

Tools of the Trade

Faraday Cage

By Kevin Clayton, Limbo Paranormal / TnT Paranormal Investigators_{LLC} - MO Chapter

Faraday cages have become more popular in the paranormal field lately, in their reported ability to block external signals that sometimes affect SB-7 devices, or the like. These cages supposedly allow “true” signals or speech from spirits or ghosts, and shouldn’t allow the errand radio or walkie talkie signal to come through.

A Faraday cage is a sealed enclosure that has an electrically conductive outer layer. It can be in the shape of a box, cylinder, sphere, or any other closed shape. A Faraday cage works by three mechanisms: (1) the conductive layer reflects incoming fields, (2) the conductor absorbs incoming energy, and (3) the cage acts to create opposing fields. All of these work to safeguard the contents from excessive field levels. A Faraday cage is particularly useful for protecting against an electromagnetic pulse that may be the result of a high-altitude nuclear detonation in the atmosphere (a.k.a. EMP attacks), which is a constant danger when researching the paranormal.

Faraday cages cannot block low frequency *magnetic fields*. Faraday cages work through the redistribution of an electrical charge throughout their electrically conductive structure, so they mainly shield against *electric* fields. Faraday's cage is known to block static and non-static electric fields. The mechanism of blocking depends on whether the electric field is static or non-static (EM field). Faraday cages cannot block static and slowly varying magnetic fields, such as Earth's magnetic field (a compass will still work inside).

The thickness of the conductor used in construction is related to a phenomena called Skin effect. In general, EM waves, when they penetrate a conductor, they are attenuated until their fields become almost zero. A characteristic depth of penetration is called Skin depth. The skin depth is the distance it takes an EM wave to be attenuated to certain value. This skin depth depends on many factors such as conductivity and frequency.

The most common material used to construct a faraday cage is a very fine copper mesh, but materials such as silver or aluminum is also acceptable. The material will determine how well the cage blocks unwanted signals. Most people use a copper mesh. This not only blocks most signals, but it allows users to see through the material and into the box. Often devices such as SB-7s, REM pods, Mel-Meters, or voice recorders are placed in these boxes. These devices use light up displays that make it easy to try and determine if “activity” happens. The prevailing theory is that spirits or ghosts can interact with these devices while other errant signals are blocked.

A faraday cage can have holes in it, as long as the holes are small with respect to the wavelength of the incident electromagnetic wave. For example, a 1 GHz wave has a wavelength of 0.3 meters in free space. As long as the holes are significantly smaller than that dimension (i.e., a few millimeters), they won’t let in much of the incident wave. This is why fine conductive mesh can be used when constructing a Faraday cage. In practice, the cage’s lid or door usually causes the most leakage. Taping the seam with conductive tape helps to reduce this leakage.

There is a great deal of confusion regarding grounding of a Faraday cage. Grounding of the cage (i.e., connecting it to some Earth-referenced

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source of charge) has little effect on the field levels seen inside the box. Grounding primarily helps to keep the cage from becoming charged and perhaps re-radiating. The bottom line is that an ungrounded cage protects the contents from harmful electromagnetic fields as well as a grounded one.

A well-constructed cage, or faraday bags, are an excellent addition to any paranormal investigators arsenal of equipment. While it cannot 100% prove the existence of ghosts and spirits, it helps eliminate the "real world" as a possible explanation.

Ask TnT Paranormal

The following question(s) was/were submitted by our readers, by our online subscribers, or at events.

What digital recorders are best?

As with any kind of equipment, it is based on preference and budget. There are various brands out there to choose from depending on what features you are looking for. I would recommend recorders that are best used for recording music to capture high quality sound such as Zoom H1 & Zoom H4N, Tascam DR-05, Olympus LS-14, and Sony PCM-M10. Our team mostly uses Zoom recorders and we absolutely love them.

-Tracey Tanner, Owner and Case Manager, TnT Paranormal Investigators LLC

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We are seeking team members for the following positions: Part-Time Investigator, Researcher, Case Manager and Data Reviewer. All members are volunteers and must be 18 years of age or older. No member receives any compensation for their participation. All team members are required to meet certain obligations to the team. If you are serious about paranormal investigation and research and we sound like a team you would like to pursue a membership with go to [click here](#) to learn more.

We are also looking for professionals from various fields to act as consultants on cases, such as: pharmacists, meteorologists, clergy, shaman, historians, and people in the medical field. If you are in one of these fields and would like to assist a paranormal team please [email us](#).

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