

INTERNATIONAL STANDARD

NORME INTERNATIONALE



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

**Réseaux de distribution par câbles pour signaux de télévision, signaux de
radiodiffusion sonore et services interactifs –
Partie 113: Systèmes optiques pour la transmission de signaux de radiodiffusion
soumis à une charge de porteuses exclusivement numériques**



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CONTENTS

FOREWORD.....	8
INTRODUCTION.....	10
1 Scope.....	11
2 Normative references	11
3 Terms, definitions, graphical symbols and abbreviated terms.....	12
3.1 Terms and definitions.....	12
3.2 Graphical symbols	19
3.3 Abbreviated terms.....	20
4 Optical system reference model.....	21
4.1 Overview.....	21
4.2 Over-all FTTH system reference model.....	21
4.3 Reference models for the optical systems for broadcast signal transmissions	24
4.3.1 Optical wavelength for FTTH system	24
4.3.2 Reference models.....	24
4.4 Specified performance points of the optical system.....	25
5 Preparation of measurement.....	25
5.1 Environmental conditions	25
5.1.1 Standard measurement conditions	25
5.1.2 Temperature and humidity	26
5.1.3 Setting up the measuring setup and system under test	26
5.1.4 AGC/ALC operation	26
5.1.5 Impedance matching between pieces of equipment	26
5.1.6 Standard operating condition	26
5.1.7 Standard signal and measuring equipment	26
5.2 Accuracy of measuring equipment	27
5.3 Source power.....	27
6 Methods of measurement	27
6.1 Measuring points and items	27
6.1.1 General	27
6.1.2 Measuring points	28
6.1.3 Measured parameters.....	28
6.2 General measurement requirement.....	29
6.2.1 General	29
6.2.2 Input specification.....	29
6.2.3 Standard measurement conditions.....	29
6.2.4 Precautions for measurements	30
6.3 Optical power.....	30
6.3.1 General	30
6.3.2 Measuring setup	30
6.3.3 Measuring method	31
6.3.4 Precautions for measurement.....	31
6.3.5 Presentation of the results	31
6.4 Optical wavelength.....	32
6.4.1 Introduction	32
6.4.2 Method of measurement	32
6.4.3 Presentation of the results	32

6.5	SINR (signal-to-intermodulation and noise ratio) below 1GHz	32
6.5.1	General	32
6.5.2	Measuring setup	33
6.5.3	Measuring conditions	33
6.5.4	Precautions for measurement	33
6.5.5	Presentation of the results	34
6.6	Relative intensity noise (RIN) of optical signal	34
6.6.1	General	34
6.6.2	Measuring setup	34
6.6.3	Measurement conditions	35
6.6.4	System RIN measuring method	35
6.6.5	SINR calculation based on RIN value	37
6.6.6	Component RIN calculation	37
6.6.7	Example for calculating of SINR	39
6.7	Optical modulation index	41
6.8	Signal-to-crosstalk ratio (SCR)	41
6.8.1	General	41
6.8.2	Equipment required	41
6.8.3	General measurement requirements	41
6.8.4	Procedure	41
6.8.5	Potential sources of error	42
6.8.6	Presentation of the results	42
6.9	RF signal-to-intermodulation and noise ratio (SINR) of satellite broadcast signals	42
6.9.1	General	42
6.9.2	Measuring setup	43
6.9.3	Equipment required	43
6.9.4	Measurement procedure	43
6.9.5	Presentation of the results	44
6.10	System BER (bit error ratio)	44
6.10.1	Overview	44
6.10.2	Connection of the equipment	44
6.10.3	Measurement procedure	45
6.10.4	Presentation of the results	45
6.11	SINR versus BER measurement	45
6.11.1	General	45
6.11.2	Connection of the equipment	45
6.11.3	Presentation of the results	46
6.12	System noise margins	47
6.12.1	General	47
6.12.2	Connection of the equipment	47
6.12.3	Measurement procedure	48
6.12.4	Presentation of the results	48
6.13	Modulation error ratio (MER)	49
6.13.1	General	49
6.13.2	Connection of the equipment	49
6.13.3	Measurement procedure	50
6.13.4	Presentation of the results	50
6.14	In-band frequency characteristics between optical transmitter and V-ONU	50

