



**Arrangements for Assignment of the Spectrum in the 6/7 GHz
Band for the Provision of Public Mobile Services and the
Related Spectrum Utilisation Fee**

Response to Consultation Paper

29 August 2023

INTRODUCTION

1. Hong Kong Telecommunications (HKT) Limited (“HKT”) welcomes the opportunity to provide its views and comments in response to the proposals put forward by the Communications Authority (“CA”) and the Secretary for Commerce and Economic Development (“SCED”) in the consultation paper issued on 18 July 2023 regarding *Arrangements for Assignment of the Spectrum in the 6/7 GHz Band for the Provision of Public Mobile Services and the Related Spectrum Utilisation Fee* (“**Consultation Paper**”).
2. This Consultation Paper deals with the proposal to firstly, amend the Hong Kong Table of Frequency Allocations (“**HKTF**”) to allow spectrum in the 6425 – 7075 MHz frequency range to be used for mobile services (in addition to the existing fixed services and fixed-satellite services); and secondly, the arrangements to assign a total of 400 MHz of spectrum within the range 6570 – 6770 MHz and 6925 – 7125 MHz (“**6/7 GHz Band**”) to Mobile Network Operators (“**MNOs**”).

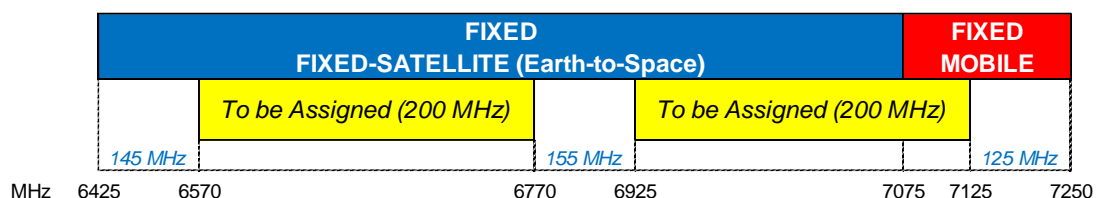


Figure 1: Diagram showing the Frequency Range proposed to be extended for use by Mobile Services and the Spectrum Bands proposed to be assigned to MNOs

3. The detailed arrangements regarding these proposals give rise to certain technical, operational and regulatory issues which are discussed in the Consultation Paper. In the following sections of this submission, HKT provides its comments in response to each of the questions raised in the Consultation Paper concerning the CA and the SCED’s proposed arrangements.
4. HKT would, however, like to firstly put forward an alternative approach to be adopted by the CA to this spectrum band.

A Longer Term View of the 6/7 GHz Band

5. In accordance with its duty under the Telecommunications Ordinance (“**TO**”)¹ and the Radio Spectrum Policy Framework (“**RSPF**”)² to ensure the efficient allocation and use of spectrum, HKT would strongly suggest that the CA step back and consider the whole frequency band from 6425 – 7125 MHz (“**Extended 6/7 GHz Band**”) on a more holistic level. This band is precisely the frequency range that has just been allocated for mobile services in Mainland China from 1 July 2023 onwards.

6. HKT notes that, while the CA proposes to amend the HKTFA to allow spectrum in the 6425 – 7075 MHz frequency range to be used for mobile services, i.e. just like the rest of the Extended 6/7 GHz Band (7075 – 7125 MHz), there are certain parts of this frequency range which are not yet ready to be assigned by the CA, i.e. there are “gaps” which have been left behind by the CA. These can clearly be identified from the following diagram:

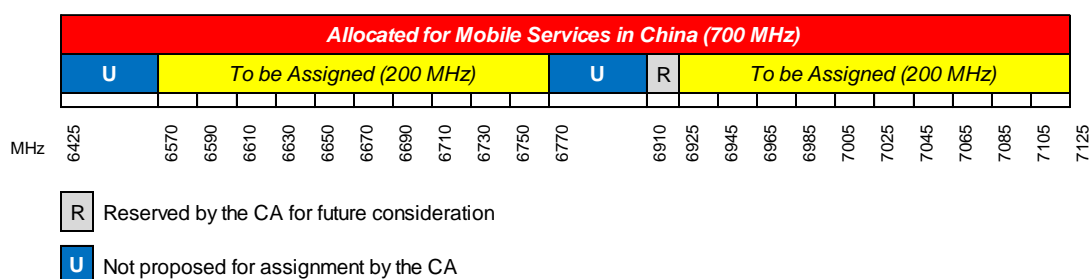


Figure 2: Diagram showing the Frequency Range allocated for Mobile Services in Mainland China, the spectrum proposed to be Assigned in Hong Kong and the Unassigned Parts of the Frequency Range

