



department for  
**culture, media  
and sport**

# Core Receiver Requirements for the Digital Switchover Help Scheme

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# Section 1: Introduction

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The Core Receiver Requirements (the CRR) described in this document are designed to apply to receiving equipment provided to those vulnerable people (the elderly and those with disabilities) who are eligible for assistance under the Digital Switchover Help Scheme.

Many of these requirements have been identified by the Consumer Experts Group and described in their report entitled “*Digital TV Equipment: Vulnerable Consumer Requirements*” presented to the Government and Digital UK in March 2006 ([www.digitaltelevision.gov.uk/publications/pub\\_dtvconsumer\\_mar06.html](http://www.digitaltelevision.gov.uk/publications/pub_dtvconsumer_mar06.html)).

These requirements are intended to complement others technical ones which may be required by individual delivery platforms; for example DTT receiving equipment which is compliant with the CRR will also need to be compliant with the UK D-book ([www.dtg.org.uk/testing/conformance.html](http://www.dtg.org.uk/testing/conformance.html)).

***For the purpose of this document ‘shall’ is a requirement and ‘should’ is a desirable.***

The working premises are that a receiver meeting these requirements

- **shall** set a high standard of “ease of use” whilst meeting the usability needs of the widest possible range of users and user-capabilities;
- **shall** be capable at least of receiving all free-to-air standard-definition MPEG2-coded TV services including access-service components (subtitles and audio description), digital text and interactive elements and all free-to-air radio services;
- **shall** be capable of adjusting to correctly signalled changes to service line-up as and when these occur;
- for DTT, **shall** be capable of adjusting to the inevitable shift in channels and frequencies which will take place during digital switchover;
- **shall** (if a set-top box or DTR) be capable of interoperability with most televisions available on the market &
- **shall** meet UK Government Procurement Requirements for Sustainable Products (see [www.mtprog.com](http://www.mtprog.com) for current and future indicative requirements).

Such a receiver might be a set-top box, a DTR or an iDTV and could incorporate other functionalities<sup>1</sup> not directly covered by the requirements defined in this CRR.

Central to any practicable design **shall** be the principle that the receiver will be used by people with a wide range of capabilities. A significant proportion of these will be used to very

<sup>1</sup> E.g. DTR, MPEG4 and/or HD decoding, diversity reception, internet access, decoding of encrypted services, multi-device remotes etc.

simple interfaces with their existing analogue TV equipment and some will be unaccustomed to complex menu-driven user interfaces (UIs). The guiding principles of these requirements are therefore that the UI **shall** be simple to understand, **shall** provide explicit user feedback for actions initiated by the user, **shall**, where feasible, hide invisible behaviour (e.g. autoscan, software downloads etc.) and, above all, **shall** leave the user in no doubt as to where they are in any necessary navigation and how to return to the root or default decoding condition.

Note that this is a document defining the **requirements** of suitable receiving equipment– it is **not** a functional specification, nor does it specifically address issues such as packaging or user instructions.

The Help Scheme will rule on compliance of the specifications, taking all reasonable steps to fulfil that obligation and its decision shall be final.

## Section 2: General Requirements

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- A 1 Receivers **shall** be capable of simultaneously displaying subtitles and relevant user-interface data (menus, feedback icons – e.g. mute etc.) where these do not compete for screen space **or** of temporarily suspending subtitle display during such a user-initiated dialogue and restoring them as appropriate.
- A 2 Receivers **shall** be capable of decoding and presenting subtitles in the form appropriate for the platform.
- A 3 Receivers **shall** be capable of decoding and presenting audio description in the form appropriate for the platform.
- A 4 Full EPG content information **shall** be presented to the user in appropriate form including appropriate indications of the availability of subtitles and AD.
- A 5 The receiver **shall** identify and respond to changes to the service line-up without undue disturbance to the viewer.
- A 6 A receiver **shall** automatically identify changes in the receivable multiplexes (including new frequencies) from substantive changes to the data signalled in the Service Information within the received bit-stream (i.e. in the NIT and/or SDT) or other platform management data, **shall** update the relevant cached information and, where appropriate, **shall** execute a rescan or its equivalent in a suitable user-friendly manner. It is highly desirable that the strategy taken for any rescan or its equivalent be made as transparent as possible (optimally wholly invisible) to the user<sup>2</sup>. For DTT, set-top boxes **shall** respond appropriately to network change information signalled in the broadcast stream whatever other autonomous strategy is also implemented.
- A 7 A receiver **shall** correctly manage multiple instances of a service (eg regional variants) so that the preferred instance of that service can be suitably presented to the viewer on the assumption that broadcasters have correctly identified their services. Where possible this management **should** be capable of being performed automatically although manual override is desirable. Once stored, such preferences should be capable of being maintained across subsequent retuning where appropriate.

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<sup>2</sup> eg. when the receiver is in “standby” or at a suitable time (early morning) which can be redefined by the user.

