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Television Technical Performance Code

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Updates and amendments:
Statement', 9 November 2016.
This Annex highlights the
changes we are making to the
version of this document which
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Section 1

Introduction

1.1 ~~Under the 1990 and 1996 Broadcasting Acts (the '1990 Act' and the '1996 Act' respectively) as amended by the Communications Act (2003) require Ofcom is required to include conditions in its the licences for Channels 3, 4 and 5, and in the licences and for multiplex services issued under the 1996 Act, relating to transmission standards and reliability. Specifically, Ofcom must include such conditions as which are appropriate for securing that requiring the signals carrying these services to attain high standards of technical quality and reliability throughout so much of the service coverage area as is for the time being reasonably practicable (see section 66(4) of the 1990 Act and section 12(1)(g) of the 1996 Act). Accordingly, these licences include conditions requiring the licensee to do all they can to ensure the relevant provision of These conditions require observance of this Television Technical Performance Code are observed.~~

4.1.2 ~~Other~~ While digital terrestrial television multiplexes licensed under the 1996 Act must also hold licences issued under the Wireless Telegraphy Act 1996, Ofcom also ~~are authorised to operate by licenses~~ some digital terrestrial television multiplexes ~~ees issued under the Wireless Telegraphy Act 2006 alone. Where required to do~~ In some cases, these licensees are also required to ~~so by their licences, these multiplexes must also observe this Television Technical Performance Code.~~

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Section 2

The Television Signal

2.1 All picture, sound, test and other signals broadcast by ~~the~~ licensees must comply with the technical standards specifications which are for the time being applicable in the UK.

~~2.2 For analogue services (Channels 3, 4 and 5) the Specification of Television Standards for 625-line System I Transmissions in the United Kingdom, previously published by the DTI Radiocommunications Agency, and Recommendation ITU-R BT.470 give details of the current UK PAL-I and PAL-I1 standards for the PAL-vision waveform. The current standard applicable for transmissions of subtitling or other teletext information within the PAL-I and PAL-I1 signals is ITU-R (CCIR) Teletext System B. The specification for this system is published by ETSI in EN 300 706. To the extent that this standard is employed, the licensee must comply with the Ofcom Rules of Operation for the use of ITU-R Teletext System B.~~

~~2.3~~ 2.2 For digital terrestrial television services the currently applicable transmission standards are described in 'Reference Parameters for Digital Terrestrial Television Transmissions in the United Kingdom', available from Ofcom¹.

¹ https://www.ofcom.org.uk/data/assets/pdf_file/0017/36512/dttt_uk.pdf

Section 3

Technical Quality Standards

- 3.1 ~~Multiplex licensees, Channel 3 licensees, the Channel 4 licensee, and the Channel 5 licensee~~ Licensees must provide Ofcom with a description of their procedures for ensuring high standards of technical quality.
- 3.2 ~~These~~ Licensees are required to make their own assessment of the technical quality of their service. The objective of this monitoring should be to confirm the effectiveness of their procedures for ensuring high standards of technical quality.
- ~~3.3 For Channels 3, 4 and 5, live studio outputs should normally achieve a sound and vision grade of 5 on the ITU-R 5-Point Quality Grading Scale described in ITU-R BT.500². Recorded programmes based on electronic production should normally achieve a grade of at least 4 and other programmes should normally achieve a grade of at least 3.~~
- ~~3.4 Circumstances where a lower grade might be justified include news inserts, topical or actuality material, historical material where it is not practicable further to improve the technical quality, or where low quality clearly forms part of the editorial intent of the programme.~~
- ~~3.5.3.3~~ Timing differences between the sound and vision of the transmitted programmes should not be annoying to the viewer.
- ~~3.6 The technical quality available from a directly fed transmitter (i.e. one receiving its signals from an SHF link, land line or satellite, without a rebroadcast link en route) used to broadcast Channel 3, 4, 5 in analogue or digital form, or S4C Digital, should not normally be more than half a grade worse (in sound or vision) than that available at the broadcast licensee's transmission output. Perceptible transient distortion caused by digital compression is permitted provided it is not annoying to the viewer. For transmission paths in which one or more rebroadcast links are involved, the RBL quality should be as high as is reasonably practicable.~~

² A tape is available from Ofcom illustrating these picture quality grades.

