Test Report

Landis + Gyr Meter

Date of this report: July 13, 2019

Date Test Report performed June 10, 2019 thru July 13, 2019

Name: - Not published per instructions from the client

Location: - South East Michigan area

1. Conditions of the Tests

    a. Electric field transients aka Dirty Electricity (DE)

        i. The real technical term is conducted emissions. The slang term is DE. There can be DE from both electrical devices internal and external to the building. In your case I did detect significant sources from some from inside but mostly from outside the building.

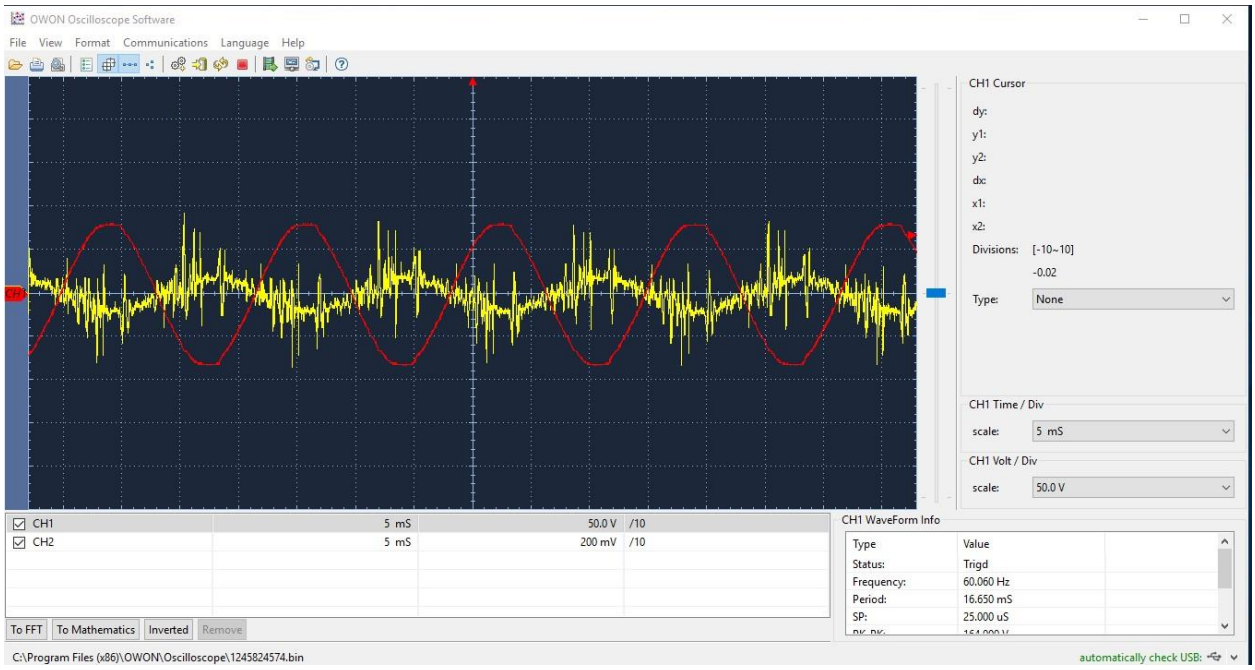
        The oscilloscope traces I am including here need a little explanation.
        You will notice a line trace in RED which is the measured 120 volt AC 60 cycle. This RED trace is the normal waveform I would expect in every building. Notice the scale of the major division (the big black squares) is 50 Volts per division. You will note that 120 volts is actually somewhere almost it is useful to use as a reference when comparing the YELLOW trace waveform. In this building the 60 Hz waveform is normal.

        The YELLOW trace is a measurement of what is called the DE that is actually riding the RED waveform. However you cannot pick out the frequencies present because the amplitude (signal strength) of the 60 Hz signal is so significant that it obliterates the higher frequencies from the measured values. In order to provide this important measurement you must add a “High Pass Filter” to block the fundamental 60 Hz signal. I used a “High Pass Filter” to measure the frequencies above 60 Hz. DE is at frequencies from 1 KHz to 10 MHz with biologically active effects starting at about 4 KHz.