6.14.1	Overview	50
6.14.2	Measurement setup	50
6.14.3	Measuring method	51
6.14.4	Presentation of the results	51
7	Specification of the optical system for broadcast signal transmission.....	52
7.1	Digital broadcast system over optical network.....	52
7.2	RF signal levels at system outlet.....	52
7.3	RF signal-to-intermodulation and noise ratio and performance allocation	53
7.4	Relationship between RIN and SINR.....	58
7.4.1	Type of broadcast services	58
7.4.2	Types of broadcast services and relative signal level.....	59
7.4.3	RIN performance requirements	60
7.5	Optical wavelength.....	62
7.6	Frequency of source signal	63
7.7	Level difference between adjacent channels	63
7.8	BER at headend input	65
7.9	MER	65
7.10	SINR specification for in-house and in-building wirings	66
7.11	In-band frequency characteristics	68
7.12	Electrical signal interference	69
7.13	Crosstalk due to optical fibre non-linearity	71
7.14	Interference due to intermodulation noise caused by fibre non-linearity.....	72
7.15	Environmental conditions	72
Annex A (informative)	Actual service systems and design considerations	73
A.1	General.....	73
A.2	Multi-channel service system	73
A.2.1	General	73
A.2.2	Operating conditions.....	74
A.2.3	Operating environment	74
A.3	Re-transmission service system.....	75
A.3.1	General	75
A.3.2	Operating conditions.....	75
A.3.3	Operating environment	76
A.4	SINR calculation of optical network.....	76
A.5	System reference model	77
A.6	Hints for actual operation	81
A.6.1	Optimum operation	81
A.6.2	Key issues to be specified	81
Annex B (informative)	BER extrapolation method.....	82
Annex C (informative)	Optical system degradations	84
C.1	System degradation factors.....	84
C.2	Non-linear degradation	85
C.2.1	Degradation factors	85
C.2.2	Stimulated Brillouin scattering (SBS)	85
C.2.3	Stimulated Raman scattering (SRS).....	86
C.2.4	Self-phase modulation (SPM)	89
C.2.5	Cross-phase modulation (XPM)	89

Annex D (informative) Measurement of parameters (R , I_{d0} , I_{eq} and G) required for RIN calculation	90
D.1 Measurement of the responsivity (R)	90
D.2 Measurement of dark current (I_{d0})	90
D.3 Measurement of equivalent noise current density (I_{eq})	90
D.4 Measurement of gain (G)	91
Annex E (informative) Measurement of peak and average signal levels of digitally modulated signals	92
E.1 General	92
E.2 Peak and average power measurement using CCDF	92
E.3 Measurement method of CCDF	94
E.3.1 General	94
E.3.2 Measurement procedure	94
E.3.3 Estimation of BER from the CCDF measurement result	95
E.3.4 Examples of CCDF measurements	96
E.4 Performance evaluation of the FTTH system	97
E.4.1 General	97
E.4.2 Evaluation procedure	97
E.5 Potential sources of error	98
Annex F (informative) Clipping noise	99
Annex G (informative) Relation between SINR degradation and rain attenuation	100
G.1 Relation between SINR and G/T	100
G.2 SINR degradation of satellite receiving system due to rain attenuation	101
Bibliography	102
Figure 1 – Example of FTTH system for television and sound signal	23
Figure 2 – FTTH Cable TV system using one wavelength	25
Figure 3 – FTTH Cable TV system using two wavelengths	25
Figure 4 – Specified performance points of the optical system	25
Figure 5 – Typical optical video distribution system	28
Figure 6 – Test setup for optical power measurement using a wavelength filter	30
Figure 7 – Test setup for optical power measuring using a WDM coupler	31
Figure 8 – Measurement of optical wavelength without a WDM coupler	32
Figure 9 – Measurement of optical wavelength using a WDM coupler	32
Figure 10 – Test setup for RF signal to intermodulation and noise ratio measurement	33
Figure 11 – Test setup for RIN measurement	35
Figure 12 – Test setup for signal to crosstalk measurement	41
Figure 13 – Setup for the measurement of SINR for satellite broadcast signals	43
Figure 14 – Test setup for BER measurement	44
Figure 15 – Test setup for SINR versus BER measurement procedure	45
Figure 16 – Extrapolation method of BER measurement	46
Figure 17 – Example of SINR versus BER characteristics	47
Figure 18 – Test setup for system noise margin measurement	48
Figure 19 – Example of system noise margin characteristics	49
Figure 20 – Test setup for MER measurement	49

