

**Michael R. Neuert, MA, BSME**  
**Neuert Electromagnetic Services**  
3343 Primrose Avenue, Santa Rosa, CA 95407  
(707) 578-1645 1-800-638-3781  
[www.emfcenter.com](http://www.emfcenter.com)

(© 2018 Michael R. Neuert, Model BVM-S2, GB GDT-3200)

# **Body Voltage Meter** **Instructions**

## **For Measuring “ELF Electric Fields”**

**Special Note:** YouTube video instructions “How to Use a Body Volt Meter” can be found on our website: <https://emfcenter.com/body-volt-meter-to-measure-electric-fields/>

### **Important Note about the Batteries!**

*The batteries need to be changed when the small picture of a “battery” appears in the display. Always be sure to turn off the test meter after use, or the batteries will run down quickly. To replace the batteries, remove the two small screws at the back of the meter with a small Phillips screwdriver. Pull off the back cover, and replace with two fresh AAA batteries.*

### **Table of Contents...**

#### **Part A. The Body Voltage Meter**

- A1. Introduction*
- A2. Set Up the Meter*
- A3. Take a Measurement*
- A4. Check That the Meter is Working Properly*
- A5. What If There is No Soil Accessible for the Ground Rod?*

#### **Part B. Information About Electric Fields**

- B1. What are the Health Concerns?*
- B2. What Levels Are Safe?*
- B3. What Are the Common Sources?*
- B4. Determine What the Sources Are*
- B5. How to Reduce the Electric Fields*
- B6. Why Use the Body Voltage Method?*

## Part A. The Body Voltage Meter

### A1. Introduction

Because our bodies are electrically “conductive”, they are always attracting and picking up electromagnetic fields (EMFs), similar to the way the antenna for your car radio picks up the radio frequencies (RF) emitted from a radio station tower. Your body is an antenna!

For example, the *electric* field part of the *electro*-magnetic field creates measurable voltages on the surface of your body. Many people can feel this, and many sensitive people report being affected by this. The “Body Voltage Meter” accurately measures these AC electrical voltages on your skin that are being caused by nearby ELF *electric* fields.

**Your Body Voltage Meter is easy to assemble.** See Figure 1 (Page 4) which shows proper assembly. These are the main parts...

1. The *multimeter* is the red handheld digital meter that will measure and display the AC voltage.
2. The *skin probe* is the red wire that is plugged into the upper plug-in on the *multimeter*. You will hold the bare metal end of this probe between your fingers, to measure the voltage on your skin. (See Figures 1 and 2.)
3. The *ground rod* is the long screwdriver that you will drive into some moist soil outside to make to make an electrical grounding connection with the earth.
4. The *ground wire* is the 100 foot spool of black wire used to connect the *multimeter* to the *ground rod*. (One end is plugged into the lower plug-in on the red *multimeter*. The other end is attached to the metal shank of the *ground rod* using the alligator clip.)

### A2. Set Up the Meter

**Step 1.** Place the *multimeter* in a location where you wish to test for *electric fields* – e.g., in your bedroom, on the couch, at your computer, in the kitchen, etc.

**Step 2.** Find the nearest location outside the building where there is a good patch of exposed earth – real dirt that goes down deep. Then push the *ground rod* (the long screwdriver) into the earth until only an inch of the metal shank is left exposed above the ground. Ideally, this will be close to a door or window that can be opened, so that the long *black ground wire* can be easily run from the *multimeter* inside to the *ground rod* outside. If the soil is dry, moisten it with some water to improve conductivity.

*(Important Note: If there is no accessible patch of soil within about 100 feet of the test location – for example in a large commercial building or tall apartment building – see item #A5 for an alternative method.)*

**Step 3.** Carefully unwind some of the *black ground wire* from the spool, enough to extend it from the *multimeter* in the room to be tested, out through the open door or window, to the *ground rod* (screwdriver) in the earth. There is 100 feet of ground wire on the spool provided with this kit. If the 100 feet is not long enough, you can purchase an extension to increase the distance.

