Communication cables - Specifications for test methods - Part 1-8: Electrical test methods - Attenuation

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 50289-1-8:2017 sisaldab Euroopa standardi EN 50289-1-8:2017 ingliskeelset teksti.	This Estonian standard EVS-EN 50289-1-8:2017 consists of the English text of the European standard EN 50289-1-8:2017.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 17.03.2017.	Date of Availability of the European standard is 17.03.2017.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 33.120.20

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50289-1-8

March 2017

ICS 33.120.20

Supersedes EN 50289-1-8:2001

English Version

Communication cables - Specifications for test methods - Part 1-8: Electrical test methods - Attenuation

Câbles de communication - Spécifications des méthodes d'essai Partie 1-8: Méthodes d¿essais électriques - Affaiblissement

Kommunikationskabel - Spezifikationen für Prüfverfahren Teil 1-8: Elektrische Prüfverfahren - Dämpfung

This European Standard was approved by CENELEC on 2016-12-16. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 50289-1-8:2017 E

Contents

Page

European foreword

This document [EN 50289-1-8:2017] 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 50289-1-8:2001.

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 details the test methods to determine attenuation of finished cables used in analogue and digital communication systems.

It is bound to be read in conjunction with EN 50289-1-1, which contains essential provisions for its application.

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 50289-1-1, *Communication cables - Specifications for test methods - Part 1-1: Electrical test methods - General requirements*

EN 50289-1-11, *Communication cables - Specifications for test methods - Part 1-11: Electrical test methods - Characteristic impedance, input impedance, return loss*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 50289-1-1 and EN 50290-1-2 and the following apply.

3.1
cable attenuation
decrease in magnitude of power of a signal that propagates along the cable

3.2
insertion loss (*IL*) of a network (e.g. cable or cable assembly)
ratio of power P_1 delivered to a specified load in a transmission system, before insertion of the given network, to the power P_2 delivered to the same load after insertion of the network:

$$IL = 10 \cdot \log\left(\frac{P_1}{P_2}\right) \left(\text{dB}\right) \quad (1)$$

Note 1 to entry: The insertion loss of a network depends on the network itself as well as the transmission system in which it is inserted (including the load). The insertion loss is generally expressed in decibels.

Note 2 to entry: In a transmission system where the load and source impedances are equal, the insertion loss can be expressed by the scattering parameter S_{21}.:

$$IL = -20 \cdot \log\left(\left|S_{21}\right|\right) \left(\text{dB}\right) \quad (2)$$

Note 3 to entry: For a cable which is matched to the transmission system in which it is inserted, the insertion loss is equivalent to the cable attenuation.

Note 4 to entry: Further information on definitions of attenuation can be found in IEC/TR 62152.