

Lab ID#: AD19650116
Receipt Date: Sep 9, 2019
Test Date: Sep 26, 2019

Report: 20PS850A

Report Date: Sep 28, 2019

DUT INFORMATION

Brand	XPG
Manufacturer (OEM)	Channel Well Technology
Series	Core Reactor Gold
Model Number	
Serial Number	
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	47-63
Rated Power (W)	650
Type	ATX12V
Cooling	120mm Fluid Dynamic Bearing Fan (HA1225H12F-Z)
Semi-Passive Operation	X
Cable Design	Fully Modular

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	54.1	3	0.3
	Watts	110		650	15	3.6
Total Max. Power (W)		650				

CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (650mm)	1	1	16-20AWG	No
8 pin EPS12V (650mm) / 4+4 pin EPS12V (+150mm)	1	2	16-18AWG	No
6+2 pin PCIe (650mm+150mm)	2	4	16-18AWG	No
SATA (500mm+145mm+145mm+145mm)	3	12	18AWG	No
4-pin Molex (500mm+150mm+150mm+150mm)	1	4	18AWG	No

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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
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	1x GBU1006 (600V, 10A @ 100°C)
APFC MOSFETS	2x Infineon IPA60R190P6 (600V, 12.7A @ 100°C, 0.190Ohm) & 1x SPN5003 FET (for reduced no-load consumption)
APFC Boost Diode	1x CREE C3D06060A (600V, 6A @ 154°C)
Hold-up Cap(s)	1x Nippon Chemi-Con (420V, 470uF, 2,000h @ 105°C, KMQ)
Main Switchers	2x Infineon IPA60R190P6 (600V, 12.7A @ 100°C, 0.190Ohm)
APFC Controller	Champion CM6500UNX
Resonant Controllers	Champion CU6901V
Topology	Primary side: Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	4x International Rectifier IRFH7004PBF (40V, 164A @ 100°C, 1.4mOhm)
5V & 3.3V	DC-DC Converters: 2x UBIQ QM3054M6 (30V, 61A @ 100°C, 4.8mOhm) & 2x UBIQ QN3107M6N (30V, 70A @ 100°C, 2.6mOhm) PWM Controllers: ANPEC APW7159C
Filtering Capacitors	Electrolytics: 8x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 2x Nippon Chemi-Con (105°C, W), 1x Nippon Chemi-Con (1-5,000h @ 105°C, KZE), 1x Rubycon (4-10,000h @ 105°C, YXJ) Polymers: 24x FPCAP
Supervisor IC	Weltrend WT7502 (OVP, UVP, PG, SCP)
Fan Model	Hong Hua HA1225H12F-Z (120mm, 12V, 0.58A, Fluid Dynamic Bearing Fan)
5VSB Circuit	
Rectifier	1x Galaxy Microelectronics D10PS45L SBR (45V, 10A) & InPower Semiconductor ISD04N65A (650V, 4A, 2.50hm)
Standby PWM Controller	On-Bright OB5282CP

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	89.455%
Efficiency With 10W (≤500W) or 2% (>500W)	73.209
Average Efficiency 5VSB	79.675%
Standby Power Consumption (W)	0.0362335
Average PF	0.987
Avg Noise Output	22.65 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A

230V

Average Efficiency	91.334%
Average Efficiency 5VSB	79.129%
Standby Power Consumption (W)	0.0558775
Average PF	0.951
Avg Noise Output	23.23 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A

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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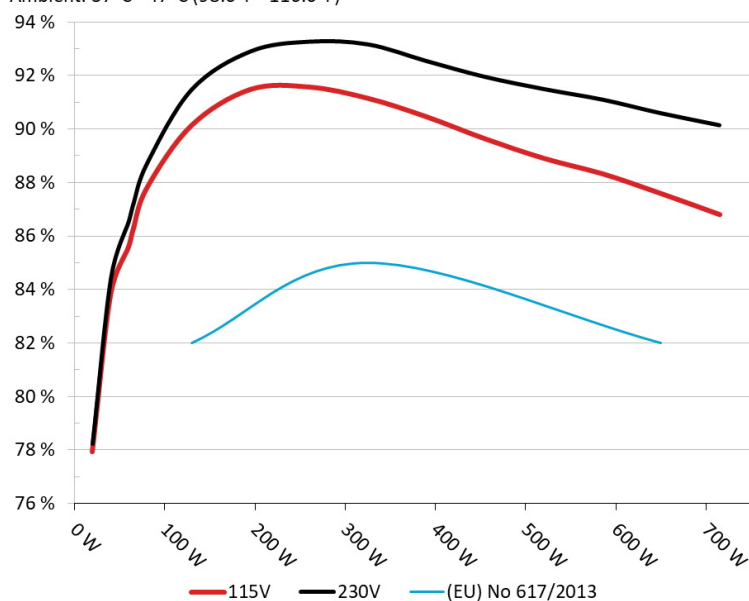
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: XPG Core Reactor 650

