Cable networks for television signals, sound signals and interactive services - Part 115: In-building optical systems for broadcast signal transmissions

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN IEC 60728-115:2022 sisaldab Euroopa standardi EN IEC 60728-115:2022 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 60728-115:2022 consists of the English text of the European standard EN IEC 60728-115:2022.
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 and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 18.03.2022.	Date of Availability of the European standard is 18.03.2022.
Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

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ICS 33.060.40, 33.160.01, 33.180.01

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 60728-115

March 2022

ICS 33.160.01; 33.180.01; 33.060.40

English Version

Cable networks for television signals, sound signals and interactive services - Part 115: In-building optical systems for broadcast signal transmissions (IEC 60728-115:2022)

Réseaux de distribution par câbles pour signaux de télévision, signaux de radiodiffusion sonore et services interactifs - Partie 115: Systèmes optiques internes aux immeubles pour la transmission de signaux de diffusion (IEC 60728-115:2022)

Kabelnetze für Fernsehsignale, Tonsignale und interaktive Dienste - Teil 115: Optische In-Haus-Anlagen zur Übertragung von Rundfunksignalen (IEC 60728-115:2022)

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

The text of document 100/3705/FDIS, future edition 1 of IEC 60728-115, prepared by IEC/TC 100 "Audio, video and multimedia systems and equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60728-115:2022.

The following dates are fixed:

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In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60068-1:2013 NOTE Harmonized as EN 60068-1:2014 (not modified)

IEC 60728-1:2014 NOTE Harmonized as EN 60728-1:2014 (not modified)

IEC 60728-3 NOTE Harmonized as EN IEC 60728-3

IEC 61755-1 NOTE Harmonized as EN 61755-1

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NORME INTERNATIONALE

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Cable networks for television signals, sound signals and interactive services – Part 115: In-building optical systems for broadcast signal transmissions

Réseaux de distribution par câbles pour signaux de télévision, signaux de radiodiffusion sonore et services interactifs –
Partie 115: Systèmes optiques internes aux immeubles pour la transmission de signaux de diffusion

IEC 60728-115:2022-02(en-fr)

IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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INTERNATIONAL STANDARD

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Réseaux de distribution par câbles pour signaux de télévision, signaux de radiodiffusion sonore et services interactifs – Partie 115: Systèmes optiques internes aux immeubles pour la transmission de signaux de diffusion

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Part 115: In-building optical systems for broadcast signal transmissions

FOREWORD

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

Draft	Report on voting
100/3705/FDIS	100/3721/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.

A list of all parts in the IEC 60728 series, published under the general title *Cable networks for television signals, sound signals and interactive services*, can be found on the IEC website.

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.

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CABLE NETWORKS FOR TELEVISION SIGNALS, SOUND SIGNALS AND INTERACTIVE SERVICES –

Part 115: In-building optical systems for broadcast signal transmissions

1 Scope

This part of IEC 60728 is applicable to in-building optical transmission systems for broadcast signal transmission that consist of optical transmitters, optical amplifiers, splitters, V-ONUs, etc. These systems are primarily intended for television and sound signals using digital transmission technology. This document specifies the basic system parameters and methods of measurement for in-building optical distribution systems between building network interfaces (BNI) and home network interfaces (HNI) in order to assess the system's performance and its performance limits.

This document is also applicable to broadcast signal transmission using a telecommunication network if it satisfies the requirements of the optical portion of this document. This document describes RF transmission for fully digitalized broadcast and narrowcast (limited area distribution of broadcast) signals over an FTTH network and introduces the X-PON system as a physical layer media. The detailed description of the physical layer is out of the scope of this document. The scope is limited to RF signal transmission over optical networks; thus, it does not include IP transport technologies, such as IP multicast and associated protocols.

This document specifies the required system performance of all-optical building networks in order to establish connections with FTTH networks, which are defined by IEC 60728-113 and IEC 60728-13-1. Use of in-building optical networks is very effective for saving costs (installation and maintenance) and enabling future network upgrades, especially in huge apartment buildings.

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 60728-6:2011, *Cable networks for television signals, sound signals and interactive services – Part 6: Optical equipment*

IEC 60728-101:2016, *Cable networks for television signals, sound signals and interactive services – Part 101: System performance of forward paths loaded with digital channels only*

IEC 60728-113:2018, *Cable networks for television signals, sound signals and interactive services – Part 113: Optical systems for broadcast signal transmissions loaded with digital channels only*

IEC 60728-13-1:2017, *Cable networks for television signals, sound signals and interactive services – Part 13-1: Bandwidth expansion for broadcast signal over FTTH system*

IEC 60825-1, *Safety of laser products – Part 1: Equipment classification and requirements*

IEC 60825-2, *Safety of laser products – Part 2: Safety of optical fibre communication systems (OFCSs)*

IEC 60825-12, *Safety of laser products – Part 12: Safety of free space optical communication systems used for transmission of information*

IEC 61280-1-1, *Fibre optic communication subsystem basic test procedures – Part 1-1: Test procedures for general communication subsystems – Transmitter output optical power measurement for single-mode optical fibre cable*

IEC 61280-1-3, *Fibre optic communication subsystem test procedures – Part 1-3: General communication subsystems – Measurement of central wavelength, spectral width and additional spectral characteristics*

3 Terms, definitions, graphical symbols and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

3.1.1
BER
bit error ratio
ratio between erroneous bits and the total number of transmitted bits

[SOURCE: IEC 60728-1:2014, 3.1.9]

3.1.2
central wavelength
average of those wavelengths at which the amplitude of a light source reaches or last falls to half of the maximum amplitude

[SOURCE: IEC 60728-6:2011, 3.1.23, modified – The term "centre wavelength" has been replaced by "central wavelength".]

3.1.3
MER
modulation error ratio
sum of the sequence of the squares of the magnitudes of the ideal symbol vector divided by the sum of the squares of magnitudes of the symbol error vectors of a sequence of symbols

[SOURCE: IEC 60728-1:2014, 3.1.61, modified – The note to entry has been omitted.]

3.1.4
optical amplifier
optical waveguide device containing a suitably pumped, active medium which is able to amplify an optical signal

Note 1 to entry: There are several methods based on wavelength can used for amplification. EDFA (erbium-doped fibre amplifier) is used for the optical amplifier of cable television FTTH network.

[SOURCE: IEC TR 61931:1998, 2.7.75, modified – Note 1 to entry has been added.]