

立法會 *Legislative Council*

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Panel on Information Technology and Broadcasting

Meeting on 19 April 2021

Background brief on spectrum assignment for the provision of telecommunications services

Purpose

This paper provides background information on the Administration's assignment of various spectrum bands for the provision of telecommunications services. It also summarizes the views of Legislative Council Members in previous discussions on the subject, as well as the views of four local mobile network operators in their recent submissions on the development of fifth generation ("5G") mobile services in Hong Kong.

Background

2. Under section 32G(1) of the Telecommunications Ordinance (Cap. 106), the Communications Authority ("CA") has the statutory duty to promote the efficient allocation and use of the radio spectrum as a public resource. Sections 32H(2) and 32I(1) of Cap. 106 empower CA to allocate and assign radio frequencies and to designate which of them shall be subject to the payment of spectrum utilization fee ("SUF") following consultation with the telecommunications industry and other affected persons. Section 4(4) of the Communications Authority Ordinance (Cap. 616) stipulates a number of matters to which CA must have regard, in performing its functions, as appear to it to be relevant.

3. The Radio Spectrum Policy Framework ("the Framework") promulgated by the Administration in April 2007 sets out the policy objectives and the guiding principle in spectrum management which CA should take into account in discharging its spectrum management responsibilities under Cap. 106. According to the Framework, a market-

based approach will be used in spectrum management wherever CA considers that there are likely to be competing demands from providers of non-Government services, unless there are overriding public policy reasons to do otherwise.

4. As at end-October 2020, more than 2 000 MHz of radio spectrum were being used for mobile communications services in Hong Kong (as detailed in **Appendix I**). In accordance with the Framework, CA publishes a spectrum release plan ("SRP") every year on a rolling basis, or as required by the circumstances, to inform the industry and the public of the potential supply of radio spectrum of the following three years.

5. According to the latest SRP for 2021-2023 released in February 2021, in addition to the expected supply of 2 825 MHz of spectrum in the 600/700 MHz, 850 MHz, 2.5/2.6 GHz, 4.9 GHz and 26/28 GHz bands in 2021, CA has earmarked 4 000 MHz of new spectrum in the 41 GHz band for release to the market in the coming three years to enable the on-going development of public mobile services, including 5G mobile services. CA would conduct separate consultation exercises before exercising its powers under Cap. 106 in making a decision on spectrum allocation and/or assignment.

Previous discussions

6. The Administration briefed the Panel on Information Technology and Broadcasting ("the Panel") on 10 May 2019 on the assignment of spectrum for 5G mobile services, and on 9 November 2020 on the facilitative measures for telecommunications operators to extend mobile network coverage. The Subcommittee on Telecommunications (Method for Determining Spectrum Utilization Fee) (Spectrum for Auction) Regulation and Telecommunications (Designation of Frequency Bands subject to Payment of Spectrum Utilization Fee) (Amendment) Order 2019 ("the Subcommittee") also discussed related issues at its meeting on 11 June 2019.

Resolving the problem of the 5G restriction zone in Tai Po

7. The 5G mobile services, if operating at the 3.4 – 3.7 GHz band in Tai Po and Stanley, may cause interference with the satellite earth stations there as they are using the same frequency band for telemetry, tracking and control ("TT&C") of satellites. To address the technical hurdle, CA has designated restriction zones in Tai Po and Stanley within which MNOs have to comply with certain restrictions when deploying radio base stations ("RBSs") operating in the 3.5 GHz band.

8. At the Panel meeting on 10 May 2019, some members asked how the 5G mobile services would be affected in the restriction zones at Tai Po and Stanley, and whether the Administration would consider relocating the earth stations. Members of the Subcommittee asked whether the permissions for satellite operators to use the spectrum in the 3.5 GHz band within the restricted zones would expire before MNOs began to use such spectrum to operate 5G mobile services. They also asked whether the 3.5 GHz band would then be used exclusively by mobile network operators ("MNOs") for the provision of 5G mobile services.

