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Hollow metallic waveguides
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Guides d'ondes métalliques creux
Troisième partie: Spécifications particulières pour les guides d'ondes rectangulaires plats

Metallische Hohlleiter
Teil 3: Allgemeine Empfehlungen für flache Rechteck-Hohlleiter

RD: IEC 153-3 (1964) ed 1; IEC/SC 46B (not appended)

The Harmonization Document consists of the following :

- Title Page

Related to Directive: -

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List of national deviations

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Hollow metallic waveguides

Part 3:
Relevant specifications for flat rectangular waveguides

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOLLOW METALLIC WAVEGUIDES

Part 3: Relevant specifications for flat rectangular waveguides

FOREWORD

1) The formal decisions or agreement of the I E C on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.

2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.

3) In order to promote this international unification, the I E C expresses the wish that all National Committees having as yet no national rules, when preparing such rules, should use the I E C recommendations as the fundamental basis for these rules in so far as national conditions will permit.

4) The desirability is recognized of extending international agreement on these matters through an endeavour to harmonize national standardization rules with these recommendations in so far as national conditions will permit. The National Committees pledge their influence towards that end.

5) The I E C has not laid down any procedure concerning marking as an indication of approval and has no responsibility when an item of equipment is declared to comply with one of its recommendations.

PREFACE

This publication was prepared by Sub-Committee 46B, Waveguides and their Accessories, of Technical Committee No. 46, Cables, Wires and Waveguides for Telecommunication Equipment.

It contains Part 3, Relevant Specifications for Flat Rectangular Waveguides, of the complete I E C Recommendation for hollow metallic waveguides, and it is intended to be used in conjunction with Part 1, General Requirements and Measuring Methods, which is issued as I E C Publication 153-1.

The relevant specification for ordinary rectangular waveguides is issued as I E C Publication 153-2 and the relevant specification for circular waveguides is issued as I E C Publication 153-4.

The general outline of the Recommendation was first discussed in Paris in November 1956. A draft was prepared which was considered in Stockholm in 1957. Successive revised drafts were then prepared and discussed during the meetings held in London in 1958, in Ulm in 1959 and in Copenhagen in 1960. As a result of the latter meeting, a draft was submitted to the National Committees for approval under the Six Months' Rule, in September 1960.

Four unfavourable votes were received and several countries submitted comments which were considered during the meeting held at Interlaken in 1961.

Amendments adopted during the latter meeting were submitted to all National Committees for approval under the Two Months' Procedure in May 1962.

Some editorial comments were discussed and accepted at the meeting held in Bucharest in 1962.

The following countries voted explicity in favour of publication of Part 3 :

Belgium	Norway
Czechoslovakia	Poland
Denmark	Romania
Finland	Sweden
France	Switzerland
Germany	United Kingdom
Italy	United States of America
Japan	Yugoslavia
Netherlands	

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.

HOLLOW METALLIC WAVEGUIDES

Part 3: Relevant specifications for flat rectangular waveguides

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RECTANGULAR FLAT WAVEGUIDES — TYPE F

Clause No. of IEC Publication 153-1	Item
1.	**General**
	Standardized types
	The series of rectangular flat waveguides covered by this publication are shown in Table I.
1.2	*Type designation*
	For these waveguides the type designation comprises:
	a) The code: 153 IEC-F
	b) A number characterizing a particular size of waveguide. This number expresses approximately in multiples of 100 MHz (Mc/s) the geometric mean frequency of the recommended frequency range.
	Frequency range
	The frequency range indicated in Table I is from 1.25 to 1.9 times the cut-off frequency in the dominant mode. For any particular type of application the working frequency range may be smaller or greater than the frequency range given in the table.
2.	**Mechanical requirements**
2.1	*Dimensions*
2.1.3.1	*Inside dimensions*
	The nominal values and the tolerances are specified in Table I.
	The tolerances both on width and height, are: $\pm \frac{1}{1\,000}$ of the nominal value of the width.
2.1.3.2	*Wall thickness*
	The nominal values are specified in Table I.
2.1.3.3	*Eccentricity*
	The eccentricity shall not exceed 10% of the nominal wall thickness.

RECTANGULAR FLAT WAVEGUIDES — TYPE F (continued)

Clause No. of I E C Publication 153-1	Item
2.1.3.4	*Outside dimensions* The nominal values and the tolerances thereon are specified in Table I. The tolerance both on width and height shall be $\pm \frac{1}{500}$ of the inside nominal width.
2.1.3.5	*Rectangularity of cross-section* The rectangularity of the inside and outside cross-section shall conform to the requirements specified in Part 1 of these Recommendations.
2.2	*Other mechanical requirements*
2.2.1	*Bow* The bow shall not exceed the requirements specified in Part 1 of these Recommendations.
2.2.2	*Twist* The twist shall conform to the requirements specified in Part 1 of these Recommendations.
2.2.3	*Surface roughness* Under consideration.
3.	**Electrical tests**
3.1	*Attenuation* The maximum attenuation shall not exceed 1.3 times the values calculated from formula (1) in Part 1 at a frequency of 1.5 times the cut-off frequency. The values given in the table are for waveguides made of copper with standard resistivity $\rho_o = 1.7241.10^{-8}$ ohm.metre.
3.2	*Irregularity of characteristic impedance* Under consideration.
4.	**Additional tests**
4.1	*Gas-tightness* Under consideration.