

THE ORDINANCE
OF THE MINISTER OF THE INFRASTRUCTURE
of 2008

**on the technical and exploitation requirements
for consumer equipment used to the reception
of digital terrestrial television transmissions**

On the basis of the Article 132 paragraph 3 of the Act of 16 July 2004 – Telecommunications Law (O. J. No. 171, item 1800, with further amendments) it is decreed that:

§ 1. 1. Detailed technical and exploitation requirements for consumer equipment used to the reception of digital television transmissions are set forth.

2. The requirements mentioned in paragraph 1 constitute the annex to the ordinance.

§ 2. The ordinance has come into force after 14 days since the day of the announcement.

**The annex to the ordinance
of the Minister of the Infrastructure of 2008**

**TECHNICAL AND EXPLOITATION REQUIREMENTS
FOR CONSUMER EQUIPMENT USED TO THE RECEPTION
OF DIGITAL TERRESTRIAL TELEVISION TRANSMISSIONS**

1. Scope

The annex defines the set of requirements and parameters whose fulfilment is indispensable to the correct reception of signals delivered by means of the terrestrial broadcasting using the DVB-T system and the MPEG-2 transport stream to the transmission of services applied in the digital television. As basic requirements were adopted parameters of the digital television receiver defined in ETSI TS 101 154 [7] as „25 Hz H.264/AVC HDTV the video, MPEG-2 Layer 2 and E-Ac-3 audio, the odds and Baseline IRD able are decode up is 1920 x 1080 interlaced 25 Hz the video pictures or 1280 x 720 progressive 50 Hz the video pictures”.

The necessity of the fulfilment of requirements of the present document does not preclude expendability of the receiver for other features improving its functionality or usefulness. Technical parameters pointed out by the word “option” are not mandatory but if they appear then should comply with given requirements.

2. Normative References

- [1] EN 300 468 V1.8.1:2007 Digital Video Broadcasting (DVB); Specification for service information (SI) in DVB systems. ETSI
- [2] EN 300 472 V1.3.1:2003 Digital Video Broadcasting (DVB); Specification for conveying ITU-R System B Teletext in DVB bitstreams. ETSI
- [3] EN 300 743 V1.3.1:2006 Digital Video Broadcasting (DVB); Subtitling systems. ETSI
- [4] EN 300 744 V1.5.1:2004 Digital Video Broadcasting (DVB); Framing structure, channel coding and modulation for digital terrestrial television. ETSI
- [5] ES 202 184 V.1.1.1:2004 Digital Video Broadcasting (DVB); MHEG-5 Broadcast Profile. ETSI
- [6] ETR 289 ed.1:1996 Digital Video Broadcasting (DVB); Support for use of scrambling and Conditional Access (CA) within digital broadcasting systems. ETSI
- [7] TS 101 154 V.1.8.1:2007 Digital Video Broadcasting (DVB); Specification for the use of Video and Audio Coding in Broadcasting Applications based on the MPEG-2 Transport Stream. ETSI
- [8] TS 102 006 V1.3.1:2004 Digital Video Broadcasting (DVB); Specification for System Software Update in DVB systems. ETSI
- [9] TS 102 366 V1.1.1:2005 Digital Video Broadcasting (DVB); Digital Audio Compression (AC-3, Enhanced AC-3) Standard. ETSI
- [10] ISO/IEC 13818-3:1998 Information technology – Generic coding of moving picture and associated audio information; Part 3: Audio
- [11] EN 50049-1:1997/A1:1998 Domestic and electronic equipment interconnection requirements: Peritelevision connector. CENELEC

- [12] EN 50157-2-1:1998 Domestic and similar electronic equipment interconnection requirements: AV.link – Part 2-1: Signal quality matching and automatic selection of source devices. CENELEC
- [13] EN 50160:2007 Voltage characteristics of electricity supplied by public distribution systems. CENELEC
- [14] EN 55013:2001 Sound and television broadcast receivers and associated equipment – Radio disturbance characteristics – Limits and methods of measurement. CENELEC
- [15] EN 55020:2007 Sound and television broadcast receivers and associated equipment - Immunity characteristics - Limits and methods of measurement. CENELEC
- [16] EN 55022:2006/A1:2007 Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement. CENELEC
- [17] EN 55024:1998/A1:2001/A2:2003/IS1:2007 Information technology equipment – Immunity characteristics – Limits and methods of measurement. CENELEC
- [18] IEC 60038:2002 IEC standard voltages
- [19] EN 60065:2002/A1:2006 Audio, video and similar electronic apparatus – Safety requirements. CENELEC
- [20] EN 60950-1:2001/A11:2004 Information technology equipment – Safety – Part 1: General requirements. CENELEC
- [21] EN 60958-1:2004 Digital audio interface – Part 1: General. CENELEC
- [22] EN 61000-6-1:2007 Electromagnetic compatibility (EMC) – Part 6-1: Generic standards – Immunity for residential, commercial and light-industrial environments. CENELEC
- [23] EN 61000-6-3:2007 Electromagnetic Compatibility (EMC) – Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments. CENELEC
- [24] IEC 60169-2:1965 + A1:1982 Radio-frequency connectors Part 2 Coaxial unmatched connector
- [25] IEC 61937-3:2007 Digital Audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958 Part 3. Nonlinear PCM bitstreams according to AC-3 and enhanced AC-3 formats
- [26] EN 62216-1:2001 Digital terrestrial television receivers for the DVB-T system – Part 1: Baseline receiver specification
- [27] ITU-R Recommendation BT.470-7:2005 Conventional analogue television systems
- [28] ITU-T Recommendation H.264:2007 Advanced video coding for generic audiovisual services
- [29] HDMI Licensing, LLC, “High-Definition Multimedia Interface”, rev. 1.0, December 9, 2002
- [30] Intel, “High-Bandwidth Digital Content Protection System”, rev. 1.1, June 9, 2003
- [31] CEA 770.3, High Definition TV Analogue Component Video Interface.

