

**For information  
on 11 June 2007**

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

**Public Consultation on  
Providing Radio Spectrum for Broadband Wireless Access**

**INTRODUCTION**

This paper briefs Members on the consultation exercise launched by the Office of the Telecommunications Authority (OFTA) on 11 May 2007 concerning the provision of radio spectrum for broadband wireless access (BWA). The consultation period will end on 11 July 2007.

**BACKGROUND**

2. OFTA conducted the first consultation exercise in December 2004 on the proposed use of spectrum in the 3.5 GHz band for the deployment of BWA as well as the licensing framework for BWA. At the Panel meeting on 15 January 2005, OFTA briefed Members on various issues in relation to that consultation exercise.

3. OFTA conducted a second consultation exercise in August 2005, inviting views from the industry and interested parties on the proposals for the regulatory framework for BWA deployment. During that consultation exercise, there were concerns from the industry that the 3.5 GHz band proposed for BWA might interfere with the existing fixed satellite services in the same band as well as in the adjacent bands. OFTA subsequently conducted a detailed study which confirmed that such interference might indeed occur. Having carefully considered the potential impact of BWA in the 3.5 GHz band to the existing fixed satellite services, and in the light of the spectrum policy review undertaken by the Commerce, Industry and Technology Bureau at the time, OFTA decided to withhold the proposed release of spectrum for BWA service for the time being.

## **THE CONSULTATION PAPER**

4. The Third Consultation Paper on Providing Radio Spectrum to provide Broadband Wireless Access (the Consultation Paper) released by OFTA on 11 May 2007 is consequential to the preceding two consultation exercises conducted in December 2004 and August 2005. Taking into account the views obtained previously as well as the outcome of the related studies, the Consultation Paper invites views from the industry and interested parties on the proposed use of the 2.3 GHz band for BWA deployment and other relevant issues. In addition, the Consultation Paper also seeks expressions of interest, on a confidential basis, from parties who are interested in investing in BWA services operating in the proposed spectrum bands, with a view to assessing the likely market demand for spectrum for BWA, so as to assist the Telecommunications Authority (TA) to decide the way forward.

### **BWA Technology**

5. BWA is a wireless technology aimed at providing high-speed access to telecommunications networks for users over a wide area by using wireless technology. There are technical standards supporting nomadic and mobile wireless access services. Furthermore, fixed carriers may use BWA in customer access networks to provide “last mile” connections to users, alleviating the need to install copper wires in buildings to connect the end-users. Thus, BWA can provide speedy alternative access method to those fixed carriers who are hiring the customer access networks of other fixed carriers through Type II interconnections<sup>1</sup>, thereby potentially expanding the service areas of those fixed networks. In addition, BWA may also be used by fixed and mobile carriers for backhaul applications<sup>2</sup> to supplement their use of physical cables from fixed networks to connect different network elements.

6. The Government’s vision is to facilitate the provision of broadband Internet access to all citizens in Hong Kong, regardless of whether they are at home or on the move. The 3G networks have played significant roles in providing ubiquitous and high-speed connections to light weight and highly

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<sup>1</sup> Mandatory Type II interconnection at telephone exchange level will be phased out by June 2008, unless the fixed lines meet the essential facilities criteria.

<sup>2</sup> “Backhauls” are inter-links within a network.

mobile devices. BWA provides additional capacity to support advanced applications and wireless Internet access to users. We consider that the introduction of BWA services in Hong Kong should be conducive to the objective of establishing Hong Kong as a ubiquitous wireless city.

### **Need to proceed with further BWA Consultation**

7. Since a number of economies (including Australia, France, Germany, Japan, New Zealand, Singapore, South Korea, Taiwan, the UK and the US) have already deployed or planned to deploy BWA shortly, we consider it necessary to make available suitable spectrum for BWA services to address the market need and facilitate the introduction of new technologies and services of BWA so as to maintain Hong Kong's position as a leading telecommunications hub of the Asia Pacific region.

8. On 24 April 2007, the Commerce, Industry and Technology Bureau (CITB) issued the Radio Spectrum Policy Framework, which sets out the policy objectives, guiding principles and other key issues for the management of radio spectrum in Hong Kong. On 27 April 2007, the TA issued the TA Statement on "Deregulation for Fixed-Mobile Convergence" to conclude the views and regulatory changes that would be adopted as a consequence of the review in relation to fixed mobile convergence. Following the issue of the above two documents, which provide a clear picture on the Government's policy on the use of radio spectrum and the regulatory issues relevant to fixed-mobile convergence, the TA considers that it is opportune to resume consultation with the industry and the public on BWA deployment in Hong Kong.

### **Spectrum Availability**

9. According to the current market information and technology developments, BWA deployments in the 2.3 GHz and 2.5 GHz bands are gaining momentum. Currently, the 2.5 GHz band (2.50 – 2.69 GHz) is reserved for the expansion of 3G mobile services in Hong Kong. Since there are competing demands for different services to operate in the 2.5 GHz band and the coming World Radiocommunication Conference (WRC) 2007<sup>3</sup> will discuss the worldwide allocation of the 2.5 GHz band, it is pre-mature to consider the

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<sup>3</sup> The World Radiocommunication Conference 2007 will be held in Geneva from 15 October to 9 November 2007. World Radiocommunication Conferences (WRC) are international treaty-making conferences held under the auspices of the Radiocommunication Sector of the International Telecommunication Union (ITU). WRC revise and update the Radiocommunication Regulations, which govern the use of spectrum worldwide.

allocation in this band for BWA services for the time being. The TA considers that the 2.3 GHz band (2.30 – 2.40 GHz) can be allocated for BWA applications in Hong Kong first. The TA will decide the allocation of 2.5GHz after the conclusion of the WRC 2007.

