Draft of 17 January 2025

R E G U L A T I O N

O F T H E M I N I S T E R F O R D I G I T A L A F F A I R S [1)]

of ……..

on the technical and operational requirements for television signal receivers[2), 3)]

Pursuant to Article 406(6) of the Act of 12 July 2024 - Electronic Communications Law (Journal of Laws, item 1221), the following is hereby decreed:

§ 1. Technical and operational requirements for television signal receivers are laid down in the Annex to the Regulation.

§ 2. This Regulation shall enter into force 14 days after its publication.[4)]

MINISTER FOR DIGITAL AFFAIRS

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1)The Minister for Digital Affairs manages the government administration section — computerisation pursuant to § 1(2) of the Regulation of the Prime Minister of 18 December 2023 concerning the specific scope of activities of the Minister for Digital Affairs (Journal of Laws, item 2720).

2)For the matter covered by it, this Regulation implements Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code (OJ L 321, 17.12.2018, p. 36; OJ L 334, 27.12.2019, p. 164; OJ L 419, 11.12.2020, p. 36; OJ L 137, 22.4.2021, p. 1 and OJ L 333, 27.12.2022, p. 80).

3)This Regulation was notified to the European Commission on … under No. … pursuant to § 4 of the Regulation of the Council of Ministers of 23 December 2002 concerning the manner in which the national notification system of standards and legal acts functions (Journal of Laws, item 2039; and Journal of Laws of 2024, item 597), which implements the provisions of Directive (EU) 2015/1535 of the European Parliament and of the Council of 9 September 2015 laying down a procedure for the provision of information in the field of technical regulations and of rules on Information Society services (OJ EU L 241, 17.9.2015, p. 1).

4)This Regulation was preceded by the regulation of the Minister for Digital Affairs of 7 October 2019 on technical and operational requirements for digital receivers (Journal of Laws of 2021, item 515), which expires on the date of entry into force of this Regulation in accordance with Article 104(14)(a) of the Act of 12 July 2024 – Provisions implementing the Act – Electronic Communications Law (Journal of Laws, item 1222).

Annex to the Regulation
of the Minister for Digital Affairs
of ..... (item .....)

TECHNICAL AND OPERATIONAL REQUIREMENTS FOR TELEVISION SIGNAL RECEIVERS

1. General provisions

Television signal receivers for the reception of signals transmitted by means of terrestrial broadcasting meet the technical and operational requirements necessary for the correct reception of this signal based on the DVB-T and DVB-T2 systems for the provision of audiovisual content and other data and ancillary services.

For DVB-T, the parameters of a television signal receiver defined in ETSI TS 101 154 [14] as '25 Hz H.264/AVC HDTV video, MPEG-2 Layer 2 and E-AC-3 audio, for a Baseline IRD able to decode up to 1 920 x 1 080 interlaced 25 Hz video pictures or 1 280 x 720 progressive 50 Hz video pictures' have been adopted as basic parameters.

For DVB-T2, the parameters of a television signal receiver defined in ETSI TS 101 154 [14] for level 4.1 HDTV: 50 Hz HEVC HDTV 8-bit (resolutions 1920 x 1080 p50, 1280 x 720 p50) MPEG-2 Audio Layer II and E-AC-3 audio have been adopted as basic parameters. For a television signal receiver capable of displaying UHD pictures, the DVB-T2 television signal receiver shall also support the format specified in ETSI TS 101 154 [14] in clause 5.14 HEVC HDR UHDTV IRD using HLG10 and HEVC HDR UHDTV IRD using PQ10, Main 10 Profile, Main Tier for UHDTV with 3 840 x 2 160 resolution and AC-4 audio.

Compliance with the requirements laid down in the Annex does not preclude equipping a television signal receiver with other functions enhancing its functional or operational qualities.

The technical parameters accompanied by the phrase 'if present' are not mandatory for use but, if they are present, must meet the specified requirements.

The technical and operational requirements laid down in the Annex to the Regulation shall be considered fulfilled when the television signal receivers comply with the standards and documents specified in point 2 of the Annex, to the extent specified in the Annex.