**Step 4.** Outside, attach the *alligator clip* (at the end of the long *black ground wire*) to the metal shank of the *ground rod* (screw driver) in the soil. Make sure that the *alligator clip* is well connected to the metal shank part of the screwdriver (*ground rod*). It's a good idea to wrap some tape around this connection to make sure that it does not get pulled off during the tests.

**Step 5.** Back inside, check that the red and black probe wires are plugged securely into the *multimeter*. Turn the meter on by turning the dial from "Off" to the second "V" – the black "V" with the squiggly line over it. This stands for AC Voltage.

### **A3. Take a Measurement**

**Step 6.** Position your body just as how you would normally be in this location. For example, in the bedroom, lay down on your bed. At your computer or desk, sit in your chair.

**Step 7.** Hold the bare metal end of the red *skin probe* between your fingers (see Figure 2). Hold still for several seconds, and then read the voltage measurement displayed on the multimeter. The voltage may jump around a little bit – this is normal. Just hold still for a few seconds and write down the average number.

**Step 8.** Always be sure to turn off the meter when you are finished, or the battery will run down. You can check that the meter is working properly, by following the steps in the next section.

### **A4. Check That the Meter is Working Properly**

You can verify that the Body Voltage Meter is working properly in two ways. Find a table lamp (or any other electrical device) with a power cord plugged into an electrical outlet. Lay the power cord over your lap, or across your body. Unplug the power cord from the wall, and take a body voltage measurement. Then, plug the cord back into the wall (still keeping the cord on your lap) and take a second measurement. You should see the body voltage measurement go up significantly when you do this, usually by 1.0 Volt or more. *Warning: Do not do this test on yourself if you are a very sensitive person. Ask a friend to help!*

In general, the body voltage measurement should go up when you get closer to power cords and hidden electrical wires in the walls, floors and ceilings. And they should go down when you move further away. If this is not so, check that...

1. the *ground rod* is driven securely into the soil,
2. the soil is wet (moisten if necessary),
3. the alligator clip is well secured to the metal shank of the *ground rod*,
4. the red and black probes are both inserted firmly into the *multimeter*,
5. the *multimeter* is set to AC Volts (the black "V" with the squiggle over it),
6. the batteries are okay (e.g., there is no little picture of a battery in the display).

(Note: Another method, if you are comfortable and knowledgeable with electricity, is to measure the voltage of an electrical wall outlet with the body voltage meter. Being careful, insert the bare metal end of the red *skin probe* into the "hot" prong of a standard wall outlet. *Warning: For this test, be sure you never touch your skin to the bare metal of the probe, or you will receive a shock!* The "hot" is usually the smaller of the two vertical slots of the electrical outlet, and usually on the right. If the meter is working, the reading should typically be between 110 to 125 volts ( in north America). Never do this kind of test if you are unsure of your safety!)



**Figure 1: Proper assembly of the body volt meter**

**Figure 2: Holding the red probe correctly to take a measurement**



### **A5. What If There is No Soil Accessible for the Ground Rod, for Example in a Large Commercial Building or Tall Apartment Building?**

For accuracy, a clean reference for “zero” voltage is needed. Since the earth is our best source of “zero” volts, the preferred test method is to use a ground rod driven into the soil as described above. The set-up above will work well for most homes and offices where there is accessible soil within 100 feet of each room.

If necessary, you can extend the length of the *black ground wire* even further by adding extensions (you can purchase these from us) as needed. On the second floor of buildings, the long ground wire can usually be fed out of a window and down to the ground.

However, this may be difficult in certain offices and apartments which are over two stories tall, and in some large commercial and office buildings. Or there may be no nearby places with uncovered soil in some urban settings. If so, you can use the grounded prong of a standard three-prong electrical outlet to substitute for the *ground rod* outside. To do this, you will need to purchase an additional grounding cord that can plug directly into a grounded electrical outlet.