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



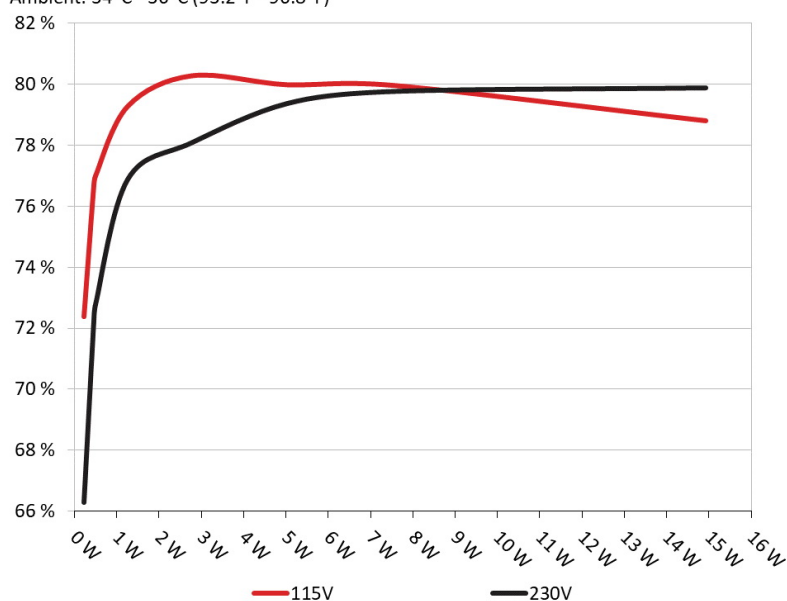
INFO

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: XPG Core Reactor 650

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)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.228	72.381%	0.032
	5.053V	0.315		115.13V
2	0.090A	0.455	76.599%	0.059
	5.053V	0.594		115.13V
3	0.550A	2.773	80.284%	0.255
	5.040V	3.454		115.13V
4	1.000A	5.029	79.990%	0.341
	5.028V	6.287		115.13V
5	1.500A	7.522	79.970%	0.389
	5.014V	9.406		115.13V
6	3.000A	14.917	78.809%	0.452
	4.972V	18.928		115.13V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.228	66.279%	0.010
	5.054V	0.344		230.27V
2	0.090A	0.455	72.108%	0.019
	5.053V	0.631		230.27V
3	0.550A	2.773	78.069%	0.099
	5.040V	3.552		230.27V
4	1.000A	5.028	79.356%	0.163
	5.027V	6.336		230.27V
5	1.500A	7.522	79.750%	0.217
	5.014V	9.432		230.27V
6	3.000A	14.916	79.867%	0.314
	4.972V	18.676		230.27V

