HKCA 1108

ISSUE 0~~2~~3

~~October December~~

~~20122022~~February 2023

TECHNICAL SPECIFICATION

FOR DIGITAL TERRESTRIAL TELEVISION

BASELINE RECEIVER REQUIREMENTS

通訊事務管理局
COMMUNICATIONS
AUTHORITY

FOREWORD

1.   This specification covers the technical standard of Digital Terrestrial Television (DTT) Baseline Receiver Requirements in Hong Kong.

2.   In case of any doubt about the interpretation of this specification, the decision of the Communications Authority (CA) shall be final.

3.   The CA reserves the right to revise the contents of this specification without prior noticeThe CA may amend any parts of this specification as and when he deems necessary. Amendments or re-issues of this specification may not be distributed automatically to the parties concerned and it will be the responsibility of the parties concerned to ensure that their systems/equipment conform to the latest requirements.

4.   The HKCA specifications and other documents issued by the CA can be downloaded from the website of the Office of the Communications Authoritydirectly through the OFCA's Internet Home Page at http://www.ofca.gov.hk.

5.   If further information is required, please contact :

        Senior Telecommunications Engineer (Broadcasting Support)
        Office of the Communications Authority
        29/F, Wu Chung House
        213 Queen's Road East
        Wanchai
        Hong Kong
        Tel :   +852 2961 6333
        Fax :   +852 2803 5113
        Tel :   +852 2961 6333
        Email :   dtv@ofca.gov.hk

<u>AMENDMENT HISTORY</u>

Issue		Item	Description
No.	Date		
01	June 07		First Edition
02	Oct 12		Basic-tier DTT receiver is removed
03	Dec 22	5.4	- Integrated TV receiver with 4:3 display is removed
		13.1	- Types of interfaces and connectors are generalised
		14	- Electrical safety requirements referring to HKCA 2001 are removed

CONTENTS

1.   **SCOPE**

This specification covers the technical standard of Digital Terrestrial TV (DTT) Baseline Receiver Requirements in Hong Kong.   A DTT receiver will be capable of receiving all programme services transmitted in the multiple frequency network (MFN) and the single frequency network (SFN). For the avoidance of doubt, the requirements given in this specification apply to DTT receivers including set-top boxes (STB) and integrated television sets unless otherwise stated.

2.   **TECHNICAL STANDARD**

The detailed requirements are set out in the following tables for ease of reference.   This specification covers the baseline requirements and the receiver manufacturers may incorporate additional functions / features in addition to the requirements given in this specification.

Requirements for DTT Receivers[1]

Item No.	Description	Reference / Detail
1	*Basic Features*	
1.1	Minimum requirements for DTT reception	Receivers shall be able to properly receive and decode all domestic free standard definition (SD) and high definition (HD) television programme services transmitted by the DTT broadcasters in Hong Kong.
2	*RF Characteristics, Channel Demodulation and Decoding*	
2.1	Frequency Band	470 MHz – 862 MHz
2.2	Transmission channel bandwidth	8 MHz
2.3	Channel demodulation and decoding	Transmitted DTT signals will comply with GB 20600-2006 ('the National Standard')[2] which includes some 300 combinations of options. Receivers shall at least support the following options : Mode – C = 3780 Modulation – 64QAM, 16QAM and 4QAM Frame Header – PN 945 Code Rate – 0.4 and 0.6 Symbol Interleaving – Mode 2 i.e. B = 52 and M = 720 symbols. Receivers shall be capable of correctly interpreting the system information given in the frame body in accordance with Annex G of the National Standard.
2.4	Channel offset	The nominal centre frequency of each channel is given by :

---

[1] In the following text, DTT receivers and "higher-tier receivers" as stipulated in Issue 01 of this specification refer to the same thing.

[2] The National Standard has been adopted by the International Telecommunication Union (ITU) in recommendation ITU-R BT.1306 "Error-correction, data framing, modulation and emission methods for digital terrestrial television broadcasting".

