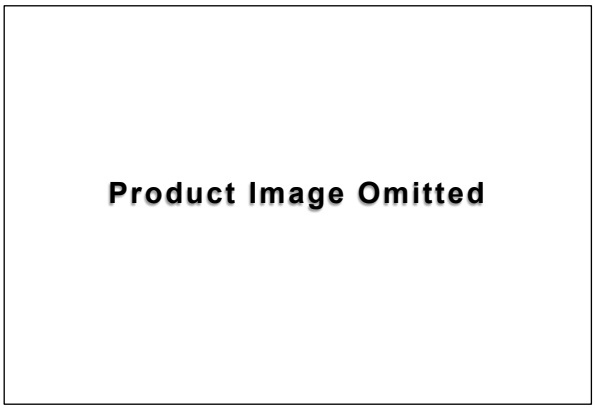
2011

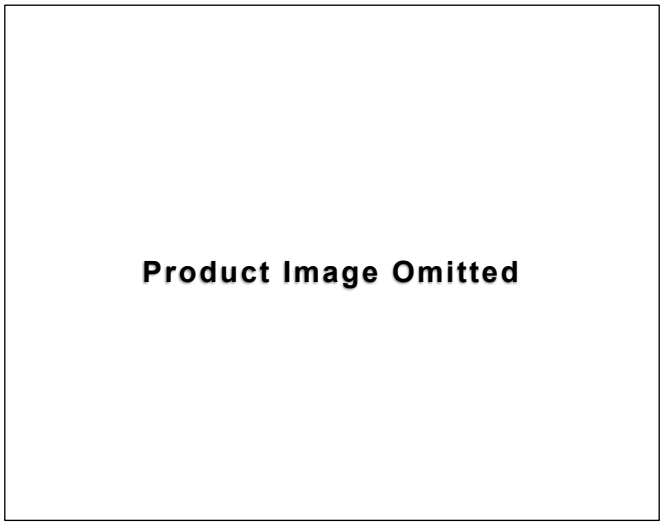
INTRODUCTION

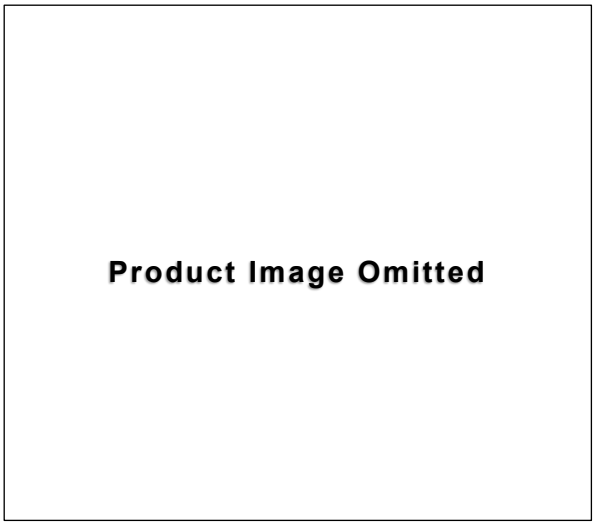
360° Test Labs has been retained to perform tests upon an energy saving device, four provided samples of which are shown to the right.



TESTED ITEMS

Disassembly of a device reveals three sets of two plastic clamps held together by a pair of cast-in tie-wraps, the set of three devices held together by a single-sided aluminum tape with a black plastic insulating tape wrapped over the aluminum; see the photo to the left below.





Close examination of the plastic clamps finds embossed labels on the outside, as seen in the photo to the right above. Note the arrow on the top half pointing to the right; also note the device has a marked ... shape with the “nose” to the right, in the direction of the arrow.

When engineers removed the ... sufficiently as to determine ..., we found ...; see the following photo. It is not clear from the installation video at http://www.... whether the device is intended to be installed with the “nose” ... pointing toward or away from the load, although the electrician in the video does appear to examine the end of the devices and is seen to flip around two of the three that he installed in the left breaker box.

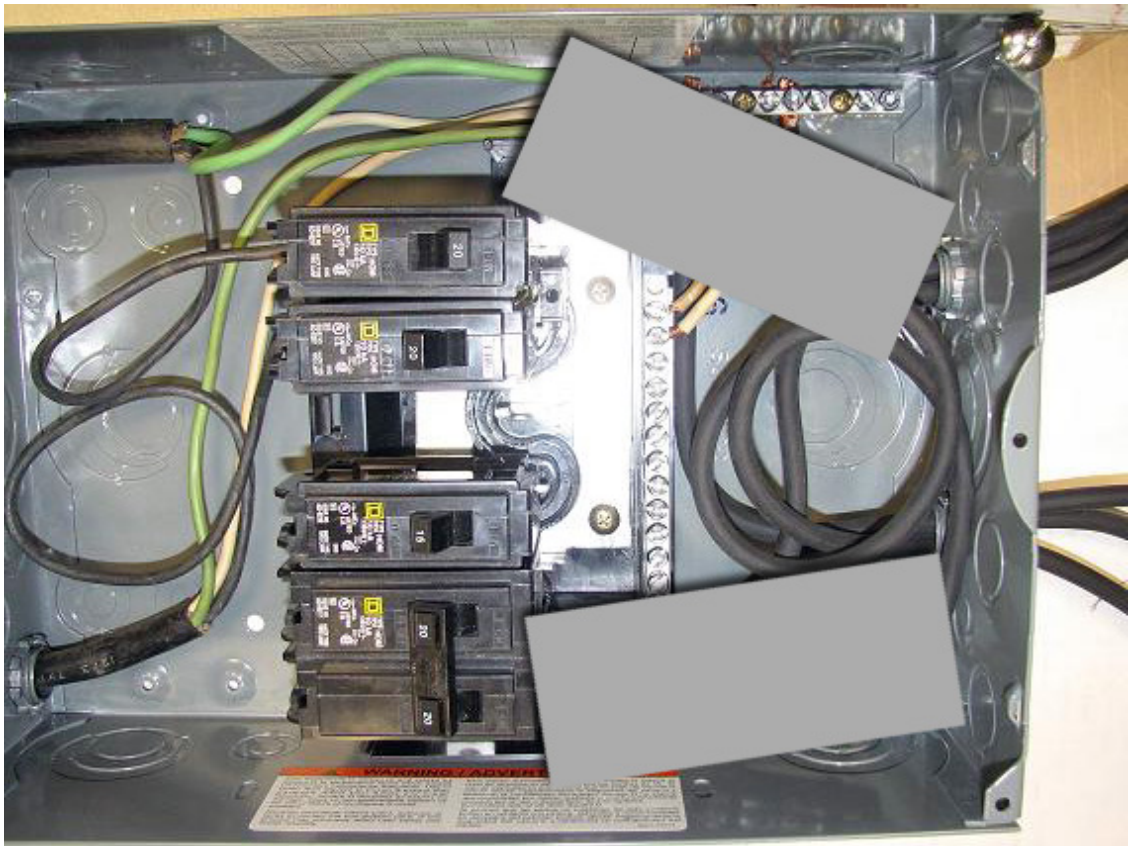
An ohmmeter check of a device, to determine whether it is built of some kind of conductive material, showed that the internal device is not conductive. Even when the ohmmeter probes were placed within 0.01” of one another, the resistance remained too high to measure (at least 3 Gigaohms).

A device was cut in half with a pair of tin snips; see the following photo. With some pressure on the tin snips, the tin snips cut through the device as if it were made of a stiff but somewhat flexible plastic material, similar to the plastic from which tie wraps are made.

TEST SET UP AND EQUIPMENT

To faithfully simulate installation within a typical residential breaker box, electrical engineers installed breakers within a residential type breaker box. The breaker box was provided with both sides of the 240VAC line, as seen below, with tested devices installed on the mains lines. Two 20 ampere breakers provided interruption of the mains. The breakers fed a 5 and 10 foot length of 3-conductor, 12-gauge power cable into which the loads were plugged. A four-way “cube” was used to break out power for multiple loads; no power strips with transient protectors were

utilized through these measurements since it was desired to see how the tested devices performed such tasks.



Loads that were tested with the tested devices included:

- Transformer-powered test equipment, including:
  - Tektronix 7904 oscilloscope with dual-trace 7A24 and 7A26 plug-ins
  - Tektronix 177D1 Curve Tracer
  - Hewlett Packard 6622A Programmable Power Supply
  - Hewlett Packard 8935A-series TDMA Analyzer
  - Hewlett Packard 8640B Signal Generator
- 1500 watt electric space heater
- Desktop computer, LCD monitor and external USB hub
- Assorted fluorescent lamps, combined total of 120 watts
- Assorted tungsten-filament lamps, including a high-intensity photo studio lamp
- Electric drill
- 1.25 HP vacuum cleaner

Each load was tested with and without an tested device mounted on the mains wire. Power was not interrupted as the device was installed or removed, so that continuous recording of electrical parameters could be accomplished. Several devices, such as the fluorescent lamps, vacuum cleaner, computer, and electric drill, required a 5 to 30 minute warm-up period before they stabilized and drew a constant amount of power (engineers allowed the computer to set into its idle state before beginning measurements). 360° Test Labs also performed measurements with some of the above equipment combined and drawing a total of 14 amperes.

Measurement equipment included the following:

- Lutron LX-1108 Lux Meter
- Tektronix 7904 Oscilloscope Mainframe with 7A24 and 7A26 dual-trace plug-ins
- Amprobe ACD-56HPQ Power Quality Clamp-On Meter
- Watt's Up PRO ES Power Analyzer and Data Logger
- Fluke VR1710 Voltage Quality Recorder

The Lutron lux meter measured light intensity from the fluorescent and incandescent lamps as the tested devices were installed or removed.

The Tektronix oscilloscope provided a real-time view of the AC line waveform.

The clamp-on Amprobe meter was used to verify the current, voltage and power factor measurements being recorded by the Watt's Up PRO Analyzer.

The Watt's Up PRO ES meter provided continuous data measurement of the following parameters:

- Line Voltage to the load(s)
- AC current drawn by the load(s)
- Power Factor
- Real power (watts) drawn by the load(s)
- Apparent power (Volt-Amps) drawn by the load(s)

Reactive power cannot be measured but instead is calculated from the Real Power, Apparent Power, or Power Factor.

The high precision Fluke Voltage Quality Analyzer was used to monitor for voltage transients or spikes (which could also be recorded by the Watt's Up meter but only at 1 second intervals; the Fluke can capture such spikes at the moment they occur), as well as AC current and power factor. These measurements provided back-up to those performed by the Watt's Up PRO ES meter.

TEST PROCEDURE

A selected load was plugged into the breaker box, turned on, and then the various electrical parameters of the load were monitored, until the load had stabilized. The fluorescent lamps required over ½ hour before their current stabilized sufficiently that measurements could be conducted over a 10-minute span. Similarly, the vacuum cleaner also changed its current draw as the motor warmed up, as did the electric drill. The computer was allowed to boot up then run until the monitor showed the computer had gone into a stable idle state. The test equipment was also allowed to run until all equipment had stabilized and the current draw was steady.

Throughout our measurement tests, engineers noted that the AC line voltage would vary a volt or two, which also caused the current drawn by a load to vary by a small amount. Thus, several times, when HVAC or lighting loads were varied within our test facility causing the AC voltage to jump or dip significantly, it was necessary to stop and re-run a measurement procedure.

After the load(s) had stabilized, then the Watt's Up recorder was reset, and then allowed a few seconds of steady recording before beginning the actual measurement run itself. A measurement run consisted of either 5 or 10 minutes of the load operating. Measurements began with the tested device installed with the following loads:

- Vacuum cleaner
- Photo studio lamp
- Electric drill
- Fluorescent lamps
- Computer, monitor and external USB hub
- A run called “All Above” which combined a number of different types of loads (purely resistive, inductive and capacitive) and that included the heater set to 1 kW, computer with monitor and USB hub, Tektronix 7904 oscilloscope, Tektronix 177D1 Curve Tracer, Hewlett Packard 6622A Power Supply, and Hewlett Packard 8935 TDMA Analyzer, the total of which drew about 14 amperes.

Measurement runs which began without an tested device already installed included the following:

- Transformer-powered test equipment
- Heater set to 1500 watts

The table on the following page lists measured electrical parameters of each load tested, with and without the tested device installed. Plots of each of five electrical parameters for each load are shown on the following pages. A following table lists the electrical parameters and measured light levels of the fluorescent lamps, the high intensity photo studio lamp, and the fluorescent lamps that were measured during the “All Above” measurement run.

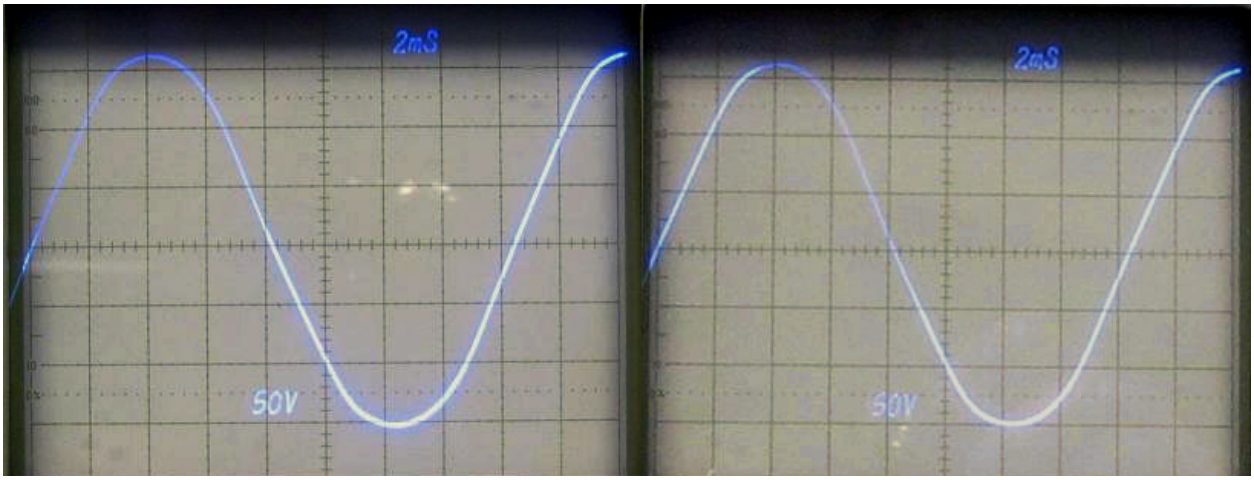
MEASUREMENT ANALYSIS

Examination of the table reveals that with one exception, there was less than one percent difference in the real power drawn by any equipment/appliance with an tested device installed, and without an tested device installed. The one exception was the vacuum cleaner, and analysis of its real power, AC current, apparent power, and voltage plots show that initially, the vacuum cleaner drew much more current and power than it did after it had warmed up after about two minutes had passed. At that time, all four parameters had dropped to their lowest values measured over the 20-minute measurement period but were slowly rising again until a relatively steady-state can be seen beginning at about the 12th minute. The conclusion here is that the vacuum cleaner was not a good example: at least, not unless it had first been allowed to stabilize and measurements begun some minutes after it had been turned on.

Initial measurements of the 1500 watt space heater seemed to show that after the tested device was installed, the heater drew MORE current, and thus power; but by the conclusion of the measurement period, the heater was drawing LESS current, and thus consuming less power. However, it can be seen, by the voltage measurement, that the voltage had increased incrementally immediately after the tested device was installed, and that it had dropped by half a volt by the conclusion of the measurement period; thus, **the difference during that time was actually due to the AC mains line voltage changing rather than any effect the tested device may have had upon the current drawn by the space heater.**

Close examination of the plots for other loads show that very often, slight changes in electrical parameters are seen associated with the line voltage available; the lower the voltage, the less the power and current drawn. Some minor fluctuations (up to about ½ volt) in line voltage can be found on the voltage plots of other equipment/appliances, which accounts for the slight variation in current drawn, and thus real and apparent power, by each load. This amount of line voltage swing is typical of most homes and businesses.

Images of the oscilloscope traces are shown below while measuring the test equipment load; the first is with the tested device not installed, the second is with the tested device installed. There is no discernable difference with or without the tested device although the AC line voltage can be seen to have shifted slightly in the right image.



Left above: Test Equipment load without device installed on the mains line.

Right above: Test Equipment load with device installed on the mains line.

LAMP MEASUREMENTS

The table on page 8 presents the parameters measured during three tests during which the light intensity (in Lux) were measured from fluorescent lamps or the high intensity photo studio lamp. The difference in each test was less than 1%; light emissitivity appeared to be relatively unaffected by the use of an tested device.

CONCLUSION

With the exception of the vacuum cleaner, there was less than 1% change in real power consumed by a variety of electrical appliances and equipment. The vacuum cleaner can be seen to have stabilized after several minutes of operation, whereupon there is no discernable difference between having the tested device installed, and without the tested device.

Equipment	Notes	Time	Amps.	Real Power (Watts)	Volts AC	Power Factor	Apparent Power (Volt-Amps)	Calc. Reactive Power (Watts)	% Difference in Real Power With tested device Installed (see note 2)
Vacuum Cleaner	Device Installed	1428:30	6.737	796.7	122.2	0.91	873.0	356.9	
"	Device Removed	1440:30	6.316	727.8	122.7	0.93	775.3	267.2	
"	Measurement Ended	1450:05	6.315	728.9	122.8	0.93	776.3	267.1	**109.3**
Electric Drill	Device Installed	1642:00	2.942	354.4	124.4	0.96	367.2	96.1	
	Device Removed	1647:00	2.936	355.4	124.7	0.97	366.2	88.3	
	Measurement Ended	1652:00	2.942	356.4	124.7	0.97	367.0	87.6	**99.4**
High-Intensity Photo Studio lamp	Device Installed	1510:12	2.259	285.6	125.6	1.00	285.6	0.0	
"	Device Removed	1515:48	2.261	285.5	125.6	1.00	285.5	0.0	
"	Measurement Ended	1520:00	2.262	285.6	125.5	1.00	285.6	0.0	**100.0**
Test Equipment	Device **Not** Installed	1635:03	8.162	826.6	122.4	0.82	999.6	562.1	
"	Device Installed	1645:57	8.172	825.0	122.2	0.82	998.0	561.6	
"	Measurement Ended	1655:00	8.162	824.6	121.9	0.82	996.0	558.6	**99.8**
Fluorescent Lamps	Device Installed	1215:19	0.986	105.0	126.2	0.84	124.6	67.1	
"	Device Removed	1220:43	0.985	105.0	126.2	0.84	124.6	67.1	
"	Measurement Ended	1225:00	0.986	105.1	126.3	0.84	124.6	66.9	**99.9**
Computer, Monitor and External USB Hub	Device Installed	1100:00	1.950	147.1	125.6	0.60	244.3	195.0	
"	Device Removed	1105:35	1.974	147.2	125.6	0.60	244.3	195.0	
"	Measurement Ended	1110:30	1.941	147.5	125.4	0.60	243.5	193.7	**99.7**
1500 Watt Space Heater	Device **Not** Installed	1315:00	12.503	1444.9	116.0	0.99	1448.9	107.6	
"	Device Installed	1321:38	12.509	1448.5	116.2	0.99	1453.2	116.8	
"	Measurement Ended	1325:00	12.477	1440.4	115.7	0.99	1444.5	108.8	**99.7**
"All Above" (see note 1)	Device Installed	1350:00	14.072	1559.7	115.3	0.97	1604.7	377.4	
"	Device Removed	1355:44	14.071	1558.0	115.3	0.97	1601.1	369.0	
"	Measurement Ended	1400:05	14.047	1557.6	115.5	0.97	1602.1	375.0	**100.1**

Notes

1. Appliances and equipment measured for test "All Above" included an electric space heater set to 1 kW, a desktop computer with monitor and external USB hub, a set of fluorescent lamps, a Tektronix 7904 oscilloscope with various plug-ins, a Tektronix 177D1 Curve Tracer, a Hewlett Packard 6622A Power Supply, and a Hewlett Packard 8935A-series TDMA Analyzer.

2. This difference was calculated by dividing the amount of real power (in watts) drawn by the appliance with the tested device installed, by the amount of real power (in watts) drawn by the appliance with the tested device not installed, *at the conclusion of the measurement period*. Red indicates MORE power was drawn with the tested device, and green indicates LESS power was drawn with the tested device.

