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**NATIONAL STANDARD OF THE  
PEOPLE'S REPUBLIC OF CHINA**

**GB/T 25102.4-2010**

Replacing GB/T 11454-1989

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**Electroacoustics -- Hearing aids -- Part 4: Induction loop  
systems for hearing aid purposes -- Magnetic field strength**

电声学 助听器 第4部分：助听器用感应回路系统磁场强度

**(English Translation)**

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## Foreword

GB/T 25102 "electroacoustic hearing aids" is divided into 14 parts.

- Part 0. Measurement of electroacoustic characteristics;
- Part 1. Hearing aids with induction pickup coils;
- Part 2. Hearing aids with automatic gain control circuit;
- Part 3. Hearing equipment that is not completely worn on the listener;
- Part 4. Magnetic field strength of inductive loop systems for hearing aids;
- Part 5. Papillary joints of pluggable headphones;

- Part 6. Characteristics of hearing aid input circuits;
- Part 7. Performance measurement of quality inspection for delivery of hearing aids;
- Part 8. Measurement of performance of hearing aids under simulated operating conditions;
- Part 9. Measuring methods for hearing aids with output of bone shock absorbers;
- Part 11. Symbols and marks for hearing aids and their associated equipment;
- Part 12. Dimensions of electrical connector systems;
- Part 13. Electromagnetic compatibility (EMC);
- Part 14. Specification for digital interfaces.

This part is part 4 of GB/T 25102.

This part is a revision of GB/T 11454-1989 "Magnetic field strength of audio-sensitive circuits for hearing aids".

This part is equivalent to IEC 60118-4.:2006 "Electroacoustic hearing aids Part 4. Magnetic field strength of induction loop systems for hearing aids Degree "(English version).

This part replaces GB/T 11454-1989 "Magnetic field strength of audio-sensitive circuits for hearing aids".

The current version of this section has a lot of technical changes compared to the 1989 version. The standard title from the original "hearing aid with an audio sensing loop of the magnetic field strength "modified to" electroacoustic hearing aids in Part 4. hearing aids with induction loop system magnetic field strength. " Current version of the previous one Version made many modifications and supplements. Increased the preamble and the introduction, the text of the contents of the original 5 chapters of a total of 9 to 6 a total of 50, and Added six informative appendices and 18 references.

Appendix A, Appendix B, Appendix C, Appendix D, Appendix E, Appendix F of this section are informative.

This part is made by the Ministry of Industry and Information Technology of the People's Republic of China.

This part is owned by the National Electrotechnical Standardization Technical Committee (SAC/TC23).

This part is responsible for drafting units. People's Liberation Army General Hospital Institute of Otolaryngology, Tianjin hearing aids factory, China Electronics Technology Group Corporation Three research institutes.

This part participates in the drafting unit. Siemens Listening Instrument (Suzhou) Co., Ltd.

## Introduction

The audio sensing loop system is a device provided to a hearing aid user and is widely used in a hearing aid equipped with an induction pickup coil the user is able to reduce the difficulty of listening due to the distance from the sound source, with a shielded window and/or background noise between the speaker and the speaker. Unless in security Face-to-face conversations, background noise, and distance in a static environment are the main reasons why hearing aids can not achieve a satisfactory listening effect. for the convenience of hearing impaired, foreign churches, theaters, venues and other public places within the wide installation of the audio sensor circuit system. Audio sense the application of the loop system can also be extended to many temporary exchange sites, such as ticketing, bank counters and those free of charge Side restaurants) and elevators. In addition, a coil for magnetic induction coupling with a hearing aid is also commonly provided on the telephone handle.

In the environment where reverberation and background noise have a significant effect on acoustic signals, it is usually possible to send an audio signal through an inductive loop system.

To establish an acceptable signal to noise ratio.

One form of an audio-sensing loop system is the form of a circuit in the form of a loop in the area where the hearing-impaired person is listening or around the area cable. The cable is connected to the other audio sources such as the microphone system or radio receiver, CD player, etc. via an amplifier. The amplifier is back an audio current is generated in the cable to generate a magnetic field in the loop. The design and laying of the induction circuit depends on the installation of the circuit system Building structures, especially large amounts of steel, iron and aluminum structures. In addition, the installation and location of cables and equipment will produce a strong audio magnetic field back Scene noise, thus affecting the loop signal reception.

Another form of audio-sensing loop system is a small loop for communicating with a hearing aid user in the vicinity thereof. Such as neck back Road coils, ticketing systems, standalone portable systems, and induction loops mounted on seats (see Appendix A).

The audio-sensing loop system's pickup device is usually a personal hearing aid equipped with a pickup coil, but in some applications there are special Inductive loop receiver.

As a receiver for an audio-sensing loop system, personal hearing aids can provide a loop system anywhere, especially in public places Enough to use the signal sent by the loop system to help the hearing aid wearer to listen. In order to more effectively play this advantage of the loop system, it is necessary A standard value of the magnetic field strength is used to adjust the sensitivity of the pick-up coil of the hearing aid accordingly. The magnetic field strength should meet the following in principle.

The strength should be large enough to achieve an acceptable signal-to-noise ratio in the background magnetic noise generated by the power supply or the like.

--- strength can not be too large, so as not to cause hearing aid overload.

The lower limit of the magnetic field strength is controlled by the value that the background magnetic noise may reach. In order to determine the typical value, in a large number of households, churches, schools, Theaters and other places were measured. In addition, measurements were made on the hearing aid to determine the acceptable input stage range as Magnetic field strength limit, see GB/T 25102.1-2010.

Electroacoustic hearing aids Part 4. Inductive loop systems for hearing aids Magnetic field strength

## 1 Scope

This section specifies the requirements for the magnetic field strength of a hearing aid system for hearing aids, with the aim of ensuring that the hearing aid is not overloaded to provide the appropriate signal to noise ratio. This section also specifies the minimum frequency response range required for acceptable clarity.

This section specifies the method of measuring the strength of the magnetic field and gives information on the applicable test equipment (see Appendix B) (See Appendix C) and other important matters.

This section applies to audio induction that produces an audio alternating magnetic field and provides an input signal for a hearing aid with an induction pickup coil Loop system.

This part of the circuit drive amplifier and the associated microphone or audio signal source is not specified, such as in the ITU-TP.370 category the requirements of the magnetic field strength of the equipment such as the telephone handle are not specified.

## 2 Normative reference documents

The terms of the following documents are the terms of this part by reference to this part of GB/T 25102. Any reference to the date of the text , All subsequent amendments (excluding corrigenda) or revisions do not apply to this part, however, encouragement under this section the parties to the agreement study whether the latest version of these documents can be used. For undated references, the latest edition of this document applies section.

## 3 Terms and definitions

The following terms and definitions apply to this section.

Reference magnetic field strength level 0dB reference magnetic field strength level of 400mA/m.