2. List of standards and documents

2.1. The list of standards and documents referenced in the Annex:

[1] PN-EN 50049-1:2003 Domestic and similar electronic equipment interconnection requirements – Peritelevision connector, implementing EN 50049-1:1997 [IDT], EN 50049-1:1997/A1:1998 [IDT], EN 50049-1:1997/corrigendum Feb. 2000 [IDT]

[2] PN-EN 50157-2-1:2002 Domestic and similar electronic equipment interconnection requirements: AV link - Part 2-1: Signal quality matching and automatic selection of source devices, implementing EN 50157-2-1:1998 [IDT]

[3] PN-EN 50160: 2023-10 Voltage characteristics of electricity supplied by public electricity networks, implementing EN 50160:2022 [IDT]

[4] PN-EN 60038:2012 CENELEC standard voltages, implementing EN 60038:2012

[5] PN-EN IEC 60958-1:2022-06 Digital audio interface – Part 1: General, implementing EN IEC 60958-1:2021 [IDT], IEC 60958-1:2021 [IDT]

[6] PN-EN 61169-2:2007 Radio frequency connectors – Part 2: Sectional specification – Radio frequency coaxial connectors of type 9.52, implementing EN 61169-2:2007 [IDT], IEC 61169-2:2007 [IDT]

[7] PN-EN 62216:2011 Digital terrestrial television receivers for the DVB-T system, implementing EN 62216:2011 [IDT], IEC 62216:2009 [IDT]

[8] PN-EN 62680-1:2016-03 Universal Serial Bus interfaces for data and power transmission – Part 2-1: Universal Serial Bus Specification, Revision 2.0 (TA 14), implementing EN 62680-2-1:2015 [IDT], IEC 62680-2-1:2015 [IDT]

[9] PN-ETSI EN 300 468 Digital Video Broadcasting (DVB) – Specification for Service Information (SI) in DVB systems, implementing ETSI EN 300 468

[10] PN-ETSI EN 300 706 V1.2.1:2005 Enhanced teletext specification, implementing ETSI EN 300 706 V1.2.1:2003 [IDT]

[11] PN-ETSI EN 300 743 V1.6.1:2019-04 Digital Video Broadcasting (DVB) - Subtitling systems, implementing ETSI EN 300 743 V1.6.1:2018 [IDT]

[12] PN-ETSI EN 300 744 Digital Video Broadcasting (DVB) - Framing structure, channel coding and modulation for digital terrestrial television, implementing ETSI EN 300 744

[13] PN-ETSI EN 302 755 Digital Video Broadcasting (DVB) - Framing structure,

channel coding and modulation for a second generation digital terrestrial television broadcasting system (DVB-T2), implementing ETSI EN 302 755

[14] ETSI TS 101 154 Digital Video Broadcasting (DVB); Specification for the use of Video and Audio Coding in Broadcast and Broadband Applications

[15] ETSI TS 102 006 Digital Video Broadcasting (DVB); Specification for System Software Update in DVB Systems

[16] ETSI TS 102 366 Digital Audio Compression (AC-3, Enhanced AC-3) Standard

[17] ETSI TS 103 190 Digital Audio Compression (AC-4) Standard Part 2: Immersive and personalized audio

[18] ETSI TS 102 796 Hybrid Broadcast Broadband TV

[19] PN-ISO/IEC 8859-2:2001 Information technology – 8-bit single-byte coded graphic character sets – Latin alphabet No. 2

[20] ISO/IEC 13818-3:1998 Information technology – Generic coding of moving pictures and associated audio information – Part 3: Audio

[21] ITU-T Recommendation H.264: Advanced video coding for generic audiovisual services

[22] ITU-T Recommendation H.265: High efficiency video coding

[23] ITU-R Recommendation BT.2020 Parameter values for ultra-high definition television systems for production and international programme exchange

[24] ITU-R Recommendation BT.2100 Image parameter values for high dynamic range television for use in production and international programme exchange

[25] Digital Video Broadcasting (DVB); Specification for Service Information (SI) in DVB systems, DVB Document A038 Rev.16, April 2023

[26] High-bandwidth Digital Content Protection System, Revision 1.3, December 21, 2006, Digital Content Protection LLC

[27] High-bandwidth Digital Content Protection System, Mapping HDCP to HDMI, Revision 2.2, February 13, 2013, Digital Content Protection LLC

[28] High-Definition Multimedia Interface, Version 1.4a, March 2010, HDMI Licensing, LLC

[29] High-Definition Multimedia Interface, Version 2.0b, March 2016, HDMI Licensing, LLC

[30] NorDig Unified Requirements for Integrated Receiver Decoders for use in cable, satellite, terrestrial and managed IPTV based networks, Requirements ver. 3.1 (October,

2018)

