



# UK Digital TV Usability and Accessibility Guidelines, including Text to Speech

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DTG Accessibility Working Group

89 Albert Embankment

London

SE1 7TP

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# Preface

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This document is in two parts:

Part A Usability Guidelines

Part B Accessibility Guidelines

There is also an Appendix of links to reference documents.

This guidelines document assumes the receiving device is conformant with the requirements set out in the DTG's [D Book](#).

Part A contains guidance on the non-technical factors affecting the user experience, while Part B contains guidance on making services accessible.

The content of this publication is intended to provide general guidance only. All equipment manufacturers and television platform providers are encouraged and strongly advised to seek independent disability or other relevant advice tailored to their own corporate or organisational needs and objectives in the interpretation of this guidance.

## Nomenclature

In this document, the term “receiver” is used to represent any device designed to receive television services whether delivered by terrestrial, satellite, or Internet-based content delivery mechanisms . Consequently, it includes integrated receivers, set-top boxes, recorders, Smart TVs and other hybrid devices.

The following capitalised words have the meanings shown.

1. **MUST** This word, and the terms "REQUIRED" or "SHALL," mean that the definition is an absolute requirement of the specification.
2. **MUST NOT** This phrase, and the phrase "SHALL NOT," mean that the definition is an absolute prohibition of the specification.
3. **SHOULD** This word, and the adjective "RECOMMENDED," mean that there may exist valid reasons to disregard an item, but the full implications must be understood and carefully weighed before choosing a different course.
4. **SHOULD NOT** This phrase, and the phrase “NOT RECOMMENDED,” mean that there may exist valid reasons when the behaviour is acceptable or even useful, but the full implications should be understood and the case carefully considered before implementing any behaviour described with this label.
5. **MAY** This word, and the adjective “OPTIONAL”, mean that an item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because the vendor feels that it enhances the product while another vendor may omit the same item. An implementation which does not include a particular option **MUST** be prepared to interoperate with another implementation which does include the option, though perhaps with reduced functionality. In the same vein, an implementation which does include a particular option **MUST** be prepared to interoperate with another



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implementation which does not include the option (except, of course, for the feature the option provides.)



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# Introduction

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It is undeniable that digital TV has brought many benefits to viewers, given the improved picture quality, increased choice of channels and the interactivity available. These benefits will not be available to all viewers if receivers are too complex to install and operate or do not support the access services.

It is worth noting the changing demographics in the United Kingdom: there are continual increases in the portion of the population over the age of 70, the age at which hearing loss can become significant as well as deteriorating eyesight and dexterity. At the same time, this portion consumes more TV content and, in many cases, looks to TV, both linear and OTT, to provide company and their link to the world outside their homes. This is also true for people of all ages who suffer from poor physical and mental health, who are at the highest risk of being lonely and rely on TV for vital companionship.

Part A of this document contains guidance on the usability of consumer equipment utilising the digital TV services, from installation and set-up to controls, user interfaces and locating content.

Part B covers the accessibility of content through subtitles and audio description as well as text to speech.

## Areas of concern specific to Connected TV

Connected TV (CTV), brings together traditional television services with Internet-based content and has brought new benefits to viewers. It offers more content, more flexibility and choice over viewing opportunities, more interactivity and some improved accessibility features.

In addition to interactivity provided via the broadcast service (e.g. MHEG-5), further interactivity is provided via the Internet to Connected TVs that support Hybrid Broadcast Broadband TV<sup>1</sup> (HbbTV), a widely adopted standard for connected TV and these recommendations also apply to HbbTV applications.

This new functionality and the added features of Connected TV can create accessibility and general usability challenges whilst offering opportunities for improved accessibility beyond what can be achieved with traditional services.

## Complexity

Connected TV products are frequently complex and the problems of accessibility as faced by disabled and older people in these products are often compounded by general complexity barriers.

## Initial setup

Because of the need for Connected TV receivers to access the Internet, in addition to a broadcast signal, users are often faced with tasks and terminology that they do not understand or with which they

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<sup>1</sup> Further details are available at <https://www.hbbtv.org/>



are not familiar, or which are not designed for accessibility. In addition, devices often require additional accounts to be set up for specific on-demand services.

### **Finding and playing content**

In Connected TV products, users often need to navigate to “different” parts of the system in order to find and play content, or have to activate different media player applications to get to content. Interaction should be simple, consistent and effortless – especially the journey between live broadcast and on-demand services. The differences between access services provision for linear content versus IP delivered content further contribute to the accessibility problem. This does not just pertain to the differences in provision of access services, but also to the often differing methods for activation and control depending on whether or not the content viewed is linear or non-linear in nature.

The facilities for browsing, finding, and selecting content sometimes look and feel very different when comparing linear with on-demand content.

### **User Interface and remote controls**

Users often experience what they perceive to be inconsistencies in menus and other controls, usually because of inherent architectural or semantic differences between linear and non-linear content. For example, they find that pressing subtitle or audio description buttons while watching on-demand content may not have the expected result compared to watching linear content.

Specific accessibility features of the User Interface are sometimes not consistently available and supported for both linear and non-linear content. Text entry methods (for search terms, URLs...) are often inaccessible, in part or entirely, to disabled users.

### **Media Players and other applications**

Embedded media players and other receiver applications often lack the accessibility functions common to other platforms (such as desktops) while Connected TV application developers are frequently unaware of the requirements for accessibility in support of older and disabled users. Applications on companion devices face similar issues and frequently don't even take advantage of native accessibility-related capabilities of the host platform (such as iOS or Android).

Embedded media players frequently do not support some or all the user interface accessibility features of the broadcast parts of the product and propagation of remote control buttons for subtitling and audio description into these media players is often poorly supported.

### **User expectations**

Connected TVs bring the web and TV experiences together. Users may have expectations based on their experience of the web, for example that assistive technologies such as screen readers are available.



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# Part A – Usability Guidelines

## **Purpose**

Part A of this document seeks to provide information on the best industry practices that should deliver an acceptable user experience. Consumers view and judge the services provided by a Television brand largely through the product experience.

The best practices contained within Part A of the document promote some strategies for ensuring the consumer experience is a good one. However, these are guidelines and do not prevent organisations and companies from delivering a better user experience using alternative approaches.



# AI Remote Control Implementation Guidelines

See [D Book](#) Chapter 25 for information on the function-support requirements for remote control handsets.

The following chapter has been written mainly with reference to traditional remote control handsets but, in view of the developments in remote control technologies and interfaces, references to control “buttons” or “keys” may be to control functions, physical buttons, companion screens or voice / gesture controls.

## A1.1 Handset feel and comfort

### A1.1.1 Size and shape

Is the handset large enough to hold comfortably? Is it easy to manipulate using the right or left hand? (E.g. are all buttons accessible with one-handed use?)

When the handset is placed on a flat surface, can it be operated with one finger?

Larger handsets enable larger buttons, labels, and spaces between buttons making them easier to use for people with visual impairments and/or manual dexterity problems. In addition, they can be more comfortable to hold when designed to fit an average human hand size.

The design of the remote control should enable the battery to be changed by users with limited physical dexterity and without the use of tools.

### A1.1.2 Centre of gravity and weight

Is the remote control well-balanced and weighted correctly to hold comfortably?

The centre of gravity should be such that the remote control sits comfortably in the hand. This must be evaluated with the batteries in position. The remote control should also be designed to be easily operated with either the left or right hand. Whilst there is a tendency to develop lightweight products, consumers tend to prefer slightly heavier remote controls.

### A1.1.3 Texture

Is the remote control material non-slippery and easy to grip?

The remote control should be made of an easy grip material (without being abrasive) rather than smooth plastic that slips easily out of the hand. Avoid materials such as shiny metallic (chrome) or smooth plastic that produce glare which can make it difficult to see the buttons and labels and shapes that make it difficult to hold by users with reduced motor skills.

Have the materials specified for the remote control taken account of any necessary toxicity or allergy issues?

Each manufacturer should be able to provide details of raw material content to ensure that harmful or potentially allergenic materials are not present (e.g. latex).



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## A1.2 Transmission

### A1.2.1 Angle of operation

Can the handset operate the target receiver from a range of angles?

In the case of remote controls which rely on line of sight of the receiver, the area (both horizontal and vertical) in which the digital receiver is able to detect the signal from the remote control should be as broad as possible as direct aim towards the digital receiver can be difficult for some users, especially when the reception device is not included in the display device. Consideration must also be given to the physical mounting position of the receiver module as this can adversely affect both the angle and range of the remote control signal reception. Is the angle and range fully specified?

### A1.2.2 Protocol and Technology

Has a suitable transmission protocol been selected?

The transmission protocol and technology specified should ensure that there is no potential interference with other devices in the local area for line of sight devices and local and remote locations for Bluetooth and other wireless remotes. Careful consideration should also be given to potential post installation support to ensure that alternative manufacturers could supply replacement or specialist accessibility products using the same transmission protocol. Alternative technologies such as Bluetooth may offer opportunities to better support users who have accessibility issues.

## A1.3 Button layout and design

### A1.3.1 Functional groups

Are buttons of the same functional category grouped together?

It is easier to identify, operate, and differentiate functions when buttons are grouped together by similar category (for example, numeric buttons, colour buttons, navigation buttons, volume up/down, voice control and additional services).

### A1.3.2 Spacing

Is there variation in spacing between buttons (e.g. bigger spaces between functional groupings)?

Spaces between buttons should be greater between functional button groupings than within groupings, as this makes buttons and groupings of buttons easier to identify and locate.

Are the buttons within a functional group well separated (e.g. by 25% to 50% of button width)?

### A1.3.3 Position

Are more frequently used buttons placed in the easiest to find locations?

Prioritise buttons for inclusion on the handset based on frequency of use. More frequently used functions include standby, channel and volume adjustment, and the EPG service and related buttons ("OK" and "back").

Are standardised or commonly used button layouts used where appropriate?

Consider the comfortable position of the thumb assuming that the user holds and manipulates the control with just one hand, left or right.



If the shape of the casing encourages a particular way of holding the remote (for example, with indents for fingers), ensure buttons are easy to reach when the remote is held in this way.

Section 1.5 makes recommendations in this respect.

Do button positions conform to response stereotypes - “programme up” button above “programme down” button; “volume up” to right or above “volume down”?

The position of buttons relative to others can sometimes be indicative, or at least consistent with their function. This can help locate buttons manually with reduced reliance on visual inspection. For example, at the simplest level, the relative positions of the arrow buttons should be consistent with their direction (“arrow up” above “arrow down”, and “arrow right” adjacent right to “arrow left”), decrease/increase (for example, volume, programme number) can be suggested by relative buttons positions that are left/right, below/above respectively.

#### A1.3.4 Location marker

Is there a raised dot (“nib”) on the number “5” button?

A raised dot (“nib”) on the number “5” button should be provided to help users find the centre of the numeric keypad. This is especially helpful for people with visual impairments who may rely on the “5” button to orient themselves on the remote control. This is consistent with the European Telecommunications Standards Institute (ETSI) standard for tactile identifiers, [ETSI ES 201 381](#).

#### A1.3.5 Distinctiveness

Are buttons intuitively differentiable by size, shape, position and texture?

Intuitively distinctive buttons make the remote control easier to use by touch alone. Buttons can be differentiated by:

**Size** Larger button sizes that are well separated are preferred by users both with and without visual impairments. These facilitate discrete button selection and reduce the need to re-focus when switching visual attention between the display and the remote control.

The most important buttons should be the largest. Optimal button size may be informed by average thumb size data.

**Shape** Button shape can be consistent with function (for example, the four directional buttons for moving around the menus could be shaped as arrows pointing in their respective direction). Hollows in buttons (small circular centre) give clear ridges making them easy to find, comfortable to press, and easy to clean.

**Texture** Textures can be used to differentiate particularly important or frequently used buttons.

**Force / Sensitivity** The button should be designed to ensure that it is not over sensitive and will not be accidentally pressed while the user is locating the button by touch. It should also not be too tactile as this can cause problems with users who have touch or arthritic type issues.

#### A1.3.6 Colour buttons

Are the four standard colour buttons (red, green, yellow, blue) coloured correctly, in the standard order (see [Section 1.4.1.1](#)), the only buttons with these as their background colours, and clearly distinguishable from any other coloured buttons on the control?





Users are most familiar with the standard four colour buttons – red, green, yellow and blue. Ensure that the colours used are clear and unambiguous shades of those colours and could not be mistaken for another colour. Having more than one button with their background as one of the reserved colours (red, green, yellow, blue) may confuse the user when the on-screen display gives options that require the user to respond using the colour buttons. For example, a user may press a red standby button instead of the red colour button. See also [Section 1.4.1](#).

Is there sufficient contrast between the buttons, labels and background?

As a rule, higher contrast increases visibility. Solid background colours (rather than patterned) are desirable.

### **A1.3.7 Toggle**

Do toggle buttons have only two states?

Toggle buttons are useful in that they reduce the need for extra buttons; however, when they are associated with more than two states (options) it may be difficult for the user to remember the order of the options.

The state of a toggle button when it has been pressed should ideally be briefly represented by a suitable icon on the screen and as appropriate by some form of optional visual or acoustic feedback (see Section 1.3.8, below).

### **A1.3.8 Feedback**

Are there one or more simple mechanisms to confirm button press (e.g. a click)?

Users like to know that they have successfully pressed a button. This is especially important for people with visual impairments. Feedback should be provided to notify users of each button press. Note that such feedback should ideally be a response of the receiver to signal that the remote control command initiated by the user has been received and understood by the receiver.

If possible, provide multi-sensory feedback (for example, auditory/visual/tactile). Buttons that elicit a more pronounced tone (as with mobile phones) could be optional and user specified. At the very least a receiver should provide some visual feedback that a button has been pressed, either by a light on the remote control, on the display or even the receiving device.

For more information see [\[2\]](#).

Tactile feedback can be painful for some arthritis sufferers so this should be considered in the design or technical solution.

### **A1.3.9 Labelling**

Is button labelling clear and legible (font, size and colour contrast), durable, and consistent with on-screen display text?

