

**For discussion  
on 8 December 2008**

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

**Assignment of the Available Radio Spectrum in the 1800 MHz Band**

**Purpose**

This paper is to brief Members on the decision of the Government in respect of the assignment of the available radio spectrum in the 1800 MHz Band and on the related legislative amendments required for the auction of the relevant radio spectrum.

**Background**

2. Mobile telephony services in Hong Kong have demonstrated significant growth in recent years. As of August 2008, the market penetration of mobile services surpassed 160%. To cope with the increasing traffic from mobile telephone users, Mobile Network Operators (“MNOs”) have been requesting for the release of additional radio spectrum to allow for expansion of the second generation (2G) mobile service.

3. In the Spectrum Release Plan (“SRP”)<sup>1</sup> published in April 2007, the Telecommunications Authority (“TA”) indicated that she would make available the radio spectrum in the 885 – 890 MHz paired with 930 – 935 MHz band (“900 MHz Band”) and 1780.1 – 1785 MHz paired with 1875.1 – 1880 MHz band (“1800 MHz Band”) for the provision of public mobile telephony services. Most of these frequencies have already been assigned and are used to provide mobile telephone coverage in country parks and remote areas. Since the assignments are restricted to serving the country parks and remote areas, further assignment of the same frequency spectrum to provide mobile telephone service outside the country parks and remote areas is technically possible.

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<sup>1</sup> As part of the implementation of the Radio Spectrum Policy Framework promulgated in April 2007, the OFTA will publish and update annually a SRP to inform the industry of the supply of spectrum to be made available to the market within the next three years for assignment through the market-based approach.

4. Against this background, the Office of the Telecommunications Authority (“OFTA”) issued a public consultation paper in January 2008 to seek comments from the industry and interested parties on the assignment of the available radio spectrum in the 900 MHz and 1800 MHz Bands. A total of six submissions<sup>2</sup> were received. The respondents in general support the proposal of releasing additional radio spectrum for public mobile telephone services. After considering the submissions received, the TA issued a statement on 4 July 2008 promulgating her decision on assignment of the available radio spectrum in the 900 MHz and 1800 MHz Bands. The executive summary of the TA Statement is at **Annex A**.

## **The TA’s Decision**

### ***The 1800 MHz Band***

5. The TA has decided to make available the radio spectrum in the 1800 MHz band for public mobile service. As there is only 4.8 MHz x 2 of radio spectrum available for assignment in the 1800 MHz Band<sup>3</sup> and part of the radio spectrum has already been assigned and is used to provide coverage in the country parks and remote areas, the available radio spectrum is not sufficient for a new entrant to build a new network that can compete with the incumbent MNOs in terms of system capacity or coverage and quality of service. The TA therefore proposes to assign the radio spectrum in the 1800 MHz Band to the incumbent MNOs only. No adverse comment on this approach was received during the consultation. The TA will therefore assign the radio spectrum in the 1800 MHz Band to the incumbent MNOs to allow for service expansion.

### ***The 900 MHz Band***

6. The TA has decided to defer the decision on the release of the available spectrum in the 900 MHz Band, pending the finalization of the design of the Express Rail Link connecting Hong Kong, Shenzhen and Guangdong. The railway communications system for this new railway will operate in the 900 MHz Band. As such, the OFTA needs to reserve the

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<sup>2</sup> The six respondents are MTR Corporation Limited and the five incumbent MNOs, namely, China Mobile Peoples Telephone Co. Limited, CSL Limited, Hutchison Telephone Company Limited, PCCW Mobile HK Limited / PCCW-HKT Telephone Limited, and Smartone Mobile Communications Limited / SmarTone 3G Limited.

<sup>3</sup> There is a total of 4.9 MHz x 2 radio spectrum available in 1800 MHz band (i.e. 1780.1 – 1785 MHz and 1875.1 – 1880 MHz). Since the minimum bandwidth of a frequency carrier in the 1800 MHz Band is 0.2 MHz x 2, a sum of 0.1 MHz x 2 radio spectrum in the 1784.9 – 1785 MHz and 1879.9 – 1880 MHz is technically not usable. The TA is therefore only able to assign 4.8 MHz x 2 of radio spectrum for 2G service expansion.

required frequency spectrum to ensure compatibility and seamless radio communications along the entire route. The OFTA will further assess the technical feasibility of the shared use of the 900 MHz Band by the MNOs and the new railway, and will consult the industry again in 2009/2010 on the assignment of the available radio spectrum in the 900 MHz Bands.

### **Payment of Spectrum Utilization Fee (“SUF”)**

7. In accordance with the Radio Spectrum Policy Framework promulgated by the Government in April 2007, a market-based approach will be used for spectrum assignment whenever the TA considers that there is likely to be competing demand for the spectrum. The use of the spectrum by the assignee will be subject to the payment of SUF, the level of which is to be determined by auction. The TA will follow the established approach for assigning the 1800 MHz Band to the MNOs by way of an auction.

