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Standards

Irish Standard  
I.S. EN 60153-4:2017

# Hollow metallic waveguides - Part 4: Relevant specifications for circular waveguides

**I.S. EN 60153-4:2017**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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## National Foreword

I.S. EN 60153-4:2017 is the adopted Irish version of the European Document EN 60153-4:2017, Hollow metallic waveguides - Part 4: Relevant specifications for circular waveguides

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EUROPEAN STANDARD

**EN 60153-4**

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2017

ICS 33.120.10

Supersedes HD 123.4 S1:1977

English Version

**Hollow metallic waveguides - Part 4: Relevant specifications for  
circular waveguides  
(IEC 60153-4:2017)**

Guides d'ondes métalliques creux - Partie 4: Spécifications  
applicables aux guides d'ondes circulaires  
(IEC 60153-4:2017)

Metallische Hohlleiter - Teil 4: Einzelbestimmungen für  
Rundhohlleiter  
(IEC 60153-4:2017)

This European Standard was approved by CENELEC on 2017-09-20. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

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European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

## **EN 60153-4:2017 (E)**

### **European foreword**

The text of document 46F/344/CDV, future edition 3 of IEC 60153-4, prepared by SC 46F "RF and microwave passive components", of IEC/TC 46 "Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60153-4:2017.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2018-06-20
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2020-09-20

This document supersedes HD 123.4 S1:1977.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

### **Endorsement notice**

The text of the International Standard IEC 60153-4:2017 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60153-1:2016	NOTE	Harmonized in EN 60153-1:2016.
ISO/IEC 17025:2005	NOTE	Harmonized as EN ISO/IEC 17025:2005.

## Annex ZA

(normative)

### Normative references to international publications with their corresponding European publications

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-726	1982	International electrotechnical vocabulary - Chapter 726: Transmission lines and waveguides	-	-
IEC 60261	-	Sealing test for pressurized waveguide tubing and assemblies	HD 138 S2	-

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**IEC 60153-4**

Edition 3.0 2017-08

# **INTERNATIONAL STANDARD**



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## **Hollow metallic waveguides – Part 4: Relevant specifications for circular waveguides**





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**IEC 60153-4**

Edition 3.0 2017-08

# INTERNATIONAL STANDARD



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## Hollow metallic waveguides – Part 4: Relevant specifications for circular waveguides

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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ICS 33.120.10

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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HOLLOW METALLIC WAVEGUIDES –

## Part 4: Relevant specifications for circular waveguides

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60153-4 has been prepared by subcommittee 46F: RF and microwave passive components, of IEC technical committee TC:46: Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories.

This third edition cancels and replaces the second edition published in 1973-1. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Expand and revise the operation frequency range for waveguides;
- b) Revise the allowance of aperture dimensions;
- c) Revise the test method for aperture dimensions;
- d) Revise the equation of attenuation.

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

CDV	Report on voting
46F/344/CDV	46F/356/RVC

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

A list of all the parts in the IEC 60153 series, published under the general title *Hollow metallic waveguides*, can be found on the IEC website.

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

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

A bilingual version of this publication may be issued at a later date.

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## HOLLOW METALLIC WAVEGUIDES –

### Part 4: Relevant specifications for circular waveguides

#### 1 Scope

This part of IEC 60153 specifies straight hollow metallic tubing of circular waveguides for use as waveguides in electronic equipment.

The aim of this recommendation is to specify for hollow metallic waveguides:

- a) the details necessary to ensure compatibility and, as far as essential, interchangeability;
- b) test methods;
- c) uniform requirements for the electrical and mechanical properties.

#### 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 60050-726:1982, *International Electrotechnical Vocabulary. Transmission lines and waveguides*

IEC 60261, *Sealing test for pressurized waveguide tubing and assemblies*

#### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-726:1982 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

#### 4 General

##### 4.1 Standardized types

The series of circular waveguides covered by this publication are shown in Tables 1 and 2. The preferred types are shown in Table 2. As it might be desirable to use circular waveguides of intermediate sizes, Table 3 has been added in which the latter types are included.

##### 4.2 Type designation

For these waveguides, the type designation comprises:

- The code: 60153 IEC-C
- A number characterizing a particular size of waveguide. This number expresses 'approximately in multiples of 100 MHz the geometric mean frequency in the  $H_{11}$  ( $TE_{11}$ ) mode.

##### 4.3 Frequency range

In Table 2, the cut-off frequencies are shown for the following modes:

$TE_{11}$ ,  $TM_{01}$ ,  $TE_{21}$ ,  $TE_{01}$  and  $TE_{02}$ .

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