Include clear, legible, and durable button labelling that is consistent with any on-screen text. Sans serif fonts (i.e. those without details at the extremities of characters) are easier to read. Abbreviations (e.g. such as OK, TV) should be in upper case. Strong colour contrasts between labels and background increase usability. The labelling should not easily become indistinct or wear off with use and time.

The remote control labels should directly match the on-screen options (for example, users may be confused when the on-screen “select” option is meant to relate to the remote control “OK” button).



Labelling terms should be unambiguous and easily understood. Where practical, abbreviations should be avoided.

## A1.4 Recommendations for remote control button labelling (traditional handsets)

[D Book](#) Chapter 25 contains recommendations for the labelling of functions controlled by a traditional remote control handset. Reference should be made to [D Book](#) Table 25-1 for DTT receiver functions and to Table 25-2 for DTV recorder functions.

The recommendations are made exactly as printed in quote marks in the D Book tables. Capitalization of button labels should be consistent, e.g. always lower case or always 'Sentence case'. If there is no recommendation in quote marks see the appropriate note for that function in Sections 2.3.1 to 2.3.16, and 2.4.1 to 2.4.9 below.


Broadcasters and interactive content developers should use the recommended labelling when referencing the receiver functions in on-screen instructions.

Unless specifically stated it is recommended to print the label either on or immediately adjacent to the button.

Note the colours red, green, yellow, and blue should only be used as background colours for the buttons described in [Section 1.4.11 "Red, green, yellow and blue colour buttons"](#). Other background colours may be used for all other buttons, however design consideration should be given to users with sight or colour impairment..

The following sections give more detailed recommendations for button labelling and positioning.

### A1.4.1 On/Standby

The on/standby button should be positioned away from the other buttons on the remote control. The  symbol should be used. The symbol should be moulded and/or printed on the button, or printed adjacent to the button. If the on/standby button is coloured red, it must be easily distinguishable from any other red button, see Section 1.3.6. The action should ideally be a toggle, especially if only certain keys will turn the product from off to on.

### A1.4.2 Numeric buttons 0-9

It is preferred that where practicable the numeric buttons 1-9 should be positioned in 3 rows of numbers, with "1" at the top left and "9" on the bottom right. The 0 (zero) key should be on an additional row beneath these three rows as shown in Figure A1-1:

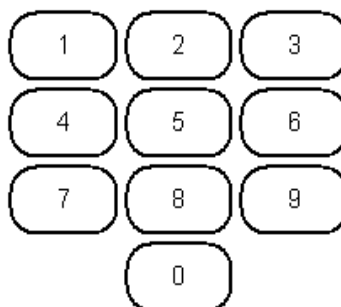


Figure A1-1. Preferred layout for numeric keys



The 5 (five) button should have a nib on or adjacent to the button (ETSI standard for tactile marking [ETSI ES 201 381](#)).

### A1.4.3 Alphabetic entry

Alpha entry on a standard handset (one without an inbuilt alpha-only keypad) should follow the format used by mobile telephones for SMS functionality (see [ETSI ETS 300 640](#)). This includes the numeric button “1” reserved for punctuation/symbols and the numeric button “0” for inserting a space. The letters should be printed either on or adjacent to the relevant button – the number in bold, the letters in normal type.

Lower case is preferred, but not essential.

See I.8 for information on text entry for Connected TV receivers.

Some users with physical disabilities will also be unable to use standard text entry methods.

**Provide feedback.** The set-up process can be assisted for visually-impaired people and some users with cognitive disabilities if there is clear and unambiguous feedback on the exact stage of the process and an accessible means of entering the required information. Devices that support TTS (see Part B - Chapter 3: Text to speech translation) will offer a greatly improved experience for such users, provided the initial setup process is fully covered by the TTS interface. Where feedback would be provided solely in audible form, this would be inaccessible to deaf people and many hearing impaired users.

**Support plug-and-play connection of devices.** A major difficulty in configuring account details such as usernames and passwords (or when entering information like WPA keys for home networking configuration where WPS is not available or not in use), is where keyboard input is required. By supporting zero-configuration attachment of HCI-compliant external USB or Bluetooth keyboards, receivers can greatly improve the accessibility of the initial setup (see I.8).

See I.8 for guidelines on text entry on Connected TV devices.

### A1.4.4 Up, down, left, right (navigation/cursor buttons)

Navigation/cursor buttons should have symbols printed and/or moulded, in order to indicate direction – i.e. arrows or triangles. The buttons should be positioned in a discrete cluster around the “OK” button. The “up”, “down”, “left” and “right” cursor buttons should be positioned above, below, left and right of the “OK” buttons respectively, as shown in Fig. A1-2.

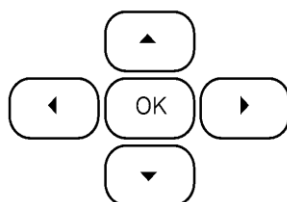


Figure A1-2. Preferred layout for navigation keys

### A1.4.5 OK/select

This button is used to select user interaction items within an interactive application or other receiver function. It should be clearly described in the user guide, particularly if the recommendation is not adopted. The EPG or User Interface must be consistent with the label that is chosen for the remote control.



The button should be positioned in the centre of the navigation cluster, and ideally be a discrete button rather than a rocker. The button should also be easily differentiated from others by touch.

#### A1.4.6 Back

This button should return the user to the previous “level” in an interactive application or other receiver function (e.g. the EPG). Note that using this button for a historical back function is also allowed. If the button is pressed and the user is at the “top level” of an interactive application or receiver function, this function will normally invoke an exit from that application or receiver function.

In MHEG, this button should be mapped to the “cancel” function. This “cancel” function should **not** be mapped to a button called “exit” or “cancel” as implied in previous editions of this document.

#### A1.4.7 Exit

This button should invoke a receiver function that returns the user directly to the last *selected* service or known channel, and acts as though the user has just tuned to that service using the EPG or P+/P- keys (i.e. any running EPG or interactive application(s) is immediately terminated and the user views the video/audio for that service if present).

If there is an auto-boot application present in this selected service the boot process is started.

#### A1.4.8 Info

This button should be used to display either a now/next banner, or information on the currently viewed event, or both.

#### A1.4.9 Text

This button should be used to toggle visibility of interactive services.

#### A1.4.10 Guide

This button is normally used to display a full screen EPG if present.

#### A1.4.11 Red, green, yellow, and blue colour buttons

The buttons should be self-coloured. It is strongly preferred that they are in a horizontal or near horizontal line on the handset, and they should be in order (from left to right) of red, green, yellow and blue, as shown in Fig. A1-3. The four colours should contrast strongly against the remote control case colour.



**Figure A1-3. Preferred layout for colour buttons (red, green, yellow, blue)**

#### A1.4.12 Volume up, volume down

These buttons should use the recognised symbol for volume (↔) with a plus and minus symbol as appropriate. The text “Vol” may also be used.

Note that volume up/down function may exist as two distinct and separate buttons, or may exist as a single “rocker” button. The “+” button should be mounted above or to the right of the “-” button.



### A1.4.13 Mute

This button should use the recognised symbol for the mute function as shown in [D Book](#) Table 25-1.

The mute function should be overridden by pressing “Volume up” or “Volume down”.

### A1.4.14 Program up, program down

This button should select the next available service in the receiver’s channel list.

The program up button (P+, CH+, P, CH) should be mounted above or to the right of the program down key (P-, CH-, P, CH)

### A1.4.15 Subtitles

This button should toggle between displaying subtitles (if available with the selected service) and not displaying them.

The function should be available directly from the remote control.

Note that the receiver should maintain the selected state (“display”/“don’t display” subtitles) across channel changes unless otherwise determined by a user-setting in a suitable set-up menu.

### A1.4.16 Audio Description

This button should control the decoding of Audio Description (AD) if available with the selected service and event and if the receiver supports AD.

The button should toggle between presenting AD mixed with programme sound or just presenting programme sound. The receiver may be capable of directing the mix to independent audio outputs (e.g. phono and/or headphone), in which case this function controls the relevant output.

The function should be available directly from the remote control if the receiver supports AD. If selection of AD requires accessing a setup screen, it is recommended that AD be the dominant item so as to simplify selection by a user who cannot see the screen clearly.

The digital receiver should maintain the selected state (“present AD”/“don’t present AD”) across channel changes unless otherwise determined by a user-setting in a suitable set-up menu.

## A1.5 Voice Control

This button should activate/deactivate a voice control microphone incorporated into the remote control.

## A1.6 Recorder labelling recommendations

[D Book](#) Chapter 25, section 25.2, details the additional functions that are considered essential or strongly recommended for control by the user of a recorder. [D Book](#) Table 25-2 also details the recommendation for function identification or the preferred symbol to be used.

When designing a recorder remote control, the principles of sections 1.1, 1.2 and 1.3 should be applied in conjunction with the additional recommendations of sections 1.6.1 – 1.6.9 and 1.7 below.



### A1.6.1 Play

This button has the dual function of starting to play either a live broadcast or selected recording, and to resume a live broadcast or selected recording that has been paused by the user. The play button should be positioned directly to the side or directly above or below the pause button (see [1.6.2](#)).

The play and pause buttons may be combined on a single rocker button.

When a rocker button is used then both symbols for play and pause should be clearly printed on the rocker button as 2 separate symbols. This should guide the user clearly where to press the rocker button to activate either the play or pause function.

Alternatively, the play and pause buttons may be combined to be used as a single button toggle (see [1.6.3](#)).

If pressed from live TV the play button should take the user directly to playback list menu.

### A1.6.2 Pause

This button should pause the current recording or playback of live broadcast. This will freeze the current frame on screen. The pause button may also have the function to resume the current recording or playback of live broadcast when pressed again.

The play and pause buttons may be combined on a single rocker button.

When a rocker button is used then both symbols for play and pause must be clearly printed on the rocker button as 2 separate symbols. This should guide the user clearly where to press the rocker button to activate either the play or pause function.

Alternatively, the play and pause buttons may be combined to be used as a single button toggle (see [1.6.3](#)).

### A1.6.3 Play/pause

This button may be used to combine the Play and Pause functions as described in [1.6.1](#) and [1.6.2](#). This single button will have the recommended symbol as shown in the table. The button will toggle between the Play and Pause functions.

### A1.6.4 Stop

This button should be used to stop playback or pause live TV. This will return the device back to a previously reserved state or logical condition.

### A1.6.5 Record

This button should be used to record the current event if available, and optionally the selected event from an EPG. This button should be identified by a red circle printed on the centre of the button. The button itself should not be red in colour to avoid confusion with the red button referred to in Section [1.4.11](#). It is recommended that if the record button is a dark colour then a white circular border should be printed around the outside of the red circle to improve the visual contrast.

A white letter “R” printed on the red circle can be used for additional visual clarity.



### **A1.6.6 Fast forward**

This button should be used to fast forward the replay of an event or the contents of the live buffer. This function may also have the feature that by pressing the button again the speed of fast forward would be increased.

This button should be located to the right of the fast reverse button (see 1.6.7 and 1.7).

### **A1.6.7 Fast reverse**

This button should be used to fast reverse the content of an event or the contents of the live buffer. This function may also have the feature that by pressing the button again the speed of fast reverse would be increased.

This button should be located to the left of the fast forward button (see 1.6.6, below, and [1.6](#)).

### **A1.6.8 Library**

This button is used to display the current list of recorded events on the storage media. This button should be located close to the navigation keys (see [1.4.1](#)) to allow easy navigation once in the library.

### **A1.6.9 Timer list**

This button is used to display the planned recordings or give access to add further recordings manually.

## **A1.7 Recorder functional groups**

Good remote control design will ensure that the following Recorder specific keys are grouped together in a distinctive group (see principles outlined in [1.4](#)).

The following principles should apply to the grouping of Recorder specific buttons:

Play, pause or play/pause, stop (if present), fast forward and fast reverse should be grouped as a clearly distinguishable set of buttons on the remote control.

The record button may be part of this Recorder specific group of buttons or it may be more prominently located on its own for clarity. If the record button is located on its own it should be adjacent to the Recorder specific group of buttons.

Play and pause, if separate buttons, should be adjacent and either alongside or above and below one another.

The fast forward and fast reverse keys should be in the same horizontal row of buttons with fast forward positioned to the right of fast reverse.

## **A1.8 Control of TTS**

On TTS-capable receivers, audio information or feedback (e.g. a key click sound) should be provided whenever a control function is used (front panel, remote controller or by other means). If the currently spoken TTS audio has not completed before another control function is selected, the in-progress TTS should be cancelled to allow the new function's TTS audio to begin with minimal delay.



## **AI.9 Control of access services in IP-based content**

Support for subtitling and audio description for broadcast content is specified in the D-Book, which also covers their delivery as part of IP based services. The availability of access services for IP based content is at present low, but rising steadily.

### **AI.9.1 User controls for access services**

At present, control over access services (for example switching them on or off) is frequently done in a very different way when using IP-delivered content compared to broadcast content.

#### **AI.9.1.1 Control of access service should be independent of source**

Receivers should allow end users to change the on/off setting for each access service while viewing or playing content, irrespective of whether or not this is IP or broadcast content.

#### **AI.9.1.2 Availability of access services should be displayed for all services**

Receivers should inform the user of the availability of access services (and any changes therein) for the programme they are currently viewing, for content in content/programme guides and when changing the content, including when switching between linear and non-linear content.

#### **AI.9.1.3 Maintain selection of access services**

Receivers should also maintain the choice of enabled/disabled access services across channel changes/content changes and across power on/standby cycles and apply this to both linear and non-linear services.

## **AI.10 Text entry on Connected TV (CTV) receivers**

Users of CTV receivers will need to enter text at several times, during the initial set-up and connection to a home network and in normal use to enter passwords or PINs or when interacting with applications.

### **AI.10.1.1 Entering passwords or PINs should be simple.**

Many CTV receivers require text input via the remote control or via on-screen keyboards, or various combinations of these methods. The low usability of such methods can create an accessibility barrier to the visually impaired and users with physical or cognitive disabilities.

