

**Arrangements for the Frequency Spectrum  
in the 2.5/2.6 GHz Band upon Expiry of the Existing Assignments  
for the Provision of Public Mobile Services  
and the Related Spectrum Utilisation Fee**

**Consultation Paper**

**23 September 2020**

**PURPOSE**

This paper is jointly issued by the Communications Authority (“CA”) and the Secretary for Commerce and Economic Development (“SCED”) to seek views and comments of the telecommunications industry and other affected persons on the proposed arrangements for re-assignment of 90 MHz of spectrum in the 2.5/2.6 GHz band upon expiry of the existing assignments on 30 March 2024 and methods for setting the related spectrum utilisation fee (“SUF”).

**BACKGROUND**

2. A total of 90 MHz of spectrum in the 2.5/2.6 GHz band was assigned in March 2009 for the provision of public mobile services, and the existing assignments are due to expire in March 2024. The assignments are made to three assignees<sup>1</sup>, each with an amount of 2 x 15 MHz in the frequency ranges of 2500 – 2515 MHz paired with 2620 – 2635 MHz and 2540 – 2570 MHz paired with 2660 – 2690 MHz (hereafter referred to as “Available Spectrum”)<sup>2</sup>.

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<sup>1</sup> China Mobile Hong Kong Company Limited (“CMHK”), Hong Kong Telecommunications (HKT) Limited (“HKT”) and Genius Brand Limited (“Genius Brand”) are the incumbent assignees of the Available Spectrum, with each of them holding 2 x 15 MHz of the spectrum. Genius Brand is a joint venture indirectly owned by HKT and Hutchison Telephone Company Limited (“Hutchison”). The spectrum in the 2.5/2.6 GHz band assigned to Genius Brand is assumed to be divided equally between HKT and Hutchison for the purpose of calculation of the spectrum holding in this consultation paper. Among the four major mobile network operators (“MNOs”), SmarTone Mobile Communications Limited (“SmarTone”) does not hold any of the Available Spectrum.

<sup>2</sup> Another 2 x 25 MHz or 50 MHz of spectrum in the 2.5/2.6 GHz band (“Remaining Spectrum”) with assignments expiring in May 2028 is outside the scope of the present consultation.

3. The CA sets out in this consultation paper its proposal on the arrangements for re-assignment of the Available Spectrum upon expiry of the existing assignments for the provision of public mobile services. SCED also sets out in this consultation paper his proposal on SUF for the use of the Available Spectrum. The CA intends to make its decision and inform the parties concerned on the re-assignment arrangements in the first quarter of 2021 after taking into account views and comments of the industry, thus giving a notice period of three years to the incumbent assignees before expiry of the existing assignments<sup>3</sup>.

## **LEGAL AND REGULATORY FRAMEWORK**

4. Under section 32G(1) of the Telecommunications Ordinance (Cap. 106) (“TO”), the CA has the statutory duty to promote the efficient allocation and use of the radio spectrum as a public resource of Hong Kong. Sections 32H(2) and 32I(1) of the TO empower the CA to allocate and assign radio frequencies and to designate which of them shall be subject to the payment of SUF following consultation with the telecommunications industry and other affected persons. Section 32I(2) of the TO empowers SCED to prescribe the method for determining the SUF. Before exercising the respective statutory powers conferred on them by the TO, the CA and SCED jointly conduct the present public consultation.

5. Section 4(4) of the Communications Authority Ordinance (Cap. 616) stipulates that the CA, in performing its functions, must have regard to such of the following matters which appear to the CA to be relevant in the circumstances: (a) the fostering of an environment that supports a vibrant communications sector to enhance Hong Kong’s position as a communications hub in the region; (b) the encouragement of innovation and investment in the communications market; (c) the promotion of competition and adoption of best practices in the communications market for the benefit of the industry and consumers; and (d) acting in a manner consistent with the provisions of the Hong Kong Bill of Rights Ordinance (Cap. 383).

