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**Stabilne koaksialne prenosne zveze za splošen namen in njihovi pripadajoči prirobni konektorji; 1. del: splošne zahteve in merilne metode \***

Splošnonamenski togi koaksialni vodi in pripadajoči prirobni konektorji - 1. del:  
Splošne zahteve in merilne metode

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General purpose rigid coaxial transmission lines  
and their associated flange connectors  
Part 1: General requirements and measuring methods

Lignes de transmission coaxiales  
rigides et leurs connecteurs à  
brides associés à usage général  
Première partie: Prescriptions  
générales et méthodes de mesure

Starre Koaxial-Kabel und  
zugehörige Flanschverbinder  
Teil 1: Allgemeine Anforderungen und  
Meßverfahren

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CH : SEV/ASE 3243-1  
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GB : NOS  
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INTERNATIONALE  
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**CEI  
IEC**

**60339-1**

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**Lignes de transmission coaxiales rigides et leurs  
connecteurs à brides associés à usage général**

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Prescriptions générales et méthodes de mesure**

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**Part 1:**

**General requirements and measuring methods**

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International Electrotechnical Commission  
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**GENERAL PURPOSE RIGID COAXIAL TRANSMISSION  
LINES AND THEIR ASSOCIATED FLANGE CONNECTORS**

**Part 1 : General requirements and measuring methods**

FOREWORD

- 1) The formal decisions or agreements 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.

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PREFACE

This Recommendation has been prepared by Sub-Committee 46A, R.F. Cables and their Accessories, of I E C Technical Committee No. 46, Cables, Wires and Waveguides for Telecommunication Equipment.

It contains Part 1 of the complete Recommendation for general purpose rigid coaxial transmission lines and their associated flange connectors.

Part 2 will include, in future, the standardized dimensions of rigid coaxial transmission lines and their associated flange connectors.

A first draft was discussed at the meeting held in London in 1968, as a result of which a revised draft was submitted to the National Committees for approval under the Six Months' Rule in January 1969.

The following countries voted explicitly in favour of publication of Part 1 :

|                |                          |
|----------------|--------------------------|
| Australia      | Netherlands              |
| Belgium        | Poland                   |
| Canada         | Romania                  |
| Czechoslovakia | Sweden                   |
| Denmark        | Switzerland              |
| Israel         | Turkey                   |
| Italy          | United Kingdom           |
| Japan          | United States of America |

No recommendations are made with respect to the choice and sequence of tests. This should be made subject to agreement between customer and manufacturer.

# GENERAL PURPOSE RIGID COAXIAL TRANSMISSION LINES AND THEIR ASSOCIATED FLANGE CONNECTORS

## Part 1 : General requirements and measuring methods

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This Recommendation shall be used in conjunction with:

I E C Publication 68, Basic Environmental Testing Procedures.

ISO Recommendation R286.

### 1. Scope

This Recommendation relates to gas-filled rigid coaxial transmission lines and their associated flange connectors.

It primarily covers requirements for flange connectors mounted on rigid coaxial transmission lines and gives partial data for unmounted flange connectors.

### 2. Object

The aim of this Recommendation is to specify the following for rigid coaxial transmission lines and their associated flange connectors:

- a) The recommendations necessary to ensure compatibility and, as far as essential, interchangeability.
- b) The tolerances necessary to ensure adequate electrical performance.
- c) The test methods.

## SECTION ONE — GENERAL

### 3. Terminology

#### 3.1 *Technical terms*

The following definitions shall apply for the purposes of this Recommendation.

##### 3.1.1 *Size*

The size of a rigid coaxial transmission line is defined as the rounded-off outside diameter of the line, expressed in millimetres.

##### 3.1.2 *Wall thickness*

The nominal wall thickness is defined as half the difference between nominal outside and inside dimensions, expressed in millimetres.

### 3.1.3 Ellipticity

The ellipticity  $E$  is defined as:

$$E = \frac{D_{\max} - D_{\min}}{D_{\text{nom}}}$$

where:

$D_{\text{nom}}$  = nominal inside or outside diameter either of outer or inner conductor

$D_{\max}$  = largest measured inside or outside diameter either of outer or inner conductor

$D_{\min}$  = smallest measured inside or outside diameter either of outer or inner conductor

### 3.1.4 Curvature

Curvature is defined as the maximum deviation of the actual axis of the transmission line from a straight line of specified length connecting two points on that axis.

### 3.1.5 Attenuation

Attenuation per unit of length is defined as the logarithmic decrement in transmitted power.

### 3.1.6 Flange connector

An assembly consisting of a two-way inner connector and an outer conductor flange.

### 3.1.7 Inner connector

A component, normally incorporating resilient members on both ends and a dielectric anchoring member, for connecting together two tubular rigid inner conductors.

### 3.1.8 Outer conductor flange

A component normally attached to a rigid outer conductor and used to connect another flange, mounted on another rigid outer conductor.

### 3.1.9 Mated connector set

The means for connecting together two lengths of rigid transmission line, consisting of one inner connector and two outer conductor flanges.

### 3.1.10 Pressurization

Pressurization is the application of a positive pressure, relative to the atmospheric pressure, of dry gas to the interior of a coaxial line and connector assembly; this is generally used to prevent the entrance of moisture or other foreign material. High pressurization may be applied to improve electrical performance.

### 3.1.11 Reflection coefficient and voltage standing wave ratio (v.s.w.r.)

Where the terms reflection coefficient or voltage standing wave ratio are used in this Recommendation, they refer to the properties measured on assemblies of rigid transmission lines.

*Note.* — For the relation between the reflection coefficient and v.s.w.r., the following equation is applicable:

$$r = \frac{1 + |I|}{1 - |I|}$$

where:

$|I|$  = magnitude of the voltage reflection coefficient