Some users with physical disabilities will also be unable to use standard text entry methods. Voice control, directly or via a “Smart Speaker” can be one alternative means of text entry.

### **AI.10.1.2 Provide feedback.**

Clear and unambiguous feedback on the exact stage of the process and the context of any data entry field should be provided, together with an accessible means of entering the required information. Devices that support TTS (Text to Speech translation) offer a greatly improved experience to visually-impaired users, especially if the initial setup process is fully covered by the TTS interface. If feedback is provided solely in audible form, it will be inaccessible to deaf people and many hearing impaired users.

**Support plug-and-play connection of devices.** Receivers can greatly improve the accessibility of the initial setup by supporting zero-configuration attachment of HCI-compliant external USB or Bluetooth keyboards.





### A1.10.1.3 Support for HID compliant external keyboards<sup>2</sup>

Receivers that allow Human Interface Device (HID) compliant external keyboards to be connected via a USB port or Bluetooth will significantly improve text entry accessibility, as this would allow not just a range of standard wired and wireless keyboards to be used with the receiver, but would also allow specialised keyboards to be connected to the system.

### A1.10.2 Text input via companion devices

Whilst text entry via companion devices, such as mobile phones or tablets, is an improvement over remote-control or on-screen keyboards in terms of usability and accessibility, it is not fully equivalent to allowing HID-compliant USB keyboards to be connected. They cannot replace special assistive technology keyboards: they do not offer the physical properties (in terms of key travel, repeat, layout, shape and separation and tactile feedback provided by specialised keyboards) or the degree of customisation required by some end users. In addition, the accessibility of the companion screen itself comes into play together with the accessibility of the discovery and pairing process required to connect the companion device to the CTV receiver.

Other alternative input assistive technologies such as single-switch controls might also be used with HID-compliant USB support.

**Note:** The accessibility of companion devices themselves and the accessibility of apps are outside the scope of this document.

### A1.10.3 Spoken input

Some solutions allow for spoken input (using automatic speech recognition, ASR) as an alternative to text input. This can improve the accessibility of text entry for some categories of disabled people, but this is not a solution that will work for all users and should therefore *not* be seen as the sole alternative to standard input methods.

A combination of a voice control facility for text entry and a text to speech function for confirmatory feedback of text entered can be beneficial to visually-impaired users.

### A1.10.4 Text-to-speech assisted input

Some users, in particular blind and partially-sighted users, may benefit from text entry using the numeric keys on the remote control assisted by the text-to-speech engine. As characters are entered, the text-to-speech engine provides spoken feedback on the text entered.

See Part B, Chapter 3: “Text to Speech translation” for more information about the text-to-speech function.

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<sup>2</sup> For details see “USB Device Class Definition for Human Interface Devices, Version 1.11” ([www.usb.org](http://www.usb.org))



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## **AI.11 Voice control of receiver functions**

Voice control of receivers can be provided through voice remote controls or other voice assistants. Where remote controls are used that require a button to be pressed before the voice system operates, consideration should be given to users who have reduced motor skills.

## **AI.12 Other considerations**

Where a remote control is based on the use of a touch screen, this should not be the only means of controlling the receiver: the use of such devices can be difficult for those with limited control of hand movements or single-handed.



# A2 Packaging, Documentation, and Connectivity

## A2.1 Packaging

### A2.1.1 Information on the packaging

The packaging should convey clear information to the consumer of the receiver's capabilities. Official recognised logos should be used where appropriate. (Typically, these should include the type of receiver, the broadcast platform(s) and services supported and any special capabilities).

The packaging should inform the consumer of any additional facilities or hardware that may be needed. (This will include connecting cables and type of receiving antenna system(s)).

### A2.1.2 Contents of packaging

In addition to mandatory documentation, the packaging should also contain:

A printed Quick Start Guide (see [2.4.32](#)). - The purpose of this is to ensure that the user can install the receiver to achieve at least basic reception of services. This should be in printed form and clearly identified as essential reading

A Full user guide (see [2.5.1](#)) - Best practice is for these to be in printed form but alternative on-screen formats can be considered if they meet certain criteria. If not supplied, a clear link to availability on a website should be given and should be supported through the life of the product.

Remote control with batteries.

### A2.1.3 Opening the packaging

The packaging should be easy to open, given the dexterity problems and sight problems users might have. It should be easy to remove the packaging for these users.

The best practice for all products is for the packaging to be user friendly and so avoid the use of staples or glue for securing the package. It is also recommended that a solid type internal cushioning material be used, when required, and the use of loose materials such as polystyrene balls is avoided.

The best practice for large receivers with integrated displays is that the packaging should be designed such that it can be lifted away from the product rather than the product having to be lifted from the packaging.

For receivers with integrated displays advice should be given to the consumer where two or more persons are required to remove the packaging from the product. Small components such as batteries and other accessories should be individually and securely wrapped but easy to open by hand. Such component parts should be easily seen when the main item is removed so they are not accidentally discarded with the packaging.



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## A2.2 User documentation

### A2.2.1 General

User guides should be easy to read, concise and jargon-free (using plain English). They should avoid technical abbreviations and have a design and content that will be accessible to most users.

For general guidance on best practice in documentation, see the guide “How to write in plain English” [1]. The process of applying for the Plain English Campaign’s Crystal Mark will also help in producing a document that can be read, understood, and acted upon by the intended audience.

The user guide should comprise at least a Quick Start Guide and a main user guide. Best practice is for these to be separate documents.

If there is also a copy of any written documentation online, this should be provided in an accessible HTML or PDF file format. This will enable the user to change the text size within the document to suit individual preferences as standard. HTML documents and text-based PDF files can usually be read by assistive technology such as screen readers.

It can be beneficial for users who find text inaccessible to have access to instructions as an audio file, with descriptions in place of diagrams.

### A2.2.2 Design & presentation

The type and size of typeface, its colour contrast from the colour of the paper and the quality of the paper all affect legibility. Contrast is greatest when very dark colours are used on very pale paper. Glossy paper should be avoided as reflected light obscures the print. Page layout should be simple and uncluttered.

### A2.2.3 Clear and legible typeface

Use simple sans serif or serif typefaces e.g. Arial, Foundry Form, Gill Sans, Helvetica, Bookman, Garamond, Palatino, Times. Stylised and ornate typefaces are to be avoided e.g. Apple Chancery, Braggadocio, Brush Script, Curlz MT, Desdemona, Edwardian Script, Sand, Textile. Italics and capital letters should be avoided for continuous text, since they make word shapes difficult to recognise for people with impaired sight.

### A2.2.4 Main text minimum font size

There is some variation in font size between typefaces but 12-point is legible for most readers. Large print for partially sighted people should be at least 16-point.

### A2.2.5 Single language

Where the instruction manual includes different languages, these should be presented in separate sections, complete with diagrams.

### A2.2.6 Single model documentation

An instruction manual should cover a single product only unless differences between the models covered are small and mainly cosmetic.

### A2.2.7 Content

The user guides should have a comprehensive, relevant index. In the case of shorter guides, a detailed contents page (covering the main sections and sub-sections) may be considered adequate.



### **A2.2.8 Accessibility**

The user guides should provide information about the accessibility features of the product and about access services such as subtitling and audio description, ideally in a separate accessibility section

### **A2.2.9 Pictorial representations**

The user guides should have pictorial representations and diagrams of the main features to complement the text to help understanding. These should have sufficient resolution and contrast to be useful.

Best practice is for these illustrations to be adjacent to the text to which they refer and presented in a context that will enable the user to recognise. For example, do not just show an isolated button; also show its location on the remote control.

No text should be printed on an image where it will be difficult to read. This is particularly important where screen representations are included.

## **A2.3 Troubleshooting**

The user guide should include a “troubleshooting” section relevant to the product and to reception issues in general. Best practice is for the troubleshooting problems to be based on real user experiences. For example, reception problems could be based on data from organisations such as Digital UK.

As a minimum it is recommended that the following situations are addressed:

No TV picture on first installation (e.g. reasons could be: antenna not connected, incorrect aerial or incorrect aerial alignment, TV not selected for appropriate input).

Some groups of services missing (e.g. reasons could be: incorrect aerial for full reception, not all channels available from selected transmitter).

Picture breaks up (e.g. aerial or down-lead needs upgrading or servicing, local interference from domestic appliances).

Tuning in services when using an indoor aerial (this can be difficult as the optimum aerial location may need to be determined. One solution is to tune receive in first with local roof aerial to establish correct tuning and then locate indoor aerial. Best location is often high up and/or near to window).

Receiver locks up or freezes (e.g. explain how to reboot the system).

Loss of individual service(s) (e.g. local service changes so need to retune or add new services. The user should be referred to the appropriate section of the instruction manual.).

Loss of all or group of services (this may occur if the user moves location or a DVB network change has occurred). Here the need to do a full retune should be explained and the user should be referred to the appropriate section of the instruction manual.

Receiver is receiving multiple services or wrong services are listed in primary LCNs. This will occur when the user is in an area with transmitter overlap, particularly if the transmitters are for different regions. The user should be referred to the appropriate section of the instruction manual that deals with manual tuning and target region descriptor reception. Reference should be made to the manual retuning section of the Digital UK website where the user can obtain a printout or PDF with all the relevant UHF channel numbers for a given location. The contact telephone number for the Freeview advice line (03456 505050) can be included for users without Internet access to obtain the relevant UHF channel numbers.



Advice for users of Freesat receivers is available from the Freesat website.

Pictures sometimes appear squashed. (This is caused by incorrect aspect ratio selection on the set top box receiver or incorrect auto widescreen setting on the television receiver. The user should be referred to the appropriate section of the instruction manual).

The following should also be included:

Where to find details about services and service changes in your area, e.g. the coverage checker on the Digital UK website and the Freeview telephone advice line on 03456 505050.

Users should be advised to leave their receiver on standby overnight periodically to receive latest over-air software downloads and channel line-up changes.

Information on software updates online as most new products will be SMART / connected.

### **A2.3.1 Product Support**

The supplied documents should incorporate a clear indication of where dedicated information and support services are available.

## **A2.4 Scope of user guide(s)**

The user guide(s) should cover the operation of the receiver in detail, and not assume prior knowledge of this type of product. It should provide clear explanations and demonstrations of the features: in particular, advice on how to make best use of the tools provided to enable the user to select a service and plan future viewing, including accessing services delivered via the Internet.

### **A2.4.1 On-screen information**

Where possible sufficient on-screen information should be provided to avoid reliance on a user guide.

### **A2.4.2 Accessibility statement**

Where a product has been specifically designed for given user groups (for example a product has many of the features related to visually-impaired people as covered in this document), it may be useful to include a statement declaring this and listing the specific features and behaviours intended to support this user group. This could be of value to those purchasing receivers online without the benefit of demonstration or advice from sales staff.

Where present, the accessibility statement should be included at the start of the user guide.

### **A2.4.3 Quick Start Guide (QSG)**

#### **A2.4.3.1 QSG General**

The QSG should be concise with only essential information and should be designed to be easy to follow.

The QSG should use a logical systematic approach to guide the user through the installation, connecting up, tuning sequence and configuring the receiver for optimum performance. This can be done using text instructions with diagrams and screen shots of principal menus. Good practice design can keep these instructions to a minimum if the receiver provides comprehensive, on-screen, installation and tuning guidance.

The QSG should encourage the user to read the full user guide.



### **A2.4.3.2 QSG Content**

The QSG should only contain general information on how to configure and use the equipment.

The QSG should contain:

How to setup the receiver for the first time with a clear diagram and explanation on the use of the remote control navigation buttons that may be required (e.g. to initiate or complete this process).

How to retune the receiver including information regarding the likely need for retuning in the future.

An explanation of the need for the correct receiving antenna for reception of all multiplexes for current and future transmissions as appropriate.

Text and a diagram used to identify the key features on the remote control with references to the sections in the main user guide where more detail can be obtained.

Troubleshooting tips concerning installation and tuning. This should include problems related to a poor or incorrect aerial (see 2.3, above)

A conclusion with some basics of operating the device e.g. switching on and off and changing channel. It should also make specific reference to the sections in the main instruction book where full information on key features can be obtained (adjusting picture and sound, accessing text, accessing the EPG).

### **A2.4.3.3 QSG connectivity for receivers with integrated display**

The QSG should provide text instructions and diagrams for the following basic connection options – as appropriate:

Connection to aerial, or dish, etc.

Connection to the power supply.

Connection to the home network.

Connection to a typical external recording device.

For more advanced connection diagrams the user should be referred to the main user guide and also to links to suitable on-line help such as official broadcaster support or the manufacturer's connectivity support.

### **A2.4.3.4 QSG connectivity for receivers without integrated displays**

The QSG should provide the following guidance:

Connection to a TV via HDMI or SCART where appropriate.

All common connection configurations should be shown with clear advice on which one is most appropriate for different scenarios.

The connection configurations should be shown diagrammatically using pictorial images. Essential connectivity drawings should be sufficiently large profile to clearly show connections, especially if polarity or specific placement is required.



## A2.5 Main user guide

### A2.5.1 Presentation of main user guide – printed format

The main user guide should cover all operations of the receiver. It should be presented in a friendly format so that users are encouraged to read it.

A best practice approach is to structure the user guide into two sections to make it less cluttered and complex for the new user. These sections separately cover:

**Basic features** - Basic features include those features required by the user for viewing television services following initial purchase and installation. These could include the connections, installation, and tuning, and using the receiver for its primary functions.

**Advanced features** - Additional features include information, features and services not essential for the user immediately following purchase. These can be addressed later once the user has become confident at using the product and its interface.

## A2.6 Electronic user guides

For complex and multi-function products alternatives to the printed user guide may be appropriate if the printed guide becomes unacceptably large (e.g. over 100 pages).

Here a best practice approach is to provide a printed introductory user guide, additional to the QSG, describing the basic features and operation such that the consumer can use the equipment for receiving and viewing the main services and main functions. This short guide should also contain clear instructions on how to access and use the on-screen guide. The more detailed instructions could then be provided on-line or on a supplied electronic storage device.