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<sup>3</sup> See the Statement issued by the former Telecommunications Authority (“TA”) in January 2008 on minimum notice periods for variation or withdrawal of spectrum assignments, which is available at: [http://tel\\_archives.ofca.gov.hk/en/tas/others/ta20080131.pdf](http://tel_archives.ofca.gov.hk/en/tas/others/ta20080131.pdf).

6. The Radio Spectrum Policy Framework promulgated by the Government in April 2007 (“Spectrum Policy Framework”)<sup>4</sup> sets out the policy objectives and the guiding principle in spectrum management which the CA should take into account in discharging its spectrum management responsibilities under the TO. By a statement issued in April 2007, the former TA (now the CA) explained that, in exercising his statutory powers under the TO, he would, in addition to all relevant considerations as required by law, give due regard to the Spectrum Policy Framework to the extent that there would be no inconsistency with the objectives and provisions of the TO<sup>5</sup>.

7. The Spectrum Policy Framework makes it clear that there is no legitimate expectation that there will be any right of renewal or right of first refusal upon the expiry of a spectrum assignment under the TO. The CA shall inform the parties concerned about the arrangements for spectrum re-assignment within a reasonable time before expiry of the assignments as mentioned in paragraph 3 above. In addition, under the guiding principle in spectrum management, the policy inclination is that a market-based approach will be used in spectrum management wherever the 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.

## **DEMAND FOR THE AVAILABLE SPECTRUM**

8. The mobile telecommunications market has continued to grow rapidly. The per capita monthly mobile data usage reached 9.3 gigabytes at end 2019, more than four times of that at end 2014. This growth trend is expected to continue in view of the developments of new innovative mobile broadband applications riding on the fourth generation mobile (“4G”) and fifth generation mobile (“5G”) networks. The Available Spectrum is currently fully deployed by the spectrum assignees for the provision of 4G services using the 4G Long Term Evolution (“LTE”) technology, which is a mature mobile broadband technology with ample supply of compatible network and user equipment in the market. At present, 4G services are the most popular generation of mobile services in Hong

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<sup>4</sup> The Spectrum Policy Framework is available at:  
<https://www.cedb.gov.hk/ccib/eng/legco/pdf/spectrum.pdf>.

<sup>5</sup> The former TA statement on the Spectrum Policy Framework is available at:  
[http://tel\\_archives.ofca.gov.hk/en/tas/others/ta20070424.pdf](http://tel_archives.ofca.gov.hk/en/tas/others/ta20070424.pdf).

Kong in terms of customer subscriptions and usage<sup>6</sup>, and are expected to remain prevailing by the time the Available Spectrum is due for re-assignment in 2024. It is expected that both the incumbent spectrum assignees and SmarTone which is an assignee of 20 MHz of the Remaining Spectrum would have an interest in acquiring the Available Spectrum for their continued provision of 4G services.

9. Furthermore, the 2.5/2.6 GHz band has been specified by the industry standardisation body 3<sup>rd</sup> Generation Partnership Project (“3GPP”) as one of the frequency bands that can be used for deployment of 5G services based on 5G New Radio (“NR”) technology. There is good potential for the Available Spectrum to be refarmed to meet future expected demand for 5G services including Internet of Things services. Among the spectrum suitable for the deployment of 5G services, spectrum in the 2.5/2.6 GHz band belongs to the mid-band spectrum within the 1 – 6 GHz range which provides longer range propagation than the high-band spectrum above 6 GHz and wider bandwidth than the low-band spectrum below 1 GHz. As such, the Available Spectrum supports cost effective provision of mobile broadband services when both coverage and capacity requirements are taken into account. Having regard to the factors discussed above, **the CA considers that there are likely to be competing demands for the Available Spectrum.**

