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Digital Audio Broadcasting (DAB)

Introduction

This paper sets out the key features of the DAB technology, the history of RTHK's trial of DAB and the latest plan in launching DAB services.

What is DAB

2. Digital audio broadcasting (DAB) is a robust form of broadcasting using digital compression technology to deliver audio, text, pictures and data in a binary bit stream. A DAB system serves an area by using one single frequency network (SFN). It enables more radio services to be provided alongside with data and pictures transmissions. This significantly expands the number of channels and allows for a more efficient use of the available spectrum as well as more interactions with audience.

3. DAB has been developed for over ten years. Currently, as many as 300 million people in 25 countries are served by DAB. In Asia, DAB is being tested or available in Mainland China, Australia, Singapore, South Korea and Taiwan.

4. Hong Kong has been running tests on digital signals since 1998 on L-Band (1468.368 MHz). With the digitization of broadcasting platforms, the path to enhanced broadcast services has been laid. In March 2004, RTHK commenced tests on digital broadcasting on Digital Radio Mondiale (DRM), the digital system for short-wave and AM. The result of the test was very encouraging as the DRM platform could be constructed with the existing broadcast infrastructure.

5. In 2004, RTHK conducted DAB trials for four six-month periods. The trials adopted Europe's Eureka 147 Band III system with the frequency 218.64MHz. Two transmitters were set up at Mount Gough (Hong Kong Island) and Beacon Hill (Kowloon) respectively, covering areas in Hong Kong, Kowloon Peninsula and Shatin such as Aberdeen, Central, Wan Chai, Tsim Sha Tsui, Jordan, Mong Kok, Hung Hom, Kowloon Tong and Ma On Shan, etc. Subsequently, a trial in the north-western part of the New Territories was also conducted.

6. The programmes of the FM and AM channels were relayed. Trial points were set up at different locations in Lok Fu, Wong Tai Sin, Shatin, Cheung Sha Wan,

Homantin, Kowloon Tong and Stanley for the public to experience the high sound quality of this new technology.

7. Questionnaires were given out at the trial points to collect the public's feedback on the trials. During the trial period from March to May 2005, 340 questionnaires were returned. The average score for DAB reception was 8 (10 being the highest score). Over 70% of the respondents expressed they were willing to buy a DAB receiver for quality sound broadcast. In responding to the price of DAB receivers, 26% of the respondents found the pricing from HK$101 to HK$400 acceptable. When comparison was made between DAB and AM / FM transmission, 78% and 69% respondents opted for DAB respectively.

Comparison between Am/FM and DAB technologies

8. The advantages of DAB are -

(a) Use of SFN enhances mobile reception and no fine-tuning of frequency is required;
(b) The problem of interference in AM and FM broadcast will not exist;
(c) Crystal clear sound that is comparable to near CD quality or even to the surround sound effect;
(d) Data transmission alongside with audio broadcast provides text-based information such as instant report on finance, weather and traffic news etc;
(e) The receiver will select channels automatically. When reception is in normal condition, display screen of the receiver will show the name of the channel.
(f) More channels will be available in the same frequency spectrum as compared with AM and FM transmissions.
(g) DAB provides a multimedia broadcasting environment that enables the media to develop a new market, and offers audience better broadcast quality and service.

Challenges in launching DAB services

9. Challenges include:

(a) Reception: HK's hilly terrain poses a big challenge for transmission of DAB signals, also need to install repeaters in vehicular tunnels.
(b) Receivers: price of DAB receivers at present is from almost HK$600 to few thousands. There is no top limit because the chip of DAB+ could be built in many electronic appliances. It is still relatively higher than AM/FM receivers from free of charge to few thousands.
(c) Programme content: needs to bring new or value-added features to be competitive.

The overall scene for DAB services in Hong Kong

10. In February 2010, the HKSAR Government invited applications for providing DAB services, and in November 2010, approved in principle issuing DAB licences to three commercial operators, namely, Digital Broadcasting Corporation (DBC), Metro Broadcasting Corporation (Metro) and Phoenix Radio Limited (Phoenix). In addition, RTHK would launch DAB services as well. To RTHK's understanding, the number of channels to be provided by the DAB operators will be -

(a) DBC – 7 channels;
(b) Metro – 3 channels;
(c) Phoenix – 3 channels; and
(d) RTHK – 5 channels.

11. The technology to be used will be DAB+, which is a more advanced compression technology enabling more efficient use of the spectrum. Since all operators would share the same multiplex for transmission, a "consortium" comprising all the DAB operators has been set up to serve as a platform to bring forward the common issues that need to be resolved collectively by the DAB operators, notably in the setting up of the DAB transmission network and subsequent maintenance, and marketing and promotion strategy for DAB services as a whole, etc.

RTHK's preparations for launching of DAB services

12. According to latest estimation, the DAB transmission network should be ready by mid-2012, and efforts are being made to advance the completion date.

13. RTHK plans to launch its DAB services as early as the transmission network is ready, with 2 channels in Putonghua, 2 channels in English and 1 in Cantonese, as follows.

(a) World Chinese Channel

Forget the borders. Embrace the world. Rooted in Hong Kong.

Content: Simulcasting certain Chinese programmes offered worldwide by RTHK Putonghua Channel at AM621, which will be reinforced by all-new programmes to create an information platform that broadcast worldwide in Chinese.

(b) Voice of China

All-day non-stop live relay of China National Radio programmes with no interruption from advertisements, covering news, financial, cultural, arts, and so forth.

(c) Radio 3

Content: Simulcasting certain RTHK Radio 3 programmes at AM567, offering news and current affairs information in English to help the English-speaking population in Hong Kong to assimilate with the city.

(d) BBC World Service Relay

Simulcasting RTHK Radio 6's relay of British Broadcasting Corporation's (BBC) World Service programmes, with enhanced audio quality.

(e) Radio 5 · Simple Life

Promote a simple lifestyle of personal choice that emphasizes spirituality, health, and more precious time with family and friends, while waiving extravaganza and indulgence; pressure is thus mitigated and a higher form of life is pursued.

Content: Simulcasting certain long-running programmes for seniors and cultural/education programmes offered by RTHK Radio 5 at AM783. Surveys will be conducted to meet audience demands, so as to produce all-new programmes that match the theme of simple life and inject a breeze of fresh air into the radio broadcasting arena of Hong Kong.

14. Apart from enhanced audio quality, digital broadcasting also allows for transmission of texts and images. RTHK's digital broadcasting service will take advantage of this feature to simultaneously upload news captions, traffic and weather information, financial news and Announcements of Public Interest (APIs) while broadcasting our programmes. The arrangement will allow the audience to receive multiple information items at the same time.

RTHK
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