

**For discussion on
12 November 2007**

**Legislative Council Panel
on Information Technology and Broadcasting**

**Progress in the Implementation of
Digital Terrestrial Television Broadcasting**

Purpose

This paper briefs Members on the latest progress of implementation of Digital Terrestrial Television (DTT) in Hong Kong.

Background

2. DTT broadcasting, as compared with analogue broadcasting, enhances spectrum efficiency and offers opportunities of new services including multi-channel broadcasting, standard definition television (SDTV)¹, high definition television (HDTV)¹, broadcasting with multi-viewing angles, interactive services, datacasting (e.g., financial

¹ A picture on the television screen is formed by a large number of small dots called pixels. The higher the number of pixels, the better the resolution hence picture quality. Conventional analogue TV broadcasting provides a resolution of up to 720 (horizontal) × 576 (vertical) pixels.

Standard definition television (SDTV) broadcasting can be considered as the digitised version of the conventional analogue television broadcasting. SDTV pictures are free from reception problems of “ghosting” and “snowing”, and have a picture quality similar to digital versatile disk (DVD) having a resolution of 576 lines (PAL).

High definition television (HDTV) broadcasting has picture resolution commonly referred to as 720 lines (progressive scan) or 1080 lines (interlaced scan) and is typically on a wide screen (the ratio of picture width to height of 16:9). Hence, HDTV provides a much better picture quality than analogue television and SDTV broadcasting and enables viewers at home to have the same experience as watching movies in cinema.

quotes), etc. It is also free from the traditional reception problems of “ghosting” and “snowing”.

3. Pursuant to the implementation framework for DTT broadcasting announced by the Government in 2004, the two domestic free television programmes service licensees, i.e., Asia Television Limited (ATV) and Television Broadcasts Limited (TVB) will launch DTT by end-2007 and expand the digital coverage to at least 75% of Hong Kong by end-2008. The two broadcasters are required to simulcast² their four existing analogue programme channels in digital format by sharing a newly assigned multiplex³, and they are each assigned one additional multiplex for launching new digital services.

4. The implementation of DTT is in good progress. We issued a Legislative Council brief and discussed with Members the progress of the implementation of DTT in June 2007. The following highlights the latest development pending the formal launch of DTT services by the end of this year.

Promulgation of Technical Specifications

5. Implementation of DTT involves adoption of the new technical standard. Since June 2007, the Telecommunications Authority (TA) and the Broadcasting Authority (BA) have promulgated technical specifications as set out in paragraphs 6 to 13 below.

DTT Receivers

6. DTT programmes have to be compressed and coded before

² Simulcast means simultaneously broadcasting the same television programme services in both digital and analogue formats. It is a transitional arrangement during the migration from analogue to digital broadcasting. Simulcasting is necessary because it takes time for the network operator to roll out digital transmission network, and viewers to switch over to DTT services by using necessary DTT receivers. ATV and TVB will simulcast their existing four television programme channels in both digital and analogue format for at least five years, and the public will be fully informed that they can still receive the existing four free television programme channels in analogue format, without changing or adding any equipment to their television set.

³ A multiplex is a digital transmission frequency channel which combines television programme materials and other data in digital form for transmission via a frequency channel. The process of digital combination of the signals is called multiplexing.

transmission. Both ATV⁴ and TVB have confirmed to adopt the commonly-used MPEG-2⁵ compression and coding standard in respect of the shared multiplex for simulcast, and H.264⁵ for new services to be provided through the additional multiplex.

7. Television sets currently available in the market, including the older cathode ray tube television sets and the newer plasma or LCD flat-panel television sets, are not capable of decoding DTT signals. Viewers will need to connect their existing television sets to a digital set-top box, or acquire an integrated digital television set with a built-in digital decoder for receiving DTT⁶.

8. In order to provide a reference for consumer electronic manufacturers to produce DTT receivers for the Hong Kong market, the TA promulgated a set of “Technical Specifications for DTT Receivers” on 25 June 2007. There will be two different tiers of set-top boxes available in the market to meet with the service rollout plans of the two broadcasters:

- (a) “Basic tier receivers” for receiving and decoding the four programme channels coded in MPEG-2 format and simulcast by ATV and TVB; and
- (b) “Higher tier receivers” for receiving and decoding both SDTV and HDTV programmes coded in either MPEG-2 or H.264 formats. They can receive all services which can be received by the basic tier set-top boxes, as well as all other SDTV or HDTV television programmes provided by ATV and TVB.