9. The Administration advised that MNOs concerned would normally be entitled to use the 3.5 GHz band for 15 years from April 2020 to March 2035. The corresponding periods within which the satellite operators might use the 3.5 GHz band varied from satellite to satellite. Some of these periods would straddle beyond 2035. That said, only those satellites which use the 3.5 GHz band simultaneously with the 5G mobile services would be affected.

10. The Administration further explained that, with a view to removing the 5G restriction zone in Tai Po, the Administration had been proactively discussing with the two satellite operators on the relocation of their affected satellite earth stations in Tai Po. As at December 2020, one of the operators had been allocated a land lot by Lands Department for relocation of the relevant TT&C facilities to Chung Hom Kok Teleport. The other operator was discussing details of land allocation with the relevant departments. Taking into account the time required for detailed planning and relocation works, the Administration expected that the issues related to 5G restriction zone in Tai Po could be completely resolved in four years. Meanwhile, MNOs might make use of other 5G bands (e.g. 4.9 GHz band) or re-farm existing spectrum (e.g. 2.1 GHz band) to provide 5G services in the 5G restriction zones.

Spectrum auction reserve prices for various frequency bands

11. Members of the Panel and the Subcommittee had asked the Administration to respond to the industry's appeal to keep the spectrum auction reserve prices for the 3.5 GHz, 3.3 GHz and 4.9 GHz bands low, in order to reduce initial investment and the cost of providing 5G mobile services. Members were concerned that the high cost would be passed on to end-users. They asked if the Administration could lower the spectrum auction reserve prices and bid increments so as to lower SUF.

12. The Administration responded that, taking into consideration MNOs' substantial upfront investment on 5G mobile services infrastructure, the Secretary for Commerce and Economic Development had stated in the Joint Statements issued in December 2018 that the auction reserve price would be

set at a level that would represent the minimum base value of the spectrum for the purpose of kick-starting the competitive bidding process. SUF would ultimately reflect the market price of the spectrum which would be determined through the bidding process.

Access to premises for installing radio base stations

13. Some Panel members commented that the Administration should revise the current legislation to provide for conditions under which property owners would be required to allow MNOs to use the relevant premises to provide 5G service facilities. The Administration responded that, as in the case of fixed line networks, MNOs could apply to CA for authorization to place and maintain telecommunications facilities on any premises if the applicants could prove that there were no alternative methods to lay the network. Some members commented that applying for authorization for each installation work was time-consuming and they urged the Administration to review the relevant legislation and provide necessary support to the trade.

Submission of views from local mobile network operators

14. In connection with the Panel discussion on 9 November 2020 about the facilitative measures for telecommunications operators to extend mobile network coverage, local MNOs were invited to give their views on the development of 5G mobile services in Hong Kong, including the infrastructure requirements, legislative framework, policies, related institutional support and any other issues of relevance. By 4 March 2021, four MNOs, including China Mobile Hong Kong Company Limited, Hong Kong Telecommunications (HKT) Limited, Hutchison Telephone Company Limited and SmarTone Mobile Communications Limited had submitted their views to the Panel (see **Appendix II**).¹

15. All the four MNOs expressed a common concern about the lack of statutory power to access private premises for the installation of mobile telecommunications infrastructure. One MNO pointed out that, while a fixed network operator may be authorized by CA to exercise the power conferred under section 14(1) of Cap. 106 to enter any land (including the common areas of private buildings) to install and maintain telecommunications lines for provision of services to residents or occupiers of the buildings, it was unlikely that a MNO could fulfil the relevant conditions (see paragraph 13 above) for obtaining CA's authorization for such statutory power. To facilitate their installation of 5G networks, MNOs urged the Administration

¹ MNOs' submissions (English version only) had been circulated to Panel members and the Administration on 11 March 2021 (vide LC Paper Nos. CB(1)577/20-21(01)-(04)).

to amend Cap. 106 to accord them the same status as authorized fixed network operators and public utility providers, who could install facilities on any land (and any private building) for the provision of their services.