- A 8 A receiver **shall** manage in a stable, robust and user-friendly manner its response to modulation schemes, services and/or new data structures within the delivered stream for which it was not specified or designed. (For example a DTT receiver intended to receive DVB-T signals only **shall** not “fall-over” or “lock-up” when presented with a DVB-T2 signal. Similarly DVB-S receivers should not “fall over” in the presence of a DVB-S2 signal.)
- A 9 The receiver **shall** provide the user with a means of selecting, reordering and/or filtering favourites.
- A 10 The receiver remote control protocol and codes **shall** be made available to designers of alternative remotes (e.g. for those with manual dexterity challenges) or of alternative specialist assistive technologies (e.g. voice activated command input).
- A 11 Receivers **shall** be capable of decoding radio services.
- A 12 In the interest of energy efficiency and avoiding screen burn, receivers **should** adopt suitable strategies to blank or to reduce the amplitude of static on-screen displays (inc. placeholders for radio services) after a suitable time delay.
- A 13 The primary A/V baseband output of a set-top-box receiver **shall** be via a SCART connector with both composite and RGB and support for widescreen switching on pin 8. For DTT equipment this signal **should** also be available as a uhf-modulated PAL signal tuneable to uhf channels 21 through 68 and added to the UHF input signals looped through to the rf output.
- A 14 The secondary A/V baseband output of a receiver **shall** be via a SCART connector with composite and optional RGB output. Programmed recording **should** be facilitated by the use of pin 8. [For iDTVs SCART input/output connectors **shall** be fully connected.]
- A 15 For DTT receivers, RF loop-through **shall** work both when the receiver is ON and when it is any STANDBY mode. The loop-through **should** have minimal rf signal attenuation.
- A 16 Receivers **shall** be compliant with the standards and requirements for interoperability applicable to the relevant platform and with the signal delivery method(s) for that platform.
- A 17 Remote control terminology, labelling and button definitions **shall** be in accordance with those described in the document entitled UK Digital TV Receiver Recommendations published by the DTG ([www.dtg.org.uk/testing/conformance.html](http://www.dtg.org.uk/testing/conformance.html)).
- A18 Receivers **shall** conform to energy efficiency standards set out in the *EU Code of Conduct on Energy Efficiency of Digital TV Service Systems, Version 7*<sup>3</sup>, for “complex” set top boxes in the basic receiver only configuration. The maximum

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<sup>3</sup> Version 7 at the time of publication, but the energy efficiency standards will be in line with the most recent Code provisions.

power consumption levels shall not include additional power allowance for additional components ([http://re.jrc.ec.europa.eu/energyefficiency/html/standby\\_initiative\\_digital%20tv%20services.htm](http://re.jrc.ec.europa.eu/energyefficiency/html/standby_initiative_digital%20tv%20services.htm)).

## Section 3: Usability Requirements

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### User Interface – On-screen display

- B 1 The User Interface (UI) **shall** be designed using principles derived from good web design practice (see, for example, W3C guidelines 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 **shall** be highlighted clearly.
- B 2 There **shall** be a direct and consistent correspondence between relevant on-screen prompts and button labels on the remote control.
- B 3 Items in pop-up menus **shall** be numbered and directly selectable using numeric keys.
- B 4 The UI **shall** use a san-serif font designed for readability and use on television & at sizes suitable for normal viewing distances [Tiresias is recommended with 24 line minimum for body text, 18 min. for upper-case]. Mixed case letters **should** be used; if not possible then lower-case **should** be favoured over upper-case. Italic, underlined, oblique or condensed fonts **shall** be avoided.
- B 5 Text and relevant symbols/icons **shall** 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 **shall** be avoided.
- B 6 Arabic numerals only **shall** be used (1, 2, 3, 4, 5...)
- B 7 Symbols **shall** accord with appropriate recognised standards.
- B 8 Arrows **should** accord with the ISO7001 specification.
- B 9 Generous inter-linear spacing **should** be provided. Words **should** have a clear space around them esp. adjacent to symbols. Flashing and scrolling text **shall** be avoided.
- B 10 Left-aligned text **should** be used rather than centred or right-aligned. Justified paragraphs **should** be avoided.

### User Interface - Navigation

- B 11 The UI **shall** leave the user in no doubt as to where he/she is in any necessary navigation and how to return to the root or default decoding condition.
- B 12 In general there **should** be only one way of achieving a particular user goal. (Exceptions would be selecting a service by numeric or P+/P- keys or from an epg.)

page.)

- B 13 The UI **shall** provide a direct means of returning to the previous menu screen using a common, clear, unambiguous and consistent action and terminology such as use of a “back” button.