If a user guide is provided in electronic form then the following criteria should apply:

It should have a comprehensive interactive index that allows the user to navigate to the required section or topic.

It should have an interactive content or text search facility, and a context-sensitive help tool when the receiver is in use, to take the user to the appropriate section of the guide.

Where the user guide is provided on the associated display it should be in an interactive format such that any instructions being given can be carried out without the user having to exit the guide.

The presentation of the electronic guide should be consistent with the display technology, e.g. using established website design principles. Font size and line spacing of text should be appropriate for TV screen viewing. The use of annotated or animated diagrams may help explain technical issues.

It should be available in an accessible format, e.g. large text.

It should also be possible for the user guide to be printed out or otherwise available in printed or audio form (using a natural voice) on request.

### A2.6.1 Special formats

It is recommended that the User Guide is additionally available, on request, in alternative formats e.g. including, but not limited to, large print or audio.





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## A2.7 Connections

As a minimum requirement, the product should comply with Chapter 22, *Receiver Requirements*, of the DTG D-Book.

STBs and recorders should use HDMI CEC signalling to provide single remote control operation (for implementation guidelines see D-Book Chapter 22).

### A2.7.1 Identification

Where a choice of inputs and/or outputs is provided, the connector designation e.g. “HDMI 1”, “AV1”, “SCART 1” should be identified on the product using text or standard symbols. The choice of size and contrast should be such to make it clearly visible. Explanations and recommended functions of these connectors should be explained in the user guide.

Where connections have specific limitations, e.g. some HDMI ports may not support HDMI 2.0, these should be clearly marked.

### A2.7.2 Access for receivers with an integrated display

For receivers with an integrated display that can be wall mounted, best practice is for there to be convenient access to some connections when it is wall mounted.

Basic operating controls should be provided on the product itself to provide at least a minimum level of operation without the need for a remote control. These should be labelled clearly and meaningfully.

Where a function can be activated on the product itself it should also be possible to de-activate it there.



## A3 Installation and Tuning

### A3.1 Initial settings

#### A3.1.1 On-screen presentation

At all stages of tuning and retuning the status of the process should be indicated on the display. This should use text to describe that action being carried out with an indication of the progress and time remaining. Where instructions to the user are given the meaning should be clear and should avoid technical jargon and should avoid the necessity to refer to the user guide.

### A3.2 First-time tuning

#### A3.2.1 Process

Best practice is for receivers to carry out a full tuning sequence automatically following initial powering on. This can be carried out using the following process, assuming the receiver is connected to a display and a power source and batteries have been inserted into the remote control:

On-Screen display reminds the user to connect a suitable antenna and offers a “start tuning” prompt.

A full scan of the broadcast band.

A message to inform the user that the tuning process is complete.

At all times during the tuning there should be an on-screen indication to give the user confidence that the receiver is actively carrying out the process. This indication should also give notification of what is taking place and the progress of each stage.

As each multiplex is received, information detailing the services should be displayed. Following the tuning operation, the total number of receivable TV and radio services should be displayed.

The user should be prompted to let the tuning process complete fully before exiting it. A manual tuning process should also be provided to help tune the receiver under difficult reception conditions. This process should be explained in the user guide.

If, after tuning, no signals are detected, there should be an on-screen prompt to the user to check their antenna connection with a direct access retune prompt (e.g. “try again”).

### A3.3 Advanced settings

Following initial tuning, an on-screen message should prompt users of the options to set up any preferences. This may be achieved by referring them to the Quick Start Guide or by an on-screen systematic process. Typical preferences are:

Subtitling or AD default on.

Set-up favourites or ‘hide’ channels (as appropriate).

Power saving modes or timers.



Turn on specific accessibility features if present.

## A3.4 Initial setup of connected TV (CTV) receivers

In addition to the receiver installation guidelines in sections 3.1 - 3.3 above CTV devices need to be connected to a home IP network for access to Internet-based services and applications. Furthermore, many CTV receivers provide access to on-demand and other services that require configuration of account details (typically username and password or PIN) before they can be used.

Some aspects of product setup typically only occur once or twice during a product's usage. Manufacturers or retailers may therefore **consider offering assisted setup to customers** as an alternative to self-install. This could be in the form of face to face help or remote assistance over a network connection. In the case of remote assistance, the strategy still requires the user to install the product to such an extent that it can establish a successful remote assistance connection.

Many aspects of setup are relevant even after first usage: for instance, retuning, changing authentication credentials and pairing with companion devices. Consequently, these aspects must still be designed to be as accessible as possible.

### A3.4.1 Avoid Jargon

**Jargon should be avoided** when explaining to end users how to set up the home networking connection and configure their accounts. Many end users will not understand terms and abbreviations like "DHCP", "IP Address" etc.

Describing actions on screen and in any documentation in plain language so that non-technical audiences can understand them is, therefore, important.

### A3.4.2 Text Entry

The recommendations in chapter 1 on Text Entry should be supported in full at the initial setup stage, in particular for entry of passwords and PINs.

#### A3.4.2.1 Verification of credentials

Allow repeated attempts to set up accounts.

The user should be able to test individual accounts as they are entered into the system where this does not happen automatically once the user has entered details. If the test fails (typically because the details entered are incorrect), the user should be offered the choice of retrying immediately, trying again later (this may require providing guidance on how to return to this step) or proceeding with the rest of the setup process.

### A3.4.3 Connection to the home network

#### A3.4.3.1 Wired connections

**Use DHCP as default.**

Receivers that are connected to a home network by means of a wired connection should attempt to establish a connection as soon as the electrical connection with a network is established.

#### A3.4.4 Wireless connections

**Support WPS**



For wireless connections, receivers should support WPS (Wi-Fi Protected Setup) as this makes connection to a secure home network much easier for the user, especially when providing the user with a simple systematic instruction.

The advised sequence is to press the WPS button on the router last (receiver first) to avoid the (small) risk of concurrent WPS activation by neighbouring devices.

### **A3.4.5 Verification of WAN connectivity**

Test and confirm access to external site.

Once configured for IP access, a receiver should try a connection to a relevant remote server and inform the user of success or failure, since even if connection to a local network is successful, this does not guarantee external connectivity is available. (WAN: Wide Area Network)

### **A3.4.6 Pairing with companion devices**

#### **Support automatic discovery of connected devices.**

Many Connected TV products can be used with companion devices (secondary devices such as smartphones and tablets).

In some cases, companion devices provide an additional input method for text entry which might benefit from the accessibility features of the secondary device's Operating System. However, this obviously relies on the ability to successfully connect the companion device to the receiver, which in turn requires that process to be fully accessible.

If the secondary device is already connected to the home network, receivers may be set up to accept connection requests from devices on the same local network automatically (advanced users should be offered the possibility of switching this ability off where security concerns apply).

As an example of current best practice, some products provide pairing whereby an automatic discovery process identifies the new device (discovered on the local LAN or via Bluetooth for example) and the user only needs to ensure both devices show the same, one-off numerical code (this must be read out to blind users). If the user confirms the codes are correct, the pairing is completed and the devices considered authorised.

In addition to text entry, companion devices may provide further alternative methods for operating the product that can be useful to specific user groups. This may include access to the EPG, a spoken interface on the companion device, a simplified user interface, etc.

This screen should also have a clear 'exit' or 'skip' prompt.



## A4 The User Interface (UI)

As a priority, the design of the user interface for regular basic use, should take account of the needs of all possible users. This includes, but is not limited to:

- Switching on and off
- Changing channel
- Adjusting volume (where applicable)
- Accessing the EPG and finding content.

### A4.1 On-screen messages and prompts

Messages and prompts should be easy to read, with text presented against a plain background.

Best practice is to use a sans serif font size of at least 20 TV lines on an HD display (capital “V”) (12 TV lines on a Standard Definition display) designed for readability at normal viewing distances. The Tiresias font is recommended but other fonts designed for accessibility on modern screen technologies are also available.

The User Interface (UI) should be designed using principles derived from good web design practice (see, for example, [W3C guidelines](http://www.w3.org) at [www.w3.org](http://www.w3.org)) especially when working down menus (e.g. use of clear and unambiguous menu terminology, highlighting current position in the menu etc.). Any selected menu option should be highlighted clearly.

It is further recommended that:

There should be a direct and consistent correspondence between relevant on-screen prompts and button labels on the remote control.

Mixed case letters should be used: if not possible then lower-case should be favoured over upper-case. Italic, underlined, oblique or condensed fonts should be avoided.

Text and relevant symbols/icons should be displayed with good contrast. Colours should be limited to an absolute maximum of 85% saturation. Pure red & white and combinations of red and green should be avoided.

Arabic numerals only should be used (e.g. 1, 2, 3, 4, 5...)

Symbols should follow recognised standards.

Arrows should follow the ISO7001 specification.

Generous inter-linear spacing should be used. Words should have a clear space around them especially adjacent to symbols.

Flashing and scrolling text should be avoided.

Left-aligned text should be used rather than centred or right-aligned. Justified paragraphs should be avoided.

#### A4.1.1 On-screen menus

Ideally, each menu should be complete on the screen but if there are further menu options this should be indicated to the user.



Menu headings should avoid technical terminology unless accompanied by clear explanations of the meaning.

Most commonly used menu items should be nearer the top of each menu.

Main menu categories should be grouped logically from a user's perspective. Best practice is to avoid vague or ambiguous terms such as "tools" or "accessories".

Where possible, menu navigation and presentation should be consistent for the different functions of the receiver.

There should be no observable latency between using the navigation buttons and the movement of the screen display cursor.

On-screen menu, EPG and navigation prompts should be consistent with the remote control labelling and navigation layout.

When a menu item is highlighted the contents of that option should be further described or the options displayed.

## **A4.2 Interaction between the remote control and the display**

### **A4.2.1 Messages delivered in the broadcast**

Any information or instructions generated by the platform operator relating to a network change event should be displayed such that the importance and relevance of the message is clear to the user.

The message should be unambiguous and should not use technical terminology without adequate explanation. The message should not require the user to scroll down the screen; it should be complete on a single screen, or sequence of screens as necessary.

Where appropriate, the message should include references to helplines. The display of the message should give instructions on how to clear the message and how to save it for a later reminder.

If the message requires user initiated or automatic re-configuration of the receiver there should also be a warning not to unplug the receiver while this action is taking place.

When an assisted or automatic retune of the receiver occurs, a clear on-screen indication should be given to the user that this is taking place e.g. a progress bar or a "please wait" message.

## **A4.3 Service selection (finding a programme)**

Digital Television offers the user a choice of ways for selecting an event, each with its own benefits. To achieve the best from the system, each of these methods needs to be provided such that these benefits are realised.

This section covers:

- Service lists (Channel list).
- Now and Next (N&N EIT<sub>pt</sub>).
- the electronic programme guide (EPG).



### A4.3.1 Service list

This feature should give quick access to a selected service, it should be quick and responsive to navigate and select using the navigation buttons.

The user may wish to use an alternative third-party EPG offered by the receiver.

### A4.3.2 Info (Now and Next)

It is required that the receiver provides a convenient means for the user to access information relating to the programmes being currently broadcast, as well as the accessibility features available, and to those that are to be broadcast subsequently. This is typically achieved by selecting the Info function on the remote control, which uses the Now and Next information that is carried in the EIT data. Alternative methods such as a mini-guide are a valid alternative.

It is recommended that when in Info or mini-guide mode on a particular service that the user can scroll through other services to view the Info for those services. Accessibility options should be displayable for future events in the Info banner.

The Info function or mini-guide should be accessed without interrupting the viewing of the currently-tuned service. This can be achieved by ensuring that the programme detail is displayed as a banner or box, typically at the bottom of the screen and occupying less than one third of the screen height so as not to obscure heads and allowing the user to continue viewing the current event. If selectable toggled access to programme 'info' is additionally offered for a N&N or mini-guide displayed programme, then the display banner may exceed this size while this detail is displayed. If extended 'info' is available then the size may exceed the lower third of the screen.

The best practice for access and exit to the 'now and next', mini guide or 'info' is achieved by minimal use of the remote control buttons, e.g. by a single button toggling the action.

## A4.4 Electronic Programme Guide (EPG)

General information on the practices to be followed by EPG providers can be found in a Code of Practice published by Ofcom<sup>3</sup>.

To benefit users with impaired vision and hearing, a receiver should facilitate:

rendering the text needed for EPG navigation and the provision of information on channels and programmes included in the EPG as speech;

highlighting in the EPG display or listing separately programmes with audio description (and with signing, for users with hearing impairments);

selection of a 'high contrast' display

adjustment of the display of EPG information so that it can be magnified, or the text enlarged.

The following sections give detailed information on best practice for a satisfactory user experience. Information on design for legibility can be found in Chapter 5.

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<sup>3</sup> [https://www.ofcom.org.uk/\\_\\_data/assets/pdf\\_file/0031/19399/epgcode.pdf](https://www.ofcom.org.uk/__data/assets/pdf_file/0031/19399/epgcode.pdf)



#### **A4.4.1 Favourite channels**

The provision of a Favourite Channels facility is recommended as this enables users to quickly locate their preferred services from the increasing number of services available. This is particularly useful for viewers using assistive technology.

#### **A4.4.2 EPG format**

The EPG should be displayed in a format that allows the user to conveniently review programmes in a manner that allows them to directly compare programme schedules between channels. Good practice is to show a minimum of 5 services per screen covering a 2 to 2.5 hour period, using a common timeline.

Fewer services and shorter timelines may be used for a magnified setting (for users with sight loss) but should not be the default. For readability the text should be as large as possible while still leaving a gap between the text and any surrounding gridlines. More channels or time may be considered if this can be achieved without loss of clarity.

#### **A4.4.3 Navigation via EPG**

When navigating the EPG, for best practice it should be possible to:

Scroll through the service list one service at a time or more rapidly one screen at a time.

Scroll along the timeline in small steps (e.g. 0.5 hours at a time) or more rapidly (e.g. 1 day at a time).