Figure 21 – Example of result of MER measurement (64-QAM modulation format).....	50
Figure 22 – Setup for the measurement of in-band frequency characteristics	51
Figure 23 – Measurement example of in-band frequency characteristics	51
Figure 24 – Performance specified points	52
Figure 25 – Permissible signal level of adjacent channels (ISDB-T, ISDB-C and ISDB-C2)	64
Figure 26 – Section SINR for SDU wiring (specified by electrical signal)	67
Figure 27 – Section SINR for MDU wiring (specified by electrical signal)	68
Figure 28 – Section SINR for MDU wiring (specified by optical signal)	68
Figure 29 – Signal level difference with 3rd order interference signal (ISDB-T)	69
Figure 30 – Signal level difference with 3rd order interference signal (ISDB-C 64QAM)	70
Figure 31 – Signal level difference with 3rd order interference signal (ISDB-C 256QAM)	70
Figure 32 – Level difference between signal and reflected (echo) signal (ISDB-T)	70
Figure 33 – Level difference between signal and reflected (echo) signal (ISDB-C 64QAM)	71
Figure 34 – Level difference between signal and reflected (echo) signal (ISDB-C 256QAM)	71
Figure A.1 – Example of a multi-channel service system of one million terminals	73
Figure A.2 – Example of a multi-channel service system of 2 000 terminals	74
Figure A.3 – Example of re-transmission service system of 72 terminals.....	75
Figure A.4 – Example of re-transmission service system of 144 terminals.....	75
Figure A.5 – Model 1 system performance calculation.....	79
Figure A.6 – Model 4 system performance calculation.....	80
Figure B.1 – Extrapolation method of BER measurement	82
Figure B.2 – BER characteristics for 256-QAM, 1 024-QAM and 4 096-QAM (extrapolation method)	83
Figure C.1 – Reflection model.....	84
Figure C.2 – Degradation factors of optical transmission system.....	85
Figure C.3 – SBS generation image	85
Figure C.4 – Interference between two wavelengths	87
Figure C.5 – Simulation of SRS (OLT transmission power versus D/U)	87
Figure C.6 – Simulation of SRS (D/U in arbitrary unit versus fibre length)	88
Figure C.7 – Fibre length of the first peak of SRS D/U versus frequency.....	88
Figure C.8 – GE-PON idle pattern spectrum (ISO/IEC/IEEE 8802-3:2017 1 000 Base-PX) (62,5 MHz = 1 250 Mbps/20 bit).....	89
Figure D.1 – Measurement of gain (G)	91
Figure E.1 – Typical CCDF curves for OFDM and M-QAM signals.....	93
Figure E.2 – CCDF measurement setup	94
Figure E.3 – CCDF measurement example	95
Figure E.4 – SER vs SINR performance in an AWGN channel	96
Figure E.5 – Example of CCDF measurements	96
Figure E.6 – Performance evaluation of digital optical signals in the FTTH system.....	97
Figure E.7 – CCDF measurement bandwidth.....	97
Figure F.1 – Clipping effects in laser diode static curve (IL curve).....	99
Figure F.2 – Clipping noise, zero span, sweep time 100 μ s.....	99

Table 1 – Level of RF signals.....	16
Table 2 – Optical wavelength for FTTH system	24
Table 3 – Frequency range	24
Table 4 – Measuring equipment	27
Table 5 – Measuring points and measured parameters	29
Table 6 – Parameters used for the calculation of SINR	39
Table 7 – RF signal noise bandwidth	40
Table 8 – Digital signal levels at the system outlet	53
Table 9 – Minimum SINR (SDU case)	54
Table 10 – Minimum SINR (MDU case).....	55
Table 11 – Minimum RF SINR requirements in operation	56
Table 12 – Types of broadcast services	58
Table 13 – Types of broadcast services and relative signal level	60
Table 14 – Minimum operational RIN values for digital broadcast services using the frequency band below 1 000 MHz	60
Table 15 – Type of service and minimum operational RIN values for satellite services.....	61
Table 16 – Performance of optical wavelength and power.....	62
Table 17 – Minimum MER Performance ^a for FTTH systems.....	66
Table 18– Section SINR for in-house/in-building wiring.....	67
Table 19 – In-band frequency characteristics specification.....	68
Table 20 – Limits for in-channel electrical signal interference	69
Table 21 – Interference level due to fibre non-linearity.....	72
Table 22 – Environmental conditions	72
Table A.1 – Operating conditions of a multi-channel service system	74
Table A.2 – Operating conditions of re-transmission service system	76
Table A.3 – Basic system parameters for multi-channel and re-transmission service systems	78
Table C.1 – Disturbance parameter of Raman crosstalk.....	86

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

Part 113: Optical systems for broadcast signal transmissions loaded with digital channels only

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This second edition cancels and replaces the first edition published in 2018 and IEC 60728-13-1:2017. This edition constitutes a technical revision.

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

- a) IEC 60728-13-1, which deals with the bandwidth expansion for broadcast signal over FTTH systems, has been merged with this document;
- b) a table containing the digital signal level at the system outlet (Table 8) has been added.

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

Draft	Report on voting
100/3900/FDIS	100/3920/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.

The list of all the parts of 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/publications.

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INTRODUCTION

International Standards and other 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 ranges from antennas and/or special interfaces to headends, or other interface points on the network up to any terminal interface of the equipment on the customer's premises.

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) 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 113: Optical systems for broadcast signal transmissions loaded with digital channels only

1 Scope

This part of IEC 60728 is applicable to optical transmission systems for broadcast signal transmission that consist of headend equipment, optical transmission lines, in-house wirings and system outlets. 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 optical distribution systems between headend equipment and system outlets in order to assess the system performance and its performance limits.

In this document, the upper signal frequency is limited to about 3 300 MHz.

The purpose of this part of IEC 60728 is to describe the system specifications of FTTH (fibre to the home) networks for digitally modulated broadcast signal transmission. This document is also applicable to broadcast signal transmission using a telecommunication network if it satisfies the performance of the optical portion of the system defined in this document. This document describes RF transmission for fully digitalized broadcast and narrowcast (limited area distribution of broadcast) signals over FTTH, and introduces the xPON system as a physical layer media. The detailed description of the physical layer is out of scope of this document. The scope is limited to downstream RF video signal transmission over FTTH; IP transport technologies, such as IP Multicast and associate protocols, which require a two-way optical transmission system, are out of scope of this document.

Some interference effects occurring between the telecommunication system and the broadcast system are addressed in Clause 7.

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 TR 60728-6-1:2006, *Cable networks for television signals, sound signals and interactive services – Part 6-1: System guidelines for analogue optical transmission systems*

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