⁴ For new services to be provided by the additional multiplex, ATV initially opted for MPEG-2. In October 2007, ATV wrote to the TA and advised that it would adopt H.264 for its new services.

⁵ MPEG-2, the second set of standards for video compression and coding developed by an industry body Motion Pictures Expert Group (MPEG), is an international standard for the generic coding of moving pictures and associated audio information. It is widely used around the world to specify the format of the digital television signals that are broadcast by terrestrial, cable and satellite television systems. Currently, all the pay television and satellite television services in Hong Kong are already digitised, and they are all compressed and coded in MPEG-2 standard.

H.264, also known as MPEG-4 Part 10, is the newer generation video compression and coding technology written by MPEG together with the International Telecommunication Union Telecommunication Standardisation Sector (ITU-T) Video Coding Experts Group. It can match the best possible MPEG-2 quality by only half of the data transmission rate.

⁶ Integrated television sets would require more time for development than set-top boxes, and would most probably focus on decoding and displaying, similar to higher tier set-top boxes, both HDTV and SDTV pictures provided by the two broadcasters.

In-Building Coaxial Cable Distribution System

9. In Hong Kong, free-to-air terrestrial television signals are generally received by communal antenna and then distributed by the In-Building Coaxial Cable Distribution System (IBCCDS)⁷ to individual households. Since DTT signals will be broadcast on new frequency channels, building management offices need to engage IBCCDS operators or Communal Aerial Broadcast Distribution (CABD)⁸ system contractors to inspect and if necessary, upgrade their existing IBCCDS for the reception of DTT programmes.

10. The Housing Department has agreed to upgrade the IBCCDS systems at its own expense for all public housing estates in the territory for DTT reception by phases. As for private sector premises, while we note that some new private property developments are already equipped with IBCCDS ready for receiving DTT signals, we would liaise with major property management companies and offer them technical assistance for the carrying out of the upgrading works. We will keep the progress of the IBCCDS upgrading works under regular review.

11. On 1 August 2007, the TA revised the specification of IBCCDS, which incorporates the performance requirements for the reception and distribution of DTT signals on top of the original analogue signals. In addition, the Office of the Telecommunications Authority (OFTA) has published a companion guideline providing necessary information for the concerned upgrade work of the IBCCDS.

Generic Code of Practice on Television Technical Standard

12. Pursuant to section 3 of the Broadcasting Ordinance (Cap. 562) (BO), the BA is responsible for issuing the Generic Code of Practice on Television Technical Standards (“TV Technical Code”) to secure the proper

⁷ In-Building Coaxial Cable Distribution System (IBCCDS) is a coaxial cable system installed inside a building for distributing and relaying signals for telecommunications, broadcasting and security services. It may include Communal Aerial Broadcast Distribution (CABD) system, Satellite Master Antenna Television (SMATV) system, closed circuit television (CCTV) system, cable television system and any combination of these.

⁸ Communal Aerial Broadcast Distribution (CABD) is a system installed inside a building to receive free-to-air TV/FM signals transmitted via radio frequencies and distribute them to the individual households.

technical performance of all television programme services licensed under the BO, including television programme services provided by ATV and TVB.

13. The existing TV Technical Code applies only to analogue television programme services. Having consulted its Codes of Practice Committee, the TA as well as ATV and TVB, the BA has revised the code to include DTT programme services. The revised TV Technical Code will come into effect on 9 November 2007.

Rollout of Transmission Network

14. ATV and TVB are building their transmission network for DTT in stages. The transmission station at Temple Hill will be the first to broadcast DTT signals in 2007 and will serve up to 50% of the population of Hong Kong, covering the areas of Kowloon Peninsula, north of the Hong Kong Island, part of Shatin and east of the Lantau Island. This will be followed by the construction of five other main transmission stations at Castle Peak, Cloudy Hill, Golden Hill, Kowloon Peak and Lamma Island respectively by end-2008, and the reception areas will cover at least 75% of the population of Hong Kong.

15. To ensure aviation safety, the construction at the Temple Hill station is subject to height restriction⁹. The Civil Aviation Department has arranged flight check accordingly and has confirmed that the concerned structure does not pose air traffic safety problems. The Development Bureau has subsequently gazetted for the purpose the Hong Kong Airport (Control of Obstructions) (Exemption) (Amendment) Order 2007, which is expected to come into operation on 28 November 2007 subject to negative vetting by the Legislative Council.

