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INTERNATIONAL STANDARD



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

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references.....	8
3 Terms, definitions, symbols and abbreviations.....	9
3.1 Terms and definitions.....	9
3.2 Symbols.....	15
3.3 Abbreviations.....	16
4 Optical system reference model.....	17
5 Preparation of measurement.....	19
5.1 Environmental conditions.....	19
5.1.1 Standard measurement conditions.....	19
5.1.2 Temperature and humidity.....	20
5.1.3 Setting up the measuring setup and system under test.....	20
5.1.4 AGC operation.....	20
5.1.5 Impedance matching between pieces of equipment.....	20
5.1.6 Standard operating condition.....	20
5.1.7 Standard signal and measuring equipment.....	20
5.2 Accuracy of measuring equipment.....	21
5.3 Source power.....	21
6 Methods of measurement.....	21
6.1 Measuring points and items.....	21
6.1.1 General.....	21
6.1.2 Measuring points.....	21
6.1.3 Measured parameters.....	21
6.2 Optical power.....	22
6.2.1 General.....	22
6.2.2 Measuring setup.....	22
6.2.3 Measuring method.....	23
6.2.4 Precaution for measurement.....	23
6.2.5 Presentation of the results.....	24
6.3 Carrier level and carrier-to-noise ratio.....	24
6.3.1 General.....	24
6.3.2 Measuring setup.....	24
6.3.3 Measuring conditions.....	24
6.3.4 Measuring method for analogue signals (AM-VSB).....	24
6.3.5 Measuring method for digitally modulated signals (64 QAM, OFDM).....	25
6.3.6 Precautions for measurement.....	25
6.3.7 Presentation of the results.....	25
6.4 Carrier-to-noise ratio defined by optical signal.....	25
6.4.1 General.....	25
6.4.2 Measuring setup.....	26
6.4.3 Measuring conditions.....	27
6.4.4 System <i>RIN</i> measuring method.....	27
6.4.5 <i>C/N</i> calculation based on <i>RIN</i> value.....	29
6.4.6 Component <i>RIN</i> calculation.....	29

6.5	Optical modulation index	31
6.6	Carrier-to-crosstalk ratio (CCR).....	31
6.6.1	General	31
6.6.2	Equipment	31
6.6.3	General measurements	32
6.6.4	Procedure.....	32
6.6.5	Potential sources of error	33
6.6.6	Presentation of the results.....	33
7	Specification of optical system for broadcast signal transmission	33
7.1	Analogue and digital broadcast system over optical network	33
7.2	International TV systems	34
7.3	Relationship between <i>R/N</i> and <i>C/N</i>	35
7.4	Optical wavelength	36
7.5	Frequency of source signal	36
7.6	Optical system specification for broadcast signal transmission	36
7.7	<i>C/N</i> ratio specification for in-house and in-building wirings	37
7.8	Crosstalk due to optical fibre non-linearity	39
7.9	Single frequency interference level due to fibre non-linearity	40
7.10	Environmental conditions	40
Annex A	(informative) Actual service systems and design considerations	41
Annex B	(informative) Optical system overview.....	56
Annex C	(informative) Optical system degradations	60
Annex D	(normative) Measurement of parameters (<i>R</i> , I_{d0} , I_{eq} and <i>G</i>) required for <i>R/N</i> calculation	66
Bibliography	68
Figure 1	– Optical system reference model for one-fibre solution	18
Figure 2	– Optical system reference model for two-fibres solution.....	18
Figure 3	– Example of PON triplexer.....	19
Figure 4	– Performance specified points of the optical system	19
Figure 5	– Typical optical video distribution system.....	21
Figure 6	– Measurement of optical power using a WDM coupler	23
Figure 7	– Measurement of optical power using a wavelength filter	23
Figure 8	– Arrangement of test equipment for carrier-to-noise ratio measurement.....	24
Figure 9	– Measuring points in the optical cable TV network	26
Figure 10	– <i>R/N</i> measurement setup.....	27
Figure 11	– Arrangement of test equipment for measuring other services crosstalk.....	32
Figure 12	– Performance allocation and measuring points	33
Figure 13	– Section of <i>C/N</i> ratio specification (45 dB) for in-house wiring (specified for electrical signals).....	38
Figure 14	– Section of <i>C/N</i> ratio specification for in-house wiring (specified for optical signals).....	39
Figure A.1	– Example of a multi-channel service system of one million terminals	41
Figure A.2	– Example of a multi-channel service system of 2 000 terminals	42
Figure A.3	– Example of re-transmission service system of 72 terminals.....	43
Figure A.4	– Example of re-transmission service system of 144 terminals.....	43