Section 4

Reliability

4.1 For multiplex services licensed under the Broadcasting Act 1996 which are required to observe this Code (currently Multiplex 2, Multiplex A, Multiplex B, Multiplex C and Multiplex D) standards of reliability, (measured in terms of service availability to viewers), must be maintained to levels that are as high as reasonably practicable. The minimum standard of availability is ~~99.0%, or 99.8%~~ for viewers served by reference transmitters³ ~~and 99.0% for other transmitters~~ ~~99.8% (99.5% in the case of the national Channel 3 licence), averaged over the preceding six months.~~ These availability figures should take account of a loss of video and sound or control data essential to view the services due to any cause under the control, either directly or through contract arrangements, of the licensee.

4.14.2 ~~These multiplex licensees should notify Ofcom of any significant transmitter outages as soon as possible after they occur. Recognising that broadcasters will have specific contractual fault reporting arrangements with their own transmission providers, this Code does not specify minimum time or population thresholds which constitute a 'significant' outage. Ofcom will instead agree specific thresholds with individual multiplex operators directly so as to minimise any administrative burden on licensees. However, as guidance, we would normally expect to be notified within 24 hours of transmitter outages which last 30 minutes or more at Reference Transmitters, and of 2 hours or more at other transmitters.~~

4.24.3 A transmitter ~~breakdown outage~~ is considered to occur when the transmitter becomes incapable of ~~radiating a decodable transport stream to its planned coverage area, providing a subjective quality of Grade 3 or more for analogue services or a decodable signal for digital transmissions in the absence of perceptible interference for reception in the planned coverage area.~~ For ~~periodic~~ maintenance purposes the transmitter power ~~may be permitted to be~~ reduced by up to ~~6dB for analogue transmission or 3dB for digital transmission~~, or other changes made which result in up to an equivalent loss of population coverage, without the transmitter condition being treated as ~~an outage breakdown~~.

~~4.3~~ ~~Particular care and attention should be given to the quality and reliability of subtitle provision, signing, and audio description in recognition of their importance to those viewers who are deaf or hard of hearing or with sight impairments⁴. An appropriate apology message should normally be transmitted on the subtitle service as soon as possible when the transmitted data becomes unusable. In the case of a complete loss of subtitle service, an apology may be made as an open caption.~~

4.4 ~~Multiplex~~ licensees must submit ~~to Ofcom~~ an annual report on transmission performance each July. The report on transmission performance that should include a summary of reliability performance results for distribution and transmission in an agreed format, ~~and~~ an analysis of viewer complaints relating to poor reception and technical faults, and a brief description of any notable developments in the technical architecture of the service ~~quality~~.

³ A list of reference transmitters for Channels 3, 4, 5, and the multiplex services is provided in Annex 1 of this document available from Ofcom.

⁴ ~~Standards for the production and presentation of subtitles, signing, and audio description are set out in Ofcom's Guidance on Standards for each of these provisions.~~

4.44.5 Channel 3, Channel 4 and Channel 5 licensees must submit an annual report each July. The report should include an analysis of viewer complaints relating to poor reception quality and technical faults, a summary of any significant service-affecting studio or playout faults, and a brief description of any notable changes in the technical architecture of the service. Such annual reports may be included in the relevant multiplex report for efficiency.

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Section 5

Coverage

- 5.1 The coverage of ~~Channel 3, 4, 5 and~~ multiplex services is defined as that which is provided by the transmitters listed in the Annex to the Licence when operating in accordance with the Technical Performance Code. In order to meet this condition, ~~analogue~~ transmitters must normally operate with ~~the radiation pattern and~~ an effective radiated power equal to the maximum power contained in the appropriate Wireless Telegraphy Act Licence. ~~The required radiation patterns and effective radiated powers for digital transmitters are defined in Ofcom's Digital Terrestrial Database.~~