3. Definitions

Terms used in the annex mean:

3.1. Digital receiver – an appliance designed for the end user to the reception of digital television signals consisting of at least RF-tuner, demodulator, demultiplexer and decoders of received services as well as picture display (iDTV) or without picture display (STB).

3.2. Interactive receiver – digital receiver allowing the use of interactive TV (iTV) services locally or via return channel.

3.3. Interactive TV (iTV) – applications allowing to the user an access to an additional content and services, connected or not with broadcasted programme, by means of the interaction performed by the user interface with the receiver or by means of any return channel.

3.4. Peritelevision – the description is consistent with EN 50049-1 [11] and equivalent to the term SCART. In the further part of the document the term SCART is used.

4. Acronyms and Abbreviations

Abbreviations used in the annex mean:

AC-3	Multichannel sound coding standard invented in Dolby Laboratories (Dolby Audio Coding 3)
API	Application Programming Interface
AVC	Advanced the Video Coding
DVB	Digital Video Broadcasting
DVB-T	Digital Video Broadcasting – Terrestrial
E-AC-3	Enhanced Audio Coding 3
EIT	Event Information Table
FTA	Free-to-Air
HDCP	High-Bandwidth Digital Content Protection System
HDMI	High-Definition Multimedia Interface
HDTV	High Definition TV
iDTV	Integrated Digital TV
MPEG	Moving Picture Experts Group
NIT	Network Information Table
OSD	On Screen Display
PAL	Phase Alternating Line
S/PDIF	Sony/Philips Digital Interconnect Format
SI	Service Information
SDT	Service Description Table
SDTV	Standard Definition TV
SSU	System Software Update
STB	Set-Top Box
TV	TeleVision
UHF	Ultra-High Frequency
VBI	Video Blanking Interval
VHF	Very-High Frequency
RF	Radio Frequency
YPbPr	analogue video signal consisting of three baseband signals: luminance Y, differential of blue Pb (B-Y) and differential of red Pr (R-Y)

5. Receiving Capabilities

Digital receiver shall provide with DVB-T digital signals reception conforming to EN 300 744 [4] and accept [26]:

- VHF (BIII) and UHF ranges (174-230 MHz and 470-862 MHz);
- channel bandwidth 8 MHz (UHF) and 7 MHz (BIII);
- all DVB-T modulation modes;
- both 2K and 8K transmitting methods;
- all code rates;
- all guard intervals;
- hierarchical modulation.

6. Scanning Procedure

Digital receiver shall be able to the automatic scanning through the whole frequency range available for the RF tuner and tune in to the correct DVB-T framing structure, channel coding and modulation to deliver the incoming transport stream to the next modules. The tuning data shall be stored in a service list, in order to allow a quick tune in to the selected transport stream.

7. Access to Services

Digital receiver shall at least support following services:

- free-to-air TV broadcast;
- free-to-air sound programme broadcast;
- multilingual sound, multi-comments;
- multilingual subtitles (teletext or DVB);
- teletext;
- picture formatting for ratios of 4:3 and 16:9;
- parental access control to selected programmes or broadcasts.

8. SI Navigator

The navigator shall use the mandatory Service Information broadcast in the Service Information Table and the Event Information Table [1] to present an appropriate service and event information to the user and to allow automatic selection of service features when the user selects the service.

9. Auto Installation

Digital receiver will allow access to all receivable services mentioned in section 7 and will use the mandatory information in the NIT [1] and SDT [1] to automate the initialisation of the service list and subsequent updates thereof.

