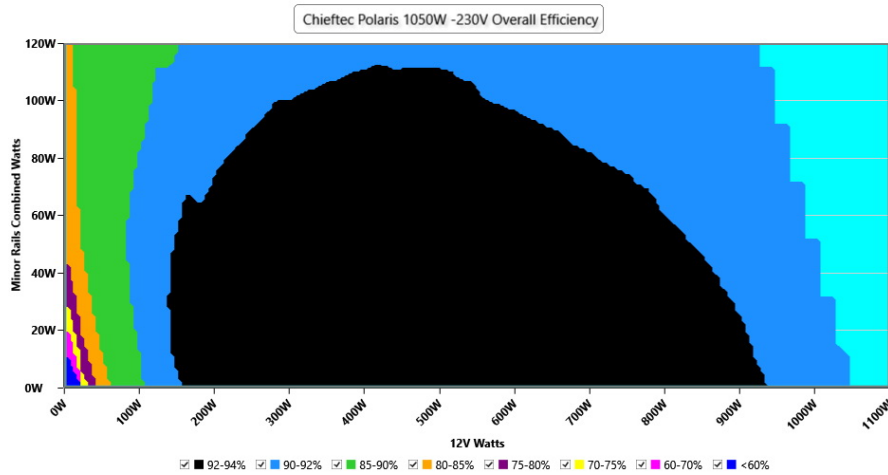
# 230V

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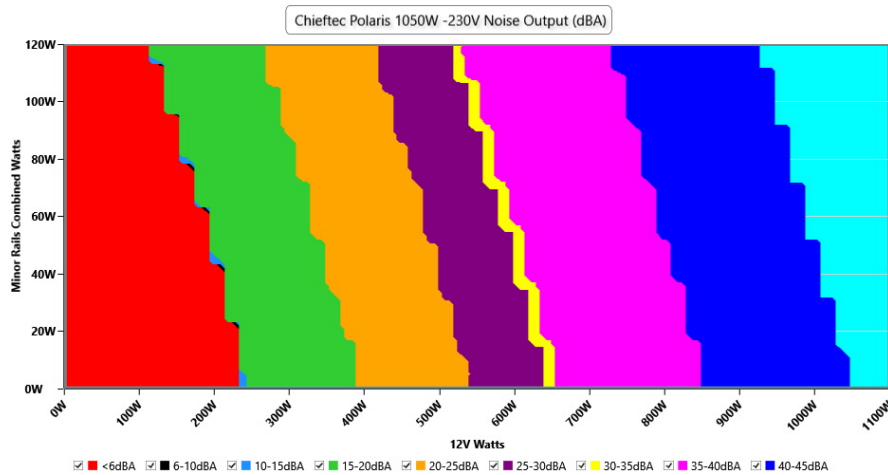
### EFFICIENCY GRAPH 230V