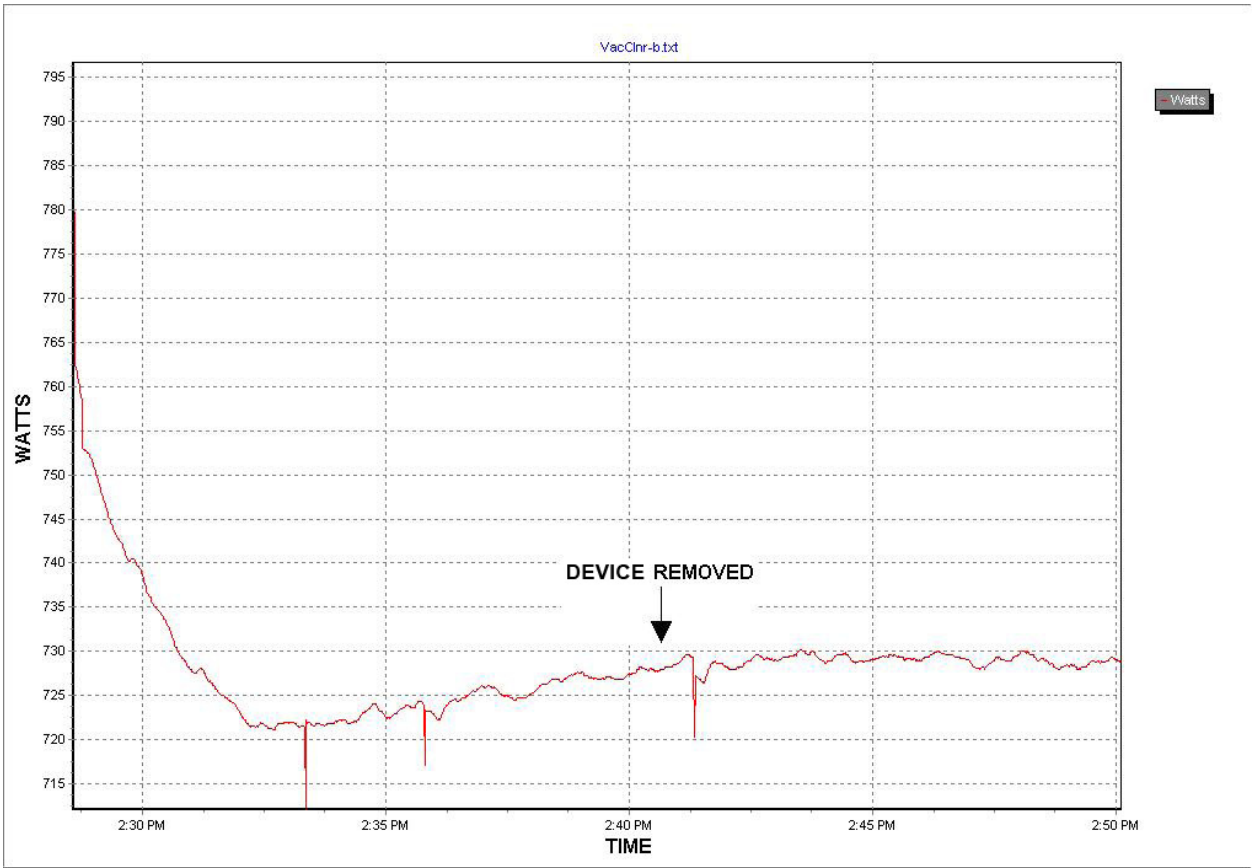
Equipment	Notes	Time	Amps.	Real Power (Watts)	Volts AC	Power Factor	Apparent Power (Volt-Amps)	Calc. Reactive Power (Watts)	Light Intensity (Lux)	% Difference in Light Intensity With tested device Installed (see note 2)	% Difference in Real Power With ESD-5000 Installed (see note 3)
High-Intensity Photo Studio Lamp	Device Installed	1510:12	2.259	285.6	125.6	1.00	285.6	0.0	1235.0		
"	Device Removed	1515:48	2.261	285.5	125.6	1.00	285.5	0.0	1237.0		
"	Measurement Ended	1520:00	2.262	285.6	125.5	1.00	285.6	0.0	1232.0	**100.2**	**100.0**
Fluorescent Lamps	Device Installed	1215:19	0.986	105.0	126.2	0.84	124.6	67.1	326.8		
"	Device Removed	1220:43	0.985	105.0	126.2	0.84	124.6	67.1	327.0		
"	Measurement Ended	1225:00	0.986	105.1	126.3	0.84	124.6	66.9	329.6	**99.2**	**99.9**
"All Above" (see note 1)	Device Installed	1350:00	14.072	1559.7	115.3	0.97	1604.7	377.4	304.8		
"	Device Removed	1355:44	14.071	1558.0	115.3	0.97	1601.1	369.0	305.6		
"	Measurement Ended	1400:05	14.047	1557.6	115.5	0.97	1602.1	375.0	304.9	**100.0**	**100.1**

Notes

1. Appliances and equipment measured for test "All Above" included an electric space heater set to 1 kW, a desktop computer with monitor and external USB hub, a set of fluorescent lamps, a Tektronix 7904 oscilloscope with various plug-ins, a Tektronix 177D1 Curve Tracer, a Hewlett Packard 6622A Power Supply, and a Hewlett Packard 8935A-series TDMA Analyzer.

2. This difference was calculated by dividing the Lux intensity emitted by the appliance with the tested device installed, by the amount of Lux measured emitted by the appliance with the tested device not installed, at the conclusion of the measurement period. Red indicates the same or LESS was emitted with the tested device, and green indicates MORE light was emitted with the tested device.

3. This difference was calculated by dividing the amount of real power (in watts) drawn by the appliance with the tested device installed, by the amount of real power (in watts) drawn by the appliance with the tested device not installed, at the conclusion of the measurement period. Red indicates MORE power was drawn with the tested device, and green indicates LESS power was drawn with the tested device.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WATTS
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790
785
780
775
770
765
760
755
750
745
740
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730
725
720
715
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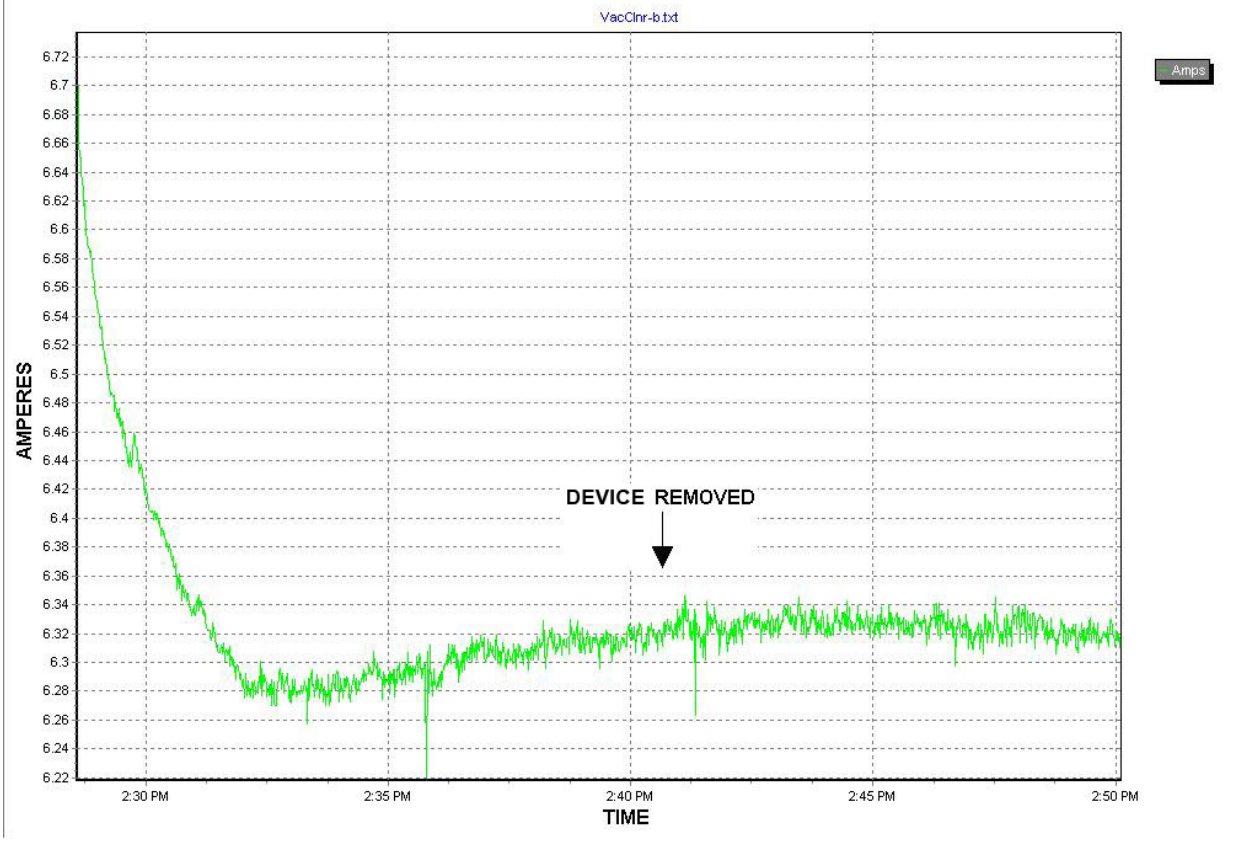
2:35 PM
2:40 PM
2:45 PM
2:50 PM
TIME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AMPERES
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6.66
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6.62
6.6
6.58
6.56
6.54
6.52
6.5
6.48
6.46
6.44
6.42
6.4
6.38
6.36
6.34
6.32
6.3
6.28
6.26
6.24
6.22
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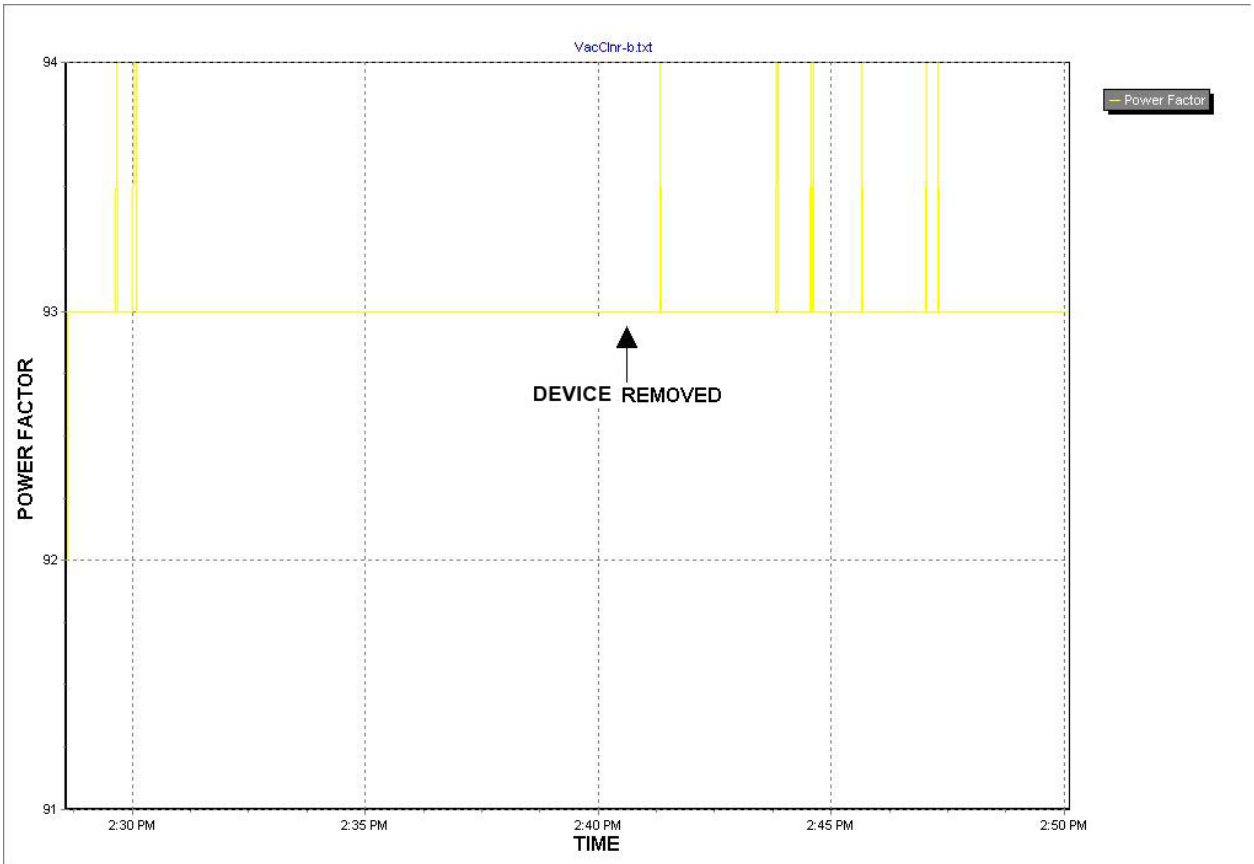
2:40 PM
2:45 PM
2:50 PM
TIME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Power Factor
POWER FACTOR
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93
92
91
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2:40 PM
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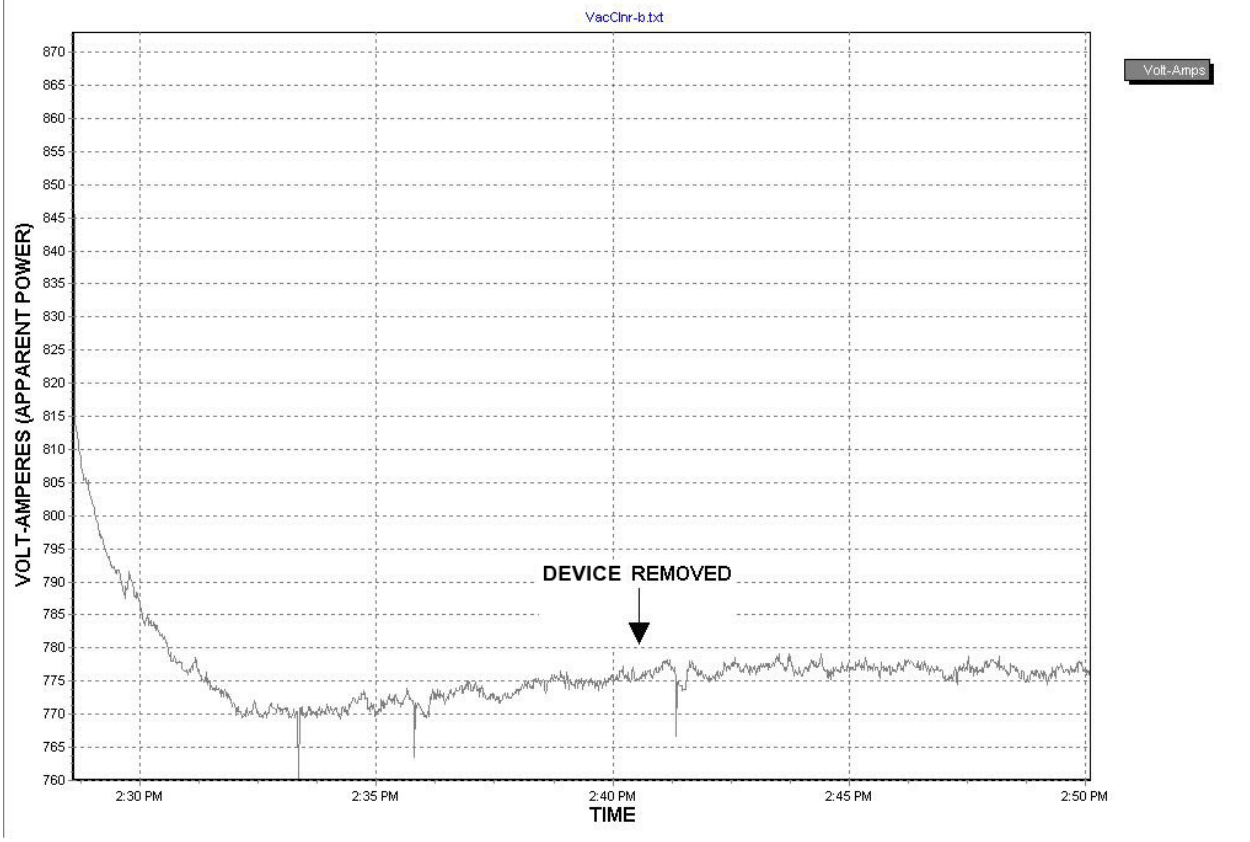
2:50 PM
TIME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Volt-Amps
VOLT-AMPERES (APPARENT POWER)
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865
860
855
850
845
840
835
830
825
820
815
810
805
800
795
790
785
780
775
770
765
760
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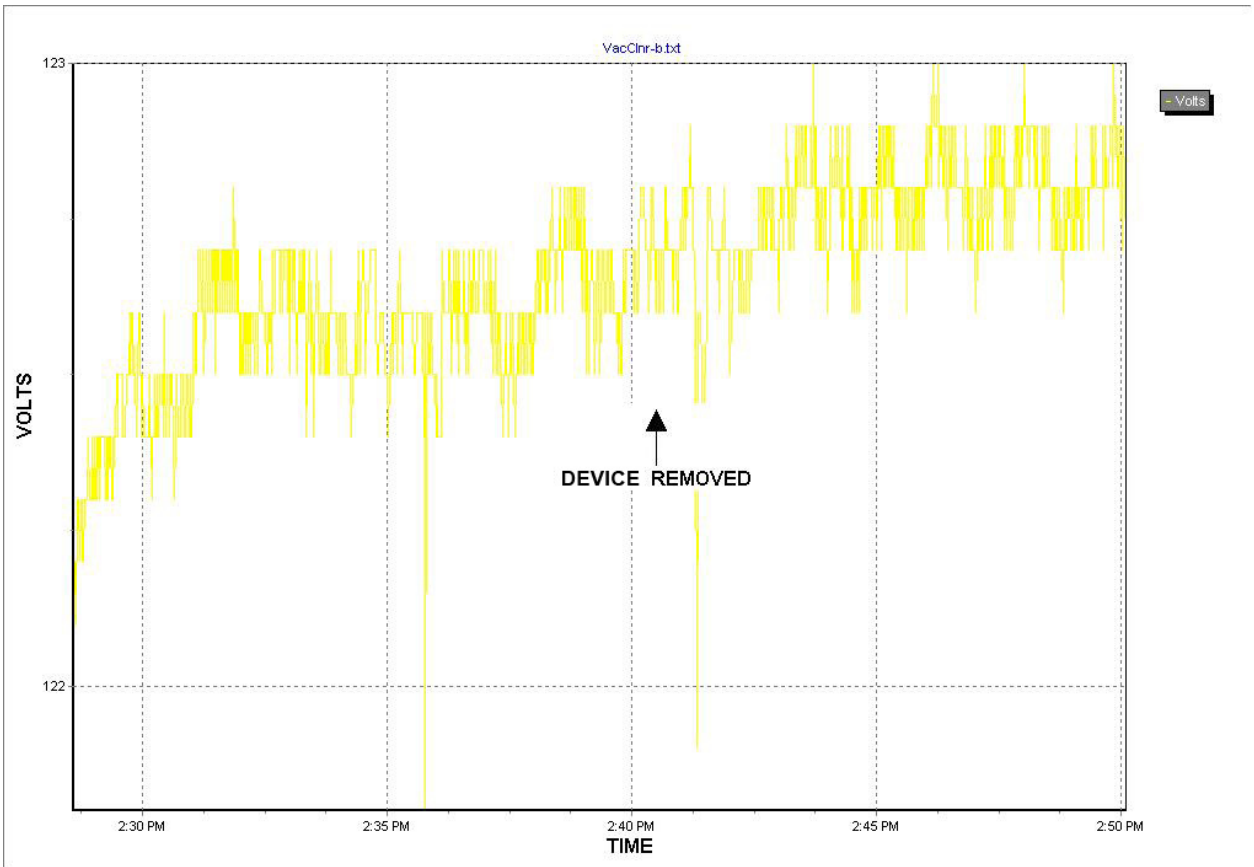
2:45 PM
2:50 PM
TIME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122
VOLTS
Volts
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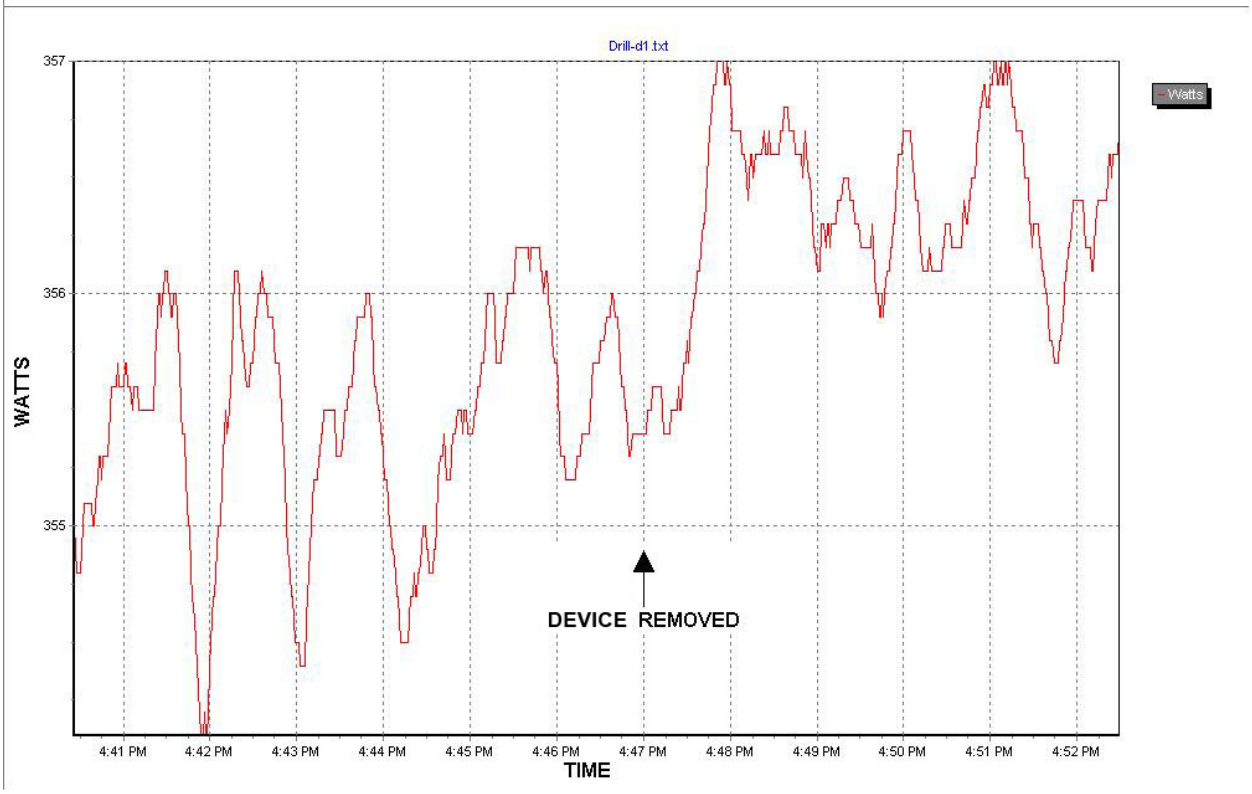
TIME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356
355
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4:46 PM
4:47 PM
4:48 PM
4:49 PM
4:50 PM
4:51 PM
4:52 PM
TIME