## **PROPOSED RE-ASSIGNMENT APPROACH**

### **Considerations for a Market-Based Approach**

10. In accordance with the guiding principle in spectrum management in the Spectrum Policy Framework, since the CA considers that there are likely to be competing demands for the Available Spectrum, a market-based approach should be used for re-assignment unless there are overriding public policy reasons to do otherwise. The CA has taken into account the policy objectives for spectrum re-assignment of ensuring customer service continuity, efficient spectrum utilisation, promotion of effective competition, and encouragement of investment and promotion of innovative services<sup>7</sup> when evaluating whether there

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<sup>6</sup> As at the end of March 2020, around 80% of mobile subscriptions in Hong Kong have been using 4G services.

<sup>7</sup> These are the four policy objectives that the CA has adopted when evaluating the proposed options for re-assignment of the spectrum in the 1.9 – 2.2 GHz band, and 900 MHz and 1800 MHz bands upon expiry of the assignments in 2016 and 2021 respectively.

are any overriding public policy reasons for not adopting a market-based approach for re-assignment of the Available Spectrum. The CA’s assessment is set out in the following paragraphs.

*Ensuring Customer Service Continuity*

11. At present, four major MNOs hold a total of 933.4 MHz of sub-6 GHz spectrum for provision of public mobile services. The 90 MHz of Available Spectrum accounts for less than 10% of the total, or 8% to 16% of the spectrum held by the respective assignees, as shown in Table 1 below. Even assuming that the incumbent spectrum assignees (or any one of them) fail to acquire any of the Available Spectrum after re-assignment, they could still use the other spectrum they hold in the Remaining Spectrum, the assignments for which are due to expire in May 2028, along with their holdings of spectrum in the other frequency bands to ensure service continuity.

**Table 1: Distribution of sub-6 GHz spectrum to major MNOs (MHz)**

	<u>Sub-6 GHz spectrum</u>		<u>Spectrum in 2.5/2.6 GHz band</u>		
	Total (MHz)	Share	due to expire in 2024 (MHz)	due to expire in 2028 (MHz)	Total (MHz)
<b>CMHK</b>	259.6	27.8%	30 (12%)	10	<b>40</b>
<b>HKT</b>	284.6	30.5%	45 (16%)	15	<b>60</b>
<b>Hutchison</b>	199.6	21.4%	15 (8%)	5	<b>20</b>
<b>SmarTone</b>	189.6	20.3%	0	20	<b>20</b>
<b>Total</b>	<b>933.4</b>	<b>100%</b>	<b>90 (10%)</b>	<b>50</b>	<b>140</b>

Note: ( ) Figures in brackets represent the shares of Available Spectrum in the overall holding of sub-6 GHz spectrum held by the respective MNOs.

12. As Table 2 below illustrates, whilst all spectrum in the 2.5/2.6 GHz band is currently deployed for the provision of 4G LTE services, a large proportion of the spectrum in the 900 MHz, 1800 MHz and 1.9 – 2.2 GHz bands previously deployed for the provision of second generation mobile (“2G”) and third generation mobile (“3G”) services has been refarmed for 4G services. All the spectrum in the 2.3 GHz band is also being deployed for the provision of 4G

services. Therefore, about 400 MHz of sub-6 GHz spectrum assigned are currently deployed for the provision of 4G services.

13. While the Available Spectrum is currently used for the provision of 4G services, it accounts for only 27% of the 339.2 MHz of spectrum currently deployed by the incumbent spectrum assignees (i.e. CMHK, HKT and Hutchison) for such purposes. They can continue to use their holdings of the Remaining Spectrum and spectrum in the other frequency bands to provide 4G services, even assuming that none of the Available Spectrum is re-assigned to them. From a broader perspective, 4G services are practically high-speed mobile broadband services, which can also be served or even better served by the 5G networks. The gradual rollout of 5G networks will absorb a portion of the 4G traffic by the time the Available Spectrum is re-assigned in 2024. Taking the spectrum used by the incumbent spectrum assignees for the provision of 4G and 5G services together, the Available Spectrum accounts for only 13% of the total. Therefore, the CA considers that there should not be concerns about continuity of customer services upon re-assignment of the Available Spectrum.

