

Lab ID#: CF60001677
Receipt Date: Jul 3, 2020
Test Date: Jul 8, 2020

Report: 20PS1677A
Report Date: Jul 14, 2020

DUT INFORMATION	
Brand	Chieftec
Manufacturer (OEM)	High Power
Series	Proton
Model Number	BDF-600S
Serial Number	1933070061391600ABR1F02003168
DUT Notes	

DUT SPECIFICATIONS	
Rated Voltage (Vrms)	115-230
Rated Current (Arms)	10
Rated Frequency (Hz)	50-60
Rated Power (W)	600
Type	ATX12V
Cooling	120mm Sleeve Bearing Fan (S1202512L)
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 (+-2°C / +- 3.6°F)
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

115V

Average Efficiency	85.007%
Efficiency With 10W (≤500W) or 2% (>500W)	57.197
Average Efficiency 5VSB	76.401%
Standby Power Consumption (W)	0.0330125
Average PF	0.990
Avg Noise Output	35.35 dB(A)
Efficiency Rating (ETA)	SILVER
Noise Rating (LAMBDA)	Standard+

230V

Average Efficiency	87.127%
Average Efficiency 5VSB	75.431%
Standby Power Consumption (W)	0.0790609
Average PF	0.954
Avg Noise Output	36.06 dB(A)
Efficiency Rating (ETA)	SILVER
Noise Rating (LAMBDA)	Standard+

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	18	18	50	2.5	0.3
	Watts	103		600	12.5	3.6
Total Max. Power (W)		600				

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

Chieftec Proton 600W

CABLES AND CONNECTORS

Native Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Caps
ATX connector 20+4 pin (460mm)	1	1	18-22AWG	No
4+4 pin EPS12V (540mm)	1	1	18AWG	No
6+2 pin PCIe (460mm+150mm)	1	2	18AWG	No
SATA (410mm+150mm+150mm)	2	6	18AWG	No
4-pin Molex (410mm+150mm+150mm)	1	3	18AWG	No

Modular Cables

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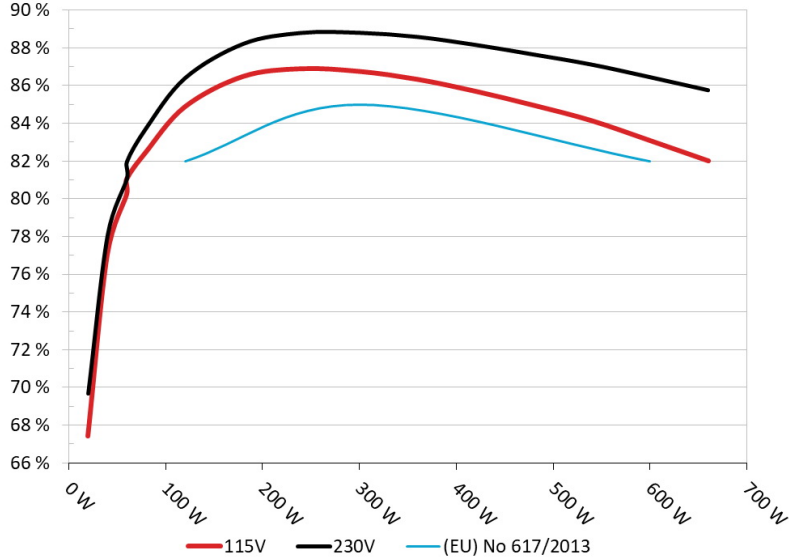
General Data	-
Manufacturer (OEM)	High Power
PCB Type	Single Sided
Primary Side	-
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x MPS HF81 (Discharge IC)
Inrush Protection	NTC Thermistor SCK-1R38
Bridge Rectifier(s)	1x Diodes GBU1006 (600V, 10A @ 100°C)
APFC MOSFETs	2x Infineon IPA60R190P6 (650V, 12.7A @ 100°C, Rds(on): 0.190hm) & 1x SPN5003 FET (for reduced no-load consumption)
APFC Boost Diode	1x Power Integrations QH12TZ600 (600V, 12A @ 90°C)
Bulk Cap(s)	1x Teapo (400V, 390uF, 105°C, LE)
Main Switchers	2x MagnaChip MDP18N50 (500V, 11A @ 100°C, Rds(on): 0.270hm)
Combo APFC / PWM Controller	Champion CM6805BG
Topology	Primary side: APFC, Double-Forward Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	-
+12V MOSFETs	4x ISC TK72E08N1 (80V, 72A @ 25°C, Rds(on): 4.3mOhm)
5V & 3.3V	DC-DC Converters: 4x Advanced Power Electronics AP3R303GMT (30V, 25A @ 70°C, Rds(on): 3.3mOhm) PWM Controllers: ANPEC APW7159C
Filtering Capacitors	Electrolytic: 13x Teapo (1-3,000h @ 105°C, SC), 2x Rubycon (3-6,000h @ 105°C, YXG), 1x Rubycon (4-10,000h @ 105°C, YXJ) Polymer: 2x FPCAP
Supervisor IC	Weltrend WT7527V (OCP, OVP, UVP, SCP, PG)
Fan Model	Globe Fan S1202512L (120mm, 12V, 0.18A, Sleeve Bearing Fan)
5VSB Circuit	-
Rectifier	1x UTC 2N70L FET (700V, 2A, Rds(on): 6.30hm)
-12V	-
Rectifier	1x KEC KIA7912PI (-12V, 1A)