2.2. If the list referred to in point 2.1. contains a reference to a specific version of the document (identified by their publication date, edition number, version number, etc.), subsequent versions of this document shall not be used.
2.3. If the list referred to in point 2.1 does not contain a reference to a specific version of the document, the latest version of the document shall be used.
2.4. The documents referred to in subdivisions [1]–[13] and [19] of point 2.1 are made available free of charge in a 'read-only' form in the Polish Committee for Standardization reading rooms, and can be purchased at sklep.pkn.pl.
2.5. The documents referred to in subdivisions [14]-[17] of point 2.1 are available on the European Telecommunications Standards Institute (ETSI) website - www.etsi.org.
2.6. The document referred to in subdivision [20] of point 2.1 is available (for a fee) on the website of the International Electrotechnical Commission (IEC) – www.iec.ch.
2.7. The documents referred to in subdivisions [21]-[24] of point 2.1 are available on the International Telecommunication Union (ITU) website - www.itu.int.
2.8. The document referred to in subdivision [25] of point 2.1 is available at www.dvb.org.
2.9. The documents referred to in subdivisions [26]-[27] of point 2.1 are available at www.digital-cp.com.
2.10. The documents referred to in subdivisions [28]-[29] of point 2.1 are available at www.hdmi.org.
2.11. The document referred to in subdivision [30] of point 2.1 is available at www.nordig.org.

3. Abbreviations and acronyms

Abbreviations and acronyms used in this Annex signify:

1) AC-3 - Dolby Audio Coding 3
2) AC-4 - Dolby Audio Coding 4
3) API - Application Programming Interface
4) ARC - Audio Return Channel in HDMI supporting audio systems
5) AVC - Advanced Video Coding
6) DVB - Digital Video Broadcasting

7) DVB-T - Digital Video Broadcasting – Terrestrial

8) DVB-T2 - Digital Video Broadcasting – Terrestrial Second Generation

9) E-AC-3 - Multi-channel digital audio coding system that is an enhancement of the AC-3 system (Enhanced Audio Coding 3)

10) FTA - Free-to-Air – uncoded programmes available to all

11) HbbTV -Service providing additional multimedia content through the Internet (Hybrid Broadcast Broadband TV)

12) HDCP - High-Bandwidth Digital Content Protection System

13) HDMI - High-Definition Multimedia Interface

14) HDR - High Dynamic Range Image, with the parameters defined in Recommendation ITU-R BT. 2100 [23];

15) HDTV - High Definition (1 280 x 720 and 1 920 x 1 080) TV;

16) HEVC - High Efficiency Video Coding

17) HFR - Transmission technology providing an increased frame rate in recorded/played video (High Frame Rate, 100/120 frames per second);

18) HLG10 - An HDR system, the specification of which can be found in Recommendation ITU-R BT.2100 [24], with 10-bit colour space resolution in accordance with Recommendation ITU-R BT.2020 [23] (Hybrid Log Gamma 10);

19) iDTV - IRD equipped with an image display (TV set)

20) IRD - Integrated receiver equipped with an integrated decoder of picture and audio (Integrated Receiver/Decoder), in an STB or iDTV version

21) LCN - Logical Channel Number

22) MPEG-2 - MPEG-2 Audio Layer II audio compression format, as defined in ISO/IEC 13818-3:1998 [20];

23) NIT - Network Information Table

24) OFDM - Orthogonal Frequency-Division Multiplexing

25) OSD - On Screen Display

26) PLP - single stream of physical data with specific modulation and coding (Physical Layer Pipe)

27) PQ10 - An HDR system, taking into account the non-linear visual perception function, capable of achieving a very wide range of brightness levels, the specification of which can be found in Recommendation ITU-R BT.2100 [24], with 10-bit colour space resolution in accordance with Recommendation ITU-R BT.2020 [23] (Perceptual

Quantizer 10);

28) SDT - Service Description Table

29) SDTV - Standard Definition TV

30) SI - Service Information

31) SISO - Content transmission technique with the use of only one transmitting antenna and received with one receiving antenna (Single-Input Single-Output)

32) SSU - System Software Update

33) STB - A television signal receiver without image display (Set-Top Box) TV TeleVision;

34) UHD - Ultra High Definition (3 840 x 2 160);

35) UHDTV - Ultra High Definition TV

36) UHF - Ultra-High Frequency 300-3000 MHz (decimetric waves) USB Universal Serial Bus

37) UTF-8 - 8-bit Unicode Transformation Format

38) VBI - Vertical Blanking Interval

39) VHF - Very High Frequency 30–300 MHz, metric waves.