Annex 1

List of Digital Television Reference Transmitters

<u>Transmitter</u>	<u>Channel 3 Region</u>
<u>Sandy Heath</u>	<u>Anglia</u>
<u>Sudbury</u>	<u>Anglia</u>
<u>Tacolneston</u>	<u>Anglia</u>
<u>Caldbeck</u>	<u>Border</u>
<u>Selkirk</u>	<u>Border</u>
<u>Brierley Hill</u>	<u>Central</u>
<u>Bromsgrove</u>	<u>Central</u>
<u>Fenton</u>	<u>Central</u>
<u>Lark Stoke</u>	<u>Central</u>
<u>Malvern</u>	<u>Central</u>
<u>Nottingham</u>	<u>Central</u>
<u>Ridge Hill</u>	<u>Central</u>
<u>Sutton Coldfield</u>	<u>Central</u>
<u>The Wrekin</u>	<u>Central</u>
<u>Waltham</u>	<u>Central</u>
<u>Lancaster</u>	<u>Granada</u>
<u>Pendle Forest</u>	<u>Granada</u>
<u>Saddleworth</u>	<u>Granada</u>
<u>Storeton</u>	<u>Granada</u>
<u>Winter Hill</u>	<u>Granada</u>
<u>Crystal Palace</u>	<u>London</u>
<u>Guildford</u>	<u>London</u>
<u>Hemel Hempstead</u>	<u>London</u>
<u>Reigate</u>	<u>London</u>
<u>Bluebell Hill</u>	<u>Meridian</u>
<u>Dover</u>	<u>Meridian</u>
<u>Hannington</u>	<u>Meridian</u>
<u>Hastings</u>	<u>Meridian</u>
<u>Heathfield</u>	<u>Meridian</u>
<u>Midhurst</u>	<u>Meridian</u>
<u>Oxford</u>	<u>Meridian</u>
<u>Rowridge</u>	<u>Meridian</u>
<u>Salisbury</u>	<u>Meridian</u>
<u>Tunbridge Wells</u>	<u>Meridian</u>
<u>Whitehawk Hill</u>	<u>Meridian</u>
<u>Brougher Mountain</u>	<u>Northern Ireland</u>
<u>Divis</u>	<u>Northern Ireland</u>
<u>Limavady</u>	<u>Northern Ireland</u>
<u>Black Hill</u>	<u>STV Central</u>
<u>Craigkelly</u>	<u>STV Central</u>

<u>Transmitter</u>	<u>Channel 3 Region</u>
<u>Darvel</u>	<u>STV Central</u>
<u>Rosneath</u>	<u>STV Central</u>
<u>Torosay</u>	<u>STV Central</u>
<u>Angus</u>	<u>STV North</u>
<u>Bressay</u>	<u>STV North</u>
<u>Durris</u>	<u>STV North</u>
<u>Eitshal</u>	<u>STV North</u>
<u>Keelylang Hill</u>	<u>STV North</u>
<u>Knockmore</u>	<u>STV North</u>
<u>Rosemarkie</u>	<u>STV North</u>
<u>Rumster Forest</u>	<u>STV North</u>
<u>Bilsdale</u>	<u>Tyne Tees</u>
<u>Chatton</u>	<u>Tyne Tees</u>
<u>Fenham</u>	<u>Tyne Tees</u>
<u>Pontop Pike</u>	<u>Tyne Tees</u>
<u>Aberdare</u>	<u>Wales</u>
<u>Blaenplwyf</u>	<u>Wales</u>
<u>Carmel</u>	<u>Wales</u>
<u>Kilvey Hill</u>	<u>Wales</u>
<u>Llanddona</u>	<u>Wales</u>
<u>Moel y Parc</u>	<u>Wales</u>
<u>Pontypool</u>	<u>Wales</u>
<u>Preseli</u>	<u>Wales</u>
<u>Wenvoe</u>	<u>Wales</u>
<u>Beacon Hill</u>	<u>West & South West</u>
<u>Bristol Ilchester Crescent</u>	<u>West & South West</u>
<u>Bristol Kings Weston</u>	<u>West & South West</u>
<u>Caradon Hill</u>	<u>West & South West</u>
<u>Huntshaw Cross</u>	<u>West & South West</u>
<u>Mendip</u>	<u>West & South West</u>
<u>Plympton</u>	<u>West & South West</u>
<u>Redruth</u>	<u>West & South West</u>
<u>Stockland Hill</u>	<u>West & South West</u>
<u>Belmont</u>	<u>Yorkshire</u>
<u>Chesterfield</u>	<u>Yorkshire</u>
<u>Emley Moor</u>	<u>Yorkshire</u>
<u>Idle</u>	<u>Yorkshire</u>
<u>Keighley</u>	<u>Yorkshire</u>
<u>Olivers Mount</u>	<u>Yorkshire</u>
<u>Sheffield</u>	<u>Yorkshire</u>

