



Best Practices to Install a Hearing Loop System that Meets the IEC Standard

Do not be led to believe a hearing loop system meets the IEC standard in all seats even if the audio from the hearing loop sounds good in one seat. Here are a few telltale signs that a loop does not meet the IEC standard and how you might be led to believe otherwise.

Problem #1: The signal is not uniform.

Misleading approach to testing the loop: Some installers use old bar graph meters and measure signal strength at very few points, generally right next to the loop wires, or in a pre-tested location showing the facility manager that the readings are uniform, when they are not.

Best practice according to the IEC standard: The signal strength should be measured while walking throughout the whole looped area. This includes measuring the signal at the farthest point from a hearing loop wire, often the center of the loop. A properly designed and installed loop will maintain a uniform signal level in every seat.

Problem #2: Poor frequency response.

Misleading approach to testing the loop: A manufacturer's representative took a meter and measured the 1000Hz level in the center of each loop in the room and showed the facility manager/owner that the readings were *close enough* to meet the frequency response portion of the IEC standard.

Best practice according to the IEC standard: The frequency response should be measured in a fixed location in the center of a hearing loop. In this scenario (for example) when the frequency response was measured accurately, it revealed the frequency response was more than 10 dB out of specification when the frequency response should be $-/+ 3\text{dB}$. Hearing loop installers should not be measuring the frequency response within a foot of a hearing loop wire. This will give artificial meter readings to meet the IEC standard.

Problem #3: The sound is not quite loud enough and unclear.

Misleading approach to testing the loop: Most of the time in a poorly designed hearing loop, you will find peak levels in the -10 to -15dB range, often due to the installation of a perimeter loop or hearing loop widths that are too far apart. The assumption is that if the level is correct for one person seated within a hearing loop in one location, it is correct for all.

Best practice according to the IEC standard: Peak levels should reach 0dB+-3dB in the center of the hearing loop wires. Sadly, in most cases, a more powerful hearing loop amplifier will not solve this issue, but a new loop configuration with smaller loop widths would correct the issue.

Problem #4: Too much background noise or electromagnetic interference (EMI). Misleading approach to verifying the loop: Don't be misled by the following comments from manufacturers and/or installers:

"A loop is only for the hearing aid wearers; that noise will go away with time."

"If we make the audio from the hearing loop louder you will not notice the background noise."

"It is fine. I checked it with my own hearing aids."

Best practice according to the IEC standard: According to the IEC standard, background noise level should be below -32dB. This is one area where I differ from the IEC standard and recommend that background noise level be below -40dB. In addition, I feel a non-hearing aid wearer, using the loop receiver should perform a listening check of the hearing loop, before the hearing loop system is proposed. Recently in the UK, I heard the following statement, "Loop systems are only for hearing aid users and no one uses the loop receivers therefore background noise levels of -32dB are fine." I disagree with this statement in that here in the U.S. hearing loops are used as an assistive listening device (ALD) system and therefore need to work well for individuals who use hearing loop receivers with headphones. Hearing loop installers and manufacturers should realize that the person paying for the hearing loop might not wear hearing aids and will use a loop receiver to check it. My suggestion is to properly assess EMI as part of a site visit and resolve EMI issues prior to moving forward with a hearing loop system installation. You don't want to find yourself in a position where payment for a completed installation is withheld until you resolve EMI issues.

In summary, if our goal is truly to sell and install a system that meets the IEC standard so that all users with properly programmed t-coils or a loop receiver can benefit from the hearing loop system. We need to empower the purchaser and provide them accurate information and/or knowledge before purchasing a loop or have an independently trained and qualified group that certifies hearing loop systems. I believe that since the manufacturer of the product conducts trainings, certifies their installers, helps with the designs and sells the product, they should be liable for a good working loop and regularly send a team out to test and certify their contractor's installations. The manufacturer should also be available to solve all loop-related issues along with their contractor.

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Richard McKinley

Managing Director, Contacta Inc. Email: richard@contactainc.com



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