



American National Standard Methods of Measurement of Compatibility Between Wireless Communications Devices and Hearing Aids

C63[®]

Accredited Standards Committee C63[®]—Electromagnetic Compatibility

Accredited by the
American National Standards Institute

ANSI C63.19-2019
(Revision of ANSI C63.19-2011)

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Secretariat

Institute of Electrical and Electronics Engineers, Inc.

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Abstract: Uniform methods of measurement for compatibility between hearing aids and wireless communications devices are set forth.

Keywords: American National Standard, ANSI C63.19, electromagnetic compatibility, HAC, hearing aid, hearing aid compatibility, measurement methods, operational compatibility, wireless communications device

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Introduction

This introduction is not a part of ANSI C63.19-2019, American National Standard—Methods of Measurement of Compatibility Between Wireless Communications Devices and Hearing Aids.

In the fall of 1995, the Federal Communications Commission (FCC) initiated a Steering Committee to initiate a summit on Hearing Aid Compatibility and Accessibility with Digital Wireless Telecommunications. The goal of the summit was to formalize and continue discussions among the three key affected interests in this issue: organizations representing people with hearing loss, hearing aid manufacturers, and the digital wireless telephone industry. The ultimate purpose of the summit was to find a resolution of the interference problem that was acceptable to the industries involved.

A summit meeting was held on January 3–4, 1996, in Washington, DC. At this summit meeting, three working groups were formed to pursue issue resolution. Subsequently, the Long-Term Solutions User and Bystander Interference Group reached a consensus that a standards project was needed to document the consensus definition of and method of measurement for hearing aid compatibility with wireless telecommunications. Subsequently ANSI C63[®] was petitioned to undertake the joint standards projects documenting the methods of measurement and defining the limits for hearing aid compatibility with wireless telecommunications.

At its April 1996 meeting, ANSI C63[®] established a task group under its subcommittee on medical devices (SC 8). The charge to this task group (TG C63.19) was to develop such standards in cooperation with representatives of organizations representing people with hearing loss, hearing aid manufacturers, the digital wireless telephone industry, and other interested parties. ANSI C63.19-2001 was the result of that committee's efforts.

The FCC adopted this standard to provide the technical requirements for its Report and Order FCC 03-168 [B41] establishing mandatory requirements for wireless hearing aid compatibility on July 10, 2003.¹ Following the adoption by the FCC and for several reasons, including technical changes in wireless communications devices and hearing aids and new understanding coming from experience gained in working with the 2001 version of this standard, a new revision effort was started. The result of this revision effort culminated in the production of ANSI C63.19-2006.

During the final approval process for the ANSI C63.19-2006 version, several issues were raised. The working group and ANSI ASC C63[®] decided to open an amendment project to deal with these issues. The successful completion of that effort resulted in the publication of ANSI C63.19-2007.

After the publication of C63.19-2007 (ANSI approved March 29, 2007), the FCC issued Report and Order 07-72 [B42] (see also FCC DA 07-4151 [B43]), allocating new wireless services to a frequency band in the 700 MHz range. As part of that rulemaking, the Commission requested that the C63[®] committee revise the standard to support the application of HAC requirements to the 700 MHz band. The committee agreed to address this 700 MHz band and also decided to extend the upper frequency range to 6 GHz, taking into account newer technologies that are also covered by similar regulations.

The working group and ANSI ASC C63[®] decided to open an amendment project to deal with these issues. The successful completion of that effort resulted in the publication of the 2011 version of the standard.

In 2015, a project was authorized to prepare a new revision of ANSI C63.19 addressing the following issues:

- a) Growing importance of VoIP and VoLTE for telephony services
- b) Hearing aid user satisfaction with HAC
- c) Adequacy of volume control

¹ The numbers in square brackets correspond to those of the bibliography in Annex J.

- d) Adequacy of T-Coil reception
- e) Harmonization with corresponding IEC 60118-13
- f) Cover new technologies, particularly at TVWS devices and cellular at 600 MHz, 3.5 GHz, and 5.0 GHz, which may include extending the lower boundary of the frequency range covered
- g) Use of software defined radio (SDR) and other new instrumentation in HAC measurements
- h) Simultaneous transmissions, particularly in smartphones

The outcome of this project was this version of the standard.

Acknowledgments

The Accredited Standards Committee on Electromagnetic Compatibility, C63[®], thanks the IEEE and Edwin L. Bronaugh (author) for granting permission to use *Helmholtz Coils for Calibration of Probes and Sensors: Limits of Magnetic Field Accuracy and Uniformity*, from the 1995 IEEE Symposium on EMC, Atlanta, GA, in Annex G of this standard.

Permission is granted by PCTEST to make available US Patent 9277331 (Inventors: Justin Chao, Stephen Liu, Andrew Harwell, Randy Ortanez) for this standard. The patent is considered essential for performing T-Coil testing on VoIP communication services.

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American National Standard Methods of Measurement of Compatibility Between Wireless Communications Devices and Hearing Aids

1. Overview

1.1 Scope

This standard applies to both wireless communications devices (WDs) and hearing aids. It sets forth uniform methods of measurement and parametric requirements for the electromagnetic and operational compatibility of hearing aids and WDs, including cellular phones, personal communications service (PCS), and voice-over-Internet-protocol (VoIP) devices, operating in the range of 614 MHz to 6 GHz.² TIA-1083, *Telecommunications Communications Products Handset Magnetic Measurement Procedures and Performance Requirements* [B87],³ has become the recognized standard for measurement procedures and performance requirements for handset-generated audio band magnetic noise of wireline communications devices, including cordless telephones (cordless handsets with wireline-connected base units). Ongoing communications between the TIA TR-41.3.14 accessibility working group⁴ and ANSI C63.19 working group have been maintained with the objective of harmonizing the two standards to the maximum extent possible.

This standard is intended to apply to all types of hearing aids with acoustic output, including, as examples, behind-the-ear (BTE), in-the-ear (ITE), in-the-canal (ITC), completely-in-the-canal (CIC) types, and receiver-in-the-canal (RIC). Test methods are provided for acoustic (microphone input) mode and tele-coil (T-Coil) hearing aid modes of operation.

Users of this standard are cautioned to maintain the field strength called for in various places in the document within the limits for radio-frequency (RF) safety specified in IEEE Std C95.1™ [B65].

1.2 Purpose

The purpose of this standard is to provide tests and establish requirements for hearing aids and for WDs that allow a hearing aid user to effectively use a WD when both the hearing aid and WD meet the requirements of this standard. The various parameters required in order to demonstrate compatibility are measured. The design

² This version of ANSI C63.19 provides detailed procedures up to 3 GHz, although the scope has been expanded up to 6 GHz. The guidance provided goes as far as well-researched methods are available and covers the primary bands relative to this topic.

³ The numbers in brackets correspond to those of the bibliography in Annex J.

⁴ TIA-1083 is administered by TIA Engineering Committee TR-41 Performance and Accessibility for Communications Products (<http://standards.tiaonline.org/all-standards/committees/tr-41>).