2. Measurements I made.

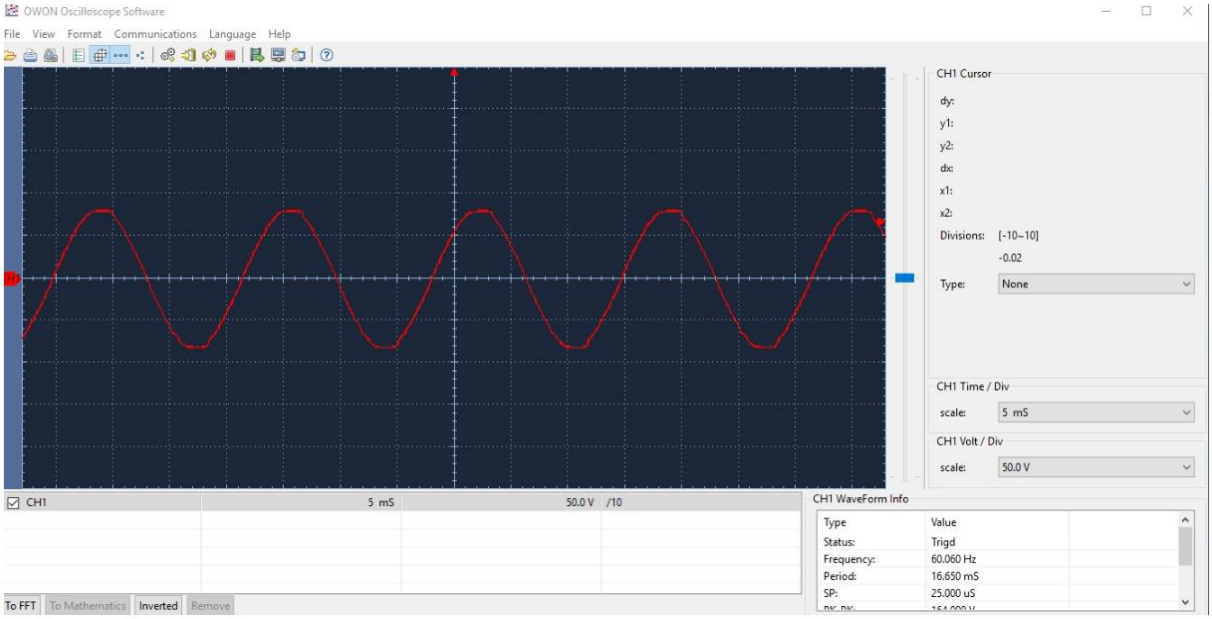
    a. Here is the first measurement with all circuits measured. The peak to peak voltage is between 0.6 to about 0.8 volts. You will notice the high spikes in the waveform. This is

high, a desired measurement should be 0.5 volts or less. Of particular note there are sharp spikes likely coming from your electric meter or a neighbor's home since you are sharing a transformer. You do have a new transformer that was recently replaced by DTE. On a Stetzer Micro Surge meter this measured initially between 130 to over 145 GS units. A Stetzer Micro Surge meter reading below 50 is considered a safe level. While I normally question a Stetzer Micro Surge meter accuracy because it has limitations of 10 kHz to 100 kHz maximum frequency, I believe the Stetzer Micro Surge meter is providing a questionable indication of the general situation in your home. Many people are not aware of the limitations of this type of meter and place an undeserved level of trust in these readings. A GS unit is not a standard unit, but because this has become such a common device many want to understand the measured values.

