

# INTERNATIONAL STANDARD

Coaxial communication cables –  
Part 1-104: Electrical test methods – Test for the stability of the capacitance of  
cable versus temperature

IEC 61196-1-104:2015  
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INTERNATIONAL  
ELECTROTECHNICAL  
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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## COAXIAL COMMUNICATION CABLES –

**Part 1-104: Electrical test methods –  
Test for the stability of the capacitance of cable versus temperature**

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International Standard IEC 61196-1-104 has been prepared by subcommittee 46A: Coaxial cables, of IEC technical committee 46: Cables, wires, waveguides, R.F. connectors, R.F. and microwave passive components and accessories.

This second edition cancels and replaces the first edition published in 2005. This edition constitutes a technical revision. This edition includes the following significant technical changes with respect to the previous edition:

- a) Subclause 4.2, Requirements for the test sample;
- b) Change in the title of Part 1-104.

The text of this standard is based on the following documents:

FDIS	Report on voting
46A/1263A/FDIS	46A/1268/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all the parts in the IEC 61196 series published under the general title *Coaxial communication cables* can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

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## COAXIAL COMMUNICATION CABLES –

### Part 1-104: Electrical test methods – Test for the stability of the capacitance of cable versus temperature

#### 1 Scope

This part of IEC 61196 applies to coaxial communications cables. It specifies test methods for determining the capacitance stability of the cable when subjected to temperature change.

#### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050 (all parts), *International Electrotechnical Vocabulary*, available at <http://www.electropedia.org/>

IEC 61196-1, *Coaxial communication cables – Part 1: Generic specification – General, definitions and requirements*

IEC 61196-1-103, *Coaxial communication cables – Part 1-103: Electrical test methods – Test for capacitance of cable*

#### 3 Terms and definitions

For the purpose of this document the terms and definitions given in IEC 60050 and in IEC 61196-1 apply.

#### 4 Test method

##### 4.1 Equipment

An environmental chamber of size and dimension capable of performing the test described herein is required.

The capacitance equipment shall be in accordance with IEC 61196-1-103.

##### 4.2 Test sample

The test sample shall be in accordance with IEC 61196-1-103

##### 4.3 Procedure

The capacitance shall be measured in accordance with IEC 61196-1-103.

The cable under test (CUT) shall be subjected to the applicable temperature cycle shown in Table 1 for a total of three cycles unless otherwise stated in the relevant sectional or detail specification.

The capacitance of the CUT shall be measured initially and after each step at the actual test temperature.

**Table 1 – Temperature cycling**

Step	Foamed PE dielectric type Temperature °C	PE dielectric type Temperature °C	PTFE dielectric type Temperature °C	Time hours
initial	20 ± 2	20 ± 2	20 ± 2	2 minimum
1	+65 ± 2	+75 ± 2	+250 ± 5	2 minimum
2	+20 ± 2	+20 ± 2	+20 ± 2	2 minimum
3	-40 ± 2	-40 ± 2	-55 ± 2	2 minimum
4	+20 ± 2	+20 ± 2	+20 ± 2	2 minimum

For other dielectric materials the test temperatures and testing hours shall be stated in the relevant sectional or detail specification.

### 5 Expression of test results

The test results should be normalized to the reference length of 1 m.

$$C = \frac{C_m}{L} \text{ (pF/m)}$$

where

$C$  is the capacitance of reference length at measuring temperature;

$C_m$  is the measured capacitance value of the CUT in picofarads;

$L$  is the length of sample in metres.

### 6 Test report

The test report shall record the test conditions given below at each temperature step:

- temperatures,
- number of cycles, if different from three,
- sample length,
- test frequency,
- cable capacitance at each step

and record the deviation from the initial value in pF/m for each temperature step as stated in the relevant sectional or detail specification.

### 7 Requirements

The deviation of the capacitance from the initial value in pF/m for each temperature step of the CUT shall comply with the requirements of the relevant detailed specification.



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