



**EAC Decision on Request for Interpretation 2009-05**  
**2002 VSS Vol. I, Sections, 2.2.7.2 c & d**  
**2005 VVSG Vol. I, Sections, 3.2.2.2 c ii & iii**

***Date:***

October 5, 2009

***Question(s):***

What devices are required to provide T-Coil compatibility?

***Section of Standards or Guidelines:***

**2002 VSS Vol. I, Section 2.2.7.2 c & d, T-Coil Compatibility**  
**2005 VVSG Vol. I, Section 3.2.2.2 c ii & iii, T-Coil Compatibility**

**VSS Volume I**

**2.2.7.2 DRE Standards**

DRE voting systems shall provide, as part of their configuration, the capability to provide access to voters with a broad range of disabilities. This capability shall:

- c. Provide, in conformance with FCC Part 68, a wireless coupling for assistive devices used by people who are hard of hearing when a system utilizes a telephone style handset to provide audio information;
- d. Meet the requirements of ANSI C63.19-2001 Category 4 to avoid electromagnetic interference with assistive hearing devices;

**VVSG Volume I**

**3.2.2.2 Blindness**

- c. All voting stations that provide audio presentation of the ballot shall conform to the following requirements: Discussion: These requirements apply to all voting machine audio output, not just to the ATI of an accessible voting station.

- i. The ATI shall provide its audio signal through an industry standard connector for private listening using a 3.5mm stereo headphone jack to allow voters to use their own audio assistive devices.
- ii. When a voting machine utilizes a telephone style handset or headphone to provide audio information, it shall provide a wireless T-Coil coupling for assistive hearing devices so as to provide access to that information for voters with partial hearing. That coupling shall achieve at least a category T4 rating as defined by American National Standard for Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids, ANSI C63.19.
- iii. No voting equipment shall cause electromagnetic interference with assistive hearing devices that would substantially degrade the performance of those devices. The voting equipment, considered as a wireless device, shall achieve at least a category T4 rating as defined by American National Standard for Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids, ANSI C63.19.

Discussion: "Hearing devices" include hearing aids and cochlear implants.

### ***Background:***

There has been some confusion regarding what the requirements cited apply to. The source of the confusion seems to center on the use of the term "a telephone style handset or headphone" and the presence of the term wireless in the title to ANSI C63.19. This RFI clarifies the intent and proper application of these requirements.

Many hearing aids are equipped with two modes of operation, microphone mode and telephone coil (T-Coil) mode. In microphone mode a microphone receives the sound, which the hearing aid then amplifies for the user. In T-Coil mode a magnetic signal that carries the audio is received, amplified and provided for the user. The purpose of this requirement in a voting system is to assure that units providing an audio ballot support T-Coil mode for hearing aid wearers.

The ability to use a T-Coil, is very important for some hearing aid users, particularly those with more profound hearing loss. In T-Coil mode the hearing aid wearer can cut out background noise and this is very important for those who have trouble using their hearing aids in the presence of background noise. A T-Coil allows a hearing aid user to turn off their hearing aid's microphone, effectively blocking background audio noise. The T-Coil receives the voice signal and it is then amplified and provided to the hearing aid wearer. Being able to turn off the hearing aid microphone is particularly helpful in a noisy environment, because the hearing aid wearer can then block out the background noise and only get the intended voice signal. The requirements being discussed in this RFI are intended to assure that hearing aid wearers can use their T-Coils when voting through an audio ballot.

FCC Part 68 made the provision of a T-Coil signal mandatory for all telephones in the US. Originally all telephones had enough magnetic flux leakage that they automatically provided a T-Coil signal. However, with changes in technology, particularly the use of piezo-electric receiver elements in some phones, the presences of a T-Coil signal was

lost. Hearing aid wearers had come to rely on this feature and the FCC mandated that a T-Coil signal continue to be provided. However, the original FCC regulations only applied to landline telephones and only required a magnetic field of the specified amplitude. As cordless and wireless phones came into common use, magnetic noise, interfering with the T-Coil signal became a problem. ANSI C63.19 was written to address the more complex issues that arose. One of the new requirements for T-Coil compatibility that ANSI C63.19 added was a signal quality requirement. The other new requirements were limits on the RF, where RF was used, such as in a cellular telephone.

The word “or” between the words “telephones style handset” and the word “headset” in Section 3.2.2.2 (c) (ii) is acting in this instance as a coordinating conjunction, connecting two separate and distinct concept words. To that end, the requirements of this section apply equally whether the voting system uses a handset or whether the system uses a more conventional headset. In addition, the term ‘telephone style’ is descriptive, not restrictive. It is meant to describe a device normally held to the ear when being used. To insure privacy all voting systems that provide an audio ballot do so through some kind of headset or handset and therefore the requirement applies to all devices that provide an audio ballot. The scoping statement to VVSG V1:3.2.2.2c makes this clear:

*c. All voting stations that provide audio presentation of the ballot shall conform to the following requirements: Discussion: These requirements apply to all voting machine audio output, not just to the ATI of an accessible voting station.*

The citation of ANSI C63.19 is intended to add the signal+noise-to-noise, also called signal-to-interference requirement and, if a wireless headset is used, to include the RF interference portion of that standard.

### ***Conclusion:***

The requirement to support hearing aids in T-Coil mode applies to all units that provide an audio ballot.

The requirements for the T-Coil signal are that it meet the amplitude and frequency response requirements of ANSI C63.19 clause 7.3.1, Audio Band Magnetic Coupling Field Intensity, as well as the signal quality requirements of clause 7.3.3, Signal Quality, for category 4. In the 2001 version of ANSI C63.19 the signal quality requirement was that the unit provide a Signal+Noise-to-Noise Ratio in dB of > 10 dB. In the 2007 version of the standard the requirement was changed to be > 30 dB. However, there was also a test method change between the 2001 and the 2007 versions. The requirements, when measured properly are roughly equivalent.

The test methods to be used in measuring for compliance are those contained in clause 6 of the ANSI C63.19 standard.

### ***Effective Date:***

Immediately upon publication and distribution.