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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Chieftec BDF-600S
Ambient: 32°C - 41°C (89.6°F - 105.8°F)

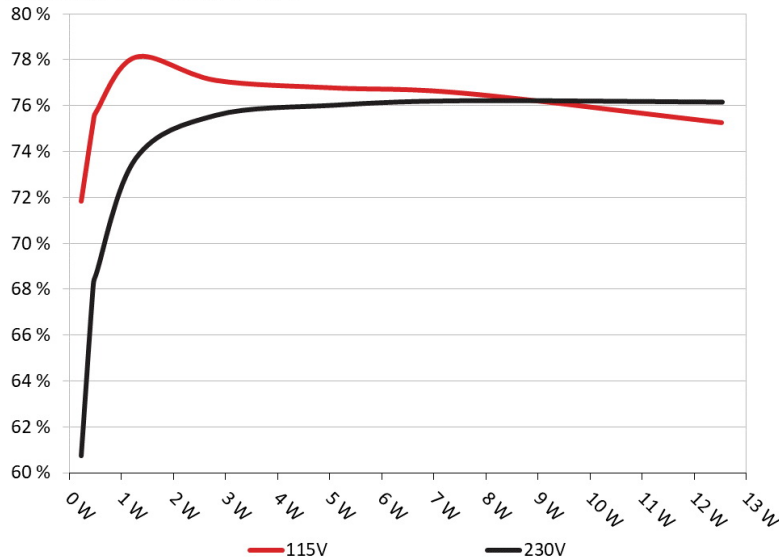


INFO

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 BDF-600S
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 -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.232	71.827%	0.055
	5.143V	0.323		115.13V
2	0.090A	0.463	75.285%	0.100
	5.141V	0.615		115.13V
3	0.550A	2.816	77.087%	0.304
	5.117V	3.653		115.13V
4	1.000A	5.096	76.759%	0.356
	5.094V	6.639		115.13V
5	1.500A	7.604	76.522%	0.385
	5.068V	9.937		115.13V
6	2.500A	12.534	75.248%	0.418
	5.013V	16.657		115.13V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.232	60.733%	0.020
	5.143V	0.382		230.26V
2	0.090A	0.463	68.189%	0.035
	5.141V	0.679		230.26V
3	0.550A	2.815	75.570%	0.159
	5.117V	3.725		230.27V
4	1.000A	5.095	76.011%	0.230
	5.094V	6.703		230.27V
5	1.500A	7.603	76.205%	0.274
	5.068V	9.977		230.26V
6	2.500A	12.539	76.146%	0.319
	5.015V	16.467		230.26V