**Table 2: Current application of sub-6 GHz spectrum in provision of public mobile telecommunications services<sup>8</sup>**

	<b>CDMA (MHz)</b>	<b>2G (MHz)</b>	<b>3G (MHz)</b>	<b>4G (MHz)</b>	<b>5G (MHz)</b>	<b>Total (MHz)</b>
800 MHz	15.0					<b>15.0</b>
850/900 MHz			20.0			<b>20.0</b>
900 MHz		15.2		34.6		<b>49.8</b>
1800 MHz		28.8		120.0		<b>148.8</b>
1.9-2.2 GHz			29.2	39.6	49.6	<b>118.4</b>
2.3 GHz				60.0		<b>60.0</b>
2.5/2.6 GHz				140.0		<b>140.0</b>
3.3 GHz					100.0	<b>100.0</b>
3.5 GHz					200.0	<b>200.0</b>
4.9 GHz					80.0	<b>80.0</b>
<b>Total</b>	<b>15.0</b>	<b>44.0</b>	<b>49.2</b>	<b>394.2</b>	<b>429.6</b>	<b>932.0</b>

<sup>8</sup> The type of mobile services supported by each individual frequency band refers to the highest order of use for which the corresponding frequency band is being deployed. For example, where a certain frequency block is being used for both 5G and 4G services, that frequency block is presented as being deployed for 5G services in the table.

### *Efficient Spectrum Utilisation*

14. As can be seen in Table 1 above, there are significant variations in the holdings of spectrum in the 2.5/2.6 GHz band among four major MNOs. Re-assignment of the Available Spectrum by a market-based approach will put the spectrum into the hands of those MNOs and new entrants (if any) which value it the most and can be expected to put it to the most efficient use during the term of the licence. It would also provide an opportunity for MNOs to optimise their spectrum holdings, taking into account other mid-band spectrum acquired and having regard to their own commercial and technical considerations. Some MNOs may want to acquire additional spectrum in the band to enhance their network capacity and transmission speed or to form contiguous blocks of wider bandwidth to attain higher spectral efficiency.

### *Promotion of Effective Competition*

15. Hong Kong's mobile telecommunications market is highly competitive, with four major MNOs serving a population of 7.5 million. Re-assignment of the Available Spectrum by a market-based approach would encourage MNOs to value their newly acquired spectrum and make good use to improve coverage, data speed and product offerings at affordable prices, thus promoting further competition that will benefit consumers.

### *Encouragement of Investment and Promotion of Innovative Services*

16. Past spectrum re-assignment exercises have led to spectrum changing hands among the incumbent MNOs. MNOs which acquire additional spectrum are likely to invest in the network infrastructure to enable them to deploy the spectrum effectively. From a more general perspective, it is expected that MNOs assigned with a right mix of spectrum through a market-based mechanism will be in a better position to introduce innovative services in the 5G era. Therefore, re-assignment of the Available Spectrum by a market-based approach can be expected to encourage investment and promote the introduction of innovative services.

## **Re-assignment of Spectrum by Auction**

17. The CA's evaluation in paragraphs 11 – 16 above has not identified any public policy reason that would override the adoption of a market-based approach for spectrum re-assignment. On the contrary, there are economic benefits which support the adoption of a market-based approach for re-assigning the spectrum. **The CA therefore proposes to adopt a market-based approach for the re-assignment of the Available Spectrum.**

18. Of the various market-based approaches<sup>9</sup>, it is considered that auction is the most appropriate for the re-assignment of the Available Spectrum. Auction allows the fair value of the spectrum to be determined in an open and transparent way and ensures that the successful bidders will be those who both value the spectrum most and can be expected to put it to the most efficient use during the term of assignment. Use of an auction approach is also consistent with practices adopted by many overseas administrations for handling similar cases. **The CA therefore proposes to re-assign the Available Spectrum by way of auction.**

**Question 1:** Do you agree with the use of a market-based approach for re-assignment of the Available Spectrum pursuant to the Spectrum Policy Framework?