7. Given the CA’s proposal for the Extended 6/7 GHz Band to be used for mobile services, it would be logical to assume that all of the spectrum within this frequency range would eventually be assigned by the CA to the

¹ Section 32G(1) of the TO requires the CA to “... promote the efficient allocation and use of the radio spectrum as a public resource of Hong Kong.”

² Paragraph 2.1 of the RSPF states that one of the spectrum policy objectives for Hong Kong is to “facilitate the most economically and socially efficient use of spectrum with a view to attaining maximum benefit for the community.”

MNOs for use. However, the current proposal to only assign 400 MHz of the spectrum in this frequency range would create “gaps” (as marked “U” and “R” in the above Figure 2) and lead to the following problems:

- *Non-contiguous spectrum blocks assigned.* Depending on how much spectrum is acquired by each MNO per the assignment arrangements proposed in the Consultation Paper, the existence of these “breaks” in the frequency range could result in non-contiguous spectrum blocks being assigned to MNOs, which is not spectrally efficient. In fact, we have already seen the complications which have resulted from assigning non-continuous stretches of spectrum. For instance, the **2.5/2.6 GHz Band**³ was assigned in two parts⁴ and this is now found to be creating difficulties for MNOs wishing to acquire contiguous spectrum blocks due to a similar “gap” found in the middle of the spectrum band.
- *Sub-optimal future spectrum assignments.* Omitting the 145 MHz of spectrum in the 6425 – 6570 MHz range (“**Opening Gap**”) and the 155 MHz of spectrum in the 6770 – 6925 MHz range (“**Middle Gap**”) from the current proposed assignment plan will mean that, in the future, when these two tranches of spectrum are eventually assigned, they cannot be used most efficiently since the optimal channel bandwidth for 5G New Radio technology in this range is 100 MHz. Thus, after one MNO has been assigned with a block of 100 MHz in the Opening Gap or Middle Gap, the residual spectrum in either of these two blocks is 45 MHz or 55 MHz respectively, which will be very difficult and costly to use for the MNO assigned with this frequency band.

8. To avoid these problems, the CA should seriously consider postponing assignment of the 400 MHz of spectrum proposed in the Consultation Paper (made up of two separate tranches of 200 MHz) and wait until the entire Extended 6/7 GHz Band is available for assignment

³ The frequency range 2500 – 2570 MHz paired with 2620 – 2690 MHz.

⁴ The frequency range 2500 – 2515 MHz paired with 2620 -2635 MHz and 2540 -2570 MHz paired with 2660 -2690 MHz was assigned in *March 2009*, whereas the frequency range 2515 – 2540 MHz paired with 2635 – 2660 MHz was assigned in *May/June 2013*.

before proceeding to assign the spectrum (a continuous range of 700 MHz) in one go.

9. Assigning the Extended 6/7 GHz Band will increase the total available amount of spectrum from 400 MHz to 700 MHz and allow 7 blocks of contiguous of 100 MHz each to be assigned to MNOs. This would result in the fullest, most efficient deployment of the entire frequency range and align use of the band between Hong Kong with Mainland China. It would also avoid the problem identified later on in the Consultation Paper regarding the Assignment Stage of the auction, which is a direct consequence of there being a gap in the frequency range from 6770 – 6925 MHz when the spectrum is being assigned.⁵

10. Postponing assignment of the spectrum blocks in the 6/7 GHz Band would also have the following benefits:

- *Time to clear out the Gaps.* It would allow the CA sufficient time to clear out the Opening Gap and the Middle Gap (a total of 300 MHz) so that the entire band will be clean when it is made available for mobile services.
- *Time to allow the eco-system to develop.* Delaying the assignment of the 6/7 GHz Band would allow more time for the eco-system for the band to develop and become more mature by the time the spectrum is assigned. This should then allow the real market value of the spectrum to be reflected in the assignment process. The general consensus in the mobile industry in Hong Kong is that, despite growing worldwide interest in this band, realistically speaking, devices supporting the 6/7 GHz Band will only become

⁵ Refer to paragraph 25 and Annex of the Consultation Paper regarding the considerations that need to be taken into account by OFCA before finalizing the Assignment Plan due to separation of the Lower Band and the Upper Band. In fact, if the Extended 6/7 GHz Band were assigned in one go it may even be possible to do away with a Clock type auction and use the more straightforward Simultaneous Multiple Round Ascending (“SMRA”) type auction to determine assignment of the spectrum.



available in 2026 at the earliest and hence spectrum in this band is unlikely to be used in practice before the first quarter of 2026.

