

<b>STN</b>	<b>Káblové siete pre televízne signály, rozhlasové signály a interaktívne služby</b> <b>Časť 13-1: Rozšírenie šírky pásma pre signál vysielaný cez systém FTTH</b>	<b>STN</b> <b>EN 60728-13-1</b>  36 7211
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Cable networks for television signals, sound signals and interactive services - Part 13-1: Bandwidth expansion for broadcast signal over FTTH system

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 02/18

Obsahuje: EN 60728-13-1:2017, IEC 60728-13-1:2017, IEC 60728-13-1:2017/COR1:2017

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EUROPEAN STANDARD

**EN 60728-13-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2017

ICS 33.160.01; 33.180.01

Supersedes EN 60728-13-1:2012

English Version

**Cable networks for television signals, sound signals and  
interactive services - Part 13-1: Bandwidth expansion for  
broadcast signal over FTTH system  
(IEC 60728-13-1:2017 + COR1:2017)**

Réseaux de distribution par câbles pour signaux de  
télévision, signaux de radiodiffusion sonore et services  
interactifs - Partie 13-1: Extension de largeur de bande pour  
signaux radiodiffusés sur réseau FttH  
(IEC 60728-13-1:2017 + COR1:2017)

Kabelnetze für Fernsehsignale, Tonsignale und interaktive  
Dienste - Teil 13-1: Bandbreitenerweiterung für  
Rundfunksignale in FTTH-Systemen  
(IEC 60728-13-1:2017 + COR1:2017)

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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**

## European foreword

The text of document 100/2927/FDIS, future edition 2 of IEC 60728-13-1 prepared by Technical Area 5 “Cable networks for television signals, sound signals and interactive services” of IEC/TC 100 “Audio, video and multimedia systems and equipment” was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60728-13-1:2017.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2018-05-31
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2020-08-31

This document supersedes EN 60728-13-1:2012.

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The text of the International Standard IEC 60728-13-1:2017+ COR1:2017 was approved by CENELEC as a European Standard without any modification.

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

IEC 60068 Series	NOTE	Harmonized as EN 60068 Series.
IEC 60529:1989	NOTE	Harmonized as EN 60529:1991.
IEC 60728-1-1	NOTE	Harmonized as EN 60728-1-1.
IEC 60728-1-2:2014	NOTE	Harmonized as EN 60728-1-2:2014.
IEC 60728-3	NOTE	Harmonized as EN 60728-3.
IEC 60728-5	NOTE	Harmonized as EN 60728-5.
IEC 60728-101:2016	NOTE	Harmonized as EN 60728-101:2017.
IEC 60825-1	NOTE	Harmonized as EN 60825-1.
IEC 60825-2	NOTE	Harmonized as EN 60825-2.
IEC 60825-12	NOTE	Harmonized as EN 60825-12.
IEC 60875-1	NOTE	Harmonized as EN 60875-1.
IEC 61280-1-1	NOTE	Harmonized as EN 61280-1-1.
IEC 61280-2-2	NOTE	Harmonized as EN 61280-2-2.
IEC 61280-2-9	NOTE	Harmonized as EN 61280-2-9.
IEC 61281-1	NOTE	Harmonized as EN 61281-1.
IEC 61290-1-2	NOTE	Harmonized as EN 61290-1-2.
IEC 61290-1-3	NOTE	Harmonized as EN 61290-1-3.
IEC 61291-1:2012	NOTE	Harmonized as EN 61291-1:2012.
IEC 61300-3-2	NOTE	Harmonized as EN 61300-3-2.
IEC 61754-13	NOTE	Harmonized as EN 61754-13.
IEC 61755-1	NOTE	Harmonized as EN 61755-1.

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-1	2013	Environmental testing - Part 1: General and guidance	EN 60068-1	2014
IEC 60728-1	2014	Cable networks for television signals, sound signals and interactive services - Part 1: System performance of forward paths	EN 60728-1	2014
IEC 60728-6	2011	Cable networks for television signals, sound signals and interactive services - Part 6: Optical equipment	EN 60728-6	2011
IEC 60728-13	2010	Cable networks for television signals, sound signals and interactive services - Part 13: Optical systems for broadcast signal transmissions	EN 60728-13	2010
IEC 60728-113	- <sup>1)</sup>	Cable networks for television signals, sound signals and interactive services - Part 113: Optical systems for broadcast signal transmissions loaded with digital channels only	EN 60728-113	- <sup>1)</sup>
IEC 61280-1-3	2010	Fibre optic communication subsystem test procedures - Part 1-3: General communication subsystems - Central wavelength and spectral width measurement	EN 61280-1-3	2010
ITU-T Recommendation G.694.1	-	Spectral grids for WDM applications: DWDM frequency grid	-	-
ITU-T Recommendation G.694.2	-	Spectral grids for WDM applications: CWDM wavelength grid	-	-

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<sup>1)</sup> At draft stage.