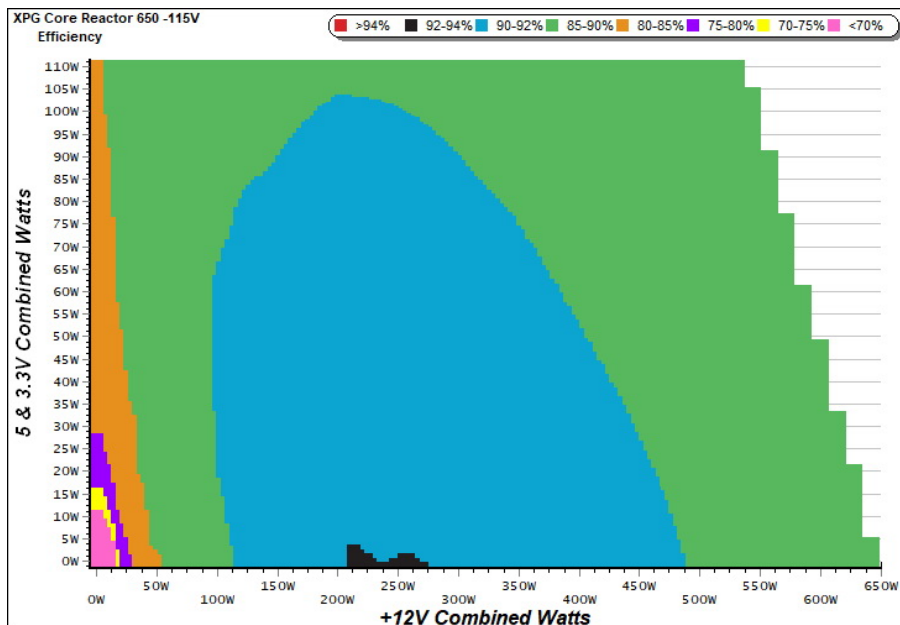
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115V

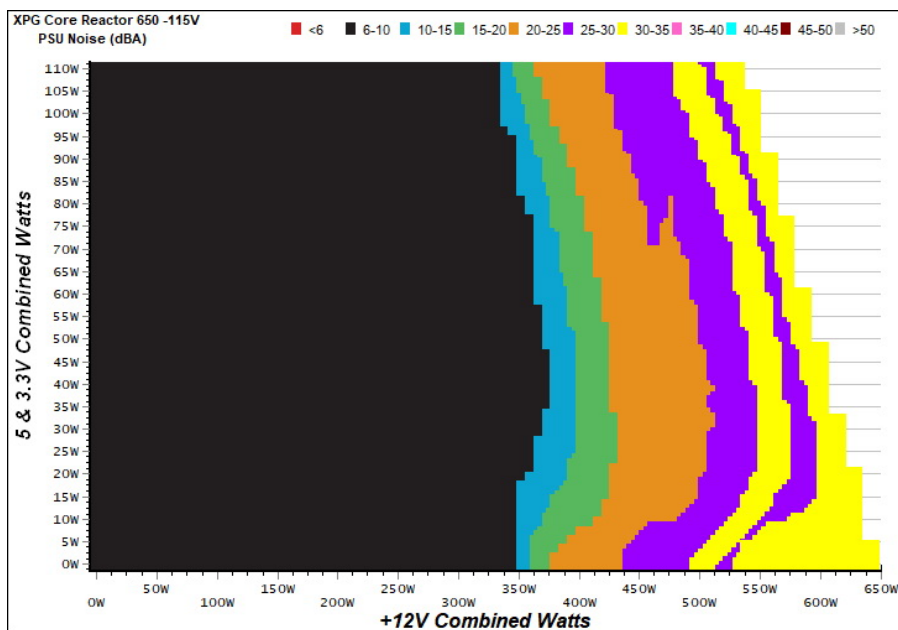
EFFICIENCY GRAPH 115V



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

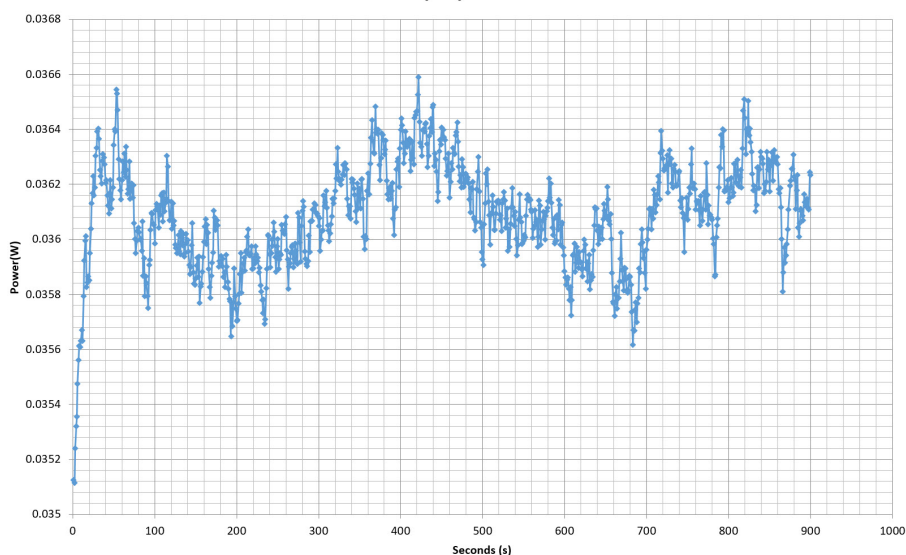
The PSU's noise in its entire operational range and under 30-32 °C (+2 °C) ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -115V