Reference Parameters for Digital Terrestrial Television Transmissions in the United Kingdom

*Published as Annex2 to
'Broadcast TV Technical Codes
Updates and amendments:
Statement', 9 November 2016.
This Annex highlights the
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version of this document which
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Section 1

Introduction

- 1.1 This document describes the currently applicable transmission standards used by all licensees providing a service under an Ofcom Multiplex Service Licence, as referred to by the Ofcom Television Technical Performance Code¹. It describes a reference system for digital terrestrial television **multiplex** transmissions and specifies the minimum necessary **parameters** to ensure that receivers can demodulate and decode all services.
- 1.2 The 1996 Broadcasting Act required the Independent Television Commission (ITC) to have regard to certain matters in awarding a multiplex licence, including proposals by applicants for promoting equipment capable of receiving all the multiplex services available in a given area. In its Invitation To Apply, the ITC required that such proposals be made. In order to maintain the ability to receive all the multiplex services, it was necessary to specify certain technical requirements covering common methods of delivering video, audio, text and data applications, together with an explanation of the constraints imposed by the Broadcasting Act on data capacity use in digital terrestrial services. These particular requirements were previously contained in the draft 'ITC Rules of Operation on the use of the DVB-T Specification'². They were subsequently updated in September 2002 and incorporated in the former ITC Community Digital Standard³. ~~They are indicated in this document by italicised text.~~
- 1.3 This document also contains parameter sets for UK digital terrestrial television services which are not provided under an Ofcom Multiplex Service Licence, but which are required by to observe the 'Reference Parameters' by their Wireless Telegraphy Act licences.

Section 2

Reference System

Where a feature is mandatory the word “shall” is used. All other features and recommendations are optional but where used shall conform to the provisions of the relevant ETSI standard or associated guideline.

Modulation and Channel Coding: DVB-T Multiplexes

2.1 EN 300 744⁴ specifies the modulation and channel coding for DVB-T systems.

The frequency offset applied to the carriers on individual channels is 0, or $\pm 1/6$ MHz (\pm approximately 167 kHz).

In order to maximise the commonality of digital terrestrial transmissions the sub-set of EN 300 744, as described in ~~either~~ Option 1 A shall be used by any Ofcom Multiplex Licensee carrying a Channel 3, Channel 4, or Channel 5 service in standard definition form.

~~or Option 2 of Table 1, shall be used prior to digital switchover.~~

The Local Television Service Multiplex Licensee (the multiplex service licensed by Ofcom under the Local Digital Television Programme Services Order 20125) shall adopt the sub-set of EN 300 744 described in Option 1C.

Other Ofcom Multiplex Licensees may alternatively adopt the sub-set of EN 300 744 as described in Option 1B.

Multiplex Licensees may adopt alternative sub-sets of the EN 300 744 standard at specified Emitting Points with the prior written consent of Ofcom. Should Ofcom consent to the use of alternative modulation modes on a permanent basis, additional sub-sets of EN 300 744 will be incorporated in future revisions of this document.

Table 1: DVB-T OFDM Parameters

OFDM Parameter	Option 1A Value	Option 1B 2 Value	Option 1C 3 Value
Number of carriers	6817 4705	6817 4705	6817
Modulation	64 QAM	64 16 QAM	64 QAMQPSK
Outer Coding R _c	2/3	3/4	3/4 2/3
Guard Interval (Δ/T_U)	1/32	1/32	1/32
Carrier spacing	1.116 kHz4.464 kHz	1.116 kHz4.464 kHz	1.116 kHz
Spacing between carriers	7.61 MHz	7.61 MHz	7.61 MHz

k_{\max} & k_{\min}			
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Modulation and Channel Coding: DVB-T2 Multiplexes

2.2 EN 302 755⁶ specifies the modulation and channel coding for DVB-T2 systems.

Multiplex Licensees authorised to use the DVB-T2 system shall adopt the subset of EN 302 755 standard described in Option 2A of Table 2. ~~may adopt the subset of the EN 302 755 standard described in Table 2 or alternative sub-sets of the standard at specified Emitting Points with the prior written consent of Ofcom.~~

Use of the extended bandwidth mode is optional.