4. Reception capacity

A television signal receiver ensures the reception of DVB-T and DVB-T2 digital signals with parameters compliant with PN-ETSI EN 300 744 [12] and PN-ETSI EN 302 755 [13] broadcast in the following ranges: VHF (174-230 MHz) in channels with a 7 MHz bandwidth and UHF (470-694 MHz) in channels with an 8 MHz bandwidth. The tuner of the television signal receiver meets the requirements laid down in the PN-EN 62216:2011 standard [7] and the remaining requirements for the radio part of the television signal receiver laid down in chapter 3.4 of the NorDig Unified Requirements for Integrated Receiver Decoders for use in cable, satellite, terrestrial and managed IPTV based networks standard [30].

5. Band search procedure

A television signal receiver enables automatic searching of the entire available frequency range and tuning to the correct DVB-T and DVB-T2 frame structure, channel coding, and modulation in order to feed the input transport stream to subsequent modules. A DVB-T2 television signal receiver enables the reception of SISO transmissions, using the OFDM

technique with and without rotated constellations. The television signal receiver ensures the reception of a DVB-T2 transmission consisting of one or more PLPs. The tuning details are stored on the list of services in order to enable quick selection of the required transport stream.

6. Access to services

A television signal receiver ensures the possibility:

1) to receive FTAs;
2) to choose an audio component of a service if multiple audio components are broadcast within one service; the remote control of the television signal receiver shall be equipped with button for selecting an audio track or with another mechanism allowing for easy selection of an audio track;
3) to select subtitles (teletext or DVB) in the UTF-8 format;
4) to use teletext;
5) to format the image to a 4:3 or a 16:9 aspect ratio;
6) to exercise parental control of access to selected programmes or broadcasts;
7) to access the menu in Polish and set the national language as Polish.

7. Service information navigator

A television signal receiver is equipped with a service information navigator, which provides the user with access to basic information on broadcast services and events in the SI tables described in PN-ETSI EN 300 468 [9] and in DVB Document A038 [25], and allows the user to control the receiver. The service information navigator enables correct display of the letters of the Polish alphabet coded in compliance with PN-ISO/IEC 8859-2:2001 [19].

8. Automatic installation

A television signal receiver uses the mandatory NIT or SDT information specified in PN-ETSI EN 300 468 [9] and in DVB Document A038 [25] to automatically create a list of services and subsequently update it. A television signal receiver supports LCN. All found services marked as 'visible' are placed on the list of services in accordance with the given LCN number. In the case of a lack of a number or the number being doubled, the service is placed at the end of the list. The user has the option of changing the order of services or

creating their own list. All services marked as ‘invisible’ are maintained, but they are not displayed on the list of available services.

9. Parental access control

A television signal receiver allows blocking access to entire programmes or selected categories of programmes if the stream contains a ‘parental_rating_descriptor’ as defined in PN-ETSI EN 300 468 [9].

10. Image signal decoder

An image signal decoder decodes digital image streams in accordance with:

1) Recommendation ITU-T H.264 [21], with the limitations laid down in ETSI TS 101 154 [14] parts 5.6 and 5.7, for a 25 Hz H.264/AVC receiver capable of decoding HP@L4 HDTV and MP@L3 SDTV streams;

2) Recommendation ITU-T H.265 [22], with the limitations laid down in ETSI TS 101 154 [14] parts 5.14.1 and 5.14.2 (HDTV) for a 50 Hz HEVC HDTV 8-bit receiver (resolutions 1 920 x 1 080 p50, 1 280 x 720 p50).

In accordance with ITU-T Recommendation H.265 [22], an integrated receiver (iDTV) capable of displaying UHD pictures shall support decoding of bitstreams in conformity with the Main Profile, Main 10 Profile, and Main Tier (as defined in ITU-T Recommendation H.265 [22]):

1) HEVC UHDTV IRD with the limitations laid down in ETSI TS 101 154 [14], part 5.14.3;

2) HEVC HDR UHDTV IRD using HLG10 and HEVC HDR UHDTV IRD using PQ10, with the limitations laid down in ETSI TS 101 154 [14], part 5.14.4.

11. Sound signal decoder

A sound signal decoder decodes digital sound streams in accordance with:

1) MPEG-2 Audio Layer II, with the limitations laid down in ETSI TS 101 154 [14], part 6.1.;

2) E-AC-3, in accordance with ETSI TS 102 366 [16] and with the limitations laid down in ETSI TS 101 154 [14] Part 6.2.

An integrated receiver (iDTV) capable of displaying UHD pictures shall support AC-4 in accordance with ETSI TS 103 190 [17] and with the limitations laid down in ETSI TS 101

154 [14] parts 6.6 and 6.7.