Power - 25/09/2019 - 10:49



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	3.561A	1.988A	1.991A	0.998A	64.949	86.256%	658	10.0	40.02°C	0.963
	12.173V	5.032V	3.312V	5.012V	75.298				44.79°C	115.13V
2	8.152A	2.983A	2.990A	1.199A	129.460	90.137%	661	10.1	40.31°C	0.987
	12.090V	5.030V	3.309V	5.007V	143.626				45.52°C	115.13V
5	22.777A	4.980A	4.999A	1.805A	325.069	91.154%	948	19.3	42.13°C	0.992
	12.054V	5.023V	3.300V	4.988V	356.614				49.56°C	115.13V
10	46.425A	8.994A	9.048A	3.032A	649.988	87.592%	2088	42.5	45.38°C	0.993
	12.068V	5.006V	3.283V	4.948V	742.066				56.41°C	115.12V

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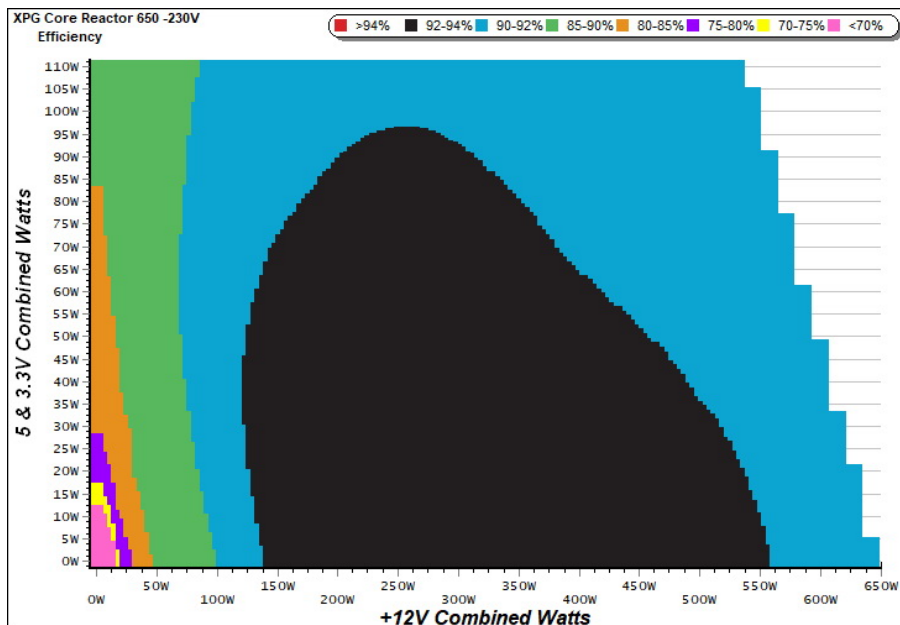
230V