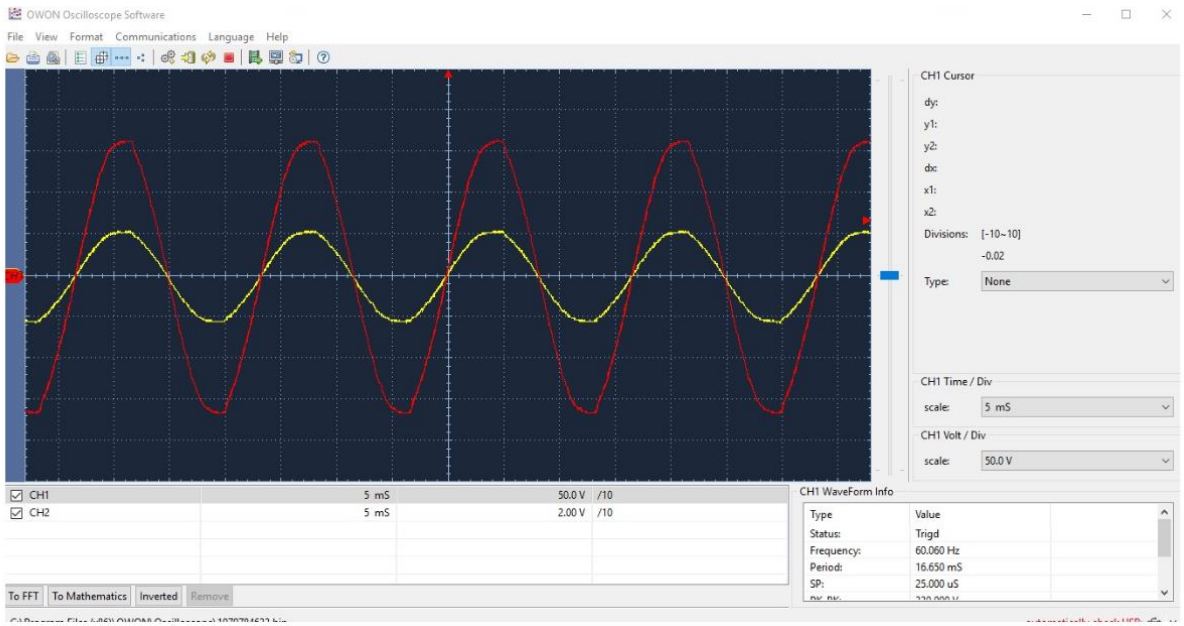


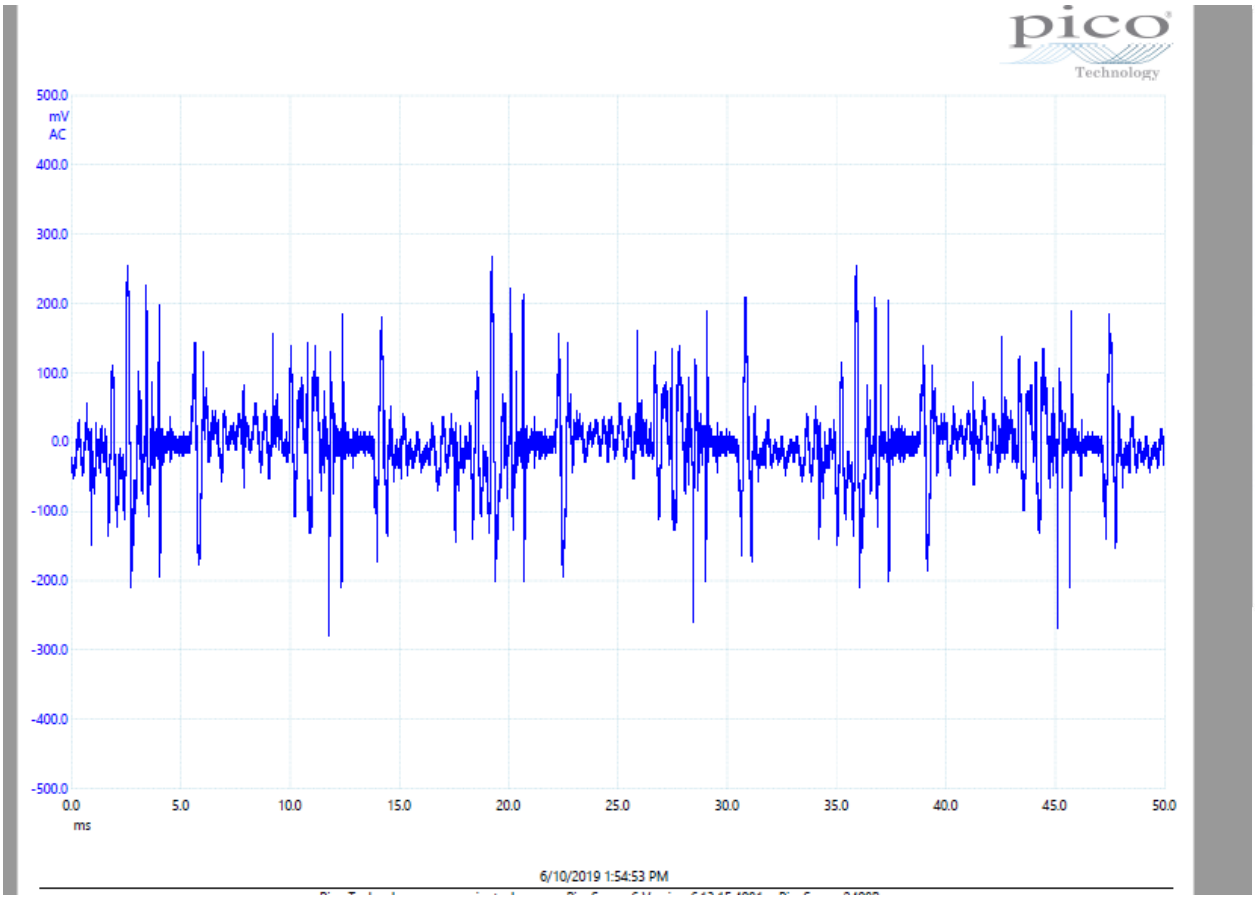
b. One interesting observation of your home was the external ground connection you installed with a solid ground connection to the meter box. I found that there was no stray voltage in your home. In addition, I did a test of your ground conductivity to be 4 ohms with the ground connection off, this is very good. National Electrical Code NEC specs require 25 ohms or less. In a later test of your home I found the DE to be reduced when this ground switch was engaged. So, I recommend you leave this switch on. When I first arrived, it was off. This proves as I have said many times before that a good ground is critical to solving DE. When the ground switch was engaged the ohms were reduced to 1 ohm. You installed this added ground connection at my recommendation last year and it turns out this was a very good thing to do.