An audio signal decoder uses metadata broadcast in an E-AC-3 or AC-4 stream to normalise the volume, convert surround sound to stereo sound, or mix the main audio component with supplementary components in accordance with Annex J to PN-ETSI EN 300 468 [9].

A television signal receiver allows the user to personalise the reception of sound using the remote control for this receiver:

1) select the soundtrack;
2) improve the intelligibility of dialogues;
3) mix additional audio (e.g. commentator's voice, audio description) with the main audio, transmitted as object audio.

Irrespective of the coding system and the number of transmitted audio channels, an audio signal decoder feeds a stereophonic signal to the analogue audio output of the television signal receiver (if present), unless a monophonic signal or two audio signals are broadcast. The decoder then sends the selected monophonic signal to both channels.

12. Teletext and DVB subtitles

When decoding audio, image, and data streams, a television signal receiver simultaneously extracts teletext data meeting the requirements of PN-ETSI EN 300 706 V1.2.1:2005 [10] for level 1.5 and transmitted in the form of packets in accordance with PN-ETSI EN 300 743 V1.6.1:2019-04 [11].

12.1. Teletext carried in digital streams is decoded in the television signal receiver as follows:

1) by an internal decoder and displayed in On Screen Display form (OSD) or

2) in the case of an STB with a built-in analogue output – by placing data on selected lines during the Video Blanking Interval (VBI) in keeping with the requirements of the ETSI EN 300 706 V1.2.1:2005 [10] standard for level 1.5.

12.2. DVB subtitles

A television signal receiver decodes and displays subtitles transmitted in accordance with the interoperability principles described in clause 7.3 of PN-ETSI EN 300 743 V1.6.1:2019-04 [11] and in Annex B.4 to that standard.

The decoding of teletext and DVB subtitles received at the same time is controlled by the user.

13. HFR (if present in the receiver)

A UHDTV television signal receiver that allows HFR display shall support stream decoding according to Main Profile, Main 10 Profile, and Main Tier (as defined in ITU-T Recommendation H.265 [22]): HEVC HDR HFR UHDTV IRD using HLG10 and HEVC HDR HFR UHDTV IRD using PQ10, with the limitations laid down in ETSI TS 101 154 [14], part 5.14.5.

14. Hybrid Broadcast Broadband TV (HbbTV)

If an iDTV television signal receiver is capable of being connected to the Internet, it shall enable using HbbTV at least in version 2.0.1 in accordance with the ETSI TS 102 796 technical specification [18]. HbbTV is active by default at the time of purchase of the television signal receiver. It is required that the user be able to turn the HbbTV function on and off easily. An iDTV television signal receiver enabling the use of HbbTV correctly receives and executes software applications (within the API) compliant with HbbTV according to the ETSI TS 102 796 technical specification [18].

The software enabling the use of HbbTV is updated in a way that allows the use and correct reception of HbbTV and software applications (within the API).

15. Remote software update

A television signal receiver enables the updating of system software for maintenance purposes. The method of updating the software is chosen by the television signal receiver manufacturer from amongst the following:

1) a storage medium connected to the USB port;
2) via the Internet (in the case of interactive receivers allowing the use of interactive TV services via the Internet);
3) DVB-SSU in compliance with ETSI TS 102 006 [15].

16. Television signal receiver interfaces

16.1. High frequency signal interface:

A television signal receiver is equipped with one IEC input socket in accordance with PN-EN 61169-2:2007 [6]. The input impedance is 75 Ω.

16.2. Digital interface

An integrated receiver (iDTV) is equipped with an HDMI type A input socket, in accordance with the High-Definition Multimedia Interface [28], secured with HDCP in accordance with the High-bandwidth Digital Content Protection System [26]. In the case of STB, the HDMI socket has a function enabling signal output to the display. In the case of an integrated receiver (iDTV) capable of displaying UHD pictures, the required standard is HDMI 2.0b or later in compliance with High-Definition Multimedia Interface, Version 2.0b [29] with HDR and ARC support, and HDCP 2.2 in compliance with High-Bandwidth Digital Content Protection System, Mapping HDCP to HDMI, Revision 2.2 [27].'. The requirement to have an HDMI input port does not apply to an integrated receiver (iDTV) containing an image display with a screen size equal to or less than 30 cm.

17. Television signal receiver power supply

A television signal receiver power supply meets the following requirements:

1) Voltage: 230 V ±10 % according to PN-EN 60038:2012 [4];
2) Frequency: 47–53 Hz according to PN-EN 50160:2010 [3].

Power supply requirements do not apply to television signal receivers powered exclusively from the device to which they are connected.