SLOVENSKI STANDARD

SIST EN 62028:2004

september 2004

Splošne merilne metode za digitalne televizijske sprejemnike (IEC 62028:2002)

General methods of measurement for digital television receivers (IEC 62028:2002)

ICS 33.160.25

Referenčna številka
SIST EN 62028:2004(en)

EUROPEAN STANDARD **EN 62028**

NORME EUROPÉENNE

EUROPÄISCHE NORM January 2004

ICS 33.160.20

English version

General methods of measurement for digital television receivers
(IEC 62028:2002)

Méthodes de mesures générales pour les récepteurs de télévision numériques
(CEI 62028:2002)

Allgemeine Messverfahren für digitale Fernsehempfänger
(IEC 62028:2002)

This European Standard was approved by CENELEC on 2003-12-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CENELEC
European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 62028:2004 E

Foreword

The text of the International Standard IEC 62028:2002, prepared by IEC TC 100, Audio, video and multimedia systems and equipment, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 62028 on 2003-12-01 without any modification.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2004-12-01

– latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2006-12-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62028:2002 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

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

Publication	Year	Title	EN/HD	Year
IEC 60107-1	1997	Methods of measurement on receivers for television broadcast transmissions Part 1: General considerations - Measurements at radio and video frequencies	EN 60107-1	1997
ISO/IEC 13818-1	2000	Information technology - Generic coding of moving pictures and associated audio information: Systems	-	-
ISO/IEC 13818-4	1998	Part 4: Conformance testing	-	-
ISO/IEC 13818-9	1996	Part 9: Extension for real time interface for system decoders	EN ISO/IEC 13818-9	2000
ITU-R Recommendation BT.500-10	2000	Methodology for the subjective assessment of the quality of television pictures	-	-
-	-	Digital Video Broadcasting (DVB); Framing structure, channel coding and modulation for 11/12 GHz satellite services	EN 300 421	- [1)]
-	-	Digital Video Broadcasting (DVB); Framing structure, channel coding and modulation for cable systems	EN 300 429	- [1)]
-	-	Digital Video Broadcasting (DVB) - Framing structure, channel coding and modulation for digital terrestrial television (DVB-T)	EN 300 744	- [1)]
-	-	Digital Video Broadcasting (DVB); Guidelines on implementation and usage of Service Information (SI)	ETR 211	1997

1) Undated reference.

Publication	Year	Title	EN/HD	Year
		Digital Video Broadcasting (DVB); Specification for Service Information (SI) in DVB systems	ETS 300 468	2000

INTERNATIONAL STANDARD

IEC 62028

First edition
2002-02

General methods of measurement for digital television receivers –

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International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE X

For price, see current catalogue

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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GENERAL METHODS OF MEASUREMENT FOR DIGITAL TELEVISION RECEIVERS

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62028 has been prepared by IEC technical committee 100: Audio, video and multimedia systems and equipment.

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

CDV	Report on voting
100/232/CDV	100/427/RVC

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.

Annexes A, B, and C form an integral part of this standard.

The committee has decided that the contents of this publication will remain unchanged until 2004. At this date, the publication will be

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

GENERAL METHODS OF MEASUREMENT FOR DIGITAL TELEVISION RECEIVERS

1 Scope

IEC 62028 deals with the standard conditions and methods of measurement on digital television receivers which receive digital television broadcast transmissions.

IEC 62028 deals with the determination of performance and allows the comparison of equipment by listing the characteristics which are useful for specifications and by laying down uniform measuring methods of these characteristics. Performance requirements are not specified, since they are specified by other international, regional or domestic standards for the systems.

It does not include the measurements specific to the transmission system, such as;

- measurements on receivers for satellite transmission systems,
- measurements on receivers for terrestrial transmission systems,
- measurements on receivers for cable transmission systems,
- measurements specific to sound channels, and
- measurements specific to data channels.

IEC 62028 does not include methods of measurement on outdoor units and antennas for satellite reception, for which reference is required to other appropriate IEC standards.