c. Here is the test of the primary voltage in red. What I observed was a normal wave form with no harmonics present.



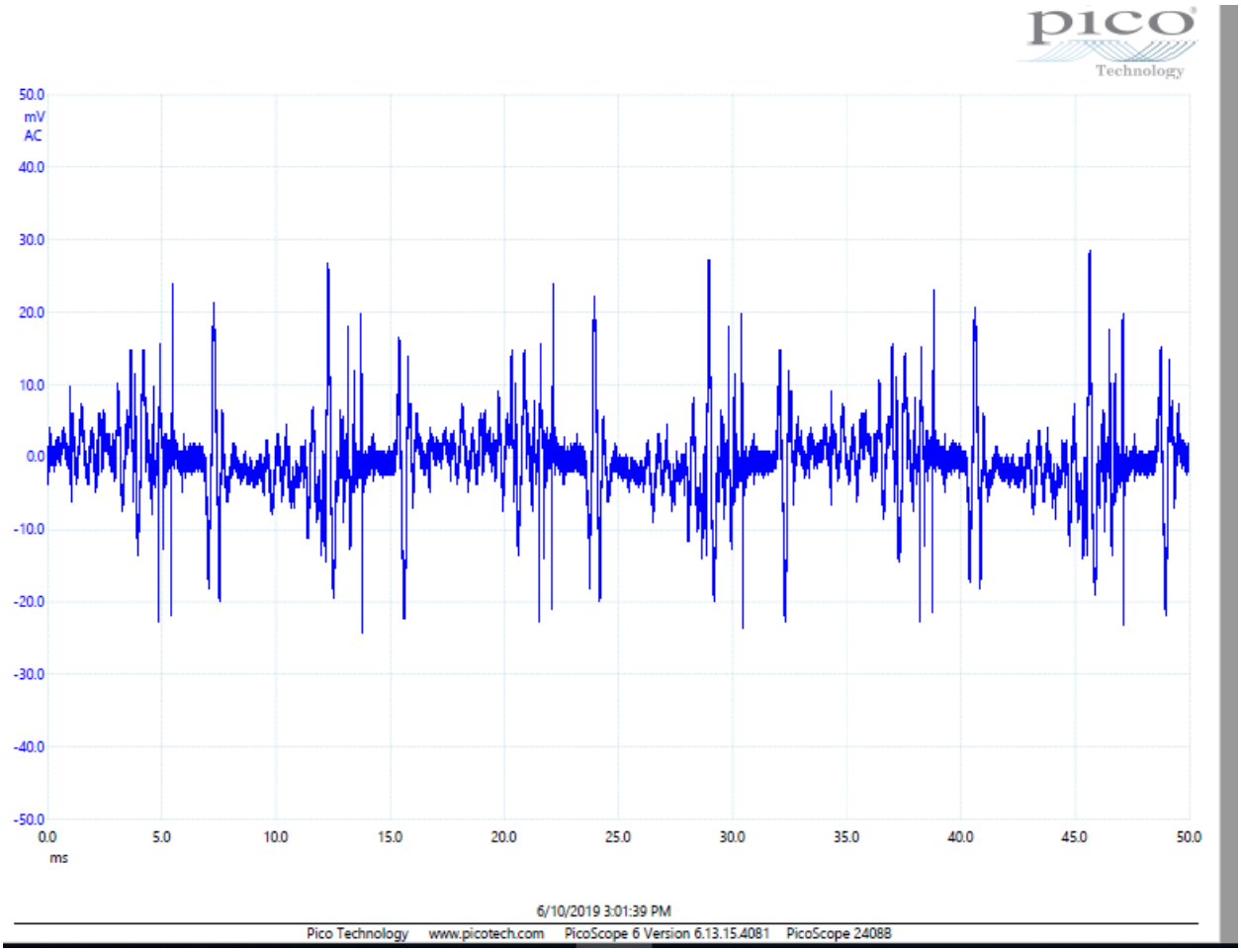
d. This is a test of the ground to neutral connection. I found no unusual effects here. The yellow trace does not show any transients or harmonics This waveform is normal.