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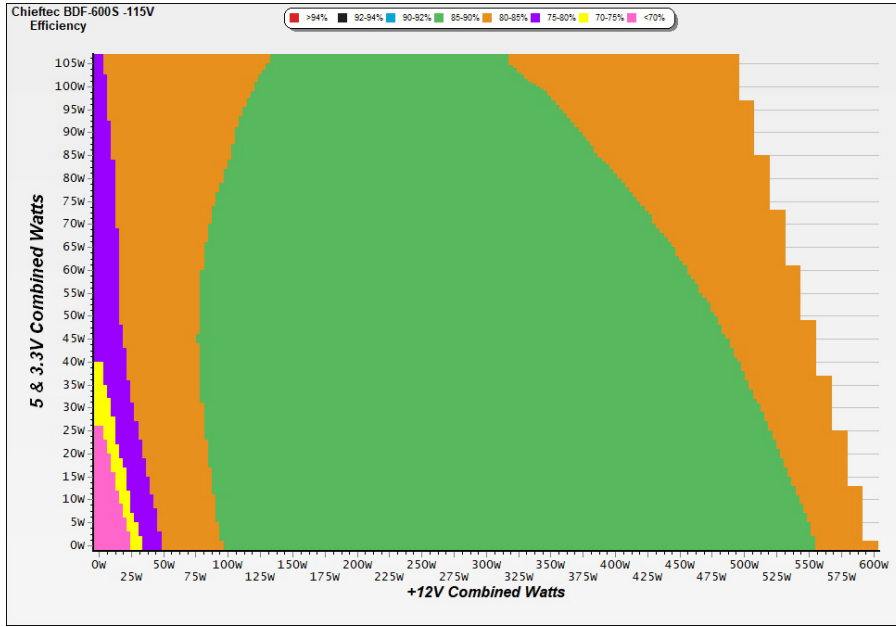
115V

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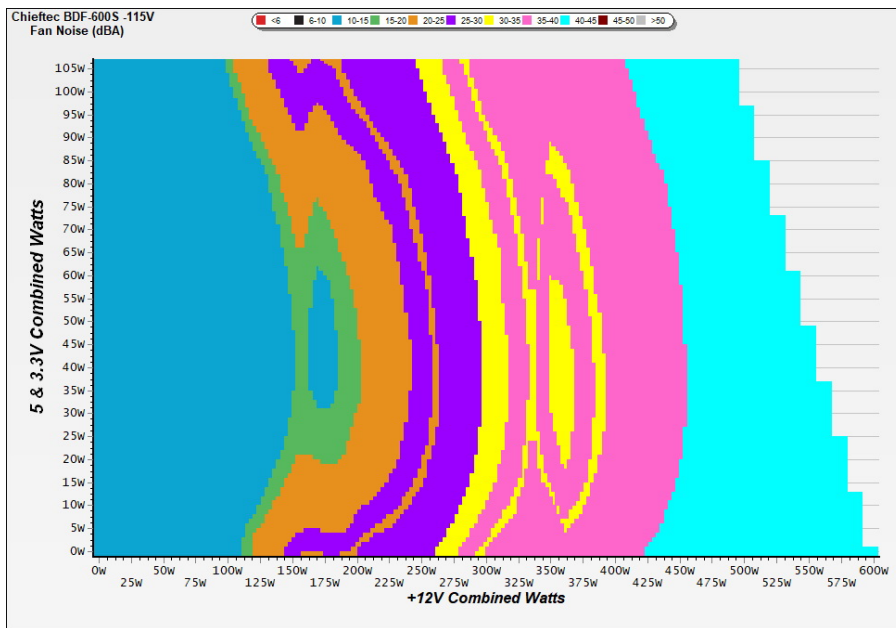
EFFICIENCY GRAPH 115V



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

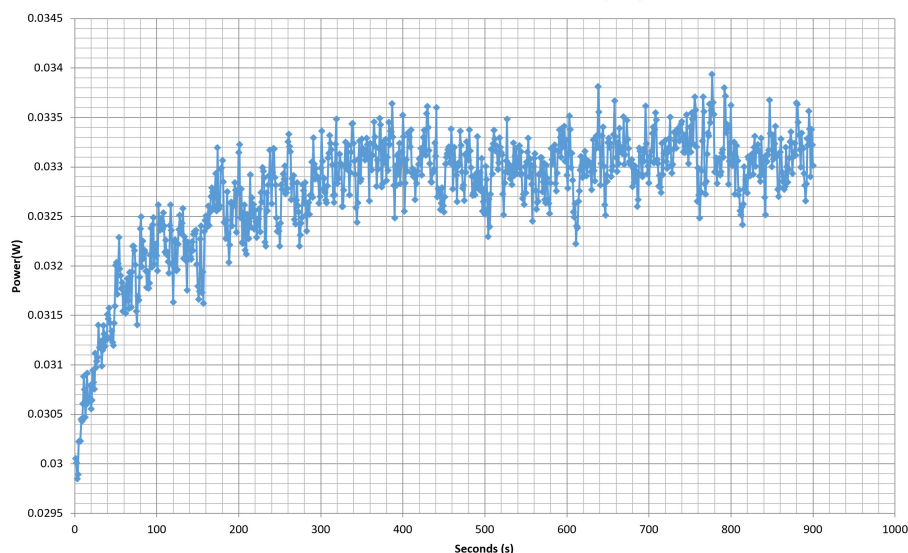
The PSU's noise in its entire operational range and under 30-32 °C (+-2 °C) ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -115V