8. As the 1800 MHz Band will be used by the MNOs as an adjunct to, and interchangeably with their existing assignments, the SUF calculation method should be simple and in line with the existing arrangements so as to minimize the administrative efforts of both the MNOs and the Government. Currently, each MNO has been assigned radio spectrum adjacent to the 1800 MHz Band for provision of 2G mobile service and pays the corresponding SUF based on the formula as prescribed under the Telecommunications (Level of Spectrum Utilization Fees)(Second Generation Mobile Services) Regulation (Cap. 106AA)<sup>4</sup>. The TA has therefore recommended to the Secretary for Commerce and Economic Development (the “Secretary”) that the SUF for the use of the 1800 MHz Band shall consist of two components: (a) an annual variable component based on the prevailing 2G SUF formula; and (b) an additional upfront component based on a lump sum committed by the successful bidder(s) in the auction. The latter will serve to determine the successful bidder(s) and the respective priority rights of the successful bidder(s) to choose the preferred set(s) of frequency bands.

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<sup>4</sup> In accordance with section 4 of Cap.106AA, the SUF formula for 2G mobile service is as follows:  
(a) for the period up to September 2011, annual SUF is to be calculated on the basis of HK\$145 per kilohertz (kHz) of spectrum assigned;  
(b) from September 2011 to September 2021, the annual SUF shall be \$1,450 per kHz of radio spectrum assigned, or 5% of the Network Turnover, whichever is higher. For the purpose of the SUF calculation, Network Turnover is defined as the revenue arising from or attributable to the provision of any telecommunications services over any telecommunications network using the frequency bands to which the SUF relates.

## **SUF for Use of Frequency in the 1800 MHz Band Serving for Country Parks and Remote Areas Only**

9. To encourage MNOs to improve coverage in the countryside, the Secretary has decided to waive MNOs for paying SUF for the use of radio spectrum to serve country parks and prescribed remote areas<sup>5</sup>. We are of the view that it is in the public interest to maintain this policy. As such, the use of radio spectrum in the 1800 MHz Band which is solely used for improving coverage in country parks and prescribed remote areas (i.e. not to be used outside the country parks and prescribed remote areas by the same operator) will not be subject to SUF.

## **The Auction Method, Spectrum Cap and Validity Period of the Assignment**

10. The TA will conduct the auction using a Simultaneous Multi-Round Ascending (“SMRA”) method<sup>6</sup>. The SMRA is considered to be an open and transparent bidding method which allows the bidders to have sufficient information for them to make informed decisions on the bidding price and the number of frequency blocks they want to bid for.

11. As the amount of radio spectrum available in the 1800 MHz Band is relatively limited and will be an adjunct to the existing assignments to the MNOs in the same frequency band, it is unlikely that competition in the mobile market will be significantly lessened even if one single party is able to acquire all of the available radio spectrum. The TA will not therefore impose any bidding restriction in the form of a spectrum cap in the auction. To allow for the necessary flexibility, the 1800 MHz Band will be divided up into six equal blocks (each with 0.8 MHz x 2) and bidders may bid for one or all of the blocks.

12. At present, each incumbent MNO has been assigned radio spectrum adjacent to the 1800 MHz Band for 2G mobile services and such assignments share a common expiry date on 29 September 2021. For administrative convenience, the validity period for the frequency spectrum to be assigned through the upcoming auction should be coterminous with that for the existing assignment the 1800 MHz Band (i.e. until 29 September 2021).

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<sup>5</sup> The country park and prescribed remote areas include those areas defined in the Country Parks Ordinance, Cap 208, plus three special locations in Sai Kung, Robin’s Nest and the Lai Chi Wo Village in Sha Tau Kok respectively which do not fall within the country park areas.

<sup>6</sup> The TA has decided to adopt the SMRA method in the auction scheduled for January 2009 in respect of the radio spectrum for the provision of broadband wireless access services.

## **Amendments to Subsidiary Legislation**

13. To enable the release of the 1800 MHz Band by auction and with payment of the SUF, amendments to three pieces of the existing subsidiary legislation under the Telecommunications Ordinance, viz the Telecommunications (Designation of Frequency Bands Subject to Payment of Spectrum Utilization Fee) Order (Cap. 106Y), the Telecommunications (Level of Spectrum Utilization Fees)(Second Generation Mobile Services) Regulation (Cap. 106AA) and the Telecommunications (Determining Spectrum Utilization Fee by Auction) Regulation (Cap. 106AC) are required. The salient changes are highlighted at **Annex B**.

## **Way Forward**

14. We will gazette and table the amendments to the subsidiary legislation at the Legislative Council shortly. Upon completion of the negative vetting process on the subsidiary legislation, the Secretary and the TA will, in the first quarter of 2009, specify the reserve price of the radio spectrum and prescribe the terms and conditions in relation to the spectrum auction respectively in the form of gazette notices. The OFTA will at the same time publish an information memorandum to invite the incumbent MNOs to bid for the radio spectrum. We plan to conduct the auction within the first half of 2009.