Change service (channel) by selecting from the current event on the EPG.

Book a recording or set a reminder.

Best practice is to provide this navigation using the navigation buttons and the colour buttons.

#### **A4.4.4 EPG load time**

In receivers where the EPG event data is cleared when in standby, the EPG should re-populate quickly after the system is returned to on-mode (typically to within 90% full in 10 minutes).

#### **A4.4.5 Optional EPG display styles**

If the system offers alternative EPG display styles such as a single service guide these should be provided as options, not as the default.

#### **A4.4.6 The synopsis (info) display**

When possible, the full synopsis should be seen on the screen. including any access services available.

### **A4.5 Channel management**

#### **A4.5.1 Deleting or hiding channels**

It should be possible to delete or hide selected channels so they cannot be accessed or seen in the EPG or service list. In the case of the delete function a suitable on-screen message should be displayed warning that this channel will become inaccessible unless a full retune is carried out.

Retuning should be PIN protected.

Hidden channels should only be re-accessible using a PIN.

A reliable recovery system should be provided for the case of the user forgetting the PIN.





### A4.5.2 Changing channels

Ideally, whenever the user changes channel, details of the current programme being received on that channel should be displayed.

## A4.6 Retuning

### A4.6.1 User-initiated retuning

The user-initiated retuning process should follow the same procedure as the first-time tuning described in [Section 3.2](#). Best practice is for the main user guide to give specific retuning information in an easy to locate section.

Access to the retune option should be in a menu group with a logical, intuitive title: “setup” or “tuning”. Menu titles such as “configuration”, “tools” or “accessories” do not convey an intuitive message. To avoid potential confusion that may occur by offering the user different retuning options, best practice is for a “full auto-scan” option to be offered as the recommended option.

Alternative options such as “manual tuning”, “search for new service retune” or “factory reset”, if available, should only be offered as secondary options.

Where applicable, before and after retuning, notification should be given to the user that personalised settings such as favourite groups, hidden or deleted channels and events tagged for reminder or recording may have to be reset.

It should be clear to the user when the retuning process has been completed: returning the user to the retuning menu should be avoided. There should never be a long period where the screen is blank or looks off.

### A4.6.2 Assisted retuning

If the receiver incorporates auto retune (i.e. updates the service list without user intervention) this function should be made clear in accompanying user documentation.

## A4.7 Booking and viewing recordings

### A4.7.1 Recording

When booking a recording a clear indication should be given to the user of the selected event both in the EPG and in the scheduled recording display. When initiating a recording of a current programme a clear indication that a recording has been started should be given. This can be either a momentary on-screen indication or a permanent front panel display, or both.

When a ‘live’ recording is in progress this should be clearly indicated on the Now & Next and EPG displays for that programme.

When more than one recording is in progress the resulting inaccessible channels should be indicated as such, typically they can be greyed out from the channel list and EPG to indicate to the user that they unavailable. If a user tries to access an inaccessible channel a message explaining why it cannot be viewed should be displayed.

When the recording storage medium is near to full capacity a warning message should be displayed on the screen whenever a recording starts or a new recording is programmed.



Prior to deleting a recorded programme, a warning message should be given for the user to confirm the deletion.

Mechanisms to allow the user to recover deleted recordings, comparable to a computer's recycle bin, should be provided if possible.

### **A4.7.2 Playing back and pause live TV**

When operating DTR functions such as pause live TV, fast forward and rewind there should be a clear indication to the user of which operation is being carried out as well as a position indicator where applicable.

The live TV buffer should be on by default so that an instant rewind function is always available.

The stop button should stop playback and return the user to live TV – but not delete the 'live buffer'.

When playing back in any special mode such as fast or slow motion then a graphic indication of progress, speed, etc., should be displayed on the screen. This display should not unduly obscure the picture.

### **A4.7.3 Library**

DTRs should provide the user with a 'library' feature showing recorded and booked programmes with programme title, dates, times, channel, whether viewed, series record information and any security status information (e.g. reserved, locked, etc.). Best practice is to provide a shortcut remote control button to access the library.

When a recording has failed, or only partially recorded, the system should report this to the user via the library.

Devices which also permit on-demand downloads should include these in the same library.

### **A4.7.4 Additional recorder applications**

Clear indications and information should appear regarding services that provide broadcaster 'pushed' events or events pulled by the DTR based on user profiles.

### **A4.7.5 Help menus**

Best practice is for on-screen help information to be context sensitive where possible and display characteristics should follow the recommendations in [section 2.6](#), Electronic User Guides.

## **A4.8 Additional services**

### **A4.8.1 Access control (e.g. Parental controls)**

A provision for the user to delete or hide selected channels is strongly recommended. Deleted or hidden channels should not appear in the EPG channel list. A deleted channel can only be accessed by a full retune of the tuner and access to the retuning feature should be PIN protected. A hidden channel can only be seen and accessed via a PIN.

A provision to lock selected channels is also recommended. If provided, this should be PIN protected and easy to unlock. The locked channels can appear in the EPG and channel list.

### **A4.8.2 Subtitles and Audio Description (AD)**

When subtitle or AD mode is active it should remain active when channels are changed.



Programmes that carry subtitles, signing and/or AD should be clearly indicated in the EPG and Info or mini guide displays so that the user can identify them without having to hunt for them: e.g. they can be highlighted directly on the EPG display or by automatic display of the 'info' data as the user scrolls through the EPG or Info. The appropriate official icons should be used<sup>4</sup>.

Programmes that support AD should be identified additionally by differing audible signals (e.g. beep) when AD mode has been globally selected and deselected and when a current AD event is selected. The different signals used should be easily identifiable by all users.

## A4.9 Finding and playing content

### A4.9.1 Consistency

Use a single content guide for all available content

Finding, navigating, and controlling the different types of content available can be a fragmented, often inconsistent and frequently confusing experience. It is recommended that there should be a single, unified content guide where viewers can browse, search, and select all available content in a consistent manner.

Features in support of accessibility should be consistently available across all content guides, delivery, and play-out technologies.

### A4.9.2 Uniform content browsing

Use a single interface style for EPGs for linear and non-linear content

Use the same terminology and controls for searching, filtering and marking as “favourite” across all different types of content.

Implementers are encouraged to develop interfaces that bring together linear and non-linear content in a single, consistent presentation. This could take the form of a single unified browser for content (instead of different programme/content guides and lists), irrespective of whether content is delivered via broadcast or over IP.

Receivers should also support all User Interface accessibility features of the solution (such as screen magnifiers, selectable themes, audio beeps and/or text-to-speech...) while browsing and searching content from all available sources.

Receivers should show the availability of access services for the current programme, for content in content/programme guides and when changing the content, including when switching between broadcast- and IP-delivered content.

### A4.9.3 Searching and filtering

Receivers should provide a simple search that operates across services.

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<sup>4</sup> Artwork for the Audio Description logo is available from RNIB, Media and broadcasting Team, 105 Judd Street, London, WC1H 9NE, UK. [audiodescription@rnib.org.uk](mailto:audiodescription@rnib.org.uk)



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It should be possible to search for content based on availability of access services for this content. For example, a user might want to search only for content that is audio described, signed or subtitled.

The ability to present only content for which a given access service is available should also be available when filtering channels or programmes, for instance within the EPG.



# A5 Design of EPGs and on-screen text for legibility

Much of the information here applies to most graphical displays and is not only useful and helpful to partially sighted people but will also help anyone who is print disabled such as people with dyslexia, attention deficit disorders, or communication or learning difficulties.

Chapter of Part B of this document provides guidance on the implementation of [Text to Speech](#) facilities which may be of benefit to visually-impaired users.

## A5.1 Text

The choice of font as well as the weight and use of effects such as italics and underlines needs to be considered. A font which is too light in terms of thickness will be hard to read as will a font which is too small.

Use a clear font for text (avoid handwriting or novelty fonts).

Italics or underlines should be used sparingly.

Use a combination of upper- and lower-case text. Many people recognise words from the shape so block capitals can be harder to read.

Use fonts with solid colours (avoid gradient or 3D effects).

## A5.2 Contrast

The choice of colours used in the interface greatly affects whether elements of the interface can be seen or not. There are two types of contrast, tonal contrast and colour contrast.

Tonal contrast refers to the difference between light and dark. This is the most important form of contrast for differentiating between foreground and background. The Ofcom EPG Code refers to being **able to select a high contrast display with a contrast ratio of no less than 7:1.**

Colour contrast refers to the contrast between different colours. Red and green have very high colour contrast but may have poor tonal contrast. Colour contrast is a useful way of differentiating between different options but must not be used as the only indicator since people with colour blindness may not be able to differentiate these options.

Use good tonal contrast between programme title and background.

Ensure that it is obvious which items are highlighted and in focus while retaining good contrast.

Use good colour contrast for programme title, background and highlighted areas of text, but do not use colour alone to provide useful information.

Branding guidelines and design aesthetics in the main EPG may often impact the ability for the EPG to be suitably high contrast for a vision impaired audience, so it will often be advisable to provide alternative higher visibility modes to meet this user need.



## A5.3 Backgrounds

Backgrounds should be one solid colour. If a dark coloured text is placed on a lighter background picture then the contrast must be considered from the view of the dark text to the darkest part of the background (and vice versa for light text on a dark background picture). Using a colour gradient or a picture also increases visual clutter which can affect users with dyslexia or other disorders affecting reading. Using bright white as a background can be 'glaring' for some users and can also make it hard for dyslexic users to read text.

Backgrounds where icons or text or images are displayed should be a solid colour. Avoid using gradients or patterns.

Avoid using images for backgrounds.

Avoid pure or bright white.

### A5.3.1 Transparencies and Opacity

Where menus and on-screen text have a transparent or semi-transparent background there should be a menu option for this background to be opaque. Transparent and semi-transparent backgrounds reduce contrast and can be distracting for people with attention deficit disorders. .

## A5.4 Icons and non-textual information

Similar rules apply to the use of icons as do for text. The use of colour contrast in icons can be very helpful to partially sighted users. This must not be the only way of imparting a piece of information however as it will not be usable by colour blind users. For instance, using a red icon to show a program is set to record will easily be seen and understood by a partially sighted person but will be inaccessible to a colour-blind user unless the shape of the icon also communicates its meaning (a red R rather than a red dot). If an icon may be used on a light or dark background then giving it a contrasting outline will help it stand out.

Colour is a good way of denoting information such as the availability of audio description and whether the program is shown in HD but too many colours or too many symbols and icons can make the interface feel cluttered. It is important to remember that non-textual information such as gridlines in an EPG or the clock-line (which indicates the current time on the horizontal axis) needs to be visible to a partially sighted audience although obviously the most important information has priority.

If images of a programme are used to offer content suggestions or display a content catalogue then the name (and episode number in the case of a series) should be displayed next to the image. If the content name is displayed over the top of the image then care should be taken to follow the above advice on backgrounds to text. If the title of the content is part of the image then this should not be relied on to inform the user since a UI designer can not influence the title's font, size, colour or background. The name and episode number should be available to any TTS engine in use (see Chapter 3 of Part B on TTS).

Do not use gradient coloured icons, use solid colours for icons.

Colour should not be the only way of denoting important information (such that a programme is set to record, has a reminder or has an Audio Description track).

Colour is a good way of denoting options such as AD, shown in HD, subtitles etc., but beware of the issue of visual clutter with too many colours or too many symbols and icons.

If an icon might be used on a light or dark background consider adding a contrasting outline or border.



Consider the accessibility of everything in the interface that imparts information whilst prioritising the accessibility of the most important information.

Images used to represent available content should have the title of the content displayed next to them.

## A5.5 Magnification

Sometimes users will need a larger font than is practical in a standard interface so manufacturers should consider implementing zoom or magnification. Zoom enlarges a portion of the screen so a mechanism needs to be available to select which portion of the screen the user wants to view. When using magnification or zoom it is important to bear in mind all of the parts of the interface that add context. An EPG is a good example of this since the user needs to see the horizontal axis to know the timing of the program and the vertical axis to know which channel it is on. Other magnification options may enlarge the element in focus while still keeping some, most, or all of the other elements on the screen.

Alternative layouts such as a list view EPG, which only lists the programmes and start times for a single channel on the screen at one time, may be easier to enlarge without losing important context information.

Magnification is useful to users for whom standard text sizes are still too small.

Any Zoom needs a mechanism for the user to select which portion of the screen they want magnified (the zoom area) and a mechanism to move focus to elements in the interface.

Having the zoom area follow the focus can simplify the user interaction but some non-focusable areas of an interface convey important information (such as program synopses) these must also be accessible.

An interface can have more than one method of zoom or magnification to account for interaction styles on different pages of the interface.

When magnifying, care must be taken not to lose contextual information (such as the vertical and horizontal axis in the EPG).

Alternative layouts such as list view EPGs may be more easily enlarged without losing essential context information.



# A6 Media players and interactive applications

Connected TV solutions include media players from broadcasters and third party content providers and might also include other interactive applications that run in a sandboxed operating environment in the receiver. These applications should be made accessible by design and tested for usability with screen readers and other assistive technologies.

## A6.1 Interaction between receiver and applications/media players

Media players and interactive applications often do not respond to remote control keys for such functions as switching on/off access services or other accessibility functions like a magnifier.

Make key commands available to applications/media players

Receivers should provide the functionality to propagate key commands, settings and controls into the application/media player sandbox (such as remote control key presses), in particular for access service and accessibility features so that embedded media players and interactive applications can take advantage of these features.

## A6.2 Support for HID compliant external keyboards

Receiver support for HID compliant external keyboards should be available to interactive applications and media players.

## A6.3 HTML5 features

HTML5, as specified in HbbTV, includes a number of technologies to support accessibility features. Application developers should support such accessibility features when they are present in a receiver.

Receiver implementers should examine the best means of supporting assistive technology standards.

### A6.3.1 Alternative content

Use alternative content in HTML5 elements to increase accessibility

The HbbTV specification mandates support for the `<source>`, `<audio>` and `<video>` HTML5 elements. Implementations should support alternative content in these elements (for example, an audio element might include a text transcript of the spoken content while track elements can provide subtitling or audio description for the content).