[10. Conditional Access (option)

Digital receiver shall be capable of receiving free-to-air as well as pay services coded in accordance with the DVB common scrambling algorithm according to ETSI ETR 289 [6]. Since the conditional access system will be selected by its provider it is recommended so that the digital receiver be flexible enough to allow later introduction of given technical solutions.]

11. Parental Access Control

Digital receiver shall enable blocking of the access to all programs or to chosen categories of broadcast, if “parental_rating_descriptor” described in EN 300 468 [1] appears in the bitstream.

12. H.264/AVC Video Decoder

Video decoder shall decode digital video bitstreams conforming with H.264 [28] constrained according to ETSI/TS 101 154 [7] section 5.7 for the 25 Hz H.264/AVC receiver capable of decoding HP@L4 bitstreams of HDTV transmission and MP@L3 bitstreams of SDTV transmission.

Regardless of the resolution of the incoming bitstream the decoder shall deliver the video signal with the PAL resolution on the analogue video output.

13. Audio Decoder

Audio decoder shall decode digital audio streams conforming with MPEG-2 Layer II in compliance with ISO/IEC 13818-3 [10] constrained according to ETSI/TS 101 154 [7] section 6.1 and E-AC-3 in compliance with ETSI TS 102 366 [9] constrained according to section 6.2 [7].

Audio decoder shall use metadata sent in the E-AC-3 bitstream to volume normalisation, downmixing any multichannel to stereo or mixing any secondary decoded audio bitstream with the main decoded audio bitstream.

Regardless of the coding system and the number of audio channels transmitted the decoder shall deliver the stereo signal on the analogue audio output of the receiver.

14. Teletext and DVB Subtitles

Teletext and DVB subtitles decoders shall support all characters of the Polish alphabet.

14.1 Teletext

During the decoding of following bitstreams: audio, video and data the digital receiver shall demultiplex in parallel the teletext service transmitted in a packetised format in accordance with EN 300 472 [2]. Teletext sent in digital bitstreams shall be decoded in the receiver as follows:

- by internal decoder and displayed in the OSD mode; or
- by tinsertion of the teletext data on the selected lines in the VBI mode (STB only).

14.2 DVB Subtitles

Digital receiver shall decode and display subtitles transmitted in accordance with EN 300 743 [3].

Decoding of the teletext and DVB subtitles which are received simultaneously shall be controlled by the user.

[15. API (option)]

Interactive receiver shall correctly receive and execute applications meeting MHEG-5 requirements according to ES 202 184 [5].]

16. Return Channel (option)

Interactive receiver shall allow an access to the return channel by PSTN, Ethernet or other – wired or wireless transmission channel – using built-in module or an external device connected to the receiver through the data transmission digital interface.

17. Over-air System Software Update

Digital receiver shall support the service of the System Software Update in compliance with TS 102 006 [8] which is intended for the maintenance or the functionality improvement of the software of the receiver after sale.

18. Interfaces and Connectors

18.1 Interfaces of RF Signal

Digital receiver shall have one input tuner connector: IEC female in accordance with IEC 60169-2 [24]. The input impedance shall be 75 Ω .

STB shall additionally have the loop-through connection in order to pass the RF input signal to the TV-set or analogue VCR. The RF signal shall be accessible at an output connector: IEC male in accordance with IEC 60169-2 [24]. The output impedance shall be 75 Ω . This output shall also deliver a television-signal coming from an internal AM-DSB modulator on TV channel chosen by the user in accordance with the Recommendation ITU-R BT.470-6 [27] for the D1/PAL standard.

18.2 Digital Interfaces

Digital receiver shall have:

- a) HDMI output according to HDMI – HDMI Licensing, LLC, “High-Definition Multimedia Interface[29]” incorporating HDCP content protection according to HDCP – Intel, “High-Bandwidth Digital Content Protection the System” [30] (STB only),
- b) electrical or optical S/PDIF output according to EN 60958-1 [21] and the applicable parts of IEC 61937-3 [25] (this may be omitted when the receiver provides a minimum 5 channel audio reproduction system capable of driving at least 5 speakers).

18.3 Analogue Interfaces

Digital receiver shall have:

- a) SCART connector according to EN 50049-1 [11] and EN 50157-2-1 [12];
- b) HD video output YPbPr according to CEA 770.3, High Definition TV Analogue Component Video Interface [31] (STB only);
- c) stereo output.

19. Power Supply of the Digital Receiver

- a) Voltage: 230 V \pm 10% according to IEC 60038 [18],
- b) Frequency: 47-53 Hz according to EN 50160 [13].

20. Safety condition of the digital receiver

The safety of the digital receiver shall conform to EN 60065 [19] and EN 60950-1 [20].

21. Electromagnetic Compatibility of the Digital Receiver

The electromagnetic compatibility shall conform to EN 55013 [14], EN 55020 [15], EN 55022 [16], EN 55024 [17], EN 61000-6-1 [22] and EN 61000-6-3 [23].