Item No.	Description	Reference / Detail
		$f_c = 474 + (i - 21)*8$ MHz where i is the channel number which is an integer between 21 and 69. The receiver shall be capable of tuning to transmissions with a channel offset of $\pm$ 1/6 MHz.
2.5	Operation in Single Frequency Network (SFN)	Receivers shall be able to operate properly in SFN environments.

2.6	Basic RF performance	*Carrier to Noise ratio (C/N) for Reference BER (3×10^{-6}) under Gaussian noise*
		    4QAM / 0.4 2.24 dB
		    4QAM / 0.6 3.89 dB
		    16QAM / 0.4 7.95 dB
		    16QAM / 0.6 10.03 dB
		    64QAM / 0.4 12.71 dB
		    64QAM / 0.6 15.61 dB
		    (where the first column represents modulation and code rate)
		
		Minimum input signal level
		    4QAM / 0.4 -97.05 dBm
		    4QAM / 0.6 -95.28 dBm
		    16QAM / 0.4 -91.23 dBm
		    16QAM / 0.6 -89.34 dBm
		    64QAM / 0.4 -86.23 dBm
		    64QAM / 0.6 -83.53 dBm

2.7	Co-channel and adjacent channel performance	*Protection ratios for co-channel interference*
		National Standard signal interfered by PAL signal
		    4QAM / 0.4 -5.8 dB
		    64QAM / 0.6 0.6 dB
		National Standard signal interfered by National Standard signal
		    4QAM / 0.4 2.1 dB
		    64QAM / 0.6 15.1 dB

Item No.	Description	Reference / Detail
		PAL signal interfered by National Standard signal
		4QAM / 0.4 34.9 dB
		64QAM / 0.6 34.9 dB
		Protection ratios for lower adjacent channel interference
		National Standard signal interfered by PAL signal
		4QAM / 0.4 -28.2 dB
		64QAM / 0.6 -28.6 dB
		National Standard signal interfered by National Standard signal
		4QAM / 0.4 -27.8 dB
		64QAM / 0.6 -15.1 dB
		PAL signal interfered by National Standard signal
		4QAM / 0.4 -0.9 dB
		64QAM / 0.6 -0.9 dB
		Protection ratios for upper adjacent channel interference
		National Standard signal interfered by PAL signal
		4QAM / 0.4 -28.2 dB
		64QAM / 0.6 -28.6 dB
		National Standard signal interfered by National Standard signal
		4QAM / 0.4 -27.8 dB
		64QAM / 0.6 -15.1 dB
		PAL signal interfered by National Standard signal
		4QAM / 0.4 -0.9 dB
		64QAM / 0.6 -0.9 dB
2.8	Impulse interference	Impulsive noise rejection :
		64QAM/0.6 4QAM/0.4

Item No.	Description	Reference / Detail
		C/N – 3 dB 28 ms 185 ms C/N – 6 dB 16 ms 105 ms C/N – 12 dB 6 ms 74 ms (Note : C/N at Reference BER and the duration refers to impulse pulse width)
3	*Multiplexing and Transport Stream*	
3.1	System layer specification	Receivers shall support transport streams complied with ISO/IEC 13818-1.
3.2	De-multiplexing	Receivers shall be capable of meeting the minimum de-multiplexing requirements stated in ETSI TS 101 154.
3.3	Data rates	Receivers shall be able to de-multiplex ISO / IEC 13818-1 transport streams and be capable of handling the applicable system gross data rates specified in the National Standard.
3.4	Packet Identifier (PID) filters	Receivers shall be capable of handling not less than 32 different PIDs simultaneously to receive any single service.
4	*Service Information (SI) and Program Specific Information (PSI)*	
4.1	Interpretation of PSI	Receivers shall be capable of interpreting the all applicable PSI (in particular, Programme Association Table (PAT) and Programme Mapping Table (PMT)) and their associated descriptors in the transport stream and responding according to ISO/IEC13818-1 and ETSI TS 101 154.
4.2	Interpretation of SI	Receivers shall be capable of interpreting the applicable SI tables and their associated descriptors in the transport stream and responding according to ETSI EN 300 468, ETSI TRS 101 211 and the following special variants in Hong Kong (e.g. character encoding).
4.3	Unrecognised signalling	Receivers shall neglect parts of the signalling which are not comprehensible.