Drill-d1.txt
Amps
AMPERES
2.954
2.952
2.95
2.948
2.946
2.944
2.942
2.94
2.938
2.936
2.934
2.932
2.93
2.928
2.926
2.924
2.922
2.92
2.918
2.916
DEVICE REMOVED
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4:42 PM
4:43 PM
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4:46 PM
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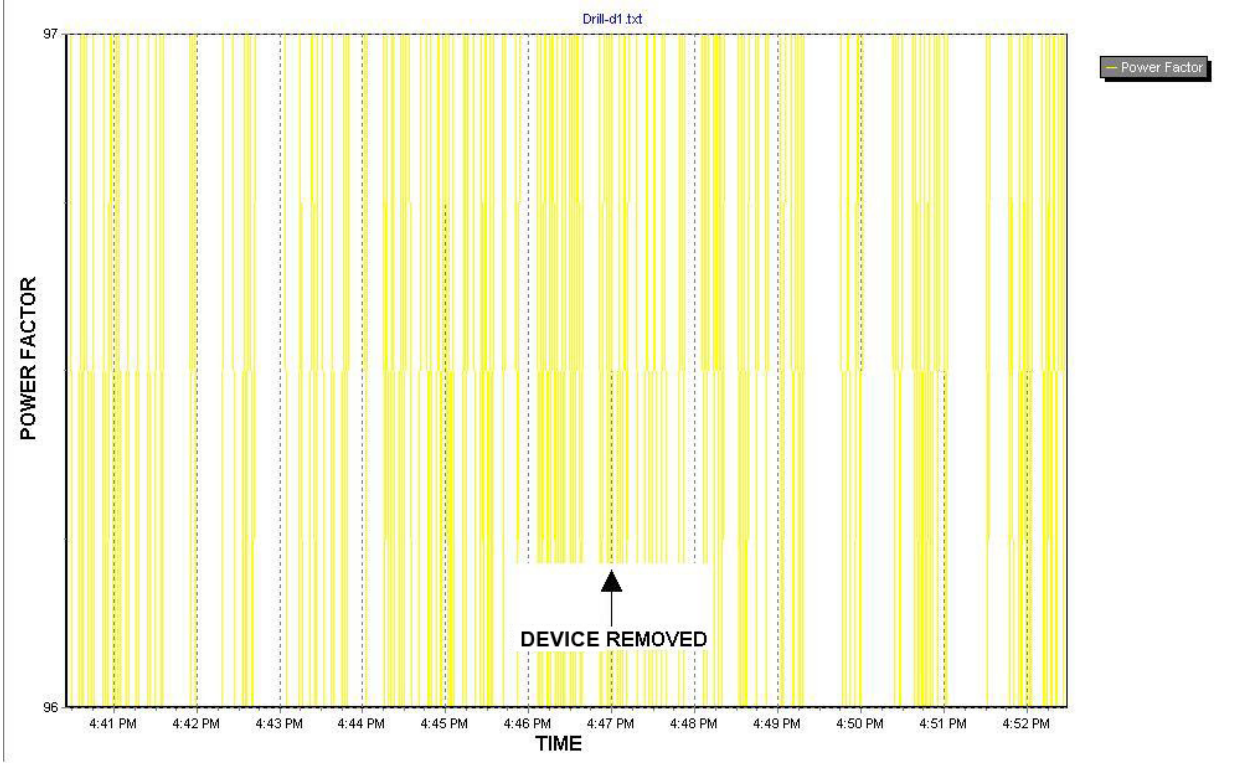
4:50 PM
4:51 PM
4:52 PM
TIME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POWER FACTOR
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96
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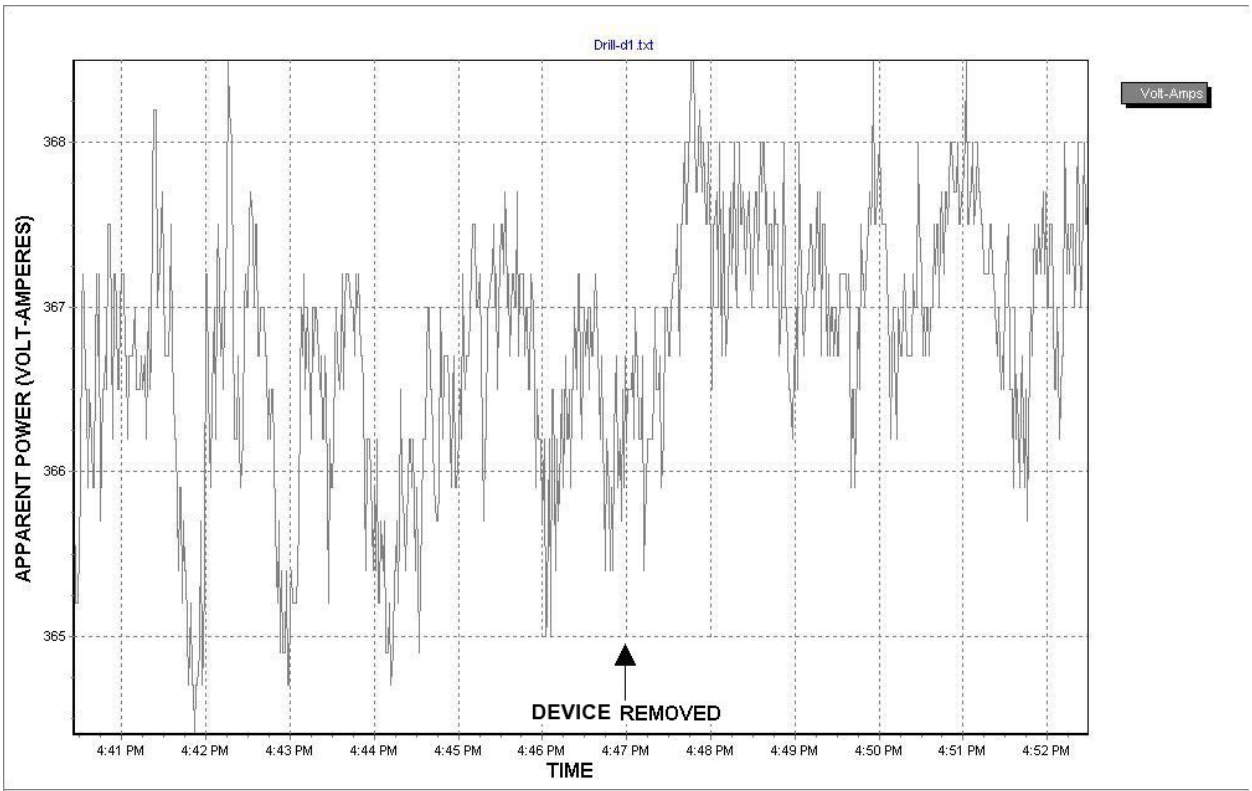
4:49 PM
4:50 PM
4:51 PM
4:52 PM
TIME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Volt-Amps
APPARENT POWER (VOLT-AMPERES)
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367
366
365
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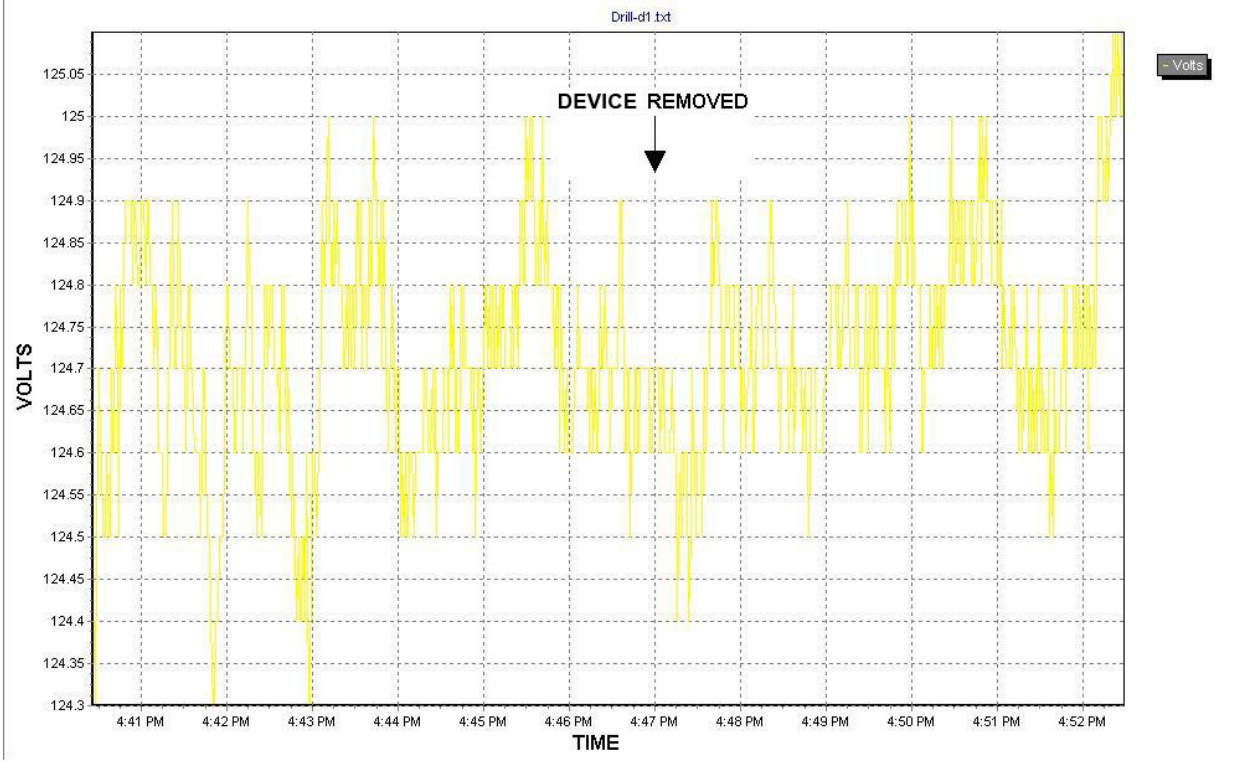
4:49 PM
4:50 PM
4:51 PM
4:52 PM
TIME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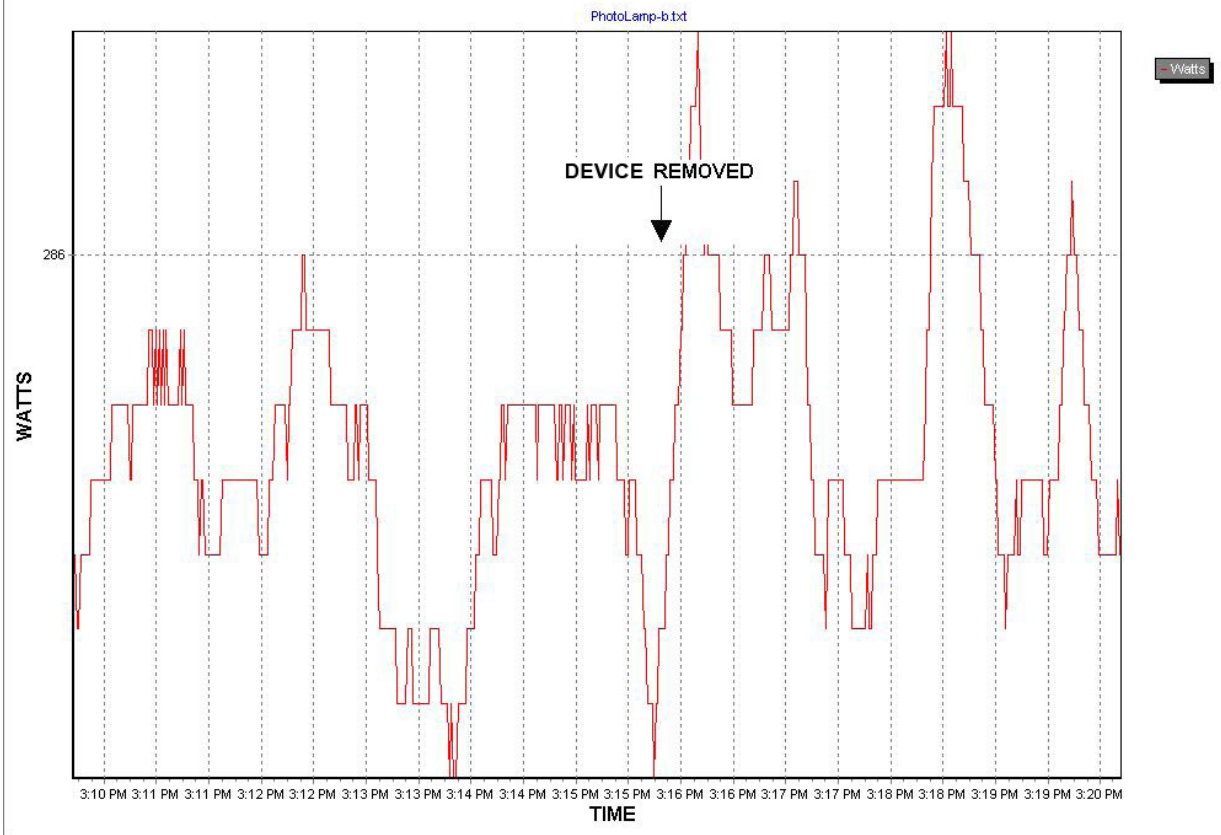
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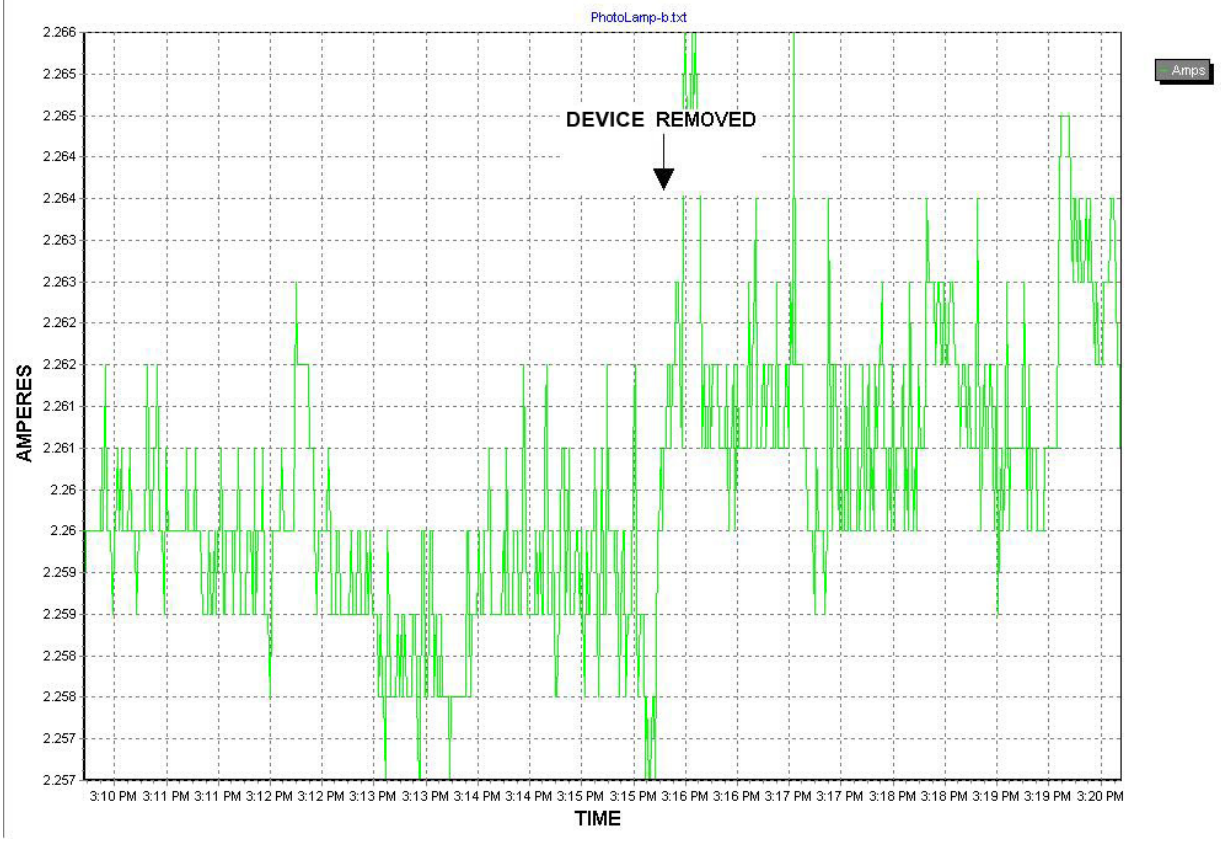
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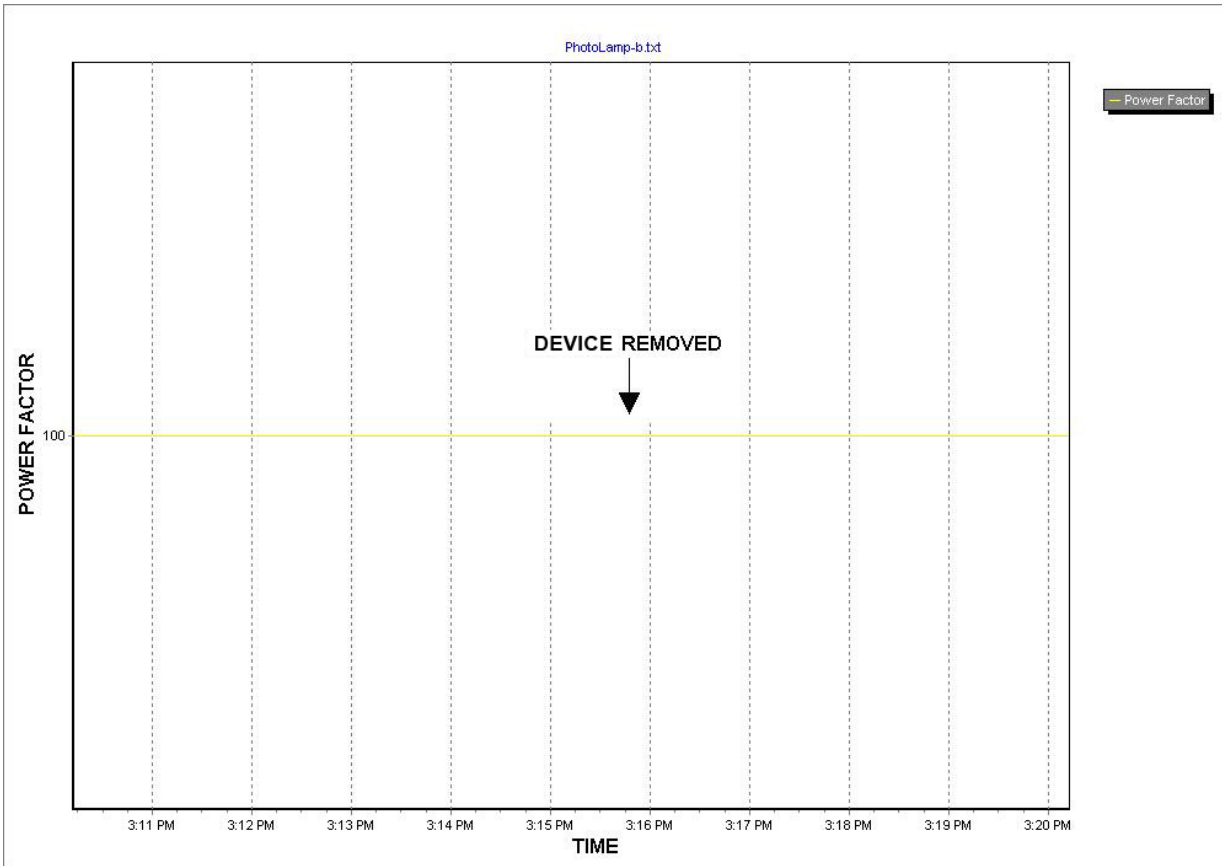
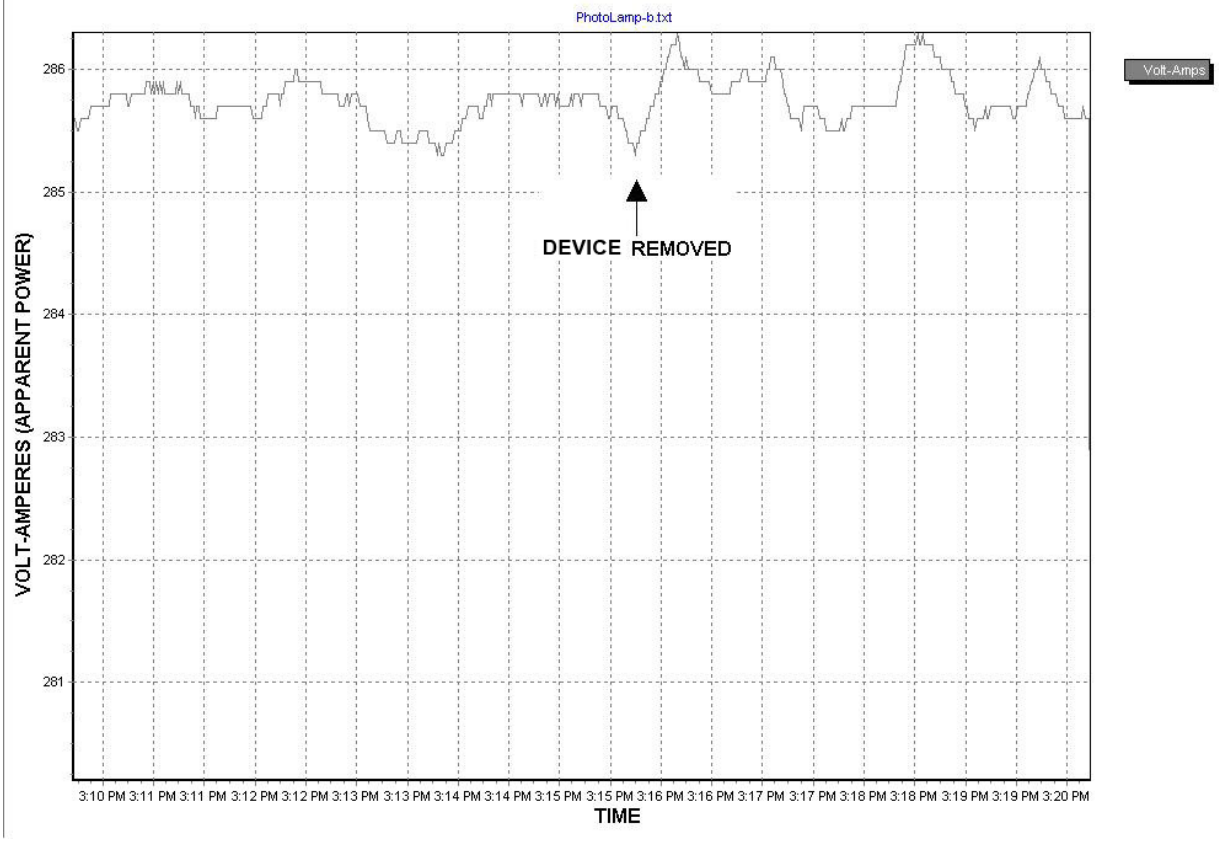
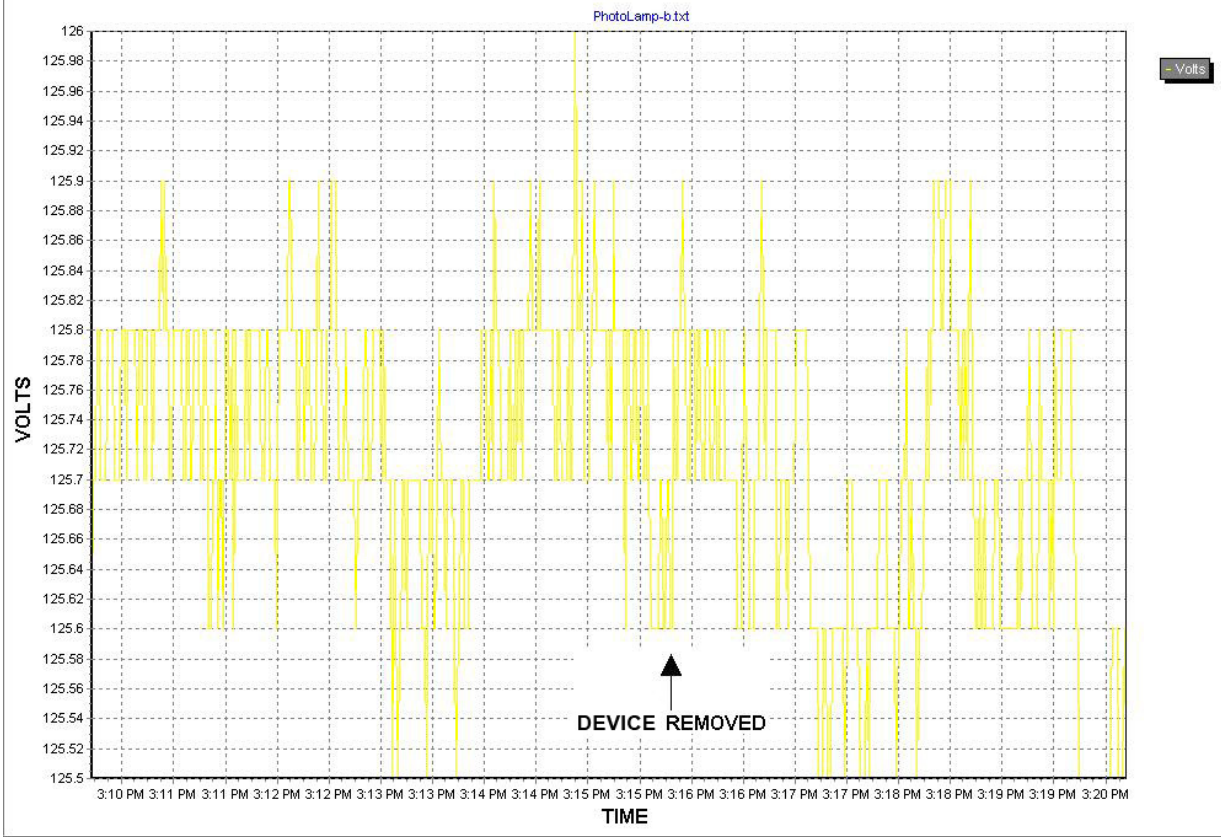
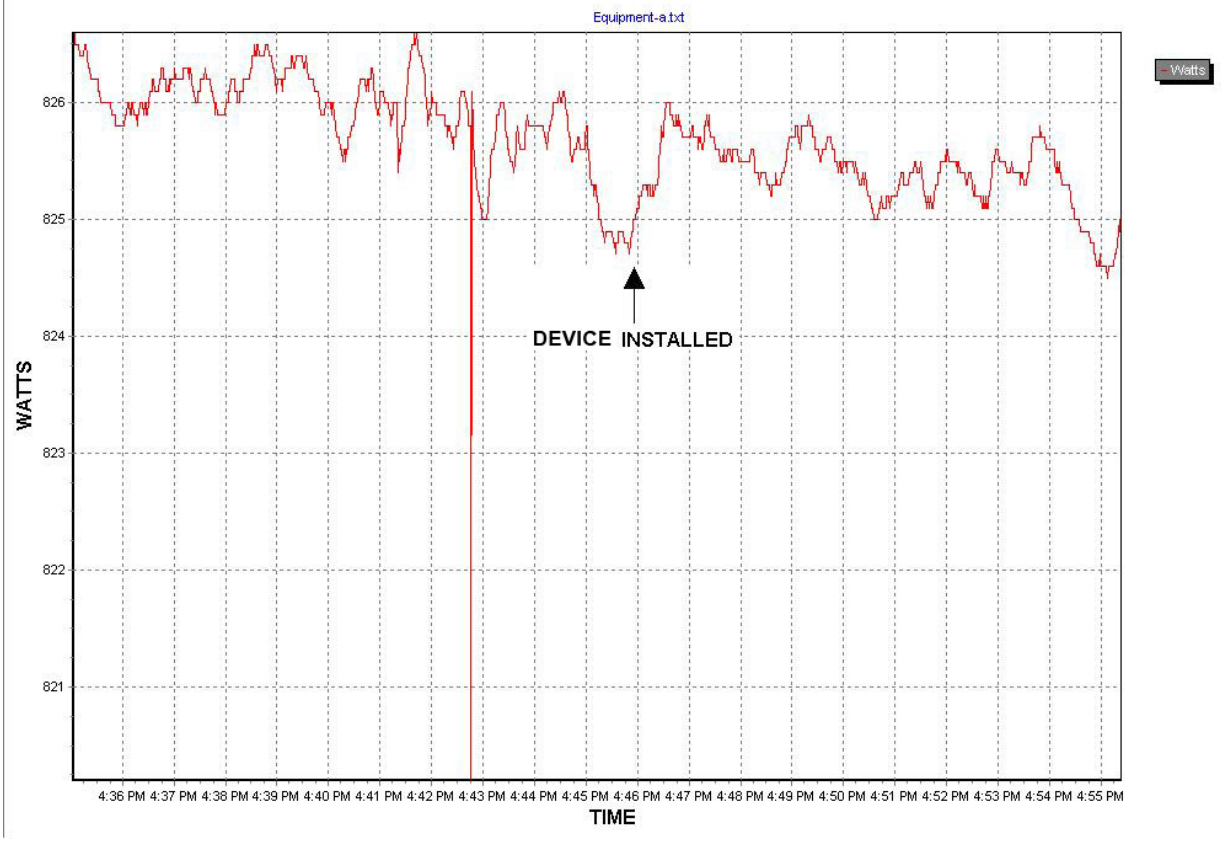
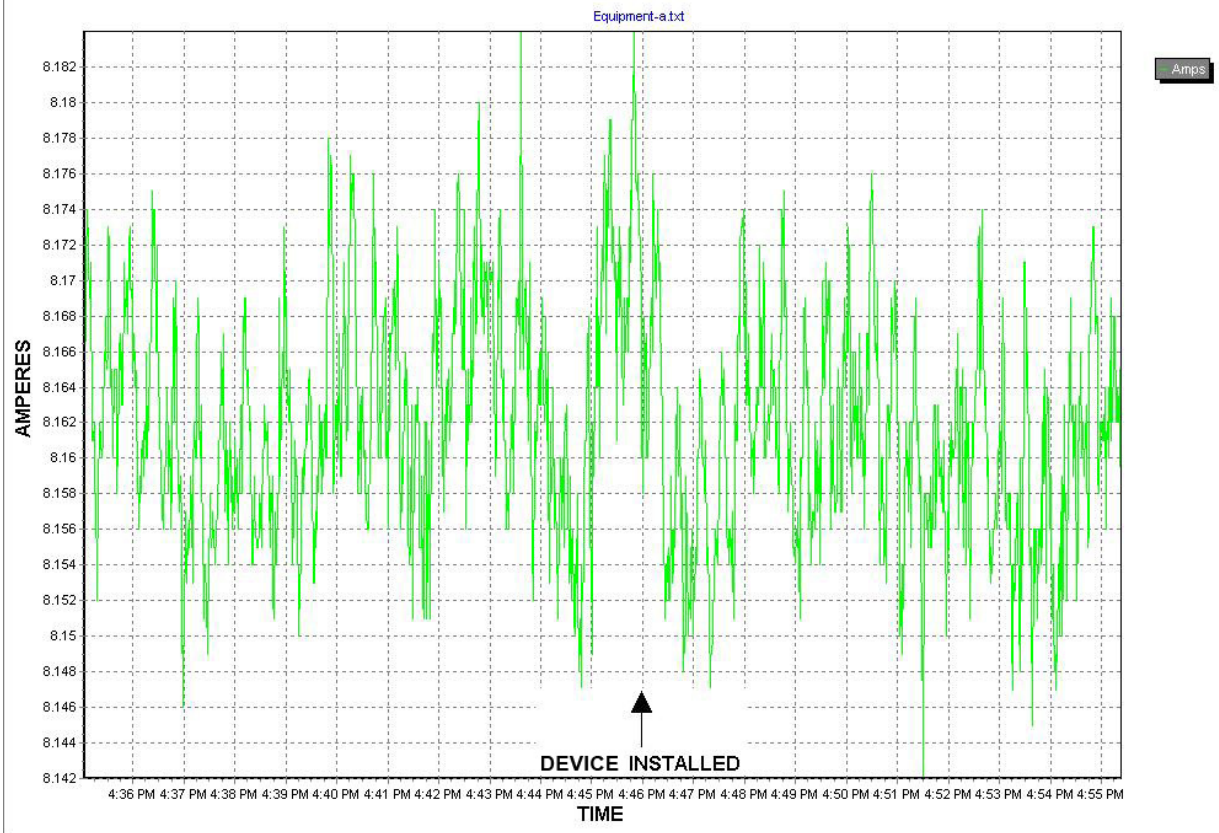
3:10 PM 3:11 PM 3:11 PM 3:12 PM 3:12 PM 3:13 PM 3:13 PM 3:14 PM 3:14 PM 3:15 PM 3:15 PM 3:16 PM 3:16 PM 3:17 PM 3:17 PM 3:18 PM 3:18 PM 3:19 PM 3:19 PM 3:20 PM
TIME

