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INTERNATIONAL STANDARD

Coaxial communication cables –
Part 1-100: Electrical test methods – General requirements

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COAXIAL COMMUNICATION CABLES –

Part 1-100: Electrical test methods – General requirements

FOREWORD

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IEC 61196-1-100 has been prepared by subcommittee 46A: Coaxial cables, of IEC technical committee 46: Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories. It is an International Standard.

This third edition cancels and replaces the second edition published in 2015. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) update of Annex A, Electrical test methods of the IEC 61196-1-1xx series.

The text of this International Standard is based on the following documents:

Draft	Report on voting
46A/1532/FDIS	46A/1551/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

This standard is intended to be read in conjunction with IEC 61196-1. It is based on the second edition: 2005 of that standard.

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

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

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- withdrawn,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

COAXIAL COMMUNICATION CABLES –

Part 1-100: Electrical test methods – General requirements

1 Scope

This part of IEC 61196 gives the general requirements and conditions for electrical tests to be performed on coaxial communication cables and applies to IEC 61196-1-1xx (all parts), which specifies electrical test methods for coaxial communication cables.

Further test details (for example, temperature, duration) and/or test requirements are given in the relevant test procedure and/or the relevant sectional or detail specification.

A table with electrical test methods of the IEC 61196-1-1xx series is given in Annex A.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61196-1:2005, *Coaxial communication cables – Part 1: Generic specification – General, definitions and requirements*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

4 Sample

4.1 Cable under test (CUT)

Unless otherwise specified in the relevant test method, the length of the CUT shall be selected to take into account the dynamic range of the measuring equipment and the frequency range specified to yield the required level of accuracy. The length should be measured with an accuracy better than 1 % unless otherwise stated in the relevant cable specification.

4.2 Pre-conditioning

The CUT shall be pre-conditioned at a constant ambient temperature for such a time as to allow the specimen temperature to stabilize according to 6.1.

5 Tests

The tests required and performance characteristics applicable to each type of cable are given in the relevant cable standard.

6 Test conditions

6.1 Ambient conditions

Tests shall be made at:

– temperature: 15 °C to 35 °C,
– relative humidity: 25 % to 75 % (no condensation),
– air pressure: 86 kPa to 106 kPa,

unless otherwise specified.

6.2 Tolerance on temperature values

Unless otherwise specified in the relevant specification, the tolerance on temperature shall be ±2 °C.

6.3 Frequency range and stability for frequency-related measurements

The required frequency range is specified in the relevant sectional specification.

The sweep shall be linear or logarithmic such that:

$$f_{\text{step}} = \left(f_{\text{stop}} - f_{\text{start}}\right) \big/ (n-1) \text{ for the linear sweep} \quad (1)$$

and

$$K = \left(\frac{f_{\text{stop}}}{f_{\text{start}}}\right)^{\frac{1}{n-1}} \text{ for the logarithmic sweep} \quad (2)$$

where

f_{start} is the lowest specified frequency;
f_{stop} is the highest specified frequency;
f_{step} is the linear frequency increment, constant over the whole specified frequency range;
n is the number of frequency points;
K is the logarithmic frequency increment.

Unless otherwise specified, the minimum number of frequency points shall be 200 per decade.

7 Test report

The test report shall include the measurements results and the actual measuring conditions with their maximum deviations.

Annex A
(informative)

Electrical test methods of the IEC 61196-1-1xx series

IEC 61196-1-1xx series: Coaxial communication cables – Part 1-1xx: Electrical test methods, consists of the following documents:

IEC 61196-1-100:2022	General requirements
IEC 61196-1-101:2015	Test for conductor d.c. resistance of cable
IEC 61196-1-102:2005	Test for insulation resistance of cable dielectric
IEC 61196-1-103:2015	Test for capacitance of cable
IEC 61196-1-104:2015	Test for the stability of the capacitance of cable versus temperature
IEC 61196-1-105:2005	Test for withstand voltage of cable dielectric
IEC 61196-1-106:2008	Test for withstand voltage of cable sheath
IEC 61196-1-107:2005	Test for cable microphony charge level (mechanically induced noise)
IEC 61196-1-108:2011	Test for characteristic impedance, phase and group delay, electrical length and propagation velocity
IEC 61196-1-110:2016	Test for continuity
IEC 61196-1-111:2014	Stability of phase test methods
IEC 61196-1-112:2006	Test for return loss (uniformity of impedance)
IEC 61196-1-113:2018	Test for attenuation constant
IEC 61196-1-114:2015	Test for inductance
IEC 61196-1-115:2006	Test for regularity of impedance (pulse/step function return loss)
IEC 61196-1-116:2015	Test for impedance with time domain reflectometry (TDR)
IEC 61196-1-119:2020	RF average power rating
IEC 61196-1-122:2006	Test for cross-talk between coaxial cables
IEC 61196-1-123:—	Test for attenuation constant of radiating cable [1]
IEC 61196-1-124:—	Test for coupling loss of radiating cable [2]
IEC 61196-1-125:—	Test for equivalent permittivity and equivalent dissipation loss of dielectric [3]
IEC 61196-1-126:—	Corona extinction voltage [4]

Publication dates, stability dates and further information can be found on the IEC web site www.iec.ch.

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1 Under preparation. Stage at the date of publication: IEC/CDV 61196-1-123:2021.

2 Under preparation. Stage at the date of publication: IEC/CDV 61196-1-124:2021.

3 Under preparation. Stage at the date of publication: IEC/CDV 61196-1-125:2021.

4 Under preparation. Stage at the date of publication: IEC/CDV 61196-1-126:2021.

Bibliography

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

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