Item No.	Description	Reference / Detail
4.4	Time and Date Table (TDT) & Time Offset Table (TOT)	Receiver shall be able to interpret the current date and time information (Coordinated Universal Time coded as Modified Julian Date). The default time zone shall be UTC +8.
4.5	Interpretation of descriptors	Receivers shall support all necessary descriptors which are required for implementation of the functions described in this specification including but not limited to the following : - service descriptor - short event descriptor - linkage descriptor - extended event descriptor - component descriptor - stream identifier descriptor - network name descriptor - service list descriptor - content descriptor - subtitling descriptor - multilingual network name descriptor - multilingual service name descriptor - multilingual component descriptor - logical channel descriptor - frequency list descriptor Receivers shall only interpret the centre_frequency, bandwidth and other_frequency_flag of the 'terrestrial delivery system descriptor' and shall ignore other fields in the 'terrestrial delivery system descriptor' which are not applicable at present.
4.6	Table cross-carriage	SI information shall cross-carry between the different multiplexes within a network through Network Information Table (NIT) other network, Service Description Table (SDT) other transport

Item No.	Description	Reference / Detail
		stream, Event Information Table (EIT) other transport stream.
4.7	Support of multilingual content	Receivers shall be capable of supporting bilingual characters (i.e. traditional Chinese and English) content for Electronic Programme Guide, service name and network name carried by multilingual network name descriptor, multilingual service name descriptor, multilingual component descriptor or any other relevant descriptors.
4.8	Service identification	Each service will be uniquely identified by original_network_id / transport_stream_id / service_id. Receivers may receive a service transmitted at different RF frequencies under the MFN configuration. Receivers shall be capable of adding the signal with the highest signal quality in its service list and discarding other signals of the same service.
4.9	Logical Channel Number (LCN)	The syntax of LCN complies with IEC 62216 1. The descriptor_tag for logical_channel_descriptor is 0x83. Each service is allocated with a LCN. The logical channel numbers need not be contiguous. The receiver LCN assignment is defined below : | LCN	Purpose
---	---
000	reserved
001 to 899	broadcaster range
900 to 999	miscellaneous range	 Broadcaster range shall be used for services with valid LCN. Miscellaneous range shall contain services whose LCN is unassigned,

Item No.	Description	Reference / Detail
		duplicated or illegal. Receivers shall correlate the channel number label for a service in the service list menu and service selection on remote control with the corresponding service LCN. Receivers shall sort the service list displayed in Electronic Programme Guide (EPG) menu according to the LCNs in the ascending order. Receivers may receive services with duplicate LCNs in some locations e.g. along border areas or due to equipment failure. When a receiver finds another transmission with services which have identical LCNs to those on a previously found transmission, the receiver shall assign the claimed LCN to the service with the best signal quality and others to the range of 900 – 999.
4.10	EITs, present / following (Now / Next) and schedule	EIT $_{present\,/\,following}$ provides information for the minimum EPG display. EIT $_{schedule}$ provides 7 days EPG information. Receivers shall continue to operate in the absence of EIT information.
4.11	PSI, SI and PID update	Receivers shall check PSI / Service Description Table (SDT) and other SI tables within 100 ms and 1 second respectively. That implies that receivers shall refresh their internal memory after the reception of the updated information and shall switch to decode the stream using the new PSI within 100 ms. Receivers shall not rely on the version_number of Program Map Tables (PMTs) and Program Association Table (PATs) to verify any changes in PMTs and PATs i.e. receivers have to interpret each received PSI