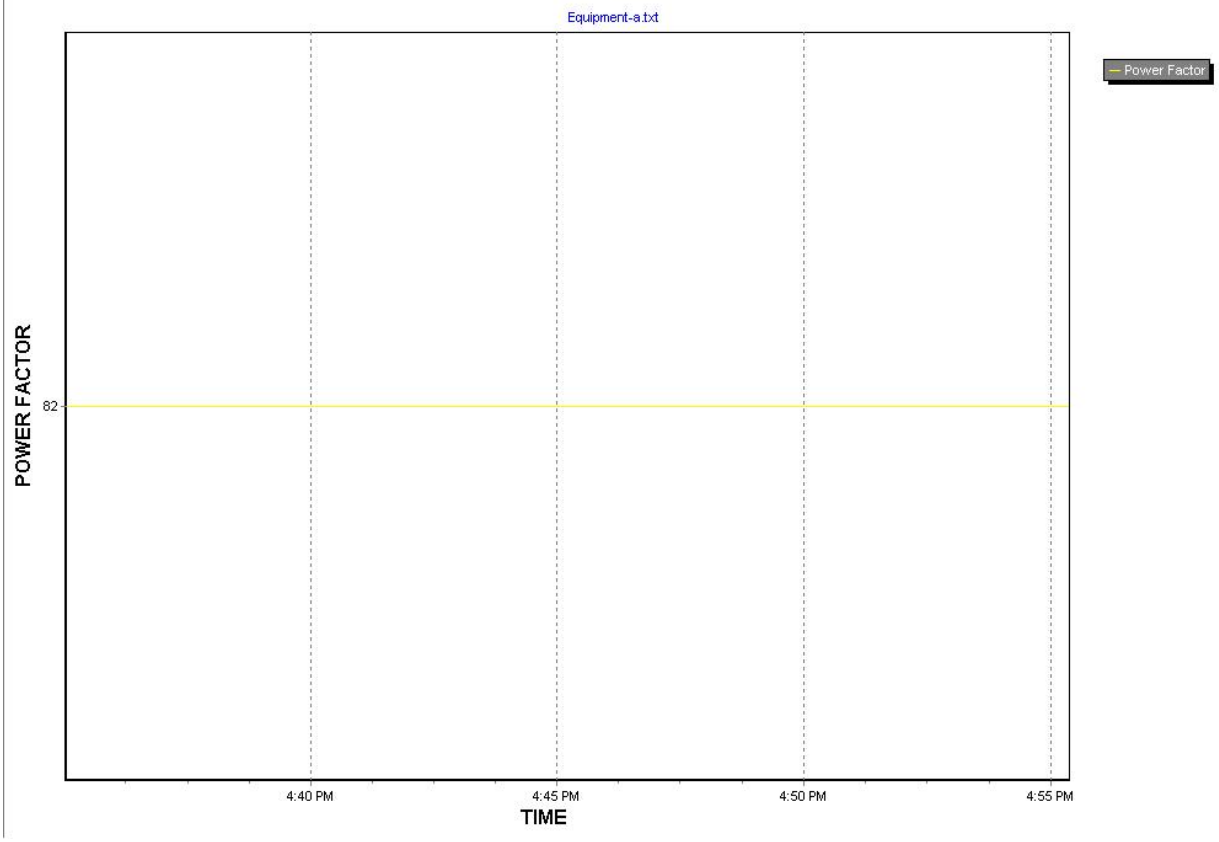

PhotoLamp-b.txt
Power Factor
POWER FACTOR
100
DEVICE REMOVED
3:11 PM
3:12 PM
3:13 PM
3:14 PM
3:15 PM
3:16 PM
3:17 PM
3:18 PM
3:19 PM
3:20 PM
TIME

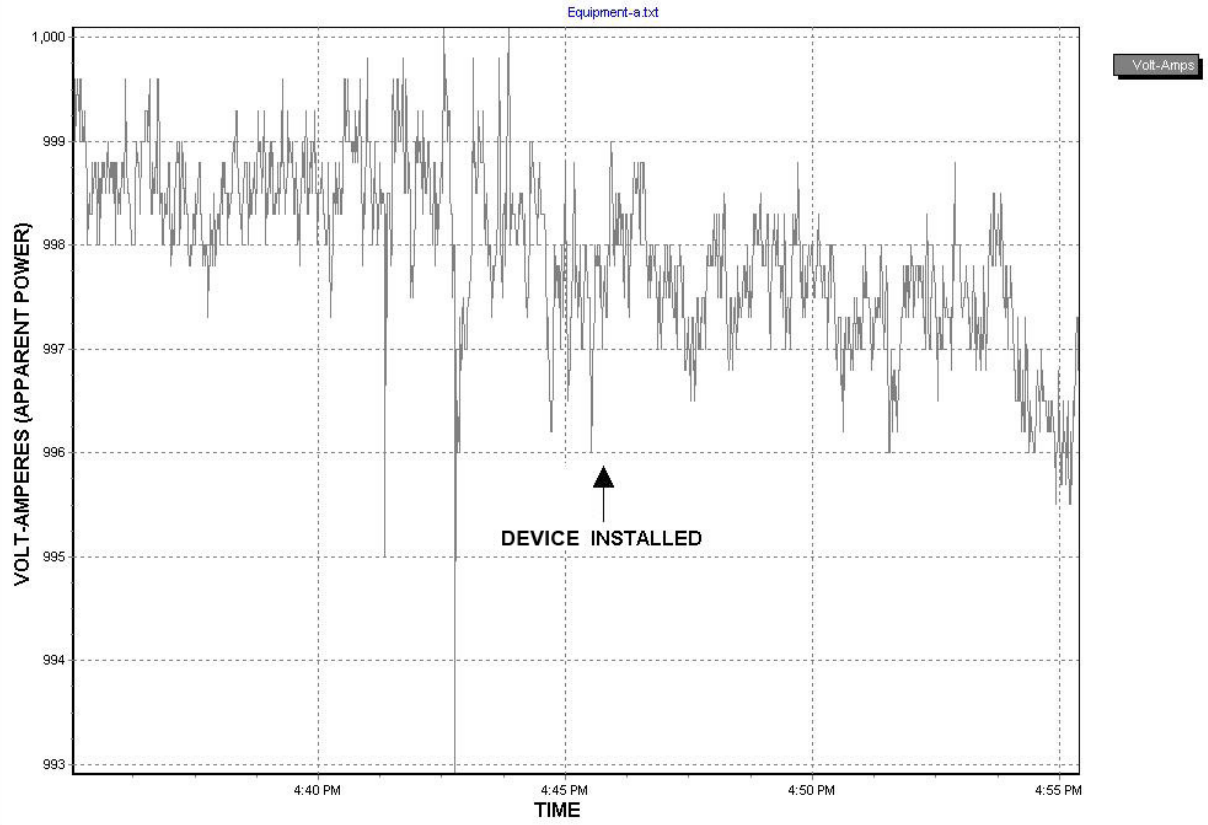

PhotoLamp-b.txt
Volt-Amps
VOLT-AMPERES (APPARENT POWER)
286
285
284
283
282
281
DEVICE REMOVED
3:10 PM 3:11 PM 3:11 PM 3:12 PM 3:12 PM 3:13 PM 3:13 PM 3:14 PM 3:14 PM 3:15 PM 3:15 PM 3:16 PM 3:16 PM 3:17 PM 3:17 PM 3:18 PM 3:18 PM 3:19 PM 3:19 PM 3:20 PM
TIME

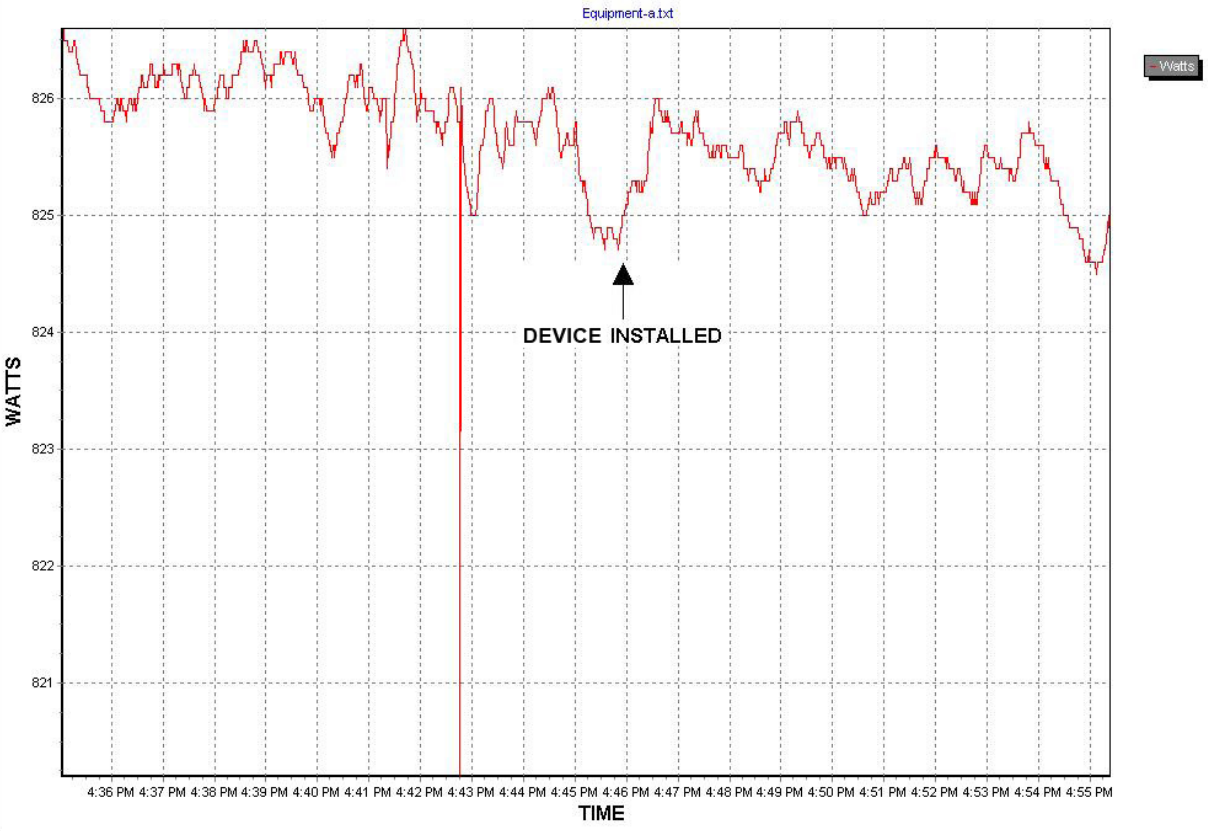

PhotoLamp-b.txt
Volts
VOLTS
126
125.98
125.96
125.94
125.92
125.9
125.88
125.86
125.84
125.82
125.8
125.78
125.76
125.74
125.72
125.7
125.68
125.66
125.64
125.62
125.6
125.58
125.56
125.54
125.52
125.5
DEVICE REMOVED
3:10 PM 3:11 PM 3:11 PM 3:12 PM 3:12 PM 3:13 PM 3:13 PM 3:14 PM 3:14 PM 3:15 PM 3:15 PM 3:16 PM 3:16 PM 3:17 PM 3:17 PM 3:18 PM 3:18 PM 3:19 PM 3:19 PM 3:20 PM
TIME