The subset of EN 302 755 currently adopted by the Northern Ireland Multiplex (providing Republic of Ireland television services within Northern Ireland) is described in Option 2B on an informative basis only.

Multiplex Licensees who are authorised to use the DVB-T2 system may adopt alternative sub-sets of the EN 302 755 standard at specified Emitting Points with the prior written consent of Ofcom. Should Ofcom consent to the use of alternative modulation modes on a permanent basis, additional sub-sets of EN 302 755 will be incorporated in future revisions of this document.

Table 2: DVB-T2 OFDM Parameters

OFDM Parameter	<u>Option 2A Value</u>	<u>Option 2B Value</u> <u>(Informative)</u>
Number of carriers:		
Normal Mode	27265	<u>27265</u>
Extended bandwidth mode	27841	<u>n/a</u>
Modulation	256 QAM	<u>QPSK</u>
Outer Coding R_c	2/3	<u>2/3</u>
Guard Interval (ΔT_U)	1/128	<u>1/128</u>
Carrier spacing	279 Hz	<u>279 Hz</u>
Spacing between carriers (k_{max} & k_{min})		
Normal mode	7.61 MHz	<u>7.61 MHz</u>
Extended bandwidth mode	7.77 MHz	<u>n/a</u>

Source Coding of Video Signals

- 2.3 Video encoding conforms to ISO/IEC 13818-2⁷ and observes the implementation guidelines contained in TS 101 154⁸. Table 3 shows the configuration for all digital programme services ~~and~~ Qualifying Services carried on the multiplex:

Table 3: Video Parameters

Parameter	Value
MPEG-2 Profile	Main
MPEG-2 Level	Main
Frame Rate	25Hz
Aspect Ratio	4:3 or 16:9

~~For Qualifying Services the encoded picture shall have either a full-screen luminance resolution (horizontal x vertical) of 720 x 576 pixels or a non-full-screen luminance resolution of a minimum of 704 x 576 pixels.~~

It is recommended that appropriate Active Format Description (AFD) be included in the user data of the video elementary stream. Commonly referred to as having an AFD value in the range 0-7, this should be taken from AFD 0-3 or 5-7 as shown in Table 4. The table lists the corresponding values of active_format in TS 101 154 that should be included.

Table 4: Values of active_format

AFD	active_format	Aspect ratio of the "area of interest"
0	1000	Active region is the same as the coded frame
1	1001	4:3 (centre)
2	1010	16:9 (centre)
3	1011	14:9 (centre)
4	1100	Reserved for future use
5	1101	4:3 (with shoot and protect 14:9 centre)
6	1110	16:9 (with shoot and protect 14:9 centre)
7	1111	16:9 (with shoot and protect 4:3 centre)

Advanced Video Coding (AVC)

- 2.4 Where the prior written consent of Ofcom has been obtained, advanced video encoding may be employed that conforms to ISO/IEC 14496-10⁹ and observes the implementation guidelines contained in TS 101 154. Table 5 shows the configuration for standard definition digital programme services or Qualifying Services carried on the multiplex and Table 6 shows the configuration for high definition digital programme services or Qualifying Services carried on the multiplex:

Table 5: Video parameters for standard definition services

Parameter	Value
AVC Profile	Main
AVC Level	3
Frame Rate	25 or 50Hz
Aspect Ratio	4:3 or 16:9

Table 6: Video parameters for high definition services

Parameter	Value
AVC Profile	High
AVC Level	4.0
Frame Rate	25Hz or 50Hz
Aspect Ratio	16:9

Alternative video coding standards may be employed at specified Emitting Points with the prior written consent of Ofcom. Should Ofcom consent to the use of alternative encoding standards on a permanent basis, such standards will be incorporated in future revisions of this document.

Source Coding of Audio Signals

- 2.5 Audio encoding conforms to ISO/IEC 13818-3¹⁰ and observes the Implementation Guidelines contained in TS 101 154⁸.

