
Koaksialni kabli – 2-4. del: Področna specifikacija za kable v kabelskih razdelilnih omrežjih – Notranji priključni kabli za sisteme, ki delujejo v območju 5 MHz do 3.000 MHz

Coaxial cables - Part 2-4: Sectional specification for cables used in cabled distribution networks - Indoor drop cables for systems operating at 5 MHz - 3 000 MHz

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EUROPEAN STANDARD

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Coaxial cables
Part 2-4: Sectional specification for cables
used in cabled distribution networks –
Indoor drop cables for systems operating at 5 MHz - 3 000 MHz

Câbles coaxiaux
Partie 2-4: Spécification intermédiaire
pour les câbles utilisés dans les réseaux
de distribution câblés –
Câbles de raccordement
à usage intérieur pour systèmes
fonctionnant à 5 MHz - 3 000 MHz

Koaxialkabel
Teil 2-4: Rahmenspezifikation für Kabel
für Kabelverteilanlagen -
Hausinstallationskabel im Bereich
von 5 MHz - 3 000 MHz

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This European Standard was approved by CENELEC on 2004-09-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

This European Standard was prepared by SC 46XA, Coaxial cables, of Technical Committee CENELEC TC 46X, Communication cables.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50117-2-4 on 2004-09-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2005-09-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2007-09-01

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1 Scope

This European Standard relates to EN 50117-1 and should be read in conjunction with this generic specification. This specification applies to indoor drop cables for use in cabled distribution systems operating at temperature between -40 °C and $+70\text{ °C}$ ¹⁾ and at frequencies between 5 MHz and 3 000 MHz and complying with the requirements of EN 50083.

The purpose of this European Standard is to specify the applicable test methods and requirements for the electrical, mechanical, environmental and fire performance of the cables.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN 50083 series	Cable networks for television signals, sound signals and interactive services
EN 50117-1	Coaxial cables – Part 1: Generic specification
EN 50289-1-6	Communication cables – Specifications for test methods – Part 1-6: Electrical test methods – Electromagnetic performance
EN 50289-3-9	Communication cables – Specifications for test methods – Part 3-9: Mechanical test methods – Bending tests
EN 50290-1-2 ²⁾	Communication cables – Part 1-2: Definitions
EN 50290-2-22	Communication cables – Part 2-24: Common design rules and construction – PVC sheathing compounds
EN 50290-2-23	Communication cables – Part 2-23: Common design rules and construction – PE insulation
EN 50290-2-25	Communication cables – Part 2-25: Common design rules and construction – Polypropylene insulation compounds
EN 50290-2-27	Communication cables – Part 2-27: Common design rules and construction – Halogen free flame retardant thermoplastic sheathing compounds
EN 50290-4-1	Communication cables – Part 4-1: General considerations for the use of cables – Environmental conditions and safety aspects
EN 62153-1-1	Metallic telecommunication cable test methods – Part 1-1: Electrical – Measurement of the pulse/step return loss in the frequency domain using the Inverse Discrete Fourier Transformation (IDFT) (IEC 62153-1-1)
IEC 61196-1-115 ²⁾	Coaxial communication cables – Part 1-115: Electrical test methods – Test for pulse return loss (regularity of impedance)

3 Definitions

For the purposes of this European Standard, the definitions of EN 50290-1-2 and EN 50117-1 apply.

1) This value is valid for applications without ampacity only.

2) At draft stage.

4 Requirements for cable construction

4.1 General

Designing the cable, consideration should be paid to the maximum admissible current stated in the detail specification. It is assumed that the raise if temperature of the inner conductor when submitted to the maximum current under nominal ambient conditions does not affect the mechanical and electrical properties of the cable (details are under study).

4.2 Inner conductor

The conductor shall meet the requirements of Subclause 4.2 of EN 50117-1, and shall be solid or tube. Individual wires can be plain or metal coated. Dimensions shall be in accordance with the detailed specification.

There shall be no joint made subsequent to the last drawing operation.

4.3 Dielectric

The dielectric material(s) shall be in accordance with Subclause 4.3 of EN 50117-1 and shall consist of polyolefin materials, with EN 50290-2-23 (polyethylene), EN 50290-2-25 (polypropylene) or any relevant part of EN 50290-2-XX. Dimensions shall be in accordance with the detail specification.