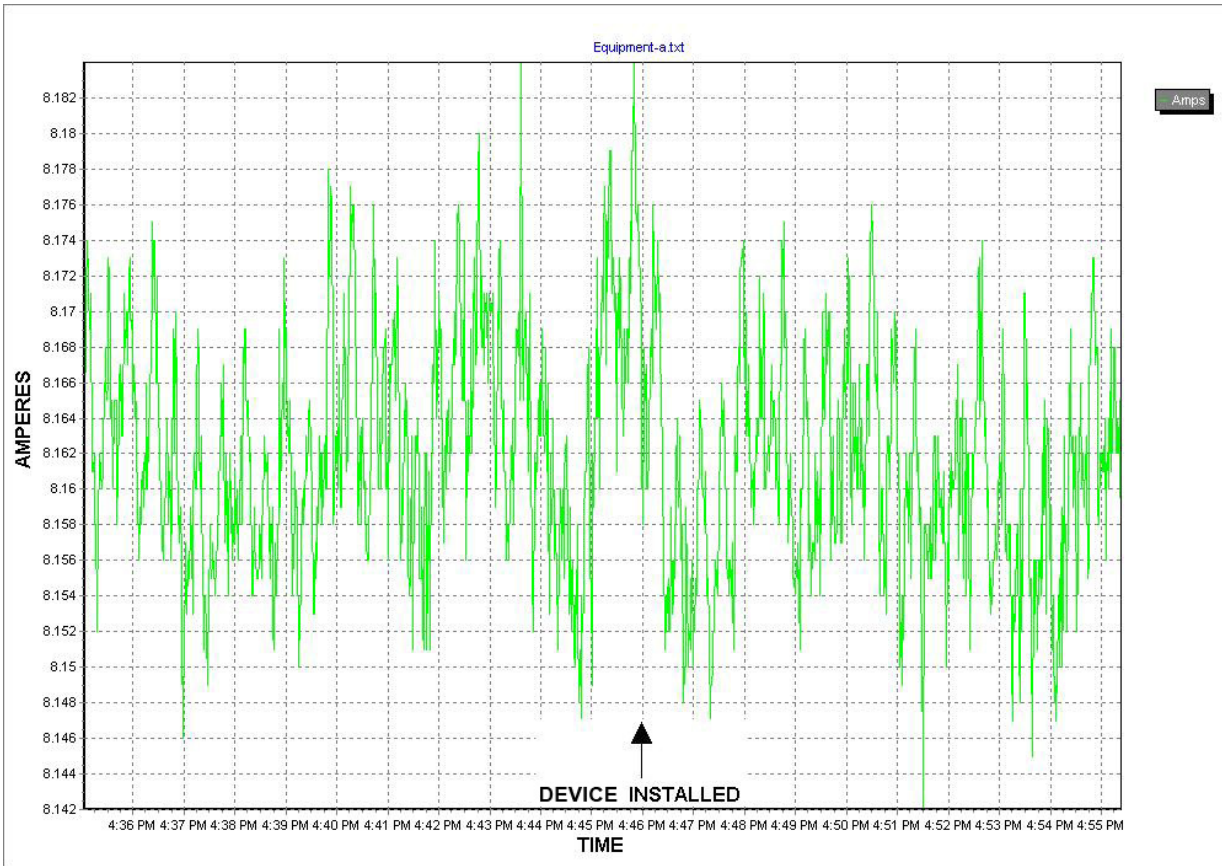

Equipment-a.txt
Watts
WATTS
826
825
824
823
822
821
DEVICE INSTALLED
4:36 PM 4:37 PM 4:38 PM 4:39 PM 4:40 PM 4:41 PM 4:42 PM 4:43 PM 4:44 PM 4:45 PM 4:46 PM 4:47 PM 4:48 PM 4:49 PM 4:50 PM 4:51 PM 4:52 PM 4:53 PM 4:54 PM 4:55 PM
TIME

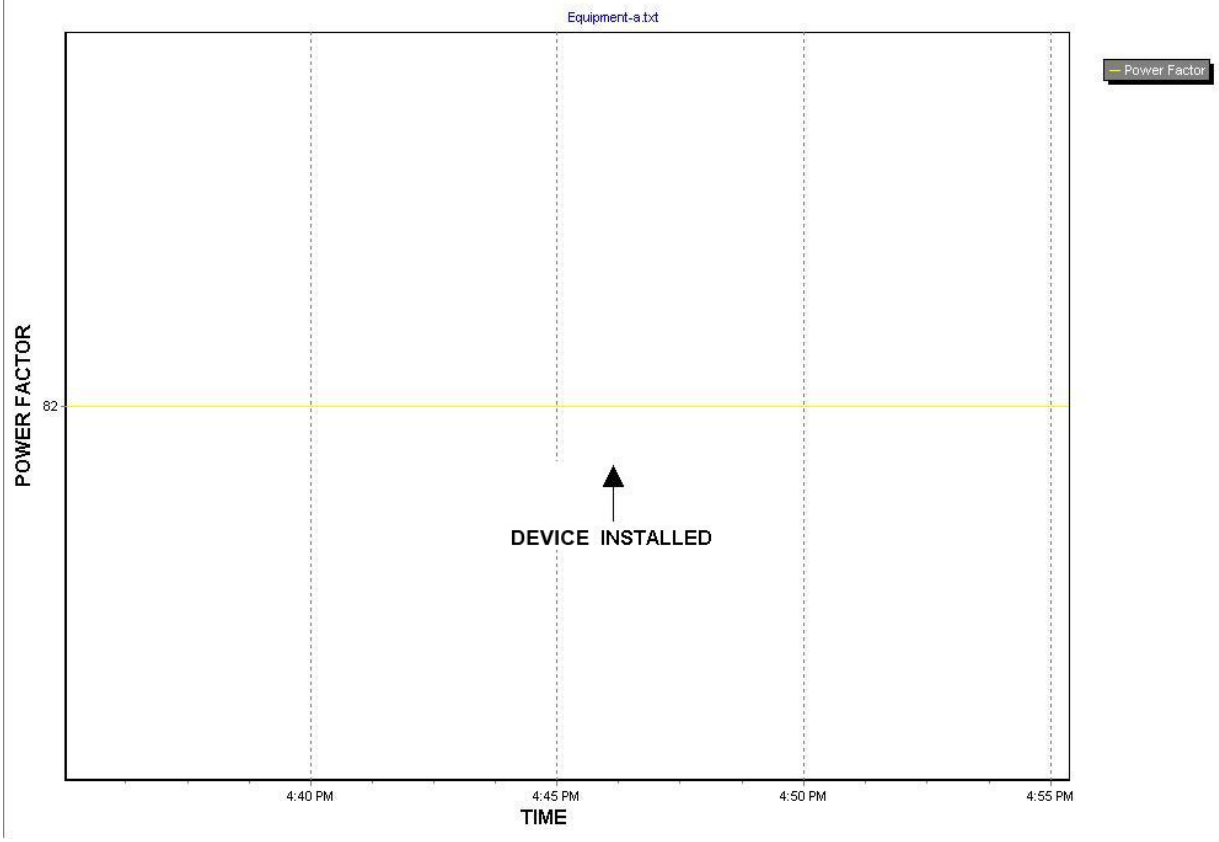

Equipment-a.txt
Amps
AMPERES
8.182
8.18
8.178
8.176
8.174
8.172
8.17
8.168
8.166
8.164
8.162
8.16
8.158
8.156
8.154
8.152
8.15
8.148
8.146
8.144
8.142
DEVICE INSTALLED
4:36 PM 4:37 PM 4:38 PM 4:39 PM 4:40 PM 4:41 PM 4:42 PM 4:43 PM 4:44 PM 4:45 PM 4:46 PM 4:47 PM 4:48 PM 4:49 PM 4:50 PM 4:51 PM 4:52 PM 4:53 PM 4:54 PM 4:55 PM
TIME

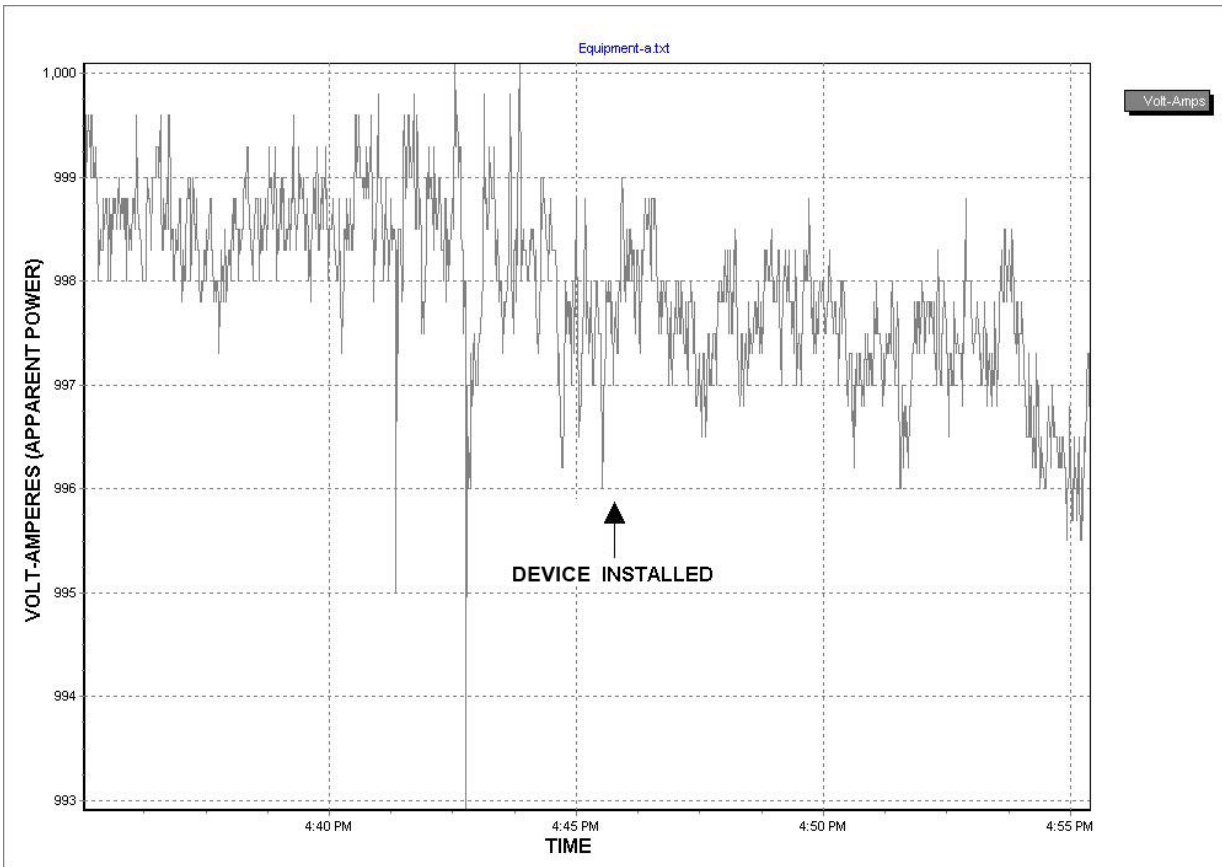

Equipment-a.txt
Power Factor
POWER FACTOR
82
4:40 PM
4:45 PM
4:50 PM
4:55 PM
TIME

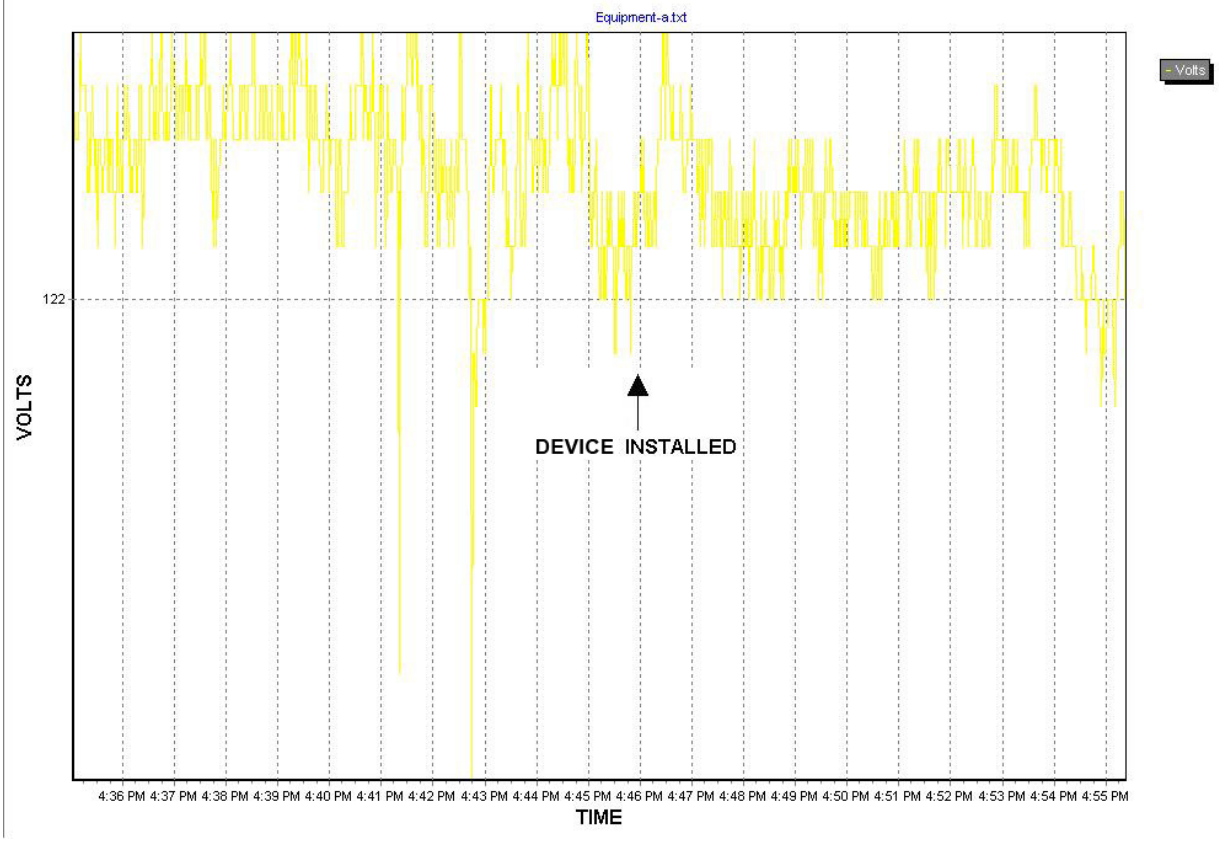

Equipment-a.txt
Volt-Amps
VOLT-AMPERES (APPARENT POWER)
1,000
999
998
997
996
995
994
993
DEVICE INSTALLED
4:40 PM
4:45 PM
4:50 PM
4:55 PM
TIME

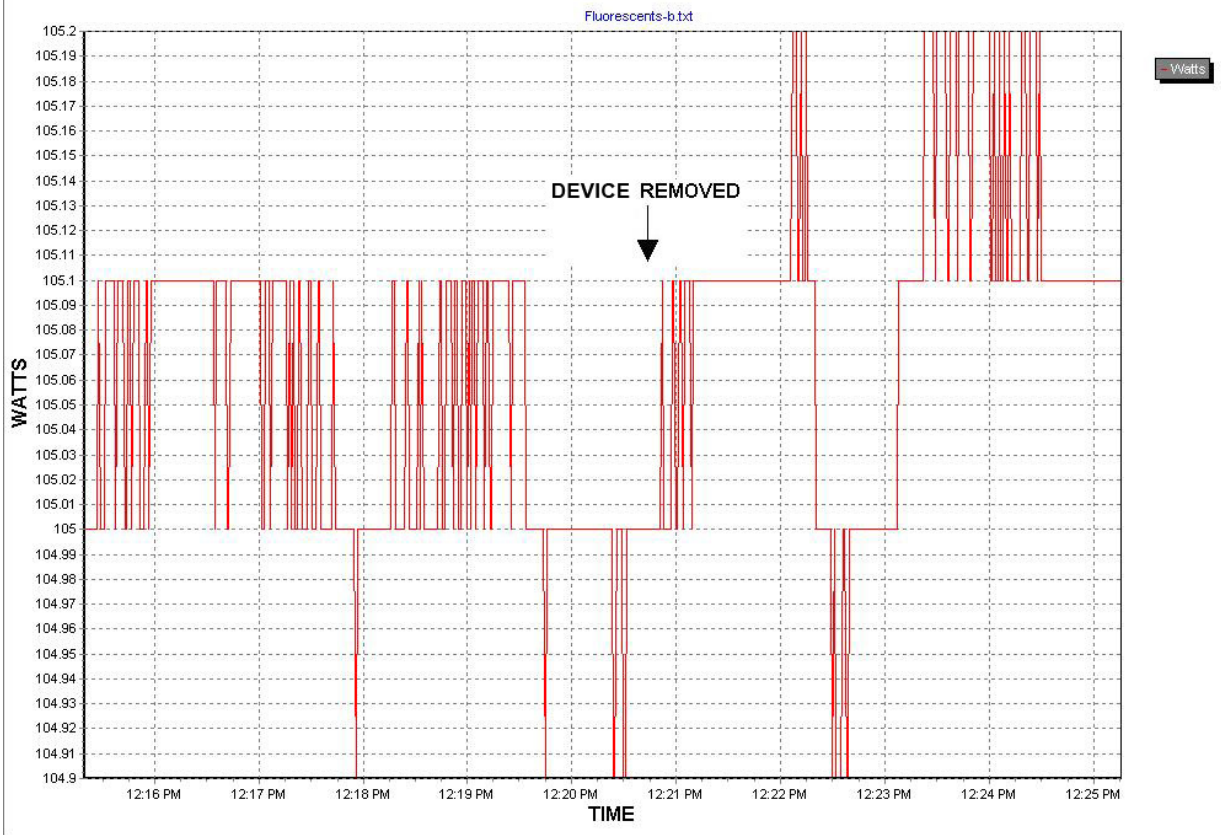

Equipment-a.txt
Watts
WATTS
826
825
824
823
822
821
DEVICE INSTALLED
4:36 PM 4:37 PM 4:38 PM 4:39 PM 4:40 PM 4:41 PM 4:42 PM 4:43 PM 4:44 PM 4:45 PM 4:46 PM 4:47 PM 4:48 PM 4:49 PM 4:50 PM 4:51 PM 4:52 PM 4:53 PM 4:54 PM 4:55 PM
TIME


Equipment-a.txt
Amps
AMPERES
8.182
8.18
8.178
8.176
8.174
8.172
8.17
8.168
8.166
8.164
8.162
8.16
8.158
8.156
8.154
8.152
8.15
8.148
8.146
8.144
8.142
DEVICE INSTALLED
4:36 PM 4:37 PM 4:38 PM 4:39 PM 4:40 PM 4:41 PM 4:42 PM 4:43 PM 4:44 PM 4:45 PM 4:46 PM 4:47 PM 4:48 PM 4:49 PM 4:50 PM 4:51 PM 4:52 PM 4:53 PM 4:54 PM 4:55 PM
TIME

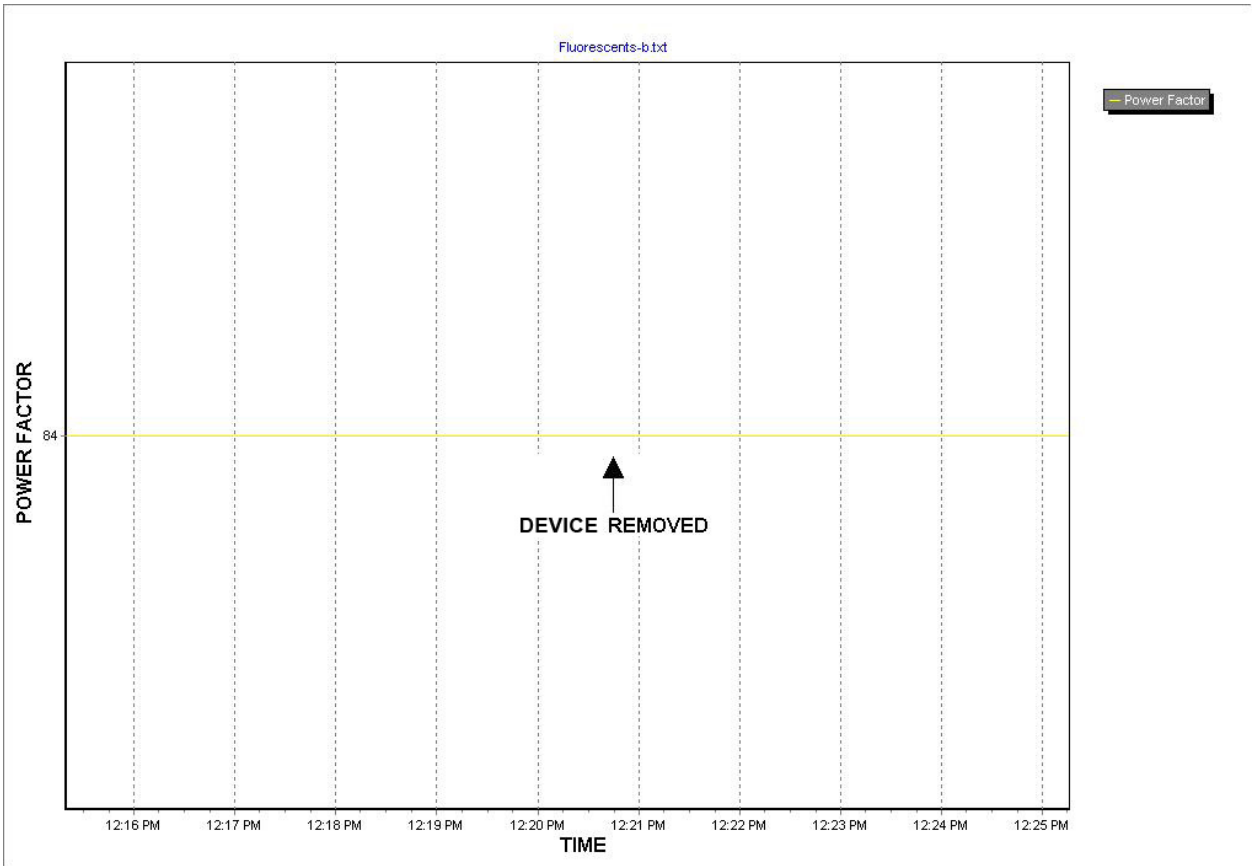

Equipment-a.txt
Power Factor
POWER FACTOR
82
DEVICE INSTALLED
4:40 PM
4:45 PM
4:50 PM
4:55 PM
TIME

