

Communication cables - Specifications for test methods  
- Part 1-1: Electrical test methods - General  
requirements

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

|                                                                                                                     |                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| See Eesti standard EVS-EN 50289-1-1:2017 sisaldab Euroopa standardi EN 50289-1-1:2017 ingliskeelset teksti.         | This Estonian standard EVS-EN 50289-1-1:2017 consists of the English text of the European standard EN 50289-1-1:2017.              |
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## English Version

**Communication cables - Specifications for test methods - Part 1-  
1: Electrical test methods - General requirements**

Câbles de communication - Spécifications des méthodes  
d'essai Partie 1-1: Méthodes d'essais électriques -  
Prescriptions générales

Kommunikationskabel - Spezifikationen für Prüfverfahren  
Teil 1-1: Elektrische Prüfverfahren - Allgemeines

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Europäisches Komitee für Elektrotechnische Normung

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## European foreword

This document [EN 50289-1-1:2017] has been prepared by CLC/TC 46X "Communication cables".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2017-09-16
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2019-12-16

This document supersedes EN 50289-1-1:2001.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

EN 50289-1, Communication cables — Specifications for test methods, is currently composed with the following parts:

- *Part 1-1: Electrical test methods — General requirements;*
- *Part 1-2: Electrical test methods — DC resistance;*
- *Part 1-3: Electrical test methods — Dielectric strength;*
- *Part 1-4: Electrical test methods — Insulation resistance;*
- *Part 1-5: Electrical test methods — Capacitance;*
- *Part 1-6: Electrical test methods — Electromagnetic performance;*
- *Part 1-7: Electrical test methods — Velocity of propagation;*
- *Part 1-8: Electrical test methods — Attenuation;*
- *Part 1-9: Electrical test methods — Unbalance attenuation (longitudinal conversion loss, longitudinal conversion transfer loss);*
- *Part 1-10: Electrical test methods — Crosstalk;*
- *Part 1-11: Electrical test methods — Characteristic impedance, input impedance, return loss;*
- *Part 1-12: Electrical test methods — Inductance;*
- *Part 1-13: Electrical test methods — Coupling attenuation or screening attenuation of patch cords / coaxial cable assemblies / pre-connectorised cables;*
- *Part 1-14: Electrical test methods — Coupling attenuation or screening attenuation of connecting hardware;*
- *Part 1-15: Electromagnetic performance — Coupling attenuation of links and channels (Laboratory conditions);*
- *Part 1-16: Electromagnetic performance — Coupling attenuation of cable assemblies (Field conditions);*
- *Part 1-17: Electrical test methods — Exogenous Crosstalk ExNEXT and ExFEXT.*

## 1 Scope

This European Standard specifies the electrical test methods for cables used in analogue and digital communication systems.

Part 1 of EN 50289 consists of the following documents:

- Part 1-1 General requirements
- Part 1-2 DC resistance
- Part 1-3 Dielectric strength
- Part 1-4 Insulation resistance
- Part 1-5 Capacitance
- Part 1-6 Electromagnetic performance
- Part 1-7 Velocity of propagation
- Part 1-8 Attenuation
- Part 1-9 Unbalance attenuation (longitudinal conversion loss, longitudinal conversion transfer loss)
- Part 1-10 Crosstalk
- Part 1-11 Characteristic impedance, input impedance, return loss
- Part 1-12 Inductance
- Part 1-13 Coupling attenuation or screening attenuation of patch cords / coaxial cable assemblies / pre-connectorised cables
- Part 1-14 Coupling attenuation or screening attenuation of connecting hardware
- Part 1-15 Coupling attenuation of links and channels (Laboratory conditions)
- Part 1-16 Coupling attenuation of cable assemblies (Field conditions)
- Part 1-17 Exogenous Crosstalk ExNEXT and ExFEXT

Further test details (e.g. temperature, duration) and/or test requirements are given in the relevant cable standard.

## 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.

EN 50289-1-9, *Communication cables - Specifications for test methods - Part 1-9: Electrical test methods - Unbalance attenuation (longitudinal conversion loss, longitudinal conversion transfer loss)*

EN 50290-1-2, *Communication cables - Part 1-2: Definitions*

EN 61169-16, *Radio-frequency connectors - Part 16: Sectional specification - RF coaxial connectors with inner diameter of outer conductor 7 mm (0,276 in) with screw coupling - Characteristic impedance 50 ohms (75 ohms) (type N)(IEC61169-16)*

IEC 60169-15, *Radio-frequency connectors — Part 15: R.F. coaxial connectors with inner diameter of outer conductor 4.13 mm (0.163 in) with screw coupling — Characteristic impedance 50 ohms (Type SMA)*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 50290-1-2 and the following apply.

#### 3.1

##### **single ended**

measurement with respect to a fixed potential, usually ground

#### 3.2

##### **mixed mode (parameter or measurement)**

parameters or measurements containing differential mode, common mode, and intermodal S-matrices

#### 3.3

##### **intermodal (parameter or measurement)**

parameter or measurement that either sources on the common mode and measures on the differential mode or, sources on the differential mode and measures on the common mode

### 4 Sampling

#### 4.1 Cable under test (CUT)

Unless otherwise specified in the relevant test method, the length of 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 shall be measured with better accuracy 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 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 temperature

Tests shall be made at an ambient temperature within the range 15°C to 35°C unless otherwise specified.

#### 6.2 Tolerance on temperature values

Unless otherwise specified in the relevant specification, the tolerance on temperature shall be  $\pm 2^\circ\text{C}$ .

#### 6.3 Frequency and waveform of test voltages for dielectric strength test

Unless otherwise specified, the test voltage shall be in the frequency range 40 Hz to 62 Hz of approximately sine-wave form, the peak ratio value/r.m.s. value being equal to  $\sqrt{2}$  with a tolerance of  $\pm 7\%$ . The values given are r.m.s.