11. In any case, there should be no rush to assign the spectrum. According to a report prepared by the GSMA⁶, while it recommends that the 6425 – 7125 MHz range be made available for 5G, this could take place anytime up to 2030.

12. In addition, as there is already a spectrum auction planned to be held in 2024⁷, delaying auction of the 6/7 GHz Band would also allow the MNOs more time to plan for participation in the latter auction and alleviate pressure on financial resources.

13. HKT appreciates the effort made by the CA to look for new spectrum bands that may be released for mobile services and assigned to the MNOs so as to facilitate the further development of 5G services. However, in terms of priority, HKT would consider it more important to firstly focus efforts on identifying and assigning any available tranches of spectrum in the *existing 5G spectrum bands* that are already being used by the MNOs.⁸ Accordingly, HKT would encourage the CA to continue evacuating more and more frequency blocks in spectrum bands such as the 3.5 GHz Band so that more spectrum can be made available to the MNOs. This would immediately increase the 5G capacity that can be offered by the MNOs without the need for further network investment and hence is preferable to making assignments of new spectrum bands.

14. If, on the other hand, after careful consideration, and with strong reasoning, the CA still believes it preferable to adhere to its original proposal and proceed with just the assignment of the 400 MHz of spectrum in the 6/7 GHz Band, then HKT would like to provide the

⁶ Report issued by the GSMA in July 2022 entitled “6 GHz in the 5G Era – Global Insights on 5925 – 7125 MHz”.

⁷ Auction of spectrum in the 850/900 MHz and 2.3 GHz Bands.

⁸ For instance, refer to the 4.9 GHz Band spectrum auction that took place in October 2019. Further spectrum blocks were released via auction in this band two years later (October 2021).



following comments on each aspect of the assignment arrangements on a without prejudice basis.

PROPOSED AMENDMENTS TO THE HONG KONG TABLE OF FREQUENCY ALLOCATIONS FOR THE 6425 – 7075 MHz BAND

15. As can be seen from the foregoing Figure 1, most of 6425 – 7125 MHz frequency range⁹ in Hong Kong is currently only allocated for use by FS and FSS. However, the Consultation Paper notes that:

- Since 2019, several countries have been discussing the use of the 6425 – 7125 MHz band for mobile services;
- At the World Radiocommunication Conference to be held in November/December this year, the International Telecommunication Union (“ITU”) will be deliberating on the use of the 6425 – 7025 MHz band for mobile services in Region 1 (Europe and Africa) and the use of the 7025 -7125 MHz band for such services on a global basis. Some regional organisations have already signaled their support for the ITU’s proposals; and
- In June 2022, the 3rd Generation Partnership Project (3GPP) introduced the 6425 – 7125 MHz band as one of the licensed bands for 5G New Radio (“NR”) technology, and the relevant technical specifications for network and user equipment are already in place.

16. Moreover, in June this year, the Ministry of Industry and Information Technology announced that the 6425 – 7125 MHz band would be allocated for mobile services in Mainland China from 1 July 2023 onwards.

Question 1:	<i>Do you have any views on the proposed amendments to the HKTFSA regarding the allocation of the 6425 – 7075 MHz Band for mobile service with FS and FSS (Earth-to-space) on a co-primary basis?</i>
--------------------	--

17. HKT notes from the Consultation Paper that there is strong support from the telecommunications community to allow the 6425 – 7075 MHz

⁹ Per the latest HKTFSA, the 5925 – 7075 MHz range is allocated to Fixed Services (“FS”) and Fixed-Satellite (Earth-to-Space) Services (“FSS”), whilst the 7075 – 7250 MHz range is allocated to FS and Mobile Services.

band to be used for mobile services. Given the appetite for spectrum from the mobile industry in Hong Kong, and the possibility that the spectrum band concerned may be used to offer advanced 5G services, HKT supports the CA taking the initial step to amend the HKTFA in order to allocate the 6425 – 7075 MHz band for mobile services on a co-primary basis with FS and FSS.¹⁰

18. HKT does, however, note that in order to clear the 6/7 GHz Band for future assignment to MNOs, the CA is in the process of relocating users of fixed links and outside broadcasting links operating in the band 6570 – 6770 MHz and 6910 – 7125 MHz to other frequency ranges, and this process is scheduled to be completed by 31 December 2024.