## **PROPOSED RE-ASSIGNMENT ARRANGEMENTS**

### **Band Plan**

19. In Hong Kong, the 2.5/2.6 GHz band has been deployed for 4G services based on the Frequency Division Duplex ("FDD") mode of operation<sup>10</sup>.

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<sup>9</sup> Footnote 1 to paragraph 3.1 of the Spectrum Policy Framework explains that a "market-based approach" refers to "methods relying on market forces to ensure the efficient use of spectrum as a public resource".

<sup>10</sup> The FDD mode of operation means that the uplink and downlink communications are separated in the frequency domain via different frequency bands.



In contrast, the 2515 – 2675 MHz band in the Mainland has been deployed for 5G services based on the Time Division Duplex (“TDD”) mode of operation<sup>11</sup>.

20. The Office of the Communications Authority sought the views of the industry last year on the use of FDD or TDD mode of operation in the new assignment term for the Available Spectrum. Four major MNOs opined that more time would be needed to observe developments in the volume of uplink and downlink traffic. They also pointed out that any change in the mode of operation from FDD to TDD would involve substantial replacement of the existing network equipment and large scale engineering work, and the quality of mobile services might be adversely affected during the transitional period. They generally considered that the FDD mode of operation should continue to be adopted in the whole 2.5/2.6 GHz band<sup>12</sup>.

21. Taking into account the above feedback from the industry, the CA proposes that the existing FDD mode of operation, and therefore paired spectrum blocks in the band plan, should continue to be used in the re-assignment of the Available Spectrum.

22. In order to provide flexibility for an interested party to bid for the optimal amount of spectrum to meet its business needs, the CA proposes to divide the band plan into nine paired frequency blocks of 2 x 5 MHz each, as shown in Figure 1 below, which is the minimum allowable channel bandwidth for FDD-LTE as specified by 3GPP. Bidders may acquire and aggregate multiple blocks to form carriers of larger bandwidths to attain higher spectral efficiency in accordance with their technical and commercial considerations. It will also provide the flexibility for the spectrum to be refarmed for the provision of 5G services in the future.

**Figure 1: Proposed band plan for the 2.5/2.6 GHz spectrum**

	D1	D2	D3	Existing Assignment due to Expire in May 2028 (2 x 25 MHz)	D4	D5	D6	D7	D8	D9	
Lower band	2500	2505	2510	2515	2540	2545	2550	2555	2560	2565	2570 MHz
Upper band	2620	2625	2630	2635	2660	2665	2670	2675	2680	2685	2690 MHz

<sup>11</sup> The TDD mode of operation means that the uplink and downlink communications are separated in the frequency domain via different time slots.

<sup>12</sup> Views of the industry on use of the 2.5/2.6 GHz band are summarised in the Radio Spectrum and Technical Standards Advisory Committee Paper No. 1/2020, which is available at: [https://www.ofca.gov.hk/filemanager/ofca/en/content\\_751/SSAC\\_Paper\\_1\\_2020.pdf](https://www.ofca.gov.hk/filemanager/ofca/en/content_751/SSAC_Paper_1_2020.pdf).

**Question 2:** Do you have any views on the proposal that the Available Spectrum be divided into nine paired frequency blocks with a bandwidth of 2 x 5 MHz each?