~~It is recommended that the bit-rate used for audio coding are:~~

~~Stereo ————— = 256 kbit/sec~~

~~Joint Stereo — = 192 kbit/sec~~

~~For the purpose of this section, the main service is defined as being the principal audio service connected with the Qualifying or digital programme service.~~

Additional audio channels, such as Audio Description or foreign language services, within the programme channel may be included in conformance with the general requirements outlined in TS 101 154.

~~When an Audio-Description service is transmitted it is recommended that it be broadcast at a minimum bit-rate of 64 kbit/sec.~~

Alternative Audio Encoding

- 2.6 Where the prior written consent of Ofcom has been obtained, audio encoding may be employed that conforms to ISO/IEC 14496-3¹¹ or TS 102 366¹² and observes the Implementation Guidelines contained in TS 101 154⁸

Multiplexing Of Signals

- 2.7 The multiplexing of baseband signals conforms to ISO/IEC 13818-1¹³ and observes the Implementation Guidelines contained in TS 101 154⁸.

In summary, all of the individual components of a service are combined into a single MPEG-2 compatible Transport Stream subject to the constraints outlined in the Implementation Guidelines on the use of MPEG-2 Systems in TS 101 154.

The Broadcasting Act 1996 requires that 90% of the multiplex capacity must be available for the transmission of digital programme services. Further information on Ofcom's interpretation of how the statutory limits apply to the constituent parts of a multiplex is available in Ofcom's Guidance on Data Limits on Digital Terrestrial Television Multiplexes¹⁴.

Program Specific Information

- 2.7.1 Transport Streams provide the tables and descriptors of Program Specific Information (PSI) as required by ISO/IEC 13818-1¹³, TS 101 154⁸, EN 300 468¹⁵ and TR 101 211¹⁶. These and any additional items are used in the manner required by these specifications and guidelines.

In summary each Transport Stream carries the following PSI tables: PAT, PMT and NIT. Transport Streams carrying scrambled services also carry a CAT.

The PIDs of all of the transport stream packets relating to the transmission of licensed services intended for General Reception in each Transport

Stream are one of the PIDs defined by ISO/IEC 13818-1 or EN 300 468 and are listed in the CAT, PAT or PMT as described above.

Service Information

- 2.7.2 All Transport Streams provide tables and descriptors of Service Information (SI) required by EN 300 468¹⁵ and TR 101 211¹⁶ and the additional features listed below.

Network Information Table (NIT)

- 2.7.2.1 Each Transport Stream carries, where reasonably practicable, NITs describing ALL the Transport Streams originating from a specific Emitting Point carrying services licensed for delivery in the UK regardless of whether they are part of the same Network. A `terrestrial_delivery_descriptor` is provided for each Transport Stream described.

Service Description Table (SDT)

- 2.7.2.2 Each Transport Stream carries, where reasonably practicable, SDTs describing the services in ALL the Transport Streams originating from a specific Emitting Point carrying services licensed for delivery in the UK regardless of whether they are part of the same Network.

A `service_descriptor` is provided for each service described. All of the `service_descriptors` carried in each SDT carry Meaningful names in respect of which are intended for identification by and display to viewers.

Event Information Table (EIT)

- 2.7.2.3 Each Transport Stream carries EIT present and following information for all events carried on the actual and ALL other transport streams originating from a specific Emitting Point. This does not apply to those services which do not normally make use of a schedule, for example music only services. Each EIT carries a short event name with a Meaningful name.

It is recommended that the maximum length of each name should not exceed 40 characters in length.

It is recommended that the transition between the present and following event should normally be accurate within 10 seconds of the event transition in the Digital Television Service.

Time Offset Table (TOT)

- 2.7.2.4 Each Transport Stream carries TOTs with a time offset descriptor for at least the United Kingdom (country code "GBR"). The values of "current time offset" and "next time offset" reflect the legal requirement in the UK at the time of broadcast.

