

Electroacoustics — Hearing aids —

Part 13: Electromagnetic compatibility (EMC)

The European Standard EN 60118-13:2005 has the status of a
British Standard

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National foreword

This British Standard is the official English language version of EN 60118-13:2005. It is identical with IEC 60118-13:2004. It supersedes BS EN 60118-13:1998 which is withdrawn.

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Part 13: Electromagnetic compatibility (EMC)
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Teil 13: Elektromagnetische
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(IEC 60118-13:2004)

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CENELEC

European Committee for Electrotechnical Standardization
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Foreword

The text of document 29/561/FDIS, future edition 2 of IEC 60118-13, prepared by IEC TC 29, Electroacoustics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60118-13 on 2005-02-01.

This European Standard supersedes EN 60118-13:1997.

It introduces a new set of requirements for use of hearing aids with mobile phones.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2006-01-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2008-02-01

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and covers essential requirements of EC Directive(s) 93/42/EEC. See Annex ZZ.

Annexes ZA and ZZ have been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60118-13:2004 was approved by CENELEC as a European Standard without any modification.

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ELECTROACOUSTICS – HEARING AIDS –**Part 13: Electromagnetic compatibility (EMC)****1 Scope**

This part of IEC 60118 covers all relevant EMC phenomena for hearing aids. EMC phenomena, such as RF emission and electrostatic discharge, are not currently known to be a significant problem in connection with hearing aids and are therefore not dealt with. Based on new knowledge, they could be considered in connection with future revisions or extensions of this standard. Hearing aid immunity to high frequency electromagnetic fields originating from wireless telephone systems is currently identified as the only relevant EMC phenomena regarding hearing aids. IEC 61000-4-3 is the basis for relevant EMC tests to be conducted on hearing aids. Measurement methods and acceptance levels are described in this standard.

For the purpose of this part of IEC 60118, two immunity classes of hearing aids are defined (see 3.1) related to their use. "Bystander compatible" is defined as a situation, which ensures that a hearing aid is usable in environments where digital wireless devices are in operation in the proximity of the hearing aid wearer. "User compatible" hearing aids will ensure that a hearing aid is usable when the hearing aid wearer is using a digital wireless device at the wearer's own aided ear.

Measurement methods for hearing aids with non-acoustic outputs and for hearing aids connected to other equipment by cables are not given in this standard.

2 Normative references

The following referenced documents are indispensable for the application 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 60118-0, *Hearing aids – Part 0: Measurement of electroacoustical characteristics*

IEC 60118-2, *Hearing aids – Part 2: Hearing aids with automatic gain control circuits*

IEC 60118-7, *Hearing aids – Part 7: Measurement of the performance characteristics of hearing aids for quality inspection for delivery purposes*

IEC 60126, *IEC reference coupler for the measurement of hearing aids using earphones coupled to the ear by means of ear inserts*

IEC 61000-4-3, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-20, *Electromagnetic compatibility (EMC) – Part 4-20: Testing and measurement techniques – Emission and immunity testing in transverse electromagnetic (TEM) waveguides*

3 Terms and definitions

For the purposes of this part of IEC 60118, the definitions given in IEC 60118-0, IEC 60118-7, and IEC 61000-4-3 as well as the following apply.

3.1

hearing aid

wearable instrument intended to aid a person with impaired hearing, usually consisting of a microphone, amplifier and earphone, powered by a low-voltage battery

NOTE Hearing aids can be placed on the body (BW), behind the ear (BTE) or in the ear (ITE).

3.2

bystander compatibility

immunity of a hearing aid that ensures it is usable in environments where digital wireless devices are in operation in the proximity of the hearing aid wearer (2 m, see Clause A.4)

3.3

user compatibility

immunity of hearing aid that ensures that a hearing aid is usable when the hearing aid wearer is using a digital wireless device at the wearer's own aided ear

3.4

reference orientation (of a hearing aid)

orientation of the hearing aid with respect to the RF emitting source which corresponds to the orientation of the hearing aid under actual use on a person facing an RF emitting source

NOTE RF exposure in the 2 orthogonal axes corresponding to the hearing aid under actual use is found to be suitable for hearing aid immunity testing (see Annex A).

3.5

input related interference level (IRIL)

level used to characterise the immunity of the hearing aid

NOTE Acoustic IRIL is expressed relative to 20 µPa in decibels, and is calculated by subtracting the gain of the hearing aid from the level of 1 kHz signal measured at the output of the hearing aid during exposure to a 1 kHz modulated RF field in microphone mode. The gain of the hearing aid is determined at 1 kHz using an input sound pressure level of 55 dB.

If the hearing aid provides an additional directional microphone, the gain determined with the omnidirectional microphone is used for determination of IRIL.

If the hearing aid provides a telecoil, the control settings used for acoustic measurement are used. Telecoil IRIL is expressed as equivalent acoustic input r.m.s levels re 20 µPa in decibels, based on the assumption that the magnetic field strength level re 1 A/m of –20 dB is practically equivalent to the acoustic sound pressure level of 70 dB.

The telecoil IRIL is calculated by subtracting the output of the hearing aid³⁾ in dB minus 55 dB, from the level of 1 kHz signal measured at the output of the hearing aid during exposure to a 1 kHz modulated RF field in telecoil mode.

Decreasing values of IRIL indicate increasing immunity.

³⁾ Determined at –35 dB input level re 1 A/m at 1 kHz.