Item No.	Description	Reference / Detail
		individually. However, receivers can assume that the program_number in the present PMT remains unchanged. Receivers shall promptly respond to any detected changes in PAT / PMT to cope with the change from HD to SD and reconfiguration of PID of video and audio of the current service.
4.12	Program Clock Reference (PCR)	Receivers shall operate correctly with PCRs for a program arriving at intervals not exceeding 100 ms as defined in ETSI TS 101 154.
5	*Video Decoding and Display*	
5.1	Video formats	Receivers shall be capable of decoding all SD video streams that comply with - a) -ISO/IEC 13818-2 Main Profile at Main Level in accordance with ETSI TS 101 154; and b) ISO/IEC 14496-10 (or H.264 AVC) Main Profile at Level 3.0 in accordance with ETSI TS 101 154. Receivers shall also be capable of decoding all HD video streams that comply with - a) ISO/IEC 13818-2 Main Profile at High Level; b) ISO/IEC 14496-10 High Profile at Level 4.0 and the following formats - i) 1920 pixels x 1080 lines interlaced ii) 1280 pixels x 720 lines progressive in accordance with ETSI TS 101 154. Receivers shall be capable of converting (including up-converting or down-converting)

Item No.	Description	Reference / Detail
		the received SD and HD signals in all formats to cope with the native resolution of their display panels or the viewers' display units whichever is applicable.
5. 2	Frame rate (frame/s)	For SD programmes: 25 Hz frame rate. For HD programmes: 50 Hz frame rate for 1280 pixels x 720 lines progressive and 25 Hz frame rate for 1920 pixels x 1080 lines interlaced.
5.3	Chroma subsampling	Chroma decoding to 4:2:0 format according to ISO/IEC 13818-2.
5.4	Aspect ratio	4:3 or 16:9 pictures may be transmitted. Receivers shall be able to identify the aspect ratio from the aspect_ratio_information given in the video header information as defined in ISO/IEC 13818-2. STB type receivers shall provide a means for selecting display configuration to satisfy the viewer's display unit which may be a standard 4:3 or widescreen 16:9 format. All ~~integrated TV receivers with 4:3 displays shall be able to adapt a 16:9 signal (e.g. centre-cut-out or letterboxing) and all~~ integrated TV receivers with 16:9 displays shall be able to adapt a 4:3 signal. DTT receivers with integrated display shall be capable of reproducing HD broadcast on its display in 1920 x 1080 @ 25 Hz interlaced or 1280 x 720 @ 50 Hz progressive with the aspect ratio of 16:9.
5.5	Display modes	DTT receivers with integrated display shall provide a mode in which it delivers 1920 x

Item No.	Description	Reference / Detail
		1080 interlaced, 25 Hz frame rate or 1280 x 720 progressive, 50 Hz frame rate HD broadcast in their original format (unscaled) and timing on its display.
5.6	Use of Active Format Description (AFD)	The syntax and semantics of AFD follow that defined in ISO/IEC 13818-2 and ETSI TS 101 154. Values of the active format in the range between 0000_2 and 0111_2 are not required. Receivers shall optimise their presentation of video according to the received AFD which describes the portion of the 4:3 or 16:9 coded frame that is 'of interest'. Receivers shall respond to an AFD signal within one frame. If there is any conflict between the AFD and MPEG-2 header information, receivers shall act in accordance with the AFD.
5.7	Video alignment	Receivers shall be capable of aligning the digital video output with the analogue video output signal as prescribed in IEC 62216 1.
5.8	Video format signalling	Receivers shall be able to interpret and respond to the signalling information defined according to the video sequence header as described in ISO / IEC 13818-2. Receivers shall use the signalling information to control the picture resolution, pan-scan and coded frame as defined in ETSI TS 101 154.
5.9	Alpha blending	Receivers shall support 16 levels of alpha blending of video and graphics in various applications e.g. EPG and subtitle.
6	*Audio —Decoding and Reproduction*	
6.1	Decode MPEG-1 Layer II	Receivers shall be capable of decoding MPEG-1 Layer II signals (defined in ISO/IEC 13818-3) in single (mono), dual, joint stereo or stereo mode according to ETSI TS 101 154. Receivers shall provide a means for selection of audio modes.