Time and Date Table (TDT)

2.7.2.5 Each Transport Stream carries a Time and Date Table.

Allocation of SI codes

2.7.3 SI codes are detailed in Table 7.

Table 7: SI Codes

SI Code	Status
Original_network_id	A single value is used for all UK DTT services: 0x233A , as registered <u>with DVB in accordance with TS 101 162</u> in ETR 162 ¹⁷ .
Network_id	A single value is used for all transmissions from each Service Insertion Point (SIP), from values registered <u>with DVB in accordance with TS 101 162</u> in ETR 162 ¹⁷ .
service_id	To be agreed by individual Qualifying Broadcasters, Digital Programme licensees and Digital Additional Service licensees for each service broadcast. Minor changes to regional content of service do not require a new value to be used.
bouquet_id	Codes are used from values registered <u>with DVB in accordance with TS 101 162</u> in ETR 162 ¹⁷ .
transport_stream_id	Used to uniquely identify a transport stream; licensees to determine value to be used.
ca_system_id	Codes are <u>used from values registered with DVB in accordance with TS 101 162</u> listed in ETR 162 ¹⁷
country code	Codes are published in ISO 3166 ¹⁸ and <u>TS 101 162</u> ETR 162 ¹⁷
private_data_specifier	A single value is used for all UK DTT services: 0x000233A , as registered <u>with DVB in accordance with TS 101 162</u> in ETR 162 ¹⁷

Multiplexing of Data Broadcast Services

2.7.4 Any stream of transport packets carrying Data Broadcast Services intended to be identified by and displayed to viewers conforms with any of the methods described in EN 301 192¹⁹. The data transmissions are referenced in the SI tables as described by EN 301 192 and EN 300 468¹⁵ and observe the guidelines in TR 101 202²⁰ and TR 101 211¹⁶.

Data services which are intended for general reception make use of DSM CC Object Carousels as defined in Section 9 of EN 301 192.

Data Coding

- 2.8 Data Services which are broadcast either wholly or as part of a Qualifying service shall be coded using an open standard. It is currently recommended that the MHEG-5 Broadcast Profile²¹ be used.

Subtitling

- 2.9 The licensee shall use the DVB Subtitling System as described in EN 300 743²² for the carriage of subtitling data intended for general reception. The licensee shall implement subtitles using region based graphics with indexed pixel numbers as described in EN 300 743.

Closed Signing

- 2.10 Methods for delivering digital closed Signing services are currently under development. It is not considered that a technique is sufficiently mature, at the date of publication, to specify its use for all digital broadcasts.

Scrambling

2.11 Where scrambling is required, the Common Scrambling Algorithm defined in TS 100 289~~ETR 289~~²³ would normally be used, unless there are reasonable grounds that this would compromise security.

2.12 The specification and licensing rights to the Common Scrambling Algorithm and the Common Descrambling Algorithm are distributed separately under arrangements with the European Telecommunications Standards Institute which acts as Custodian for the companies which have developed the Common Scrambling Algorithm. For further information regarding the distribution and licensing of the specifications licensees should ~~consult "DVB Common Scrambling Algorithm Distribution Agreements" DVB A011~~²⁴ ~~or should~~ contact:

ETSI

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Section 3

Terms and Definitions

Digital Television Service	Any television or data service licensed by the Ofcom and broadcast in a digital format.
Delivery System	The physical means of delivering Digital Television Services to the home. This could include a digital cable system, a digital terrestrial system and a digital satellite system and a digital microwave delivery system.
Network	A Network is the collection of transport streams from a single Emitting Point none of whose components are subsequently altered. More than one reference may be made to the same physical location. Each network from such an emitting point identified by a unique network_id.
Emitting Point	An Emitting Point is a reference to the physical location of a transmitter which broadcasts a Transport Stream. This may be a terrestrial transmitting site, a cable head end or a satellite or series of satellites operated by a single organisation (e.g. SES, Eutelsat) at a fixed orbital position.
General Reception	A service which is being broadcast for General Reception should be available to any person in the territory (such as the UK) providing they possess an appropriate receiver and have paid any subscription or other fees if such fees are chargeable for that service.
Meaningful	A Meaningful name, as used for service and event information tables, should allow a viewer to determine easily the identity of the service or event being broadcast. This name would normally be linked to the name or brand under which the service is currently being marketed.
Data Broadcast Services	Data services which are intended for General Reception
Qualifying Services	These are: Channel 3, Channel 4, Channel 5, S4C Digital

Section 4

References

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