# INTERNATIONAL STANDARD



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





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# INTERNATIONAL STANDARD



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

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references .....	8
3 Terms, definitions, symbols and abbreviated terms.....	8
3.1 Terms and definitions.....	8
3.2 Symbols.....	15
3.3 Abbreviated terms.....	16
4 Overview .....	18
5 Optical system reference model.....	18
6 Preparation of measurement.....	20
6.1 Environmental conditions .....	20
6.1.1 Standard measurement conditions .....	20
6.1.2 Standard operating condition .....	20
6.1.3 Standard signal and measuring equipment .....	20
6.2 Accuracy of measuring equipment .....	21
6.3 Source power.....	21
7 Methods of measurement .....	21
7.1 Measuring points .....	21
7.2 Measuring parameters .....	22
7.3 Optical power.....	23
7.4 Optical wavelength .....	23
7.5 Signal level and signal-to-noise ratio.....	23
7.5.1 General .....	23
7.5.2 Measurement setup .....	23
7.5.3 Measurement conditions .....	24
7.5.4 Measurement method for xPSK signals.....	24
7.5.5 Presentation of the results .....	24
7.6 <i>RIN</i> and signal-to-noise ratio .....	24
7.6.1 General .....	24
7.6.2 Measuring points and measurement setup.....	25
7.6.3 Measurement conditions .....	25
7.6.4 System <i>RIN</i> measurement method .....	26
7.6.5 <i>S/N</i> calculation based on <i>RIN</i> value .....	27
7.6.6 Calculation of component <i>RIN</i> .....	28
7.7 Optical modulation index.....	29
7.8 Signal-to-crosstalk ratio ( <i>SCR</i> ).....	29
8 Specification of optical system for broadcast signal transmission .....	29
8.1 Digital broadcast system over optical network.....	29
8.2 International TV systems.....	29
8.3 Relationship between <i>RIN</i> and <i>S/N</i> .....	30
8.4 Optical wavelength .....	32
8.5 Frequency of source signal .....	33
8.6 Optical system specification for satellite signal transmission.....	33
8.7 <i>S/N</i> ratio specification for in-house and in-building wirings .....	34
8.8 Crosstalk due to optical fibre non-linearity .....	35

8.9	Single frequency interference level due to fibre non-linearity .....	35
8.10	Environment condition .....	35
Annex A (informative)	Actual service systems and design considerations .....	36
A.1	General.....	36
A.2	Metropolitan type CATV .....	36
A.3	Municipal type CATV.....	37
A.4	Poor signal reception type CATV .....	38
A.5	System reference model .....	38
A.5.1	System parameters.....	38
A.5.2	Operating environment .....	39
A.6	Guidelines for actual operation .....	47
A.6.1	Optical transmitter .....	47
A.6.2	Optical amplifier .....	47
Annex B (informative)	Wavelength division multiplexing.....	48
B.1	Optical wavelength grid (optical frequency grid).....	48
B.2	Nominal central frequencies and wavelengths.....	48
B.3	Notes regarding wavelength division multiplexing .....	50
B.3.1	Crosstalk between two wavelengths .....	50
B.3.2	Receiving two wavelengths by single V-ONU .....	52
Annex C (informative)	Minimum wavelength separation .....	54
C.1	Optical beat interference.....	54
C.2	Range of wavelength variation .....	55
C.3	WDM system using optical filters and couplers.....	56
Annex D (informative)	Relation between $S/N$ degradation and rain attenuation.....	59
Bibliography.....		61
Figure 1	– FTTH Cable TV system using one-wavelength .....	19
Figure 2	– FTTH Cable TV system using two wavelengths .....	19
Figure 3	– Performance specified points of the optical system .....	19
Figure 4	– Measuring points in a typical video distribution system .....	22
Figure 5	– Measurement of optical wavelength .....	23
Figure 6	– Measurement of signal level and signal-to-noise ratio .....	24
Figure 7	– Measuring points in a typical FTTH system .....	25
Figure 8	– $RIN$ measurement setup .....	25
Figure 9	– Performance allocation and measuring points .....	29
Figure 10	– Section of $S/N$ ratio specification (38 dB) for in-house wiring .....	34
Figure 11	– Section of $S/N$ ratio specification (24 dB) for in-building wiring (in case of coaxial cable distribution after V-ONU) .....	35
Figure A.1	– Example of a multi-channel service system of one million terminals .....	37
Figure A.2	– Example of a multi-channel service system with 2 000 terminals.....	37
Figure A.3	– Example of a multi-channel with CS supplementary service system for 2 000 terminals.....	37
Figure A.4	– Example of a re-transmission service system with 72 terminals .....	38
Figure A.5	– Example of a re-transmission service system with 144 terminals .....	38
Figure A.6	– System performance calculation for model A .....	41
Figure A.7	– System performance calculation for model B .....	42