Power - 1933070061391600ABR1F02003168 - 06/07/2020 - 13:02



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	3.156A	1.934A	1.973A	0.985A	60.014	80.262%	687	12.9	34.09°C	0.984
	12.172V	5.172V	3.344V	5.076V	74.773				38.34°C	115.13V
2	7.335A	2.910A	2.973A	1.188A	120.055	84.895%	841	19.3	34.75°C	0.981
	12.155V	5.156V	3.328V	5.051V	141.416				39.82°C	115.13V
5	20.615A	4.895A	5.026A	1.808A	300.138	86.774%	1560	36.4	36.52°C	0.994
	12.109V	5.108V	3.284V	4.979V	345.883				44.66°C	115.13V
10	42.703A	8.962A	9.269A	2.575A	600.307	83.103%	1818	40.5	39.22°C	0.995
	12.015V	5.024V	3.204V	4.857V	722.367				51.74°C	115.12V

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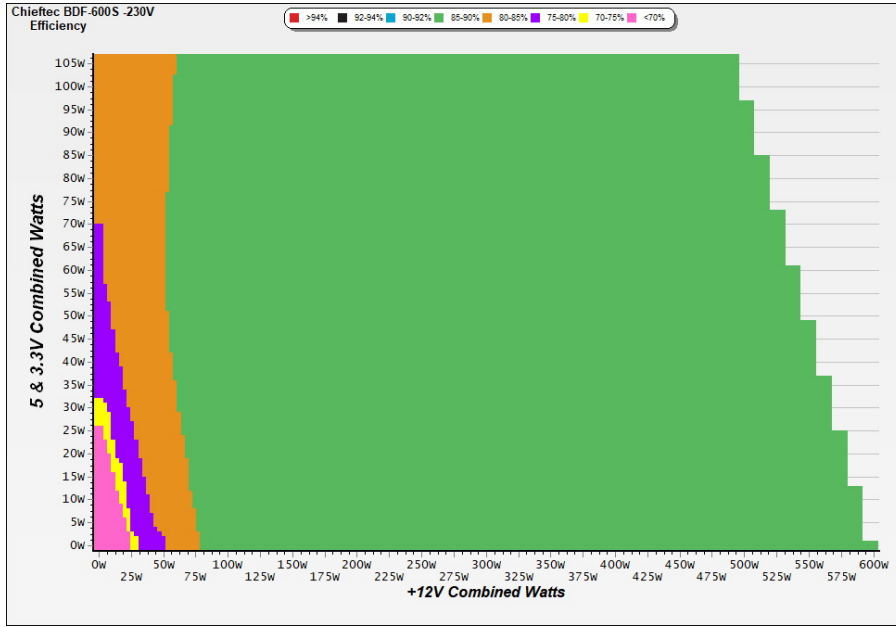
230V