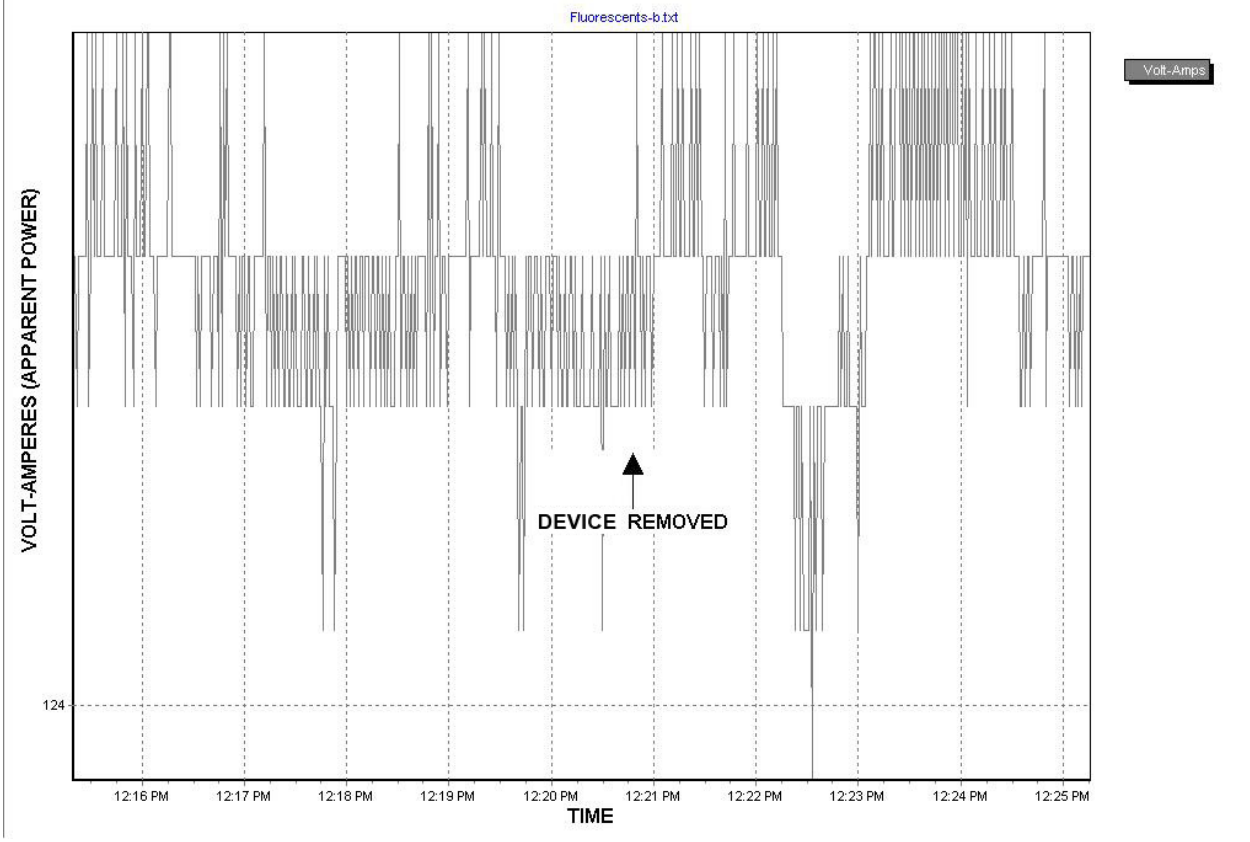

Equipment-a.txt
Volt-Amps
1,000
999
998
997
996
995
994
993
VOLT-AMPERES (APPARENT POWER)
DEVICE INSTALLED
4:40 PM
4:45 PM
4:50 PM
4:55 PM
TIME

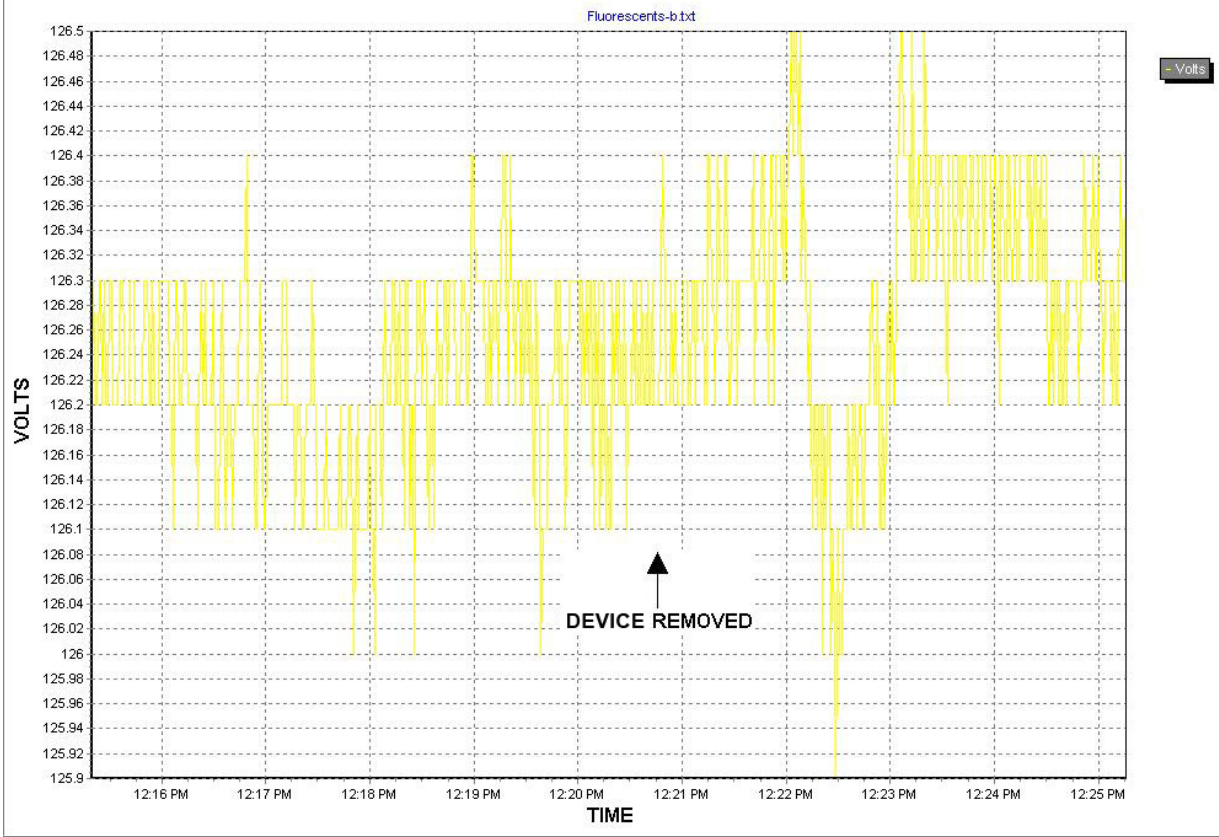

Equipment-a.txt
- Volts
122
VOLTS
DEVICE INSTALLED
4:36 PM 4:37 PM 4:38 PM 4:39 PM 4:40 PM 4:41 PM 4:42 PM 4:43 PM 4:44 PM 4:45 PM 4:46 PM 4:47 PM 4:48 PM 4:49 PM 4:50 PM 4:51 PM 4:52 PM 4:53 PM 4:54 PM 4:55 PM
TIME

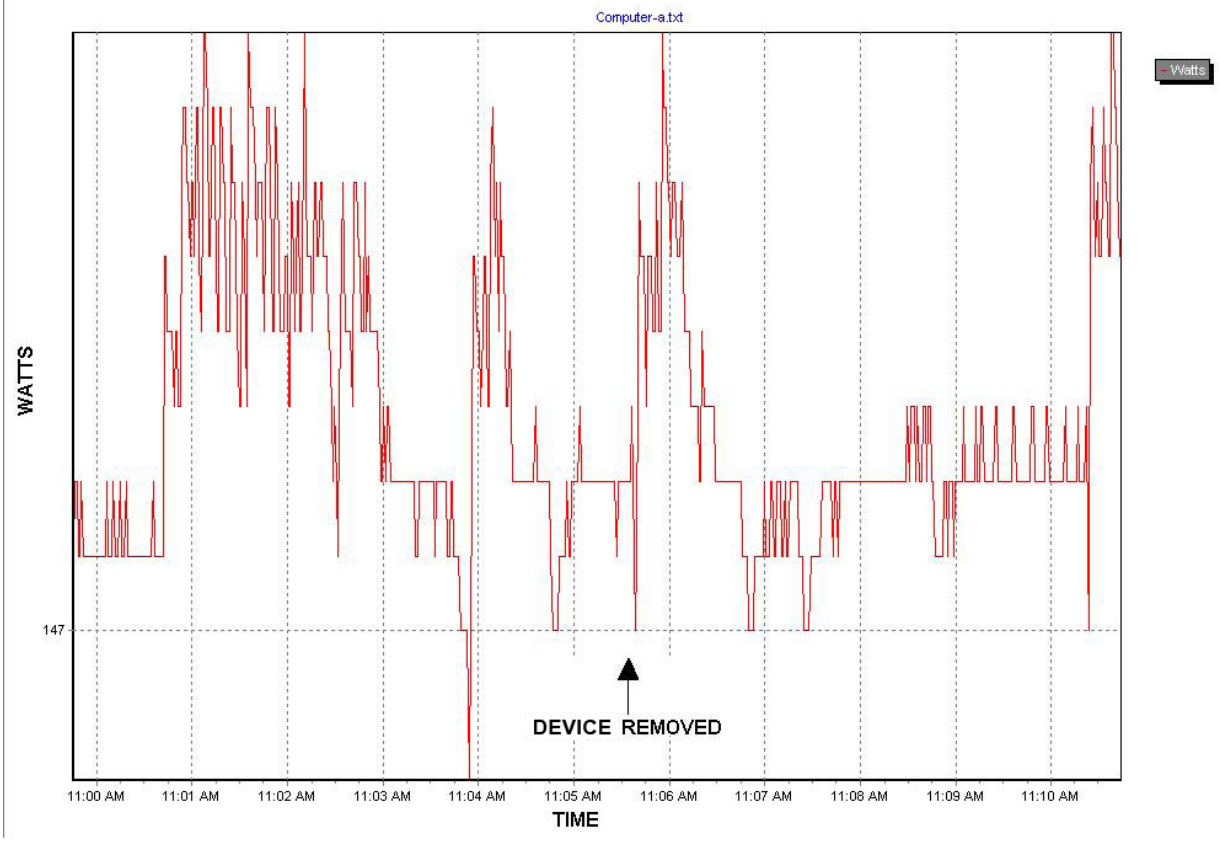

Fluorescents-b.txt
Watts
DEVICE REMOVED
WATTS
105.2
105.19
105.18
105.17
105.16
105.15
105.14
105.13
105.12
105.11
105.1
105.09
105.08
105.07
105.06
105.05
105.04
105.03
105.02
105.01
105
104.99
104.98
104.97
104.96
104.95
104.94
104.93
104.92
104.91
104.9
12:16 PM
12:17 PM
12:18 PM
12:19 PM
12:20 PM
12:21 PM
12:22 PM
12:23 PM
12:24 PM
12:25 PM
TIME

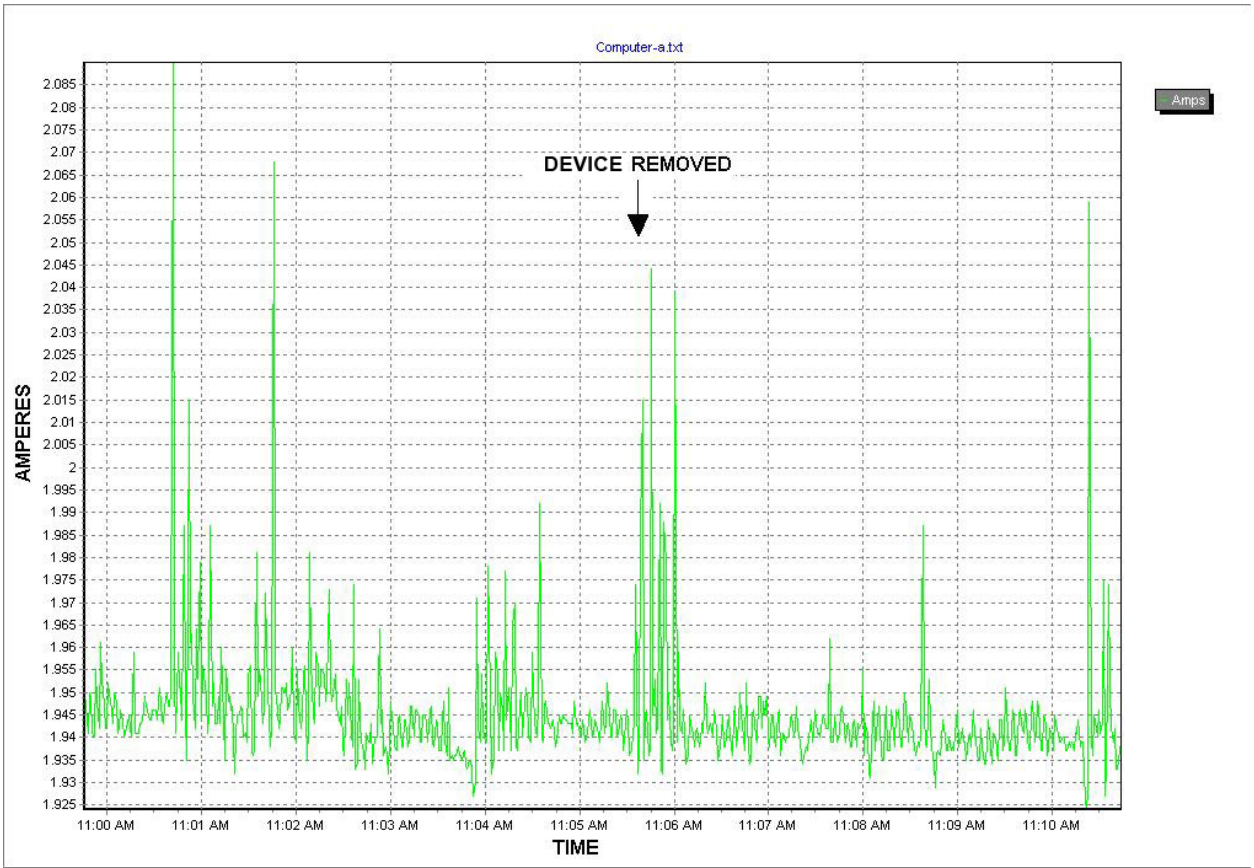

Fluorescents-b.txt
Amps
AMPERES
0.987
0.986
0.985
0.984
DEVICE REMOVED
12:16 PM
12:17 PM
12:18 PM
12:19 PM
12:20 PM
12:21 PM
12:22 PM
12:23 PM
12:24 PM
12:25 PM
TIME

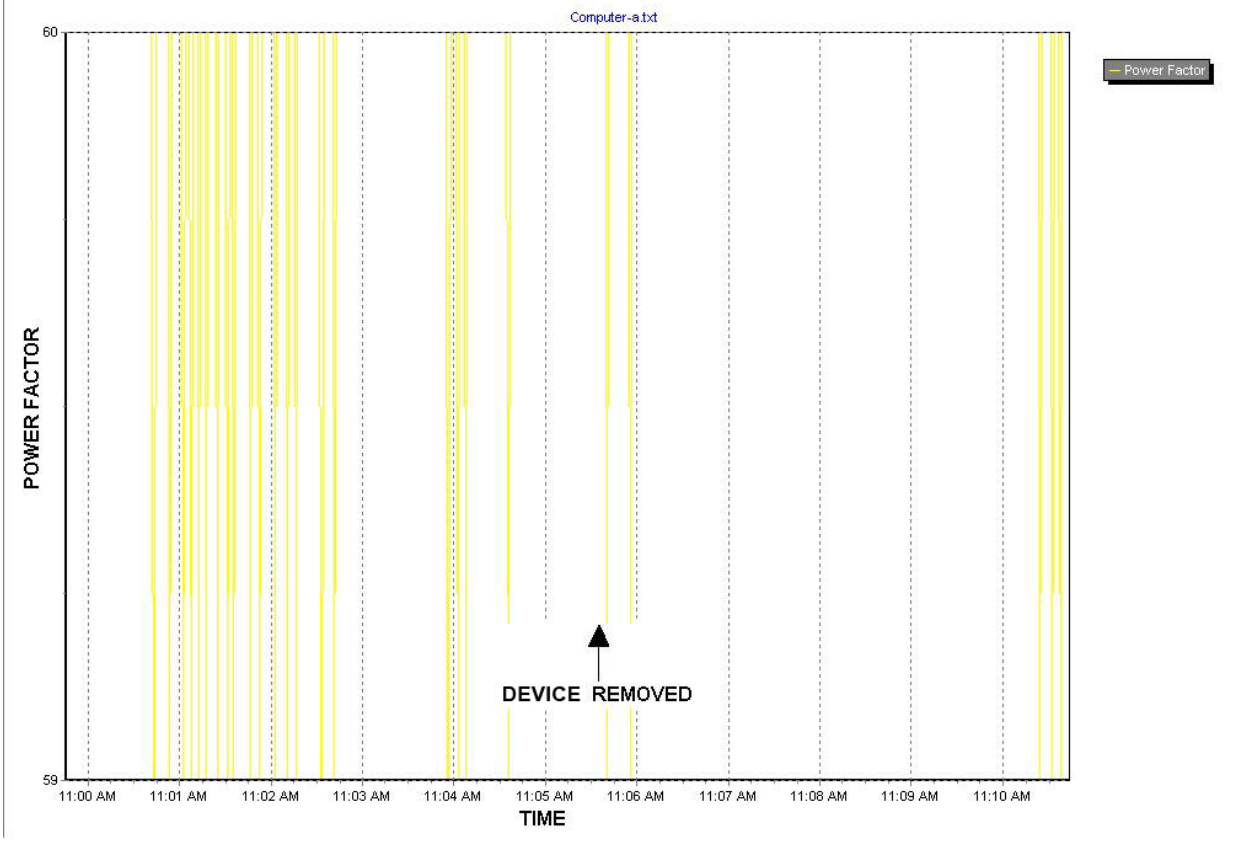

Fluorescents-b.txt
Power Factor
POWER FACTOR
84
DEVICE REMOVED
12:16 PM
12:17 PM
12:18 PM
12:19 PM
12:20 PM
12:21 PM
12:22 PM
12:23 PM
12:24 PM
12:25 PM
TIME

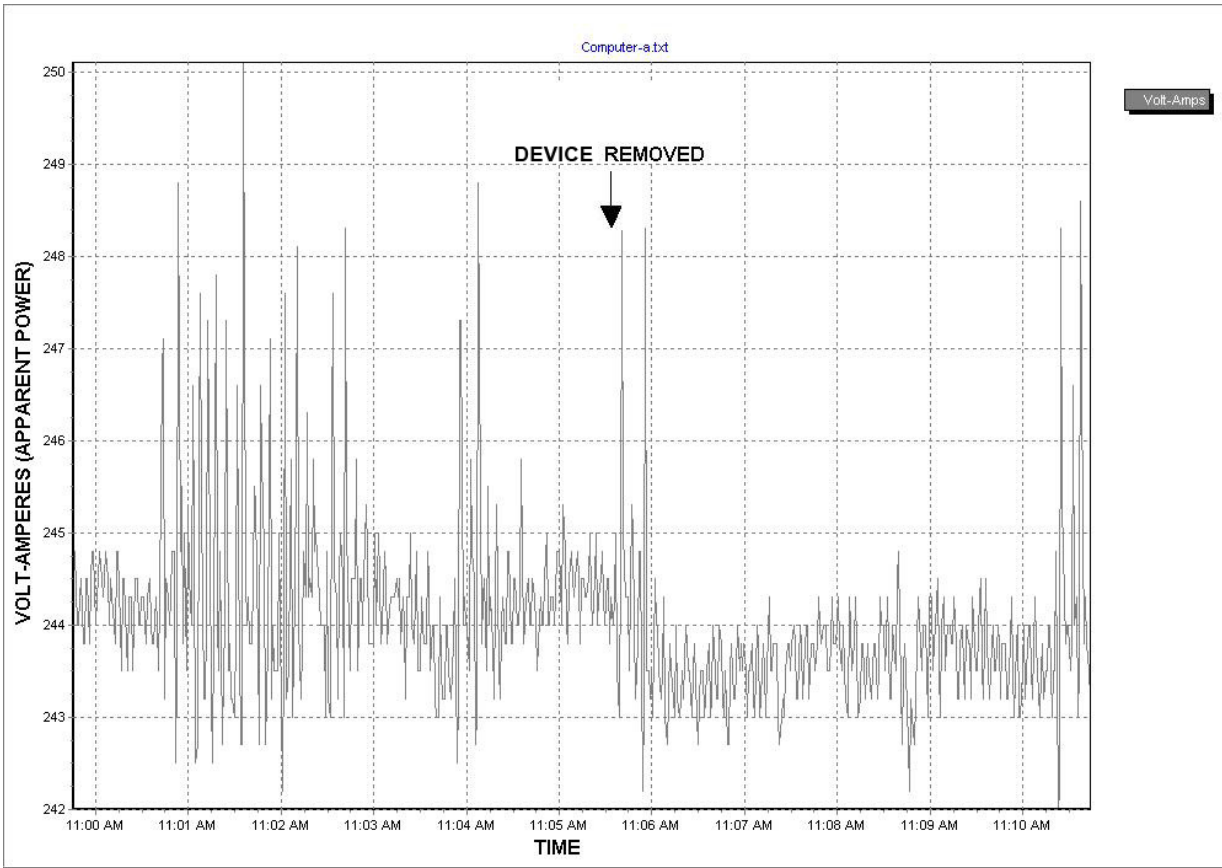

Fluorescents-b.txt
Volt-Amps
VOLT-AMPERES (APPARENT POWER)
124
DEVICE REMOVED
12:16 PM
12:17 PM
12:18 PM
12:19 PM
12:20 PM
12:21 PM
12:22 PM
12:23 PM
12:24 PM
12:25 PM
TIME

