

INTERNATIONAL STANDARD

Assistive listening devices and systems for active assisted living

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

Assistive listening devices and systems for active assisted living

FOREWORD

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IEC 63087 has been prepared by IEC technical committee 100: Audio, video and multimedia systems and equipment. It is an International Standard.

This first edition cancels and replaces IEC 63087-1 published in 2021. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to IEC 63087-1:2021:

- a) This first edition represents a different and far more comprehensive approach to the subject than IEC 63087-1, which will be withdrawn.

The text of this International Standard is based on the following documents:

Draft	Report on voting
100/4503/FDIS	100/4534/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

The audibility and intelligibility of speech and music can be degraded by the ambient sound and reverberation of the acoustic space in which it is heard. For a person with hearing difficulties intelligibility is disproportionately degraded.

An assistive listening system (ALS) enables the undesirable effects of an acoustic space to be mitigated through the direct transmission or streaming of speech, music or other audio information to an end-user device (often a hearing-aid or cochlear implant), delivered in a way that improves the listening experience for the user.

An ALS is particularly beneficial when the listener is located at some distance from a talker or the source of sound and or when the background noise level is such as to be clearly audible.

In noisy environments, bringing an appropriate pick-up microphone close to the talker or to the desired sound source can increase the signal-to-noise ratio for the listener by as much as 15 dB to 20 dB, and in enclosed spaces it can overcome the detrimental effects of reverberation as compared to the normal listening situation. This can significantly increase speech intelligibility and reduce listening effort.

An ALS is explicitly designed to deliver audible and intelligible sound wherever the intended listener is located within a room or space, within a specified coverage area or at a service point, and in a manner that provides a genuine benefit to the end-user. An ALS can also be provided as an adjunct facility to an intercom system, for example: ticket machines or station and platform help points. They are also often found in buses, taxis, and some trains where passenger announcements and information can be relayed directly to a user's hearing device. Many airports provide ALS at check-in counters and departure gates as well as in other specific areas such as baggage reclaim. Systems are also widely found in shops and stores at point-of-sale locations and at service counters in banks and ticket offices. ALS are also commonly connected to sound reinforcement and public address systems in a wide variety of venues and sites including theatres, auditoriums, conference centres, meeting rooms, public buildings, and houses of worship. Designated seating areas and facilities within sports grounds and stadiums are also often provided with an ALS where it is not possible to provide complete coverage.

ALSs have also been found to be beneficial for listeners with normal hearing, but who are listening in less-than-ideal acoustic conditions, such as in lecture theatres and classrooms or when not listening to their native language. Although predominantly used for speech, an ALS can also be used to improve the reception of music or musical performances particularly in situations where both speech and music are present.

Several different transmission technologies are available, and some can be better suited to a given situation than others. No matter what the transmission medium or situation, the objective is the same, which is to provide an audible benefit to the intended listener. This document sets out the technical and operational requirements needed to achieve this, regardless of the underlying technology.

1 Scope

This document sets out the requirements for the provision of assistive listening systems (ALS) in places or situations where there is a benefit for hearing-aid, cochlear implant, and other hearing device users, compared to listening to the acoustic signal directly at that location.

This document applies to all ALS used for communication, entertainment, or educational purposes in public, private, domestic and public transport installations.

This document does not apply to other forms of audio transmission, for example simultaneous interpretation or audio description or audio-streams other than those broadcast as part of an ALS. However, this document provides useful ancillary information for such systems which can be applied.

Personal listening and intelligibility enhancement devices and systems are also included within the scope as they constitute a special case and incorporate some unique features and requirements (Annex C).

This document does not apply to hearing aids and medical hearing devices themselves or to speech enhancement and communication systems found in some private motor vehicles which are sometimes referred to as assistive listening.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60118-4, *Electroacoustics - Hearing aids - Part 4: Induction-loop systems for hearing aid purposes - System performance requirements*

IEC 60268-16, *Sound system equipment - Part 16: Objective rating of speech intelligibility by speech transmission index*

IEC 62489-1:2010, *Electroacoustics - Audio-frequency induction loop systems for assisted hearing - Part 1: Methods of measuring and specifying the performance of system components*
IEC 62489-1:2010/AMD1:2014
IEC 62489-1:2010/AMD2:2017

ISO 7001, *Graphical symbols - Registered public information symbols*, available at <https://www.iso.org/obp>

EN 50332-2, *Sound system equipment: Headphones and earphones associated with portable music players - Maximum sound pressure level measurement methodology - Part 2: Matching of sets with headphones if either or both are offered separately, or are offered as one package equipment but with standardised connectors between the two allowing to combine components of different manufacturers or different design*

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ISO 3382-1:2009, *Acoustics - measurement of room acoustic parameters - Part 1: Performance spaces*

ITU-R BT.1359-1, *Relative timing of sound and vision for broadcasting*

ANSI S12.60, *Acoustical Performance Criteria, Design Requirements, and Guidelines for Schools, Part 1: Permanent Schools*

UK Department of Education, *Acoustic design of schools - performance standards*. Building bulletin 93, February 2015

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REEVES, B. VOELKER, D. (1993) *Effects of Audio-Video Asynchrony on viewer's memory, evaluation of content and detection ability*, Stanford University Research Report

¹⁰ Under consideration.