**Commerce and Economic Development Bureau  
Office of the Telecommunications Authority  
1 December 2008**

**Assignment of the Available Radio Spectrum  
In the 900 MHz and 1800 MHz Bands**

**Statement of the Telecommunications Authority**

**4 July 2008**

**Executive Summary**

**Introduction**

On 18 January 2008, the TA published a consultation paper entitled “Assignment of the Available Radio Spectrum in the 900 MHz and 1800 MHz Bands” to seek views and comments from the industry and interested parties on the assignment of the available radio spectrum. After careful consideration of the submissions, the TA draws the conclusions as detailed below.

**The Use of the Spectrum and Assignment Method**

2. The TA decides to make available the radio spectrum of 4.8 MHz x 2 in the 1800 MHz band (1780.1 – 1784.9 MHz paired with 1875.1 – 1879.9 MHz) to existing MNOs for service expansion. The spectrum will be divided into six blocks for bidding.

3. In line with the Government’s market driven policy, auction will be used for the assignment of the available spectrum. The period of assignment will be coterminous with the expiry date of the PCS mobile carrier licences i.e. 29 September 2021.

4. The TA decides to defer the decision on the release of available radio spectrum in the 900 MHz band. He will re-assess the market demand and the technical feasibility of sharing/co-assignment the relevant spectrum in the light of the up-to-date plan for cross-boundary train services, and will consult the industry again on the assignment of all the available spare radio spectrum in the 800/900 MHz band after the detailed design of the Express Rail Link is finalized.

## **Payment of SUF and Auction Arrangement**

5. Consistent with the guiding principles under the Radio Spectrum Policy Framework, the use of the relevant spectrum will be subject to the payment of SUF. The SUF will consist of two components: (a) an annual variable component based on the SUF calculation formula for the 2G spectrum under the existing 2G licences (to be paid on a yearly basis) and (b) an additional up-front lump sum component based on a sum committed by the successful bidder(s) in the forthcoming auction.

6. The SMRA auctioning arrangement will be used in this auction exercise. There is no restriction or cap on the amount of spectrum that a bidder can acquire in the auction.

## **Way Forward**

7. The TA will recommend to the Secretary the enactment of the necessary regulation under section 32I(2) of the TO to determine the SUF by auction. The TA will also make an order under section 32I(1) of the TO designating the available spectrum in the 1800 MHz band to be subject to the payment of the SUF. Upon completion of the relevant subsidiary legislations by the Legislative Council, the TA will publish the terms and conditions of the auction. It is targeted to complete the necessary subsidiary legislations process by end 2008, to publish the bidding documents or Information Memorandum in early 2009 for information of the interested parties, and to conduct auction in the first half of 2009.

**Office of the Telecommunications Authority**  
**4 July 2008**

**Proposed Amendments to Subsidiary Legislations to  
Enable the Release of Spectrum in 1800MHz Band by Auction**

- (i) *Telecommunications (Designation of Frequency Bands Subject to Payment of Spectrum Utilization Fee) Order (Cap. 106Y)*
- ◆ to be amended by the Telecommunications Authority (the Authority);
  - ◆ to designate the frequency bands of 1780.1 – 1784.9 MHz paired with 1875.1 – 1879.9 MHz (“Designated Frequency Bands”) in which the use of the spectrum shall be subject to the payment of SUF by the users of the spectrum
- (ii) *Telecommunications (Level of Spectrum Utilization Fees)(Second Generation Mobile Services) Regulation (Cap. 106AA)*
- ◆ to be amended by the Secretary for Commerce and Economic Development (the Secretary);
  - ◆ to apply the same formula prescribed in Cap. 106AA to determine the amount of the annual SUF payable by the users of the spectrum which falls within the Designated Frequency Bands:
    - (a) for the period up to 30 September 2011, \$145 per kHz or part thereof the spectrum assigned for use by the licensee; and
    - (b) from each of the remaining years of the period of validity of the assignment, \$1,450 per kHz of radio spectrum assigned, or 5% of the Network Turnover, whichever is higher.
  - ◆ for the avoidance of doubt, the SUF under Cap.106 AA shall be payable in addition to the SUF prescribed under Cap. 106 AC; and
  - ◆ to provide for that no annual SUF shall be applied to the use of the Designated Frequency Bands solely in the designated areas, which are to be prescribed by the Authority<sup>1</sup>.

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<sup>1</sup> It is our policy intention that the designated areas includes those areas defined in the Country Parks



(iii) *Telecommunications (Determining Spectrum Utilization Fee by Auction) Regulation (Cap. 106AC)*

- ◆ to be amended by the Secretary
- ◆ to apply the method prescribed in Cap. 106AC (i.e. SMRA) to determine the amount of the upfront SUF payable by the users of the spectrum which falls within the Designated Frequency Bands;
- ◆ for the avoidance of doubt, the SUF under Cap.106 AC shall be payable in addition to the SUF prescribed under Cap. 106 AA; and
- ◆ to provide for that no upfront SUF shall be applied to the use of the Designated Frequency Bands solely in the designated areas