Item No.	Description	Reference / Detail
6.2	Decode AC-3	AC-3 signals may be included in the transport stream. The implementation of AC-3 in the transport streams follows ETSI TS 102 366 and ETSI TS 101 154. Receivers shall be equipped with AC-3 pass-through and be able to down mix the AC-3 signals to meet the output requirement (e.g. 5.1 to 2.0 down mix stereo). Separate AC-3 audio streams may be used for bilingual transmission. Receivers shall provide means for the viewers to toggle between the received AC-3 audio streams. Receivers shall implement Dolby Digital RF mode dynamic range compression to provide proper loudness level matching with those of broadcasts containing MPEG-1 Layer II signal.
6.3	Bit rate & sampling rate	*MPEG-1 Layer II services* : Receivers shall be capable of operating at bit rates between 64 kbit/s and 256 kbit/s and supporting 32 kHz, 44.1 kHz and 48 kHz audio sampling rates. *AC-3 services* : Receivers shall be capable of operating at bit rates between 32 kbit/s and 384 kbit/s and supporting 32 kHz, 44.1 kHz and 48 kHz audio sampling rate.
6.4	Bilingual service	Receivers shall be capable of decoding bilingual sound programmes and the associated PSI / SI information correctly in accordance with ISO/IEC 13818-1/3, ETSI TS 101 154 and ETSI EN 300 468.
6.5	Change between MPEG-1 Layer II and AC-3 programme audio	For channel change or if a programme stream changes its audio delivery from MPEG-1 Layer II to AC-3 or vice versa, receivers shall respond automatically without viewers' intervention and shall mute the sound during

Item No.	Description	Reference / Detail
		the transition.
6.6	MPEG-1 Layer II and AC-3 – level variation	It is desirable that receivers should provide a means for the viewer to equalise the levels between MPEG-1 Layer II and AC-3 audio programmes.
6.7	Maximum picture-sound timing mis-alignment	Within $\pm$ 10 ms due to receiver processing alone (relative to the times indicated by Presentation Time Stamps of the video and audio components).
7	*EPG*	
7.1	Reception of EPG	Receivers shall be capable of receiving and processing the EPG data stream complied with ISO/IEC 13818-1, ETSI EN 300 468 and ETSI TRS 101 211.
7.2	EPG information	Receivers shall be capable of deriving the following information regarding EPG from the NIT, SDT, EIT $_{now/next}$, EIT $_{schedule}$:

Receivers shall be capable of deriving the following information regarding EPG from the NIT, SDT, EIT $_{now/next}$, EIT $_{schedule}$:

    LCN   3 digits

    Service name   20 Chinese characters or
                                   40 English characters

    Program title   30 Chinese characters or
                                   60 English characters

    Program duration   hh:mm

    (where hh is the number of complete hours and
      mm is the number of complete minutes)

    Elapsed duration   hh:mm

    Short description   (see below)

    Extended text   (see below)

    Now/Next event   hh:mm
      start/end times

    Current date/time   YYYY:MM:DD hh:mm

    (where YYYY is the year in Gregorian calendar,
      MM is the month of the year and DD is the day
      of the month)

The text lengths of 'Short description' and

Item No.	Description	Reference / Detail
		'Extended text' (conveyed by Extended Event Descriptor) are defined in ETSI EN 300 468.
7.3	Now / Next	When a viewer presses a dedicated button on the remote control (e.g. INFO), receivers shall show the titles and schedule time of presently viewed and the following programmes.
7.4	Next seven-day EPG	Receivers shall provide a means (e.g. a dedicated button marked 'EPG' on the remote control) for accessing the seven-day programme guide page in which the information described in paragraph 7.2 will be displayed. Receivers shall organise the EPG information in an easily accessible way.
7.5	Presentation of characters	Receivers shall clearly present both traditional Chinese and English characters (e.g. by using suitable font, colour and size) so that the characters can be easily comprehended in a normal viewing distance.
8	*Subtitle*	
8.1	General	Receivers shall include provisions to decode and display subtitles conforming to ETSI EN 300 743.
8.2	Object coding format	Receivers shall be capable of handling objects coded as pixels.
8.3	Colour look-up tables (CLUTs) – entry number	Represented by an 8-bit field (i.e. 256-entry CLUT).
8.4	Presentation time accuracy	Less than $\pm$ 40 ms with respect to the presentation time stamp (PTS).
8.5	Bilingual subtitle	Receivers shall be able to decode and process subtitles of bilingual characters (i.e. both traditional Chinese and English).
8.6	Closed caption	Receivers shall provide a means for the viewers to select the display of subtitle.
8.7	Alignment of video and graphics	The graphic system used by subtitling addresses a 720 x 576 pixel space.