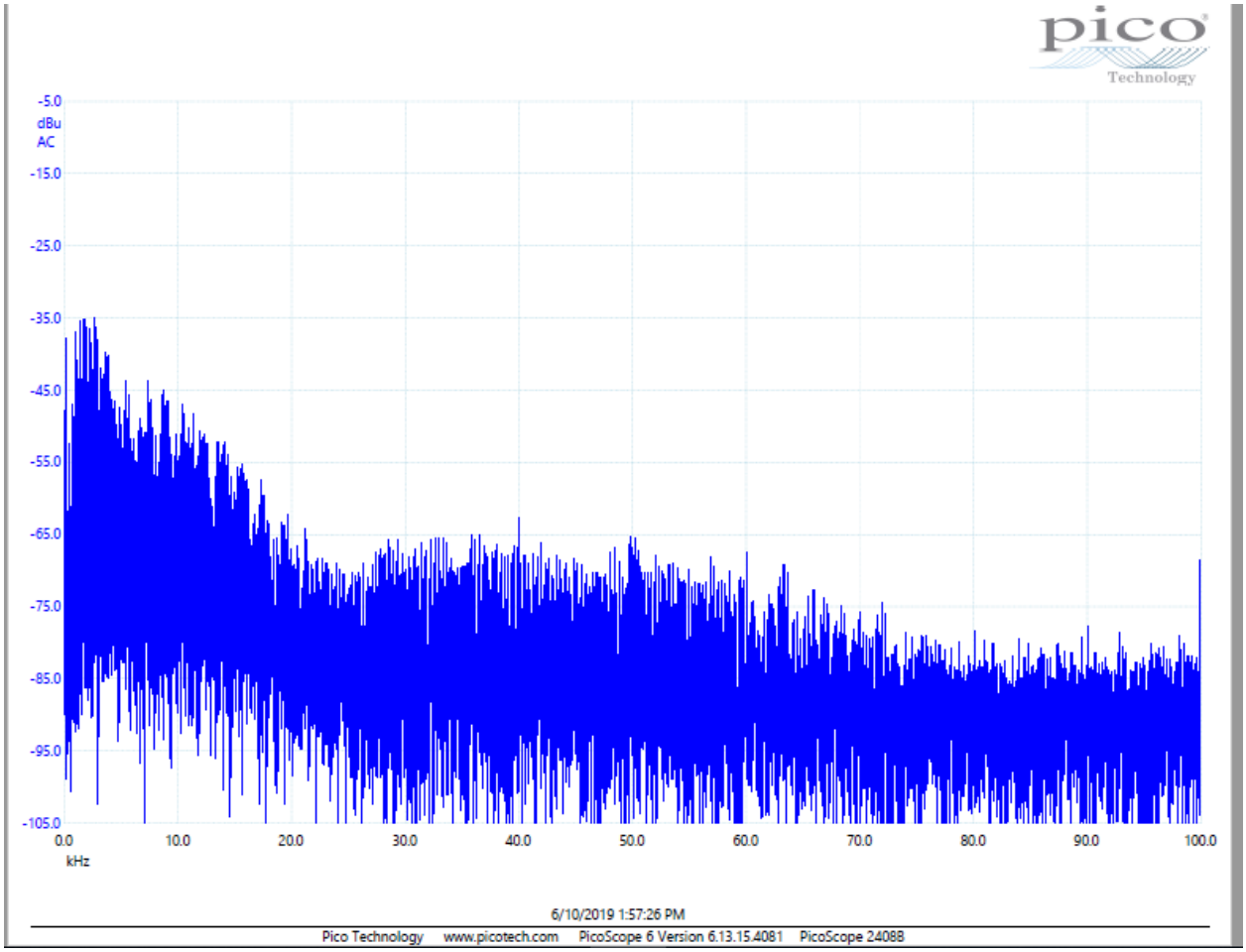


e. This waveform and the following examples are using a different kind of scope that allows better analysis of the waveforms and the frequencies observed. In this example you can see the voltages transients at above 600 mil-volts peak to peak. This is a test with the ground connection switch off. In the next test with the ground connection on the voltage transient is much less.