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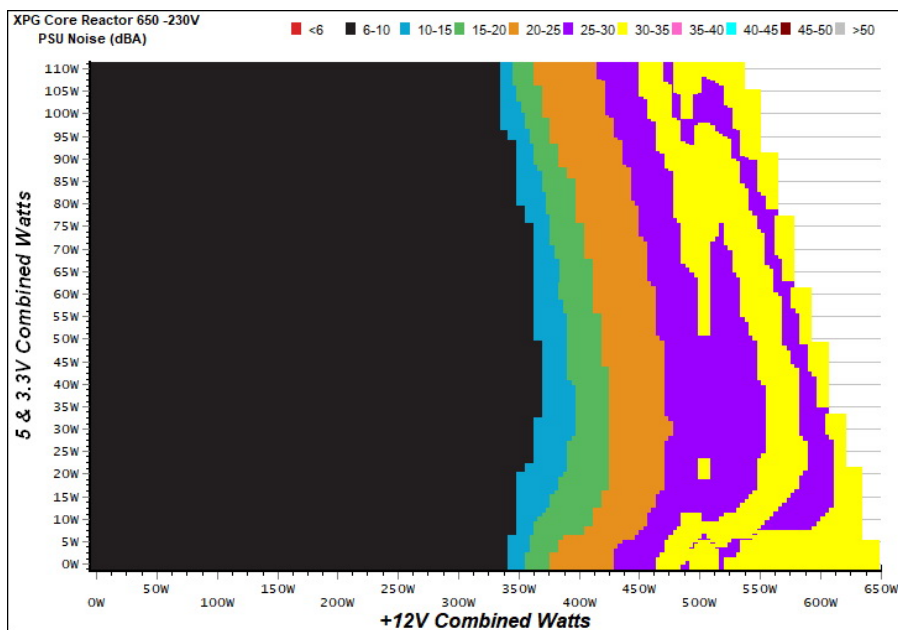
EFFICIENCY GRAPH 230V



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

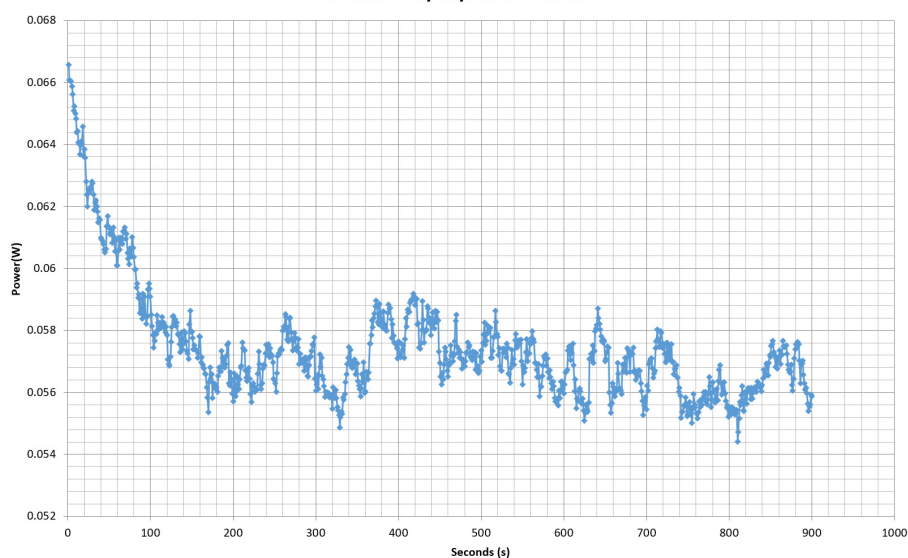
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VAMPIRE POWER -230V

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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	3.566A	1.989A	1.994A	0.998A	65.021	87.207%	659	10.1	40.03°C	0.796
	12.173V	5.032V	3.311V	5.011V	74.559				44.80°C	230.27V
2	8.155A	2.984A	2.993A	1.199A	129.526	91.463%	663	10.2	40.79°C	0.910
	12.092V	5.030V	3.309V	5.006V	141.616				45.90°C	230.27V
5	22.782A	4.980A	5.001A	1.805A	325.112	93.151%	752	12.9	42.55°C	0.971
	12.053V	5.023V	3.300V	4.988V	349.015				49.14°C	230.27V
10	46.421A	8.993A	9.049A	3.033A	649.989	90.580%	2134	43.0	45.60°C	0.985
	12.069V	5.006V	3.283V	4.948V	717.589				56.20°C	230.27V

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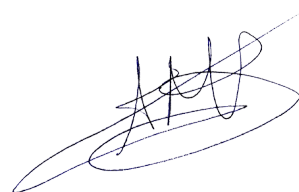


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Power specifications label

CERTIFICATIONS 115V

Aris Mpitsiopoulos
Lab Director

CERTIFICATIONS 230V



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