AS 4933:2024

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Digital television — Requirements for receivers for VHF/UHF DVB-T television broadcasts including ancillary services

AS 4933:2024

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Australian Broadcasting Corporation
Australian Digital and Telecommunications Industry Association
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Australian Information Industry Association
Australian Subscription Television and Radio Association
Community Broadcasting Association of Australia
Consumer Electronics Suppliers Association
Engineers Australia
Free TV Australia
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Preface

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee CT-002, Broadcasting and Related Services, to supersede AS 4933:2015, *Digital television—Requirements for receivers, Part 1: VHF/UHF DVB-T television broadcasts*.

AS 4933:2015 will remain current for 24 months from the date of publication of this document. After this time, it will be superseded by AS 4933:2024. Regulatory authorities that reference this Standard in regulation may apply these requirements at a different time. Users of this Standard should consult with these authorities to confirm their requirements.

The objective of this document is to provide technical specifications and requirements for digital television receivers in Australia for the reception of free-to-air (FTA) terrestrial VHF/UHF DVB-T broadcast television. It includes the minimum requirements for Integrated Receiver Decoder (IRD) functionality in accordance with DVB specifications.

This document is to be read in conjunction with AS 5362 to meet advanced modulation and coding requirements for DVB broadcast in Australia.

The specifications in this document conform to DVB-T transmissions in Australia.

DVB-T receivers have been deployed in Australia for two decades. This document recognizes backward compatibility for such receivers to preceding versions of this Standard.

This document references specifications produced by Joint Technical Committee (JTC) Broadcast of the European Broadcasting Union (EBU), Comité Européen de Normalization ELECtrotechnique (CENELEC) and the European Telecommunications Standards Institute (ETSI).

Within the European Broadcasting Union, the Digital Video Broadcasting Project (DVB) is an industry-led consortium of broadcasters, manufacturers, network operators, software developers, regulatory bodies, content owners and others committed to designing global standards for the delivery of digital television and data services.

Standards Australia is a member of the DVB Project with the status of Observer, which allows Standards Australia to support the development of Australian digital television standards, which are focused on the adoption of ETSI/DVB standards.

This document also references NorDig specifications which have been used since 2011 by many consumer electronics manufacturers in the design of DVB system digital television receivers deployed in Australia.

The major changes in this edition are as follows:

(a) Additions:

- (i) References to NorDig Unified Requirements specifications in some clauses.
- (ii) References to NorDig Unified Test Plan in some clauses.
- (iii) Reference to AS 5362 for DVB-T2 receiver specifications.
- (iv) Broadcaster Mix Audio Description.
- (v) Immunity to 700 MHz LTE signals.
- (vi) Informative explanation about implementation of Single Frequency Networks.

(b) Deletions:

- (i) Reception of Analogue PAL-B transmissions.
- (ii) Requirements for 4:3 displays.

(iii) Informative references to device operating system software.

(iv) Requirement for MHEG-5.

(v) Reference to IP services.

(vi) Requirement for Teletext data services.

(vii) Closed Captions on Analogue PAL video.

(viii) Data broadcasting.

(ix) Conditional Access, Content Protection and Copy Management.

(x) Analogue video output connectors.

Specifications set out using the verb form “shall” are requirements that need to be met to claim conformance to this document. All other statements are recommendations (set out using the verb form “should”) or additional information and are provided for guidance only.

The terms “normative” and “informative” are used in Standards to define the application of the appendices to which they apply. A “normative” appendix is an integral part of a Standard, whereas an “informative” appendix is only for information and guidance.

Contents

Introduction

Digital Terrestrial Television Broadcasting (DVB-T) officially began in Australia on 1 January 2001. The transmissions are based on the DVB-T system; however, it should be noted that the international DVB Standards and related ETSI, IEC, ISO and ITU-R documents provide for a range of operational systems.

Consumers in Australia expect to have access to a wide choice of receiving equipment, ranging from fully integrated receivers with inbuilt displays to modular set-top box receivers designed to be connected to a separate display and sound reproduction system. In addition, the various broadcasters in Australia use different brands of encoding and transmission equipment. Manufacturers who are supplying the Australian market are obliged, therefore, to ensure that their equipment will operate satisfactorily under the relevant Australian conditions.