IEC 62028 does not deal with general safety matters, for which reference is required to IEC 60065, or other appropriate IEC safety standards, nor with radiation and immunity, which will be dealt with by CISPR.

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 60107-1:1997, *Methods of measurement on receivers for television broadcast transmissions – Part 1: General considerations – Measurements at radio and video frequencies*

ISO/IEC 13818-1:2000, *Information technology – Generic coding of moving pictures and associated audio: Systems*

ISO/IEC 13818-4:1998, *Information technology – Generic coding of moving pictures and associated audio information – Part 4: Conformance testing*

ISO/IEC 13818-9:1996, *Information technology – Generic coding of moving pictures and associated audio information – Part 9: Extension for real time interface for systems decoders*

ITU-R BT.500-10:2000, *Methodology for the subjective assessment of quality of television pictures*

EN 300 421 *Digital video broadcasting (DVB) – Framing structure, channel coding and modulation for 11/12 GHz satellite services*

EN 300 429 *Digital video broadcasting (DVB) – Framing structure, channel coding and modulation for cable systems*

EN 300 744 *Digital video broadcasting (DVB) – Framing structure, channel coding and modulation for digital terrestrial television"*

ETR 211:1997, *Digital video broadcasting (DVB) – Guidelines on implementation and usage of Service Information (SI)*

ETS 300 468:2000, *Digital video broadcasting (DVB) – Specification for Service Information (SI) in DVB systems*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this publication, the following terms and definitions apply:

3.1.1
MPEG-2
refers to the ISO/IEC 13818 series. System coding is defined in part 1, video coding is defined in part 2, audio coding is defined in part 3

3.1.2
multiplex
stream of all the digital data carrying one or more services within a single physical channel

3.1.3
service information (SI)
digital data describing the delivery system, content and scheduling/timing of broadcast data streams etc. It includes MPEG-2 program specific information (PSI) together with independently defined extensions.

3.1.4
transport stream (TS)
a data structure defined in ISO/IEC 13818-1

3.2 Abbreviations

AGC Automatic Gain Controller
ARIB Association of Radio Industries and Business
ASCII American Standard Code for Information Interchange
ATM Asynchronous Transfer Mode
ATSC Advanced Television Systems Committee
BAT Bouquet Association Table
BEP Bit Error Probability
BER Bit Error Rate
BPSK Biphase Shift Keying
bslbf bit string, left bit first
CA Conditional Access
CAT Conditional Access Table

CATV	Community Antenna TeleVision
COFDM	Coded Orthogonal Frequency Division Multiplexing
CPE	Common Phase Error
CRC	Cyclic Redundancy Check
D/A	Digital-to-Analogue converter
DBS	Direct Broadcast Satellite
DFT	Discrete Fourier Transform
DIRD	Digital Integrated Receiver Decoder
DIT	Discontinuity Information Table
DTS	Display Time-Stamp
DQPSK	Differential Quadrature Phase Shift Keying
DVB	Digital Video Broadcasting
DVB-C	DVB-Cable
DVB-S	DVB-Satellite
DVB-SI	DVB-Service Information
DVB-T	DVB-Terrestrial
EB	Error Block
ECM	Entitlement Control Message
EIT	Event Information Table
EMM	Entitlement Management Message
EN	European Standard
EPG	Electronic Programme Guide
ETR	ETSI Technical Report
ETS	European Telecommunication Standard
ETSI	European Telecommunications Standards Institute
FEC	Forward Error Correction
FFT	Fast Fourier Transform
FIFO	First-in, First-out shift register
FS	Full Scale
HDTV	High Definition TeleVision
HEX	Hexadecimal notation
HP	High Priority bit stream
ICI	Inter-Carrier Interference
IF	Intermediate Frequency
IFFT	Inverse Fast Fourier Transform
IRD	Integrated Receiver Decoder
ISDN	Integrated Services Digital Network
JTC	Joint Technical Committee
LP	Low Priority bit stream
LSB	Least Significant Bit
MER	Modulation Error Ratio
MP@ML	Main Profile at Main Level
MPEG	Moving Picture Experts Group