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Hollow metallic waveguides –
Part 4: Relevant specifications for circular waveguides
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOLLOW METALLIC WAVEGUIDES –**Part 4: Relevant specifications for circular waveguides****FOREWORD**

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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- withdrawn,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.

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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} .

5 Mechanical requirements

5.1 General

It should be noted that no recommendations are made for the materials to be used for waveguides. The choice of material must be agreed between customer and manufacturer.

5.2 Dimensions

5.2.1 Basic diameter and deviations

The basic diameters (inner diameters) and the deviations are specified in Table 1.

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Table 1 – Basic diameter and deviations

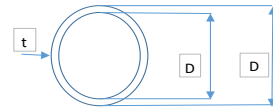


Table with columns: Type designation, Cut-off frequency in GHz for the mode (TE11, TM01, TE21, TE01, TE02), Inside cross-section (Basic diameter D, Deviation), Basic wall thickness, Outside cross-section (Basic diameter, Deviation), and Theoretical value of attenuation in dB/m (Frequency in GHz, Standard Copper, Aluminium, Gold, Brass). Rows include various mode designations from C 3.3 to C 29000.