Michael R. Neuert, MA, BSME
Neuert Electric & Electromagnetic Services
P.O. Box 8308 (Shipping: 3343 Primrose Ct.)
Santa Rosa, CA 95407
(707) 578-1645 or 1-800-638-3781

Bell 4080 Gaussmeter Instructions

A. Important Note about the Battery

Always turn the meter off after every use, or the battery will run down quickly! When the battery needs replacement, a "minus sign" (-) will appear on the display, or the display will not light up at all. To change the battery, slide off the rectangular cutout at the bottom back of the meter and replace with a fresh 9 Volt battery.

B. How to Use the Bell 4080 Digital ELF Gaussmeter

Turn the meter on by simply moving the side switch up. The meter will perform a quick self-test and display "-8.8.8" for about a second. This verifies that the meter is working properly.

Then, simply hold the meter in any location you wish to measure. For example, hold the meter at the head of your bed, in the chairs in front of the TV, or outside where children play. Important note: Always hold the meter still for a few seconds, before you read the number on the display.

The Bell 4080 measures the strength of the extremely-low-frequency (or "ELF") magnetic fields in units called milligauss (or "mG"). This gaussmeter can be used to test the ELF magnetic fields from any source, including power lines, building wiring, electrical panels, transformers, refrigerators, appliances, lights, even inside automobiles.

C. What Level is Considered Safe?

Magnetic fields in the "ELF" range – which includes all the 60Hz electrical power in the USA and the 50 Hz electricity in many other countries – have been linked to important biological effects such as immune suppression and increased cancer, in hundreds of scientific studies.

However, there is still great controversy about the potential health effects from exposure to magnetic fields, and it is difficult to define any specific level as safe or unsafe. The following information is provided to help you make your own health decisions about exposure levels…

The average level in homes across the United States is probably about 0.5 to 0.6 milligauss (mG). The average in homes is probably closer to 1.0 milligauss in major metropolitan areas like New York City and San Francisco, and also inside large office and industrial buildings.

A variety of large-scale international epidemiological studies have linked long-term magnetic field exposures as low as 2.0 milligauss to increased leukemia, lymphoma, and nervous system tumors in children. Therefore, some will suggest that concerned individuals reduce long-term exposures in the home to 2.0 mG or less.

However, when a chemical toxin is linked to adverse health effects, the recommended safety level is usually set well below the reported toxic level, to help provide for a margin of safety. Therefore, it may also be wise to consider a long-term safety level that is set well below the 2.0 milligauss, perhaps down to 0.5 milligauss or less.

In our EMF consulting work, we usually try to reduce exposures to 0.5 mG or less. Since there is no guarantee that 0.5 mG or any level is completely safe, it may be wise to reduce any exposures as much as reasonably possible.

D. Does the Gaussmeter Measure All of the Electromagnetic Fields?

The "Bell 4080" is a very accurate gaussmeter for measuring magnetic fields in the ELF frequency range – which includes all of the 60 Hz (hertz) magnetic fields from power lines, electrical wiring, lights, and various home appliances. However, this gaussmeter will not measure the other types of electromagnetic fields – the *VLF magnetic fields* (the higher frequency magnetic fields from televisions, computers and fluorescent lights), the *radio/microwave frequency fields* (the radiation from cell phones, cellular antennas, radio/TV broadcast towers, cordless phones, microwave ovens, etc.), or any of the low-frequency *electric fields*.

To detect these other kinds of electromagnetic fields, another type of meter is needed. For this purpose, we usually recommend the "TriField 100 XE," which is also available for sale or rent.

E. What Can I do to Reduce the Magnetic Fields?

In general, the readings will increase as you move toward the source, and decrease as you move further away from it. If the source is obvious, you may be able to unplug the item, or turn off the breaker for the entire circuit, to reduce the magnetic fields.

In most homes and offices, certain areas will have higher levels of magnetic fields, and others will be lower. Sometimes, you can arrange your environment to avoid

the high field locations. For example, place beds and furniture in the lowest field areas, and use the higher field locations for storage.

If you want to determine whether the magnetic fields are coming from sources outside of the building (e.g., nearby power lines) or from sources within the home (e.g., wiring, lights, appliances) simply turn off the main breaker for the whole building at the meter panel. The magnetic fields that remain will be those from the outside sources.

Remember, a very common source is hidden wiring in walls, ceilings and under floors. Also, anything that is electrically conductive – for example, metal water and gas pipes – can carry stray electrical currents that cause high magnetic field levels.

F. How Can I Get More Help to Reduce the Magnetic Fields?

If needed, we provide consultation services to assist you in the troubleshooting and repair of any magnetic field problems. Specifically, we…

1. Trace and repair electrical wiring and grounding problems that cause high fields;
2. Eliminate magnetic fields due to stray electrical currents in water and gas pipes;
3. Shield sources such as meter panels, transformers, refrigerators, and appliances;
4. Install special cancellation systems for homes near high-tension power lines.

In California, we provide all of these services on-site. In other parts of the country, we provide phone consultations to help walk you (or your electrician or contractor) through the proper steps, as needed.

Please contact our office if we can be of further assistance.

Sincerely,

Michael R. Neuert, MA
Owner, Electrical Engineer