Item No.	Description	Reference / Detail
		Receivers shall display ISO/IEC 13818-2 video in the centre (both vertical and horizontal) within this space after up-sampling as described in IEC 62216 ~~1~~.
9	*Character Encoding*	
9.1	Character set	Receivers shall support (i) ISO/IEC 10646 : 2003 with CJK full set, Latin subset and encoded control characters and (ii) Hong Kong Supplementary Character Set - 2004 (HKSCS-2004).
9.2	Encoding format	Receivers shall be capable of decoding characters conforming to UTF-8 and UTF-16 BE (Big-endian, high-byte first).
10	*Receiver Software Upgrade*	
10.1	Over-the-Air Download (OAD)	Receivers shall be capable of automatically detecting any new relevant software release in any transmitted multiplexes through OAD. Receivers shall be capable of processing software releases carried by transport streams complied with ISO / IEC 13818-1 in accordance with ETSI TS 101 154. The simple profile and update notification table enhanced profile of ETSI TS 102 006 may serve as a reference. Besides OAD, other methods may be used.
11	*Service Replacement Service*	
11.1	General	The number of services transmitted within a multiplex may vary from time to time e.g. change from HD programme(s) to SD programmes or vice versa. Receivers shall be capable of handling this situation using the linkage descriptor with the linkage type 0x05 (Service Replacement Service, SRS) defined in ETSI EN 300 468

Item No.	Description	Reference / Detail
		and ETSI T~~R~~S 101 211. Receivers shall keep record of the service currently watched before a change so that receivers can automatically return to the previous service after the transmission changes e.g. back from HD programme(s) to SD programmes or vice versa in the same multiplex.
11.2	Repetition rate	Receivers may expect the following minimum repetition rates as defined in ETSI T~~R~~S 101 211 : all sections of the SDT for the actual multiplex shall be transmitted at least every 2 s; and all sections of the SDT for other transport streams shall be transmitted at least every 10 s if present. Receivers shall monitor the changes in the SDT and make preparation for the change to the appropriate data, audio and video streams accordingly.
11.3	Change of LCN	Receivers shall show the LCN of the present service i.e. after the new service becomes running, the LCN of the new service should be used accordingly.
11.4	Action to be taken during the transitions	Receivers shall inform the viewers that they are processing the transitions and shall switch to the selected service as soon as possible.
12	*User Operation*	
12.1	Initial set-up	Receivers shall scan the full frequency band as specified in Item 2.1 for any available services either through Automatic Scan mode or Manual Scan mode and shall provide a menu listing of available services. Receivers shall be able to store up to 999 channels.

Item No.	Description	Reference / Detail
		Receivers shall work properly without the presence of NIT tables.
12.2	Network change	Receivers shall be capable of automatically checking the service list with the latest reception information (e.g. change of transmitters).
12.3	Favourite channels	Receivers shall provide means for viewers to customise and change the sequence of favourite channels.
12.4	Signal quality monitor	Receivers shall provide indication of the quality of received signals (e.g. RF signal level or bit error rate) to ensure the best reception.
12.5	Remote control functions	Remote controls of receivers shall provide the following functions : i. display the EPG; ii. select sound track / language (e.g. Chinese / English) according to the service availability; iii. toggle visibility of subtitles and between bilingual subtitles; and iv. 4 programmable short cuts to facilitate the interaction between the viewers and receivers (e.g. RED, GREEN, YELLOW and BLUE buttons in some remote controls).
13	*Interfaces and Connectors*	
13.1	Types	Receivers shall provide RF inputs. STB type receivers shall also provide ~~the following~~ interfaces and connectors for : i. RF loop through; ii. ~~composite~~analogue video output ~~(CVBS)~~; ~~iii. analogue component video (YPbPr) interface according to SJ/T 11333-2006;~~ iii. digital video output; iv. stereo audio outputs; and v. ~~coaxial outputs for~~ AC-3 pass-through.