Unless otherwise specified, the nominal diameter over the dielectric should be one of the preferred values, namely 2,9 mm, 3,7 mm, 4,8 mm and 7,2 mm.

4.4 Outer conductor or screen (standards.iteh.ai)

The construction and material of the outer conductor and/or screen shall be meet the requirements of Subclause 4.4 items b), c), f) or g) of EN 50117-1. Where option b) is used, a double braid layer is required.

For braid constructions or helically wound wires, the braid angle shall be between 15° and 45°. The coverage factor shall be greater than or equal to 65 %, or, when the cable is provided with a metal foil, greater than or equal to 25 %. These values are also valid for cables with two bi-directional layers of helically wound wires.

Dimensions shall be in accordance with the detailed specification.

4.5 Filling compounds

Not applicable

4.6 Moisture barriers

Not applicable

4.7 Wrapping layers

Not applicable

4.8 Sheath

Sheath material(s) shall meet the requirements of the EN 50290-2-22 for PVC sheaths or EN 50290-2-27 for halogen free flame retardant materials.

The sheath shall also meet the requirements of Subclause 4.8 of EN 50117-1.

Dimensions shall be in accordance with the detailed specification.

4.9 Metallic protection

Not applicable

4.10 Cable integral suspension strand (Messenger wire)

Not applicable

4.11 Oversheath

Not applicable

4.12 Fauna proofing

Not applicable

4.13 Chemical and/or environmental proofing

Not applicable

4.14 Cable identification

Cable identification shall be in accordance with Subclause 4.14 of EN 50117-1.

4.14.1 Sheath marking

Sheath marking shall be achieved as a non-degradable print containing the following minimum information:

- designation of the cable;
- attenuation value (in dB/100 m at 800 MHz, rounded);
- screening class;
- Euro-class;
- name of supplier.

EXAMPLE EN 50117-2-4 21 < XXX > Class B Euro-class C < YYY >

4.14.2 Labelling

Unless otherwise specified in the detail specification drums or coils shall be provided with a label with a non-degradable print containing the following minimum information:

- designation of the cable;
- attenuation value (in dB/100 m at 800 MHz, rounded);
- screening class;
- Euro-class;
- name of supplier;
- batch part number;
- length of cable.

EXAMPLE EN 50117-2-4 21 < XXX > Class B Euro-class C < YYY > 03/04 543m

5 Tests for completed cables

When tested in accordance with the requirements of EN 50117-1, the requirements given below shall apply.

5.1 Electrical tests

5.1.1 Low-frequency and D.C. electrical measurements

Table 1 – Low-frequency and D.C. electrical measurements

EN 50117-1 Subclause n°	Parameter	Requirements/Remarks
5.1.1.1	Conductor resistance	Applicable, value in accordance with the detail specification
5.1.1.2	Dielectric strength	2 kV D.C. or 1,5 kV A.C. for 1 min
5.1.1.3	Insulation resistance	$\geq 10^4 \text{ M}\Omega \times \text{km}$
5.1.1.4	Mutual capacitance	When required, in accordance with the detail specification
5.1.1.5	Voltage test of sheath	2,5 kV A.C. or 3,75 kV D.C., unless otherwise specified in the relevant detail specification. Test in accordance with EN 50289-1-X ^a
5.1.1.6	Discharge (corona) test	Not applicable
5.1.1.7	Voltage proof	Not applicable
5.1.1.8	Power rating	Not applicable

^a Test procedure is under consideration by CLC/SC 46XA.

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5.1.2 High-frequency electrical and transmission measurements

Table 2 – High-frequency electrical and transmission measurements

EN 50117-1 Subclause n°	Parameter	Requirements/Remarks
5.1.2.1	Velocity of propagation	May be specified for information purposes only in the detail specification.
5.1.2.2	Longitudinal attenuation (operational attenuation)	The cable shall comply at any frequency with the formula $a \cdot \sqrt{f} + b \cdot f + c$. In case of copper clad conductor material a term d / \sqrt{f} should be added, to match the curve at low frequencies. The coefficients a, b, c and d shall be given in the relevant detail specification as well as the discrete values at 200 MHz, 800 MHz and 2 400 MHz.
5.1.2.3	Characteristic impedance	$75 \Omega \pm 3 \Omega$