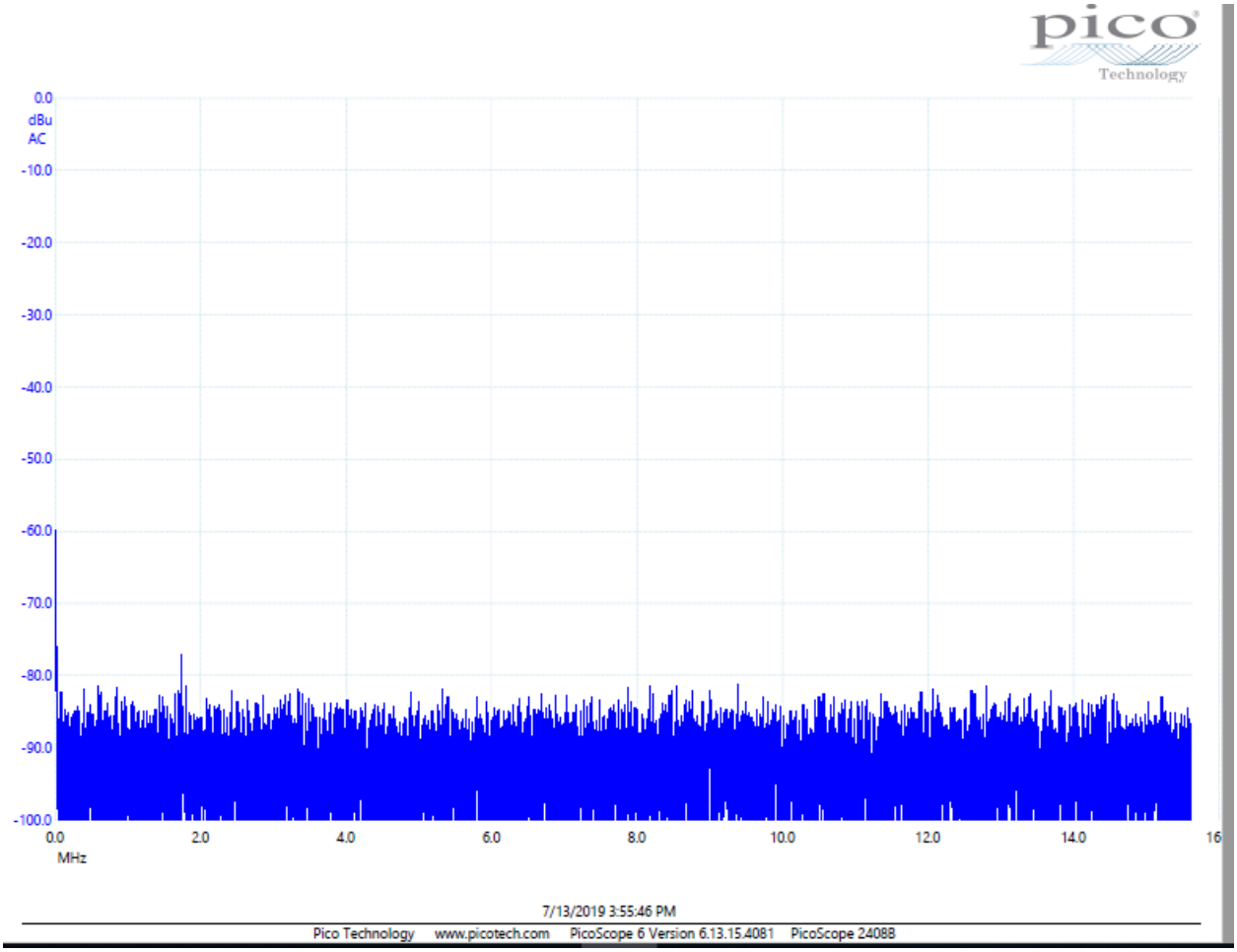
f. This next waveform is a test with the ground connection on. Note the dramatic difference in the peak to peak voltage is now at about 60 mill volts peak to peak. Again, this is more of a reason to keep this ground switch on. Also, to have a very good ground. Without a special ground conductivity test kit, you cannot just go out with a standard volt meter to figure this out.