Perform the rest of the body volt testing as already described, but keep in mind that this alternate method is much less accurate — because the voltage of the electrical grounding is often not exactly zero (due to “dirty” grounding). In most cases, it will make the measurements inaccurate by several tenths of a volt. In a few cases, it can cause inaccuracies great than a volt!

## **Part B. Information About Electric Fields**

### **B1. What Are the Health Concerns?**

Researchers have linked electromagnetic fields (EMFs) in the “ELF” range to a variety of health effects – including leukemia, lymphoma, brain and nervous system tumors, and other cancers. EMFs have also been linked to suppression of the immune system, Alzheimer’s Disease, Lou Gehrig’s Disease, depression and suicide.

Extremely-low-frequency (ELF) fields are the 60 Hertz fields commonly emitted from power lines, electrical wiring, lights, appliances, and other electrical sources. These EMFs have two main components. While most of the research has been focused on *ELF magnetic fields*, the *ELF electric fields* can also have important health effects.

A wealth of anecdotal evidence suggests that many people who are “sensitive” to electrical sources – often reporting symptoms such as headache, fatigue, nausea, dizziness, mental confusion, memory problems, skin burning and itching, irritating sounds, sleep problems, and other health issues – may be affected by the *electric fields*.

## **B2. What Levels Are Safe?**

It is difficult to define any specific level as safe or unsafe, and there is still great controversy about the potential health effects, if any, from exposure to electromagnetic fields. The information below is based on anecdotal experience from myself and other professionals. You will have to decide for yourself what levels to consider safe or unsafe.

In nature – for example outside under the trees, at the beach, or anywhere far away from electrical devices – this body voltage measurement is usually 0.0 Volts AC. For millions of years before the invention of electricity, the body voltage measurement would almost always have been 0.0 Volts AC.

Today, the average body voltage in US homes is probably between 0.5 to 2.0 Volts AC. In most homes, levels will vary greatly from 0.1 to 5.0 Volts or more, depending on the exact location and the position of the person being tested.

Anecdotally, a level of 1.0 volt or higher seems to be enough to trigger “symptoms” for many sensitive people, and some will report health problems at levels below 1.0 Volt. I find that we usually need to reduce the levels down to 0.1 Volt or less to bring significant relief to sensitive people.

In our work, we generally try to keep our clients’ long-term electric field exposures below 0.5 Volt as measured on the skin. And at night, we usually try to reduce the bedrooms down to 0.1 Volt or less, since sleep is such a critical time for the rest and rejuvenation of the body.

For individuals who are hypersensitive to EMFs or have a severe illness, cancer, chronic fatigue, chemical sensitivity, poor immune function, etc., we generally try to reduce all long-term exposures down to 0.1 Volt or less.

The highest body voltage measurement I have ever recorded was 34.5 Volts AC. My client was young and otherwise healthy, but she suddenly couldn’t concentrate or work, and she would literally lapse into what she called an “unconscious state” for hours at a time each day. She suspected something environmental because her problems began immediately after moving into a new home. Once the wiring issues in her new home (reversed polarity and lack of grounding) were repaired, she recovered fully in just a few days.

## **B3. What Are the Common Sources?**

While power lines can be a very strong source of *electric fields* outside, they are usually not a significant source of exposure inside the home (due to the distance, and the accidental shielding by common building materials).

For most people, the biggest exposure to *ELF electric fields* is from hidden electrical wiring in nearby walls, floors and ceilings. An additional common source is from nearby electrical power cords for lamps, computers, appliances, clocks, etc.

Certain electrical wiring conditions can also cause high exposures. For example, if you plug a computer into a wall outlet that is not grounded, that computer will often emit much stronger electric fields than if it was properly grounded. Electrical devices that can emit high levels of electric fields include computers, televisions, fluorescent lights and electric blankets.

