



NSAI
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:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:

EN 60153-4:2017

Published:

2017-12-08

This document was published under the authority of the NSAI and comes into effect on:

2017-12-26

ICS number:

33.120.10

NOTE: If blank see CEN/CENELEC cover page

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

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

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

For relationships with other publications refer to the NSAI web store.

Compliance with this document does not of itself confer immunity from legal obligations.

In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

This page is intentionally left blank

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.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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.

<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	-

This page is intentionally left blank



IEC 60153-4

Edition 3.0 2017-08

INTERNATIONAL STANDARD



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





THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2017 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing 20 000 terms and definitions in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

65 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.



IEC 60153-4

Edition 3.0 2017-08

INTERNATIONAL STANDARD



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

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 33.120.10

ISBN 978-2-8322-4613-9

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references	5
3 Terms and definitions	5
4 General	5
4.1 Standardized types	5
4.2 Type designation	5
4.3 Frequency range.....	5
5 Mechanical requirements.....	6
5.1 General.....	6
5.2 Dimensions	6
5.2.1 Basic diameter and deviations	6
5.2.2 Basic diameter deviations	9
5.2.3 Ellipticity.....	9
5.2.4 Wall thickness	9
5.2.5 Eccentricity.....	9
5.2.6 Outside dimensions	9
5.3 Other mechanical requirements	10
5.3.1 Bow	10
5.3.2 Surface roughness.....	10
5.3.3 Internal stresses	10
6 Electrical tests – Attenuation	10
7 Additional tests – Gastightness.....	11
Bibliography.....	12
Table 1 – Basic diameter and deviations	7
Table 2 – Circular waveguides	8
Table 3 – Inner Diameter deviations.....	9
Table 3 – Outer diameter deviations	9

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

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} .

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-