19. It is important that this step be completed before the CA makes any plans to assign the spectrum to MNOs. This is because extending the use of the 6425 – 7075 MHz band to mobile services on a “co-primary” basis with FS and FSS will impose restrictions on the new-comer (i.e. the MNOs) making use of spectrum in this band. As explained in paragraph 12 of the Consultation Paper:

[...] A new radio station of a co-primary service must refrain from causing harmful interference to, and will not be entitled to protection from harmful interference caused by, radio stations of other co-primary users already in existence. In gist, the radio stations of co-primary users will be protected on a first-come-first-served basis.

20. Clearing the 6425 - 7075 MHz band of existing fixed links and outside broadcasting links used by FS should therefore make it easier for the incoming MNOs to deploy radio stations in this frequency range as they will not need to accommodate these fixed links and outside broadcasting links.

21. HKT notes OFCA’s claim in paragraph 13 of the Consultation Paper that no such potential interference issue exists between mobile services and FSS in this band and hence co-primary use of this frequency range

¹⁰ The HKTFA can be updated to allocate the 6425 – 7075 MHz band for mobile services regardless of when spectrum in the 6/7 GHz Band is to be assigned.



between MNOs and the satellite operators should not present any problems:

[...] According to the results of the relevant studies, subject to certain deployment constraints, IMT services are compatible with satellite uplinks in the 6425 – 7125 MHz band.

22. HKT trusts that the “deployment constraints” referred to in the above paragraph do not impose any undue burden on the MNOs wishing to make use of spectrum in this band.

PROPOSED ARRANGEMENTS FOR ASSIGNMENT OF SPECTRUM IN THE 6/7 GHz BAND

Demand for Spectrum in the 6/7 GHz Band

23. In the Consultation Paper, the CA surmises that the demand for spectrum should continue to grow due to the increasing reliance of individuals and businesses on high-speed internet connectivity for all sorts of activities and the resulting need for more spectrum by mobile service providers.

24. Furthermore, since the 6/7 GHz Band has been identified by 3GPP for use in 5G services based on 5G NR technology and the frequency range is classified as mid-band spectrum which provides:

- relatively longer range propagation than higher band spectrum (above 7 GHz); and
- wider bandwidth than lower band spectrum (below 1 GHz),

this makes the 6/7 GHz Band suitable for supporting the cost effective provision of mobile broadband services.

25. Based on these observations and the experience gleaned from the previous spectrum auctions held in October 2019¹¹, November 2019¹² and October 2021¹³, the CA concludes that there must be competing demand for spectrum in the 6/7 GHz Band and hence, in accordance with the principles established in the RSPF, a market-based approach is to be adopted for assignment of spectrum in the 6/7 GHz Band.

26. While HKT does not disagree with these general observations, the CA must be careful not to mistake the existence of competing demand for the spectrum as a sign that there is imminent use, and hence a pressing need, for the 6/7 GHz Band. The existence of competing demand for any

¹¹ Auction of spectrum in the 4.9 GHz band.

¹² Auction of spectrum in the 3.3 GHz band and 3.5 GHz band.

¹³ Auction of spectrum in the 600 MHz, 700 MHz, 850 MHz, 2.5/2.6 GHz and 4.9 GHz bands.

spectrum band is simply a factor of the competitive nature of the Hong Kong mobile telecommunications market and the *potential* use for the spectrum. It allows the CA to justify the adoption of a market-based approach when determining assignment of the spectrum. However, it does not necessarily mean that the CA should be put under pressure to release the frequency band under consideration as soon as possible.