16. It is envisaged that the height of three other transmitting stations, namely Castle Peak, Kowloon Peak and Lamma Island, will also exceeds the height restrictions. The concerned flight check will be conducted in 2008.

⁹ Pursuant to the Hong Kong Airport (Control of Obstructions) Ordinance (Cap. 301), an exemption from the Secretary for Development is required if the height of any structure within the restricted area exceeds the airport height restriction (460 m). The Temple Hill station (531 m) exceeds this restriction.

Supply of Consumer Products

17. Hong Kong is one of the early adopters of the national DTT transmission standard. The Government works closely with the consumer electronics industry in order to ensure that there is a supply of reliable DTT receivers in the local market and the consumers can make an informed choice.

Availability

18. We note that DTT receivers meeting the basic tier requirements, resembling the standard version of set-top boxes to be used on the Mainland¹⁰ market, are already available in Hong Kong. On the other hand, the industry has also reported that the higher tier receivers capable of receiving both SDTV and HDTV programmes will soon be available on the market¹¹, with a higher price than that of the basic tier receivers.

19. The OFTA has mounted a survey with the relevant manufacturers for an update of their market supply plans. Among some 40 manufacturers and suppliers receiving the questionnaires of the OFTA, 26 respondents, including manufacturers from Hong Kong, the Mainland, Taiwan, Japan, Korea and the US, indicated that they already have plans to supply DTT receivers in Hong Kong. Based on the survey result, it is revealed that set-top boxes instead of integrated television sets will be the mainstay of the supply. Regarding the prices, a basic tier set-top box will be of several hundred dollars while a higher tier set-top box will cost at least a thousand dollar subject to the features it offers.

Labelling Scheme

20. In order to assist the viewing public to choose the right DTT receivers according to their needs, the Government will introduce a voluntary scheme to label DTT receivers according to the two-tier specifications as set out in paragraph 8 above. DTT receivers labelled as “basic tier” are capable of receiving the four existing television channels simulcast in digital format, with discernible improvement in reception quality, i.e., no ghosting and snowing. On the other hand, DTT receivers

¹⁰ It is reported that the Mainland’s DTT strategy is to focus on multi-channel SDTV broadcasting based on the national standard and MPEG-2.

¹¹ An electrical appliance chain store has started to accept advance booking of higher tier receivers since mid October 2007.

labelled as “higher tier” are capable of receiving both SDTV and HDTV programmes. They may also support additional services, such as electronic programme guides, interactive and datacasting services.

21. In June 2007, the OFTA consulted the two broadcasters, the DTT receiver manufacturers, the Consumer Council and the trade associations of the consumer electronics products on the implementation of the labelling scheme. All parties welcomed and supported the implementation of a labelling scheme for voluntary participation by the suppliers of receivers to be sold in Hong Kong. The OFTA is now finalising the details of the scheme, and we expect to launch it within November 2007.

Promotion and Publicity

22. In order to disseminate correct information about DTT to the public, we are launching a comprehensive package of publicity measures targeting all sectors of the community.

Property managers and technical professionals

23. Property managers and technical professionals need to have knowledge about the necessary upgrade to be made for IBCCDS for receiving DTT. Since July 2007, the OFTA has been conducting a series of DTT technical briefings to the relevant sectors, including operators of Satellite Master Antenna Television and/or Communal Aerial Broadcast Distribution systems, property developers, building management offices, incorporated owners, etc. Twelve sessions have already been conducted and the OFTA will organise six more sessions before end-2007.

District Councils

24. We will provide briefings for individual District Councils in early 2008, starting from those districts within the initial coverage of DTT broadcasting.

General viewing public

25. We will roll out a new series of announcements of public interest (APIs) via TV and radio as from November 2007. The TV API will also be produced in HDTV format to show the visual impact of DTT broadcasting to draw public attention. Newly designed leaflets and posters

will be prepared for wide distribution to the community. There will also be a dedicated website (www.digitaltv.gov.hk) which provides the latest DTT information.

26. We have already discussed with the Consumer Council to hold joint public education and promotion efforts on DTT. We will also co-ordinate the publicity and promotion work with that of ATV and TVB as well as the consumer electronics industry to maximise the impact. We will also produce education kits for distribution to schools.

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