This document aims to assist manufacturers by providing the information necessary to ensure that any digital terrestrial television receiving equipment made for the Australian system will operate satisfactorily to receive Australian digital terrestrial television broadcast transmissions.

AS 4933.1 was first published in 2000 and subsequently reviewed and re-published in 2005, 2010 and, redesignated as AS 4933, in 2015. Each edition has recognized the need for accuracy and utility in backward compatibility to previous editions and achieving interoperability in the adoption of ETSI specifications between consumer electronics manufacturers designs of DVB-T receivers.

While the 2000 edition was rudimentary in its specifications for the DVB-T Integrated Receiver Decoder (IRD), in the period leading up to publication of this current edition the DVB specifications have been updated to address of the following challenges:

(a) Expansion of the DVB specifications for DVB-T, e.g. higher efficiency audio and video coding schemes, related metadata and service information.

(b) Trends in design of consumer electronics technologies, e.g. additional applications program interfaces to IRD design, system hardware, software and firmware.

(c) Reduction in availability of radio frequency spectrum, e.g. UHF Bands IV and V down to 694 MHz, and the design of DVB-T receivers to meet requirements for immunity to interference from other radio services in adjacent bands to DVB-T services.

These challenges have influenced revisions to this document in order to maintain its accuracy and utility in relation to changes to frequency use in UHF Bands IV and V, replanning and evaluation of DVB-T signal coverage and reception. Refer to ITU-R and Australian Communications and Media Authority (ACMA) reference documents.

Section 2 of this document sets out the minimum requirements for DVB-T receivers intended for use in the Australian environment.

Because DVB-T is a rapidly evolving technological environment, manufacturers and other users of this document will need to be aware of any future revisions of this document.

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Section 1 Scope and general

1.1 Scope

This document specifies the requirements for equipment used in Australia for the reception of free-to-air (FTA) terrestrial VHF/UHF DVB-T broadcast television and to allow access to all program services offered. In addition, this document sets out permitted options for specifications that manufacturers may provide.

The requirements for digital television receivers set out in this document are consistent with the relevant Australian broadcast regulatory requirements. The international ETSI DVB specifications within the ETSI Standards, related ISO/IEC, ITU-R and NorDig Unified Requirements documents provide for the implementation of various systems. This document specifies the choices available in Australia and references Australian adaptations of these international Standards where appropriate.

This document does not cover —

(a) reception of advanced DVB transmissions;

NOTE Refer to AS 5362 for requirements relating to advanced DVB transmissions, including additional decoding functionality to be used in the Australian environment.

(b) the final presentation characteristics of picture (display) and sound or associated services or requirements for Stereoscopic 3D or 4K UHDTV;

(c) requirements for subscription television receivers; or

(d) interoperability issues for DVB-S, DVB-C and datacasting.

1.2 Application

1.2.1 General

The primary purpose of this document is to specify the minimum requirements for equipment intended to receive, demodulate and decode television broadcasts that conform to the Australian implementation of DVB-T and referenced ISO/IEC and ETSI Standards. However, because there are a range of optional features that receiver manufacturers may provide, additional information and recommendations are provided to clarify the preferred or required (as applicable) operation or facility in such cases.

Under the minimum requirements set out in Section 2, equipment shall be capable of simultaneously decoding from the Transport Stream (TS) a video stream, an associated audio stream and associated teletext closed captions (CCs). The decoded information shall be presented in a time-synchronized manner suitable for a display device and sound reproduction system subject to the mandatory implementation of the parental lock function.

In some cases, the video may need to be spatially format-converted (“scaled”) if the received format is different from the display format. Correspondingly, the received audio channels might need to be processed or downmixed to suit the available sound reproduction equipment.

1.2.2 Application to baseline television receivers

Baseline television receivers shall have capability for reception of existing DVB-T standard definition (SD) and high definition (HD) services in accordance with Section 2. Section 2 sets out the minimum requirements for television receivers if they are to operate in accordance with DVB specifications