10. To avoid mutual interference between the existing services and the future services to be operated in the 2.3 GHz band, OFTA has assessed that 85 MHz of spectrum within the band of 2.305 – 2.390 GHz may be deployed for BWA. The TA may consider offering initially only part of the spectrum in the 2.3 GHz band for bidding if the anticipated demand is insufficient to utilize the entire 2.3 GHz band efficiently, or if coordination of spectrum usage with the Mainland authorities results in part of the 2.3 GHz band in Hong Kong not initially usable due to potential radio interference.

11. Operators offering different BWA services may need different spectrum bandwidth and there should be flexibility on the assignment of spectrum to BWA operators to meet their specific commercial needs. The TA proposes that the available spectrum in the 2.3 GHz band should be divided into 5 MHz width frequency blocks and each BWA operator should be assigned with no more than 30 MHz bandwidth (i.e. no more than six frequency blocks). With such a spectrum cap and the availability of 85 MHz bandwidth, the 2.3 GHz band can support at least three BWA operators.

### **Scope of Permitted BWA Services**

12. As BWA technology will further advance in the near future and as operators may have different preference on the scope of BWA services, the TA is of the preliminary view that use of the BWA spectrum to provide fixed services, mobile services or fixed-mobile convergence services should be allowed. Hence, the TA will not restrict the types of applications and services that may be provided using the BWA spectrum.

### **Spectrum Assignment and Spectrum Utilisation Fee**

13. According to the guiding principle specified under the Radio Spectrum Policy Framework, a market-based approach should be used in spectrum management when there are competing demands from non-government services for the frequency spectrum and Spectrum Utilisation Fee (SUF) will in principle be applicable to all non-Government use of spectrum.

14. As the spectrum for BWA services is likely to attract demands from different service providers, the TA considers that the BWA spectrum should be assigned by a hybrid selection method similar to the auction of 3G spectrum in 2001, with a simple pre-qualification step and an auction. Any interested party, including existing fixed carriers, mobile carriers and new entrants, may bid for the BWA spectrum.

15. The TA has assessed different methods for SUF payment, including the royalty, deferred cash payment and up-front lump sum payment methods. Unlike the auction of 3G spectrum in 2001 when the optimistic market sentiment at the time pointed to very high valuation of spectrum, the market should be much more realistic on the prospect of BWA services when assessing the value of BWA spectrum. Thus, we consider that there should be no need to adopt the royalty approach which allows the successful bidders to spread their burden of SUF over the entire duration of the licence. Instead, the up-front lump sum payment method is considered to be straight forward, easier and less expensive for both the Government and the successful bidders to administer as compared with the other two payment methods. Therefore, the TA proposes the adoption of such payment method for SUF, the amount of which will be determined through an open auction.

### **Applicable Regulatory Framework and Licence Conditions**

16. According to the TA Statement on “Deregulation for Fixed-Mobile Convergence”, the TA perceives that there is a real need for the Unified Carrier Licence (UCL) as the existing licensing regime might not be able to address the forthcoming convergence environment. He will recommend to the Secretary for Commerce, Industry and Technology (SCIT) to make the necessary regulation under the Telecommunications Ordinance for the creation of the UCL. Since the BWA can be used for the provision of both fixed and mobile services, the TA intends to license BWA services under the UCL. Subject to the decisions of the SCIT on the creation of the UCL and the relevant legislative process, it is expected the UCL should be available in time for the licensing of BWA services.

17. In order to ensure the efficient use of spectrum and minimise the hoarding of the spectrum, the BWA licensees will be required to roll out their services within 24 months from the date when the licence is issued. Besides, performance bond will also be required to bind the licensees to such

commitments.

18. At present, the 2G and 3G licensees are required under their licences to open up at least 30% of their network capacity for access by non-affiliated Mobile Virtual Network Operators or content providers. The terms and conditions for this requirement are referred to as Open Network Access (ONA). With a large number of wireless platforms and a high degree of competition in the market nowadays, the TA considers the market force and economic principles would regulate the market efficiently. Taking into consideration of the current market situation, the TA intends not to impose ONA requirement on BWA licensees.

19. Since number portability is crucial for customers to switch services from one operator to another operator, the TA considers that the number portability requirement should be imposed on the BWA licensees who offer services using Hong Kong telephone number. Furthermore, in order to combat the use of stolen apparatus, a condition will also be included in the BWA licence such that BWA licensees should refuse to provide services to any person who possesses or uses a stolen or suspected stolen apparatus.

## **WAY FORWARD**

20. The TA will carefully consider the submissions and will take them into account in reaching his decision on the provision of radio spectrum for BWA. The auction of the BWA spectrum is tentatively planned to be conducted in 2008.

**Office of the Telecommunications Authority**  
**4 June 2007**