27. In determining the timing for release of the 6/7 GHz Band¹⁴, it is important that the CA take into account the *current state of the eco-system* for the spectrum band concerned. All technical factors indeed indicate that the 6/7 GHz Band is a suitable band for deployment in mobile services. However, there are strong views from the mobile industry in Hong Kong that it would not be *commercially viable* to deploy this band right now or even in the next couple of years due to the lack of an eco-system for this band and the availability of equipment/handsets. Accordingly, HKT does not consider the use, and hence demand, for this spectrum band to be *imminent*. HKT wishes to avoid the same scenario which is currently being found with the **26/28 GHz Band**¹⁵ whereby the eco-system has been slow to develop, and this has required the original network and service rollout obligations to be amended/postponed twice.

28. On this basis, if the CA, for good reason, decides that it must determine how the 6/7 GHz Band is to be assigned amongst the MNOs in the fourth quarter of 2024¹⁶, it should consider whether it is really necessary to carry out assignment of the spectrum in the first quarter of 2025¹⁷ given that there is no pressing need to make use of this frequency band. The actual assignment of the spectrum could be effected at a later date, e.g. first quarter of 2026.

¹⁴ In paragraph 5 of the Consultation Paper, the CA states its intention to assign the 6/7 GHz Band on 1 January 2025 at the earliest.

¹⁵ Spectrum in the 26.55 – 27.75 GHz range which was administratively assigned to three MNOs in 2019.

¹⁶ Per paragraph 36 of the Consultation Paper, the CA expects to auction the spectrum in the fourth quarter of 2024.

¹⁷ Per paragraph 36 of the Consultation Paper.

Assignment Approach

29. Consistent with previous spectrum assignment exercises, the CA proposes using an auction to determine how spectrum in the 6/7 GHz Band is to be assigned to interested parties.

30. Unless the party is barred from participating in the spectrum auction due to the connected bidders restrictions¹⁸, anyone wishing to participate in the spectrum auction simply needs to:

- (i) Provide a specified amount of deposit upfront; and
- (ii) Demonstrate its technical and financial capability to provide services that fulfil the licensing obligations associated with the spectrum.

Question 2: ***Do you have any views on assigning spectrum in the 6/7 GHz band by way of auction and allowing all interested parties, subject to minimal qualification requirements and the connected bidders restrictions, to apply for participation in the auction?***

31. HKT has no objection to the use of an auction to determine assignment of the spectrum. Such a method of assignment has been used numerous times in the past.

32. As it is unlikely that a newcomer would be able to make effective use of the limited amount of spectrum being assigned, perhaps the CA should consider restricting applications for participating in the spectrum auction to incumbent MNOs. This will ensure that participants in the spectrum auction are experienced MNOs who will be able to make full use of the spectrum.

¹⁸ Bidders that are “connected” to each other are not permitted to participate in the same spectrum auction. See footnote 10 of the Consultation Paper for the definition of “connected”.

Band Plan

33. In accordance with the technical specifications adopted by 3GPP for 5G equipment and devices operating in the 6425 – 7125 MHz range, the minimum allowable channel bandwidth for 5G NR technology is 20 MHz. On this basis, the CA intends to split the 6/7 GHz Band into 20 blocks of 20 MHz each in order to give bidders sufficient flexibility to combine blocks to obtain higher channel bandwidth:

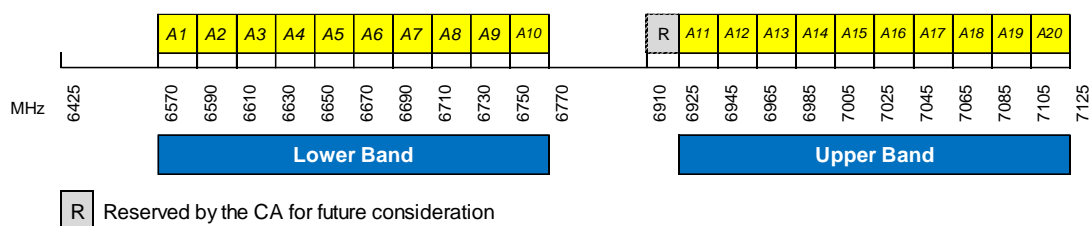


Figure 3: The CA's proposed Band Plan for the 6/7 GHz Band

34. Note that, as previously stated, even though the CA is arranging to clear the frequency range 6570 – 6770 MHz and 6910 – 7125 MHz of fixed links and outside broadcasting links, it only intends to assign the 6570 – 6770 MHz and 6925 – 7125 MHz range, i.e. a total of 400 MHz. 15 MHz of spectrum in the 6910 – 6925 MHz range will be put into reserve for future consideration.