Application developers are encouraged to take advantage of these facilities to make audio and video content fully accessible.

### A6.3.2 WAI-ARIA for full HTML5/JavaScript systems

Conform to the WAI-ARIA specification





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The Web Accessibility Initiative (WAI) develops strategies, guidelines, and resources to help make the Web accessible to people with disabilities. Increasingly, receivers are supporting full browser functionality based on HTML5, CSS3 and JavaScript, and it is recommended that such receiver implementations should be designed to be compliant with the WAI Accessible Rich Internet Applications (WAI-ARIA) specification<sup>5</sup>.

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<sup>5</sup> see <https://www.w3.org/TR/wai-aria/>



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# Part B - Accessibility Guidelines

## Introduction

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This Part offers guidelines to receiver manufacturers wishing to incorporate accessibility features into their products. Chapter 22 of the D Book, [Receiver Recommendations](#), gives details of the mandatory requirements for accessibility features in receivers



# BI User Interfaces and Remote Control

## BI.1 Supporting User Interface convenience features

Increasingly, receivers support specific accessibility features in their User Interface, such as screen magnifiers, high-visibility colour schemes, audio feedback and/or text-to-speech, etc.

Receivers should support these features as consistently as possible across all parts of the product (including when navigating non-linear content).

## BI.2 Access Services

Support for subtitling and audio description for broadcast content is specified in the D-Book, which also covers their delivery as part of IP based services. The availability of access services for IP based content is at present low, but rising steadily.

### BI.2.1 User controls for access services

At present, control over access services (for example switching them on or off) is frequently done in a very different way when using IP-delivered content compared to broadcast content.

Control of access service should be independent of source

Receivers should allow end users to change the on/off setting for each access service while viewing or playing content, irrespective of whether or not this is IP or broadcast content.

Availability of access services should be displayed for all services

Receivers should inform the user of the availability of access services (and any changes therein) for the programme they are currently viewing, for content in content/programme guides and when changing the content, including when switching between linear and non-linear content.

Maintain selection of access services

Receivers should also maintain the choice of enabled/disabled access services across channel changes/content changes and across power on/standby cycles and apply this to both linear and non-linear services.

#### BI.2.1.1 Remote controls and IP-delivered services

The provisions of Part A - Chapter 1 apply in full to Connected TV receivers.

When watching a broadcast, viewers normally press a subtitle or audio description button on the remote control for turning the access service in question on or off. To give a consistent user experience, receivers should provide a mechanism for signalling the access service button presses to any embedded media players. Dedicated access services buttons on the remote control should work for all types of content supported by the receiver in the same manner.

### BI.2.2 Role of content providers

Access services in Content should be consistent regardless of delivery method



Where a broadcast programme is available with access services, users can reasonably be assumed to expect the same access services to be present when accessing the programme over IP through some form of on-demand service. Broadcasters and other content providers should ensure this is indeed the case.

Content providers should make sure that any metadata and other information (such as in Electronic Programme Guides) is correct with regard to the availability of access services. In other words, if an access service is available, it should be signalled accordingly (both in relevant metadata as well as in textual descriptions, EPGs, etc) and vice-versa. Otherwise, users can face the situation where a programme previously available as linear broadcast with audio description or subtitling is still signalled as having subtitling and audio description available when browsing the directory for IP content (including via a reverse EPG) even though the access services in question are no longer available.

### **B1.2.3 Recording/downloading**

Recordings should include access service components when present

When recording content, be it from linear or IP sources, or when downloading IP content, receivers should by default record any related access services so that the user can select at the time of playout which access services to activate for that content.

Receivers may allow the user to switch off recording/downloading of access service resources either as a general setting or on a per recording/download basis. This should apply consistently to both linear and non-linear content.



## B2 Audio Description (AD) Services

### B2.1 Introduction

References to the technical requirements for receivers incorporating AD functionality can be found at the end of this chapter.

This chapter provides guidance on what functionality is needed for good user experience when implementing AD and related functions.

#### B2.1.1 What is AD?

AD provides an additional spoken narrative or commentary that describes characters, scene changes, on-screen text and other visual cues not otherwise picked up in the normal programme sound that a blind or partially sighted person might not see, but which are important in order to follow the story.

AD is mainly used by people with sight loss and people who require additional help to follow on-screen events (such as some people with learning difficulties or cognitive disabilities). Sight loss covers a spectrum of conditions and levels of sight and people using AD may still have some usable sight. This means they may still be able to use menus and Electronic Programme Guides with good size and contrast.

Full accessibility solutions such as text to speech (TTS) will give the best user experience but a good use of fonts, contrast, colours and audible alerts will still help users of AD. Features directly related to AD should be made usable without sight wherever possible.

AD users may live in mixed households with non-AD users and even with users who dislike AD.

#### B2.1.2 Delivery of AD

AD has typically been provided using three different delivery methods: receiver-mix, broadcast-mix and using separate audio-video services.

Out-of-channel delivery methods such as using an app that synchronises an AD stream delivered over IP with a broadcast stream may be seen as special cases of receiver mix or broadcast mix.

With receiver-mix, the AD audio stream contains only the additional commentary. The receiver must then combine this stream with the normal audio stream for play-out. This includes a requirement to adjust the balance between both streams in such a manner that the resulting output is usable. For this purpose, content providers transmit fading instructions so that the relative level of main programme sound and AD can be set appropriately and can be varied throughout the programme. Receiver-mix also enables the level of AD to be set relative to the main audio which some people find useful.

The second delivery method for AD is broadcast-mix. In this case the audio commentary is mixed with the original audio by the broadcaster and delivered as a complete alternative audio stream.

The third method of delivering audio described content is to provide a separate audio-video service (e.g. VoD and non-linear services) with the AD mixed in. This is distinct from broadcast-mix in that, instead of choosing between audio tracks for a given video asset, the user must instead choose a different audio-video asset which has AD built in. This requires no special technical requirements above those of delivering non audiodescribed content. Consideration should be made however to how the user knows



there is an audio described version and where to find it, especially if the audio described service is delivered on a different platform.

### B2.1.3 Separate delivery of audio with and without AD

Being able to deliver audio with AD to one user and audio without AD to another user can be beneficial in mixed households. This has been accomplished in the past by routing audio with and without AD through separate physical audio outputs. However, companion apps have been produced to support on-demand delivered content which provide audio with AD through headphones plugged in to the companion device. Some AD users still rely on the video so audio provided through such companion apps would need to be synchronised to the video.

If a receiver can deliver AD and non-AD audio separately then this should be provided as an optional feature rather than the only way to use AD.

### B2.1.4 AD level for receiver-mix content

The volume of receiver-mix AD should be adjustable in relation to the main content volume. This may be required for individual programmes and should be easy to change.

## B2.2 Implementation

### B2.2.1 Implementation of AD for linear content

[D Book](#) sections 4.5 and 4.6 contain details of the coding and signalling used for receiver-mix AD services.

Control of the function for UK DTT services is described in [D Book](#) section 25.2.

## B2.3 Achieving a good user experience

For users of AD, key requirements are:

- To be able to turn AD on or off easily.
- To know unambiguously the state of AD (i.e. on or off)
- To know whether highlighted content in an EPG or alternative content menu has AD available
- To know whether currently playing content has AD available
- To be able to record programmes with AD (where recording is available)
- To be able to search for content with AD

The AD setting should remain persistent across channel changes or after switching the receiver off and on again (via full power off or standby cycles). AD settings should be retained following re-tuning of the receiver, software updating or when an IP network setup is changed.

### B2.3.1 Turning AD on and off easily

#### B2.3.1.1 Toggling AD

Turning AD on or off needs to be possible without sight and should be available via a dedicated function by remote control or using a sequence that does not use visual menus. Buttons on a remote control used in turning AD on and off should be made easily distinguishable using the methods described in the remote control section in Part A of this document. There should be an audio tone to alert the user that the AD status has changed. It will not always be obvious whether AD is currently switched on (for instance in periods of content dialogue where the AD track is silent or if the currently playing programme does not have AD) so the AD on and off tones should be distinct from each other. A visual alert may also be useful for some AD users.



If AD is turned on by the user but the current programme doesn't support it then the user should be informed that the current programme does not support AD.

If voice control is available then AD could be turned on using voice commands but the voice control interface then needs to be usable without sight (e.g. with audio cues for when to speak and feedback provided audibly). There should still be a way to control AD via the remote control.

Any function that communicates the current state of the receiver should indicate whether AD is switched on or off if used while the receiver is playing content.

### **B2.3.1.2 Consistent control mechanisms**

Where practicable, the methods used for navigation and control of AD should be consistent across all interfaces associated with the services and platforms accessed by the receiver. This could be achieved through a global AD setting which is available to apps running on the receiver. Where there is an AD button on a remote control this should set the global AD setting directly and signal any running apps. This is especially important where a device includes a backwards EPG since the user may be less aware they are now watching catch-up TV.

### **B2.3.2 To know whether highlighted content in an EPG or alternative content menu has AD available**

In the UK the presence of AD is indicated in programme descriptions by the abbreviation AD. However, this is inaccessible to a blind user and often due to its size can be hard to read for partially sighted users. Support for TTS and/or larger fonts can improve this, alternatively audible alerts when a programme with AD is highlighted or visual cues such as a different coloured EPG element (ensuring tonal contrast for colour-blind users) can communicate this information quickly and more clearly. See also Part A, Section 4.8.2.

It is recommended that content descriptions also continue to use the AD abbreviation as this is a widely recognised indicator of the presence of AD.

This information should be available whether the user is browsing an EPG or any other list of available content, including recorded or downloaded programmes.

### **B2.3.3 Knowing whether currently playing content has AD available**

Where a receiver supports functions to provide information about the currently playing content (including on channel change) this information should include whether the content includes AD. Audible alerts when the programme has AD or visual cues such as different coloured elements (ensuring tonal contrast for colour-blind users) can communicate this information quickly and more clearly.

It is recommended that broadcasters also use the AD abbreviation in content descriptions as this is a widely recognised indicator of the presence of AD.

If the alert or visual cue matches those that are used for EPGs or other lists of available content then it will produce a more coherent experience for users.

### **B2.3.4 Searching for content with AD**

If a user relies on AD to follow programmes then they may want to filter out programmes that don't include it or search only for programmes that do. This option should not be inferred from whether AD is playing, however, since some programmes such as news and other speech-heavy content can be accessible without AD. If the option to filter out content without AD is available it should have its own setting, independent from the AD setting.



### B2.3.5 Recording programmes with AD

Where receivers include the ability to record content it should be possible for users to be able to turn AD on and off at the point of playback in the same way as for non-recorded content.

### B2.3.6 AD on non-linear content

Where it is within the control of receiver manufacturers the experience with on-demand content should be as close as possible to the experience with linear broadcast content. Where this is outside the control of receiver manufacturers third party developers should be enabled and encouraged to implement control mechanisms similar to the host platform. This can be enabled, for example, by giving app developers access to global AD settings and remote control events relating to AD.

If the device manufacturer provides a video playback engine to be used by third party developers then that engine should support AD. If the manufacturer provides documentation for the video playback engine then that documentation should encourage developers to provide AD and describe available mechanisms for delivery.

## B2.4 Packaging

Products that support AD should have the AD logo on them. The presence of the logo signifies that the product supports AD in full without the need for any additional equipment.

The logo is as shown and high-resolution images are available from RNIB<sup>6</sup>.



Freeview-branded products support AD even if the packaging does not carry the AD logo.

## B2.5 References and further reading

[Code on television access services, Ofcom, November 2019](#)

DTG [D Book](#) Section 4.5 (available only to DTG members)

[ETSI TS 101 154 V2.3.1 \(2017-02\)](#) Digital Video Broadcasting (DVB); Specification for the use of Video and Audio Coding in Broadcasting Applications based on the MPEG-2 Transport Stream (Annex E covers implementation of receiver-mix AD). Available through <http://www.etsi.org/standards-search>

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<sup>6</sup> RNIB, Media and Broadcasting Team, 105 Judd Street, London, WC1H 9NE, UK.  
[audiodescription@rnib.org.uk](mailto:audiodescription@rnib.org.uk)





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## B3 Subtitles & Signing

### B3.1 Introduction

It is important for deaf and hearing impaired people to have access to media and culture to avoid social and economic exclusion. It is therefore of paramount importance that deaf and hearing impaired people continue to be able to access subtitles across all delivery platforms and devices now and in the future.

There are 7.5m subtitle users in the UK. In addition to providing an essential service for the 11 million people<sup>7</sup> with hearing loss, subtitles are also widely used by people without sensory loss.

Around 10% of television viewers in the UK use subtitles on a daily basis and many more now use them when watching clips and programmes online. For some online content, the usage rises to 35%, the majority of users not being hearing impaired<sup>8</sup>.

Viewers for whom English is not their native language find subtitling useful and it is also helpful for people with learning or communication difficulties. Subtitles can also be of value on displays in public or noisy locations or where the programme sound would be a distraction or annoyance.

This chapter covers the following points:

Description of subtitles, how they are used and by whom.

Recommendations for the functionality needed to enable users to fully exploit subtitles and issues that may affect subtitling in the near future.

References to the technical requirements for receivers incorporating Subtitle functionality can be found at the end of this chapter.

#### B3.1.1 Provision of Subtitling

The 2003 Communications Act sets legal requirements for broadcasters, including terrestrial, cable and satellite linear SD and HD channels to provide subtitling. Subtitling is also available on certain catch-up and video-on-demand services and the Digital Economy Act 2017 amends the Communications Act to allow for future regulations imposing subtitling requirements on providers of On Demand Programme Services (“ODPS”) regulated by Ofcom. Until such regulations come into force the Communications Act requires Ofcom to encourage providers of ODPS to ensure that their services are progressively made more accessible to people with disabilities affecting their sight and/or hearing.