Item No.	Description	Reference / Detail
14	*Electrical Safety*	
14.1	Safety requirements	Receivers shall comply with the applicable safety requirements specified in HKCA 2001.

List of References

1	**GB 20600-2006** "Framing Structure, Channel Coding and Modulation for Digital Television Terrestrial Broadcasting System" published by ~~SAC~~ the Standardization Administration of China
2	**ETSI EN 300 468** "Digital Video Broadcasting (DVB); Specification for Service Information (SI) in DVB systems" published by ~~ETSI~~ the European Telecommunications Standards Institute (ETSI)
3	**ETSI EN 300 743** "Digital Video Broadcasting (DVB); Subtitling systems" published by ETSI ~~European Telecommunications Standards Institute~~
4	**ETSI T~~R~~S 101 211** "Digital Video Broadcasting (DVB); Guidelines on implementation and usage of Service Information (SI)" published by ETSI ~~European Telecommunications Standards Institute~~
5	**ETSI TS 101 154** "Digital Video Broadcasting (DVB); Specification for the use of Video and Audio Coding in Broadcasting Applications based on the MPEG-2 Transport Stream" published by ETSI ~~European Telecommunications Standards Institute~~
6	**ETSI TS 102 006** "Digital Video Broadcasting (DVB); Specification for System software Update in DVB systems" published by ETSI ~~European Telecommunications Standards Institute~~
7	**ETSI TS 102 366** "Digital Audio Compression (AC-3, Enhanced AC-3) Standard" published by ETSI ~~European Telecommunications Standards Institute~~
8	**HKSCS-2004** "Hong Kong Supplementary Character Set – 2004 (HKSCS-2004)" published by HKSAR - Hong Kong Special Administrative Region
~~9~~	~~**HKCA 2001** "Compliance Test Specification – Safety and Electrical Protection Requirements for Subscriber Equipment Connected to the Public Telecommunications Networks in Hong Kong" issued by the Communications Authority.~~
1~~0~~9	**IEC 62216**~~-1~~ "Digital terrestrial television receivers for the DVB-T system ~~Part 1: Baseline receiver specification~~" published by ~~IEC~~ (the International Electrotechnical Commission (IEC)
1~~1~~0	**ISO / IEC13818-1** "Information technology – Generic coding of moving pictures and associated audio information: Systems – Part 1: Systems" published by ~~ISO~~ the International Organization for Standardization (ISO) ~~(Note: The latest release of ISO/IEC13818-1 has incorporated Amendments ISO/IEC 13818-1:2000 / Amd3:2004 "Transport of AVC video over ITU-T Rec~~

	H.222.0	ISO/IEC 13818-1 streams".)
1~~2~~1	**ISO / IEC 13818-2 "**Information technology ~~—~~ Generic coding of moving pictures and associated audio information – Part 2: Video" published by ISO~~—~~ ~~International Organization for Standardization~~
1~~3~~2	**ISO / IEC 13818-3 "**Information technology ~~—~~ Generic coding of moving pictures and associated audio information ~~—~~ Part 3: Audio" published by ISO~~—~~ ~~International Organization for Standardization~~
1~~4~~3	**ISO / IEC 14496-10 "**Information technology - Coding of audio-visual objects - Part 10: Advanced Video Coding" published by ISO~~— International Organization for Standardization~~
1~~5~~4	**ISO / IEC 10646 : 2003 "**Information technology - Universal Multiple-Octet Coded Character Set (UCS)" published by ISO~~— International Organization for Standardization~~
1~~6~~5	**SJ / T 11333-2006** 數位電視接收設備介面規範第 7 部分：YPbPr 類比分量視頻信號介面。中華人民共和國信息產業部發佈
1~~7~~6	**ITU-R Recommendation BT.1306** "Error-correction, data framing, modulation and emission methods for digital terrestrial television broadcasting" published by ITU~~— International Telecommunication Union~~

- END -