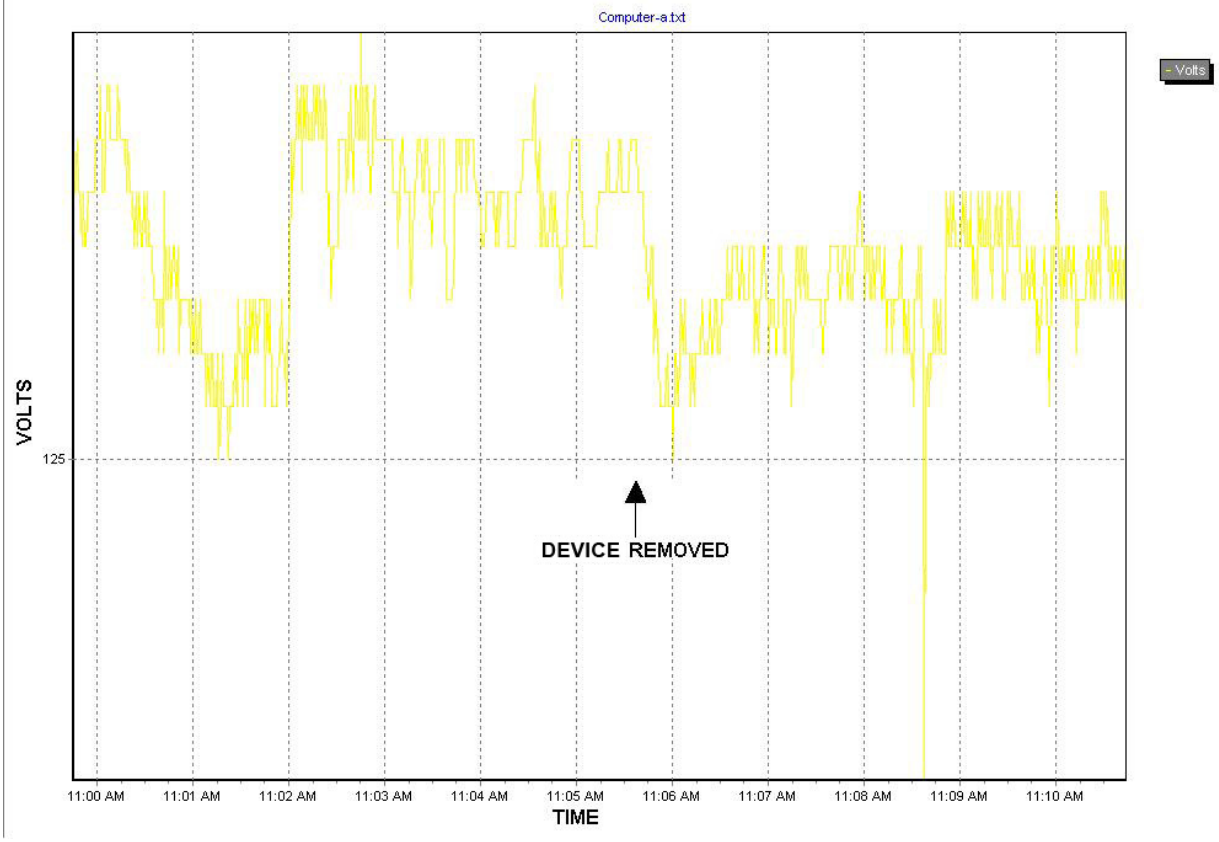

Fluorescents-b.txt
Volts
VOLTS
126.5
126.48
126.46
126.44
126.42
126.4
126.38
126.36
126.34
126.32
126.3
126.28
126.26
126.24
126.22
126.2
126.18
126.16
126.14
126.12
126.1
126.08
126.06
126.04
126.02
126
125.98
125.96
125.94
125.92
125.9
DEVICE REMOVED
12:16 PM
12:17 PM
12:18 PM
12:19 PM
12:20 PM
12:21 PM
12:22 PM
12:23 PM
12:24 PM
12:25 PM
TIME

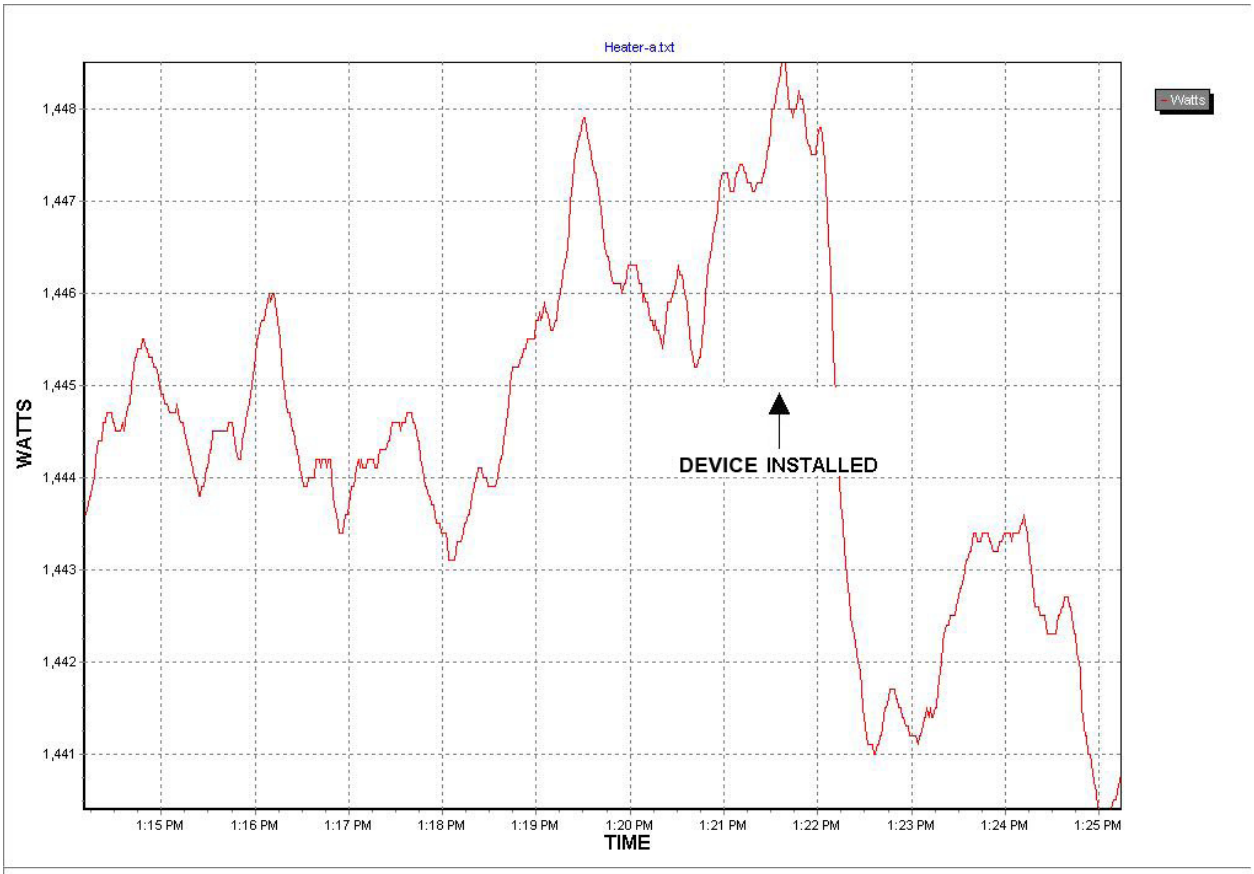

Computer-a.txt
Watts
WATTS
147
DEVICE REMOVED
11:00 AM
11:01 AM
11:02 AM
11:03 AM
11:04 AM
11:05 AM
11:06 AM
11:07 AM
11:08 AM
11:09 AM
11:10 AM
TIME

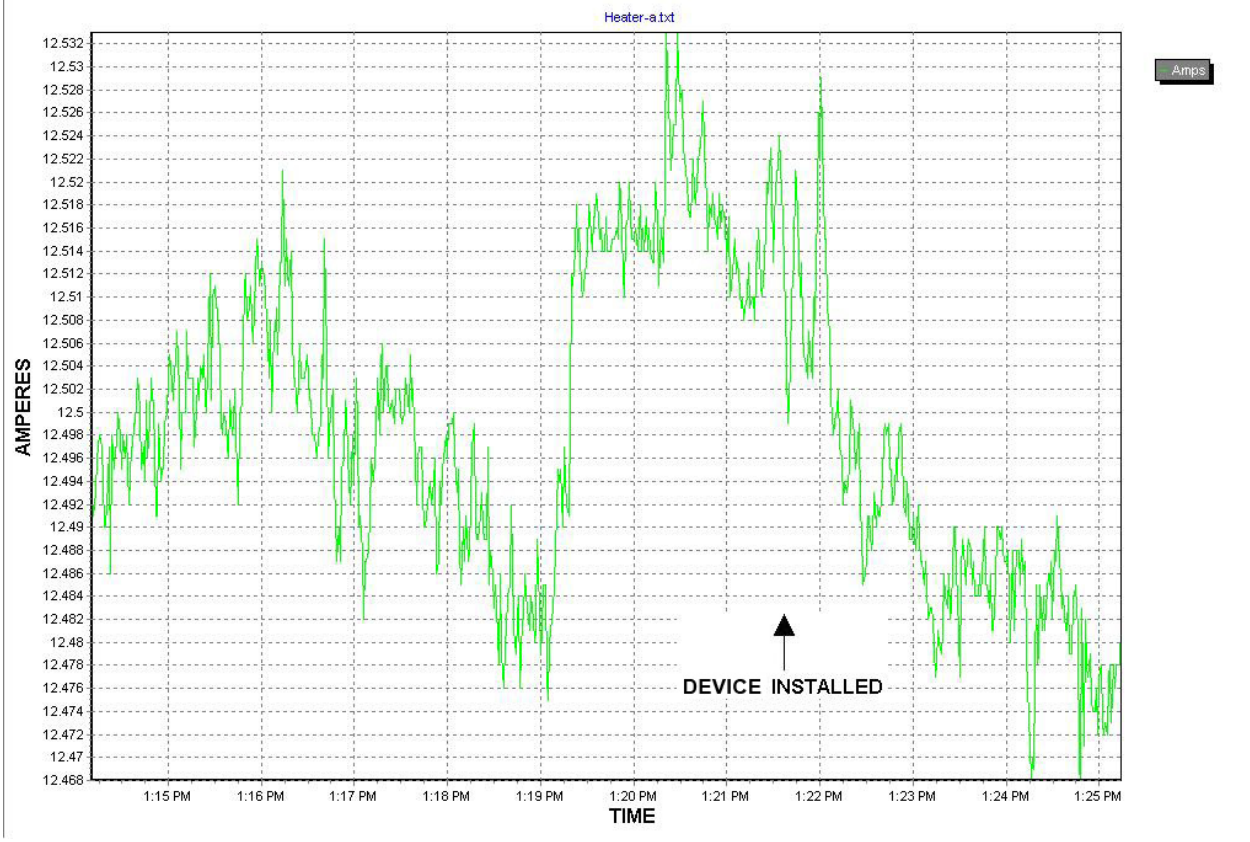

Computer-a.txt
Amps
DEVICE REMOVED
AMPERES
2.085
2.08
2.075
2.07
2.065
2.06
2.055
2.05
2.045
2.04
2.035
2.03
2.025
2.02
2.015
2.01
2.005
2
1.995
1.99
1.985
1.98
1.975
1.97
1.965
1.96
1.955
1.95
1.945
1.94
1.935
1.93
1.925
11:00 AM
11:01 AM
11:02 AM
11:03 AM
11:04 AM
11:05 AM
11:06 AM
11:07 AM
11:08 AM
11:09 AM
11:10 AM
TIME

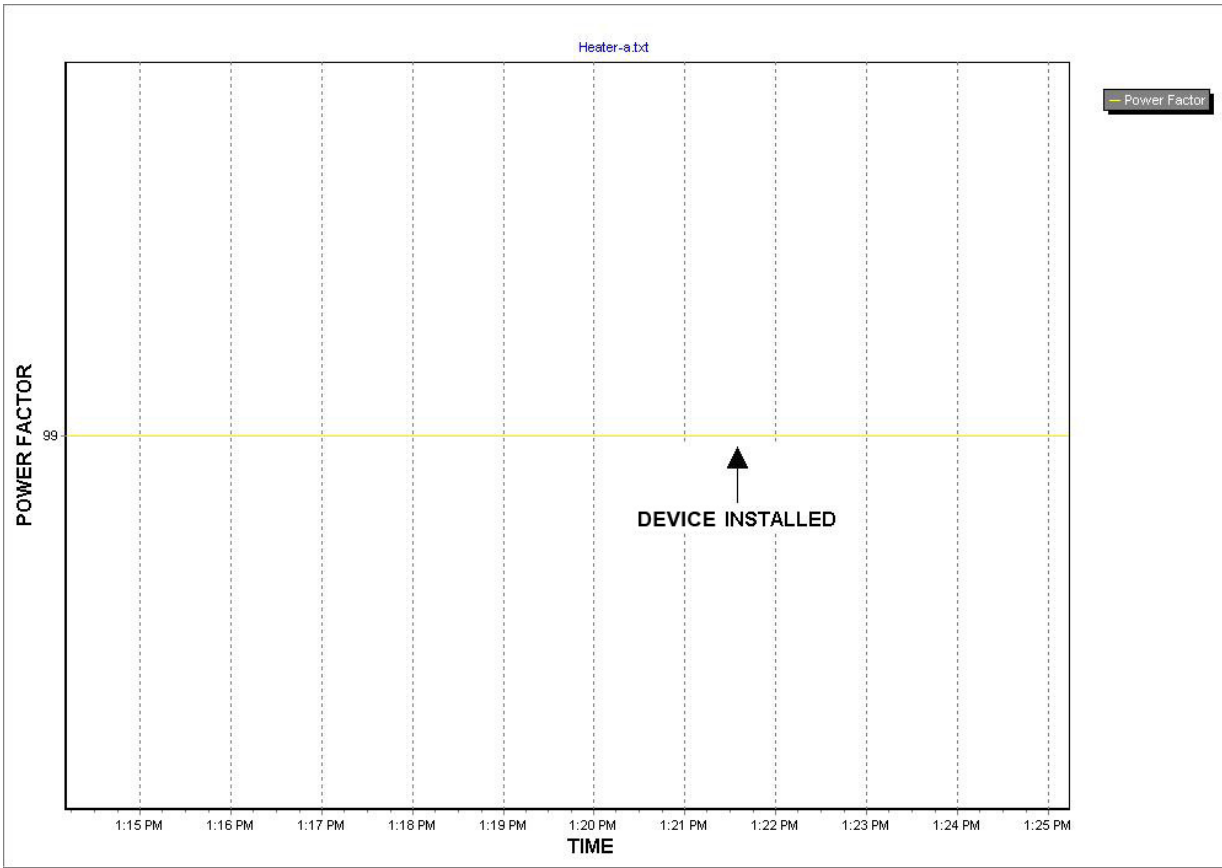

Computer-a.txt
Power Factor
POWER FACTOR
60
59
DEVICE REMOVED
11:00 AM
11:01 AM
11:02 AM
11:03 AM
11:04 AM
11:05 AM
11:06 AM
11:07 AM
11:08 AM
11:09 AM
11:10 AM
TIME

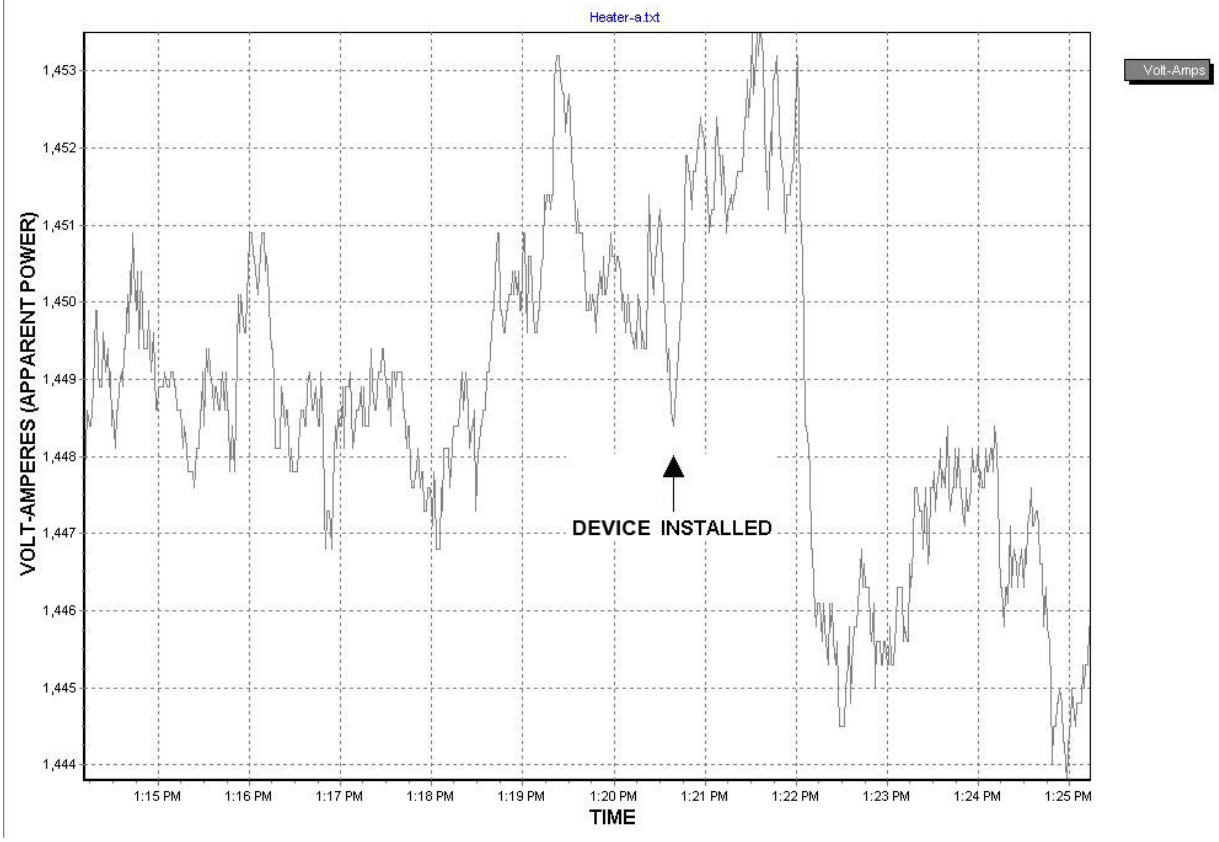

Computer-a.txt
Volt-Amps
DEVICE REMOVED
VOLT-AMPERES (APPARENT POWER)
250
249
248
247
246
245
244
243
242
11:00 AM
11:01 AM
11:02 AM
11:03 AM
11:04 AM
11:05 AM
11:06 AM
11:07 AM
11:08 AM
11:09 AM
11:10 AM
TIME

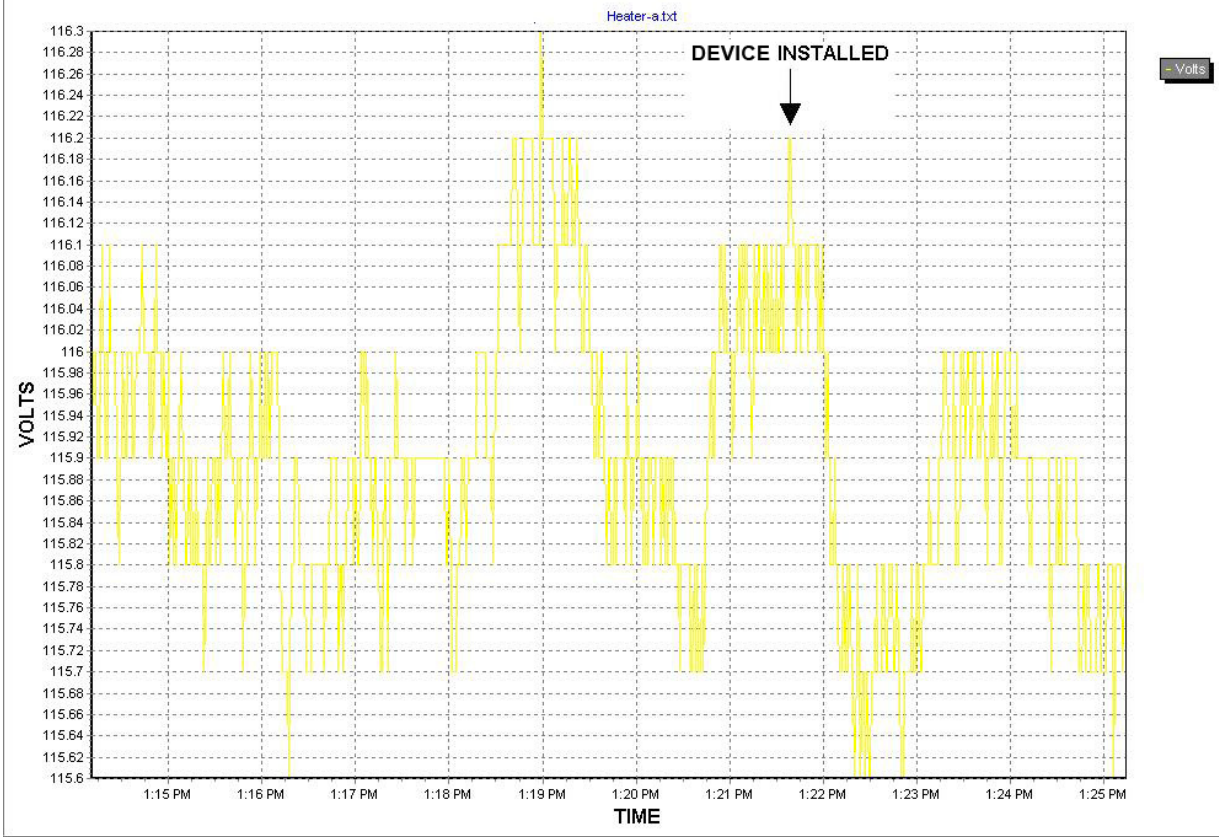

Computer-a.txt
- Volts
VOLTS
125
DEVICE REMOVED
11:00 AM
11:01 AM
11:02 AM
11:03 AM
11:04 AM
11:05 AM
11:06 AM
11:07 AM
11:08 AM
11:09 AM
11:10 AM
TIME