Question 3: *Do you have any views on the proposal that 400 MHz of spectrum in the 6/7 GHz band be divided into twenty frequency blocks, with a bandwidth of 20 MHz each, for assignment?*

35. As the minimum allowable channel bandwidth within this frequency range for 5G NR technology is 20 MHz, HKT agrees that splitting the 6/7 GHz Band into blocks of 20 MHz each will provide the maximum flexibility for MNOs wishing to acquire spectrum in this band.

36. Having said that, to make most use of the spectrum, it is likely that an MNO wishing to acquire spectrum in this band will want to acquire at least 100 MHz of the spectrum, i.e. 5 blocks of 20 MHz, so it would be

equally feasible to simply split the 6/7 GHz band into 4 blocks of 100 MHz each.

Spectrum Cap

37. Taking into consideration the existing spectrum holdings of each of the four major MNOs, and the need to prevent an undue concentration of spectrum in the hands of a single MNO (which may have the effect of restricting competition), the CA proposes applying a 140 MHz spectrum cap on bidders participating in the spectrum auction.

Question 4: *Do you have any views on the proposed spectrum cap of 140 MHz to be imposed on each bidder in the auction of spectrum in the 6/7 GHz band?*

38. In the interests of transparency, HKT considers the “competition analysis” conducted by the CA on the spectrum holdings of the MNOs (as encapsulated in paragraphs 22 and 23 of the Consultation Paper) to require more detailed explanation. From a reading of paragraph 22, it is unclear how the CA derives its proposed cap of 140 MHz. The CA then, in paragraph 23, attempts to determine whether the application of such a cap would result in any anti-competitive effects if the MNO currently holding the largest amount of spectrum (“**Largest MNO**”) manages to acquire the maximum amount of spectrum from the auction.

39. Based on the result that the Largest MNO would only end up holding 30.4% of the total spectrum, the CA concludes that there are no adverse competitive effects resulting from the adoption of a 140 MHz spectrum cap. However, in order to validate this approach, HKT suggests it would be better to provide further explanation on the following:

- The CA should clarify why it considers an MNO holding 30.4% of the total available spectrum **not** to have any material impact on competition in the mobile telecommunications market. Conceivably, a single operator (in a four operator market) holding one-third of the total amount of spectrum could be considered significant, especially if, after the auction, there is a significant gap in spectrum holdings between the Largest MNO and the MNO with

the next largest spectrum holding. If a 30.4% spectrum holding poses no competition risk, then it would be helpful to explain what is the threshold % that must be reached by a single operator before the CA considers there to be competition concerns.

- The CA should clarify how it has derived the 140 MHz spectrum cap. If a cap of 140 MHz does not result in any undue concentration of spectrum then, conceivably, a lower cap would also achieve the same result. If that is the case, it would be helpful to explain why has the CA selected a 140 MHz cap rather than say, a 120 MHz cap or a 100 MHz cap.

40. The CA's explanation of the above matters would be very useful to the industry to better understand the basis for the CA's competition analysis in any spectrum assignments to be made in the future.

Auction Format

41. With the size of the spectrum blocks being set at 20 MHz each, in order to enable successful bidders to attain higher spectral efficiency and achieve the maximum channel bandwidth of 100 MHz (i.e. 5 blocks of 20 MHz), it is necessary to ensure that the 6/7 GHz Band is assigned to MNOs in contiguous spectrum blocks. This means that the SMRA type spectrum auction often used by the CA in the past cannot be adopted for the 6/7 GHz Band since this type of auction is not conducive to achieving contiguous spectrum¹⁹.

42. Accordingly, the CA proposes to adopt a Clock auction format, which consists of a Quantity Stage (to determine the number of frequency blocks to be assigned to each successful bidder), followed by an Assignment Stage (which determines the specific frequency blocks to be assigned to each successful bidder). The bids placed by participants in the

¹⁹ In an SMRA type spectrum auction, participants are free to bid on any specific spectrum blocks at the same time and hence there is a risk that successful bidders may end up with non-contiguous spectrum blocks at the conclusion of the auction.

Assignment Stage determine the priority for assignment of the frequency blocks (“**Assignment Priority**”).

43. Based on the Assignment Priority and a set of predefined general principles to be published in the Information Memorandum for the spectrum auction, OFCA will work out a Provisional Assignment Plan. The successful bidders will be given an opportunity to comment on the Plan.