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<sup>7</sup> Action on Hearing Loss

<sup>8</sup> BBC White Paper WHP323, “Automatic recovery and verification of subtitles for large collections of video clips”, M Armstrong, September 2016



Whilst technical implementation of subtitling may differ between platforms, the user requirement remains the same and therefore all access principles described in this chapter apply to SD and HD, as well as linear and non-linear services.

## B3.2 Background

### B3.2.1 What is subtitling?

Subtitles are a text-based narrative of speech as well as descriptions of sound effects.

Subtitling is an elective service, whereby the user chooses to activate the service. In this respect it differs from the in-vision translations seen on foreign-language films.

Subtitling can be seen as an additional data stream. For equipment to support subtitling, it needs to be able to discover, decode and render this stream.

### B3.2.2 Achieving a good user experience

Subtitles should be relevant, timely, accurate, clearly legible, and positioned not to obscure key regions of interest in the video. Subtitles should be authored to meet these requirements and delivered and rendered “as-authored”.

Receivers should ensure that subtitles can be presented to the viewer with the correct subtitle, in the right place and at the right time, as signalled in the delivered service.

For users of Subtitles, key requirements are:

Subtitles easily turned on and off.

The status of subtitles (i.e. on and off) easily identifiable when changed.

An indication is provided when subtitles are available for currently playing content or while navigating other available content, including changing channel and moving through EPG or mini guide.

Be able to watch content other than linear broadcasting using subtitles.

An ability to identify subtitled programmes in a programme guide.

It is important that deaf and hearing impaired users are supported with regard to the above requirements.

Implementers should ensure that functions, equipment and service behaviours in support of subtitling are designed to be easily accessible and usable by Deaf and hearing impaired viewers. Interface aspects of subtitle-related functions should use visual feedback mechanisms, noting that audible feedback mechanisms are also desirable and are important for mixed households and people with some sight loss.

Implementers should take care to organise subtitle settings in a logical and consistent manner for user menu structures and/or other forms of command and control. This also means that the same method of subtitle operation should be available to the user irrespective of the source and nature of the content being consumed.

Implementers should aim to ensure that the level of accessibility to subtitles is maintained regardless of the location of the content. Non-linear services delivered through connected receivers should aim, as a minimum, to achieve the same level of accessibility to subtitles as in linear content. This might require



content providers to provide suitable metadata and tagging where relevant in addition to broadcast indicators, thus enabling receiving devices to identify the availability of subtitle content and an EPG to present this information appropriately.

## **B3.3 Implementation of subtitles**

### **B3.3.1 Availability of subtitles for a programme**

It is important that a user be able to find content that has subtitles. Modern television equipment provides users with various means of obtaining information about available content, such as a brief synopsis or more extensive information such as that provided in EPGs and interactive applications.

Content that has subtitles listed on EPGs should be visually identified. In the UK it is an Ofcom regulatory requirement to use the letter 'S'. The identification should be fully explained in the receiving equipment user guides and manuals in plain English.

When the user selects a service that includes subtitles, this should be indicated in the initial banner.

It is recommended that on-screen notifications be provided to inform the user that subtitles are available prior to the commencement of the programme. A pop-up text message with the word 'Subtitles' on the top right-hand side of the screen for at least 5 seconds is the method currently adopted by some linear broadcasters. However, implementers should carefully consider the methods available to the user for discovering subtitle provision, controlling the subtitle function (such as switching the subtitles on and off), as well as provision of the appropriate feedback on the current system status and changes to the state of subtitling.

#### **B3.3.1.1 Programme guides**

The user should be notified of content that has subtitles when navigating through the EPG.

Some receivers offer additional content search facilities in their EPG or mini guide; for example, to show favourite channels. The option to provide a subtitle descriptor filter so that the EPG identifies and only displays content that is subtitled would be of particular benefit to subtitle users and is highly recommended.

### **B3.3.2 Switching subtitles on and off**

The preferred method for switching subtitles on and off is directly using a dedicated single-use 'subtitles' button on the remote control. The second option is through a user menu structure which itself is accessible through the remote control. If both methods are provided, there should be consistency between the methods used to change settings.

Toggling subtitles on and off may be a frequent action for some users, and this can only be achieved through a dedicated 'subtitles' button.

Any on-screen symbols used to identify subtitle provision should match those used on the remote control.

The subtitles button should be easily identifiable and fully explained in the receiving equipment user guides and manuals.

The subtitle button on the remote control should be labelled with 'subtitle' or 'subtitles'; however, where space is limited, the abbreviation 'S' is acceptable.



Subtitle status settings should be retained after channel change, viewing streamed media / VoD, switching the receiver on and off, re-tuning of the receiver, software updating or when an IP network setup is changed.

### **B3.3.3 Visual notifications and prompts**

Visual notifications should be concise and easily distinguishable. There should be no significant delay or time lag. For example, when the user presses the subtitles button to turn them on, a pop-up on-screen text message should notify the user with “Subtitles on”. Pressing the subtitles button again to turn off the subtitles would prompt “Subtitles off”.

Visual feedback is required for the following situations:

When the user switches subtitles on.

When the user switches subtitles off.

### **B3.3.4 Subtitles for non-linear content**

This comprises catch-up content (including via embedded video, IP-based licensed catch-up players), video-on-demand content and downloadable content for play-back at a later time.

Subtitle provision and support for all additional content, and the methods used for control and navigation of subtitles should be consistent across all interfaces. The method used to switch subtitles on and off, select any subtitle settings or preferences should be the same whether the user is viewing linear broadcasts or watching on-demand video via an embedded player.

### **B3.3.5 Watching non-linear content**

Users need to be able to see subtitles for recorded programmes (and live broadcasts), downloaded and catch-up content in the same way that they select subtitles for linear content. Where the receiving equipment has a ‘record’ facility, it should also be able to play back a recorded subtitle stream and the user should be able to select subtitles in the same way as for linear broadcasts.

### **B3.3.6 Instructions in the user guide**

All aspects of the subtitle functions and EPG notification of subtitle availability should be explained in the user guide or operating instructions that accompany the equipment in plain English. Jargon should be avoided and any necessary technical words should be explained in a clear and concise way.

### **B3.3.7 Subtitle rendering**

Guidance on subtitle creation is available from the [BBC](#) and [Ofcom](#).

Where in-vision subtitles are created, e.g. for foreign language programmes, care must be taken to ensure that they are clearly legible and positioned against a suitable background to achieve adequate contrast.

For subtitles on SD services, characters should occupy no less than 20 television lines for the capital ‘V’, including lines at the top and bottom of each character with pixels that are at least 50% illuminated.

For HD services, the corresponding size is 36 television lines.



### B3.3.8 Rendering adjustments

During normal playback the subtitles should be rendered as authored. However receivers may offer some degree of presentation customisation, for example to adjust the size of subtitles delivered as timed text.

When playback controls or other user interface elements are visible, they may occupy a region of the display that overlaps with the subtitles. In this case the receiver may adjust the subtitle presentation or the control user interface to avoid the clash and maintain readability of the subtitles.

Typically subtitles are defined with a size proportional to the video size. During picture-in-picture presentation the video size is reduced. A receiver may choose a location for the subtitles that maintains readability of the subtitles in this scenario.

## B3.4 Further reading

A number of guidelines documents have been issued: the contents of these documents have not been reproduced here as they may be updated by their owners and are subject to copyright. Links have been given, to allow readers to access the documents electronically.

### B3.4.1 Authoring guidelines documents

The following documents contain useful information concerning the creation, presentation and timings of subtitles.

#### B3.4.1.1 BBC Subtitle Guidelines

The BBC's subtitling requirements for broadcast and online are set out on their website:

<http://bbc.github.io/subtitle-guidelines/>

Contents include guidance on: live subtitling, editing; timing; subtitle breaks; synchronisation; line breaks; matching shots; identifying speakers; colours; presentation; intonation and emotion; accents; difficult speech; inaudible speech and silence; hesitation and interruption; cumulatives; humour; children's subtitling; music and songs; sound-effect labels, and numbers.

#### B3.4.1.2 Ofcom's Code on television access services<sup>9</sup>

In addition to setting out the access requirements for broadcast licensees, and containing links to other useful documents, this Ofcom document includes guidelines on issues such as: pre-recorded and live subtitles; lay-out; non-speech information; synchronisation of speech and subtitling; speed of subtitling and accuracy. The referenced documents contain more-detailed information on subtitle preparation and subtitling children's programmes.

### B3.4.2 Subtitle Technical References

DTG [D Book](#) (available only to DTG members)

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<sup>9</sup> The Ofcom Code can be downloaded from:

<https://www.ofcom.org.uk/tv-radio-and-on-demand/broadcast-codes/tv-access-services>



Digital Video Broadcasting (DVB); Subtitling systems, ETSI EN 300 743 V1.3.1 (2006-11)

Digital Video Broadcasting (DVB); TTML Subtitling systems, DVB Document A174, July 2017

ETSI EN 300 472 V1.3.1 (2003-05), Digital Video Broadcasting (DVB) Specification for conveying ITU-R System B Teletext in DVB bitstreams

## **B3.5 Signing**

Broadcasters can signal in their EPG data on Freeview, using the component descriptor, to indicate a programme is closed or open (in-vision) signed for the deaf. Receivers can search for this descriptor and indicate which programmes are available with signing: this can then be shown in the EPG display.

### **B3.5.1 In-vision signing**

If both signed and non-signed versions of the same programme are available the user should be made aware of the option and have the ability to select one or the other, with a configurable default. Where possible this information should be provided even if the two versions are delivered by different mechanisms, for example one being broadcast and one being streamed online.

### **B3.5.2 Closed signing**

If closed signing is available for a programme then this option should be signalled in the EPG. (NOTE: closed signing is not currently available)



## B4 Text to Speech

### B4.1 Introduction

This chapter offers information and implementation guidance on the desirable features of a TV receiver's text-to-speech (TTS) functionality.

Providing text-to-speech (TTS) functionality for a broadcast receiver can be of great help to visually-impaired viewers. Such speech functionality may be integrated in the receiver or may be external to the receiver in a separate device.

When building a TTS interface, the objective should be to achieve functional equivalence of the user experience. This means that a viewer using the speech interface should have access to similar information and be able to accomplish tasks similar to those achievable through a graphical UI.

Consideration should be given to the inclusion of screen reader functionality so that apps, including the TV receiver's native UI, can be designed to take advantage of screen readers' capabilities.

### B4.2 Implementation approach

Receivers that incorporate a TTS function should, as a minimum, conform to the Basic Profile of IEC 62731<sup>10</sup> in respect of spoken EPGs. Reference should be made to the current version of IEC 62731 for detailed information.

Ofcom has issued a statement on requirements for improving the accessibility of EPGs to people with visual impairments through use of TTS<sup>11</sup>, to which reference should be made. (Also available is the Ofcom code of practice for EPGs<sup>12</sup>.)

However, in the interest of good user experience and for implementation of the full range of TTS functionality it is recommended that receivers implement the IEC Main (for receivers/STBs) or Enhanced (for recorders) profiles, or the feature sets defined in Section 3.

NOTE: The following items are outside the scope of this chapter:

- The interface used between a receiver (TV / set-top-box) and an external TTS device.
- The protocol used for interfacing between a TV receiver/STB and an external TTS unit.

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<sup>10</sup> [IEC 62731, Text-to-speech for television – General requirements](#), International Electrotechnical Commission (IEC)

<sup>11</sup> Ofcom Statement “[EPG Accessibility - Improvements for people with visual impairments](#)”, June 2018

<sup>12</sup> Ofcom code of practice for EPGs  
[https://www.ofcom.org.uk/\\_data/assets/pdf\\_file/0031/19399/epgcode.pdf](https://www.ofcom.org.uk/_data/assets/pdf_file/0031/19399/epgcode.pdf)



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## B4.3 Guidelines

### B4.3.1 General

All relevant textual information on the screen is accessible to the user as TTS audio as soon as it is displayed. Relevant information includes any text and icons that provide useful information to the user. The following are excluded:

- Anything embedded in the broadcast video (e.g. a news ticker)
- Bit-mapped Subtitles
- Any input or output from an interactive service related to broadcast services
- Any output from any application not related to broadcast services
- Text or graphics that are included for cosmetic reasons only (e.g. a company logo)
- Update to the display of the current time and date
- Conditional Access information.

TTS audio is provided after the user has invoked a function (e.g. via remote control or app). This is within a maximum of three seconds.

Sufficient information should be spoken to enable the user to understand what is being shown on-screen, e.g. within a menu structure (NOTE: this may be a combination of text and graphical icons)

TTS audio is provided so that the users always know where they are within the receiver UI and the available options. If new information is displayed that takes priority over any currently playing TTS audio, the presentation of the currently playing information is cancelled to allow the presentation of the new, or more important, TTS audio. For example, this could be in response to a user-invoked event such as moving through the EPG or changing channel, or to provide a warning or notification to the user, such as the result of invoking a factory reset feature or a popup message.

The language of the TTS audio is, by default, the same as that set by the user for the receiver UI.

All embedded words, e.g. native menus, as opposed to broadcast content, are spoken with a valid pronunciation for that language.

When possible, a TTS warning announcement should be provided when the user selects a mode of operation for which TTS support is known to be unavailable (e.g. a receiver function without TTS support) or may not be available (e.g. a built-in app or on selection of an external source). An announcement indicating how the user can return to a supported location is desirable.

Except when switching to a watching TV context, the user should be informed of the name of the new context that the receiver has entered (e.g. a menu title or name for the type of screen, such as “EPG”).

Dates and times should be presented in a way that is unambiguous and appropriate to the context and locale<sup>13</sup>.

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<sup>13</sup> See <http://cldr.unicode.org/translation/date-time-patterns> for information on the presentation of date and time information





To avoid confusion between different date systems (e.g. dd/mm/yy and mm/dd/yy), the month should be spoken in full when needed, i.e. corresponding to a “long” or “full” date format in the context of Unicode CLDR.

## **B4.4 Basic receiver functions (receiver on/off, input selection and volume)**

TTS audio is essential when entering an active state (e.g. coming out of standby or power-on state) and should be provided as soon as practical.