Figure A.5 – Model No.1 of a system performance calculation	47
Figure A.6 – Model No.2 of a system performance calculation	48
Figure A.7 – Model No.3 a of system performance calculation	49
Figure A.8 – Model No.4 of a system performance calculation	50
Figure A.9 – Model No.5 of a system performance calculation	51
Figure A.10 – Model No.6 of a system performance calculation	52
Figure A.11 – Model No.7 of system performance calculation	53
Figure B.1 – Topology of optical system	56
Figure B.2 – Network composition.....	57
Figure B.3 – Example of SS system	58
Figure B.4 – Example of ADS system.....	58
Figure B.5 – Example of PON system	59
Figure C.1 – Reflection model.....	60
Figure C.2 – Degradation factors of optical transmission system.....	61
Figure C.3 – SBS generation image	61
Figure C.4 – Interference between two wavelengths	63
Figure C.5 – Simulation of SRS(OLT transmission power versus D/U)	63
Figure C.6 – Simulation of SRS (D/U in arbitrary unit versus fibre length).....	64
Figure C.7 – Fibre length of the first peak of SRS D/U versus frequency.....	64
Figure C.8 – GE-PON idle pattern spectrum (IEEE 802.3ah 1000Base-PX) (62,5 MHz = 1 250 Mbps/20 bit).....	65
Figure D.1 – Measurement of gain (G).....	67
Table 1 – Level of RF signals.....	12
Table 2 – Measuring instruments	20
Table 3 – Measuring points and measured parameters	22
Table 4 – Parameters used for the calculation of carrier-to-noise ratio (C/N).....	30
Table 5 – Minimum C/N requirements in operation	34
Table 6 – Minimum RF signal-to-noise ratio requirements in operation.....	34
Table 7 – Types of broadcast services	36
Table 8 – Type of service and minimum operational R/N values.....	36
Table 9 – Optical system specification	37
Table 10 – Section of C/N ratio specification for in-house/in-building wiring	38
Table 11 – Interference level due to fibre non-linearity.....	40
Table 12 – Environmental conditions	40
Table A.1 – Operating conditions of a multi-channel service system	42
Table A.2 – Operating conditions of re-transmission service system	43
Table A.3 – Basic system parameters for multi-channel and re-transmission service systems	45
Table A.4 – Verified optimum operation	54
Table B.1 – PON systems and main parameters	59
Table C.1 – Disturbance parameter of Raman crosstalk.....	62

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**CABLE NETWORKS FOR TELEVISION SIGNALS,
SOUND SIGNALS AND INTERACTIVE SERVICES –**
Part 13: Optical systems for broadcast signal transmissions

FOREWORD

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International Standard IEC 60728-13 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.

The text of this standard is based on the following documents:

FDIS	Report on voting
100/1623/FDIS	100/1646/RVD

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

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

The list of all the parts of the IEC 60728 series, 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 publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

The contents of the corrigendum of August 2010 have been included in this copy.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

Standards of the IEC 60728 series deal with cable networks including equipment and associated methods of measurement for headend reception, processing and distribution of television signals, sound signals and their associated data signals and for processing, interfacing and transmitting all kinds of signals for interactive services using all applicable transmission media.

This includes

- CATV¹-networks;
- MATV-networks and SMATV-networks;
- individual receiving networks;

and all kinds of equipment, systems and installations installed in such networks.

The extent of this standardization work is from the antennas and/or special signal source inputs to the headend or other interface points to the network up to the terminal input.

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.

¹ This word encompasses the HFC (Hybrid Fibre Cable) networks used nowadays to provide telecommunications services, voice, data, audio and video both broadcast and narrowcast.

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

Part 13: Optical systems for broadcast signal transmissions

1 Scope

This part of IEC 60728 is applicable to optical transmission system for broadcast signal transmission that consists of a head-end equipment, optical transmission lines, in-house wirings and a system outlet. The system is primarily intended for television and sound signals using analogue and/or digital transmission technology. This standard specifies the basic system parameters and methods of measurement for optical distribution system having a system outlet in order to assess the system performance and its performance limits.

The purpose of this part of IEC 60728 is to describe the system specification of FTTH (fibre to the home) network for broadcast signal transmission. This standard is also applicable to the broadcast signal transmission using telecommunication network if it satisfies the optical portion of this standard. This standard describes RF transmission for broadcast and narrowcast (limited area distribution of broadcast) signals over FTTH, and introduces xPON system as a physical layer media. The detailed description of physical layer is out of the scope of this standard. The scope is limited to RF signal transmission over FTTH, thus, it does not include IP transport technologies, such as IP Multicast and associate protocols. Some interference descriptions between telecommunication system and broadcast system addressed in Clause 7 and Annex D should be referred to for detailed explanations. Annex A describes actual service systems with design consideration based on this standard. Annex B gives an overview of the optical transmission systems applicable for broadcast signal transmission.

2 Normative references

The following referenced documents are indispensable for the application 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 60068-1:1988, *Environmental testing – Part 1: General and guidance*

IEC 60728-1:2007, *Cable networks for television signals, sound signals and interactive services – Part 1: System performance of forward paths*

IEC 60728-6:2003, *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 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 (OFCS)*

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

IEC 61291-1:2006, *Optical amplifiers – Part 1: Generic specification*

IEC 61755-1:2005, *Fibre optic connector optical interfaces – Part 1: Optical interfaces for single mode non-dispersion shifted fibres – General and guidance*

IEC 61930:1998, *Fibre optic graphical symbology*

IEC 61931:1998, *Fibre optic – Terminology*

ITU-T Recommendation G.692, *Optical interfaces for multichannel systems with optical amplifiers*

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