#### INFO

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### NOISE GRAPH 230V



#### INFO

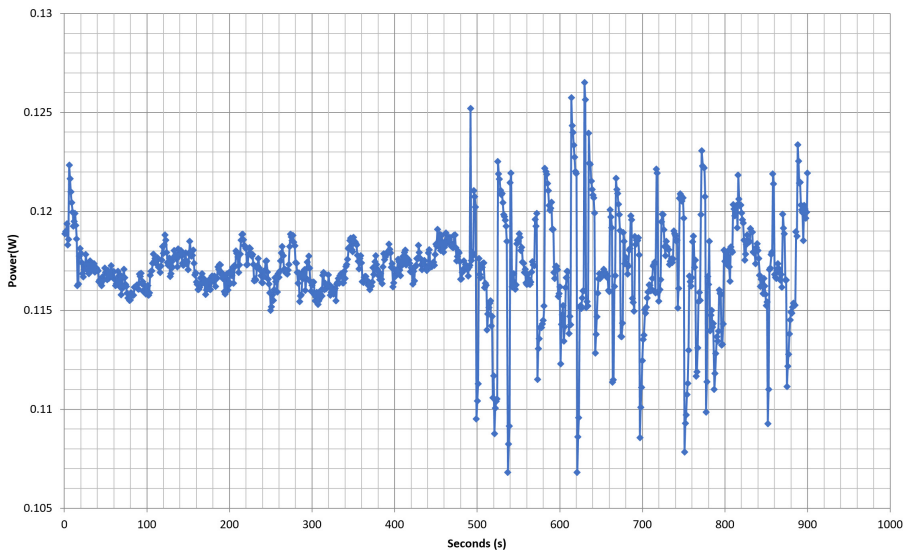
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### 10-110% LOAD TESTS 230V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
10%	6.878A	1.973A	1.987A	0.984A	104.948	89.45%	0	<6.0	45.53°C	0.862
	12.117V	5.069V	3.321V	5.081V	117.329				40.55°C	230.33V
20%	14.788A	2.963A	2.983A	1.185A	209.934	92.791%	0	<6.0	46.06°C	0.944
	12.107V	5.062V	3.319V	5.065V	226.245				40.73°C	230.33V
30%	23.078A	3.461A	3.485A	1.386A	314.936	93.28%	660	15	41.35°C	0.97
	12.085V	5.056V	3.314V	5.049V	337.627				47.29°C	230.33V
40%	31.352A	3.96A	3.988A	1.59A	419.561	93.382%	848	23.8	41.72°C	0.981
	12.068V	5.051V	3.31V	5.033V	449.297				48.1°C	230.34V
50%	39.339A	4.957A	4.99A	1.794A	524.886	93.249%	851	23.8	41.95°C	0.988
	12.058V	5.044V	3.307V	5.016V	562.886				48.88°C	230.34V
60%	47.275A	5.956A	5.994A	2A	629.415	92.894%	1021	29.6	42.26°C	0.992
	12.049V	5.037V	3.303V	4.999V	677.561				49.85°C	230.34V
70%	55.289A	6.959A	6.999A	2.207A	734.724	92.356%	1311	36.8	43.17°C	0.994
	12.039V	5.031V	3.301V	4.982V	795.535				51.29°C	230.34V
80%	63.309A	7.964A	8.002A	2.315A	839.559	91.881%	1434	39.6	44.29°C	0.995
	12.031V	5.024V	3.298V	4.967V	913.74				52.83°C	230.34V
90%	71.748A	8.467A	8.495A	2.422A	944.938	91.393%	1526	41.3	44.88°C	0.997
	12.021V	5.019V	3.295V	4.953V	1033.929				53.88°C	230.34V
100%	79.923A	8.975A	9.018A	3.047A	1049.769	90.728%	1769	45.7	45.59°C	0.998
	12.012V	5.014V	3.293V	4.922V	1157.045				55.41°C	230.35V
110%	87.970A	9.984A	10.116A	3.055A	1154.395	90.122%	1761	45.5	46.84°C	0.997
	12.005V	5.008V	3.291V	4.909V	1280.93				57.73°C	230.35V
CL1	0.115A	14.37A	14.339A	0A	121.292	84.056%	0	<6.0	49.19°C	0.899
	12.112V	5.025V	3.326V	5.09V	144.3				42.34°C	230.37V
CL2	0.114A	22.002A	0A	0A	111.394	81.242%	0	<6.0	51.5°C	0.89
	12.121V	5V	3.331V	5.099V	137.115				43.43°C	230.37V
CL3	0.114A	0A	21.709A	0A	73.976	76.709%	0	<6.0	53.71°C	0.821
	12.124V	5.073V	3.344V	5.096V	96.437				44.71°C	230.37V
CL4	87.316A	0A	0.001A	0.003A	1049.578	91.357%	1650	43.7	45.17°C	0.998
	12.020V	5.053V	3.303V	5.027V	1148.879				55.17°C	230.34V

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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])	Temps (In/Out)	PF/AC Volts
20W	1.226A	0.493A	0.497A	0.196A	19.992	70.64%	0	<6.0	39.07°C	0.473
	12.110V	5.076V	3.321V	5.115V	28.301				36.83°C	230.33V
40W	2.699A	0.69A	0.696A	0.293A	39.993	80.976%	0	<6.0	40.65°C	0.657
	12.110V	5.074V	3.321V	5.11V	49.388				37.83°C	230.33V
60W	4.170A	0.887A	0.894A	0.392A	59.993	85.512%	0	<6.0	42.25°C	0.742
	12.117V	5.073V	3.321V	5.105V	70.157				38.62°C	230.33V
80W	5.638A	1.084A	1.093A	0.49A	79.941	88.07%	0	<6.0	43.84°C	0.802
	12.117V	5.072V	3.321V	5.1V	90.769				39.77°C	230.33V

### RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	5.97mV	5.34mV	10.01mV	5.72mV	Pass
20% Load	7.77mV	7.42mV	11.93mV	7.39mV	Pass
30% Load	8.30mV	8.48mV	13.70mV	10.43mV	Pass
40% Load	8.81mV	7.47mV	13.19mV	12.30mV	Pass
50% Load	9.52mV	8.84mV	14.76mV	14.37mV	Pass
60% Load	11.29mV	9.09mV	15.67mV	16.04mV	Pass
70% Load	12.10mV	9.91mV	16.99mV	17.86mV	Pass
80% Load	14.53mV	12.25mV	23.96mV	19.38mV	Pass
90% Load	16.35mV	17.94mV	30.53mV	21.96mV	Pass
100% Load	24.00mV	22.11mV	35.26mV	26.07mV	Pass
110% Load	26.45mV	26.24mV	40.36mV	28.00mV	Pass
Crossload1	12.37mV	10.18mV	21.76mV	8.40mV	Pass
Crossload2	7.88mV	8.59mV	10.77mV	6.33mV	Pass
Crossload3	6.28mV	7.27mV	20.78mV	7.08mV	Pass
Crossload4	22.85mV	17.37mV	27.86mV	23.38mV	Pass

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**Anex**

**Chieftec Polaris 1050W**



Top side



Power specifications label

**CERTIFICATIONS 115V**




**Aristeidis Bitziopoulos**  
Lab Director

**CERTIFICATIONS 230V**



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