SLOVENSKI STANDARD
SIST HD 351.1 S1:2004

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Rigid precision coaxial lines and their associated precision connectors - Part 1: General requirements and measuring methods (IEC 60457-1:1974)

Präzisionsrohrleitungen und zugehörige Präzisionssteckverbinder - Teil 1: Allgemeine Anforderungen und Meßverfahren (IEC 60457-1:1974)

Lignes coaxiales rigides de précision et leurs connecteurs de précision associés - Partie 1: Règles générales et méthodes de mesure (CEI 60457-1:1974)

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INFORMATION SHEET

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Teil 1: Allgemeine Anforderungen und Meßverfahren

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AT :

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DE : NOS

DK : NOS

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Première partie: Règles générales et méthodes de mesure

Rigid precision coaxial lines and their associated precision connectors

Part 1: General requirements and measuring methods

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

RIGID PRECISION COAXIAL LINES AND THEIR ASSOCIATED PRECISION 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 international unification, the I E C expresses the wish that all National Committees should adopt the text of the I E C recommendation for their national rules in so far as national conditions will permit. Any divergence between the I E C recommendations and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

PREFACE

This recommendation has been prepared by Sub-Committee 46D, Connectors for R.F. Cables, of I E C Technical Committee No. 46, Cables, Wires and Waveguides for Telecommunication Equipment.

A first draft was discussed at the meeting held in The Hague in 1970. As a result of this meeting, a final draft, document 46D(Central Office)5, was submitted to the National Committees for approval under the Six Months' Rule in July 1971. Amendments, document 46D(Central Office)14, were submitted to the National Committees for approval under the Two Months' Procedure in September 1972.

The following countries voted explicitly in favour of publication:

Australia
Belgium
Czechoslovakia
Denmark
France
Germany
Hungary
Israel
Italy
Japan
Korea (Democratic People's Republic of)
Netherlands
Poland
Sweden
Switzerland
Turkey
United Kingdom
United States of America

RIGID PRECISION COAXIAL LINES AND THEIR ASSOCIATED PRECISION CONNECTORS

Part 1 : General requirements and measuring methods

This recommendation shall be used in conjunction with:

— I E C Publication 68, Basic Environmental Testing Procedures;

— ISO Recommendation R 286;

— ISO Recommendation R 370.

The schedule of test shall be specified in the detail specification.

1. Scope

This recommendation relates to rigid precision coaxial lines and their associated precision connectors for instrumentation, to be used within the limits for temperature, humidity and pressure as given in the standard atmospheric conditions for testing in Publication 68-1, Part 1: General. Precision connectors can be of the hermaphroditic type, flange type or of the pin and socket type.

This recommendation covers requirements for precision connectors mounted on rigid precision coaxial lines and gives mechanical data for coupling mechanism.

2. Object

The aim of this recommendation is to specify the following for rigid precision coaxial lines and their associated connectors:

a) the requirements necessary to ensure compatibility and, as far as essential, interchangeability;

b) the test methods;

c) the dimensional deviations allowed to ensure adequate electrical performance.

SECTION ONE — GENERAL

3. Terminology

3.1 *Technical terms*

In accordance with the International Electrotechnical Vocabulary (I.V.E.), I E C Publication 50.

In addition, the following terms are used in this recommendation.

3.1.1. *Size*

For precision lines, the size is defined as the rounded-off inner diameter of the outer conductor, expressed in millimetres.

3.1.2 *Wall thickness*

The basic wall thickness is defined as half the difference between nominal outside and inside diameters.

3.1.3 *Ellipticity*

Ellipticity "E" of inner or outer conductor is defined by the formula:

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

where:

E denotes the ellipticity of either outer or inner conductor

D_{nom} = nominal inside diameter of outer conductor or the nominal outside diameter of centre conductor

D_{max} = largest measured diameter either of outer or centre conductor

D_{min} = smallest measured diameter either of outer or centre conductor

These measurements are to be made at the same cross-section.

3.1.4 *Excentricity*

$$\text{Excentricity } e = \frac{\Delta e}{D}$$

Δe = deviation of the axis of the outside diameter of the centre conductor from the axis of the inside diameter of the outer conductor.

3.1.5 *Curvature*

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

3.1.6 *Attenuation and insertion loss*

The attenuation of a coaxial line is defined as the reduction of transmitted power expressed in decibels per unit of length. In the case of connectors, the specifications refer to the insertion loss of a mated pair.

3.1.7 *Frequency range*

3.1.7.1 *Cut-off frequency*

The theoretical cut-off frequency of a coaxial line is the calculated frequency at which the TE_{11} mode theoretically first occurs (the practical value will be different from this).

3.1.7.2 *Maximum frequency*

The maximum frequency up to which all the requirements shown in the detail specification are maintained.

3.1.8 *Laboratory precision connector (LPC)*

The laboratory precision connector (LPC) is a precision connector with no dielectric support for use with air-dielectric line standards.

3.1.9 *General precision connector (GPC)*

The general precision connector (GPC) is a precision connector with a self-contained dielectric support and all component parts captive for general use. The GPC must be capable of supporting the unsupported LPC inner conductor.