Power Source Setup

Suzanne Stone

Demartek

SNIA Emerald™ Training

SNIA Emerald™ Power Efficiency Measurement Specification

Version 3.0

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SNIA Emerald™

Demartek Background

- Test lab specializing in real-world, hands-on research and analysis of data center technologies
- ISO 17025 accredited test lab
- EPA-recognized test lab for ENERGY STAR Data Center Storage testing
- SNIA Emerald Recognized Tester
- Website: www.demartek.com/TestLab

Real-world, Hands-on Research & Analysis

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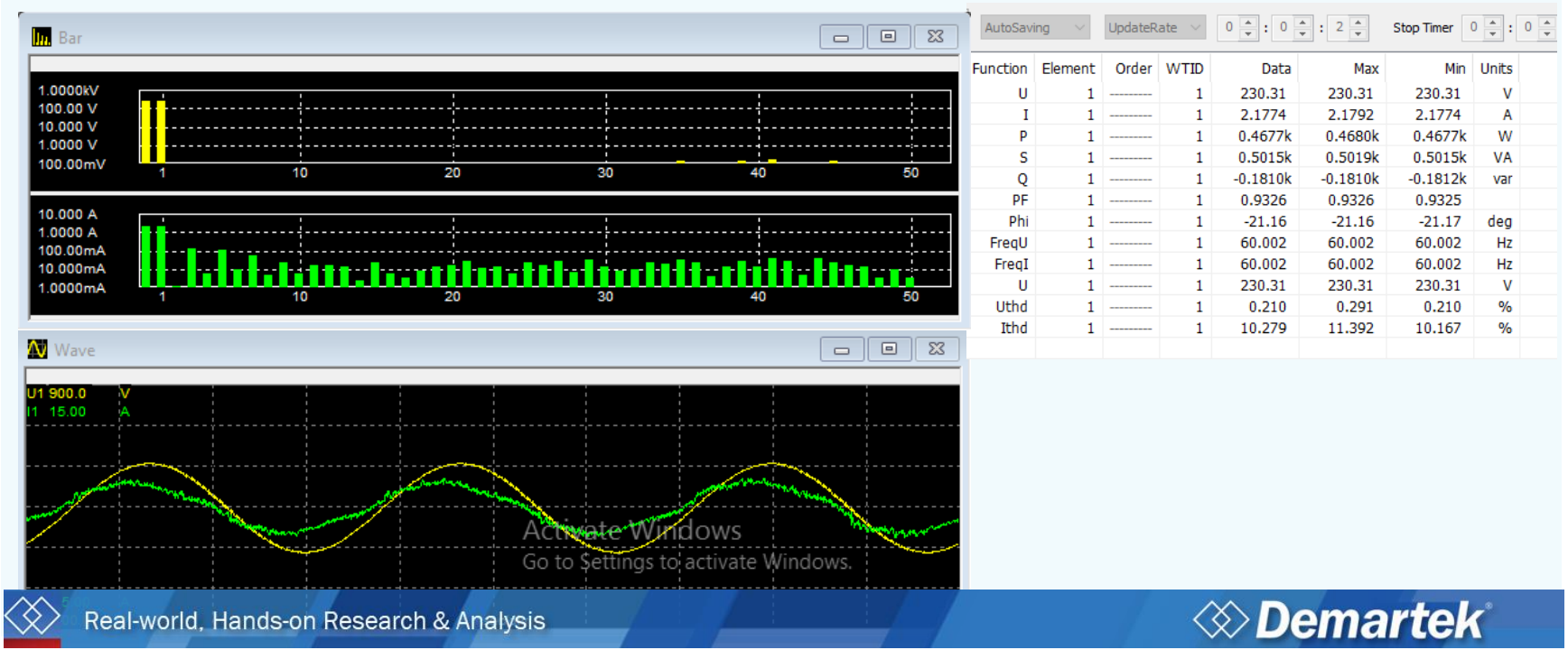
Power Requirements

- ENERGY STAR has always required power conditioning
- SNIA Emerald has added the same requirements as ENERGY STAR to new version of their specification:
  - ≤ 1500W ±1% Voltage Tolerance ±2.0% THD
  - ≥ 1500W ±5% Voltage Tolerance ±5.0% THD
  - Allowed Voltages: 100V, 115V, 200V, 208V, 230V, 400V

Typical Wall Power

- Our wall power comes in at around 239-241V. We typically work with smaller systems requiring 1% voltage tolerance. We need to be at 227-232V.
- We also see our Voltage THD vary considerably (this can depend on the equipment under test as much as the wall power.)

Harmonics and Voltage with a Source



Function	Element	Order	WTID	Data	Max	Min	Units
U	1	---------	1	230.31	230.31	230.31	V
I	1	---------	1	2.1774	2.1792	2.1774	A
P	1	---------	1	0.4677k	0.4680k	0.4677k	W
S	1	---------	1	0.5015k	0.5019k	0.5015k	VA
Q	1	---------	1	-0.1810k	-0.1810k	-0.1812k	var
PF	1	---------	1	0.9326	0.9326	0.9325	
Phi	1	---------	1	-21.16	-21.16	-21.17	deg
FreqU	1	---------	1	60.002	60.002	60.002	Hz
FreqI	1	---------	1	60.002	60.002	60.002	Hz
U	1	---------	1	230.31	230.31	230.31	V
Uthd	1	---------	1	0.210	0.291	0.210	%
Ithd	1	---------	1	10.279	11.392	10.167	%

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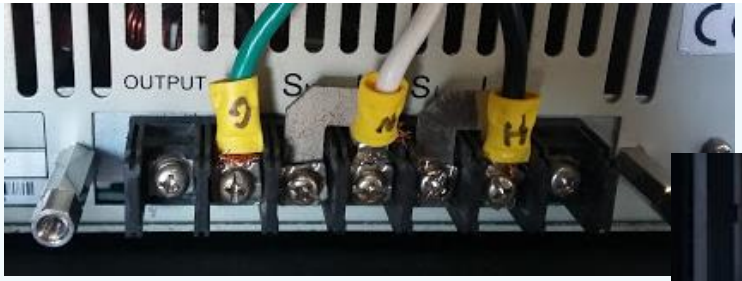
Setting Up Source

-  Currents of only 100-200mA can kill under the wrong conditions. 
- Make sure personnel are qualified or hire an electrician.
- Demartek procedure: Keep wall power unplugged while you attach everything else. Have someone else check your work, put the guards in place, then plug in to wall power and start.

Setting Up Source

- One cable goes from source output to power meter to storage. Make sure nothing is plugged in to wall power while you do this.

Setting Up Source



Setting Up Source

- One cable goes from wall power to A/C input.

*Connect first, put on guard, then plug in, *please.*

Setting Up Source

- Now, check your work!

Setting Up Source

- Guards in place! Not plugged in!

Setting Up Source

- Plug it in. Turn on source, set your desired voltage, and turn on output.

Setting Up Source

- Plug it in. Turn on source, set your desired voltage, and turn on output.

Setting Up Source

- Plug in your power meter, turn it on, and observe.

Q&A

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Questions?

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www.demartek.com/TestLab

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