### User Interface - Feedback

- B 14 The UI **shall** provide explicit and distinguishable user feedback for actions initiated by the user (e.g. to acknowledge a highlighted choice, a key stroke, an activated command etc.). This **should** be both visual and audible although audible feedback may be capable of being disabled via the UI.
- B 15 The UI **shall** provide appropriate explicit on-screen information re. system status.
- B 16 The receiver **should** provide a mechanism to support speech output of text displayed on screen (viz. on-screen text related to menu selection and receiver status message – e.g. “no signal”- and the enunciation of channel names, programme names, presence of subtitles/AD and now/next event names). NB: the receiver is not expected to interpret Dtext pages or eTV applications verbally.

### User Interface - favourites and user preferences

- B 17 The receiver **shall** provide the user with a means of selecting, reordering and/or filtering the presentation of services in the service list (i.e. a “favourites” list). Newly “discovered” services **shall** not impact existing favourites without user intervention.
- B 18 The UI **should** also provide the means of tailoring functionality & user interface to suit the user and of storing and retrieving individual user preferences.

### User Interface - invisible behaviour

- B 19 The UI **shall** hide invisible receiver behaviour (e.g. autoscans, software downloads etc.) where appropriate.
- B 20 The receiver **should** detect when software has become unstable and auto-recover without interrupting the presentation of vision and sound for the most-recently-selected service.
- B 21 Where feasible, software upgrades **shall** not cause loss of all relevant existing user settings (e.g. volume, subtitles enabled, favourites list etc.).

### User Interface - other requirements

- B 22 The UI **shall** provide the means of selecting and deselecting the display of subtitles

and, **independently**, of selecting and deselecting the presentation of audio description.

- B 23 On-screen receiver set-up procedures **shall** use easy-to-understand terms.

## Remote control

### Remote control - keys

- B 24 Keys **shall** be large and well separated (e.g. at least 50% of button width).
- B 25 Adjacent keys **shall** be tactilely distinguishable (e.g. be raised or have raised edges).
- B 26 There **shall** be a raised marking on the figure 5 key of the numeric pad.
- B 27 Keys **shall** be logically grouped by function and those functional groups **should** be separated by more than the distance between keys within each group. Different functions **should** also be distinguished by distinct shapes or texture (see ES 201 384).

### Remote control - labelling

- B 28 The remote control **shall** have clear visual markings.
- B 29 All legends **shall** be clear, legible (in a san serif font and as large as possible) and contrast with the keys and/or background
- B 30 All labelling **shall** be durable and long-lasting (e.g. moulded into casing).
- B 31 The labelling **shall** be intuitive & standardised with a clear meaning for each legend.

### Remote control - feedback

- B 32 The receiver **shall** provide visual and audible feedback of pressing a remote key (e.g. click and led flash on pressing). Note that this **shall** be a response of the receiver and not of the remote control.

### Remote control – physical

- B 33 The remote **shall** be capable of single handed operation by either hand.
- B 34 The remote **shall** be easy to grip and be coated in a non-slippery, textured material.
- B 35 The directional properties of the communications link from the remote control to the receiver **shall** be as wide angle as possible.
- B 36 The remote **shall** be stable if placed on a flat surface.

### Remote control – general

- B 37 Means **shall** be provided to allow various styles and complexity of remote controller to be supplied as options (e.g. minimalist, large-button etc.)
- B 38 Basic remote control functions **should** also be available from the receiver front panel (e.g. power on/off, channel up/down, volume up/down).
- B 39 Means **shall** be provided to dedicate a key to select/deselect subtitles and to indicate the status of the setting on the receiver screen.
- B 40 Means **shall** be provided to dedicate a key to select/deselect audio description and to indicate the status of this setting including a distinctive audible indication that the AD has been enabled as a response of the receiver (see also B32).
- B 41 The remote **shall** have no redundant keys.
- B 42 Access to the remote's battery compartment **should** be straightforward but proof against small children.

## Subtitles and Audio Description

- B 43 If the user elects to see subtitles when available, this choice **shall** be maintained across channel changes without further user intervention.
- B 44 If the user elects to listen to audio description when available, this choice **shall** be maintained across channel changes without further user intervention.
- B 45 If audio description has been enabled in the user interface, any secondary output (e.g. SCART for video recording) **shall** convey the appropriate mix of programme sound and audio description.

## Hardware

### Audio output

- B 46 The receiver **shall** provide an easily-accessible audio output at a signal level suitable for driving wireless headphones or inductive loop equipment. This output **shall** be such that it can be easily made available on a suitable receptacle (e.g. phono or using a SCART-to-phono adaptor) to feed a domestic hi-fi for those blind & partially-sighted who will use it without a video display. It **shall** be possible to direct either the AD mix or programme sound to this output.

### Power switch

- B 47 The receiver **should** provide a power switch in an easily-accessible position with which the receiver can be put into its lowest power consumption (e.g. a standby) mode.

## Connections

- B 48 A fully-connected and individually screened SCART lead at least 1m in length **shall** be provided. This **shall** comply with the appropriate standards and include means to ensure that it remains securely in place at all times.
- B 49 External connections **shall** be easily accessible and clearly marked (e.g. with colour coding) to match the appropriate connectors with each supplied lead.

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