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Part 13: Electromagnetic compatibility (EMC) (Revision of IEC 60118-13: 2011)

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Introduction

This draft standard is based on international discussions in which the UK has taken an active part. Your comments on this draft are welcome and will assist in the preparation of the consequent standard. There is a high probability that this text could be adopted by CENELEC as a reference document for harmonization or as a European Standard. Recipients of this draft are requested to comment on the text bearing in mind this possibility.

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	(7)
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/ Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



29/768/CD

COMMITTEE DRAFT (CD)

IEC/TC or SC: 29		Project number IEC 60118-13 Ed.4.0	
Title of TC/SC: Electroacoustics		Date of circulation 2012-05-04	Closing date for comments 2012-08-10
Also of interest to the following committees		Supersedes document 29/767/RR	
Proposed horizontal standard ☐ Other TC/SCs are requested to indicate their interest, if any, in this CD to the TC/SC secretary			
Functions concerned: ☐ Safety ☒ EMC ☐ Environment ☐ Quality assurance			
Secretary: L.E. NIELSEN, Denmark		THIS DOCUMENT IS STILL UNDER STUDY AND SUBJECT TO CHANGE. IT SHOULD NOT BE USED FOR REFERENCE PURPOSES. RECIPIENTS OF THIS DOCUMENT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.	

Title:

IEC 60118-13: Electroacoustics – Hearing aids – Part 13: Electromagnetic compatibility (EMC)
(Revision of IEC 60118-13:2011)

(Titre) :

Introductory note

As a consequence of the preparation of IEC 60601-2-66 "Hearing instruments and hearing instrument systems – General requirements for basic safety and essential performance" IEC/TC 29 supported, at its meeting April 2011 in London, a proposal from WG 13 "Hearing aids" to revise IEC 60118-13:2011.

In accordance with the maintenance rules, a Review Report is now circulated together with the present document as a first CD 60118-13 for comments.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROACOUSTICS – HEARING AIDS –

Part 13: Electromagnetic compatibility (EMC)

FOREWORD

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International Standard IEC 60118-13 has been prepared by IEC technical committee 29: Electroacoustics. It has the status of a product EMC standard in accordance with IEC Guide 107, *Electromagnetic compatibility – Guide to the drafting of electromagnetic compatibility publications*.

This third edition cancels and replaces the second edition published in 2011. This third edition constitutes a technical revision. It introduces a new set of requirements for use of hearing aids with mobile phones.

The text of this standard is based on the following documents:

FDIS	Report on voting
29/XXX/FDIS	29/YYY/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

IEC 60118 consists of the following parts, under the general title *Hearing aids*:¹

- Part 0: Measurement of electroacoustical characteristics
- Part 1: Hearing aids with induction pick-up coil input
- Part 2: Hearing aids with automatic gain control circuits
- Part 3: Hearing aid equipment not entirely worn on the listener
- Part 4: Magnetic field strength in audio-frequency induction loops for hearing aid purposes
- Part 5: Nipples for insert earphones
- Part 6: Characteristics of electrical input circuits for hearing aids
- Part 7: Measurement of the performance characteristics of hearing aids for production, supply and delivery quality assurance purposes
- Part 8: Methods of measurement of performance characteristics of hearing aids under simulated *in situ* working conditions
- Part 9: Methods of measurement of characteristics of hearing aids with bone vibrator output
- Part 12: Dimensions of electrical connector systems
- Part 13: Electromagnetic compatibility (EMC)
- Part 14: Specification of a digital interface device

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

¹ IEC 60118-10:1986 (Ed.1), *Hearing aids – Guide to hearing aid standards*, was withdrawn in 2002.

INTRODUCTION

This revised version of this standard introduces generic specifications and criteria for EMC requirements for hearing aids. Experience in connection with the use of hearing aids in recent times has identified digital wireless devices, such as GSM mobile phones as potential sources of disturbance for hearing aids. Interference in hearing aids depends on the emitted power from the wireless telephone as well as the immunity of the hearing aid. The performance criteria in this standard will not totally ensure hearing aid users interference- and noise-free use of wireless telephones but will establish useable conditions in most situations. In practice a hearing aid user, when using a digital wireless device, will seek, if possible, to find a position on the ear which gives a minimum or no interference in the hearing aid.

In some cases, hearing aids are connected to other equipment by cable, but this standard does not cover common mode transients and common mode surges on such cable connections.

Based on experience in connection with the use of hearing aids, relevant sources of disturbance for hearing aids include low frequency radiated magnetic fields, which may interact with the induction pick-up coil input included in some hearing aids. As the induction pick-up coil input is an intended feature of some hearing aids, and the hearing aid therefore must have a certain sensitivity to low frequency magnetic fields, it is not relevant to specify immunity against disturbing low frequency magnetic fields. To avoid unintended interference from low frequency magnetic noise fields, the recommendations specified in IEC 60118-4 [1]², regarding specifications for induction loop systems, should be followed.

Various test methods have been considered for determining the immunity of hearing aids. When a wireless telephone is used close to a hearing aid, there is an RF near-field illumination of the hearing aid. However, validation investigations in preparing this standard have shown that it is possible to establish a correlation between the measured far-field immunity level and the immunity level experienced by an actual hearing aid used in conjunction with a digital wireless device. The use of a far-field test has shown high reproducibility, and is considered sufficient to verify and express the immunity of hearing aids. Near-field illumination of the hearing aid (i.e. by generating an RF field using a dipole antenna) could however bring valuable information during design and development of hearing aids.

² Figures in square brackets refer to the bibliography.

ELECTROACOUSTICS – HEARING AIDS –

Part 13: Electromagnetic compatibility (EMC)

1 Scope

This part of IEC 60118 in principle covers all relevant EMC phenomena for hearing aids. Hearing aid immunity to high frequency electromagnetic fields originating from digital wireless devices is currently identified as the most relevant EMC phenomenon regarding hearing aids.

Hearing aids containing RF receivers or transmitters within the range of 9 kHz to 400 GHz are not covered by this standard.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 60318-4, *IEC reference coupler for the measurement of hearing aids using earphones coupled to the ear by means of ear inserts*

IEC 61000-4-2, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

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

IEC 61000-4-8, *Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic 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*

IEC 60601-1-2, *Medical electrical equipment – Part 1-2: General requirements for basic safety and essential performance: Electromagnetic compatibility – requirements and tests*

CISPR 11, *Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics – Limits and methods of measurement*