Figure A.8 – System performance calculation for model C .....	43
Figure A.9 – System performance calculation for model D .....	44
Figure A.10 – System performance calculation for model E.....	45
Figure A.11 – System performance calculation for model F.....	46
Figure B.1 – Linear crosstalk between two wavelengths.....	51
Figure B.2 – Wavelength dependency of Raman crosstalk .....	51
Figure B.3 – Nonlinear crosstalk between two wavelengths .....	52
Figure B.4 – Frequency dependency of cross-phase modulation .....	52
Figure B.5 – $S/N$ degradation (two wavelengths into one V-ONU case).....	53
Figure C.1 – Experimental results of $RIN$ degradation due to optical beat .....	55
Figure C.2 – Wavelength variation of a DWDM transmitter against ambient temperature.....	56
Figure C.3 – Wavelength variation of a CWDM transmitter against ambient temperature.....	56
Figure C.4 – Example of wavelength division multiplexing using WDM filter .....	57
Figure C.5 – Example of CWDM filter design .....	57
Figure C.6 – Example of wavelength division multiplexing using optical coupler .....	58
Table 1 – Level of RF signals.....	13
Table 2 – Measuring instruments .....	21
Table 3 – Measuring points and measured parameters .....	22
Table 4 – Parameters used to calculate $S/N$ when signals of multiple wavelengths are received by a single V-ONU .....	28
Table 5 – Minimum RF signal-to-noise ratio requirements in operation.....	30
Table 6 – Types of broadcast services .....	31
Table 7 – Type of service and minimum operational $RIN$ values for satellite services .....	32
Table 8 – performance of optical wavelength and power .....	33
Table 9 – Optical system specification .....	33
Table 10 – Section of $S/N$ ratio specification for in-house/in-building wiring.....	34
Table 11 – Interference level due to fibre non-linearity (single frequency interference) .....	35
Table A.1 – Basic system parameters (Japan) .....	39
Table B.1 – Example nominal central frequencies of the DWDM grid .....	49
Table B.2 – Nominal central wavelength for spacing of 20 nm (ITU-T G.694.2) .....	50

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**CABLE NETWORKS FOR TELEVISION SIGNALS,  
SOUND SIGNALS AND INTERACTIVE SERVICES –****Part 13-1: Bandwidth expansion for broadcast signal over FTTH system**

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International Standard IEC 60728-13-1 has been prepared by technical area 5: Cable networks for television signals, sound signals and interactive services, of IEC technical committee 100: Audio, video and multimedia systems and equipment.

This second edition cancels and replaces the first edition published in 2012. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition.

- Transmission frequency was expanded in order to achieve satellite signal for 4 K video service. The transmission frequency over FTTH would be 3 300 MHz.
- High signal modulation case like 16 APSK and 32 APSK was added in order to correspond to transmission for 4 K video service.

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

FDIS	Report on voting
100/2927/FDIS	100/2959/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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## INTRODUCTION

Standards and deliverables of the IEC 60728 series deal with cable networks including equipment and associated methods of measurement for headend reception, processing and distribution of television and sound signals and for processing, interfacing and transmitting all kinds of data signals for interactive services using all applicable transmission media. These signals are typically transmitted in networks by frequency-multiplexing techniques.

This includes for instance

- regional and local broadband cable networks,
- extended satellite and terrestrial television distribution systems,
- individual satellite and terrestrial television receiving systems,

and all kinds of equipment, systems and installations used in such cable networks, distribution and receiving systems.

The extent of this standardization work is from the antennas and/or special interfaces to the headend or other interface points to the network up to any terminal interface of the customer premises equipment.

The standardization work will consider coexistence with users of the RF spectrum in wired and wireless transmission systems.

The standardization of any user terminals (i.e. tuners, receivers, decoders, multimedia terminals, etc.) as well as of any coaxial, balanced and optical cables and accessories thereof is excluded.

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

## Part 13-1: Bandwidth expansion for broadcast signal over FTTH system

### 1 Scope

The purpose of this part of IEC 60728 is the precise description of an FTTH (fibre to the home) system for expanding broadband broadcast signal transmission from CATV services only, towards CATV plus broadcast satellite (BS) plus communication satellite (CS) services, additionally to other various signals such as data services.

The scope is limited to the RF signal transmission over FTTH systems.

### 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 60068-1:2013, *Environmental testing – Part 1: General and guidance*

IEC 60728-1:2014, *Cable networks for television signals, sound signals and interactive services – Part 1: System performance of forward paths*

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

IEC 60728-13:2010, *Cable networks for television signals, sound signals and interactive services – Part 13: Optical systems for broadcast signal transmissions*

IEC 60728-113:—, *Cable networks for television signals, sound signals and interactive services – Part 13: Optical systems for broadcast signal transmissions<sup>1</sup>*

IEC 61280-1-3:2010, *Fibre optic communication subsystem test procedures – Part 1-3: General communication subsystems – Central wavelength and spectral width measurement*

ITU-T Recommendation G.694.1, *Spectral grids for WDM applications: DWDM frequency grid*

ITU-T Recommendation G.694.2, *Spectral grids for WDM applications: CWDM wavelength grid*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**