44. Alternatively, the successful bidders may agree amongst themselves an Alternative Assignment Plan and submit this to OFCA for consideration.

45. OFCA will take into consideration all comments and submissions received before making a final decision on which specific frequency blocks to be assigned to each successful bidder.

Question 5: ***Do you have any views on the proposed format of the auction for the assignment of spectrum in the 6/7 GHz band?***

46. HKT agrees that in order to minimize the risk of non-contiguous spectrum blocks being assigned to bidders, a Clock auction format should be used to determine assignment of the 6/7 GHz Band.

47. Per the proposed general principles to be adopted by OFCA in drawing up the Provisional Assignment plan²⁰, Principle 3 appears to grant priority of assignment to bidders who have bid for more than 100 MHz of spectrum in the 6/7 GHz Band regardless of the amounts they bid in the Assignment Stage. This seems unfair. A bidder who has only acquired, say 80 MHz of spectrum in the Quantity Stage but whose bid was second highest in the Assignment Stage should be given priority to be assigned contiguous spectrum blocks over a bidder who acquired 120 MHz of spectrum in the Quantity Stage but failed to place any bid in the Assignment Stage.

48. Accordingly, Principle 3 should be amended such that the higher the amount bid by the bidder in the Assignment Stage the higher the

²⁰ Per the Annex to the Consultation Paper.



order of priority for assigning that bidder with the number of blocks it bid for in the Quantity Stage, and the higher the priority for being assigned with contiguous blocks.²¹

²¹ Of course, the risk of bidders being assigned with non-contiguous blocks is completely eliminated if HKT's primary proposal is adopted and the CA waits until the entire band from 6425 – 7125 MHz is cleared before assigning the whole frequency range of 700 MHz in one go, with no "gaps".

LICENSING ARRANGEMENTS

Licensing and Validity Period

49. In line with previous spectrum releases, spectrum in the 6/7 GHz Band is proposed to be assigned for a period of 15 years. This coincides with the term of the Unified Carrier Licence (“UCL”) which will be issued to each successful bidder of the spectrum.

50. Incumbent holders of the UCL who successfully acquire spectrum at the auction will be permitted to apply to the CA to combine the new licence into their existing UCL.

Restriction on Frequency Swap

51. The CA proposes barring successful bidders from swapping any of the frequency blocks they acquired at auction within the first 5 years of the spectrum being assigned to them.

52. It is interesting to note that the CA justifies this restriction on the basis of ensuring that bidding during the auction is competitive so as to:

[...] realise the full market value of the frequency blocks [...]

53. If, indeed, the CA considered it important for the 6/7 GHz Band to be auctioned for a price that reflected the full market value of the spectrum then perhaps HKT earlier comments suggesting that it was premature to release spectrum in this band at the moment, and that the whole assignment exercise for the 6/7 GHz Band should be postponed until the eco-system for this band is more developed, would make more sense.

Technology Neutrality

54. As with past spectrum assignment exercises, the CA intends to maintain the principle of technology neutrality and allow spectrum in the 6/7 GHz Band to be used by the assignee with whatever technology it chooses, based on widely recognized standards for service provision.

Network and Service Rollout Obligations

55. In line with other mid frequency band spectrum which has been assigned by the CA, the CA proposes to require each successful bidder of spectrum in the 6/7 GHz band to roll out its network and services with the use of the assigned spectrum to an area which covers at least 50% of the population within 5 years of the spectrum being assigned, and to maintain this coverage for the duration of the assignment period.

Performance Bond for Rollout Obligations

56. In order to ensure that each spectrum assignee is able to meet its network and service rollout obligations, the CA intends to require the successful bidders of the spectrum to provide a performance bond guaranteeing that they will be able to meet the rollout obligations by the stipulated deadline. The amount of the bond is to be specified by the CA in the Information Memorandum for the spectrum auction that will be issued by OFCA in due course.

<p>Question 6: <i>Do you have any views on the proposed licensing arrangements as specified in paragraphs 26 to 31 above? Among others, do you have any views on the network and service rollout obligations proposed to be imposed on the successful bidders of spectrum in the 6/7 GHz band?</i></p>

57. HKT has the following comments on each of the above licensing arrangements:

58. *Licensing and Validity Period.* In principle, HKT supports longer spectrum assignment/licence terms in order to allow MNOs sufficient time to recoup their investment (i.e. price paid for the spectrum as well as the network rollout costs). Accordingly, an assignment/licence term of at least 20 to 25 years would make more commercial sense. Indeed, across the globe, some major markets have already moved towards longer licence terms, unlimited licence terms and an expectation of renewal.

