

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.
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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)

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(IEC 60728-115:2022)

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European foreword

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INTERNATIONAL STANDARD

NORME INTERNATIONALE



**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
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Partie 115: Systèmes optiques internes aux immeubles pour la transmission de
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CABLE NETWORKS FOR TELEVISION SIGNALS, SOUND SIGNALS AND INTERACTIVE SERVICES –

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

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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 be 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.]