## **Spectrum Cap**

23. While the CA intends to impose minimal constraints that limit spectrum acquisition in an auction, in exercising its spectrum management powers, the CA is also mindful of the need to prevent an undue concentration of spectrum in the hands of any single spectrum assignee which may have the effect of restricting competition. Having considered the overall spectrum holdings of four major MNOs in various frequency bands and their holdings of 4G spectrum, the CA proposes a spectrum cap for each bidder at 2 x 25 MHz out of the total 2 x 45 MHz of the Available Spectrum to be re-assigned.

24. In other words, a successful bidder may acquire up to 56% of the Available Spectrum. The proposed spectrum cap enables MNOs which provide 4G services with use of the Available Spectrum to acquire the similar amount of the spectrum they are currently using in the coming re-assignment exercise if they so wish. Such a spectrum cap should not give rise to any competition concern as each of the four major MNOs has been assigned with hundreds of megahertz of spectrum across various frequency bands, as shown in Table 3 below. Even assuming that the incumbent MNO that holds the largest amount of spectrum succeeds in acquiring up to the cap of 50 MHz of the Available Spectrum, its share in the spectrum available for the provision of public mobile services will only increase slightly from 30.5% to 31.0%, while the shares of spectrum holding by the other MNOs will be in the range of 20% – 29%. Furthermore, the CA has planned to release more spectrum in different frequency bands for mobile use in the coming few years<sup>13</sup>. In view of the above, the proposed spectrum cap is not expected to give rise to over-concentration of spectrum holding in the hands of any individual market player and will unlikely risk any impact on effective competition in the mobile telecommunications market.

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<sup>13</sup> Please refer to the Spectrum Release Plan for 2020 – 2022 issued by the CA on 10 January 2020, which is available at:  
[https://www.ofca.gov.hk/filemanager/ofca/common/Industry/broadcasting/spectrum\\_plan2020\\_en.pdf](https://www.ofca.gov.hk/filemanager/ofca/common/Industry/broadcasting/spectrum_plan2020_en.pdf).

**Table 3: Distribution of sub-6 GHz spectrum by major MNOs  
as at 30 September 2021 (MHz)**

	850/ 900 MHz	900 MHz <sup>^</sup>	1800 MHz <sup>^</sup>	1.9 - 2.2 GHz	2.3 GHz	2.5/ 2.6 GHz	3.3 GHz	3.5 GHz	4.9 GHz	Total	Share in Total
<b>CMHK</b>		10	40	19.6	30	40	20	60	40	<b>259.6</b>	<b>27.8%</b>
<b>HKT</b>	15	20	40	29.6		60	30	50	40	<b>284.6</b>	<b>30.5%</b>
<b>Hutchison</b>	10	10	30	29.6	30	20	30	40		<b>199.6</b>	<b>21.4%</b>
<b>SmarTone</b>	10	10	40	39.6		20	20	50		<b>189.6</b>	<b>20.3%</b>
<b>Total</b>	<b>35</b>	<b>50</b>	<b>150</b>	<b>118.4</b>	<b>60</b>	<b>140</b>	<b>100</b>	<b>200</b>	<b>80</b>	<b>933.4</b>	<b>100%</b>

Note: (^) Distribution of the spectrum in the 900 MHz and 1800 MHz bands is based on the arrangements for re-assignment of the spectrum concerned to be effective on 12 January 2021 and 30 September 2021 respectively.

**Question 3:** Do you have any views on the proposed spectrum cap of 2 x 25 MHz to be imposed on each bidder for the re-assignment of the Available Spectrum?

### **Eligible bidders**

25. The CA considers that there should only be minimal qualification requirements for registering bidders' interest and for demonstrating their capability to provide satisfactory services. The CA preliminarily proposes to impose the following qualification requirements on a bidder who is interested in participating in the auction of the Available Spectrum. In short, an eligible bidder should –

- (a) lodge a specified amount of deposit which may be forfeited if the bidder violates the auction rules or fails to take up the licence after winning the auction; and
- (b) demonstrate its technical and financial capability to provide services in fulfilment of the licensing obligations to the satisfaction of the CA and submit any other relevant supporting information which the CA may deem necessary.