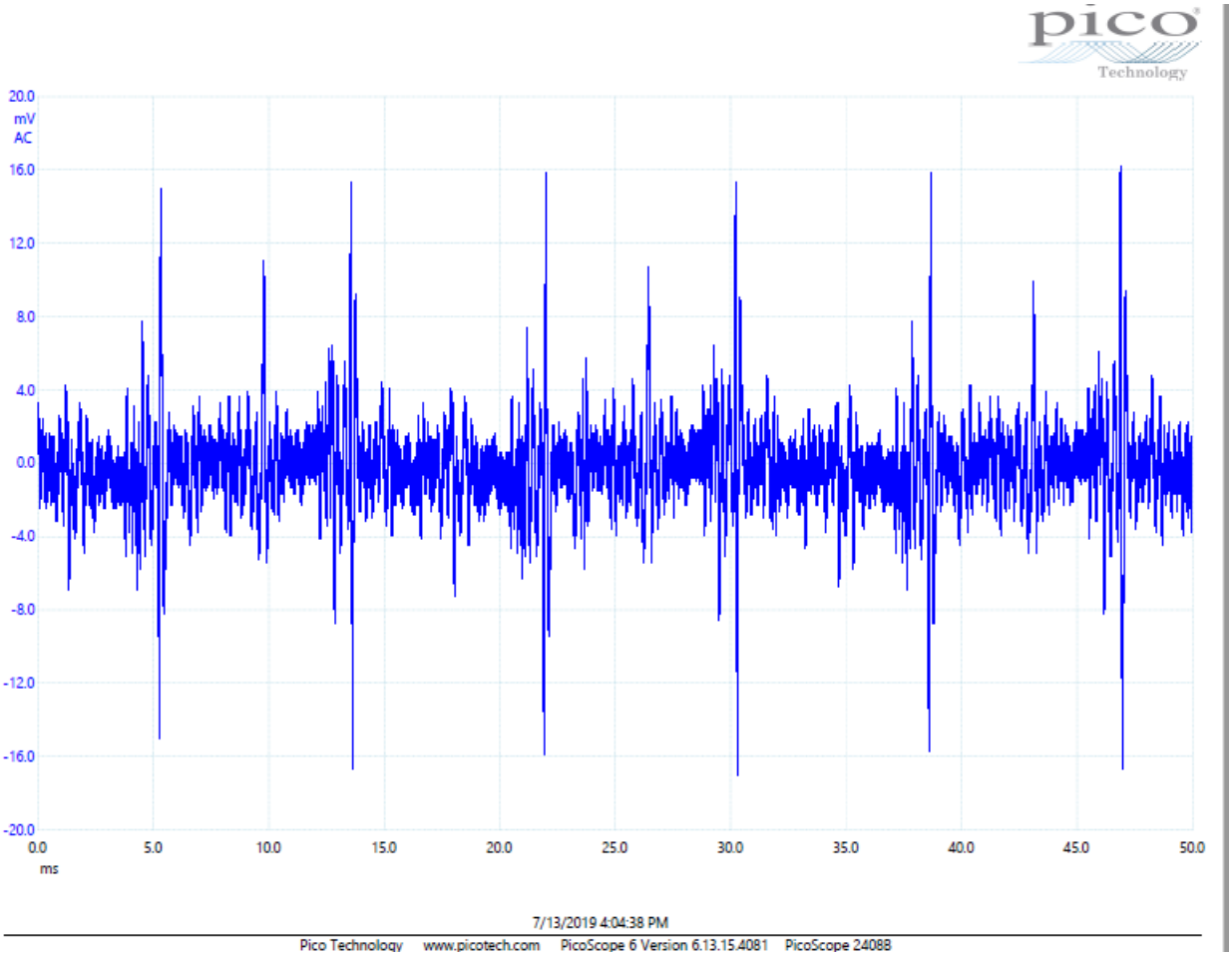
g. Now let's look at the frequencies present in the wave form. This test is for frequencies from 60 Hz to 100 kHz. You will notice that the bulk of strong signals are less than 60 kHz. What this mean is that much of what your home is experiencing is from a combination of the grid and the electric meter artifacts. This test was done with the ground circuit on. You have no electronic devices in your home that are the likely source of these frequencies.