59. *Restriction on Frequency Swap.* As a matter of principle, HKT disagrees with the imposition of any ban on spectrum swapping. Spectrum swapping allows MNOs to make the most efficient use of their spectrum resources by combining spectrum blocks exchanged with other MNOs in order to achieve contiguous frequency bands and hence minimize costs arising from carrier aggregation.

60. By imposing an initial moratorium on spectrum swapping, this increases MNOs' costs compared to allowing spectrum swapping right from the very start. Increased costs means less funding available for network rollout and service improvement. Accordingly, HKT is not in favour of imposing any restriction on frequency swapping.

61. *Technology Neutrality.* HKT supports a technology neutral approach. As long as the MNO adopts a technology that is based on widely recognized standards for service provision and this does not result in any harmful interference with other existing services or users of adjacent frequency bands, the particular technology chosen by the MNO should be permitted to be used.

62. *Network and Service Rollout Obligations & Performance Bond for Rollout Obligations.* If the CA considers it necessary to impose network and service rollout obligations and to provide a performance bond as a precondition for assignment of the spectrum then, in the interests of consistency, these should be benchmarked against the network and service rollout obligations and performance bonds that were previously imposed for spectrum bands with similar characteristics.

63. In this regard, HKT notes that in the previous assignment of other *new* mid-band spectrum (e.g. 3.5 GHz band, 4.9 GHz band), a 50%²² network and service rollout requirement within the first 5 years of assignment was imposed. Accordingly, HKT sees no reason why the same requirement should not be imposed for the 6/7 GHz Band, which has similar technical characteristics as the aforementioned mid-band spectrum bands.

²² To be exact, only a 45% rollout requirement was imposed for the 3.5 GHz band because of the existence of the Restriction Zones.

SPECTRUM UTILISATION FEE

64. As the CA has proposed that an auction be used to determine assignment of the spectrum in the 6/7 GHz Band, the amount of the Spectrum Utilisation Fee (“SUF”) payable by each successful bidder will be determined under the auction process. However, in order to kick-start the bidding process, the SCED will set a reserve price for each frequency block which represents the minimum base value of the spectrum. This reserve price will be specified by the SCED nearer the time of the auction.

65. Consistent with past spectrum auctions, the SCED intends to allow the SUF to be paid by the successful bidders either:

- In one lump sum upfront; or
- In 15 annual instalments, with the first instalment being the total SUF payable by the spectrum assignee divided by 15, and the subsequent instalments being increased each year by a fixed percentage representing the time value of money to the Government.

<p>Question 7: <i>Do you have any views on the proposal in relation to the setting and collection of SUF as specified in paragraphs 32 to 34 above?</i></p>

66. All along, HKT has urged the SCED to set minimal reserve prices for spectrum auctions, as the reserve price is merely intended to be an opening price to kick start the bidding process. The reserve price should allow ample room for the bidding process to discover the true market price for the spectrum and hence should not be set with reference to any assumed current market price for the spectrum. Setting the reserve price at too high a level will simply hinder the bidding process.

67. Accordingly, HKT would once again urge the SCED to set a minimal reserve price in respect of the auction of the 6/7 GHz Band. It would be reasonable to expect the SCED to set the opening price for the auction at a level which is no higher than the range of reserve prices set for the most recent spectrum auctions.



68. To further ease the pressure on MNOs' cash flow, HKT supports the option to allow SUF payments to be made by instalment instead of in one lump sum upfront. This would be consistent with the approach taken in recent spectrum auctions. HKT would request that the SCED set the fixed percentage used to uplift each annual SUF instalment at a reasonable rate.

69. HKT would also request that the CA/SCED make it crystal clear in the Information Memorandum to be published in respect of the 6/7 GHz Band spectrum auction that, pursuant to the tax concessions announced in the Government's 2023-24 Budget, the SUF payments, regardless of whether they are paid upfront in one lump sum or via annual instalment, are tax deductible.

Submitted by:

Hong Kong Telecommunications (HKT) Limited

29 August 2023