26. Subject to fulfilment of the above qualification requirements, the CA proposes that all interested parties may apply for participation in the auction to be conducted for the re-assignment of the Available Spectrum.

**Question 4:** Do you have any views on re-assigning the Available Spectrum by allowing all interested parties to apply for participation in the auction?

### **Auction Format**

27. For the re-assignment of the Available Spectrum, the CA proposes to adopt the simultaneous multiple-round ascending (“SMRA”) auction format. This auction format was often used in auctions conducted in the past including the auctions of the spectrum in the 2.5/2.6 GHz band in 2009 and 2013 respectively, and the industry is familiar with it.

**Question 5:** Do you have any views on the adoption of the SMRA auction format for the re-assignment of the Available Spectrum?

## **LICENSING ARRANGEMENTS**

### **Licensing and Validity Period**

28. The CA will grant a new unified carrier licence (“UCL”) to each successful bidder of the Available Spectrum. According to Schedule 2 of the Telecommunications (Carrier Licences) Regulation (Cap. 106V), UCLs are issued with a period of validity of 15 years from the day on which they are issued. The validity period of the frequency assignment will last for 15 years and be coterminous with the term of the newly issued licence. For incumbent licensees who successfully acquire spectrum in the proposed auction, they may apply to the CA to combine their existing UCLs with the new UCL to be issued.

### **Restriction on Frequency Swap**

29. In order to facilitate competitive bidding in the auction and realise the full market value of each individual frequency block, the CA proposes that swapping of frequency blocks within the Available Spectrum should generally

not be allowed from the commencement of the new re-assignment term in March 2024 until the re-assignment of the Remaining Spectrum in May 2028. Following the re-assignment of all the spectrum in the 2.5/2.6 GHz band, the CA may consider any proposal of frequency swapping from MNOs provided that there are sound justifications such as enhancing spectral efficiency.

### **Technology Neutrality**

30. In the assignment of spectrum for provision of public mobile services, the CA in general adopts a technology neutral approach whereby assignees are free to use whatever technology they choose based on widely recognised standards for service provision. Unless there is any overriding reason worth special consideration, the CA will adhere to this technology neutral approach in assigning and licensing the Available Spectrum. The assignees may use the spectrum assigned for providing 4G or other generations of mobile services under their UCLs, so long as the technology to be used is a widely recognised standard. However, to avoid causing any harmful interference among spectrum assignees in the 2.5/2.6 GHz band, the use of the Available Spectrum should be in line with the band plan proposed in paragraphs 21 – 22 above, which is based on the FDD mode of operation stipulated in the relevant 3GPP standards.

### **Network and Service Rollout Obligations**

31. In order to prevent spectrum hoarding and to ensure that the auctioned spectrum will be put into efficient use for the timely provision of advanced telecommunications services for the benefit of the general public, the CA will in general impose network and service rollout obligations on successful bidders in a spectrum auction.

32. In view of the good radio propagation characteristics of spectrum in the 2.5/2.6 GHz band which facilitates the provision of broad geographical coverage in an economic way and the extensive coverage of existing mobile networks using spectrum in the 2.5/2.6 GHz band, the CA proposes to require each successful bidder of the Available Spectrum to roll out its network and services with use of the assigned spectrum to provide a minimum coverage of 90% of the population of Hong Kong within five years from the date of the spectrum re-assignment.

## **Performance Bond for Rollout Obligations**

33. To ensure compliance with the network and service rollout obligations as proposed in paragraphs 31 – 32 above, the CA proposes to require each of the successful bidders of the Available Spectrum to lodge a performance bond. The amount of performance bond will be specified by the CA in the information memorandum to be issued for the auction of the Available Spectrum.

