
Hollow metallic waveguides - Part 7: Relevant specifications for square waveguides

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Hollow metallic waveguides
Part 7: Relevant specifications for square
waveguides

Guides d'ondes métalliques creux
Septième partie: Spécifications
particulières pour les guides
d'ondes carrés

Metallische Hohlleiter
Teil 7: Besondere Anforderungen an
Rechteck-Hohlleiter

RD: IEC 153-7 (1972) ed 1; IEC/SC 46B (not appended)

The Harmonization Document consists of the following :

- Title Page

Related to Directive: -

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CH : NOS
DE : DIN 47 302 Teil 10/02.79
DK : NOS
ES : NOS
FI : NOS
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Première édition
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Guides d'ondes métalliques creux

**Septième partie:
Spécifications particulières pour les guides
d'ondes carrés**

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Hollow metallic waveguides**

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Relevant specifications for square waveguides

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Commission Electrotechnique Internationale
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOLLOW METALLIC WAVEGUIDES

Part 7: Relevant specifications for square waveguides

FOREWORD

- 1) The formal decisions or agreements of the IEC 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 international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendations and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

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PREFACE

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

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It contains Part 7: Relevant Specifications for Square Waveguides, of the complete IEC recommendation for hollow metallic waveguides. Part 1, General Requirements and Measuring Methods, has been issued as IEC Publication 153-1.

Relevant specifications for other types of waveguides appear in companion publications.

The general outline of this recommendation was first discussed at the meeting held in Baden-Baden in 1965. Successive revised drafts were prepared and discussed during the meetings held in Tel Aviv in 1966 and in London in 1968. After this latter meeting, a draft was submitted to the National Committees for approval under the Six Months' Rule, document 46B(Central Office)41, in July 1969.

Although the draft received formal approval it was referred back to SC 46B at its meeting in The Hague in 1970 where some questionable points were resolved and the decision made to adopt the Six Months' Rule Document.

During the London meeting in 1968 it was recognized that the Square Waveguide draft did not include sufficient sizes to adequately cover the frequency spectrum.

Subsequent to the London meeting a draft was circulated which contained additional sizes of Square Waveguides. This draft was discussed at the meeting in The Hague. Following the meeting in The Hague a draft on additional sizes of Square Waveguides was submitted to the National Committees for approval under the Six Months' Rule, document 46B(Central Office)48, in March 1971.

The two approved Six Months' drafts have been combined to form this recommendation.

The following countries voted explicitly in favour of publication of Part 7:

Australia	Norway
Belgium	Poland
Denmark	Portugal
France	Romania
Germany	Sweden
Israel	Switzerland
Italy	Turkey
Japan	United Kingdom
Netherlands	United States of America

DIMENSIONAL DEVIATIONS

The values for the permissible deviations in this recommendation follow the principles given in ISO Recommendation R286, ISO System of Limits and Fits, where:

Deviation is defined as:

Algebraical difference between a size (actual, maximum, etc.) and the corresponding basic size.

Upper deviation is defined as:

Algebraical difference between the maximum limits of size and the corresponding basic size.

And lower deviation is defined as:

Algebraical difference between the minimum limit of size and the corresponding basic size.

It should be noted that the upper and lower deviations may have like signs, unlike signs or either deviation may be zero. This permits the basic sizes of mating shafts and holes to be identical.

The older concept of plus tolerances and minus tolerances has an undesirable limitation, in that the basic sizes of mating shafts and holes cannot be identical for clearance fits.

HOLLOW METALLIC WAVEGUIDES

Part 7: Relevant specifications for square waveguides

SQUARE WAVEGUIDES — TYPE Q

Clause No.	Item
1.	General
1.1	<p><i>Standardized types</i></p> <p>The series of square waveguides covered by this publication are shown in Table I.</p>
1.2	<p><i>Type designation</i></p> <p>For these waveguides the type designation comprises:</p> <p>a) The code: 153 IEC-Q</p> <p>b) A number characterizing a particular size of waveguide. This number expresses approximately in multiples of 100 MHz the geometric mean frequency of the recommended frequency range.</p> <p>Example: 153 IEC-Q100 denotes a 19.5 mm × 19.5 mm (0.7677 in. × 0.7677 in.) square waveguide with a centre frequency of approximately 10 GHz in the dominant mode.</p>
1.3	<p><i>Frequency range</i></p> <p>The frequency range indicated in Table I is from 1.15 to 1.375 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.</p>
2.	Mechanical requirements
	<p>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.</p>
2.1	<i>Dimensions</i>
2.1.1	<p><i>Inside dimensions</i></p> <p>The deviations both on width and height are $\pm 1/500$ of the inside basic width.</p> <p>The basic values, the deviations and the inside corner radii are specified in Table I.</p>