pico
Technology
-5.0
dBu
AC
-15.0
-25.0
-35.0
-45.0
-55.0
-65.0
-75.0
-85.0
-95.0
-105.0
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
80.0
90.0
100.0
kHz
6/10/2019 1:57:26 PM
Pico Technology www.picotech.com PicoScope 6 Version 6.13.15.4081 PicoScope 24088

h. Here is the test of the frequencies now present with a Sine Tamer installed. You will note the large amplitudes of the frequencies previously present are reduced dramatically. This is because the Sine Tamer is rated to mitigate from 1 kHz to 10 MHz in frequency. The ground switch was on. These are dramatic results. GS unit were at 45.



i. Here is the same test condition but looking at the voltage transients with the Sine Tamer ON and the Ground switch was on. Note the transient volts have been dramatically reduced. We had 60 mil volts peak to peak previously and now we have about 30 mill volts peak to peak. This is now extremely low. Remember we started out at 600 mill volts peak to peak. We had started this all with over 130 GS units and reduced this to 45 GS units, but keep in mind the built-in limits of the Stetzer Micro-Surge meter, it cannot read transients at frequencies below 10 kHz or transients at frequencies above 100 kHz. This is possibly providing a false GS reading but it is hard to know, only an oscilloscope can produce reliable measurements. All measurements were done with battery operated equipment only.



Overall Summary and recomendatons:

Your building does has enough conducted emissions to recommend it be remediated. Now the question on where the root issue is likely to be. Based on the largest magnitude of the transients are below 60 kHz and the large quantity of transients, there is likely more conducted emissions coming in from the gird and meter system.

I am often asked “so what?” we are exposed to all kinds of electrical pollution daily and I do not feel the effects, so why do we need to do anything about this? This conducted emission is both at an electrical, magnetic field and RF level.

Studies:

There are numerous studies on the exposure effects of EMF, check out Dr. Andrew Marino with 50 years of research in this area. He is truly an independent researcher and physician and not typically funded by industry.

Here are numerous studies by Dr. Marino you can browse. I am including a hard copy of this study.

https://www.ncbi.nlm.nih.gov/pubmed/21793784

https://andrewamarino.com/journalarticles.html

I will only sell the DNA line of filters or the Sine Tamer brand of filters. In your case I strongly recommend the Sine Tamer filter. I have had good results from the Sine Tamer filter. There are no capacitors in the Sine Tamer unit and the power consumption is only 8 mill amps to power the two LED lgiths on the unit. There is no magnetic field created either unlke all capacitor based units. That is unique in the DE filter marlet. This recommendation is based on the wave forms I observed. Although I found no power line technology capability in the wave forms. The Sine Tamer filter is the only filter on the market that will mitigate DE voltage transients **and** power line technology. No capactive filter on the market including the Stetzer, Green Wave or the Power Perfect Filter can fix a power line technology issue. Only the Sine Tamer filter can address these issues. There have been statements that a Power Perfect Filter can fix a power line technology, in my opinion this is not true because the technology in the Power Perfect simply cannot do it. No capacitor based filter can do it. Thankfully I found no powe line communications present.

Total cost for a Sine Tamer is $1,094.58 USD, this includes shipping and taxes. This price is subject to change without notice.

Click this link to purchase the Sine Tamer

https://www.defiltersllc.com/our-filters/

If you have any questions please ask or call.

I look forward to a next step at your request.

Sincerely yours,

William S. Bathgate

DE Filters LLC

10909 Monticello Road

Pinckney, MI 48169

256-570-5434

www.defiltersllc.com