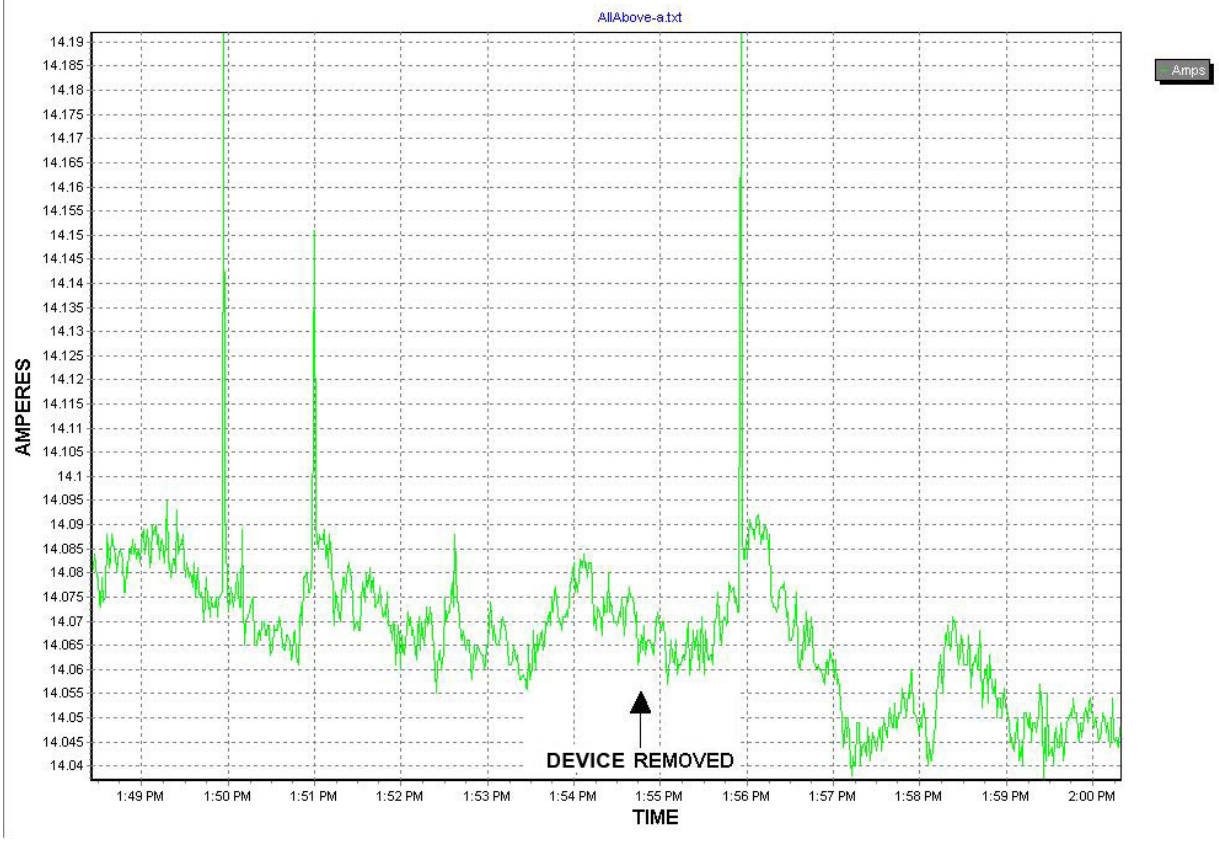

Heater-a.txt
Watts
WATTS
1,448
1,447
1,446
1,445
1,444
1,443
1,442
1,441
DEVICE INSTALLED
1:15 PM
1:16 PM
1:17 PM
1:18 PM
1:19 PM
1:20 PM
1:21 PM
1:22 PM
1:23 PM
1:24 PM
1:25 PM
TIME

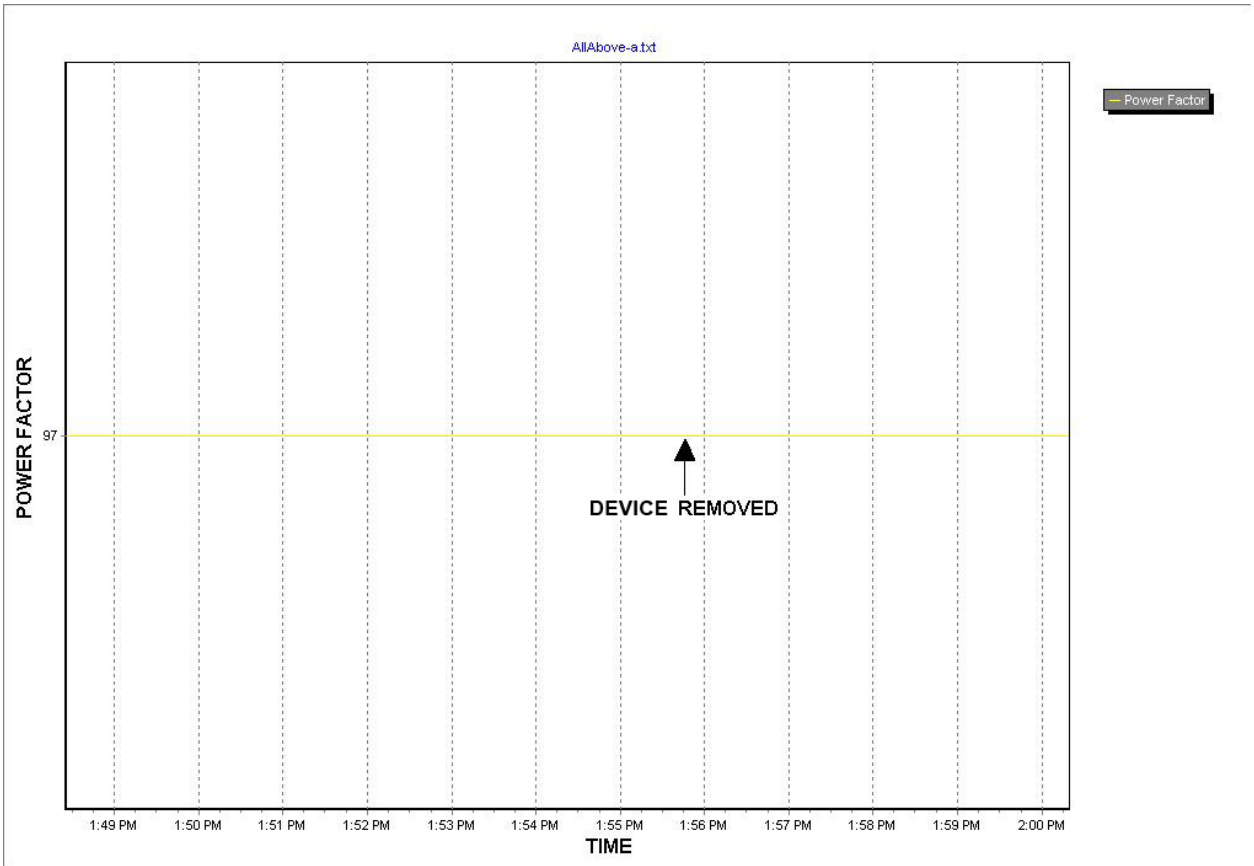

Heater-a.txt
Amps
AMPERES
12.532
12.53
12.528
12.526
12.524
12.522
12.52
12.518
12.516
12.514
12.512
12.51
12.508
12.506
12.504
12.502
12.5
12.498
12.496
12.494
12.492
12.49
12.488
12.486
12.484
12.482
12.48
12.478
12.476
12.474
12.472
12.47
12.468
DEVICE INSTALLED
1:15 PM
1:16 PM
1:17 PM
1:18 PM
1:19 PM
1:20 PM
1:21 PM
1:22 PM
1:23 PM
1:24 PM
1:25 PM
TIME

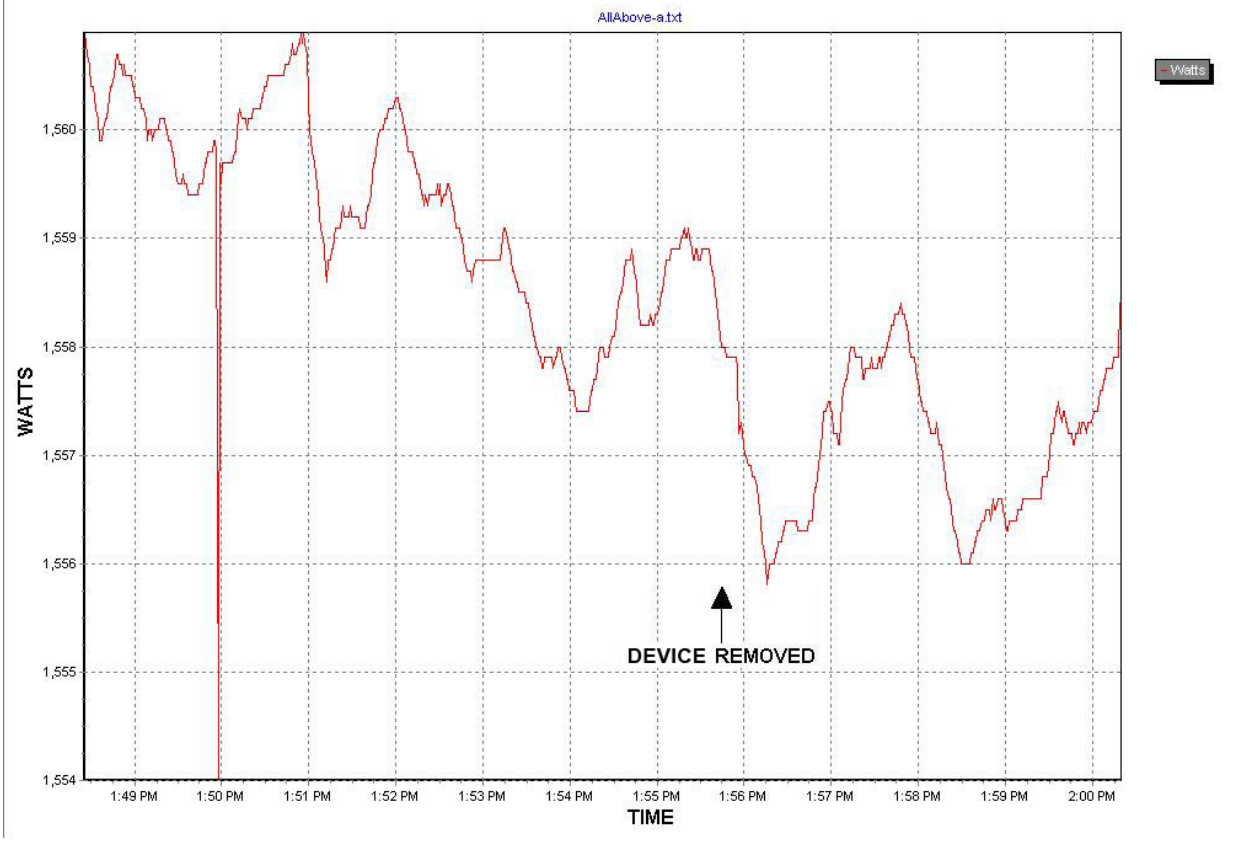

Heater-a.txt
Power Factor
POWER FACTOR
99
DEVICE INSTALLED
1:15 PM
1:16 PM
1:17 PM
1:18 PM
1:19 PM
1:20 PM
1:21 PM
1:22 PM
1:23 PM
1:24 PM
1:25 PM
TIME

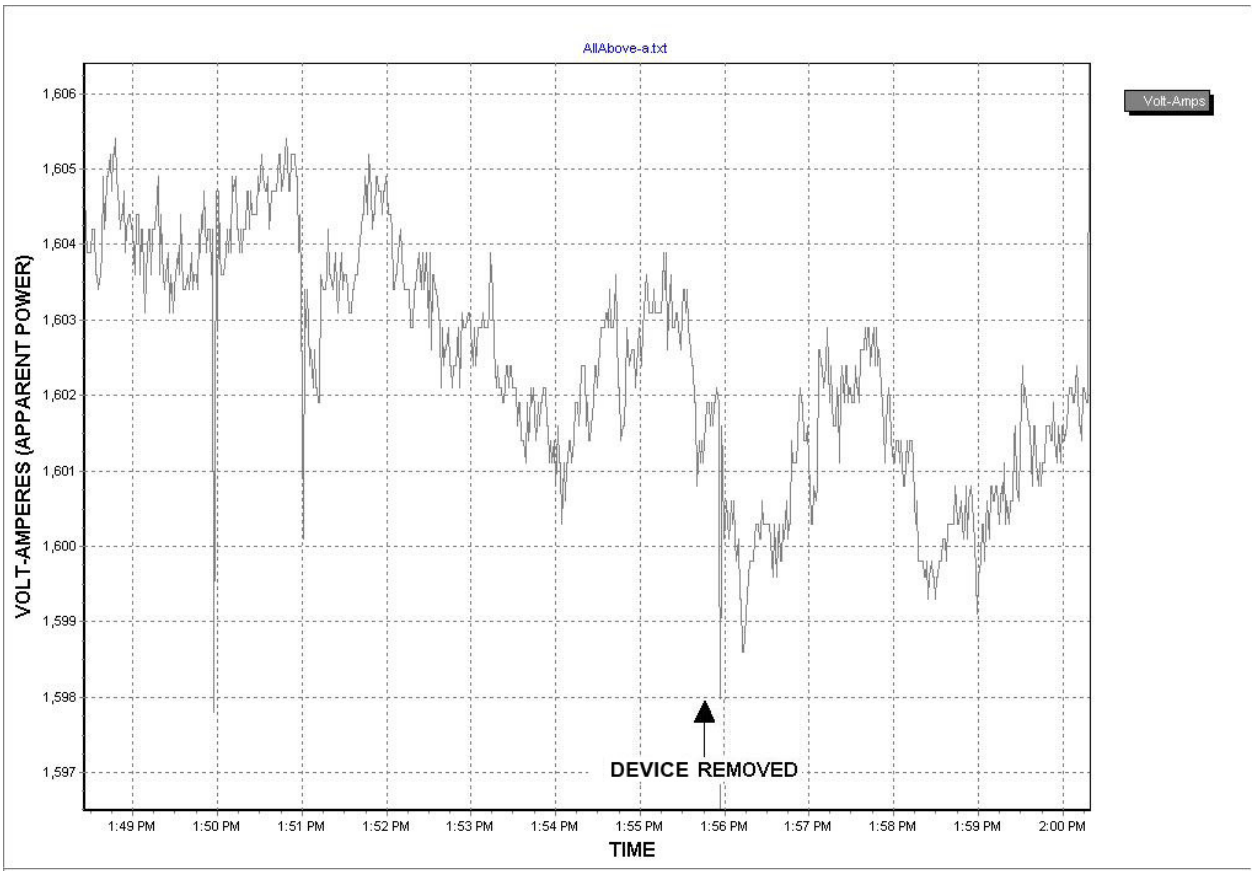

Heater-a.txt
Volt-Amps
VOLT-AMPERES (APPARENT POWER)
1,453
1,452
1,451
1,450
1,449
1,448
1,447
1,446
1,445
1,444
DEVICE INSTALLED
1:15 PM
1:16 PM
1:17 PM
1:18 PM
1:19 PM
1:20 PM
1:21 PM
1:22 PM
1:23 PM
1:24 PM
1:25 PM
TIME

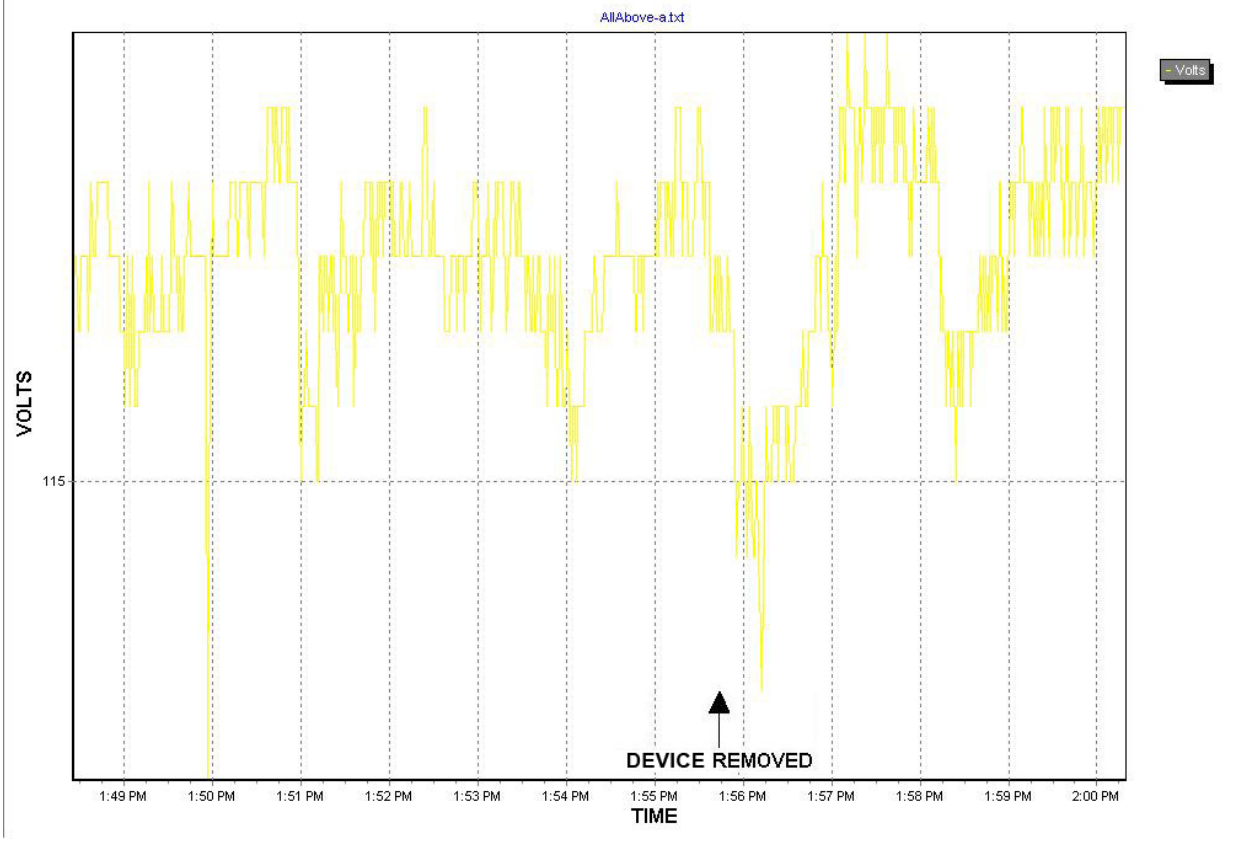

Heater-a.txt
DEVICE INSTALLED
Volts
VOLTS
TIME
116.3
116.28
116.26
116.24
116.22
116.2
116.18
116.16
116.14
116.12
116.1
116.08
116.06
116.04
116.02
116
115.98
115.96
115.94
115.92
115.9
115.88
115.86
115.84
115.82
115.8
115.78
115.76
115.74
115.72
115.7
115.68
115.66
115.64
115.62
115.6
1:15 PM
1:16 PM
1:17 PM
1:18 PM
1:19 PM
1:20 PM
1:21 PM
1:22 PM
1:23 PM
1:24 PM
1:25 PM


AllAbove-a.txt
Amps
AMPERES
TIME
DEVICE REMOVED
14.19
14.185
14.18
14.175
14.17
14.165
14.16
14.155
14.15
14.145
14.14
14.135
14.13
14.125
14.12
14.115
14.11
14.105
14.1
14.095
14.09
14.085
14.08
14.075
14.07
14.065
14.06
14.055
14.05
14.045
14.04
1:49 PM
1:50 PM
1:51 PM
1:52 PM
1:53 PM
1:54 PM
1:55 PM
1:56 PM
1:57 PM
1:58 PM
1:59 PM
2:00 PM


AllAbove-a.txt
Power Factor
POWER FACTOR
97
DEVICE REMOVED
1:49 PM
1:50 PM
1:51 PM
1:52 PM
1:53 PM
1:54 PM
1:55 PM
1:56 PM
1:57 PM
1:58 PM
1:59 PM
2:00 PM
TIME


AllAbove-a.txt
Watts
WATTS
1,560
1,559
1,558
1,557
1,556
1,555
1,554
DEVICE REMOVED
1:49 PM
1:50 PM
1:51 PM
1:52 PM
1:53 PM
1:54 PM
1:55 PM
1:56 PM
1:57 PM
1:58 PM
1:59 PM
2:00 PM
TIME


AllAbove-a.txt
Volt-Amps
VOLT-AMPERES (APPARENT POWER)
1,606
1,605
1,604
1,603
1,602
1,601
1,600
1,599
1,598
1,597
DEVICE REMOVED
1:49 PM
1:50 PM
1:51 PM
1:52 PM
1:53 PM
1:54 PM
1:55 PM
1:56 PM
1:57 PM
1:58 PM
1:59 PM
2:00 PM
TIME


AllAbove-a.txt
- Volts
VOLTS
115
DEVICE REMOVED
1:49 PM
1:50 PM
1:51 PM
1:52 PM
1:53 PM
1:54 PM
1:55 PM
1:56 PM
1:57 PM
1:58 PM
1:59 PM
2:00 PM
TIME