#### **B4. Determine What the Sources Are**

Electric fields are emitted from a variety of sources, many of which may be unknown, unseen or unexpected. The following procedures can help you track down and determine the exact sources of the electric fields you are measuring.

In general, the strength of the field will increase as you approach the source, and decrease as you move away from it. But be aware that if there are several sources, the complex field patterns can mix in surprising and unpredictable ways, making it more difficult to determine the sources clearly.

**Step 1.** Turn “OFF” the main electrical breaker or switch for the whole building, so that all electricity inside the home is off. Measure and record the body voltage in several locations, especially the bedrooms. This gives you a very good idea of the *electric fields* that are coming from everything *external* to the house, such as power lines, neighboring homes, etc.

**Step 2.** Turn the main power switch back “ON” again. Also turn on all the lights and appliances that you would normally have on. Measure and record the body voltage in the exact same locations as you did in Step 1. This gives you a very good idea of the total *electric fields* coming from *external* sources such as power lines, plus all the *internal* sources such as electrical wiring, lights, power cords and appliances.

**Step 3.** Then for each location, subtract the measurement in *Step 1* from the measurement in *Step 2*. This new number will give you a good estimate of the electric fields emitted from only the *internal* sources – e.g., electrical wiring, lights, cords and appliances.

**Step 4.** To test if a particular item (such as a lamp or clock next to your bed) is a significant source, take a body voltage measurement near the item. Then without moving or changing your position, unplug the item completely and retest the body voltage to see if there is a significant reduction.

**Step 5.** Perhaps most helpful, is to determine which particular electrical circuits are causing the electric fields where you sleep. Lay on your bed to take the measurements, while someone else turns the breakers on and off. Turn off all the breakers (but keep the main breaker on of course). Then turn on one circuit breaker (with the others off) and take a body voltage measurement. Then turn that one off and turn on the next breaker and measure that. Do this for each circuit breaker. You will quickly see which particular circuits are causing the strongest electric fields at your bed.

#### **B5. How to Reduce the Electric Fields**

Sometimes you can simply move a bed, couch or table to a new location in the same room to reduce the exposure greatly. You can unplug electrical cords for lights and appliances, especially those near the beds. At night, some people turn off the particular circuit breakers that are causing high electric fields in the bedrooms. An electrician can install remote switches to make this more convenient.

An electrician can also install proper grounding or repair wiring problems that are causing high *electric fields*. If the wiring is accessible, it can be shielded at a relatively low cost. For new and remodel construction, special “Low-EMF” electrical wiring can be installed using shielded materials. And shielded cords can be added to lamps and appliances, especially for those near beds.

## **B6. Why Use the Body Voltage Method?**

*Electric fields* abound in our modern environments. And because the surface of our bodies are so electrically conductive, we are always attracting and absorbing the *electric fields* around us. This is similar to how the radio antenna in your car picks up radio station signals. Our bodies are antennas too.

In fact, your skin is so conductive that it will interfere with the accuracy of most regular hand-held *electric field* test meters. Since your body is already acting as the “perfect antenna”, the most useful and insightful method is to directly measure the voltage on your skin caused by to the *electric fields*.

This is exactly what the Body Voltage Meter does – it measures the artificial AC voltages induced onto your skin from all the *ELF electric fields* around you. This method is commonly called body voltage testing, skin voltage testing or skin volt testing.

***If you need further assistance, we provide professional telephone consultations to help you reduce the EMFs in your environment.***

***In northern California, we also provide onsite EMF services including testing, troubleshooting and shielding, as well as the design of specially shielded low-EMF wiring systems for new or remodel construction.***

***If we can be of further assistance, please contact my office.***

***Thank you.***

***Michael R. Neuert, MA, BSME  
Neuert Electromagnetic Services  
Owner, EMF Consultant and Engineer***

© 2018 Michael R. Neuert, Author/Engineer  
(Model BVM-S2, Version D, August 2018)