34. As all the spectrum in the 2.5/2.6 GHz band has been fully deployed for the provision of public mobile services, if the incumbent assignees of the Available Spectrum are re-assigned the spectrum they currently hold, it is likely that their mobile networks will have met, if not exceeded, the 90% minimum population coverage requirement upon the re-assignment. Therefore, if any of the nine frequency blocks of Available Spectrum is acquired by an incumbent assignee, the assignee may choose to provide network coverage figures demonstrating that its network operating with the spectrum re-assigned has already fulfilled the 90% minimum population coverage requirement, without the need to provide a performance bond for that frequency block.

**Question 6:** Do you have any views on the proposed licensing arrangements as specified in paragraphs 28 – 34 above? In particular, do you have any views on the network and service rollout obligations proposed to be imposed on the successful bidders of the Available Spectrum, and the associated performance bond or network coverage statistics as the case may be proposed for ensuring compliance?

## **SPECTRUM UTILISATION FEE**

35. Since the CA proposes the adoption of an auction as the appropriate market-based approach for the re-assignment of the Available Spectrum, the successful bidders should pay the final bidding price of the individual frequency block as SUF for use of the spectrum. For the purpose of kick-starting the competitive bidding process, there will be a reserve price for each of the nine frequency blocks, set at a level that represents the minimum base value of the spectrum. The auction reserve price will be specified by SCED nearer the time of the auction.

36. Regarding the method of payment of SUF, to afford greater flexibility to the spectrum assignee to make financial arrangements for the payment of SUF, SCED proposes that the spectrum assignee be given a choice to pay the SUF either by –

- (a) lump sum payment upfront, which is the lump sum amount determined in the auction; or
- (b) annual instalments, with the first instalment equivalent to the lump sum amount referred to in (a) above divided by 15 (i.e. the number of years of assignment), and subsequent instalments to be increased every year by a pre-set percentage which aims to reflect the time value of money to the Government.

Question 7: Do you have any views on the proposal in relation to the setting and collection of SUF as specified in paragraphs 35 – 36 above?

## **INVITATION OF COMMENTS**

37. This consultation paper sets out preliminary views and proposals of the CA and SCED on the arrangements for the re-assignment of the Available Spectrum and the related SUF. For the avoidance of doubt, all the information provided and views expressed in this consultation paper are for the purpose of discussion and consultation only. Nothing in this consultation paper represents or constitutes any decision made by the CA or SCED. The consultation contemplated by this consultation paper is without prejudice to the exercise of the powers by the CA and SCED under the TO or any subsidiary legislation thereunder.

38. The CA and SCED will carefully consider the submissions received in this consultation, and insofar as it is practicable in the circumstances shall endeavour to announce their respective decisions on the arrangements for the re-assignment of the Available Spectrum and the related SUF in the first quarter of 2021, thereby giving a three-year advance notice to the incumbent spectrum assignees about the arrangements for spectrum re-assignment. This will be followed by the necessary preparatory work including the making of relevant legislative amendments for the re-assignment of the Available Spectrum.

39. Any person who would like to respond to this public consultation should do so on or before **20 October 2020**. **Late submissions would not be considered.** The CA and SCED may publish all or part of the views and comments received, and disclose the identity of the source in such manner as they see fit. Any part of the submissions considered commercially confidential should be clearly marked. The CA and SCED would take such markings into account in making the decision as to whether such information will be disclosed or not. Submissions should be sent to –

Office of the Communications Authority  
29/F., Wu Chung House  
213 Queen's Road East  
Wan Chai  
Hong Kong  
(Attention: Principal Regulatory Affairs Manager (R22))

Fax: 2803 5112

E-mail: [consult-2.5-2.6GHz@ofca.gov.hk](mailto:consult-2.5-2.6GHz@ofca.gov.hk)

An electronic copy of the submission should be provided by e-mail to the e-mail address indicated above.

**Commerce and Economic Development Bureau  
(Communications and Creative Industries Branch) and  
Office of the Communications Authority  
23 September 2020**