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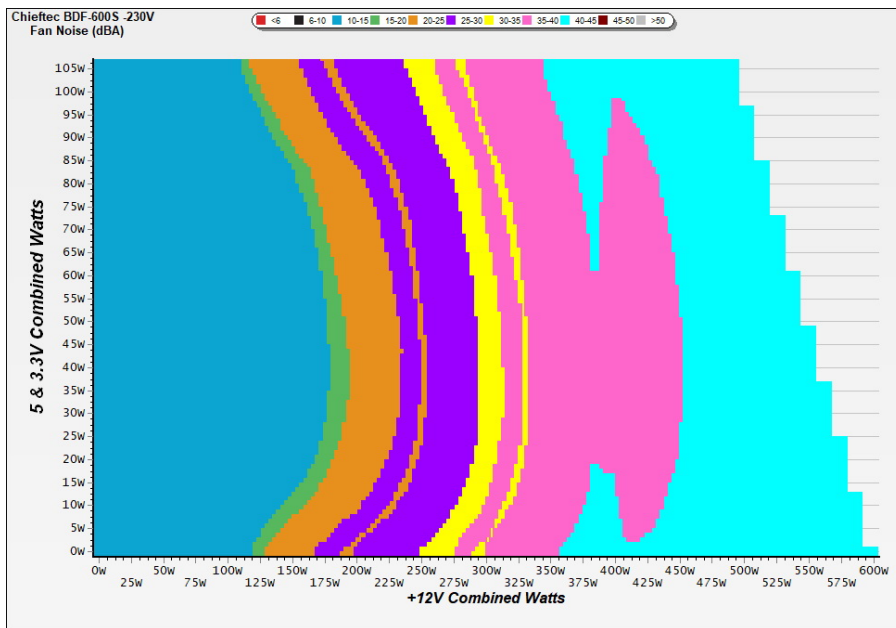
EFFICIENCY GRAPH 230V



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

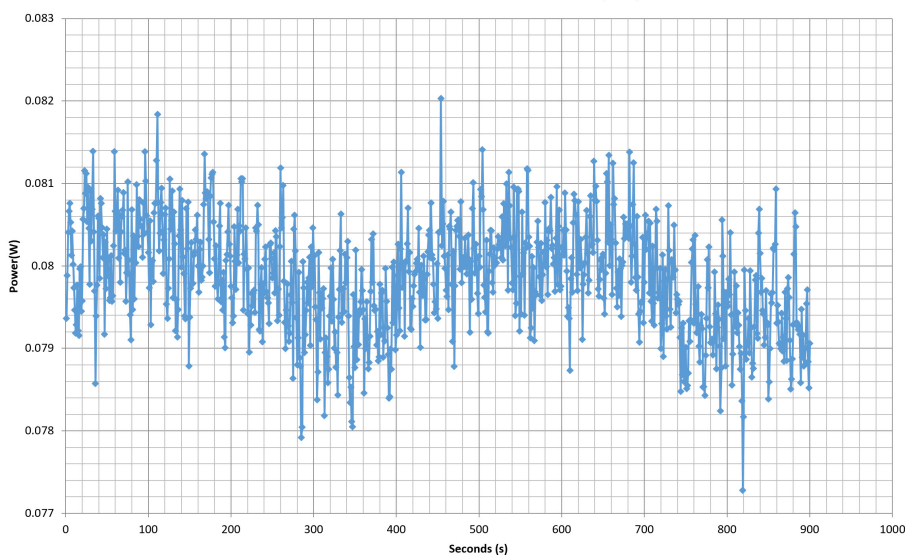
The PSU's noise in its entire operational range and under 30-32 °C (+2 °C) ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -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	3.156A	1.934A	1.974A	0.986A	60.010	81.089%	686	12.4	34.17°C	0.716
	12.169V	5.171V	3.344V	5.075V	74.005				38.99°C	230.27V
2	7.334A	2.911A	2.973A	1.188A	120.038	86.412%	691	14.7	34.63°C	0.924
	12.154V	5.154V	3.329V	5.051V	138.913				39.61°C	230.27V
5	20.611A	4.895A	5.023A	1.808A	300.090	88.815%	1448	34.2	36.43°C	0.983
	12.109V	5.108V	3.286V	4.979V	337.882				43.41°C	230.27V
10	42.695A	8.957A	9.258A	2.571A	600.246	86.463%	1816	40.4	39.55°C	0.985
	12.016V	5.026V	3.208V	4.864V	694.219				50.40°C	230.26V

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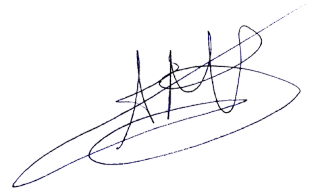


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Power specifications label

CERTIFICATIONS 115V

Aristeidis Bitziopoulos
Lab Director

CERTIFICATIONS 230V



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