16. The four MNOs also requested the Administration to expedite the approval process for the installation of RBSs on government premises which, according to one of the MNOs, would take three to four year on average. Although the launch of the Pilot Scheme for Installation of Radio Base Stations at Selected Government Venues ("the Pilot Scheme") had opened up a fast track avenue for applying for installation of RBSs on about 1 000 selected premises, MNOs considered that many of the selected venues were unattractive and the processing time of about 5 to 11 months for applications under the Pilot Scheme was still too long. The MNOs proposed that inter-departmental efforts should be pulled together to speed up the approval process, and MNOs should be allowed to add new premises into the Pilot Scheme.

17. The MNOs expressed support for the Administration to set up antenna poles (or towers) in rural areas for shared use by different MNOs, and suggested that the Administration should streamline the site approval process for such furniture.

Latest position

18. The Administration will brief the Panel on 19 April 2021 on the assignment of various spectrum bands for the provision of telecommunications services.

Relevant papers

19. A list of the relevant papers is set out in the **Appendix III**.

Appendix I

Radio Spectrum Used for Provision of Public Mobile Services

<u>Band</u>	<u>Type of Mobile Services*</u>				<u>Total</u> (MHz)
	<u>2G</u> (MHz)	<u>3G</u> (MHz)	<u>4G</u> (MHz)	<u>5G</u> (MHz)	
850/900 MHz		35.0			35.0
900 MHz	14.8		35.0		49.8
1 800 MHz	28.8		120.0		148.8
1.9 - 2.2 GHz		29.2	19.6	69.6	118.4
2.3 GHz			90.0		90.0
2.5/2.6 GHz			140.0		140.0
3.3 GHz				100.0	100.0
3.5 GHz				200.0	200.0
4.9 GHz				80.0	80.0
26/28 GHz				1 200.0	1 200.0
Total	43.6	64.2	404.6	1 649.6	2 162.0

* Situation as at end-October 2020.

(Source: Commerce and Economic Development Bureau)

Appendix II

Submissions on the development of 5G mobile services in Hong Kong

Mobile network operator	Submission (English version only)
China Mobile Hong Kong Company Limited	LC Paper No. CB(1)577/20-21(01)
Hong Kong Telecommunications (HKT) Limited	LC Paper No. CB(1)577/20-21(02)
Hutchison Telephone Company Limited	LC Paper No. CB(1)577/20-21(03)
SmarTone Mobile Communications Limited	LC Paper No. CB(1)577/20-21(04)

Appendix III

List of relevant papers

Committee	Date of meeting	Papers
Panel on Information Technology and Broadcasting	9 November 2020	Administration's paper on facilitative measures for telecommunications operators to extend mobile network coverage (LC Paper No. CB(1)97/20-21(03)) Minutes of meeting (LC Paper No. CB(1)406/20-21)
	10 May 2019	Administration's paper on assignment of spectrum for fifth generation mobile services (LC Paper No. CB(1)1020/18-19(05)) Background brief on spectrum assignment and the fifth generation mobile services (LC Paper No. CB(1)1020/18-19(06)) Minutes of meeting (LC Paper No. CB(1)1290/18-19)
Council	3 June 2020	Question No. 18 raised by Hon CHAN Hak-kan 5G mobile communications and technology
Council	26 February 2020	Question No. 22 raised by Hon WU Chi-wai Community Care Fund Digital Television Assistance Programme

Committee	Date of meeting	Papers
Subcommittee on Telecommunications (Method for Determining Spectrum Utilization Fee) (Spectrum for Auction) Regulation and Telecommunications (Designation of Frequency Bands subject to Payment of Spectrum Utilization Fee) (Amendment) Order 2019	11 June 2019	Legislative Council Brief (File Ref: CCIB/B 480-20-8-1-10(C)) Background brief prepared by the Legislative Council Secretariat (LC Paper No. CB(1)1149/18-19(02)) Minutes of meeting (LC Paper No. CB(1)1285/18-19) Report of the Subcommittee (LC Paper No. CB(1)1211/18-19)