The user should be informed when standby is selected. When the receiver is restarted and the ‘watching TV context’ is entered, the user will be informed of the channel number and name, the programme title and AD availability.

When switching from standby or an external source (e.g. an HDMI input) to watching TV, the user should be informed of what channel is on now. This should include channel name and programme title.

When switching from standby to last used context (e.g. HDMI input) then the context should be announced (e.g. "HDMI ONE").

When switching from another context (including standby) to watching an external source (e.g. an HDMI input) then the receiver should announce the source (e.g. “HDMI ONE”). It is accepted that an external source may not be able to supply TTS data via the receiver.

TTS audio should be muted when the main audio is muted after the user has been informed that the audio is being muted.

## **B4.5 Turning TTS On/Off, verbosity and help**

The function to turn TTS on and off should be easily accessible.

It should be possible for the level of the main audio to be lowered when TTS is spoken.

It should be possible for a user to cancel the presentation of the TTS audio currently being played for example through a dedicated “shut up” function. Receivers may prevent the cancellation of “high priority” TTS audio, e.g. warnings about the result of invoking a factory reset feature.

When the user mutes the audio, no further TTS audio should be presented, except for feedback from invoking the mute function.

The user should be able to change the amount of TTS audio (e.g. amount of help given within prompts or guidance data provided on entering a context). It should be possible to set at least two levels of verbosity, one for beginners and one for experienced users.

TTS audio includes guidance data that provides a description of those functions that are essential for the user to interact with the user interface within the current context (but not necessarily displayed on screen), for example, instructions on how to navigate the current menu or EPG screen. It is acceptable that this information is included as a function (such as a remote button) for accessing “additional information”.

The user can optionally be provided with guidance data on how to operate the next context (e.g. what functions, such as remote control buttons, are to be used and what they will do) when this is provided for the sighted user.



## B4.6 Menus, sub-menus and lists

When using a (sub-)menu:

The user should be informed of the number of entries and the currently highlighted/selected entry when they first enter the (sub-)menu.

The user should be informed of the currently highlighted/selected entry when this changes as the user navigates the (sub-)menu.

Where accessibility functions (for controlling features including TTS, subtitles and AD) are accessed via a dedicated accessibility menu, the same requirements will be met as for (sub-)menus.

When navigating menus, the user should be informed when exiting the menu or when the user uses "Back" to navigate to a level higher in the menu structure. This can be done explicitly by announcing that the menu has been exited, or implicitly by announcing the new context.

When revolving / carousel menus are used (e.g. when users reach the end and move forward they land back on the first item) the end / beginning of the menu should be announced when reached.

For complex screens containing large amounts of information (e.g. diagnostics) there should be a way for the user to access the information in manageable sections.

For empty lists or menus, suitable TTS audio should be provided, even if not visually presented (e.g., in the case of a Favourites list with no favourites, the screen title would be spoken together with "no items" message).

When a receiver operation has been running for more than, for example, 10 seconds without a spoken message, e.g. during a channel scan, some form of audio feedback should be provided, e.g. beeps or TTS audio (if available).

The user should be informed when the receiver moves between any of the following: watching TV, browsing a list of channels, using a menu or sub-menu, using the EPG. This includes moving between two different menus (e.g. entering or leaving a sub-menu).

## B4.7 Pop-ups, warnings and progress bars

Where a pop-up notification is presented on-screen, an unambiguous announcement should be made to let the TTS user know that a pop-up has been presented, before announcing the contents of the pop-up.

When there are popup messages:

The user should be informed that there is a notification or pop-up, including a description of the notification or pop-up.

If applicable the user should be provided with periodic updates on progress of operations that take substantial time to complete, such as re-tuning.

Receiver-generated warnings and notifications should generate TTS audio and this should take precedence over other TTS audio.

It should be possible to repeat the currently playing, or previously played (if none currently playing) TTS audio. If the presentation has changed since the last presentation (e.g. time display, percentage complete etc.), then new TTS audio is presented, rather than a simple repeat of the previous information.



When the AD, subtitles, TTS or mute functions are invoked via the remote control (subject to availability), the user should be informed of the changed status and should also be informed if the selected function is not available on current programme.

When a progress bar or a changing numeric indicator (e.g. percent complete) or similar is displayed, it is not required to provide TTS audio every time the screen is updated. If the User Interface design is such that the user is waiting for something to complete and the completeness is indicated by this bar or indicator, TTS audio on the status is provided regularly.

## B4.8 Receiver Settings

The user should be able to alter the volume of the TTS audio independent of the programme audio, and the TTS engine announces this at the new volume level.

The user should be able to adjust the speed and, where applicable, other characteristics of the TTS audio such as pitch and TTS voice type.

The TTS facility should be available during set-up and following a reset.

Receivers may provide TTS audio that is not a literal reading of the visual information on the display, as long as the equivalent meaning is conveyed to the user.

TTS audio should be announced in the same way in response to the user invoking a function via a front panel control or from a remote control device.

Where appropriate, abbreviated words in receiver menus should be spoken in full by the TTS engine.

All numbers should be spoken in a manner suited to the context, e.g. as natural numbers, ordinals or digit-by-digit.

If the TTS engine does not support the signalled language, it should indicate via TTS audio that the signalled language is not supported but speaking the text may nevertheless give a usable, if strange, user experience.

## B4.9 Programme Guide

When first entering the EPG the user should be informed, for the currently highlighted/selected programme, of the channel number and name and the programme's title, start time and end time or duration and availability of AD (provided this information is included in the programme synopsis).

To enable the rapid identification of the selected programme when navigating an EPG, TTS audio should be so ordered as to present the most important items first. The spoken programme title and channel information should precede the start times and duration of the programme, followed by the date if appropriate. Important information should be presented as soon as it is displayed; other information (e.g. navigation information) may be omitted if not requested.

When navigating a grid-based EPG, it is not necessary to repeat information that has not changed. For example, when navigating through the programmes available on the same channel and date, only the information for the selected programme should be spoken.

## B4.10 Receiver operation

When changing channel or, alternatively, when using functions to access additional information:

The user should be informed of the number and name of the channel.



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The user should be informed of what programme is on now and may be informed of what programme will follow (where available).

The information provided for a programme, if displayed, should include the programme title and availability of AD.

The user should also be informed when a programme has AD and/or subtitles.

The user should be informed if an audio-only or data-only service has been selected.

The user should be able to access the synopsis of the current programme and should be able to access the synopsis of the next programme if available.

When using a function to request additional information (such as by the use of an “info” button), the user should be provided with all information being displayed by the receiver relating to the currently selected channel.

When changing channel by pressing number buttons, the user should be informed of each number button as it registers on the on-screen user interface.

It is desirable for the user to be able to find out the current time where available.

Control of TTS On/Off and volume should be available at all times.

## **B4.11 Recordings and library list**

Where a receiver supports recording functions:

the operation of the Pause, Playback, Stop and Record functions should be announced when invoked.

Rewind and Fast Forward should be announced together with the speed.

Programme information should be available during playback and when navigating the Library list, including the position of the playback point in the programme.

## **B4.12 Testing**

Before release, the user interface including TTS facility should be tested for usability with a suitable user-group of blind or partially-sighted users.

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# Part C Appendix – Abbreviations, standards, references, and recommended reading

## CI Abbreviations

BLE	Bluetooth protocol aimed at low-power consumption in devices
CTV	Connected TV
DTG	Digital Television Group
DTR	Digital Television Recorder
DTT	Digital Terrestrial Television
DVB	Digital Video Broadcasting
DVB-T	DVB Terrestrial
DVB-T2	Second generation Digital Video Broadcasting Terrestrial
EPG	Electronic Program Guide
EIT	Event Information Table. Defined in EN 300 468.
EITpf	Event Information Table, present/following
HD	High Definition (>=720 horizontal lines of pixels)
HDMI	High Definition Multimedia Interface. ( <a href="http://www.HDMI.org">www.HDMI.org</a> )
LCN	Logical Channel Number
HbbTV	Hybrid Broadband TV
MHEG	Multimedia and Hypermedia Experts Group. ISO/IEC 13522-5.
SD	Standard Definition (<720 horizontal lines of pixels)
STB	Set Top Box
TTS	Text To Speech
UK DTT	Digital Terrestrial Television within the UK
VoD	Video on Demand



## C2 Related standards

EN 300 294	Television Systems; 625-line television Wide Screen Signalling (WSS). Equivalent to ITU-R BT.1119.
EN 300 468	Digital Video Broadcasting (DVB); Specification for Service Information (SI) in DVB systems. v1.11.1.
EN 300 743	Digital broadcasting systems for television, sound and data services; <i>Subtitling systems</i> .
ETS 300 640	Human Factors (HF); Assignment of alphabetic letters to digits on standard telephone keypad arrays
EN 300 744	Digital broadcasting systems for television, sound and data services; Framing structure, channel coding and modulation for <i>digital terrestrial television</i> .
EN 50049-1	Peritelevision (SCART) Connector.
ISO/IEC 13818-1	Information technology - Generic coding of moving pictures and associated audio information: Systems. ISO/IEC 13818-1:1996(E).
ISO/IEC 13818-2	Information technology - Generic coding of moving pictures and associated audio information: Video.
ISO/IEC 13818-3	Information technology - Generic coding of moving pictures and associated audio information: Audio.
ISO/IEC 13522-5	MHEG-5. Information technology - Coding of multimedia and hypermedia information: Support for Base-Level Interactive Applications.
ISO/IEC 13522-5:1997/Cor.1:1999(E)	MHEG-5. Information technology - Coding of multimedia and hypermedia information: Support for Base-Level Interactive Applications. Technical Corrigendum 1.
ISO/IEC 62216-1	ISO/IEC 62216-1, Digital terrestrial television receivers for the DVB-T system, part 1: Baseline receiver specification. (Commonly known as the E-Book)
Advanced Television Directive (95/47/EC)	Directive 95/47/EC Directive of the European parliament and of the Council of 24 October 1995 on the use of standards for the transmission of television signals.
MHEG-5 UKPROFILE	UK Profile of MHEG-5, A specification for interactive services comprising chapters 11-19 of the D Book
ETSI ES 202 184	MHEG-5 Broadcast Profile
ETSI ES 201 381	Human Factors (HF); Telecommunications keypads and keyboards; Tactile identifiers
Statutory Instrument 2003 No. 1901	Advanced Television Services Regulations 2003 (SI 2003/1901) supporting Article 24 of and Annex VI to Directive 2002/22/EC (the —Universal Service Directivell) <a href="http://www.opsi.gov.uk/si/si2003/uksi_20031901_en.pdf">http://www.opsi.gov.uk/si/si2003/uksi_20031901_en.pdf</a>



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ISO 24500	Ergonomics -- Accessible design -- Auditory signals for consumer products
HDMI	<a href="#">HDMI Forum Specification 2.1</a> (Available to licensed adopters only)
HbbTV	<a href="#">HbbTV TV Association Specification 2.02</a>

## C3 References

- 1) Digital TV Group D Book DTT Requirements for Interoperability  
[https://dtg.org.uk/publications/download\\_d-book](https://dtg.org.uk/publications/download_d-book)
- 2) Trace R & D Centre, University of Wisconsin-Madison (working draft, 1992) Accessible Design of Consumer Products: Guidelines for the Design of Consumer Products to Increase their Accessibility to People with Disabilities or Who Are Ageing:  
[http://trace.umd.edu/docs/consumer\\_product\\_guidelines/consumer.htm](http://trace.umd.edu/docs/consumer_product_guidelines/consumer.htm)
- 3) Plain English Campaign; “How to write in plain English”; [www.plainenglish.co.uk/files/howto.pdf](http://www.plainenglish.co.uk/files/howto.pdf)

## C4 Recommended reading

- 1) CENELEC “Standardisation Requirements for Access to Digital TV and Interactive services by Disabled People”, 2003, by Gerry Stallard
- 2) OFCOM “Code on Television Access Services”  
[https://www.ofcom.org.uk/\\_data/assets/pdf\\_file/0020/97040/Access-service-code-Jan-2017.pdf](https://www.ofcom.org.uk/_data/assets/pdf_file/0020/97040/Access-service-code-Jan-2017.pdf)
- 3) OFCOM EPG code: <https://www.ofcom.org.uk/tv-radio-and-on-demand/broadcast-codes/epg-code>
- 4) ISO/TR 16982:2002 “Ergonomics of human-system interaction – Usability methods supporting human-centered design
- 5) Lindsey Etchell and David Yelding (2004) ‘Inclusive Design: Products for All Consumers’, Consumer Policy Review, 14(6) (November/December):186.
- 6) Directive 2002/22/EC of the European Parliament and the council on universal service and users’ rights relating to electronic communications networks and services. [The Electronic Communications \(Universal Service\) Regulations 2003](#)
- 7) Ofcom UK, “Summary of research on the ease of use of domestic digital television equipment Publication date: 8 March 2006”
- 8) Digital TV Equipment: Vulnerable Consumer Requirements, “A Report by the Consumer Expert Group to Government and the Digital UK”: [Access to broadcast and on-demand content: Time to catch up!](#)
- 9) EU Audiovisual Media Services Directive (AVMSD) revised <https://ec.europa.eu/digital-single-market/en/revision-audiovisual-media-services-directive-avmsd>
- 10) [Directive \(EU\) 2019/ of the European Parliament and of the Council of 17 April 2019 on the accessibility requirements for products and services](#)
- 11) Web Content Accessibility Guidelines (WCAG) 2.0, <http://www.w3.org/TR/WCAG20/>
- 12) “Accessibility Features for Alexa” and “Use Your Alexa Device to Control Your Fire TV”  
<https://www.amazon.co.uk/gp/help/customer/display.html?nodeId=202158280>  
[https://www.amazon.co.uk/gp/help/customer/display.html/ref=hp\\_left\\_v4\\_sib?ie=UTF8&nodeId=202174250](https://www.amazon.co.uk/gp/help/customer/display.html/ref=hp_left_v4_sib?ie=UTF8&nodeId=202174250)